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Assessing the Effectiveness of Equity Incentive Mechanisms in China's State-Owned Listed Companies

LAN Ye

Doctor of Management

Supervisors:
PhD Vasco Barroso Gonçalves, Assistant Professor,
ISCTE University Institute of Lisbon
PhD CHEN Xu, Professor,
University of Electronic Science and Technology of China

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LAN Ye

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I declare that this thesis does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university and that to the best of my knowledge it does not contain any material previously published or written by another person except where due reference is made in the text.

Signed: Lan Ye Date: 2025.10.28

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Abstract

State-controlled listed companies play a pivotal role in China's economic development. To mitigate agency costs caused by the separation of ownership and management, equity incentives have been rolled out in these firms since 2006. After nearly two decades of practice, despite a mature regulatory framework and wide adoption, the practical effectiveness of such incentives remains controversial, which motivates this study. This research targets three core issues: the actual effects of equity incentives in state-controlled listed companies, factors affecting incentive efficiency, and ways to optimize incentive implementation.

This study reviews the evolution of China's equity incentive system and related practices, and builds a targeted theoretical model for state-controlled listed companies. Using 2011-2024 A-share state-controlled listed companies as samples, it applies econometric methods to examine the link between equity incentive implementation and corporate performance. Findings show that incentive designs in these firms are rooted in the dual institutional logic of state-owned public attributes and listed company market attributes, with strict regulation and dual functions, leading to a preference for restricted stocks and a broad coverage of executives, core technicians and ordinary employees. Empirical results prove that equity incentives significantly improve firm performance, with incentive intensity positively correlated to performance growth, while including large numbers of employees generates no extra performance benefits.

This study unveils the unique institutional logic and multi-objectives of equity incentives in Chinese state-controlled listed companies, supplementing and refining existing incentive theories in the state-owned economy context. It also offers an integrated analytical framework beyond classical agency theory to interpret corporate governance practices with Chinese characteristics.

Keywords: State-controlled listed company, Equity incentive, Policy, Practice, Performance
JEL: G34, M12

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Resumo

As empresas estatais de capital aberto desempenham um papel fundamental no desenvolvimento económico da China. Para mitigar os custos de agência decorrentes da separação entre propriedade e gestão, foram implementados incentivos de capital próprio nessas empresas a partir de 2006. Após quase duas décadas de prática, apesar de um quadro regulamentar maduro e de uma ampla adoção, a eficácia prática desses incentivos permanece controversa, o que motiva este estudo. Esta investigação aborda três questões centrais: os efeitos dos incentivos de capital próprio nas empresas estatais de capital aberto, os fatores que afetam a eficácia dos incentivos e as formas de otimizar a sua implementação.

Este estudo analisa a evolução do sistema de incentivos de capital próprio da China e as práticas relacionadas, e constrói um modelo teórico direcionado para empresas estatais de capital aberto. Utilizando como amostra as empresas estatais de capital aberto de ações A no período de 2011 a 2024, aplica métodos econométricos para examinar a relação entre a implementação de incentivos de capital próprio e o desempenho empresarial. Os resultados mostram que o modelo dos incentivos nessas empresas tem as suas raízes na lógica institucional dual das características das empresas estatais e das características do mercado das empresas de capital aberto, sujeito a uma regulação rigorosa e com funções duplas, o que leva a uma preferência por ações com restrições e a uma ampla cobertura que inclui executivos, técnicos especializados e funcionários em geral. Os resultados empíricos comprovam que os incentivos de capital próprio melhoram significativamente o desempenho das empresas, verificando-se uma correlação positiva entre a intensidade do incentivo e a melhoria do desempenho, enquanto a inclusão de um grande número de funcionários não gera benefícios adicionais de desempenho.

Este estudo revela a lógica institucional única e os múltiplos objetivos dos incentivos de capital próprio nas empresas estatais de capital aberto chinesas, complementando e refinando as teorias de incentivos existentes no contexto da economia estatal. Oferece ainda um quadro analítico integrado, além da teoria clássica da agência, para interpretar as práticas de governação empresarial com características chinesas.

Palavras-chave: Empresa cotada controlada pelo Estado, Incentivos com ações, Política, Prática, Desempenho

JEL: G34, M12

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摘　要

国有控股上市公司在中国经济发展中扮演着关键角色。为缓解所有权与经营权分离产生的代理成本，自 2006 年起，股权激励工具开始在这些公司中推行。经过近二十年的实践，尽管监管框架已趋成熟且应用广泛，但其实际成效仍存争议，这构成了本研究的动机。本研究旨在探讨三个核心问题：国有控股上市公司实施股权激励的实际效果、影响激励效率的因素以及优化激励实施的途径。

本研究回顾了中国股权激励制度及相关实践的演进，并构建了一个针对国有控股上市公司的理论模型。以 2011 年至 2024 年 A 股国有控股上市公司为样本，应用计量经济学方法检验了股权激励实施与公司绩效之间的联系。研究结果表明，这些公司的激励方案设计植根于国有企业公共属性与上市公司市场属性的双重制度逻辑，并受到严格监管且承担双重功能，这导致其普遍偏好采用限制性股票作为激励工具，并将高管、核心技术人员及普通员工广泛纳入激励范围。实证结果证明，股权激励能显著提升公司绩效，且激励强度与绩效增长呈正相关，然而，将大量员工纳入激励计划并未产生额外的绩效收益。

本研究揭示了国有控股上市公司股权激励独特的制度逻辑与多元目标，在国有经济情境下对现有激励理论进行了补充与修正。同时，本研究也提供了一个超越经典代理理论的一体化分析框架，用以理解中国特色现代企业制度下的公司治理实践。

关键词：国有控股上市公司，股权激励，政策，实践，效果

JEL: G34, M12

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博士之路，远比我想象的更漫长、更曲折、也更孤独。然而，正是这段并不轻松的旅程，让我遇见无数值得铭记一生的温暖，也让我逐渐看清自己——原来，我竟可以如此坚韧。

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List of Abbreviations

Abbreviation	Full English Term
CRRA	Constant Relative Risk-Aversion
IR	Individual-Rationality
IC	Incentive-Compatibility
ROE	Return on Equity
EVA	Economic Value Added
RPE	Relative-Performance Evaluation
CSR	Corporate Social Responsibility
SOEs	State-Owned Enterprises
SASAC	State-owned Assets Supervision and Administration Commission
CSMAR	China Stock Market & Accounting Research
EPS	Earnings Per Share
ROA	Return on Assets
Lev	Leverage
VIF	Variance Inflation Factor
PSM	Propensity Score Matching
OLS	Ordinary Least Squares
R&D	Research and Development

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Chapter 1: Introduction

1.1 Research background, research questions and core concepts

1.1.1 Research background and research questions

Equity incentives, under the framework of modern corporate governance, serve to align the long-term interests of enterprises with those of employees. By balancing these interests, they support the sustainable and healthy development of corporate performance. Since the adoption of equity incentive plans by Chinese listed companies, both the forms and mechanisms of such incentives have continued to evolve. Various types of instruments and supporting measures have been introduced in succession, and implementation procedures have become increasingly standardized. As an effective incentive approach, equity incentives can improve employee quality and engagement, thereby enhancing firm performance.

Pilot programs in some state-owned enterprises began in the 1990s. However, due to an immature capital market legal framework and firm-level limitations, early successes were rare. The 2005 reform of the split-share structure, which gradually addressed the incompatibility between tradable and non-tradable shares, reduced the barriers to implementing equity incentives in state-controlled listed companies. In 2006, the State Council promulgated the Measures for the Administration of Equity Incentives of Listed Companies and the Trial Measures for the Implementation of Equity Incentives in State-Controlled Listed Companies (Domestic), providing legal support for their implementation. Over the subsequent two decades, China introduced a series of policies that gradually established a regulatory framework for equity incentives in state-owned enterprises with Chinese characteristics, promoting their widespread application in state-controlled listed companies.

Despite these developments, the effectiveness of equity incentives in practice remains contested. Some studies argue that they can effectively enhance corporate value, while others caution that they may exacerbate insider control risks. The issue is further complicated by the dual nature of state-controlled listed companies, which combine the public-ownership attributes of state enterprises with market-oriented operational goals. As a result, the choice of incentive instruments, the determination of incentive intensity, and the scope of coverage are constrained by multiple institutional factors, including state-asset supervision, compensation regulation,

and social responsibility. This produces a distinctive tension between “policy regulation” and “market incentives.”

Against this background, and considering the recent national conditions of China and the practical developments of state-controlled listed companies, this study aims to conduct a comprehensive review of the evolution of China's equity incentive system and its implementation practices for such firms. Using A-share state-controlled listed companies (hereinafter referred to as state-controlled listed companies) from 2011 to 2024 as the sample, it investigates the actual effects of implementing equity incentive plans in these companies and the factors influencing them. The objective is to provide references for improving the equity incentive mechanisms in Chinese state-controlled listed companies. Specifically, the research addresses three interrelated questions: What are the actual effects of implementing equity incentives in state-controlled listed companies? What are the factors influencing the effectiveness of equity incentives in these companies? How can the performance of equity incentive implementation in state-controlled listed companies be improved?

1.1.2 Core concepts

1. State-Controlled Listed Company Limited by Shares

Within the context of this study, a state-controlled listed company limited by shares refers to a company incorporated as a joint stock limited company under the Company Law of the People's Republic of China, whose shares are listed and traded on a stock exchange, and in which state-owned capital holds a controlling position. It represents a fusion of "state-owned capital control" and the attributes of a "public company." Based on the stipulations of Article 4 of the "Measures for the Supervision and Administration of State-Owned Enterprise Asset Transactions" (Order No. 32 of the State-owned Assets Supervision and Administration Commission of the State Council and the Ministry of Finance) and Article 3 of the "Measures for the Supervision and Administration of State-Owned Equity in Listed Companies" (Order No. 36 of the SASAC, MOF, and CSRC), and according to the form of control, "state-controlled listed companies limited by shares" can be categorized into two types:

Absolute Control: An enterprise where government departments, institutions, public service units, solely state-owned enterprises, or wholly state-owned enterprises, individually or collectively, contribute capital and hold a combined property (share) right ratio exceeding 50% (not including 50%), and one of them is the largest shareholder.

De Facto Control (Relative Control): An enterprise where the direct or indirect

shareholding ratio of a government department, institution, public service unit, or a single state-owned or state-controlled enterprise does not exceed 50%, but it is the largest shareholder, and can exercise actual control over the enterprise through shareholder agreements, articles of association, board resolutions, or other arrangements.

2. Equity Incentive

Within the context of this study, equity incentive is a long-term incentive system and its operational practice. It conditionally grants company equity or equity-linked interests to incentive recipients, thereby transforming them from pure salary recipients into partial owners of the company. This deeply aligns their personal interests with the company's long-term value growth and shareholder interests. Its aims are to address principal-agent problems, mitigate moral hazard, and ultimately enhance the company's competitiveness and sustainable development capacity.

3. Practical Effectiveness

This study defines practical effectiveness as a composite concept deeply embedded in China's unique institutional context, integrating optimally designed contracts, behavioral drivers, and performance outcomes. In the context of this study, "practical effectiveness" is by no means a simple "effective-ineffective" binary judgment. Rather, it is an analytical framework that reveals the "conditional effectiveness" and "functional complexity" of incentive contracts under China's specific institutional constraints. At the theoretical level, "practical effectiveness" is embodied as the achievement of an "optimal equilibrium" of key contract parameters that achieves incentive compatibility, representing the standard for effective incentives in the normative ("ought-to-be") state. At the empirical level, "practical effectiveness" is operationalized as the verifiable enhancement effect on corporate performance and its clear boundaries.

1.2 Research content and methods

1.2.1 Research content

Based on the formulation of the research questions and the research plan, the content of this study focuses on four interrelated aspects. First, the evolutionary patterns and practical characteristics of equity incentive policies in state-controlled listed companies. Second, an equity incentive model for state-controlled listed companies based on the principal-agent analysis framework. Third, the actual effects of implementing equity incentives in state-

controlled listed companies and the factors influencing them. Fourth, countermeasures and suggestions for improving the performance of equity incentives in state-controlled listed companies. Simultaneously, to solidify the theoretical foundation of this study and provide a reference for equity incentives in state-controlled listed companies, this study also systematically reviews the theoretical underpinnings of equity incentives. Furthermore, it focuses on the equity incentive practices of listed companies in five countries—the United States, Germany, France, Japan, and South Korea—extracting commonalities and differences to provide a theoretical and practical context for understanding the introduction of equity incentive measures in state-controlled listed companies.

The internal logical relationship of the above research content is as follows: First, by comprehensively reviewing the evolution of the equity incentive system and its practical implementation process in state-controlled listed companies, their main characteristics are identified, laying the groundwork for screening the primary factors influencing equity incentives. Second, based on the characteristics of equity incentives in state-controlled listed companies, a theoretical model for equity incentives in Chinese state-controlled listed companies is constructed to investigate the main factors affecting their effectiveness. Third, the main variables influencing the implementation effectiveness of equity incentives in state-controlled listed companies are identified. Using A-share state-controlled listed companies from 2011 to 2024 as the sample, econometric statistical methods are employed to test the performance of equity incentives in these companies. Finally, based on the conclusions from the theoretical model and statistical analysis, countermeasures and suggestions for improving the implementation performance of equity incentives are proposed.

Based on the research questions and overall plan, this dissertation is organized into eight chapters. Apart from Chapter One, the main contents are as follows:

Chapter Two consolidates the theoretical foundation by systematically analyzing the intellectual trajectory of equity incentives. It provides interdisciplinary and multi-level theoretical support for the subsequent empirical research.

Chapter Three focuses on the practices of equity incentives in listed companies across the United States, Germany, France, Japan, and South Korea. By extracting commonalities and differences, it offers reference points for the design of equity incentive systems with Chinese characteristics and underscores the importance of adapting institutional transplantation to local contexts.

Chapter Four reviews the historical evolution of equity incentive policies in China's state-controlled listed companies from the perspective of institutional history and provides a

systematic restatement of the regulatory framework governing equity incentives in these firms.

Chapter Five combines macro-level statistics with a micro-level case study to reveal the practical characteristics of equity incentives in state-controlled listed companies in China.

Chapter Six examines the contract design of equity incentives in state-controlled listed companies and conducts empirical validation. Through theoretical derivation and data modeling, it uncovers the internal logic of incentive mechanisms.

Chapter Seven employs panel data of state-controlled listed companies to conduct regression analysis, testing both the actual effects of equity incentive implementation and the factors influencing these effects.

Chapter Eight synthesizes the core findings of the study and reflects on its limitations.

1.2.2 Research methodology and data sources

In addition to the descriptive background chapters, with the theoretical basis (Chapter 2), the comparative study of equity incentives practices in foreign countries (Chapter 3), and the evolution of the regulatory system in China (Chapter 4), based on the research of scientific, technical, and legal documentation, this study primarily employs case study (Chapter 5), theoretical modeling (Chapter 6), and econometric statistical methods (Chapter 7). First, the case study research method is used to present both the macro-level landscape and micro-level details of equity incentive practices in state-controlled listed companies since 2007 through statistical data from both macro and micro perspectives. Second, the theoretical modeling method is employed to construct an equity incentive model for senior executives that uncovers the internal logic of incentive mechanisms and provides quantifiable contract parameter guidelines.

Finally, statistical techniques, including correlation analysis and regression analysis, are used, with A-share state-controlled listed companies from 2011 to 2024 as a research sample and employing Stata software, to test the effects of equity incentive implementation in state-controlled listed companies.

1.3 Research objectives and contributions

1.3.1 Objectives of the research

Current research on the effects of equity incentives in Chinese state-owned enterprises predominantly concentrates on the level of empirical analysis, exhibiting significant limitations，

and thus answering the research questions. Firstly, traditional research methods struggle to conduct granular analyses targeting the heterogeneity of individual firms. Due to significant variations among firms in equity structures, governance mechanisms, and market environments, empirical findings show considerable heterogeneity (see Chapter 5). Secondly, most existing studies focus on single-phase equity incentive plans, lacking a systematic investigation of dynamic incentive mechanisms.

Given this context, and building on existing research, this study takes the incentive practices of state-controlled listed companies as its research object. It employs empirical research methods to conduct an empirical study on the equity incentive policies and their implementation effects in state-controlled listed companies, aiming to make original contributions in four key areas and thus answering the research questions. First, to provide a panoramic display and systematic restatement of the equity incentive policies and regulatory systems for Chinese state-controlled listed companies，summarize the core conclusions of the study and propose targeted policy recommendations, in response to the study's research questions (see Chapter 5). Second, to offer a theoretical explanation of the practice regarding the mechanisms linking equity incentives and performance improvement in these companies, thereby providing a rigorous theoretical paradigm for explaining the micro-mechanisms through which equity incentives influence corporate performance (see Chapter 6). Third, to empirically verify the practical effectiveness of equity incentives in state-controlled listed companies and the factors influencing it (see Chapter 7). Fourth, to reveal the particularities of equity incentives in state-controlled listed companies, offering a new theoretical perspective for understanding corporate governance practices with Chinese characteristics (see Chapter 8).

1.3.2 Contributions of the research

First, this study systematically examines the evolutionary trajectory of equity incentive policies, providing a panoramic interpretation of the institutional genealogy of equity incentives in Chinese state-controlled listed companies. The study finds that this institutional system is rooted in the nature of public ownership of state-owned enterprises and is simultaneously subject to the dual strict constraints of state-owned assets supervision and securities regulation for listed companies. This has resulted in the distinctive feature of "triple control" — significantly stricter regulations regarding incentive eligibility, incentive scale, and incentive intensity compared to non-state-owned listed companies. Its institutional change trajectory is closely linked to the deepening of China's state-owned enterprise reform and the development

process of the capital market, showing an evolutionary trend from cautious early pilot programs to gradual standardization and diversification. This constitutes the primary institutional context for understanding the equity incentive practices in state-controlled listed companies.

Second, based on principal-agent theory, this study constructs an executive equity incentive model applicable to the specific context of state control, providing a theoretical explanation for the performance improvement mechanisms of equity incentives in state-controlled listed companies. Model derivation indicates that to effectively bridge the agency conflict arising from the separation of ownership and management, it is necessary to align the interests of management with those of shareholders by granting them residual claim rights. The model further deduces key contract design principles: the proportion of equity granted must be linked to company size and historical performance, aiming to maximize incentive efficiency while controlling equity dilution costs. Furthermore, the lock-up period model of "two-year lock-up, three-year phased release" proves to be a key mechanism for achieving an optimal balance between strengthening managers' medium- to long-term commitment and avoiding the suppression of their current effort due to excessive fear of future market uncertainty. This theoretical construct provides a normative framework for analyzing the micro-pathways through which equity incentives affect corporate performance.

Third, integrating macro-level data analysis with micro-level case studies, and through large-sample statistical testing, this study verifies the practical effectiveness of equity incentives in state-controlled listed companies and the factors influencing it. Statistical analysis shows a significant positive correlation between the implementation of equity incentive plans and corporate performance improvement, with incentive intensity being a key moderating variable, demonstrating a clear dose-effect relationship. Particularly importantly, the study finds that industry heterogeneity is a core contextual factor: the performance-enhancing effect of equity incentives is most pronounced in high-tech industries. This confirms the behavior-driven mechanism through which it influences performance by altering executives' risk preferences and incentivizing innovation investment, thereby precisely identifying the key boundary conditions affecting its utility.

Finally, by analyzing the macro-institutional context, examining micro-level cases, and testing empirical data, this study discovers that the equity incentive mechanism in state-controlled listed companies is a "hybrid governance device" carrying both economic incentive and political-social functions. The underlying logic of its plan design is deeply embedded with non-economic institutional objectives such as organizational fairness, welfare sharing, and political responsiveness, rather than solely pursuing the maximization of economic efficiency.

The research in this study not only comprehensively demonstrates the complex landscape of equity incentive practices in state-controlled listed companies but also provides an integrated analytical perspective that goes beyond classical agency theory for understanding corporate governance practices under the modern enterprise system with Chinese characteristics.

Chapter 2: Literature Review and Theoretical Basis

Based on the research questions and design of this study, and given the prominent separation of ownership and management in state-controlled listed companies, this study primarily adopts principal-agent theory as its theoretical research foundation. From this theoretical standpoint, equity incentives are regarded as a pivotal mechanism to resolve the goal alignment issue between agents and principals under information asymmetry. By granting agents the entitlement to share the enterprise's residual claims, equity incentives align the utility functions of principals and agents to a certain degree, which in turn motivates senior executives to prioritize the long-term development and overall interests of the firm in their decision-making processes. Equity incentives have long attracted extensive academic attention across multiple disciplines such as management and economics. Scholars have conducted extensive and in-depth investigations from diverse theoretical perspectives, generating a wealth of theoretical findings that offer multifaceted analytical lenses for interpreting the equity incentive phenomenon. Among these theoretical frameworks, principal-agent theory holds particularly significant influence. By analyzing equity incentives from the perspective of corporate ownership structure and agency relationships, this theory provides profound interpretive insights, and its core theoretical propositions constitute both the starting point of this study and the cornerstone of its analytical framework.

1.2 Literature review

1.2.1 Major topics in domestic and international research on equity incentives

As a widely adopted governance tool, equity incentives have attracted broad academic attention and generated a substantial body of literature. Based on the research questions set in this study, the main topics of domestic and international research on equity incentives can be summarized as follows.

1. Research on the motivations for implementing equity incentives in listed companies

Empirical results from Lu et al. (2009) indicate that Chinese listed companies generally display two types of incentive motives: motivational and welfare-oriented (or non-motivational). Feng and Chen (2014) found that most listed companies in China adopt equity

incentives primarily out of motivational considerations. Yu et al. (2010) further showed that when designing performance evaluation systems for equity incentives, executives exhibit significant altruistic tendencies, with no substantial difference between state-owned and private enterprises. Through a case study of Lu et al. (2012) argued that its equity incentives display a dual nature of "incentive-welfare-reward," which leads to a dilemma in defining their purpose and limits their effectiveness as a true motivational mechanism.

However, a large number of empirical studies have found that the actual effects of equity incentives often deviate from these theoretical expectations and may even produce negative outcomes. Bebchuk et al. (2002) explained this by arguing that managers can extract rents by leveraging their compensation and power; the greater their administrative power, the stronger their rent-seeking or expropriation ability. Managers not only directly influence employee compensation but also, to some extent, affect corporate decision-making itself.

The majority of existing research therefore converges on the conclusion that incentive-oriented equity incentives can effectively reduce agency costs and yield positive outcomes. Yet, when corporate governance structures are weak, equity incentive schemes may instead become a rent-seeking tool for managers. Importantly, many studies infer managerial motivation by "backtracking" from post-implementation performance changes. This approach carries significant limitations in sample selection, especially in the Chinese context. Under incentive mechanisms where performance targets are designed to reach a certain level, corporate performance will likely improve during the incentive period regardless of managerial motivation, thereby enabling the exercise of equity options and complicating conclusions about underlying intent.

2. Research on the influencing factors of equity incentive mechanisms

A variety of factors shape equity incentive practices in listed companies. Li and Hui (2018) identified five key determinants of executive equity incentives: government regulation, executive age, ownership concentration, industry competition, and talent demand. At the same time, factors such as managerial compensation, corporate growth, and firm size also exert significant influence on the design of incentive schemes. Yu (2011) further argued, based on empirical analysis, that executive pay plays an important role in shaping the effects of equity incentives. However, this role is moderated by variables such as operating risk, growth potential, and ownership concentration-all of which are themselves conditioned by firm size. Research by Li and Su (2012), as well as Li and Sun (2013), also demonstrated that the characteristics of controlling shareholders significantly affect the formulation of equity incentive plans, with differences in the nature of control rights exerting additional influence. Ji (2013) analyzed how

firm and industry characteristics, the identity of the driving actors, property rights, life cycle stage, operational conditions, and the capital market environment all profoundly shape equity incentive models. Li and Ding (2010) found that implementing equity incentive systems at different stages of the corporate life cycle constitutes an effective motivational approach. Finally, Jiang (2012) emphasized that equity incentives do not exist in isolation; they are influenced by a combination of mechanisms, including market evaluation, control and constraint systems, market selection, integrated incentive systems, and the broader policy environment. Together, these studies provide a wide range of perspectives and valuable insights for comprehensively understanding the determinants of equity incentive schemes in listed companies.

3. Research on the relationship between equity incentives and investment behavior

The prevailing view is that equity incentives constitute a long-term and effective governance mechanism, directly influencing managerial behavior and thereby shaping corporate investment decisions. Lu et al. (2011) argued that establishing equity incentive systems in China can effectively mitigate conflicts of interest between executives and controlling shareholders, restrain corporate overinvestment, and alleviate problems of "underinvestment." Zhang and Cao (2022), through a comparative study of governance effects before and after state-owned enterprise reforms, found that equity incentives in state-owned enterprises exert a significant inhibitory effect on excessive investment. Chen and Zhou (2014) demonstrated that managerial equity incentives, compared with non-equity incentives, substantially increase corporate cash flow. Similarly, Xu and Xu (2013), in a study of high-tech listed companies, found that equity incentives stimulate R&D （Research and Experimental Development） investment, though the relationship between incentive intensity and R&D effort follows an inverted U-shape. Tang and Xu (2012), based on panel data of Chinese small and medium-sized listed firms, concluded that equity incentives promote technological innovation investment in these companies, though for non-state-owned firms the effect takes the form of an inverted U-shape. Gong (2021) provided empirical evidence that family firms possess latent motives to foster R&D investment, which, to some extent, encourage executives to increase R&D spending.

Under the assumption of "bounded rationality," speculative behaviors by executives-such as market timing and earnings management-become almost inevitable, facilitated by their unique informational advantages. Zhu and Tao (2024) examined the motives, methods, and timing of speculative behaviors by Chinese managers, concluding that opportunities for

speculation arise at various points in time. Yang and Wang (2023) argued that when compensation committee members lack independence, managers exploit their information advantages to make ex-ante decisions and engage in speculative practices such as earnings management to capture private benefits. Shen and Li (2025) also found that equity incentives do not necessarily reduce agency costs; instead, they may foster managerial opportunism and profit manipulation. Zhang et al. (2014) observed that prior to implementing equity incentives, Chinese listed firms engaged in negative earnings management, with state-owned enterprises showing an even greater tendency than private firms toward such practices. Zhou (2014) found that in larger firms, executives are more likely to engage in earnings management-typically downward manipulation prior to public disclosure and upward manipulation beforehand. Finally, Xu et al. (2013), through a corporate life-cycle analysis, concluded that stock incentives positively influence earnings management in the growth stage, but have no significant effect in the maturity stage.

4. Research on equity incentives and other executive behaviors

Studies on the relationship between equity incentives and executive behavior have produced divergent conclusions. Some scholars argue that equity incentives enhance executives' risk tolerance and thus serve as an effective motivational mechanism. Others, however, contend that equity incentives exert no significant influence on managerial risk-taking, and in some cases, firms with higher risk profiles even grant fewer shares to their executives.

Yin and Li (2012) revealed a strong link between equity incentives and corporate growth, finding that when firms exhibit greater growth potential, the motivational effect of equity incentives in encouraging risk-taking becomes more pronounced. In examining the relationship between equity incentives and executive turnover, Zong et al. (2013) offered a new perspective: when firm performance is within controllable bounds, equity incentives can significantly reduce the frequency of executive changes, thereby highlighting their role in stabilizing management teams. At the same time, many scholars have investigated the multifaceted effects of equity incentives on executive behavior. They argue that such incentives can suppress inefficient investment and promote innovative input, but may also encourage speculative conduct, which in turn heightens operational risks for firms.

Nevertheless, research on areas such as executive risk-taking and turnover remains relatively limited, and no consensus has yet been reached. Moreover, many studies lack a holistic perspective when examining executive behavior. Differences in research focus, sample selection, variable design, and methodology further weaken the comparability of findings. These limitations suggest that future research should undertake deeper and more comprehensive

inquiry into the complex relationship between equity incentives and executive behavior, in order to provide more accurate and effective managerial implications.

5. Research on the types of equity incentive instruments

Mckeon (2011) examined the impact of different incentive schemes on accounting practices. He found that, since U.S. accounting standards assign a zero intrinsic value to stock options, the use of stock options-compared with restricted stock-can better improve reported earnings in financial statements and support stock price performance. Consequently, American firms tend to favor stock options as their preferred incentive instrument. Ni and Hu (2021), through an empirical analysis of 56 listed companies that announced equity incentive plans in 2009-2010, discovered that, compared with restricted stock, the stock market reacts more strongly to firms that adopt stock options. Similarly, Xiao (2020) showed that motivational choices display significant gender effects. When executives hold a relatively larger share of equity incentives, firms are more likely to use restricted stock, as executives prioritize their own interests.

6. Contextual and institutional factors behind cross-national differences in equity incentives

First, existing research shows that contextual factors are a major determinant of cross-national variations in equity incentives. Kim (2024) argued that corporate culture plays a crucial role in shaping employee shareholding behavior, as cultural traditions and values across countries affect both the acceptance and implementation of such practices. Oyer (2004) noted that in cultures characterized by collectivism and family orientation, equity incentives centered on individual performance face inherent limitations. In contrast, Sun and Xia (2022) observed that in firms emphasizing individualism and market competition, equity incentives are more readily perceived as an effective motivational tool. Such cultural differences directly shape the forms of equity incentives adopted by companies during the process of internationalization.

Second, legal systems also constitute an important factor influencing the stability and effectiveness of equity incentive mechanisms. Zheng et al. (2005) pointed out that regulatory regimes differ across countries, directly affecting both the legitimacy and execution of equity incentives. Abroad, Shen et al. (2015) argued that China's existing legal system offers relatively greater flexibility for designing incentive mechanisms, whereas in some countries legal constraints impose tighter restrictions. Xu et al. (2016) emphasized that understanding and complying with local laws is a critical prerequisite for implementing cross-border equity incentives. Similarly, Chen et al. (2016) stressed that market environments are highly contextual: differences in the development and maturity of national securities markets directly shape both the demand for, and the effectiveness of, equity incentives. Collins et al. (2018)

found that in less-developed capital markets with weak liquidity and low participation, equity incentives face greater implementation difficulties. By contrast, more mature markets provide companies with broader options, mechanisms, and tools to carry out such incentives effectively.

Institutional arrangements further contribute to international differences in equity incentive practices. Li and Wan (2017) emphasized that government policies and regulatory design strongly influence the choice and implementation of equity incentives in Chinese listed companies. Cheng (2020) noted that state-level regulations-such as caps on executive compensation-can constrain corporate incentive decisions. Moreover, corporate governance and ownership structures also play a role: the effectiveness of stock options depends directly on the quality of corporate governance, as stronger governance provides better protection for shareholder interests and facilitates equity incentives.

Taken together, cultural, legal, market, and institutional factors all interact with industry-specific needs to produce diverse international patterns of equity incentives. Accordingly, research on cross-national differences should be pursued from both contextual and institutional perspectives, with close attention to their interactive mechanisms. This study aims to provide useful insights for Chinese enterprises seeking to navigate equity incentive practices under conditions of globalization.

1.2.2 Evaluation of existing research findings

A review of extensive domestic and international studies on stock option incentives shows that most scholars agree on their generally positive impact on firm performance. Empirical evidence has confirmed such effects in practice, though some scholars argue that the relationship between stock option incentives and firm performance is non-linear or less straightforward.

From a corporate governance perspective, many researchers acknowledge that equity incentive mechanisms help address deficiencies in current governance structures and mobilize the collective efforts of the entire firm to enhance corporate value. Moreover, sound governance is essential to ensuring the proper execution of equity incentive mechanisms, enabling them to deliver sustained motivation and develop healthily in the long term. Corporate governance and equity incentives are not independent or opposed to one another, but rather complementary and closely interrelated. The combination of effective governance and a well-designed incentive mechanism can generate significant motivational effects, whereas the absence of either undermines overall effectiveness.

Nevertheless, numerous studies note that the effectiveness of equity incentive

implementation is often constrained by multiple factors, including underdeveloped capital markets, weak governance structures, and inadequate performance evaluation systems. From the perspective of human capital, scholars widely agree that human capital exerts a positive influence on the outcomes of stock option incentives. They emphasize that the ultimate value of incentive systems lies in human resources, since corporate value creation ultimately depends on human capital. Consequently, research on the role of human capital in equity incentives has become increasingly important. At the same time, limitations exist in current research findings. In developed economies, where stock option schemes have a longer history, more mature capital markets, and stronger corporate governance, research results are comparatively robust and persuasive. In contrast, research and practice in China remain less mature, with institutional environments differing significantly from those abroad. No unified consensus has yet been reached, underscoring the ongoing importance of studying equity incentive mechanisms. Furthermore, most existing research remains theoretical and lacks sufficient empirical support. Given China's unique property rights system and the large role of state-owned enterprises in the national economy, the effects of implementing equity incentives in SOEs (State-Owned Entreprises) remain uneven. Existing studies are often dominated by theoretical analysis and lack large-sample empirical testing. Therefore, this study's empirical examination of the effects of equity incentives in Chinese listed companies not only helps fill gaps in the literature, but also provides new perspectives for both academic inquiry and managerial practice.

2.2 Theoretical basis

2.2.1 Equity incentives from a management perspective

1. Principal-agent theory

Principal-agent theory is the most fundamental theoretical basis of corporate governance. It focuses on the internal structure of rights and the agency relationships within firms. In modern enterprises, agency problems are a critical issue that must be addressed. Two primary mechanisms-monitoring and incentives-are essential for effectively resolving such problems. However, strengthening supervision alone is insufficient, as it is also necessary to motivate supervisors themselves to perform their roles effectively, especially when utility functions and risk attitudes are difficult to measure precisely. Alchian and Demsetz (1972) provides valuable insights. They argued that in team production settings, it is often difficult to accurately measure and allocate individual contributions, which inevitably gives rise to shirking and supervision

challenges. To address this problem, the importance of residual claim rights must be recognized. Supervisors can only be motivated to carry out their responsibilities diligently if they are granted sufficient residual claims. Building on this idea, Langlois (2013) further developed the concept, suggesting that in team production, those whose contributions are the most difficult to measure should hold residual claims of the firm and employ and monitor other team members whose contributions are easier to assess. Such an arrangement helps reduce shirking and enhances overall team efficiency and performance.

Because agents can always exploit their informational advantage to undermine the effectiveness of principals' supervision, monitoring alone cannot resolve the agency problem and often incurs significant costs. Principal-agent theory thus posits that, in addition to monitoring mechanisms, firms must design incentive systems that effectively link the payoffs of principals and agents. Specifically, agents' benefits should increase in proportion to the principals' benefits, and the increase should exceed the potential gains from concealing information or pursuing self-interest. This alignment encourages agents to make decisions that maximize the principals' welfare (Spremann, 1987). In modern economic activities, principal-agent relationships play a crucial role. Principals delegate specific tasks to agents and bear the risks associated with the outcomes of agents' actions. Agents, in turn, undertake management responsibilities, though they do not necessarily assume the full risks of their decisions. To safeguard the rights and responsibilities of both sides, a contractual relationship must be established between principals (risk bearers) and agents (risk creators). However, information asymmetry compels principals to incur additional monitoring costs to ensure agents act in their interests. Such monitoring, however, may also induce moral hazard, whereby agents, in pursuit of personal gain, deviate from principals' objectives. To balance risk-sharing and incentives, it is essential to design effective incentive mechanisms that align the goals of principals and agents, thereby reducing the likelihood of moral hazard. These mechanisms are the key to ensuring the healthy and stable development of principal-agent relationships. Jensen and Meckling (1976) extended the theories of Alchian and Demsetz (1972) by emphasizing ownership incentives. They argued that making managers residual claimants of the firm is an effective way to resolve agency problems, aligning the interests of principals and agents. Holmstrom and Milgrom (1994) further contended that incentive mechanisms are more important than monitoring in addressing conflicts between principals and agents. Similarly, Jensen and Meckling (2019) proposed that ownership structures should be arranged according to the principle of maximizing specialization net of transaction costs. They pointed out that to minimize transaction costs, activities with low efficiency and high transaction costs should be

indirectly priced through residual claims. For key personnel who are critical to corporate development-yet whose direct pricing costs and transaction expenses are prohibitively high-residual claims should be assigned to them as a more efficient arrangement.

Principal-agent theory, as a cornerstone of modern corporate governance, centers on the coordination of objectives between principals and agents under conditions of information asymmetry. This theory not only uncovers the deeper logic of corporate governance but also provides effective tools for resolving agency conflicts and optimizing governance structures. In practice, the goals of agents and principals often diverge. Agents, as managers of the firm, may pursue personal utility maximization, while principals seek the maximization of overall corporate value. Such divergences can lead agents to deviate from the best interests of principals in the course of management, thereby generating agency costs. Thus, the central challenge of principal-agent theory lies in how to reconcile and align the objectives of both parties under these conditions. To address this problem, principals must design an optimal governance mechanism. Such a mechanism should both ensure effective monitoring and provide strong incentives, thereby guaranteeing that agents consistently act in line with the principle of maximizing the principal's interests. At the same time, it should reduce agency costs and improve overall corporate efficiency. By means of such a system, principals can ensure that the decisions and behaviors of agents remain consistent with the firm's long-term development goals, thereby safeguarding the principals' rights and interests.

Equity incentives have emerged within this theoretical framework as an important instrument of modern corporate governance. By incorporating shares or equity into executive compensation, equity incentives grant agents the right to participate in the residual claims of the firm. This arrangement transforms managers into partial owners of the company, thereby more closely aligning their personal interests with the firm's collective interests. As a result, agents become more attentive to the long-term growth and overall performance of the company, since their own financial well-being is tied directly to corporate success. Through equity incentives, the utility functions of principals and agents can be brought into closer alignment. When agents hold company stock, they are naturally more concerned with stock price performance and profitability, as these outcomes directly affect their personal returns. This convergence of interests makes agents more likely to make decisions consistent with the firm's overall welfare, thereby reducing agency costs. Furthermore, equity incentives achieve the goal of "incentive compatibility." By integrating the personal interests of agents with the overall interests of the company, they stimulate managerial enthusiasm and creativity, encouraging greater commitment to management activities. Such positive incentives not only enhance

operational efficiency and market competitiveness but also strengthen organizational cohesion and unity, thereby promoting the firm's sustainable development.

2. Equity incentive thoughts in human capital theory

Human capital theory emphasizes the central role of human capital in corporate wealth creation. Human capital not only generates investment returns, but, due to its inseparability from its owners and the presence of firm-specific risks, its owners inevitably become the primary bearers of business risk (Abbas et al., 2024). Based on this theory, the owners of human capital, namely managers, are granted the legal right to share in the residual claims of the firm. This represents an important innovation relative to traditional capital theory and property rights theory.

Historically, firms have tended to focus on investing in physical capital, emphasizing the allocation of funds and materials. However, with the modernization of management concepts, the understanding of human capital has deepened. Generally, the returns on human capital investment exceed those on physical capital, owing to the unique scarcity of human resources. In today's context of increasingly specialized and complex business operations, talent with professional management experience and core technical expertise has become especially valuable. Their knowledge and skills constitute a critical component of corporate core competitiveness and contribute substantial value-added to the enterprise. Accordingly, the additional value created by firms should be distributed to employees (Gerhart & Feng, 2021).

At the same time, because human capital cannot be separated from its owners, the establishment of effective incentive mechanisms is particularly important. If human capital investment is not adequately recognized and rewarded, its owners may seek alternative opportunities. In the digital era, the significance of human capital has become even more pronounced. Motivating individuals has emerged as a key challenge, since without proper incentives, the potential of human resources cannot be fully realized. In this context, equity incentives have developed into a critical strategy in modern human resource management (Z. Zhu & Xie, 2023).

3. Stakeholder theory in equity incentive

Stakeholder theory originated in the 1960s and gradually matured in Western countries. Its introduction into the study of equity incentives provides a more comprehensive, inclusive, and profound intellectual framework. This perspective situates equity incentives within the broader context of corporate strategy and social responsibility, taking into account the interests of employees, managers, shareholders, and other stakeholders. By balancing multiple interests, equity incentives not only motivate employees and foster innovation and growth but also help

build healthier and more sustainable relationships between firms and their stakeholders (Alshukri et al., 2024). Looking ahead, equity incentive theory is expected to continue integrating with stakeholder theory to promote more comprehensive, long-term, and sustainable corporate development.

In management studies, equity incentive theory holds an important position, while stakeholder theory provides a broader and deeper conceptual foundation. Equity incentives are not merely designed to reward shareholders; rather, they represent a multi-stakeholder, win-win mechanism that balances and adjusts the rights of both internal and external stakeholders to achieve long-term success and sustainability (Jensen & Meckling, 1976). Within this framework, the design and implementation of equity incentive schemes must consider the expectations, needs, and rights of all stakeholders, thereby creating more comprehensive and rational incentive systems.

First, stakeholder theory underscores that corporate success cannot be defined solely in terms of shareholder returns (Freeman et al., 2021). It calls for managers, when making business decisions, to weigh the needs of diverse stakeholders. This stands in sharp contrast to the traditional shareholder-centric perspective, emphasizing instead that corporate development requires the collective efforts and participation of all stakeholders, with the goal of maximizing overall welfare rather than the interests of a single group (Donaldson & Preston, 1995). Within this network of diverse interests, equity incentives are seen as mechanisms that can simultaneously meet multiple demands, encouraging broad participation and promoting long-term success. Thus, equity incentives are not merely tools for achieving short-term economic returns but are also oriented toward creating long-term value through multi-stakeholder alignment.

Second, employees, as key internal stakeholders, play a decisive role in corporate success. Stakeholder theory highlights that their involvement and motivation are central to sustainable success in equity incentive schemes (Kalra, 2024). Equity incentives link employees' personal benefits to corporate performance, encouraging deeper engagement not only in daily operations but also in long-term strategy and development. This approach enhances motivation, creativity, and loyalty, thereby shaping corporate culture and fostering organizational innovation (Core & Guay, 2001). Under the guidance of stakeholder theory, equity incentives should extend beyond management and senior executives to include a wider range of employees. Such inclusiveness ensures that all levels of staff-from ordinary workers to key teams and senior managers-share in corporate success. This not only narrows hierarchical gaps within the firm but also builds a more cohesive and collaborative organizational culture.

Finally, stakeholder theory imposes clearer requirements on long-term corporate stability. Traditionally, companies have faced pressure from short-term stock price fluctuations and prioritized immediate returns. Stakeholder theory, by contrast, stresses the importance of balancing the interests of diverse groups and ensuring steady long-term development (Ahmić, 2022). When designing equity incentive schemes, it is essential to consider how to motivate employees to focus on long-term strategy and sustainable growth, thereby aligning their goals with those of multiple stakeholders. This approach not only helps avoid short-termism but also supports the creation of more sustainable business models.

4. Equity incentive theory from the perspective of managerial power theory

While Equity Incentive have been widely adopted, empirical findings on the relationship between these incentives and firm performance remain significantly divergent. Some studies support the interest alignment hypothesis. For instance, Mcconnell and Servaes (1990) found a positive correlation between managerial shareholding and firm performance up to a certain level of ownership. However, Jensen and Murphy (1990) discovered that the sensitivity of executive compensation (including equity incentives) to company performance is remarkably weak. Similarly, a study of 867 firms by Loderer and Martin (1997) concluded that higher managerial ownership does not significantly improve firm performance.

More in-depth research has revealed a non-monotonic relationship between managerial ownership and performance. The seminal work by Morck et al. (1988) demonstrated that as managerial shareholding increases, it produces two opposing effects on firm performance: the alignment effect and the entrenchment effect.

In this context, the "managerial power theory" advanced by Bebchuk et al. (2002) challenges the traditional "optimal contracting theory." Proponents of this theory argue that managers are not passive recipients of contracts; they may utilize their power to influence or even set their own compensation, thereby turning equity incentives into a tool for rent extraction and creating new agency problems rather than resolving existing ones. This implies, sequitur:

First, equity incentives are not necessarily the optimal solution for interest alignment. While the principal-agent theory posits that granting equity to managers aligns their interests with those of shareholders, thus reducing agency costs, the managerial power theory contends that the design and implementation of equity incentive plans can be influenced by managers themselves, rather than being solely geared towards shareholder interests (Bebchuk et al., 2002; Core et al., 2008).

Second, managers may manipulate equity incentive plans. They can leverage their influence to set favorable conditions for stock options, for example, through timing or repricing

underwater options, thus transforming incentives into a mechanism for wealth transfer rather than value creation (Amoah et al., 2017).

Third, equity incentives may conceal excessive compensation. The lower transparency of options and restricted stock compared to cash allows powerful CEOs to use them to circumvent "outrage constraints." For instance, firms that voluntarily expense options may use lower valuation assumptions to reduce the disclosed cost (Johnston, 2006).

Finally, equity incentives may induce excessive risk-taking. An option-heavy compensation structure incentivizes managers to increase firm volatility. When combined with short vesting schedules, this can lead to value-destructive leverage or project choices, encouraging stock price manipulation (L. Peng & Röell, 2014).

Overall, the managerial power theory does not completely dismiss the function of equity-based pay but emphasizes that its effectiveness depends on factors such as the corporate governance structure. For example, when a board is captured or lacks independence, equity incentives are more likely to serve as a reward for managerial power (Morse et al., 2011). Conversely, strong external governance can curb these distortions (Bebchuk et al., 2002). Consequently, there is a prevailing call for improving the effectiveness of equity incentives through more sophisticated design-rather than simply increasing the grant size or proportion-such as by tightening performance vesting conditions (Bettis et al., 2018; Chen et al., 2016), extending lock-up periods (Chang et al., 2015; Shi et al., 2020), strengthening board independence (Dittmann et al., 2010; Morse et al., 2011), and enhancing the monitoring capacity of large shareholders (Kaplan & Minton, 2012).

2.2.2 Equity incentive theory from the perspective of game theory

1. Static game approach in equity incentive theory

The static game approach, as an important branch of modern management theory, provides strong theoretical support for the design and implementation of equity incentive plans (Nwogugu, 2020). By applying the basic principles of game theory, it examines the strategic interactions and interest alignment between firms and employees in the process of equity incentives, offering an effective pathway to optimize incentive mechanisms and enhance employee motivation.

The earliest equity incentive systems were built upon the economic theory of agency costs, aiming to mitigate conflicts of interest between shareholders and managers caused by information asymmetry and divergent objectives (Jensen & Meckling, 1976). Within this

theoretical framework, static game models became key tools for analyzing how shareholders and managers formulate optimal strategies in specific contexts. Since the 1960s, as corporate scale expanded and managerial power increased, equity incentives attracted widespread attention as important mechanisms for stimulating managerial performance (Murphy, 1999). During this period, static game analysis was further developed and applied extensively to evaluate the effects of managerial ownership on corporate decision-making and performance (Core & Guay, 2001). In early practice, many firms adopted such plans not only to motivate managers but also to reduce their tax burden and raise capital (Himmelberg et al., 1999). In this context, static game models were used to design optimal incentive schemes aimed at minimizing tax costs while maximizing firm value (Scholes et al., 2002).

The static game approach emphasizes that, at a given point in time, firms and employees make decisions independently and simultaneously. This means that in the design and implementation of equity incentive plans, both parties engage in rational strategy selection based on their own interests and the information available (Cabrales et al., 2021). Firms determine key elements such as participants, allocation ratios, and performance conditions according to business objectives, financial status, and market environment, while employees decide whether to accept the plans based on career development, income expectations, and risk tolerance.

Within the static game framework, strategic choices between firms and employees are mutually influential (Oyer & Schaefer, 2005). The design of corporate incentive plans directly affects employee responses, while employees' willingness to participate, in turn, shapes firms' decisions. This reciprocal relationship allows static game analysis to more accurately capture the realities of equity incentive processes, providing both theoretical support and practical guidance for firms in designing and implementing equity incentive plans.

2. Dynamic game method in equity incentive theory

As research on equity incentives has deepened, the limitations of applying static game models to such problems have gradually become apparent. In response, the dynamic game approach has emerged, with the advantage of better capturing the strategic interactions between shareholders and managers over time (Dutta & Fan, 2014). By incorporating the temporal dimension, dynamic game models compensate for the shortcomings of static ones and provide a more comprehensive perspective for the study of equity incentives.

The dynamic game approach in equity incentive theory serves as a theoretical tool for analyzing the continuous decision-making and strategic interactions between firms and employees throughout the incentive process. Compared with static game models, dynamic

games emphasize the temporal dimension of decision-making and strategic adjustment (Grossman & Hart, 1983). They allow researchers to uncover the evolving nature of equity incentive schemes during implementation and to examine how these changes affect the interests of different stakeholders (Nwogugu, 2020). Under the dynamic framework, equity incentives are no longer viewed as one-off decisions; rather, they are conceived as multi-stage processes involving multiple decision points (Bettis et al., 2018). Firms and employees adjust and optimize their strategies at different stages in response to new information and changing circumstances. This continuity and adaptability enable dynamic game methods to more accurately reflect the realities of equity incentive practices.

Dynamic game models can be constructed through mathematical modeling and simulation experiments to analyze the evolutionary process of equity incentive schemes. These models may include multi-stage game models and stochastic process models, which simulate the decision-making processes of firms and employees under varying scenarios and predict the possible outcomes of equity incentive schemes at different stages (Jørgensen & Zaccour, 2004). By analyzing and comparing such models, firms can more accurately evaluate the effectiveness and feasibility of their incentive schemes, thereby formulating more scientific and rational strategies.

2.2.3 Equity incentive thought in information economics

As an important branch of knowledge in business and economics, equity incentive theory has attracted wide attention and extensive research. The discussions and analyses surrounding it span multiple fields, among which the concept of equity incentives in information economics is particularly noteworthy. From the perspective of information economics, equity incentives are defined as a powerful managerial mechanism designed to ignite and sustain employee enthusiasm while fostering creative thinking (Akerlof, 1970; Spence, 1973). In this view, equity incentives are not only a form of compensation but also a potential mechanism for stimulating employee initiative. By granting employees shares in the company, their interests become more closely aligned with those of the enterprise, thus establishing a long-term and stable incentive system (Holmstrom, 1979). Such a mechanism effectively guides employees to look beyond short-term personal gains and to prioritize the firm's overall long-term development. Equity incentive thought in information economics emphasizes not only employees' economic motivations but also the role of information transparency and sharing in building a corporate culture of trust and cooperation (Stiglitz, 2002).

The theoretical foundation of equity incentives in information economics stems from the existence of information asymmetry-namely, that in business transactions one party often possesses more information than the other, leading to unequal exchanges (Akerlof, 1970). In employment relationships, employers usually have greater access to corporate information, while employees hold relatively less. Equity incentive mechanisms, by allowing employees to share in the firm's future success, partially offset this asymmetry and help establish more equitable employment relationships (Lazear, 2004).

Research and application of equity incentive theory within the framework of information economics offer promising opportunities for organizations seeking to optimize human capital and promote sustainable success. By aligning employees' interests with company performance, the theory provides a compelling pathway to cultivate a workforce that is not only proactive but also deeply committed to the growth and prosperity of the organization (Core & Guay, 2001).

From a broader perspective, the adoption of equity incentive plans contributes to the overall dynamism and adaptability of the business landscape. By fostering an environment in which employees think and act like owners, firms can tap into previously underutilized potential, thereby enhancing innovation and competitive advantage (Bryson & Freeman, 2014). However, the implementation of equity incentive theory requires measurable strategies tailored to the unique dynamics of each organization. Factors such as firm size, industry norms, and cultural context must be carefully considered in the design and execution of such programs (S. Kim & Patel, 2017). Equally important is the establishment of clear communication channels and transparent guidelines to ensure that all stakeholders fully understand the incentives and obligations associated with these arrangements (Conyon & He, 2012).

2.3 Conclusion

Through a systematic review of existing literature, a certain consensus has been reached in the academic community regarding the potential positive effects of equity incentives in alleviating agency conflicts, improving corporate performance, and boosting corporate innovation. Meanwhile, relevant studies also indicate that the actual effects of equity incentives are complexly affected by multiple factors, including incentive motives, internal and external corporate governance environments, industry characteristics, and institutional backgrounds.

It is particularly noteworthy that most classical theories and empirical studies are grounded in the context of Western markets and corporate governance. However, China's unique institutional environment—especially the dual logic of public ownership attributes and market-

oriented attributes of state-owned enterprises, the underdeveloped capital market, and the differentiated corporate governance structure—limits the direct application of existing conclusions to the Chinese context.

Current research, especially studies focusing on China's state-controlled listed companies, still suffers from several gaps: it is dominated by theoretical analysis, lacks sufficient large-sample empirical tests, and fails to conduct an in-depth analysis of the multiple objectives of incentive schemes and the special institutional logic. These deficiencies provide a clear theoretical starting point and sufficient research space for this study to focus on China's state-controlled listed companies and conduct an in-depth exploration of the complex causes, special logic and actual effectiveness of their equity incentive mechanisms.

In summary, the theoretical landscape of equity incentives is pluralistic and complex. Different theoretical perspectives assign distinct connotations and expectations to equity incentives. Principal-agent theory defines it as a key tool designed to address information asymmetry and achieve the bundling of interests and incentive compatibility between principals and agents. Human capital theory, from a property rights perspective, views it as a legal embodiment that recognizes and rewards specific investments in human capital, granting it residual claim rights. Stakeholder theory expands its role to a coordination mechanism that balances and aligns the interests of multiple parties—such as shareholders, employees, and management—to achieve the enterprise's long-term sustainable development. In contrast, managerial power theory cautions that in contexts of weakened governance, equity incentives may devolve into channels for managerial rent-seeking rather than effective solutions to agency problems. Game theory and information economics further deepen the understanding of its dynamic implementation process and signaling function from the perspectives of strategic interaction and information structure optimization, respectively. The fundamental divergence among these perspectives lies in the differing perceptions of the essential nature of equity incentives: is it primarily a "governance tool" to reduce agency costs, or a "value embodiment" of human capital property rights? is it a "coordination mechanism" for balancing multiple interests, or a "game outcome" reflecting the internal power structure of the company? This divergence directly leads to different theoretical expectations and empirical hypotheses regarding the implementation motives, plan design, and ultimate effects of equity incentives.

Based on the definition of the research problem in this study and focusing on the specific context of Chinese state-controlled listed companies—where the high degree of separation between ownership and management makes agency problems particularly complex and typical—this study selects principal-agent theory as the primary theoretical foundation for the

following specific reasons. Accordingly, equity incentive is defined here as a corporate governance mechanism aimed at resolving the objective alignment problem between agents and principals under conditions of information asymmetry.

First, the ultimate owner of Chinese state-owned enterprises is the public. Ownership is realized through a multi-tier principal-agent chain (the public → the state → SASAC/state capital platforms → listed companies). This leads to de facto problems of "absence of the owner" and "insider control." Management power resides with internal managers, while state-owned asset management institutions, acting as shareholders, often have their supervisory motivation and effectiveness constrained by administrative objectives and multiple mandates. This classic, and indeed intensified, agency conflict framework is precisely the starting point and focus of principal-agent theory.

Second, the widespread existence of policy burdens and social objectives in state-controlled listed companies may cause management's objective function to deviate further from the pure goal of maximizing shareholder value. As a form of monetary compensation contract, the core function of equity incentives is precisely to align and bind management's personal utility function with shareholder interests (particularly as represented by market value) by allowing them to share in residual claims. This is a direct application of the "incentive compatibility" principle from principal-agent theory.

Finally, in the process of Chinese state-owned enterprise reform, improving corporate governance and establishing market-oriented incentive and restraint mechanisms are key issues. The two paths for mitigating agency costs provided by principal-agent theory—"monitoring" and "incentives"—offer the most direct and powerful analytical paradigm for analyzing and evaluating equity incentives. Therefore, examining equity incentives in Chinese state-controlled listed companies through the lens of principal-agent theory allows this study to closely align with their fundamental institutional characteristic of "separation of ownership and management." It enables an in-depth analysis of the motivational conflicts, costs and benefits, and implementation effects behind the incentive contracts, thereby laying a solid theoretical foundation for understanding and optimizing the incentive mechanisms of state-owned enterprises with Chinese characteristics.

Chapter 3: Comparative Study of the Different Countries Equity Incentive Practices

As a corporate governance and incentive mechanism, the specific forms, evolutionary trajectories, and ultimate outcomes of equity incentives are deeply embedded within the respective legal traditions, tax systems, financial market structures, corporate governance models, and socio-cultural contexts of different countries. Therefore, a systematic examination of the differentiated paths in equity incentive practices among typical economies such as the United States, Europe (represented by Germany and France), and East Asia (represented by South Korea and Japan) is instrumental. It aids in understanding the institutional logic and constraints underpinning the evolution of equity incentive instruments under varied institutional backgrounds, helps to distill the key contextual variables that influence the design and implementation effectiveness of equity incentives, and provides a broad frame of reference for the subsequent study focusing on Chinese state-controlled listed companies. This comparative analysis furnishes a more solid and diverse empirical foundation for the discussions in this study concerning the effects, influencing factors, and improvement strategies of equity incentives.

3.1 Equity incentives in U.S. listed companies

3.1.1 Overview of U.S. practices

The modern concept of equity incentives originated in the United States, closely linked to changes in compensation systems. Before World War I, American enterprises generally implemented a piece-rate wage system, and it was not common to tie managerial pay directly to firm performance. Over time, particularly in the 20th century, firms gradually moved away from this traditional practice. By the 1920s, most U.S. companies had adopted bonus systems, making bonuses a significant component of managerial compensation; in many cases, bonuses accounted for as much as 50 percent of base salary. In the following decades, equity incentives slowly gained traction as part of executive pay structures, though widespread adoption did not occur until the 1950s (Ruan, 2007). Prior to that, stock option compensation for corporate managers was subject to high marginal tax rates, which limited its appeal. However, with the enactment of U.S. tax legislation in 1950, the restricted stock option was introduced. This

instrument enjoyed preferential tax treatment, with strict rules on exercise price, vesting period, and post-exercise holding requirements, which significantly accelerated the spread and development of equity incentives in the United States (Meckling & Alchian, 1960).

By the 1960s, the compensation structure of U.S. chief executive officers had undergone a marked transformation: bonuses and stock options together accounted for about two-thirds of total pay. This shift underscored the growing importance of equity incentives in motivating senior corporate executives.

In 1972, the Accounting Principles Board issued Opinion No. 25, introducing significant reforms in the accounting treatment of stock options. For the first time, it adopted the intrinsic value standard to determine whether stock options should be recorded as company expenses. Intrinsic value refers to the difference between the market price of the stock and the option's exercise price. When the market price exceeds the exercise price, the option has a positive intrinsic value and must be expensed as an "in-the-money" option. This reform enhanced the transparency and accuracy of corporate financial statements, enabling investors to better understand compensation policies and potential future costs. It provided clearer and more rational guidance for stock option accounting, further advancing the standardization of corporate governance and financial management.

By the 1980s, the Western world, led by the United States, experienced a wave of management buyouts. Many large corporations operating across multiple industries faced severe developmental challenges and financial constraints, forcing them to restructure assets and adjust strategic directions. A growing number of firms chose to divest subsidiaries to the very management teams that had previously run them, adopting what became known as management buyout strategies. This trend created greater demand for managerial talent to jointly oversee corporate operations. As a result, the market demand for managerial expertise expanded rapidly, leading to significant increases in executive compensation.

At the same time, technical personnel played a critical role in the success of innovative technology firms. Yet most of these companies were still in their early stages and could not afford to offer high salaries to attract and retain such talent. To address this challenge, many of these firms widely adopted equity-based compensation strategies, granting stock options or restricted shares to managers and technical staff. The prospect of a future initial public offering (IPO) meant that rising stock prices could generate substantial returns for these employees (Guay et al., 2002). At the turn of the 21st century, as the dot-com bubble burst and the U.S. securities market entered a period of stagnation, inflated stock valuations gradually corrected. During this process, the excessive use of equity incentive programs began to reveal inherent

problems. Several major U.S. corporations were exposed for financial fraud directly related to their equity incentive schemes, drawing widespread public concern. These events highlighted the potentially adverse incentive effects that equity plans could generate for corporate executives and prompted deep reflection in both the United States and Europe on the merits and drawbacks of such arrangements.

To address these issues, the United States introduced a series of corrective measures. Among them, the Sarbanes-Oxley Act strengthened accounting oversight of publicly traded companies, prohibited firms from providing financial support for executive equity incentive schemes, and imposed stricter disclosure requirements regarding insider transactions.

3.1.2 Main models of equity incentives in U.S. listed companies

Through years of practice, two mature models of equity incentives have developed in U.S. listed companies: Incentive Stock Options (ISOs) and Non-Qualified Stock Options (NSOs). ISOs are a special type of stock option established under U.S. tax law, enjoying preferential tax treatment. NSOs, by contrast, are not subject to specific statutory requirements and are treated for tax purposes in the same way as ordinary stock transactions. Any company, in accordance with U.S. tax law, has the discretion to design and implement either ISOs or NSOs. Together, these two instruments constitute the primary forms of equity incentives in U.S. listed companies, each carrying distinctive implications for firms and employees based on differences in tax regulation (Moylan, 2000).

For listed companies, ISOs can motivate employees but impose relatively high administrative costs. Because they must satisfy strict statutory requirements, the design and implementation of ISOs are complex. Companies must comply with rigorous procedures, fulfill extensive disclosure obligations, submit detailed reports, and record all relevant transactions. Furthermore, to ensure that employees adhere to ISO requirements, firms must devote significant resources to monitoring compliance, which increases operational costs (Galustian, 2024). More importantly, the rigid legal conditions governing ISOs restrict a firm's ability to adapt stock option plans flexibly to its actual circumstances. For example, companies may wish to adjust incentive schemes in response to market conditions or employee performance, but the statutory constraints of ISOs significantly reduce this flexibility. ISOs also present certain tax limitations. Unless employees violate the holding-period requirement by selling shares prematurely, companies implementing ISOs generally cannot deduct the spread between the exercise price and the market price at the time of exercise. This results in higher tax costs for

companies, further adding to their financial burden.

By contrast, NSOs offer companies a more flexible and cost-effective incentive tool (Keebler, 2001). Because NSOs involve lower administrative expenses, companies can tailor incentive plans to their specific circumstances, adjusting to different market environments and employee needs. In addition, NSOs allow firms to deduct the spread realized by employees at exercise as taxable compensation, thereby reducing corporate tax burdens and improving the economic efficiency of equity incentives. For employees, ISOs remain attractive, primarily because of their tax advantages. The deferral of taxation and conversion of income type under ISOs provide tangible benefits in terms of tax planning, making them a valuable form of compensation.

3.2 Equity incentives in German and French listed companies

The practice of equity incentives in Germany can be traced back to the 1970s, initially taking the form of employee share purchase schemes. However, because the number of shares employees could acquire was limited and strict rules governed holding periods, these plans lacked sufficient attractiveness, and managerial participation remained very low.

By the mid-1990s, German firms began to recognize the critical role of equity incentives in strengthening shareholder rights, and equity-based compensation for executives gradually gained popularity. In the early stage, the common approach was to grant managers a certain amount of "convertible bonds," which could later be exchanged for company shares once specific conditions were met. This strategy was primarily designed to circumvent the strict provisions of the 1965 German Stock Corporation Act, which imposed tight restrictions on share issuance to managers. Nevertheless, the inherent instability of convertible bond mechanisms led some shareholders to challenge their legality in court.

Until as late as 1998, only a few corporate giants, such as Volkswagen Group and Deutsche Bank, had implemented equity incentive mechanisms. To bypass legal constraints on stock options, some firms experimented with alternative forms such as stock appreciation rights and phantom shares. However, a turning point came in 1998 with the revision of the German Corporate Governance and Transparency Act, which for the first time explicitly recognized the right of stock corporations to issue new share subscription rights directly to employees. From that point onward, stock options gained broad acceptance in Germany and became an integral component of corporate governance structures.

In Germany, listed companies have traditionally been conservative in disclosing executive

compensation, particularly with regard to the implementation details of stock option plans (Bayer & Burhop, 2009). Although this situation has improved in recent years with the push for greater corporate governance transparency, Germany still remains relatively cautious compared to other countries. At present, firms adopting equity incentive plans in Germany fall mainly into two groups: large joint-stock corporations listed on the main market, and medium-sized companies traded on the secondary market (the "Neuer Markt"). Among these, firms in the information technology sector account for a significant share. Statistics indicate that about 70 percent of large joint-stock corporations have adopted or are implementing stock option plans, while the figure is as high as 90 percent among medium-sized firms listed on the secondary market (Alhadab & Al-Own, 2019). These companies generally view stock option plans as an effective means of motivating managers to work more actively and to enhance corporate performance. Nevertheless, compared with the United Kingdom and the United States, German regulations on stock option plans remain relatively rudimentary, lacking detailed operational guidelines and clear supervisory requirements. The regulatory characteristics of German stock option schemes are reflected mainly in the following aspects: First, in terms of scope of application, under the provisions of the "Principle of Corporate Supervision and Disclosure," equity incentive plans primarily target members of management and other employees of the company and its subsidiaries. Supervisory board members and individuals not employed by the company are typically excluded from such incentive arrangements. This restriction narrows the coverage of stock option plans but ensures that incentives are focused more precisely on the firm's core management. Second, regarding the effective duration of stock options, German law stipulates a minimum vesting period of two years before options may be exercised. This requirement forms a legal element of stock option schemes, ensuring that managers must wait a relatively long period before exercising their rights. Such a provision discourages short-term managerial behavior and encourages a stronger focus on the firm's long-term development. Although German law does not explicitly specify a maximum duration for stock options, in practice the exercise period is typically set within ten years. Finally, with respect to option pricing, under the German Stock Corporation Act, shares may not be issued at a discount below par value. Consequently, the exercise price of stock options is usually set no lower than the nominal value of the shares.

Regarding the gains employees make from selling stocks after exercising options, German tax law stipulates that if employees sell the stocks within one year of exercising their options, they must pay capital gains tax. However, if the stocks held by employees represent more than 1% of the company's nominal share capital, capital gains tax must be paid on the profits

regardless of when the stocks are sold. This provision helps prevent managers from obtaining improper benefits through short-term trading, thus maintaining fairness and stability in the market.

In addition, the capital gains tax rate in Germany is the same as the marginal personal income tax rate, although annual capital gains up to a certain threshold may be exempt from taxation. This reflects the German tax law's comprehensive consideration and balance between personal income tax and capital gains tax. As for the costs incurred by companies due to stock options, German tax law allows these expenses to be deducted from corporate taxes. This provision helps reduce the tax burden on companies, encouraging more firms to adopt stock option plans to motivate executives. From a financial accounting perspective, publicly traded companies in Germany must include the value of the stock options they issue as part of payroll expenses, which is reflected in the company's financial reports. This requirement ensures that the economic effects of stock option plans are accurately and truthfully represented in the financial statements, helping investors and other stakeholders better understand the company's true financial condition and performance. When options are exercised, the company pays the difference in cash to the executives. The value of the stock options, which is often linked to a specific index, is relatively easy to calculate. This accounting treatment aligns with international accounting standards and facilitates both internal management and external supervision. German listed companies exhibit distinct characteristics and patterns in areas such as executive compensation disclosure, stock option plan implementation, adoption rates, regulatory specifics, eligible participants, option validity periods and exercise conditions, exercise prices and tax treatment, and accounting practices. Although German regulations on stock options are more rudimentary compared to countries like the UK and the US, they have evolved with increased corporate governance transparency and tax law adjustments.

The corporate governance of listed companies in France is a broad and rich topic, requiring a thorough exploration of various legal, institutional, practical, and cultural factors (O'brien, 2007). In France, the corporate governance system for listed companies is built on a series of laws and regulations aimed at protecting shareholder rights, ensuring the effectiveness and transparency of corporate governance, and promoting long-term sustainable development. The French corporate governance system relies on a legal framework, including the French Commercial Code, securities laws, and relevant EU regulations. These laws establish basic principles concerning company organization, board responsibilities, shareholder rights, and more, providing the legal foundation for corporate governance.

The board of directors plays a central role in the governance of French listed companies.

By law, the board is responsible for overseeing the management team's operations and deciding the company's strategic direction. To ensure the board's independence and effectiveness, French company law requires that at least one-third of board members be independent, with an independent chairman leading the board. Shareholder rights in France are well-protected. Shareholders have significant decision-making power in company matters, which they exercise through annual general meetings. This includes reviewing financial reports, electing board members, and making decisions on company policies. Furthermore, French securities law mandates a range of disclosure and shareholder communication requirements to ensure that shareholders are kept informed of the company's operations and financial status in a timely manner. In addition to the legal framework, the corporate governance of listed companies in France is influenced by several other factors, such as company culture, investor relations, and industry practices. Some large listed companies demonstrate exemplary governance by establishing robust internal control systems and risk management mechanisms, maintaining close communication with shareholders, and taking measures to enhance the transparency and efficiency of corporate governance.

3.3 Research on equity incentive practices in South Korean and Japanese listed companies

3.3.1 Overview of equity incentive practices in South Korea and Japan

As important economic entities in Asia, South Korea and Japan have developed their equity incentive practices relatively later than the United States. However, in recent years, they have gradually revealed their unique development trajectories. Similar to the evolution of equity incentive mechanisms in the U.S., South Korea and Japan's implementation of equity incentives is closely linked to their tax regulations. As countries following common law traditions, their tax law frameworks combine statutory regulations and case law principles, providing dual safeguards for the tax treatment of equity incentives. In the early stages of equity incentive development, courts in both South Korea and Japan established, through a series of cases, the principle that the stock difference gained by employees from their employment relationships should be treated as taxable income. This principle played an important guiding role in the tax law system at the time, laying the foundation for the subsequent practice of equity incentives. As stock options were introduced in South Korea and Japan, it became increasingly apparent that this tax principle provided a tax advantage for equity incentives. When employees are

granted the option to exercise stock purchase rights in the future, the tax liability is typically determined based on the difference between the stock's market value at the grant date and the future exercise price. Since the exercise price set in stock option plans generally does not exceed the real-time market value of the stock, these stock options generally incur lighter tax burdens. This favorable tax treatment undoubtedly provided strong impetus for equity incentive plans, leading to their widespread adoption by more companies in South Korea and Japan. Recognizing the limitations of this tax system, the governments of South Korea and Japan quickly moved to enact legal measures to address this issue. Beginning in 1966, the governments of both countries legislated to ensure that the profits employees gained when exercising stock options in most equity incentive plans would be subject to personal income tax. This change significantly increased the tax burden on equity incentives, leading to higher personal income taxes for employees when they exercised their options. This shift undoubtedly reduced the attractiveness of equity incentives and drove some companies to explore other possibilities. This led to the creation of the "Stock Acquisition Plan," a carefully designed program allowing employees to purchase stock at a lower price and pay a reduced personal income tax. Once employees held the stock, the profit from any future increase in stock price would not be subject to personal income tax. This advantage made the "Stock Acquisition Plan" widely adopted by companies in South Korea and Japan at the time, becoming a highly favored form of equity incentive (Qiao et al., 2023).

Although statutory stock option plans initially gained some success, they soon faced a downturn. Given the cautious stance of both the South Korean and Japanese governments on equity incentives, multiple tax policies were enacted to close loopholes that allowed companies to evade taxes through "Stock Acquisition Plans." As a result, capital gains derived from the acquisition of stocks by employees were also included in the scope of personal income tax. This limited the development of stock option plans in South Korea and Japan, with only a few companies continuing to adopt this mechanism. Statistics indicate that by 1978, only 10% of companies in South Korea and Japan granted stock options to their senior executives. As the economy developed and market conditions evolved, both the South Korean and Japanese governments gradually recognized the important role equity incentives could play in motivating employees and improving corporate performance. Consequently, in the late 1970s and early 1980s, both governments introduced a series of tax incentives aimed at equity incentive mechanisms. These policies created a more favorable tax environment for equity incentive plans, prompting more and more companies to adopt these mechanisms to incentivize employees.

The 1980s can be considered the "golden period" for the development of stock option plans in South Korea and Japan. During this period, the governments of both countries implemented the "Income Savings Stock Option Plan" and the "Corporate Stock Option Plan." These measures marked key policy shifts of the era and greatly accelerated the adoption and application of stock options in South Korea and Japan. More and more companies began to recognize the importance of equity incentives and put them into practice. With continued tax incentives and improving market conditions, a growing number of companies started using stock incentive plans to motivate employees and boost company performance. These plans not only provided employees with richer compensation but also gave companies more stable and sustainable growth momentum.

After the 1990s, South Korea and Japan's attitudes towards stock option plans began to shift. Both countries started to reassess equity incentive programs and sought more rational solutions, gradually reducing their reliance on unconditional stock option plans. They shifted toward implementing management stock option plans linked to specific company performance targets. The introduction of this approach made equity incentive plans more aligned with the actual performance and strategic goals of companies, thus better motivating employees' enthusiasm and creativity. Under this new incentive model, Long-Term Incentive Plans (LTIPs) were rapidly promoted and applied in South Korea and Japan. Compared to traditional stock options, LTIPs focus more on the long-term development of the company and the achievement of performance targets, making them more widely adopted by companies. In some large corporations, LTIPs have even become a significant component of CEO compensation, surpassing the proportion allocated to stock options.

3.3.2 Achievements in equity incentives practices

In South Korea and Japan, stock options, as an incentive mechanism, have evolved significantly under the influence of tax law. Due to varying tax treatments, multiple types of option plans have emerged, with the most notable being the "approved stock option plan." This plan requires approval from the domestic tax authorities and enjoys specific tax incentives, which have attracted significant attention and application from numerous companies. Within the approved stock option plans, the two most representative types are the "Company Stock Option Plan (CSOPs)" and the "Save As You Earn Stock Option Plan (SAYE)." Both plans have distinct features and together form a key part of the stock option systems in South Korea and Japan.

Company Stock Option Plan (CSOPs): This plan was first introduced in South Korea and

Japan in 1984 through the Financial Act to meet the demand for executive incentives and rewards (Cin & Smith, 2002). With ongoig revisions and improvements to the Financial Act, CSOPs gradually evolved into a standardized and transparent stock option plan. To receive approval from the tax and customs authorities, CSOPs must meet a series of strict statutory conditions, including specifying the authorized recipients, the stock value involved in the options, the type of stock used, a fixed exercise price, and a waiting period for exercising the options. Under the CSOPs framework, companies have the flexibility to determine the scope of beneficiaries, but this is typically limited to employees or full-time directors. These beneficiaries must hold specific positions within the company and cannot possess excessive vested interests to ensure fair distribution and effective incentives through the stock options. Regarding the exercise price, CSOPs require that a fixed stock purchase price be set when the options are granted, and this price generally cannot be lower than the market price of the stock on the grant date, thus ensuring the value of the options. Additionally, CSOPs limit the number of stock options that can be granted to each beneficiary to avoid over-incentivizing and mitigating potential risks. These limitations ensure the fairness and effectiveness of the stock option plan. At the same time, CSOPs approved by the tax and customs authorities enjoy tax incentives. These include exemptions from personal income tax for company executives when stock options are granted, and no personal income tax on the profits earned from exercising options within a specified period. These tax benefits significantly reduce the company's tax burden while enhancing the appeal of stock option plans.

Save As You Earn Stock Option Plan (SAYE): This plan differs from CSOPs by placing greater emphasis on broad employee participation and savings functionality. Under this plan, employees are required to open a designated account with a bank or financial institution chosen by the company, and a certain amount is deducted from their monthly salary to be deposited into this account. These funds are then used to purchase company shares, thus achieving both the employees' savings and investment objectives. In the SAYE plan, the company grants stock options of an equivalent value based on the amount of funds in the employee's account and the length of time the funds have been deposited. This mechanism not only encourages employees to save long-term and engage in the company's growth but also provides them with a potential means of capital appreciation (Gunny et al., 2024). Furthermore, since the SAYE plan involves a wide range of employees, it typically sees higher participation rates, which helps to foster a sense of belonging and loyalty among employees.

Overall, although CSOPs and SAYE differ in some details, they both form important components of the approved stock option plans in South Korea and Japan. These plans provide

companies with an effective incentive tool, boosting employee motivation and loyalty, while also offering employees a potential opportunity for capital growth, creating a win-win situation for both the company and its employees.

3.4 Comparison and lessons from the different countries equity incentive practices

3.4.1 Comparison of the different countries equity incentive practices

Protecting shareholder rights, ensuring the independence and effective supervision of the board of directors, and enhancing the transparency and fairness of corporate governance. Whether in Germany, France, or South Korea and Japan, listed companies face similar challenges and pressures, such as the erosion of shareholder rights, lack of board independence, and insufficient information disclosure (Aguilera & Jackson, 2003; Wójcik, 2018). To address these challenges, these countries have implemented a series of measures, including improving laws and regulations, developing corporate governance guidelines, and strengthening regulatory bodies, all aimed at protecting shareholder rights, improving board independence and supervisory functions, and enhancing the transparency and fairness of corporate governance (Clarke, 2014). In addition, these countries have also focused on corporate social responsibility and sustainable development practices, such as formulating sustainable development strategies and engaging in social welfare activities to strengthen the company's sense of social responsibility and public image (Ioannou & Serafeim, 2017). Therefore, despite the differences in their equity governance systems, these countries share a common goal of protecting investor interests and promoting the long-term, stable development of businesses, achieving notable results (Thomsen & Conyon, 2012).

It is worth noting that all three typical equity incentive systems face a series of similar challenges and pressures, such as imperfect governance structures, insufficient protection of shareholder rights, and weak board oversight mechanisms (Claessens & Yurtoglu, 2013). In these countries, there is a certain degree of imbalance and instability in the corporate governance of listed companies, especially in some large South Korean and Japanese firms that may be controlled by family members or major shareholders, leading to less democratic and transparent governance structures (Young et al., 2008). Furthermore, with the development of globalization and digitalization, global corporate governance is encountering an increasingly complex market environment and regulatory pressures, necessitating continuous adjustments

and improvements to governance mechanisms (Filatotchev & Nakajima, 2014). Therefore, although the equity governance systems in these countries exhibit some differences, they all face similar issues and challenges, requiring joint efforts from governments, regulatory bodies, companies, and investors. Through reforms and improvements to equity governance mechanisms, they aim to promote the continuous improvement of corporate governance and enhance its effectiveness (Aguilera et al., 2012).

3.4.2 Lessons and implications from the different countries equity incentive practices

The three typical equity incentive practices discussed above provide valuable insights that can guide the research and help address the challenges and issues faced by domestic equity governance systems. These lessons are instrumental in refining our understanding of corporate governance and in addressing the complexities of implementing effective governance mechanisms. On one hand, effective equity governance is the foundation for a company's long-term and stable development. It requires collective efforts from governments, regulatory agencies, companies, and investors (Claessens & Yurtoglu, 2013; Ioannou & Serafeim, 2017). Through the enhancement of laws and regulations, the development of corporate governance guidelines, and the strengthening of regulatory bodies, significant improvements in corporate governance can be achieved (Aguilera et al., 2018). These efforts are essential for ensuring that companies operate in a manner that promotes both sustainability and accountability. On the other hand, shareholder rights protection, board independence, and information disclosure are critical factors influencing the effectiveness of corporate governance (Bebchuk & Weisbach, 2010). Strengthening supervision and management in these areas is necessary to improve transparency and fairness in corporate governance (Armstrong et al., 2010). As these elements are closely linked to the overall health of a company, ensuring that they are adequately addressed will play a pivotal role in enhancing corporate performance and safeguarding investor interests (Larcker & Tayan, 2016).

3.5 Conclusion

From the analysis and comparison of equity incentive practices in typical economies such as the United States, Germany-France, and South Korea-Japan above, it is evident that the specific forms, evolutionary trajectories, and ultimate outcomes of equity incentives are inextricably linked to legal traditions, tax systems, financial market structures, corporate governance models, and socio-cultural backgrounds. The U.S. practice can be characterized as a "market-driven and

rule-refined" model. The flourishing development of its equity incentives (especially stock options) is rooted in deep capital markets, flexible employment relationships, and sophisticated, evolving tax and accounting rules. Its fundamental feature lies in the high degree of financialization and marketization of incentive instruments, with legal and accounting rules designed to provide clear boundaries and prevent abuse for market-based contract design, rather than imposing substantive restrictions. The practice in European countries like Germany and France presents an "institutionally constrained and stakeholder-balanced" model. The introduction of equity incentives is relatively cautious, constrained by stricter company laws (e.g., preventing capital dilution), traditions of co-determination, and a relatively conservative disclosure culture. Its fundamental feature is placing equity incentives within a framework that maintains corporate capital stability and balances the interests of multiple stakeholders (especially employees), with the law playing a stronger role as a "shaper" rather than merely a "responder." The practice in East Asian economies like South Korea and Japan can be summarized as a "policy-guided and selectively adopted" model. The development of their equity incentives has been clearly and strongly driven and shaped by government tax policies, evolving from restriction, to guidance via tax incentives, to performance linkage. Its fundamental feature is the government's active intervention in and guidance of corporate incentive mechanism design through tax tools, to serve specific economic development or corporate governance reform goals, reflecting a strong government-led character. These diverse international practices hold significant referential value for addressing the research questions in this study concerning equity incentives in Chinese state-controlled listed companies.

First, the implementation effectiveness of equity incentives relies on the supporting institutional environment. Isolated evaluation of the "effect" of equity incentives, detached from the specific legal, tax, and governance structures, is one-sided. Therefore, this study must be grounded in the context of China's unique property rights structure, corporate governance weaknesses, and diversified policy objectives.

Second, for identifying "what are the influencing factors," international comparison provides a checklist of key variables. The U.S. experience highlights the importance of accounting standard transparency, the independence of board compensation committees, and capital market efficiency. German practice emphasizes the influence of rigid company law provisions and the tradition of labor co-determination. The trajectory of South Korea and Japan vividly demonstrates the role of tax policy as a critical lever. These factors together constitute an analytical framework, suggesting that when studying the Chinese case, we need to focus particularly on China-specific influencing factors such as the principal-agent chain of state-

owned property rights, the tension between administrative intervention and market mechanisms, the conflict between policy assessment objectives and shareholder value objectives, and insider control.

Finally, international practice indicates that there is no "best equity incentive practice" universally applicable everywhere. Considerations for improving equity incentives in state-controlled listed companies must be based on the fundamental characteristic of the "high degree of separation between ownership and management" in these companies and the hybrid institutional environment in which they operate, in order to propose practical and feasible countermeasures.

Chapter 4: Evolution of the Equity Incentive Regulatory System for State-Controlled Listed Companies

In September 2006, the State-owned Assets Supervision and Administration Commission of the State Council (hereinafter referred to as the SASAC) and the Ministry of Finance issued the "Provisional Measures for the Implementation of Equity Incentives by State-Controlled Listed Companies (Domestic)." This marked the formal, systematic, and comprehensive introduction of equity incentive systems in domestic state-controlled listed companies in China. Subsequently, ZTE Corporation, as a representative of centrally administered enterprises (hereinafter referred to as central enterprises), and Inner Mongolia Yili Industrial Group Co., Ltd., as a representative of local state-owned enterprises, both officially established and implemented equity incentive plans in 2007 in accordance with the "Provisional Measures." This marked the official start of equity incentive practices for state-controlled listed companies in China. From 2007 to 2025, the equity incentive system for state-controlled listed companies has undergone 18 years of development. During this process, the China Securities Regulatory Commission (hereinafter referred to as the CSRC) gradually relaxed approval requirements for equity incentives, and an increasing number of state-controlled listed companies have implemented equity incentive plans. On this foundation, in 2020, the SASAC issued the "Guidelines for Implementing Equity Incentives in Central State-owned Enterprises Listed on the Stock Exchange," further standardizing the equity incentive practices of central enterprises and refining the regulatory framework for equity incentives in state-controlled listed companies. This chapter reviews the overall evolution of the regulatory system for equity incentives in state-controlled listed companies since the introduction of related policies. From a historical institutional perspective, it summarizes the characteristics of the development of the equity incentive system in state-controlled listed companies, restates the main elements of the current equity incentive system for these companies in China, and looks ahead to its future development directions.

4.1 Evolution of the equity incentive policies for state-controlled listed companies

Equity incentives are designed based on the reality of the separation between ownership and control in modern companies. The aim is to close the gap between the interests of the company and its senior management or employees by granting them stocks or options, enabling them to share in the company's development gains. This mechanism helps improve the motivation and loyalty of senior management or employees while reducing agency costs. In state-controlled listed companies, the separation between ownership and control is significant. Therefore, the state-owned asset regulatory authorities introduced equity incentives as an important measure to promote the reform and transformation of these companies, improve operational performance, and facilitate their upgrading. The introduction of equity incentives has gone through a process from individual pilot programs to widespread implementation, gradually institutionalizing and legalizing the practice. From an institutional historical perspective, this process can be broadly divided into three stages.

4.1.1 Preparation stage (Prior to 2006)

Starting with the General Office of the State Council's 2002 circulation of the "Guidance Opinions on Pilot Equity-Incentive Programs for State-Owned High-Tech Enterprises", issued by the Ministry of Finance (MoF) and the Ministry of Science and Technology (MoST), and extending through the China Securities Regulatory Commission's 2006 release of the "Measures for the Administration of Equity Incentives by Listed Companies (Trial)", several pilot programs for equity incentives were launched in state-owned enterprises. The MoF and MoST jointly organized pilots among centrally administered enterprises, while provincial finance and science and technology departments oversaw pilots in locally administered state-owned firms. Although these early programs did not specifically target state-controlled listed companies, the experience gained and the institutional foundation established during this period were instrumental for the later expansion of equity incentives to this group.

During this stage, the General Office of the State Council, the State-owned Assets Supervision and Administration Commission of the State Council (SASAC), the Ministry of Finance (MoF), and the Ministry of Science and Technology (MoST) jointly issued a series of normative documents that established the core framework for the equity incentive system in state-owned enterprises. Key documents include: the *Notice of the General Office of the State*

Council Forwarding the Guidance Opinions of the MoF and MoST on Pilot Equity-Incentive Programs for State-Owned High-Tech Enterprises; the *Notice of the General Office of SASAC and the General Office of MoST on Launching Equity-Incentive Pilots in Centrally Administered High-Tech Enterprises*; the *Notice of the General Office of the State Council Forwarding SASAC's Implementation Opinions on Further Regulating State-Owned Enterprise Restructuring*; and the *Notice of the General Office of SASAC, the General Office of MoST, and the General Office of the Beijing Municipal Government on Organizing Equity-Incentive Pilots for State-Owned High-Tech Enterprises and Corporatized Research Institutes in Zhongguancun Science Park*. Collectively, these documents laid the institutional foundation for implementing equity incentives in state-controlled listed companies, covering the following key aspects.

1. Eligibility requirements for implementing equity incentives

Companies were required to have a sound corporate governance structure and robust financial management systems; demonstrate strong financial performance-specifically, after-tax profits over the past three years must account for more than 30% of total net assets; maintain a clear focus on high-tech operations-with R&D personnel comprising over 10% of the workforce and R&D expenditure exceeding 5% of sales revenue; and show stable and sustainable growth prospects.

2. Eligible participants

Two groups of personnel were permitted to participate: (a) scientific and technical staff who had made significant contributions to the company's technological advancement, and (b) senior management responsible for improving operational performance.

3. Forms of equity incentives

Permitted instruments included stock options, conditional shares, share awards (including position-based shares), and phantom stock.

4. Implementation procedures

(1) A comprehensive asset valuation had to be completed prior to launching any pilot program; (2) the equity-incentive plan required approval from the board of directors or the shareholders' meeting; and (3) implementation was contingent upon approval from the relevant finance and science and technology authorities.

5. Limitations on equity incentives

The total value of awarded shares, adjusted by any price coefficients, could not exceed 35% of the net-asset appreciation generated by after-tax profits over the past three years. In addition, the number of granted shares could not surpass half of this maximum value. Plans were

expected to retain a portion for future allocation and were generally designed for full implementation within three to five years.

Overall, although some state-owned enterprises piloted equity-incentive plans during this period, practical implementation remained limited and challenging. Four main factors contributed to this outcome:

First, the original purpose of introducing equity incentives was more about rewarding than genuinely incentivizing. At the time, such incentives were viewed primarily as a component of SOE reform, intended to reward key technical personnel and managers for their past achievements rather than to mitigate agency costs stemming from the separation of ownership and control.

Second, supervisory authorities over state-owned assets adopted a cautious approach to the mechanism. Although the Guidance Opinions on Pilot Equity-Incentive Programs for State-Owned High-Tech Enterprises encouraged "active exploration of stock-option incentives," it also warned against "arbitrary actions or irrational enthusiasm," which significantly constrained the scope and participants of the pilot programs.

Third, the institutional design was inadequate. On one hand, the threshold for pilot eligibility was relatively high: the "Guidance Opinions" stipulated that the Ministry of Finance and the Ministry of Science and Technology would organize pilots for central enterprises, while provincial-level finance and science and technology departments would oversee local SOE pilots-thereby indirectly narrowing the range of eligible enterprises. On the other hand, the implementation requirements and procedures were overly complex, yet lacked detailed supporting policies or operational guidelines, making it extremely difficult to implement equity-incentive plans in practice.

4.1.2 Initiation stage (2006-2010)

At the end of 2005, the China Securities Regulatory Commission (CSRC) issued the "Measures for the Administration of Equity Incentives by Listed Companies (Trial)", which came into effect on January 1, 2006. This landmark regulation marked the beginning of a comprehensive and systematic implementation of equity-incentive mechanisms across the A-share market. Building upon this foundation, SASAC, the Ministry of Finance, the CSRC, and both the Shanghai and Shenzhen Stock Exchanges successively released a series of rules and normative documents. By the end of 2010, these efforts had formed the initial regulatory framework governing equity incentives for listed companies in China's A-share market, thus providing the

legal basis for state-controlled listed companies to adopt such plans.

1. Measures for the Administration of Equity Incentives by Listed Companies (Trial)

This regulation emphasized strict information disclosure and upheld the principles of corporate autonomy within the context of market discipline. It addressed five key areas:

(i) detailed disclosure requirements and procedures to enhance regulatory oversight;

(ii) clear eligibility criteria and definitions of qualified recipients;

(iii) comprehensive provisions on performance evaluation metrics, share-pricing mechanisms, reserved equity ratios, timing restrictions for plan issuance and termination;

(iv) standardization of decision-making and implementation procedures; and

(v) establishment of supervisory mechanisms and legal responsibilities in cases of non-compliance.

2. Provisional Measures for the Implementation of Equity Incentives by State-controlled Listed Companies (Domestic)

Issued by SASAC and the Ministry of Finance in September 2006, this was the first comprehensive and systematic regulation dedicated to domestic equity-incentive programs in state-controlled listed companies. It laid out four core components:

(i) objectives, guiding principles, and applicable scope;

(ii) permitted incentive types and required implementation steps;

(iii) mandatory procedural protections and disclosure obligations; and

(iv) quantitative and qualitative limitations on incentive grants.

3. Notice on Regulating Issues Concerning the Implementation of the Equity Incentive System by State-controlled Listed Companies

Released by SASAC and the Ministry of Finance following an evaluation of the initial implementation of the "Provisional Measures", this document refined operational details. It clarified key plan components, outlined the full implementation process, and specified crucial parameters such as total share-pool limits, individual grant ceilings, and the application and approval procedures.

4. Memoranda on Equity Incentive Matters No. 1, No. 2, and No. 3

Prepared by the CSRC to address practical challenges in early implementation, these memoranda provided detailed guidance on:

(i) the drafting, approval, revision, and cancellation of equity-incentive plans;

(ii) share quota allocation and transfer mechanisms;

(iii) criteria for identifying eligible recipients and related disclosure requirements; and

(iv) procedures for phased grants and pricing rules.

4.1.3 Improvement stage (Post-2010)

Given the central political and economic role of state-controlled listed companies in China's economic system, regulatory oversight of their equity-incentive schemes has become increasingly complex. Moreover, as part of broader state-owned enterprise reform, both external regulations and internal governance structures have remained in constant transition, presenting substantial challenges to the design and implementation of incentive plans. Oversight responsibilities are distributed among SASAC, the Ministry of Finance, the CSRC, and relevant industry regulators. In response to lessons learned from the 2006 "Provisional Measures" and shifting SOE reform priorities, SASAC-together with other regulatory bodies-has issued numerous rules and normative documents. These efforts have contributed to a highly detailed and mature regulatory system that now governs every aspect of equity incentives in state-controlled listed companies. The most influential among these are as follows:

1. Measures for the Administration of Equity Incentives by Listed Companies (2016)

Building upon the 2006 "Trial Measures", this formal regulation, effective from September 1, 2016, significantly improved the framework by:

(i) clearly defining eligibility requirements for companies and individual participants;

(ii) expanding the scope of potential recipients and introducing new obligations, such as the requirement for incentive agreements;

(iii) enhancing corporate autonomy and decision-making flexibility, while reinforcing internal controls and market oversight;

(iv) detailing specific implementation procedures, including the management of insiders, shareholder approvals, registration of grants, and plan revisions; and

(v) establishing ex-post supervisory mechanisms, strengthening disclosure responsibilities, and introducing enforcement provisions for regulatory violations.

2. Measures for the Administration of Equity Incentives by Listed Companies (2018 Revision)

On January 15, 2018, the CSRC amended the 2016 "Measures", with the revised version becoming effective on September 15, 2018. The main change eliminated policy restrictions for non-PRC nationals by:

(i) explicitly allowing foreign nationals to participate as recipients of equity incentives and defining the relevant eligibility conditions; and

(ii) authorizing approved foreign recipients to open securities accounts with the designated registration and settlement agency to receive their allocated shares.

3. Guidelines on the Implementation of Equity Incentives by Central Enterprise-Controlled Listed Companies (2020)

In April 2020, SASAC released a set of comprehensive "Guidelines" that built upon the 2006 "Provisional Measures" and subsequent CSRC regulations, forming a detailed and practice-oriented policy framework for equity-incentive plans in central enterprise-controlled listed companies. Compared with earlier regulations, these "Guidelines" introduced five major innovations.

(i) Plan Content Requirements

They specify key elements such as incentive objectives, eligible recipients and selection criteria, permissible instruments and stock sources (incremental or existing shares), scope of application, and quantitative limits (including total cap, initial award limit, per-individual ceiling, and reserved shares). Requirements also include pricing mechanisms-restrictive stock must be priced at no less than 50% of fair market value-as well as plan duration (up to ten years), minimum grant intervals (at least one year), and lock-up periods (typically no less than two years).

(ii) Performance-Assessment System

A three-tier indicator system is introduced, covering shareholder returns, corporate growth capacity, and operational quality. The "Guidelines" outline how these indicators should be applied and emphasize performance reviews following award issuance, particularly in relation to vesting constraints.

(iii) Governance and Administration

The "Guidelines" define clear responsibilities for management, implementation processes, accountability mechanisms (including for special circumstances), financial accounting treatment, and tax compliance obligations.

(iv) Implementation Procedures

Detailed workflows are provided for each level of state shareholder, outlining processes for plan proposal, review, filing, execution, revocation, termination, re-application, ongoing supervision, and disclosure.

(v) STAR Market Provisions

Special rules apply to central-enterprise-controlled companies listed on the STAR Market, including expanded award limits and greater pricing flexibility. These provisions are aligned with the Shanghai Stock Exchange's STAR Market listing rules and associated disclosure requirements to ensure regulatory compliance.

4. Measures for the Administration of Equity Incentives by Listed Companies (2025

Revision)

On March 28, 2025, the CSRC revised the "Measures for the Administration of Equity Incentives by Listed Companies", with two major changes.

(i) The authority previously held by the Supervisory Board and independent directors over equity-incentive matters was transferred to the Board's Compensation and Appraisal Committee. This shift strengthens the Board's central role, streamlines governance, and improves both approval efficiency and the professionalism of internal oversight.

(ii) The scope of eligible participants was expanded to include members of the Supervisory Board. As a result, in addition to directors (excluding independent directors), supervisors may now also receive equity incentives.

4.2 The regulatory system for equity incentives in state-controlled listed companies

Equity-incentive schemes for A-share state-controlled listed companies are governed by both securities market regulations and state-owned asset supervision policies, and they function within the broader context of China's ongoing state-enterprise reform. The legal and policy framework is extensive, dynamic, and often complex, making it difficult to fully understand without a structured synthesis. To address this, the study consolidates and organizes the relevant provisions from the Company Law of the People's Republic of China, the Measures for the Administration of Equity Incentives by Listed Companies, and other currently applicable regulations. It presents a comprehensive and systematic restatement of the legal regime that governs equity-incentive mechanisms in China's A-share state-controlled listed companies.

4.2.1 The regulatory system for equity incentives in state-controlled listed companies

Table 4.1 provides a directory of the legal regulations concerning equity incentives for state-controlled listed companies in China. These regulations form a pyramid-shaped system, structured according to their legal authority and level of specialization.

Table 4.1 Directory of legal regulations

Hierarchy	Regulation	Issuing Authority	Effective Date
Law	Company Law of the People's Republic of China	Standing Committee of the National People's Congress	July 1, 2024
	Securities Law of the People's Republic of China	Standing Committee of the National People's Congress	March 1, 2020
Administrative Regulations	-	-	-
Departmental Rules	Provisional Measures for the Implementation of Equity Incentives by State-Controlled Listed Companies (Domestic)	SASAC; Ministry of Finance	September 30, 2006
	Notice on Regulating Issues Concerning the Implementation of the Equity Incentive System by State-Controlled Listed Companies	SASAC; Ministry of Finance	October 21, 2008
	Measures for the Administration of Equity Incentives by Listed Companies (2018 Revision)	China Securities Regulatory Commission (CSRC)	March 27, 2025
	Notice on Further Improving Equity-Incentive Work for Central Enterprise-Controlled Listed Companies	SASAC	October 24, 2019
	Guidelines on the Implementation of Equity Incentives by Central Enterprise-Controlled Listed Companies	SASAC	April 23, 2020
Exchange Rules	Shanghai Stock Exchange Science and Technology Innovation Board Stock Listing Rules	Shanghai Stock Exchange	December 31, 2020
	STAR Market Information Disclosure Business Guidelines No. 4: Equity-Incentive Information Disclosure	Shanghai Stock Exchange	September 11, 2020
	Shanghai Stock Exchange STAR Market Listed Company Self-Regulatory Guidelines	Shanghai Stock Exchange	January 7, 2022
	Shenzhen Stock Exchange Listed Company Business Handling Guide	Shenzhen Stock Exchange	June 21, 2020

Hierarchy	Regulation	Issuing Authority	Effective Date
	Shenzhen Stock Exchange Listed Company Business Handling Guide No. 9: Equity Incentives	Shenzhen Stock Exchange	June 21, 2020
	Shenzhen Stock Exchange ChiNext Stock Listing Rules	Shenzhen Stock Exchange	December 31, 2020
	Beijing Stock Exchange Stock Listing Rules (Trial)	Beijing Stock Exchange	October 30, 2021
	Beijing Stock Exchange Listed Company Continuous Supervision Guide No. 3: Equity Incentives & Employee Shareholding Plans	Beijing Stock Exchange	November 2, 2021

Source: Developed by the author

4.2.2 Core content of the legal system for equity incentives in state-controlled listed companies

1. Conditions for implementing equity incentives in state-controlled listed companies

The conditions for implementing equity incentives in state-controlled listed companies include both mandatory requirements and situations in which the implementation is prohibited.

Mandatory Conditions: These six requirements must be met for a state-controlled listed company to be allowed to implement equity incentives:

(1) A well-established corporate governance system: The general meeting of shareholders, board of directors, supervisory board, and management team must be well-organized, with clear responsibilities. The system for electing and replacing directors must operate effectively, and the board of directors should have the capacity to properly appoint, assess, and incentivize senior management.

(2) Sound internal control mechanisms: The number of external directors (including independent directors) must account for more than half of the board members. The remuneration and audit committees must consist entirely of external directors, with a well-defined and regulated system.

(3) A comprehensive operational management system: This includes the basic management system, internal control system, personnel management system, performance assessment system, and compensation and benefits system.

(4) Sound operational status: The company must have a clear and feasible development

strategy, good asset quality and financial status, and stable operational performance. In the past three years, there should be no illegal activities related to financial accounting, income distribution, or salary management.

(5) A complete internal control system: The company must have an effective internal control system capable of overseeing the implementation of the equity incentive mechanism. This includes mechanisms for economic responsibility audits, information disclosure, deferred payments, and reclaiming incentive payments.

(6) Other conditions prescribed by securities regulatory authorities.

Prohibited Conditions: A state-controlled listed company will not be allowed to implement equity incentives if it meets any of the following five conditions:

(1) The financial accounting report for the most recent fiscal year has been issued with a qualified or disclaimer of opinion by a registered auditor.

(2) The internal control over financial reporting for the most recent fiscal year has been given a qualified or disclaimer of opinion by a registered auditor.

(3) Within the last 36 months after listing, the company has failed to distribute profits according to the law, company bylaws, or public commitments.

(4) The company is prohibited from implementing equity incentives by laws and regulations.

(5) Other situations as determined by the China Securities Regulatory Commission (CSRC).

2. Targets and restrictions for implementing equity incentives in state-controlled listed companies

In state-controlled listed companies, the targets for equity incentives fall into two main categories: the first category includes senior management, such as directors, supervisors, and managers of the listed company; the second category includes key employees, such as management, technical, and business professionals who have a direct impact on the company's operational performance and sustainable development.

There are also two main exclusions for individuals who are not eligible for equity incentives. One exclusion is for individuals who may lead to conflicts of interest or pose a risk to the company's governance, such as independent directors, external directors, heads of central enterprises managed by the central government or SASAC, and other individuals specifically prohibited by the state-owned asset regulatory authorities or securities regulatory bodies. The second exclusion is for individuals who have engaged in violations or other circumstances that make them unsuitable for equity incentives. This includes individuals who have been identified as inappropriate by a stock exchange within the past 12 months, those who have been identified

as inappropriate by the China Securities Regulatory Commission (CSRC) or its dispatched agencies within the past 12 months, individuals who have been administratively penalized or subjected to market entry bans by the CSRC or its agencies due to major violations in the past 12 months, and individuals who fall under the prohibitions outlined in the Company Law regarding eligibility to serve as directors or senior management.

3. Implementation methods, share sources, and scale limits of equity incentives

The methods of implementing equity incentives in state-controlled listed companies include restricted stock, stock options, and other forms of equity incentives. The first category, restricted stock, refers to shares granted to incentivized individuals under the equity incentive plan, where certain rights, such as transfer rights, are restricted according to the plan's conditions. The second category, restricted stock for the ChiNext Board and STAR Market, applies only to these boards and involves the grant of shares to individuals who meet the incentive plan's conditions, with shares being acquired and registered in installments once the benefit conditions are fulfilled. Stock options give the incentivized individuals the right to purchase a certain number of company shares at pre-determined conditions within a specified period.

As for the sources of shares for equity incentives, there are three primary methods: the first is to issue new shares to incentivized individuals, which is the main source of shares for equity incentives; the second is to repurchase the company's own shares for equity incentives; the third is to acquire shares through other methods allowed by law and administrative regulations.

In terms of the scale of equity incentives, state-controlled listed companies face three main restrictions: total limit, which sets a cap on the total number of shares allocated for equity incentives; individual limit, which limits the number of shares any one incentivized individual can receive; and reserve limit, which restricts the number of shares reserved for future equity incentive plans.

(i) The cumulative number of shares subject to all active incentive plans may not exceed 10% of total share capital (20% for STAR Market companies), and must not cause the state-controlling shareholder to lose actual control;

(ii) The number of shares granted under a company's first incentive plan should generally be capped at 1% of total share capital;

(iii) For small- and medium-market-cap companies and technology-innovation enterprises, the first-plan cap may be raised to no more than 3%;

(iv) The cumulative number of shares granted over any two consecutive full years should normally be limited to 3% of total share capital, although this may be relaxed to 5% in cases of

major strategic transformation.

In terms of per-individual entitlements, unless otherwise approved by a special resolution of the shareholders' meeting, the cumulative number of shares-whether exercised or unexercised-granted to any single incentive recipient under all active equity-incentive plans must not exceed 1% of the company's total share capital. Additionally, the value of shares granted to directors and senior executives may not exceed 40% of their total compensation at the time of grant.

With respect to reserved quotas, when a listed company allocates shares for future market-oriented recruitment, the number of reserved shares must not exceed 20% of the total planned awards under the equity-incentive plan.

4. Performance-assessment indicators

According to Notice on Further Improving Equity-Incentive Work for Central Enterprise-Controlled Listed Companies and Guidelines on the Implementation of Equity Incentives by Central Enterprise-Controlled Listed Companies,the performance of equity-incentive plans is evaluated based on three categories of indicators:

(1) Shareholder-return and value-creation metrics, such as return on equity (ROE), return on assets (ROA), net-asset cash return (EOE), and return on invested capital (ROIC);

(2) Sustainable-growth metrics, including net-profit growth rate, operating-profit growth rate, revenue growth rate, growth rate of revenue from innovation-driven businesses, and the economic value-added (EVA) growth rate;

(3) Operational-quality metrics, such as changes in EVA (ΔEVA), asset-liability ratio, cost-to-income ratio, accounts-receivable turnover, operating-profit margin, total-asset turnover, and cash-conversion-cycle index.

5. Implementation procedures for equity incentives

The process for implementing equity incentives in state-controlled listed companies consists of three main steps:

(1) Drafting the Equity Incentive Plan: The first step involves the remuneration and evaluation committee of the board of directors drafting the equity incentive plan. This is done after thorough communication with the state-owned asset supervisory authorities to ensure alignment with regulations and organizational goals.

(2) Review and Approval of the Equity Incentive Plan: Once the draft is prepared, it must be submitted to both the board of directors and the supervisory board for review. After obtaining their approval, the plan is then submitted to the state-owned asset supervisory authorities for final approval before being presented to the shareholders' meeting for voting.

(3) Implementation of the Equity Incentive Plan: After the shareholders' meeting approves the plan, the board of directors and the supervisory board proceed to finalize the specific details of the stock grants. They then submit an application to the stock exchange and the securities registration institution to complete the stock issuance.

4.3 Characteristics of the legal system for equity incentives in state-controlled listed companies

State-controlled listed companies in China function both as models of modern corporate governance and as key instruments of state ownership, exerting strategic influence over national economic development and occupying a central role in the country's economic system. As a result, regulatory oversight of these companies must meet the standards of the securities market while also fulfilling the dual mandate of safeguarding and increasing the value of state assets, and enhancing the scale, quality, and efficiency of state-owned enterprises. This dual role requires that equity-incentive systems for state-controlled listed companies incorporate both economic and non-economic objectives, giving rise to distinct institutional characteristics. Compared with state-controlled non-listed companies and privately controlled listed firms, regulators take a more cautious approach to equity incentives in state-controlled listed companies, and Chinese law imposes stricter supervisory requirements-reflected in three key dimensions:

1. Stricter eligibility requirements for incentives

In general, the CSRC treats equity incentives in non-state-controlled listed companies as matters of corporate autonomy, applying a regulatory approach based on "procedural control + negative listing." Under this model, no substantive eligibility criteria are imposed; companies are only required to complete three procedural steps-self-assessment, public consultation, and corrective action-while prohibitions are limited primarily to specific financial circumstances.

In contrast, equity incentives in state-controlled listed companies are not governed solely by corporate autonomy. Instead, regulators apply a framework of "substantive conditions + procedural control + negative listing," which includes: (1) clearly defined substantive eligibility requirements; (2) explicit prohibitions on certain scenarios; and (3) the involvement of state-asset supervisory authorities in the review and approval process, thereby subjecting incentive plans to substantive regulatory oversight.

2. Stricter control on the scale of incentives

To avoid improper use of equity incentives that could lead to the erosion of state-owned

assets, the total number of shares allocated for equity incentives in state-controlled listed companies is subject to more stringent limits. Article 14 of the Provisional Measures for the Implementation of Equity Incentives by State-controlled Listed Companies (Domestic) requires that the total size of the incentive share pool over the plan's valid term be determined reasonably, taking into account the company's total share capital, the scope of eligible recipients, and the intended level of incentives. Each grant must fall within a range of 0.1% to 10% of total share capital. Furthermore, the size of the initial grant under a company's first equity-incentive plan should, in principle, be capped at 1% of total share capital, and the total number of shares under all active plans must not exceed 10% of total share capital.

3. Stricter limitations on the intensity of incentives

Incentive intensity for individuals is assessed based on both the proportion of total share capital allocated to a recipient and the value of awarded shares relative to their compensation. According to the Measures for the Administration of Equity Incentives by Listed Companies, unless approved by a special resolution of the shareholders' meeting, no individual may receive shares amounting to more than 1% of the company's total share capital across all active incentive plans. The Provisional Measures further differentiate between general participants and senior executives by applying dual ceilings on individual grants. Specifically, directors and senior executives may not receive shares whose total value exceeds 40% of their compensation at the time of the grant.

4.4 Future development trends of the equity incentive system in state-controlled listed companies

Looking back at the historical development and key elements of the equity incentive policies for state-controlled listed companies, it is evident that the introduction of equity incentive mechanisms in China has been a cautious yet steady process. The approach follows the effective strategies that have been in place since China's reform and opening-up, progressing through a path of "pilot programs-small-scale applications-broad adoption." Through continuous trial and error, a practical work model has been developed, which has eventually evolved into a universal system. At the same time, the equity incentive system itself is an extension of corporate governance, closely tied to the development of corporate governance principles, corporate legal systems, and the capital markets. Therefore, as China's corporate systems continue to improve and the capital markets mature, it is expected that the equity incentive system in state-controlled listed companies will gain broader applicability. The methods of equity incentives and

performance evaluation standards are also expected to diversify.

4.4.1 The scope of equity incentives in state-controlled listed companies will be further expanded

The full implementation of a registration-based IPO system in China will not only enhance the efficiency of company listings but also ease financial and valuation thresholds for public offerings. As listing barriers decrease and the number of potential equity-incentive sponsors increases, more state-controlled listed companies are expected to adopt equity-incentive schemes. On one hand, the streamlined issuance review process and strengthened disclosure obligations under the registration system will allow more enterprises to access capital markets, expanding the pool of eligible plan sponsors and accelerating listing timelines. As a result, companies aiming to attract talent quickly will be more likely to introduce incentive plans in earlier stages of development.

On the other hand, market-driven pricing mechanisms will improve the effectiveness of incentives. Under the registration system, the pricing of new shares will more accurately reflect true market value through secondary-market benchmarks, making employee return expectations more transparent. This enhancement in incentive attractiveness is particularly evident in technology-driven and high-growth firms, where equity incentives serve as a critical tool for retaining key talent. In addition, replacing administrative pre-approval with disclosure-based filing shortens the approval cycle for equity-incentive plans, enabling companies to adapt schemes more promptly to changing market conditions and thereby increasing implementation efficiency.

4.4.2 Diversification of equity-incentive models

The reform of the registration-based IPO system has facilitated the expansion of innovative instruments-such as Type II restricted stock and option-embedded awards-originally piloted on the STAR Market and ChiNext, to the broader A-share market. Companies will increasingly be able to tailor their incentive structures to match their stage of development, drawing from a broader set of tools that may include performance shares, zero-strike restricted stock, and cash-settled awards. For state-controlled listed companies aiming to enhance competitiveness, motivate senior management and core employees, and support long-term sustainable growth, the adoption of diversified incentive instruments will be critical. In particular, state-controlled enterprises in the technology sector will use these tools to align innovation talent with strategic

objectives, thereby strengthening their capacity for innovation and accelerating the commercialization and industrialization of key technological achievements.

4.4.3 Toward a multi-dimensional performance-assessment framework

ESG (Environmental, Social, and Governance) has become a key trend in the development of international capital markets and a major focus for shareholders. The report from the 20th National Congress of the Communist Party of China also calls for "accelerating the green transformation of the development model and advancing the peak carbon emissions and carbon neutrality goals in a steady and proactive manner." With the increasing internationalization of China's capital markets, it is expected that state-controlled listed companies, in order to enhance their influence and lead the development of international capital markets, will gradually diversify the performance evaluation criteria for equity incentives. These criteria, which are currently focused mainly on financial aspects, will shift towards a more comprehensive approach that includes ESG factors and aligns with national macroeconomic strategies. This will lead to the formation of a more systematic and comprehensive performance evaluation system.

4.5 Conclusion

Examining the nearly two-decade evolution of the regulatory policy on equity incentives for state-controlled listed companies reveals that the entire institutional development followed a typical "policy experimentation" model. This involved accumulating experience through pilot programs, followed by the gradual construction of a multi-layered, complex rule system—embodied in departmental regulations, normative documents, and stock exchange self-regulatory rules—that integrates general norms for listed companies with special regulatory requirements for state-owned assets. The significance of reviewing this process lies in the following aspects:

First, for exploring "what are the actual effects," the analysis of institutional history provides crucial institutional context and constraints. The evolutionary process of regulatory policy—from non-existence to existence, from strict to relaxed, and then to standardized improvement—is itself a manifestation of the state's perception and response to the potential effects (both positive and negative) of equity incentives in state-owned enterprises. Therefore, any empirical test regarding implementation effects must incorporate the specific regulatory stage in which the sample companies operated and the particular version of applicable rules as

key contextual variables. An evaluation of "pure economic effects" detached from the institutional environment would be one-sided.

Second, for identifying "what factors influence the effects," the content of this chapter directly reveals a series of key institutional factors. Examples include the strict definition of eligible incentive recipients, the setting of "ceilings" on incentive intensity, and the diversified requirements for performance assessment metrics. These factors not only shape the contractual characteristics of incentive plans but also directly influence their incentive effects. Worthy of special attention is the "substantive approval" characteristic highlighted in the policy evolution. This means the administrative will of state-owned assets regulatory authorities and the diversified objectives of state-owned shareholders (beyond mere profit maximization) profoundly intervene in the design and execution of incentive plans. This constitutes a unique political and administrative influencing factor that distinguishes state-controlled listed companies from their non-state counterparts.

Finally, for contemplating "how improvements should be made," the direction and inherent logic of policy evolution provide fundamental guidance. The continuous improvement of the system indicates that the direction for reform is not simply deregulation. Rather, it is optimizing the scientific rigor and flexibility of contract design based on enhancing corporate governance effectiveness and strengthening market discipline. For instance, the evolutionary trend of performance assessment metrics from financial indicators towards a more multi-dimensional system suggests that improvements should emphasize long-term value and non-financial performance. The differentiated arrangements for companies listed on the Science and Technology Innovation Board (STAR Market) indicate that improvements need to consider corporate heterogeneity and strategic objectives.

Chapter 5: Review of Equity Incentive Practices in State-Controlled Listed Companies

The "Interim Measures for the Implementation of Equity Incentives in State-Controlled Listed Companies (Domestic)" marked the beginning of equity incentive practices in state-controlled listed companies. From 2007 to 2024, with the gradual optimization of regulatory measures and the improvement of laws and regulations, the number of state-controlled listed companies implementing equity incentives has increased year by year. By the end of 2024, a total of 385 state-controlled listed companies had implemented 444 equity incentive plans. A review of these practices helps to understand the overall trajectory and main characteristics of equity incentive implementation in state-controlled listed companies from a factual perspective, and also contributes to a better response to the research questions. Therefore, this chapter adopts both macro and micro perspectives, presenting the macro view of equity incentive practices in state-controlled listed companies through statistical data, while also conducting a case study on typical equity incentive practices to comprehensively and systematically present the overall picture of equity incentives in these companies.

5.1 Overall picture of equity incentive practices in state-controlled listed companies

As of the end of 2024, there were 5,383 listed companies in China's A-share market. Of these, 3,503 were privately-owned listed companies, accounting for approximately 65.1%; 1,565 were state-controlled listed companies, making up about 29.1%; and the remaining 315 were joint ventures and foreign-invested companies, accounting for about 5.9%. Among the state-controlled listed companies, 385 have implemented equity incentive plans, representing 24.6% of all state-controlled listed companies. To provide a comprehensive view of the equity incentive practices in state-controlled listed companies, this study uses statistical methods to analyze the data on equity incentives in these companies from 2007 to 2024. Looking at a longer time span, the equity incentive practices in state-controlled listed companies reveal the following trending characteristics.

5.1.1 The number of companies adopting equity incentive plans has increased significantly but with notable disparities

Overall，the number and scope of equity incentive implementations in state-controlled listed companies have increased year by year, but there is significant disparity, and there is still room for improvement in adoption rates and incentive intensity.

First, the number and scope of equity incentive implementations in state-controlled listed companies have shown a year-on-year increasing trend.

From the data, between 2007 and 2024, a total of 385 A-share state-controlled listed companies implemented 444 equity incentive plans, with a clear overall trend:

Steady Increase in Number: Over the 15-year period, the number of companies implementing equity incentives grew from 2 to 385, with 444 equity incentive plans being implemented. Although the growth rate slowed in 2023 and 2024, there remains a noticeable overall upward trend.

Expansion of the Scope of Equity Incentives: Along with the gradual increase in the number of incentive plans, the scope of equity incentives implemented by state-controlled listed companies has also continued to expand. This trend has been particularly evident since 2015, with the median proportion of employees receiving equity incentives (as a percentage of the company's total workforce on the date the draft plan was announced) rising from 2.2% in 2015 to 8.1% in 2022. Although there was a slight drop in 2023 and 2024, the proportion remained above 3%. Companies in the information transmission, software, and IT services industries have implemented even broader incentive schemes. For example, in 2022, 84% of companies where the number of employees receiving equity incentives accounted for over 15% of the total workforce had been registered as national-level high-tech enterprises.

Secondly, there is a significant disparity in the implementation of equity incentives by state-controlled listed companies.

Local Enterprises Have Emerged as Leaders: State-controlled listed companies can be divided into central enterprises and local enterprises based on their regulatory affiliation. From 2007 to 2024, 175 central enterprises implemented 196 equity incentive plans, while 221 local enterprises implemented 248 equity incentive plans. Due to the larger base, local enterprises have shown more remarkable performance in implementing equity incentives. As seen in Figure 5.1, since 2018, the number of equity incentive plans implemented by local enterprises has surpassed that of central enterprises. Over time, the gap between the two has gradually widened, particularly in 2023 and 2024, where local enterprises have implemented far more equity

incentive plans than central enterprises, with the number in 2024 being more than four times that of central enterprises.

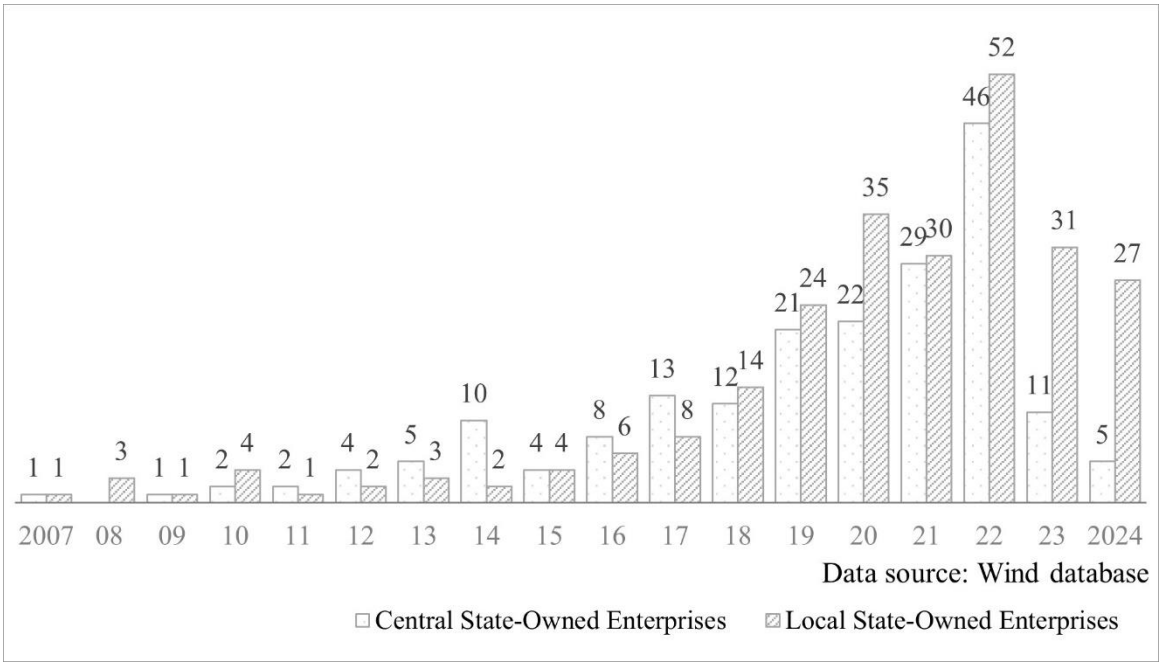


Figure 5.1 Number of equity incentive plans in central and local enterprises

Differentiation Among Trading Boards: The Chinese A-share securities market is divided into four different trading boards: the Main Board, the Growth Enterprise Market (GEM), the Sci-Tech Innovation Board (STAR Market), and the National Equities Exchange and Quotations (NEEQ) system. The Main Board is the primary venue for the listing and trading of stocks of listed companies in China. These companies are typically large, well-established firms with mature profit models, stable financial conditions, and high market recognition, and they must meet strict listing requirements. The GEM mainly serves startup enterprises, small and medium-sized enterprises (SMEs), and high-tech companies that do not meet the listing requirements for the Main Board. The listing standards focus on the growth potential and innovation of the companies, with relatively lower financial requirements. The STAR Market is specifically designed for small and medium-sized enterprises in technology and innovation sectors, particularly those in six key industries such as new-generation information technology and high-end equipment. It serves tech-driven enterprises that align with national strategies and are advancing critical core technologies. The listing thresholds are lower, with no financial requirements and the ability for non-profitable companies to list, using a registration-based system for issuance. The NEEQ system, a non-listed over-the-counter market, provides equity trading and financing services for innovative, entrepreneurial, and growing SMEs, but it is not included in the scope of this study and analysis.

Due to the significant differences in positioning and functions among these trading boards,

state-controlled limited liability companies listed on different boards also show clear distinctions in the implementation of equity incentives. As shown in Figure 5.2, the proportion of state-controlled listed companies on the Main Board implementing equity incentives has shown a clear upward trend, increasing from 0.2% in 2007 to nearly 22.7% in 2022. However, the proportion of state-controlled listed companies on the GEM implementing equity incentives has fluctuated more significantly. The proportion of state-controlled companies listed on the STAR Market implementing equity incentives is still showing trends due to the short time since its opening.

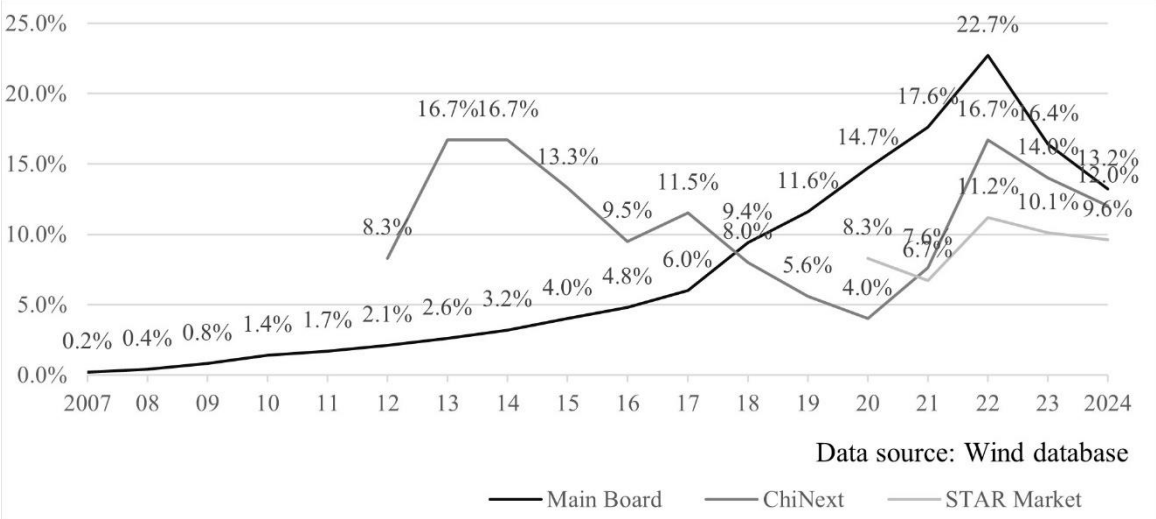


Figure 5.2 Proportion of state-controlled listed companies implementing equity incentives on three trading boards

Lastly, there is still room for improvement in the adoption rate and incentive intensity of equity incentives in state-controlled listed companies.

To further measure the extent of the implementation of equity incentives in state-controlled listed companies, this thesis defines the adoption rate as the percentage of state-controlled listed companies implementing equity incentives out of the total number of such companies. The statistical data for the period from 2007 to 2024 is presented in Figure 5.3, and overall:

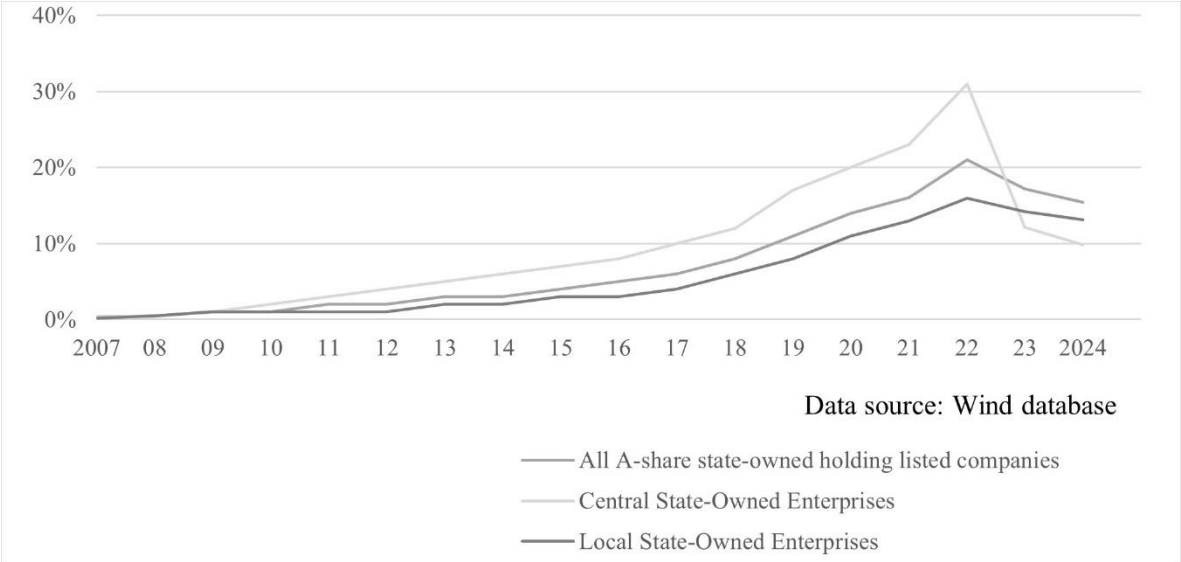


Figure 5.3 Trend of adoption rate of equity incentives in state-controlled listed companies

On one hand, from 2007 to 2022, the adoption rate of equity incentives in state-controlled listed companies showed a year-on-year increase, peaking at 21% in 2022. However, the adoption rate sharply declined in 2023 and 2024. The reason for this is likely that China's economy entered an adjustment phase starting in 2023, with the nationwide call for "tightening expenditures," making it inappropriate to continue the widespread implementation of equity incentive plans. Among these companies, central enterprises had a higher adoption rate of equity incentives than the overall state-controlled listed companies and local enterprises. In particular, in 2022, 31% of central enterprises implemented equity incentives, which was 10 percentage points higher than the overall state-controlled listed companies and 15 percentage points higher than local enterprises.

On the other hand, it is evident that the proportion of state-controlled listed companies implementing equity incentives is still relatively low. Even in the peak year of 2022, the proportion of central and local enterprises implementing equity incentives remained significantly lower than the adoption rate of equity incentives in A-share listed companies. In 2022, the adoption rate of equity incentives in A-share listed companies was 48%, and by the end of 2024, a total of 3,071 listed companies had implemented equity incentives, accounting for 57.0% of the total number of A-share listed companies. Therefore, it can be expected that after the end of China's economic adjustment period, the proportion of state-controlled listed companies implementing equity incentives will still have significant room for improvement.

Meanwhile, due to the regulatory requirements on equity incentives, the incentive intensity of state-controlled a-share companies is relatively weak.

The incentive intensity of equity incentives can generally be reflected by the proportion of

the granted equity relative to the company's total share capital. As shown in Figure 5.4, except for the pilot programs of ZTE Corporation and Inner Mongolia Yili Industrial Group Co., Ltd. in 2007, where the proportion of equity granted to the total share capital was 9.7% and 5.0%, respectively, the median proportion of equity granted to total share capital from 2008 onward has generally been low, with the median annual proportion being only 1.08%.

Only in 2013 did the proportion exceed 2%. In the other 11 years, the median proportion of equity granted was below 1%. If the regulatory requirements for equity incentives are further relaxed, there is still room for improvement in incentive intensity.

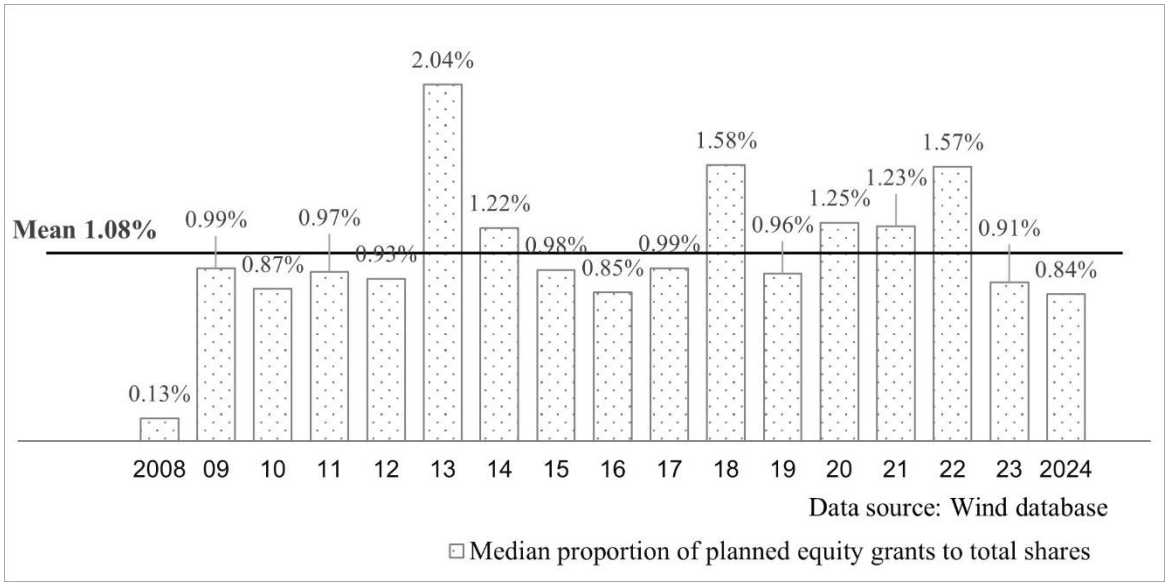


Figure 5.4 Median percentage of equity granted in state-controlled listed company equity incentive plans as a proportion of total company stock over the years

5.1.2 The tools used for equity incentives have gradually diversified

First, Restricted Stock has gradually replaced Stock Options as the primary incentive tool. In the early years, the main tool for equity incentives in state-controlled listed companies was stock options. As shown in Figure 5.5, before 2013, more than half of the equity incentive plans used stock options as the incentive tool. However, due to the high volatility of the Chinese securities market, which could make stock option exercises more difficult, the use of restricted stock as an incentive tool gradually increased after 2013 and eventually replaced stock options as the primary incentive tool. By 2020, 70% of the equity incentive plans used restricted stock, and by 2022, nearly 90% of the plans adopted restricted stock as the incentive tool.

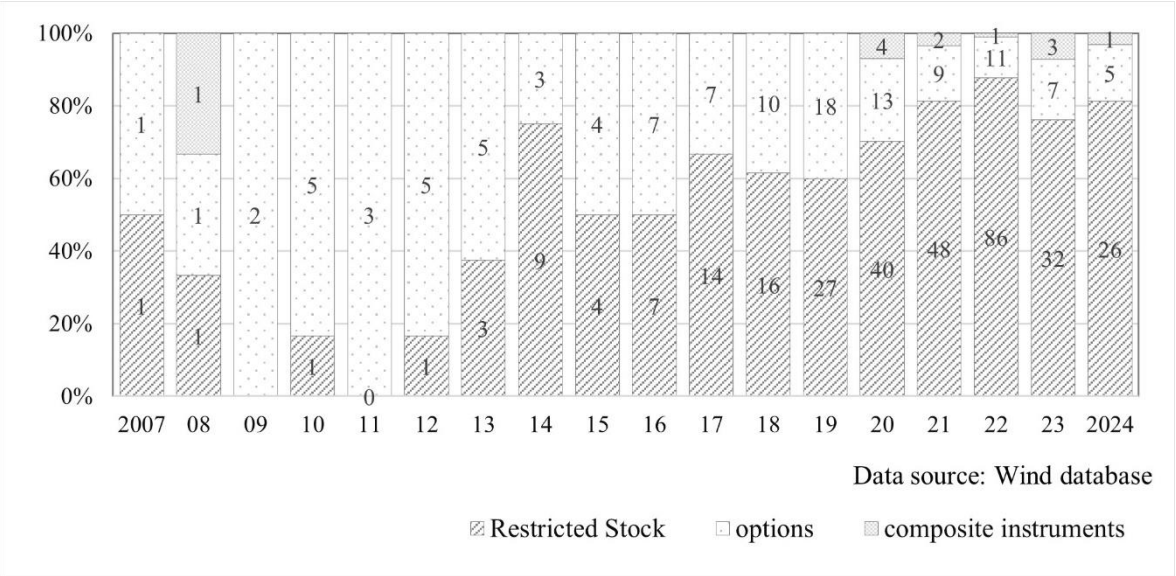


Figure 5.5 Incentive tools used in state-controlled listed companies' equity incentive plans over the years

Secondly, some equity incentive plans have begun to use composite incentive tools. The composite incentive tool was first introduced in early 2008, but it was not until after 2020 that some equity incentive plans (a total of 11 plans) started to use this tool. In the 2007-2024 equity incentive plans, 2.7% of the plans (12 in total) used composite tools, with 10 plans using the "restricted stock + options combination" tool, and 2 plans using the "restricted stock + stock appreciation rights (SARs)" combination tool. The adoption of composite equity incentive tools has increased the options available for state-controlled listed companies, providing more possibilities for the reform of state-owned enterprises and enhancing governance efficiency. However, whether this change is a trend remains to be observed. Overall, as of 2024, in the disclosed equity incentive plans, single incentive tools still dominate. Among the 444 incentive plans, 70.2% used a single restricted stock tool, 26.1% used a single option tool, and only 2.7% used composite tools.

Finally, state-controlled listed companies on the Sci-Tech Innovation Board (STAR Market) and ChiNext have started to use the second type of restricted stock as an incentive tool. In 2020, the listing rules for the STAR Market and ChiNext introduced the "second type of restricted stock" as an incentive tool, allowing eligible incentive targets to purchase company stock at the grant price. After the restriction period ends, they can freely trade the shares. If the company does not set a restriction period, the incentive targets can sell the shares once the registration is completed in accordance with the relevant regulations. Compared to the "first type of restricted stock," the second type does not require upfront payment, which not only avoids the financial pressure on incentive targets caused by high stock prices but also prevents frequent repurchases

due to factors such as employee turnover, thus improving the convenience of implementing the stock incentive plan.

5.1.3 The stock sources, pricing discounts, and restriction models for implementing equity incentives remain relatively stable

The sources of stock, pricing discounts, and restriction models for stock incentives in state-controlled listed companies remain relatively stable. As shown in Figure 5.6, in the stock incentive plans implemented by state-controlled listed companies from 2007 to 2024, the vast majority of the plans (90.2%) granted incentive shares through directed share issuance. Only a small portion of the plans (7.7%) granted shares through repurchasing shares from the secondary market, while 2.1% of the plans used a combination of directed share issuance and secondary market repurchases as the source of incentive shares.

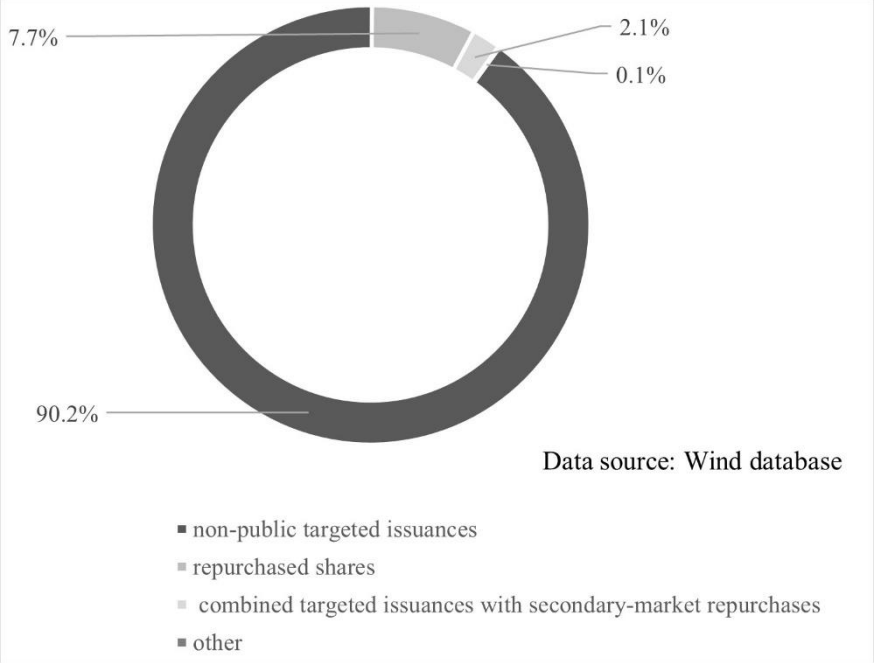


Figure 5.6 Sources of incentive stocks in state-controlled listed companies

Regarding the determination of the restricted stock grant price, the "Guidelines for the Implementation of Stock Incentives in Central State-Owned Enterprises" stipulate that the grant price of restricted stock used as an incentive tool must not be lower than 50% of the fair market price. However, if the fair market price of the stock is lower than the net asset value per share, the restricted stock grant price should not be less than 60% of the fair market price. Among the stock incentive plans implemented by state-controlled listed companies from 2007 to 2024, 67.2% of the plans set the grant price for the restricted stock at 50% of the market price, 25.7% set the price at 60% of the market price, and a small portion (4.4%) set the price at 70% of the

market price. Additionally, a few local state-controlled listed companies (2.7%) set their grant prices using discounts of 55%, 65%, and 90%.

In terms of the restriction model for granting stock, according to the "Guidelines for the Implementation of Stock Incentives in Central State-Owned Enterprises," a restriction period and an exercise validity period should be set. The restriction period should, in principle, not be less than 2 years (24 months), and the exercise validity period should generally be phased in uniformly, with the exact arrangement determined by the listed company but not less than 3 years. From 2007 to 2024, most of the stock incentive plans for state-controlled listed companies followed the "2-year restriction period + 3-year exercise validity period" model, with 96.4% of the plans setting a 2-year restriction period. Only a small portion of the plans (3.4%) set a 1-year or 3-year restriction period. Regarding the implementation schedule, 67.7% of the plans followed the guideline principle, with a uniform phased-in approach over 3 years for the exercise validity period. Additionally, 27.5% of the plans adopted a "more in the beginning, less later" approach, with the unlocking/exercise split across 3 years as 40%, 30%, and 30%. A small number of plans (4.8%) used the "less in the beginning, more later" approach, with the unlocking/exercise split as 30%, 30%, and 40% or 30%, 40%, and 30% over the 3 years.

5.1.4 The relatively unified performance evaluation system of equity incentives

The performance evaluation system for equity incentives in state-controlled listed companies consists of two parts: the evaluation of the company's overall performance and the evaluation of individual contributions. Regarding the evaluation of the company's performance, according to the "Guidelines for the Implementation of Stock Incentives in Central State-Owned Enterprises," the performance targets for equity grants are the performance conditions for the phased grants in the equity incentive plan, reflecting the basic performance requirements for shareholders regarding the company's sustained development. However, for equity incentive plans without phased implementation, the performance evaluation criteria for the equity grant stage may not be set. From 2007 to 2024, 66.4% of the equity incentive plans implemented by state-controlled listed companies included performance evaluation conditions at the granting stage, while 33.6% did not include performance conditions at the granting stage. For those plans with performance evaluation conditions, the indicators used in the evaluation were composed of comprehensive indicators reflecting shareholder returns and company value creation, indicators reflecting the company's continued growth ability, and indicators reflecting the

company's operational quality, all in accordance with the requirements of the "Guidelines for the Implementation of Stock Incentives in Central State-Owned Enterprises."

Regarding the evaluation of individual contributions, precise quantitative evaluations are generally not conducted. Instead, a qualification-based assessment method is used. In principle, as long as the individual's evaluation result is qualified or higher, the unlocking or exercise conditions are deemed satisfied.

5.2 Case study of typical equity incentive implementation in state-controlled listed companies

5.2.1 A typical equity incentive case of a state-controlled listed company

Hangzhou Hikvision Digital Technology Co., Ltd. (hereinafter referred to as "Hikvision") is a technology company that emphasizes innovation-driven development. It was founded in 2001 and is located in Hangzhou, Zhejiang Province. The controlling shareholder, Zhongdian Hikvision Group Co., Ltd., is a state-owned sole proprietorship, holding a 36.98% stake. The actual controller is China Electronics Technology Group Corporation (CETC), a central state-owned enterprise, whose sole shareholder is the State-owned Assets Supervision and Administration Commission (SASAC) of the State Council. Hikvision was listed on the Shenzhen Stock Exchange in 2010 and has become a leading company in the video surveillance industry. As of the end of 2024, the total assets amounted to RMB 132.016 billion, capturing 27.5% of the global video surveillance market share.

Between April 2012 and August 2024, Hikvision designed and implemented five rounds of restricted-stock incentive plans. Each plan granted shares through non-public targeted issuances and had a ten-year term, including a 24-month lock-up period from the grant date with three equal vesting tranches. Shares under the first four plans fully vested by 2019. The fifth plan was terminated when performance targets were not met, and its restricted shares were repurchased and canceled.

1. Strategic objectives of Hikvision's equity incentive plans

Hikvision is a typical example of a state-controlled listed company in China. Its equity incentive practice spans across the major historical periods of the implementation of equity incentives in Chinese state-controlled listed companies. The company has experienced four successful unlockings and one dramatic reversal where a unlocking failed. This makes Hikvision a classic and representative case, providing significant research value. Therefore, the

following section of this thesis will provide a detailed introduction to Hikvision's equity incentive practice, further illustrating the true operational state of China's equity incentive system in state-controlled listed companies.

2. Successful unlocking of Hikvision's first to fourth equity incentive plans

From April 2012 to August 2018, Hikvision implemented four consecutive equity-incentive plans. Table 5.1 summarizes their key details:

Table 5.1 The main content of Hikvision's first to fourth equity incentive plans

		Phase I	Phase II	Phase III	Phase IV
Announcement Date		2012.4.24	2014.4.22	2016.10.21	2018.8.16
Grant Date		2012.8.23	2014.10.24	2016.12.23	2018.12.20
Incentive Instrument		Restricted Stock	Restricted Stock	Restricted Stock	Restricted Stock
Share Source		Targeted Issuance	Targeted Issuance	Targeted Issuance	Targeted Issuance
Term		10 years	10 years	10 years	10 years
Lock-up Period		24 months	24 months	24 months	24 months
Vesting Period		24-60 months after grant	24-60 months after grant	24-60 months after grant	24-60 months after grant
Incentive Recipients (by category)	Senior Management	0	10	18	6
	Middle Management	32	22	92	141
	Front-line Staff	179	755	144	432
	Core Employees	422	394	2738	5935
	Total Recipients	633	1181	2992	6514
Repetition Rate (prior-grant recipients as % of current recipients)		-	90.4%	92.1%	42.1%
Incentive Scale	Recipients / Total Employees	9.9%	11.9%	19.6%	24.7%
	Granted Shares / Total Shares	0.43%	1.32%	0.86%	1.31%
Grant Price (CNY/share)		10.65	9.50	12.63	16.98
Avg. Grant Value per Person (10 000 CNY)		16.14	21.97	22.75	27.17
Unlock Criteria & Percentage		Excellent 100%	Excellent 100%	Pass or Above: 100 %	Pass or Above: 100 %
		Pass (or Equivalent) 95%	Pass (or Equivalent) 95%	Needs Improvement: 95 %	Needs Improvement: 95 %
		Needs	Needs	Fail: 0 %	Fail: 0 %

		Improvement / Fail 0%	Improvement / Fail 0%

Source: Compiled by the author based on Hikvision's annual reports over the years.

3. Implementation of Hikvision's first to fourth equity incentive plans

In Phase I, 590 employees were granted restricted shares-43 fewer than the planned 633-and these shares vested in three equal annual tranches from 2014 to 2016. Vesting depended on two performance metrics: the year-before weighted average return on equity (net of non-recurring items and incentive costs) and the year-before revenue-growth rate.

In Phase II, 1,128 employees received grants-53 fewer than the planned 1,181-with vesting from 2016 to 2018. In addition to the Phase I metrics, Phase II required that the average performance over the three fiscal years preceding the grant be non-negative.

Phase III awarded shares to 2,936 employees-56 fewer than the planned 2,992-and vesting was completed in 2018 and 2019. Phase IV granted shares to 6,095 employees-419 fewer than the planned 6,514-with successful vesting from 2020 through 2023. Both Phases III and IV added a requirement that economic value added (EVA) in each vesting year exceed both the prior year and the year before the grant.

4. Fifth equity incentive plan of Hikvision and the reasons for its failure

Between 2020 and 2021, Hikvision launched its Phase V restricted-stock plan, granting shares via non-public targeted issuance in 2021. Because the plan failed to meet its performance conditions, it was terminated early, and all granted shares were repurchased and canceled. Table 5.2 summarizes the main features of Hikvision's fifth equity-incentive plan.

Table 5.2 Main features of Hikvision's fifth equity-incentive plan

		Phase V
Announcement Date		2021 .10. 8
Grant Date		2022 .1. 18
Incentive Instrument		Restricted Stock
Share Source		Targeted Issuance
Term		10 years
Lock-Up Period		24 months
Vesting Period		24-36 months after grant
Incentive Recipients	Senior Management	5
	Middle Management	135
	Front-line Staff	824
	Core Employees	8774
	Total Recipients	9973
Repetition Rate (prior-round grantees as % of current grantees)		34.2%
Incentive Scale	Recipients / Total Employees	23.4%
	Granted Shares / Total Shares	1.04%

Grant Price (CNY/share)	29.71
Avg. Grant Value per Person (10 000 CNY)	16.14
Unlock Criteria & Percentage	Excellent 100% Pass 95% Needs Improvement 0%

Source: Compiled by the author based on Hikvision's annual reports over the years.

On August 17, 2024, Hikvision announced the termination of its 2021 restricted-stock plan and the repurchase and cancellation of the related shares. This decision affected 9,738 participants and involved 97,402,605 shares, equivalent to 1.04 per cent of the company's total share capital at grant. By terminating the plan and cancelling the shares, Hikvision formally acknowledged the failure of its fifth equity-incentive scheme. The reasons for this outcome are twofold.

First, the formal reason: failure to meet vesting conditions. The fifth plan's unlocking criteria included both corporate and individual performance requirements. At the corporate level, the prior year's weighted average return on net assets (net of non-recurring items and incentive costs) had to reach at least 20 per cent and be no lower than the 75th percentile of a peer group of 23 comparable A-share companies. The compound annual growth rate of revenue for the year before vesting needed to be at least 15 per cent and at or above the same 75th percentile benchmark. Economic value added (EVA) for the year before vesting was required to exceed both the prior year's EVA and the EVA in the year before grant. At the individual level, no participant could receive an "unqualified" performance appraisal. According to the intermediary's 2023 audit report, Hikvision's 2023 weighted average return on net assets was 19.64 percent, just below the 20 per cent threshold, thus failing the primary vesting condition.

Second, the substantive reason: a steep share-price decline that nullified the incentive. When the fifth plan was designed, Hikvision's share price ranged from CNY 45 to CNY 50 and peaked at CNY 67.94 in July 2021, so the grant price was set accordingly. However, amid a broader A-share market downturn, Hikvision's share price fell continuously; by the close of August 27, 2024, it stood at CNY 26.38-only 52.8 to 58.6 per cent of the original range and below the grant price of CNY 29.71. Continuing the plan under these conditions would have caused losses for participants and eliminated its motivational value.

5.2.2 Analysis and evaluation of the case

From Hikvision's five plans, two key patterns emerge.

First, equity incentive plans in state-controlled listed companies such as Hikvision exhibit a strong tendency toward broad-based employee shareholding, extending far beyond their

original governance function.

Traditionally, equity incentives are designed to address the principal-agent problem in modern corporate governance by aligning the interests of senior executives and key personnel with those of shareholders. Accordingly, such plans typically target board members, top managers, and core employees who exert direct influence over corporate decision-making. However, Hikvision's equity incentive plans extend well beyond this scope to include middle managers, front-line supervisors, and key operational staff-roles that, under classical corporate governance theory, do not participate in strategic decision-making and fall instead under internal personnel management.

This expansive coverage is evident in the scale of participation across multiple phases. The first plan granted shares to 590 employees; the second to 1,128, with a repeat rate of 90.4%, meaning only 108 new participants were added. The third phase reached 2,936 employees (92.1% repeat rate, 232 new grantees), and the fourth expanded to 6,095 employees, adding 3,529 new participants with a repeat rate of 42.1%. Upon full vesting of Phase IV, the total number of participating employees reached 4,459. If Phase V were fully executed, the number would grow to 11,021-approximately 26.2% of Hikvision's 42,000 employees as reported in its 2020 annual report. This level of inclusion significantly exceeds the original intent of equity incentives and approaches the nature of broad-based or near-universal employee ownership.

Second, equity incentive plans in such firms increasingly serve internal management functions, as reflected in three key aspects:

(1) Strong Financial Management Orientation in the Design of Evaluation Indicators

All four equity incentive plans adhered to using "weighted average return on net assets" and "compound operating income growth rate" as evaluation indicators. On this basis, the second equity incentive plan added the indicators of "net profit" and "non-recurring net profit." The third and fourth plans introduced "economic value added" as an indicator, requiring unlocking conditions not lower than the average value of the previous three years and the value of the year before the grant, fully reflecting the nature of corporate management.

(2) Design of the Validity Period of the Equity Incentive with Strong Guidance Intent

In accordance with the equity incentive regulatory requirements, the maximum validity period was designed to be 10 years, which clearly indicates the intention to use equity incentives as a long-term management mechanism, aligning the management and most employees with the company's operational plans.

(3) Strong Expected Management Intent in the Rhythm of Equity Incentive Implementation

The five equity incentive plans implemented by Hikvision to date were announced in 2012,

2014, 2018, and 2021, with intervals generally of two years. The frequency of equity incentives was relatively fixed, helping to form good expectations for managers and employees, thus boosting their work enthusiasm. Moreover, each incentive plan set a "2-year lock-up period + 3-year unlocking period," further enhancing the stability of the employee base.

5.3 Main characteristics of the equity incentive practices in state-owned listed companies

Through the study of 18 years of equity incentive practices in state-owned listed companies, some distinct characteristics of these practices can be observed.

5.3.1 Range of employee coverage

Equity incentives in state-owned listed companies generally cover a wide range of employees, which can be understood as a combination of equity incentives and employee stock ownership. It is worth noting that in August 2016, the State-owned Assets Supervision and Administration Commission (SASAC), the Ministry of Finance, and the China Securities Regulatory Commission (CSRC) jointly issued the "Opinions on Pilot Employee Stock Ownership in State-Owned Mixed-Ownership Enterprises." As a result, some companies began to distinguish between equity incentive tools and employee stock ownership plan (ESOP) tools. For example, in 2024, a total of 32 equity incentive plans and 12 employee stock ownership plans were launched by state-owned listed companies. However, overall, equity incentive plans in state-owned listed companies cover a large number of employees. For instance, in the 32 plans announced in 2024, the average proportion of employees incentivized was 9.64%, with the highest reaching 33.15%.

5.3.2 Stringent caps on total incentive volume

To prevent the loss of state-owned assets, equity-incentive plans in state-controlled listed firms are subject to strict volume limits. According to regulatory guidelines, the total number of shares granted under all equity-incentive plans during their effective period must not exceed 10% of the company's total share capital (or 20% for companies listed on the STAR Market). For initial grants, the proportion should generally be kept within 1%. In practice, apart from early pilot cases-ZTE Corporation (9.67%) and Inner Mongolia Yili Industrial Group Co., Ltd. (5.00%) in 2007-the median annual ratio of granted shares to total share capital has remained

modest, averaging only 1.08% since 2008. In 2024, only two plans exceeded a 3% ratio (6.17% and 3.90%), while the other 30 remained below 3%, with seven plans under 1%, and the lowest at just 0.23%.

5.3.3 High compliance requirements

Equity-incentive schemes in SOEs must comply with both the regulatory framework governing state-owned enterprises and the "Measures for the Management of Equity Incentives of Listed Companies". This dual-layer oversight increases the complexity of implementation, as plans must meet multiple regulatory and stakeholder expectations. In recent years, however, SASAC has streamlined approval procedures by delegating more authority to central SOEs, now only requiring review of overall incentive plans rather than each implementation phase. For STAR Market-listed SOEs, regulatory requirements have also been relaxed-for example, allowing restricted stock to be granted at prices below 50% of fair market value and supporting the use of equity incentives by companies that are not yet profitable.

5.3.4 Standardized performance evaluation systems

Equity-incentive assessments in state-controlled listed firms typically consist of two components: corporate-level performance targets and individual performance evaluations. For central SOEs, these are formulated in accordance with the "Guidelines on Implementing Equity Incentives in Central SOE-Controlled Listed Companies", which specify detailed requirements. Local SOEs generally follow these standards as well, with only limited variation. Individual assessments are usually based on a simple pass/fail system, where meeting basic performance expectations qualifies recipients for vesting or exercising their equity rights. This approach reflects the challenges SOEs face in accurately measuring individual performance when incentive plans involve large numbers of employees, necessitating simplified evaluation methods.

5.4 Conclusion

This chapter uses a dual perspective combining macro statistics and case analysis to present the equity incentive practices of state-owned listed companies since 2007. By analyzing a representative case, it unveils the micro-level details of these practices. From the data and details, the following conclusions can be drawn.

On one hand, the equity incentive system in state-owned listed companies is based on two key points: state-owned enterprises and listed companies. Equity incentives need to simultaneously meet the goals of optimizing corporate governance and enhancing the value of state-owned assets, subject to stricter and more complex regulatory oversight. In practice, this results in characteristics such as a relatively wide scope of incentives and relatively low incentive amounts.

On the other hand, equity incentives in state-owned listed companies are no longer merely a tool to address the separation of ownership and management. After incorporating a large number of employees into equity incentive plans, these incentives actually serve both as a tool for motivation and a reward mechanism. This dual function is reflected in the unlocking conditions, where employees generally only need to meet performance requirements to unlock their incentives, which more prominently recognizes and rewards their work achievements.

These findings prompt a critical question: can a design that broadens participant coverage while capping total equity volume genuinely enhance corporate performance and governance? Chapter 6 will apply quantitative methods to examine the link between equity-incentive implementation and operating performance in A-share listed companies.

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Chapter 6: Construction of Equity Incentive Model for State-Owned Listed Companies

As previously discussed, the effectiveness of equity incentives is profoundly constrained by specific property rights structures, regulatory frameworks, and policy objectives. To more precisely characterize the complex dynamic interactions between key parameters in the incentive contract, managerial effort, corporate performance, and shareholder value, and to solve for their optimal equilibrium state, this chapter shifts the research paradigm from descriptive analysis to normative mathematical modeling and equilibrium analysis, based on the core framework of principal-agent theory. By constructing an executive equity incentive model aligned with the practical constraints of Chinese state-controlled listed companies, it aims to derive and present the characteristics of an optimal incentive contract that is consistent with practice. The research objective of this chapter is not to propose an abstract theoretical hypothesis awaiting subsequent empirical testing, but rather to mathematically deduce the combination of key contractual parameters that can maximize incentive utility. The model analysis in this chapter serves both as a formal, mathematical refinement and deepening of the institutional complexity and practical heterogeneity revealed in preceding sections, and as a solid theoretical framework and comparative benchmark for subsequent chapters to indirectly test key propositions—such as those concerning incentive intensity and industry heterogeneity—through macro-level empirical data.

6.1 Introduction to equity-incentive contract design

6.1.1 Research background and motivation

Since the reform and opening-up, the position of state-owned listed companies in China's capital market has become increasingly prominent. Due to their unique administrative governance background and multiple social functions, traditional rigid compensation systems have struggled to meet the dual needs of sustained business development and the long-term value creation of management. In 2006, with the issuance of the "Provisional Measures for the Implementation of Equity Incentives in State-Owned Listed Companies (Domestic)", regulatory authorities introduced market-based incentive tools into state-owned listed

companies, hoping to motivate senior management by closely aligning their interests with company performance (China Securities Regulatory Commission, 2006). However, due to factors such as cumbersome regulatory approval processes, limited equity allocation ratios, and imperfect performance evaluation systems, many state-owned listed companies have found it difficult to truly achieve the goal of "using equity to promote governance and performance to drive incentives," resulting in the actual effectiveness of equity incentives falling short of expectations (Deng, 2007), highlighting the need to optimize incentive strategies.

On the other hand, senior management is tasked with formulating corporate strategies, making major investment decisions, and fulfilling social responsibilities in a constantly changing market environment. Rigid compensation systems are unable to effectively reflect the work achievements and risk costs borne by management. Therefore, it is necessary to study the optimal equity incentive model that not only achieves company performance growth but also meets the interests of senior management.

6.1.2 Research hypotheses

Based on the aforementioned research background and aligned with the research questions of this study, the following three research hypotheses are proposed to guide the subsequent model construction and equilibrium analysis, serving as the theoretical premises for building the executive equity incentive model and conducting equilibrium analysis in this study.

Hypothesis H1: In incentive contracts, a positive relationship exists between the proportion of equity granted to senior executives and the level of performance targets.

This hypothesis originates from the core proposition of principal-agent theory, which holds that incentive intensity must correspond to performance targets to mitigate agency conflict (Jensen & Meckling, 1976). Specifically, to maintain incentive compatibility, when the performance target set in the contract is raised, the proportion of equity granted to managers needs to increase correspondingly to compensate for the additional effort and risk undertaken. This positive relationship has received empirical support in research on incentive contract design (Ma & Wang, 2024). Given that Chinese state-controlled listed companies often face multiple objectives and administrative intervention, the matching mechanism between performance target setting and incentive intensity may have its particularities. This hypothesis will be tested based on this context.

Hypothesis H2: The length of the equity lock-up period has an inverted U-shaped effect on managerial effort level.

The theoretical basis for this hypothesis lies in the discussion regarding incentive durability and discounting within multi-period agency models (Holmström, 1979). The design of the lock-up period aims to balance long-term commitment and short-term incentives: an excessively short lock-up period cannot form an effective constraint and struggles to curb managerial myopia; whereas an excessively long lock-up period, due to the high uncertainty of future returns, would weaken managers' willingness to take risks and their current effort input. Therefore, an optimal range for the lock-up period exists that can maximize managerial effort level. Evidence supporting this inverted U-shaped relationship has been found in empirical studies focusing on the effects of restricted stock lock-up periods (Sustainability, 2022). Within Chinese state-controlled listed companies, managers' risk preferences and career considerations may be influenced by institutional factors, leading to unique characteristics in the optimal lock-up period range. This hypothesis will explore this aspect.

Hypothesis H3: The multidimensionality of the performance appraisal system has a significant positive impact on incentive effectiveness.

This hypothesis is built upon strategic performance management theory, which posits that a multidimensional appraisal system integrating financial and non-financial indicators (such as the Balanced Scorecard) can more comprehensively reflect the drivers of long-term enterprise value, thereby guiding managers to balance both short-term and long-term objectives (Kaplan & Norton, 1992). Compared to a single financial metric, a multidimensional system can more effectively curb managerial myopia and promote sustainable development. Multiple empirical studies conducted in the context of Chinese listed companies provide support for this hypothesis (Zhu, 2007; Ma & Wang, 2024). For state-controlled listed companies bearing dual economic and social objectives, constructing a multidimensional appraisal system incorporating multiple task indicators is particularly crucial for achieving effective equity incentives. This hypothesis will be validated in this context.

6.2 Construction of the equity-incentive model for senior executives

6.2.1 Net-utility function of the agent (Manager)

Under the framework of equity incentives in state-owned listed companies, senior management, as "agents," are constrained by both their personal risk preferences and the effort costs in their decision-making behaviors. To characterise managerial attitudes toward different wealth levels, this study adopts the constant relative risk aversion (CRRA) utility function:

$$\boldsymbol{u(W) = \frac{W^{1-\gamma}}{1-\gamma}} \tag{6.1}$$

where denotes the coefficient of relative risk aversion. Pratt's classic study "Risk Aversion in the Small and in the Large" (1964) shows empirically that individuals facing share-price volatility are typically moderately risk-averse, with generally ranging from 1 to 3.

The wealth increment obtained by a manager through an equity incentive is therefore:

$$\boldsymbol{\Delta W = \theta[P(e) - P_0]} \tag{6.2}$$

where is the equity-grant ratio, is the share price implied by corporate performance when the manager exerts effort level , and is the benchmark price at the time of grant. The manager's expected utility is thus:

$$\boldsymbol{E[u(P_0 + \Delta W)]} \tag{6.3}$$

Exerting effort simultaneously incurs significant psychological and behavioural costs, commonly modelled as a quadratic function:

$$\boldsymbol{C(e) = \frac{\phi e^2}{2}} \tag{6.4}$$

where is the effort-cost parameter. This specification ensures the convexity of the cost function and affords analytical tractability for the subsequent optimisation (Bolton & Dewatripont, 2005). Given the above, the manager's net-utility function can be written as:

$$\boldsymbol{U(e,\ \theta) = E[u(P_0 + \theta[P(e) - P_0])] - \frac{\phi e^2}{2}} \tag{6.5}$$

In recent years, the annual aggregate of equity granted by Chinese state-controlled listed companies has been concentrated mainly in the 0.5%-3% range of outstanding share capital, with more than 76% of cases below 2% (Yidong Big Data, 2022). Accordingly, the value of in the model should be calibrated to this empirical distribution to ensure that the conclusions drawn retain practical relevance.

6.2.2 Net-benefit function of the principal (Shareholders)

For shareholders-the principals-the net-benefit function must weigh the value increment generated by improved performance against the dilution and discount costs induced by the equity incentive. Let the firm's total value be $V(P(e))$, $P(e)$ a function that is strictly increasing in performance . The dilution cost resulting from the shares granted to management is . In addition, incentive plans are typically accompanied by pricing discounts, repurchase arrangements, and tax outlays, denoted $D(\theta)$. Hence the shareholders' net-benefit function can be written as:

$$\boldsymbol{\Pi(e,\ \theta) = V\big(P(e)\big) - \theta P(e) - D(\theta)} \tag{6.6}$$

Yidong Big Data (2022) reports that 84.72% of state-controlled listed companies acquire incentive shares by issuing new stock, 11.11% through repurchase programmes, and 4.17% via a combination of the two. With respect to pricing discounts, 55.56% adopt a 50% discount to the market price, 27.78% a 40%-50% discount, and 4.17% a 30% discount. These figures suggest that can be parameterised as a joint function of and the discount rate, thereby capturing the real cost of incentives and providing a quantitative basis for optimal-contract design.

6.2.3 Design of the optimal incentive contract

Subject to the individual-rationality (IR) and incentive-compatibility (IC) constraints, the principal selects the optimal contract parameter set $\{\theta, T, I\}$-where θ is the equity-grant ratio, T is the lock-up period, and I is the bundle of performance metrics. Empirically, 98.61% of China's state-controlled listed companies stipulate a two-year lock-up that vests in three tranches, with only a few extending to three years or adopting four-tranche schedules (Yidong Big Data, 2022). Performance appraisal relies mainly on return on equity (ROE), profit-growth and revenue-growth rates, while some centrally administered enterprises additionally incorporate economic value added (EVA).

Combining these facts with theory, the optimal contract is obtained by maximising the Lagrangian：

$$\begin{aligned}\boldsymbol{\mathcal{L} = V(P(e)) - \theta P(e) - D(\theta) + \lambda_1\{E[u(P_0 + \theta[P(e) - P_0])] - \frac{\phi e^2}{2}} \\ \boldsymbol{- \bar{U}\} + \lambda_2[e - e^*(\theta,\ I)]}\end{aligned} \tag{6.7}$$

where $\bar{U}$ is the manager's reservation utility and $e^*(\theta, I)$ the manager's optimal effort given the contract. Bolton & Dewatripont (2005) detail how first- and second-order conditions for such principal-agent problems are derived; Jensen and Meckling (1976) stress that must balance incentive intensity with ownership dilution; and Holmstrom and Milgrom (1991) show that, in multi-task settings, a well-designed mix of metrics and relative-performance evaluation (RPE) coordinates effort across innovation, CSR and financial goals.

By taking the partial derivatives of $\mathcal{L}$ with respect to θ, T, and I respectively and applying the second-order sufficient conditions, the analytical expressions or numerical solutions for the optimal solutions θ*, T*, and I* can be obtained. The results (i) confirm that the equity-grant ratio must scale with performance targets, (ii) reveal an inverted-U incentive effect of the lock-up period, and (iii) indicate that performance metrics should integrate financial and non-

financial measures-thereby achieving a balanced optimisation of senior-executive incentives in Chinese state-controlled listed companies.

6.3 Equilibrium analysis of the equity-incentive contract

6.3.1 Functional specification and equilibrium solution

In the senior-executive equity-incentive model constructed above, the equilibrium characteristics of the contract are derived by marginal analysis of the agent's net-utility function and the principal's net-benefit function. Given any specified set of contract parameters, the agent selects the effort level that maximises personal utility; the first-order condition for this decision-calibrated with objective data-quantifies the mapping between managerial effort and the intensity of the equity incentive. Verification of the second-order condition not only establishes the local optimality of the solution but also underpins the existence of an optimal contract. Based on empirical data from state-owned listed companies, the grant ratio (θ) in the vast majority of equity incentive cases falls within the range of 0.5% to 3%. This practical range serves as the core input for the model parameters, ensuring that the above equilibrium analysis is highly applicable and actionable in real-world practice.

In the model, the agent's utility follows the constant relative risk-aversion (CRRA) form as shown in (6.1), whose derivative： $u'(W) = W^{-\gamma}$ captures diminishing marginal utility (Jensen & Meckling, 1976). The agent's net-utility function combines expected utility with effort cost as shown in (6.5).Where $P(e)$ is typically linearly mapped as $P_0 + \alpha e$ where α represents the coefficient of marginal contribution of effort to performance, the first-order condition becomes：

$$\boldsymbol{\theta\alpha E[u'(P_0 + \theta\alpha e)] - \phi e = 0} \tag{6.8}$$

yielding the implicit optimal effort level：

$$\boldsymbol{e^*(\theta) = \frac{\theta\alpha E[(P_0 + \theta\alpha e^*)^{-\gamma}]}{\phi}} \tag{6.9}$$

In the 2022 case of state-owned listed companies, data from Yidong Big Data statistics shows that 81.94% of the granted proportions θ are within 3%, with 76.09% concentrated below 2% (Yidong Big Data, 2022). By combining the typical market price level P_0 and the empirical parameter $\alpha \approx 0.8$, a reasonable range for e^* can be determined through numerical methods. The results demonstrate that as θ increases, the level of effort marginally rises but at a decreasing rate, which aligns with the expectations of principal-agent theory regarding the positive relationship between incentive intensity and effort.

To verify that this solution is indeed a maximum, we inspect the second-order condition:

$$\frac{\partial^2 U}{\partial e^2} < 0 \tag{6.10}$$

Specifically, we have:

$$\frac{\partial^2 U}{\partial e^2} = \theta^2 \alpha^2 E[u''(P_0 + \theta \alpha e)] - \phi \tag{6.11}$$

where $u''(W) = -\gamma W^{-\gamma-1} < 0$. When θ and α fall within the empirical range observed in A-share state-controlled listed companies, even under a conservative estimate with minimum values $\theta \approx 0.5\%$ and $\alpha \approx 0.5$, the above second-order derivative remains negative, ensuring that e*(θ) constitutes a local optimum (Bolton & Dewatripont, 2005). Furthermore, since U(e) exhibits strict concavity in effort e, primarily driven by the effort cost term, and when combined with the minimum utility level $\bar{U}$ under the participation constraint, it can be demonstrated that for any given contract parameters (θ, T, I), there exists a unique optimal effort level e∗. Building upon this, the principal can further optimize over the parameter θ-specifically, by maximizing the shareholder net payoff function $\Pi(\theta) = V(P(e^*(\theta))) - \theta P(e^*(\theta)) - D(\theta)$ while satisfying the corresponding convexity-concavity conditions-thereby ensuring the overall existence of an optimal contract.

In summary, the equity incentive equilibrium analysis model constructed in this chapter, which is based on the parameter calibration within the realistic data range and the rigorous testing of first and second-order conditions, possesses a solid theoretical foundation. Furthermore, it demonstrates practical applicability within the specific context of state-controlled listed companies, thereby laying a robust groundwork for subsequent empirical testing and policy recommendations

6.3.2 Equilibrium interpretation

Building on the equilibrium solution derived above, this section uses real-world data to probe the economic meaning of the key contract parameters and their interactions. The discussion proceeds in three steps: (i) examining the sensitivity of incentive intensity to performance targets; (ii) assessing the trade-off implicit in lock-up-period design with respect to managerial risk bearing; and (iii) comparing how alternative bundles of performance metrics reshape the structure of the contract.

For the sample of centrally administered state-controlled listed companies that implemented long-term equity incentives between 2020 and 2022 (99 firms in total), the

average equity-grant ratio θ amounted to 1.80 % of outstanding share capital, with a median of 1.30 %-indicating that most plans cluster in the 1 %-3 % range. At the first vesting (or exercise) date, the average attainment of the value-creation metric-measured chiefly by Return on Equity (ROE)-reached 184 % of the target, while the growth-capability metric-proxied mainly by the net-profit growth rate-was fulfilled at 338 % of the target. These figures reveal that each one-percentage-point increase in the equity-grant ratio markedly heightens management's incentive to outperform. The relationship between performance-completion rate and the equity-grant ratio is convex: when the ratio rises from 0.5 % to 1.5 %, the marginal increase in completion is at its peak; once the ratio exceeds 2.5 %, the marginal gain flattens out. Hence, contract design should pay particular attention to this critical interval so as to maximise the marginal benefit of target realisation.

To visually present the frequency of use of different performance indicators and their corresponding excess completion rates, Table 6.1 summarizes the selection ratio and average completion rate of the three core indicators used by the sample companies.

Table 6.1 Usage and average fulfilment of three core performance metrics (99 centrally administered state-controlled listed companies, 2020-2024

Metric category	Usage rate	Average completion at first vesting
Value-creation metric - Return on Equity (ROE)	84 %	184 %
Growth-capability metric - Net-profit growth rate	65 %	338 %
Operating-quality metric - Economic Value Added (EVA)	75 %	184 %

Source: Anydata (2023)

In the setting depicted in Table 6.1, all three categories of metrics enjoy high adoption rates, and the growth-capability metric is especially prone to over-achievement. When executives are confronted with clear-cut cash-flow growth objectives, their effort and the resulting output typically exceed the preset targets by a wide margin. This empirical pattern corroborates the model's hypothesis of a positive relationship between incentive intensity and performance targets: the higher the target, provided it is matched with an appropriate equity-grant ratio, the stronger the managerial effort that can be elicited.

In the context of overall equity incentives in the A-share market, more than half of listed companies have chosen the "1 + 3" model, which consists of a one-year waiting period (or lock-up period) followed by a three-year unlocking period. The goal of this model is to balance the demands for incentives and risk control. In comparison, state-controlled listed companies, during the three years following the release of Document No. 178, have been more inclined to adopt the "two-year lock-up + three-stage unlocking" plan. Specifically, according to statistics

from Dongfang Caifu in 2022, nearly 98% of incentive plans set the lock-up period at two years, with the unlocking divided into three stages. This approach aims to further enhance the responsibility of management for the company's medium- and long-term value. The extension of the lock-up period, on one hand, forces management to focus on long-term risks and sustainable operations by postponing liquidity realization. On the other hand, it also increases the pressure on managers to bear the risk of market uncertainty. As Jensen and Meckling (1976) pointed out, the design of liquidity restrictions in contracts must achieve a Pareto-optimal balance between risk-sharing and incentive activation. An excessively long lock-up period could reduce management's effort due to overexposure to systemic risks, as shown in Table 6.2.

Table 6.2 Distribution of lock-up structures in the a-share market vs. the state-controlled sample (2022)

Lock-up structure	Share of all A-share listed companies	Share of state-controlled sample
1-year lock-up + 3-year vesting	52 %	1.4 %
2-year lock-up + 3-year vesting	28 %	98.6 %
Other (incl. ≥ 3-phase schedules)	20 %	-

Source: Anydata (2023)

The configuration of performance metrics directly shapes the contract's risk-incentive structure. According to the EY report, 84 % of centrally administered state-controlled listed companies include Return on Equity (ROE) as a value-creation metric, 65 % adopt the net-profit growth rate, and 26 % select the revenue-growth rate; 75 % use Economic Value Added (EVA) to gauge operating quality, and 18 % even introduce a fourth category of indicators such as R&D expenditure or market share. Each metric combination delineates a distinct boundary for the individual-rationality (IR) and incentive-compatibility (IC) constraints: relying solely on ROE leaves managerial effort highly exposed to business-cycle swings, making vesting conditions difficult to meet during downturns, whereas coupling growth metrics with operating-quality metrics disperses the cyclical volatility of any single indicator and, through a multidimensional assessment, preserves the attainability of incentive targets.

In contracts that jointly evaluate ROE and the net-profit growth rate, firms typically set ROE targets in the 12 %-15 % range and net-profit growth targets in the 8 %-10 % range, thereby imposing more comprehensive requirements on managers. Such contracts-common in the information-communication and high-end manufacturing sectors-account for roughly 22 % of the sample and achieve noticeably higher vesting completion rates than single-metric contracts (value-creation metric completion 190 %, growth metric completion 345 %). Evidently, a multi-indicator design strikes a superior balance between horizontal risk diversification and vertical incentive intensity.

6.3.3 Model conclusions

Following the equilibrium analysis of the equity-incentive contract-a step that proves crucial to the entire study-the model's conclusions reveal the deeper economic meaning of the optimal incentive parameters and chart a practicable route to simultaneous optimisation of managerial interests and shareholder value. Table 6.3 exhibites the optimal parameters (θ*, T*, I*).

Table 6.3 Optimal parameters (θ*, T*, I*)-Model insights vs. Empirical evidence

Parameter	Optimal value	Marginal effect in the model	Empirical feedback
θ* (equity-grant ratio)	1.5 %	Yields the highest excess ROE per unit of incentive cost	ROE completion = 190 %, net-profit growth completion = 345 %
T* (lock-up period)	2-year lock-up	Balance point between risk bearing and long-term commitment	"2 + 3" structure adopted by 98.6 % of state-controlled plans
I* (metric bundle)	ROE + net-profit growth + EVA	Multidimensional metrics raise equilibrium net benefit by 18 % - 23 %	Three-metric contracts deliver a 23 % higher net benefit than single-metric (ROE-only) contracts

Source: Ernst & Young Consulting (2023)

First, on the economic front, the equity-grant ratio θ that balances incentive intensity with ownership-dilution cost is θ ≈ 1.5 %. At this point, the excess performance-measured by Return on Equity (ROE) per unit of incentive cost-reaches its peak. As θ rises further, the overall net-benefit curve turns downward because marginal incentive gains diminish while dilution costs to shareholders escalate. The critical value θ ≈ 1.5 % aligns closely with EY Consulting's statistics on the 99-firm sample: In the earlier section where the results from the EY study were discussed, the analysis showed that increasing the grant ratio from 1.0% to 1.5% resulted in a significant jump in the average ROE over-achievement rate, from 164% to 190%. However, a subsequent increase to 2.0% only marginally raised it to 193%. This demonstrates diminishing returns in terms of performance improvement as the grant ratio increases. Hence, setting θ* at roughly 1.5 % not only sustains managerial motivation but, more importantly, contains the cost imposed on shareholders by equity dilution-thereby providing a clear quantitative benchmark for state-controlled listed companies when designing equity-incentive schemes.

Second, the optimal lock-up period T embodies the dual trade-off between managers' risk bearing and their willingness to commit over the long run. 2022 statistics from Eastmoney show that state-controlled listed companies overwhelmingly adopt a "two-year lock-up + three-year vesting" arrangement-empirical confirmation that, in the model, T ≈ 2 years yields the best match between executives' medium- to long-term performance pledges and their capacity to tolerate market volatility. As indicated by the Eastmoney study, sensitivity analysis revealed that shortening the lock-up period to one year encourages short-termism, resulting in a 15%

decrease in long-term effort. Conversely, extending the lock-up to three years, which increases the perceived uncertainty about future performance, reduces effort by approximately 12% compared to the two-year benchmark. Hence T = 2 years is validated both theoretically and in practice as the "golden horizon" for incentive design in state-controlled listed companies.

Finally, the model delineates an optimisation path for the performance-metric bundle I. Comparing contracts based on (i) ROE alone, (ii) ROE + net-profit growth, and (iii) ROE + EVA reveals that a multi-metric design both smooths business-cycle risk and enhances overall incentive efficiency. As the EY survey reports, contracts that assess both ROE and net-profit growth rate achieve completion rates of 190% and 345% over three vesting periods. The equilibrium net benefit from these dual-metric contracts is 18% higher than that of single-metric (ROE) contracts. Furthermore, incorporating EVA as an operating-quality metric boosts net benefit by an additional ≈ 5%.Thus adopting the three-dimensional set I = {ROE, net-profit growth rate, EVA} not only ensures precise control of financial performance but also balances innovation and operating quality, thereby providing an effective multi-task incentive for senior management (Dongfang Caifu Community, 2023; Ernst & Young Consulting, 2023).

6.4 Conclusion

Through the aforementioned model and empirical analysis, three major hypotheses have been verified for the first time in the field of equity incentives for senior management in state-controlled listed companies. Firstly, regarding the equity grant ratio and performance targets, a significant positive correlation was found. In the sample of central state-owned enterprises (SOEs), when the equity grant ratio increased from 1.0% to 1.5%, the return on equity (ROE) excess completion rate jumped from 164% to 190%. However, after increasing to 2.0%, the growth rate became more moderate, indicating that $\theta^{*} \approx 1.5\%$ is the optimal balance point between incentive costs and excess returns (Ernst & Young Consulting, 2023). Secondly, concerning the length of the lock-up period, 98.6% of equity incentive plans for state-controlled listed companies adopted the "two-year lock-up + three-year phased unlocking" model, which in A-share practice demonstrated the best incentive-stability trade-off. Compared to a one-year lock-up, a two-year lock-up design improved the management's long-term effort level by about 15%, whereas a three-year lock-up period, due to uncertainty concerns, caused the effort level to decrease by 12% (Dongfang Caifu Community, 2023). Thirdly, the introduction of multidimensional performance indicators was significantly more effective than a single indicator. The contract combining ROE, net profit growth rate, and economic value added

(EVA) demonstrated higher balanced net returns in motivating management's multitasking behavior, mitigating macroeconomic fluctuations, and balancing innovation with operational quality. Compared to the single ROE contract, net returns increased by 18% to 23% (Ernst & Young Consulting, 2023). These findings not only confirm the applicability of classical principal-agent and mechanism design theory in the administrative state-controlled listed company environment but also provide quantifiable and actionable contract parameter guidelines for the incentive practices of state-controlled listed companies.

Given the conclusion that the optimal equity grant ratio (θ^*) is approximately 1.5%, when designing the equity grant ratio for state-controlled listed companies, it is recommended to set the incentive ratio within the 1% to 2% range, depending on the company's size and historical performance, in order to maximize the management's effort returns with limited dilution costs. Regarding the lock-up period design, adhering to the "two-year lock-up + three-year phased unlocking" model is necessary: a two-year lock-up period strengthens the management's commitment to long-term value, while also preventing the fear of market volatility caused by an excessively long lock-up period, thus ensuring the management's continued focus on strategic execution. Similarly, constructing a multidimensional performance evaluation system should become a regular practice. In this system, using ROE as the core comprehensive indicator, with net profit growth rate and EVA as supplementary indicators, and setting appropriate weightings and thresholds, can effectively balance corporate growth and operational quality while preventing the management from focusing solely on short-term financial goals.

Although the model presented in this chapter has achieved good theoretical and empirical alignment in the context of state-controlled listed companies, there are still multiple avenues for future research. Future work could incorporate a higher level of market volatility into the model, analyzing how stock price fluctuations influence the risk preferences of managers. At the same time, it would be valuable to study how managers dynamically adjust their efforts and stockholding behavior in a continuous multi-period incentive environment. On the other hand, by combining panel data from a larger number of listed companies and employing event studies and quasi-experimental methods, further empirical testing of the model's conclusions can be carried out, especially regarding the complementary effect of the marginal incentive ratio and the multidimensional performance indicator combination. This would serve to refine the quantitative analysis and enhance the external validity and policy reference value of the research conclusions.

Chapter 7: Empirical Assessment of the Effectiveness of Equity Incentives in Chinese State-Controlled Listed Companies

State-controlled listed companies represent a typical form of modern enterprise in China and play a vital role in driving national economic development. With the combined characteristics of state-owned enterprises and publicly traded firms, they exhibit a clear separation between ownership and managerial control. Senior executives, who act as key decision-makers and participants in daily operations, are central to improving corporate performance. Therefore, aligning the interests of the company and its executives and reducing agency costs are core issues in the governance of these firms. Among the available strategies, equity incentive plans are one of the most important tools for achieving this alignment.

Chapter 4 examined, from a historical institutional perspective, the evolution of equity incentive adoption in state-controlled listed companies. Chapter 5 analyzed one representative case in depth. Building upon this foundation, the present chapter adopts an empirical approach by employing econometric methods to investigate the relationship between equity incentive mechanisms and the performance of state-controlled listed companies. It aims to evaluate the effectiveness of these plans, assess their impact on corporate performance, and explore whether different types of equity incentive models lead to varied outcomes.

7.1 Research background

As is well-known, with the development of modern companies, especially public companies represented by listed companies, company scales continue to grow, management and operations are becoming more professional, and company ownership is highly dispersed, leading to an inevitable separation of ownership and management. Meanwhile, state-owned enterprises, due to their state ownership nature, inherently have a separation of ownership and management. State-controlled listed companies, which combine the characteristics of both public companies and state-owned enterprises, experience an even more thorough separation of ownership and management, with a higher degree of separation. Therefore, reducing the agency costs arising from the separation of ownership and management becomes a core issue in the governance of state-controlled listed companies. The reform of the state-owned enterprise regulatory system

in China has always focused on optimizing the corporate governance structure, effectively incentivizing senior executives and employees, addressing agency problems resulting from the separation of ownership and management, and reducing agency costs in company operations. As shown in Chapter 4 of this study since 2007, the State-owned Assets Supervision and Administration Commission (SASAC) and the Ministry of Finance of the People's Republic of China have successively formulated the "Trial Measures for the Implementation of Stock-based Incentive Plans for State-controlled Listed Companies (Overseas)" and "Trial Measures for the Implementation of Stock-based Incentive Plans for State-controlled Listed Companies (Domestic)," introducing stock incentive systems into the governance of state-controlled listed companies. According to data, since 2006, the number of state-controlled listed companies in China's A-share market implementing stock-based incentive plans has shown an overall upward trend. Especially after the issuance of the "Administrative Measures for Stock-based Incentive Plans of Listed Companies" in 2016, the implementation of stock incentive plans in state-controlled listed companies became more standardized, and the number of state-controlled listed companies implementing these plans grew rapidly. By the end of 2024, a total of 385 state-controlled listed companies had formulated and implemented 444 stock incentive plans, accounting for 24.6% of the total 1,565 state-controlled listed companies.

In this context, to verify the actual effect of implementing stock-based incentive plans on enhancing the performance of state-controlled listed companies, based on the research questions set, this chapter selects state-controlled listed companies from 2011 to 2024 as samples. Using econometric methods, it investigates the relationship between the implementation of stock-based incentive plans and the performance of these companies. The study aims to answer the following questions through empirical data analysis: First, whether implementing stock-based incentive plans for senior management can effectively enhance the performance of state-controlled listed companies and whether there are differences in the effectiveness of these plans across different industries. Second, it explores the impact of the intensity of the stock incentive plans and the different incentive models adopted on the performance of state-controlled listed companies. Finally, it examines the potential impact of including some employees in the stock-based incentive plan on the performance of state-controlled listed companies.

7.2 Research hypotheses

The separation between ownership and managerial control is a common feature in modern

corporate governance and is particularly evident in the structure of state-controlled listed companies. As the ultimate shareholder, the State retains residual claims on corporate assets and earnings and, under the *Company Law of the People's Republic of China*, holds rights such as voting, receiving dividends, accessing information, exercising pre-emptive subscription, and transferring shares. Senior executives-including directors and general managers-are vested with managerial authority and are responsible for daily operations and strategic decision-making.

The separation of ownership and management, while beneficial in enhancing a company's operational efficiency and management level, inevitably creates discrepancies and conflicts between the roles and interests of shareholders and senior management. This divergence generates agency problems, incurs agency costs, and reduces company performance. For example, a long-standing issue for state-owned enterprises, such as the lack of innovation drive, is precisely caused by the separation of ownership and management. Innovation, being a long-term, high-risk, and capital-intensive activity, introduces considerable uncertainty. Senior managers, concerned that business failures could adversely affect their career development or salary, tend to "rationally" choose more conservative and stable projects, avoiding high-risk innovative ventures (Li, 2011).

Reducing agency costs therefore depends on narrowing the gap between the objectives of principals (capital providers) and agents (senior managers), easing conflicts of interest, and encouraging decision-making aligned with the company's long-term interests through appropriate incentive mechanisms (Zhu, 2019). Equity incentives serve as one such mechanism: by transferring a portion of ownership to senior executives, they allow managers to share in residual returns, thereby reducing agency problems stemming from misaligned utility preferences (Li & Wan, 2017).

If equity incentive plans effectively influence the performance of state-controlled listed companies, then greater ownership held by executives should correspond to lower agency costs. It is thus reasonable to hypothesize a positive correlation between the intensity of equity incentives and improvements in firm performance-namely, that increased managerial shareholding leads to enhanced company outcomes.

Based on this rationale, the study proposes the following hypotheses:

H1: The implementation of equity incentive plans significantly improves the performance of state-controlled listed companies.

H2: The intensity of equity incentive plans is positively associated with the performance of state-controlled listed companies.

Given the distinctive structure of China's economic system, state-controlled listed

companies operate across a wide range of sectors. Based on the Catalogue of Strategic Emerging Industries (2010 edition), the Strategic Emerging Industry Classification (2012, Trial), and the Guidelines for Industry Classification of Listed Companies (2012 revision), this study adopts the classification framework developed by Peng and Mao (2017) to categorize these firms into three main groups:

1. Traditional manufacturing
2. Emerging information transmission, software, and information technology services
3. Scientific research and technical services

Among these categories, traditional manufacturing is characterized by a mature industrial system and a relatively stable market structure. Business models in this sector are well established, and the outcomes of managerial decisions are more predictable. Therefore, the potential for equity incentives to reduce decision-making risk or enhance competitiveness is limited, and any resulting performance improvement is expected to be relatively modest.

In contrast, firms in the fields of emerging information transmission, software and IT services, and scientific research and technical services operate in dynamic, competitive markets. These industries are defined by rapid technological change, evolving market structures, and high levels of uncertainty in managerial outcomes. In such settings, senior executives often exhibit risk-averse behavior to safeguard their positions and compensation against potential failures. As equity incentives are designed to align executive interests with those of the company, their introduction in high-tech industries may motivate managers to support riskier, innovation-driven projects with the potential for higher returns, thereby enhancing firm performance.

To examine whether the effectiveness of equity incentives varies by industry, this study divides the sample into high-tech sectors (comprising emerging information transmission, software and IT services, and scientific research and technical services) and non-high-tech sectors (including traditional manufacturing and other industries). Accordingly, the following hypothesis is proposed:

H3: The performance-enhancing effect of equity incentives is industry-specific: state-controlled listed companies in high-technology sectors experience greater performance improvements from equity incentives than those in non-high-technology sectors.

In China, equity incentives are primarily implemented through two instruments: stock options and restricted shares. Both mechanisms enable recipients to benefit from future increases in firm value, but they differ significantly in two aspects: (i) acquisition cost and (ii) exposure to risk. Stock options are usually granted with an exercise price equal to or slightly

above the market price, resulting in a relatively high upfront cost. In contrast, restricted shares are generally issued free of charge or at a substantial discount, leading to a much lower initial cost.

In terms of risk, option holders may choose to exercise only when the stock price rises, thereby avoiding losses if the price falls. This creates an asymmetric payoff structure, allowing executives to capture gains while limiting downside risk. As a result, they are more tolerant of short-term fluctuations caused by failed projects or managerial errors. Conversely, the payoff from restricted shares is symmetric: executives gain when the price increases but also incur losses when it declines, making them more sensitive to short-term volatility.

As shown in Chapter 5, the examination of the stock incentive practices of state-owned listed companies indicates that before 2013, more than half of the stock incentive plans used stock options as the incentive tool. However, after 2013, the use of restricted stock as an incentive tool gradually increased and eventually replaced stock options as the primary incentive tool. By 2022, nearly 90% of the stock incentive plans implemented by state-owned listed companies used restricted stock as the incentive tool. Although the percentage declined in 2024, it still remained above 80%. Based on the comparison between stock options and restricted stock, as well as the practices of state-owned listed companies, Hypothesis 4 is proposed:

H4: Compared with stock options, restricted-share incentive schemes have a more significant positive effect on corporate performance.

Although senior executives are responsible for major corporate decisions and play a central role in the management of state-controlled listed companies, certain key employees possess specialized expertise and technical skills that are essential to daily operations. This is especially true in high-tech state-controlled firms, where technological innovation is a core source of competitive advantage. Employees with proprietary knowledge and innovation capabilities are critical to the success of research and development activities and perform roles that cannot be easily replaced. Involving these employees in equity incentive plans allows them to share in the firm's future value creation, generating several motivational benefits. First, profit-sharing enhances the alignment of interests between the company and its employees. Empirical evidence shows that providing equity incentives to technical staff can promote shared goals across departments, strengthen collaboration, encourage voluntary knowledge exchange, improve interdepartmental cooperation, and ultimately enhance overall team efficiency (Guo et al., 2019). Second, equity participation fosters a stronger sense of belonging, leading to improved work attitudes and higher engagement, which supports innovation and contributes to

better operational performance (Wu, 2023).

However, there is also contrary research suggesting that including employees in equity incentive plans might encourage opportunistic behavior, which could, in turn, lower the company's operational performance (Meng et al., 2019). This is because, in large companies, employees and senior management have different roles, and employees often need to work in teams. The relationship between individual contributions and company performance is influenced by various factors, making it difficult to quantify or reflect. As a result, the benchmarks for equity incentives must be based on the overall team performance rather than individual contributions. This can lead to the phenomenon of "free-riding," where individual or some employees may reduce their efforts while benefiting from the work of others in the team, ultimately hindering the effectiveness of teamwork. Furthermore, as the scope of equity incentives expands, it may encourage more "free-riding" behavior, which in turn could demotivate hardworking employees, ultimately obstructing the improvement of the company's performance and resulting in outcomes contrary to the original objectives of implementing the equity incentive plan.

Given that extending equity incentives to employees may both strengthen team cohesion and improve performance (Wang & Qian, 2021), while also creating the risk of opportunistic behavior, and considering that Chapter 5 reveals many state-controlled listed companies include a significant proportion of employees in such plans, this study proposes the following hypothesis for empirical testing:

H5: Extending equity incentive plans to a subset of employees contributes to improved performance in state-controlled listed companies.

In the previous analysis of equity incentive practices in state-controlled listed companies in Chapter 5, we observed that these equity incentive plans mostly cover senior management, middle management, grassroots management, and some employees. The number of incentive targets is large, with a relatively high proportion of the total employee base, and some incentive plans feature both equity incentives and employee stock ownership. However, the large number and broad scope of incentive targets inevitably make it difficult to accurately assess the impact of individual performance on the company's overall performance. As a result, most state-controlled listed companies adopt a "pass/fail" evaluation for personal performance, where an employee is eligible for unlocking or exercising their equity rights upon passing the evaluation. While this approach ensures fairness and simplicity, it can be inferred that it is difficult to eliminate opportunistic behaviors such as "free-riding" or "shirking responsibilities," which is not entirely aligned with the original intent of equity incentives. Therefore, to test whether

expanding the scope of equity incentive targets improves company performance, This study proposes Hypothesis 6:

H6: The breadth of incentive coverage is positively related to the performance of state-controlled listed companies.

7.3 Research design

7.3.1 Sample selection

This study selects state-controlled listed companies from 2011 to 2024 as the sample, and given the lag effect of equity incentive plans on corporate performance, the performance data has been adjusted with a one-period lag. The data used in this study is sourced from the CSMAR database. To avoid potential biases caused by the inherent characteristics of the companies and to improve the robustness and explanatory power of the conclusions, companies with special characteristics were excluded based on the following conditions to enhance the robustness and interpretability of the research conclusions:

1. Excluding companies that, according to the stock listing rules of the Shenzhen and Shanghai Stock Exchanges, have had their stock trading specially treated due to financial issues or other abnormalities, as well as those with a risk of delisting due to three consecutive years of losses, whose stock trading has been specially treated (i.e., ST and ST* companies) from the analysis of equity incentive plans;

2. Firms with missing values in key variables;

3. Financial and insurance institutions;

4. Equity incentive plans involving multiple instruments or using incentive tools other than stock options or restricted shares.

After applying these criteria, the final sample consists of 2,965 firm-year observations drawn from 1,442 state-controlled listed companies. All continuous variables are winsorized at the 1st and 99th percentiles to mitigate the influence of extreme values.

7.3.2 Variable definitions

1. Corporate performance (Performance)

To assess the impact of equity incentive plans on the performance of state-controlled listed companies, this study adopts corporate performance as the dependent variable. Although there are various ways to measure firm performance, Tobin's Q-defined as the ratio of a firm's market

value to the replacement cost of its assets-is commonly used under the assumption of an efficient securities market. However, given the high proportion of retail investors and significant price volatility in China's A-share market (Liu & Guo, 2024), as well as the difficulty in accurately estimating asset replacement costs for state-controlled listed companies, this study follows the approach of Cui et al. (2022), and uses Earnings Per Share (EPS) as a financial indicator to represent corporate performance.

2. Implementation of equity incentive Plan (Incentive)

In line with the research objective of examining the effect of equity incentive plans on corporate performance, this study sets a dummy variable for the implementation of such plans, referring to the methodology of Yang and Xin (2021). If a company implements an equity incentive plan in a given year, the variable takes the value of 1; otherwise, it is assigned 0.

3. Equity incentive intensity (In_intensity)

To further assess whether the intensity of equity incentives correlates positively with corporate performance, this study adopts a commonly used measurement method from prior research: the ratio of shares allocated for equity incentive plans to the company's total outstanding shares. The formula is as follows: Incentive Intensity = Number of shares used for the equity incentive plan / Total shares outstanding

4. Equity incentive coverage (In_extent)

To evaluate whether the scope of incentive recipients is positively related to corporate performance, this study adopts a standard metric from existing literature: the ratio of the number of proposed incentive recipients to the total number of company employees. The formula is: Incentive Coverage = Number of proposed incentive recipients / Total number of employees

5. Equity-incentive mechanism (MODE)

State-controlled listed companies in China primarily adopt two types of equity-incentive mechanisms: stock options and restricted stock. Drawing on Gao (2023), this study constructs a dummy variable to capture the mode of incentive:

MODE = 0 if the plan uses stock options as the incentive instrument;

MODE = 1 if the plan uses restricted stock.

6. Employee inclusion (Emp_in)

As discussed in Chapter 5, equity-incentive plans in many state-controlled listed companies extend beyond top executives to include middle management and ordinary employees. To test whether inclusion of non-executive staff contributes to performance improvement, we define a binary variable:

Emp_in = 1 if the plan includes non-senior executives among its incentive recipients;

Emp_in = 0 otherwise.

7. Industry classification (Industry)

To examine whether the effectiveness of equity incentives varies across industries, we classify firms based on whether they belong to high-tech sectors. The binary variable is defined as follows: Industry = 1 for firms in high-tech industries (as designated in the Catalogue of Strategic Emerging Industries and the 2012 Industry Classification Guidelines for Listed Companies), including information transmission, software and IT services, and scientific R&D and technical services;

Industry = 0 for firms in non-high-tech industries, including traditional manufacturing et al. not falling under the above categories.

8. Control variables (Control)

To standardize the comparison benchmarks across different listed companies and minimize the impact of company-specific characteristics on the robustness of the regression, This study follows the approach used by Li and Wan (2017) in their related research. The following control variables are selected, including the debt-to-asset ratio (Lev) and company profitability (ROA), among others. The names and definitions of the control variables are shown in Table 7.1.

Table 7.1 Main variables and their definitions

Variable Type	Variable Code	Variable Name	Variable Definition and Measurement
Dependent Variable	Performance	Company Performance	Earnings Per Share (EPS)
Independent Variable	Incentive	Whether the Stock Option Plan is Implemented	If the company implements a stock option plan in a given year, assign value 1; otherwise, assign value 0
	In_intensity	Stock Option Intensity	Percentage of stock used in the stock option plan relative to the company's total stock
	In_ extent	Stock Option Coverage	Percentage of the target number of people for stock option plan relative to total employees
	MODE	Stock Option Model	Value is 0 if stock options are used, and value is 1 if restricted stock is used
	Emp_in	Employee Incentive	If non-senior management employees are included in the stock option plan, assign value 1; otherwise, assign value 0
	Industry	Company Industry	Assign value 0 for non-high-tech industry companies, and value 1 for high-tech industry companies
Control Variables	Lev	Leverage	Total liabilities / Total assets
	ROA	Profitability	Operating profit / Total assets
	Cash	Financial Constraint	Cash and cash equivalents / Total assets
	Growth	Company Growth	Revenue growth rate of the company
	Subsidy	Government	Government subsidies / Total assets

Block_Holder	Support Ownership Structure	Proportion of shares held by the largest shareholder
Tangible	Asset Structure	Net fixed assets / Total assets
Year	Year	Calendar year

7.3.3 Model construction

This study establishes six regression models and employs panel data with multivariate regression analysis to test the proposed hypotheses. The models are constructed as follows:

1. To test Hypothesis 1 (H1)-that the implementation of equity incentive plans can significantly improve the performance of state-controlled listed companies-the following baseline model is specified:

$$\mathbf{Performance}_{i,\ t} = \boldsymbol{\beta_0} + \boldsymbol{\beta_1 Incentive}_{i,\ t-1} + \boldsymbol{\beta_2 Control}_{i,\ t-1} + \boldsymbol{\varepsilon}_{i,\ t} \quad (7.1)$$

2. To test Hypothesis 2-that the intensity of an equity-incentive plan is positively correlated with the performance of state-controlled listed companies-Model 2 is constructed as follows:

$$\mathbf{Performance}_{i,\ t} = \boldsymbol{\beta_0} + \boldsymbol{\beta_1}\mathbf{In_intensity}_{i,\ t-1} + \boldsymbol{\beta_2 Control}_{i,\ t-1} + \boldsymbol{\varepsilon}_{i,\ t} \quad (7.2)$$

3. To test Hypothesis 3-that the performance improvement from equity-incentive plans is greater for high-tech companies than for non-high-tech companies-Model 3 is constructed separately using data from high-tech firms and non-high-tech firms as follows:

$$\mathbf{Performance}_{i,\ t} = \boldsymbol{\beta_0} + \boldsymbol{\beta_1 Incentive}_{i,\ t-1} + \boldsymbol{\beta_2 Control}_{i,\ t-1} + \boldsymbol{\varepsilon}_{i,\ t} \quad (7.3)$$

4. To test Hypothesis 4-that, compared with the restricted-stock incentive model, the stock-option incentive model has a more pronounced effect on improving corporate performance-Model 4 is constructed as follows:

$$\mathbf{Performance}_{i,\ t} = \boldsymbol{\beta_0} + \boldsymbol{\beta_1 MODE}_{i,\ t-1} + \boldsymbol{\beta_2 Control}_{i,\ t-1} + \boldsymbol{\varepsilon}_{i,\ t} \quad (7.4)$$

5. To test Hypothesis 5-that equity-incentive plans covering a portion of employees help improve the performance of state-controlled listed companies-Model 5 is constructed as follows:

$$\mathbf{Performance}_{i,\ t} = \boldsymbol{\beta_0} + \boldsymbol{\beta_1}\mathbf{Emp_in}_{i,\ t-1} + \boldsymbol{\beta_2 Control}_{i,\ t-1} + \boldsymbol{\varepsilon}_{i,\ t} \quad (7.5)$$

6. To test Hypothesis 6-that the scope of incentive recipients is positively correlated with the performance of state-controlled listed companies-Model 5 is constructed as follows:

$$\mathbf{Performance}_{i,\ t} = \boldsymbol{\beta_0} + \boldsymbol{\beta_1}\mathbf{In_extent}_{i,\ t-1} + \boldsymbol{\beta_2 Control}_{i,\ t-1} + \boldsymbol{\varepsilon}_{i,\ t} \quad (7.6)$$

7.4 Empirical analysis

7.4.1 Descriptive statistics

To obtain a preliminary understanding of the variables' characteristics, Table 7.2 reports, for each variable, the sample size, mean, standard deviation, minimum, median, and maximum values.

Table 7.2 Descriptive statistics of variables

VarName	Mean	SD	Min	Median	Max
Performance	2.64	1.403	0.00	2.48	7.22
Incentive	-	-	-	-	-
MODE	-	-	-	-	-
In_ extent	0.41	0.492	0.00	0.00	1.00
In_intensity	0.02	0.034	0.00	0.00	0.15
Emp_in	-	-	-	-	-
Industry	-	-	-	-	-
Lev	0.45	0.204	0.03	0.46	0.92
ROA	0.03	0.077	-0.37	0.03	0.25
Cash	0.11	0.105	0.00	0.09	0.78
Tangible	0.14	0.122	0.00	0.10	0.74
Growth	0.13	0.352	-0.65	0.07	3.07
Block_Holder	0.61	0.139	0.22	0.64	0.91
Subsidy	0.00	0.018	-0.00	0.00	0.86

Source: Compiled based on the CSMAR database (China Stock Market Accounting Research).

7.4.2 Correlation analysis

Correlation analysis employs correlation coefficients to describe relationships among variables. First, the presence of a relationship is determined; then, whether the relationship is positive (coefficient > 0) or negative (coefficient < 0). The magnitude of the coefficient reflects the strength of the linear relationship, while its sign indicates direction. Statistically, the Pearson and Spearman coefficients are the most common metrics; the Pearson coefficient, which is suited to measuring linear correlations, is adopted here to test the relationships among all variables. The results are presented in Table 7.3 Because the variables reflect different dimensions-such as financial structure and ownership structure-of state-controlled listed companies, intercorrelations are inevitable. Hence, it is necessary to assess whether these correlations could threaten the stability of the regression models.

Table 7.3 Correlation matrix of variables

	Performance	Incentive	In_extent	In_intensity	MODE	IEmp_in	Industry	Lev	ROA	Cash	Tangible	Growth	Block_Holder	Subsidy
Performance	1													
Incentive	0.49***	1												
In_ extent	0.46***	0.49***	1											
In_intensity	0.49***	0.41***	0.32***	1										
MODE	0.34***	0.29***	0.33***	0.38***	1									
Emp_in	0.37***	0.37***	0.29***	0.38***	0.28***	1								
Industry	-0.38***	-0.35***	-0.44***	-0.32***	-0.27***	-0.15***	1							
Lev	-0.48***	-0.46***	-0.51***	-0.45***	-0.30***	-0.31***	0.11***	1						
ROA	0.42***	0.41***	0.38***	0.34***	0.24***	0.24***	0.32***	-0.39***	1					
Cash	0.45***	0.45***	0.34***	0.39***	0.22***	0.31***	0.41***	-0.43***	0.37***	1				
Tangible	0.55***	0.47***	0.49***	0.54***	0.34***	0.32***	0.33***	-0.56***	0.36***	0.46***	1			
Growth	0.41***	0.48***	0.47***	0.44***	0.32***	0.33***	0.20**	-0.44***	0.35***	0.36***	0.46***	1		
Block_Holder	-0.55***	-0.54***	-0.51***	-0.49***	-0.38***	-0.40***	-0.32***	0.56***	-0.42***	-0.50***	-0.53***	-0.50***	1	
Subsidy	0.15***	0.11***	0.12***	0.14***	0.09***	0.09***	0.07***	-0.13***	0.10***	0.13***	0.16***	0.14***	-0.15***	1

Note: *p<0.1, **p<0.05, ***p<0.01

7.4.3 VIF test

In regression analysis, correlations among explanatory variables may inflate their variances, leading to inaccurate coefficients and reduced model stability. Because the independent variables in this study display notable intercorrelations, we conduct a Variance Inflation Factor (VIF) test to assess multicollinearity before running the formal regressions. VIF measures whether the variance of each predictor is inflated by high correlations with other predictors; a VIF value exceeding 5 indicates severe multicollinearity. Table 7.4 reports the test results, showing that all variables have VIF values below 5, which confirms that the correlations among variables are within tolerable limits and do not jeopardize model stability or reliability.

Table 7.4 Multicollinearity test

Variable	VIF	1/VIF
Block_Holder	2.13	0.47
Tangible	1.98	0.50
Lev	1.87	0.54
Incentive	1.78	0.56
In_intensity	1.74	0.57
In_ extent	1.74	0.57
Growth	1.64	0.61
Cash	1.54	0.65
ROA	1.38	0.73
Inc_extent	1.31	0.76
MODE	1.29	0.78
Subsidy	1.04	0.96
Industry	1.12	0.89
MeanVIF	1.58	

7.4.4 Regression analysis

In line with the research theme and questions of this study, we conducted regression analyses using the above-defined variables. The results are as follows:

1. Implementing equity incentive plans helps improve the performance of state-controlled listed companies

Table 7.5 reports the regression model on the relationship between the performance of state-controlled listed companies and whether they implement equity incentive plans. In Model (1), where control variables are not included, and Model (2), where control variables are included, the coefficients for whether an equity incentive plan is implemented (Incentive) are 1.3237 and 0.3623, respectively, both significant at the 1% significance level ($p < 0.01$). This indicates that, regardless of the differences in control variables, implementing an equity incentive plan significantly improves company performance. After controlling for other variables, although

the equity incentive plan still has a significant positive effect on company performance, the promoting effect is somewhat weakened. This conclusion supports the hypothesis of H1, that is, implementing an equity incentive plan in state-controlled listed companies can improve company performance. Furthermore, the R^2 of Model (2) is 0.470, which, according to Cohen's (1988) effect evaluation rules, represents a medium-level effect in social science research (R^2 = 0.5~0.8).

Table 7.5 Regression models examining the relationship between corporate performance and the implementation of equity-incentive plans

	(1) Performance	(2) Performance
Incentive	1.3237***	0.3623***
	(27.354)	(6.882)
Lev		-0.4496***
		(-3.494)
ROA		2.2390***
		(7.590)
Cash		1.3135***
		(5.745)
Tangible		2.6662***
		(12.484)
Growth		0.1545**
		(2.228)
Block_Holder		-1.9432***
		(-9.764)
Subsidy		1.6717
		(1.517)
_cons	1.9302***	3.3798***
	(7.365)	(12.417)
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
N	2,965	2,965
R^2	0.283	0.470
R^2_a	0.267	0.457

Note: *p<0.1, **p<0.05, ***p<0.01

2. The intensity of equity incentives is positively correlated with the performance of state-controlled listed companies

Table 7.6 reports the regression models of corporate performance and equity-incentive intensity. For the intensity variable (In_intensity), the coefficient in Model (3)-without additional controls-is 19.3061 and significant at the 1 % level ($p < 0.01$). After controlling for leverage and other factors in Model (4), the coefficient falls to 6.5994, yet remains significant at the 1 % level. These results indicate a robust positive relationship between incentive intensity and firm performance: although the effect weakens when more controls are added, incentive intensity remains a key driver of performance growth. Accordingly, the findings support

Hypothesis 2 (H2): higher equity-incentive intensity contributes to better operating performance in state-controlled listed companies.

Table 7.6 Regression models of corporate performance and equity-incentive intensity

	(3) Performance	(4) Performance
Inc_intensity	19.3061***	6.5994***
	(29.236)	(9.239)
Lev		-0.4219***
		(-3.298)
ROA		2.2968***
		(7.882)
Cash		1.4451***
		(6.431)
Tangible		2.2271***
		(10.129)
Growth		0.1673**
		(2.458)
Block_Holder		-1.9668***
		(-10.052)
Subsidy		1.2189
		(1.113)
_cons	2.0634***	3.4664***
	(7.987)	(12.894)
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
N	2,965	2,965
R^2	0.304	0.477
R^2_a	0.287	0.463

Note: *p<0.1, **p<0.05, ***p<0.01

3. Effectiveness of equity incentives and industry affiliation of state-controlled listed companies

To test whether the impact of equity incentive plans differs across industries, the sample firms are divided into high-tech and non-high-tech groups and separate regressions are run; the results are presented in Table 7.7. Among high-tech state-controlled listed companies, the coefficient on equity-incentive implementation (Incentive) is 0.5080 and significant at the 1 % level, indicating that adopting an equity incentive plan significantly enhances corporate performance. This may be because high-tech industries depend heavily on innovation and talent; by linking the interests of key employees to the company's long-term development, equity incentives effectively stimulate innovation motivation, increase R&D efficiency, and thus boost performance.

Table 7.7 Regression models of corporate performance and equity-incentive intensity table

	(5) High-tech companies Performance	(6) Non-high-tech companies Performance
Incentive	0.5080***	0.0727
	(8.284)	(0.792)
Lev	-0.5058***	-0.1936
	(-3.521)	(-0.812)
ROA	1.8826***	2.1247***
	(5.771)	(3.872)
Cash	4.0339***	0.2507
	(5.055)	(0.799)
Tangible	1.8154***	2.9970***
	(6.388)	(9.287)
Growth	0.3111***	0.0420
	(2.998)	(0.439)
BlockHolder	-0.3339	-3.3016***
	(-1.359)	(-10.101)
Subsidy	8.3742***	1.3301
	(2.824)	(1.034)
_cons	1.9092***	4.1884***
	(5.948)	(10.604)
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
N	1,770	1,195
R^2	0.395	0.413
R^2_a	0.373	0.376

Note: *p<0.1, **p<0.05, ***p<0.01

In contrast, for non-high-tech state-controlled listed companies, the coefficient on Incentive is 0.0727 and not statistically significant ($p > 0.1$). This suggests that in traditional industries the performance-enhancing effect of equity incentive plans is not evident. The result implies that business models in non-high-tech sectors often rely more on capital input, economies of scale, or conventional production factors, so the marginal gains in employee motivation and operational efficiency brought about by equity incentives are limited and do not readily translate into significant performance improvements.

4. There is no clear correlation between the stock-option incentive model and corporate performance improvement.

As shown in Table 7.8, Model (7), the coefficient for the MODE variable is 1.3496, which is significant at the $p<0.05$ level. However, after controlling for other variables such as the debt ratio in Model (8), the coefficient decreases to 0.2801 and lacks statistical significance at both the $p<0.01$ and $p<0.05$ levels. This suggests that after controlling for variables like the debt ratio, there is no statistically significant correlation between the adoption of different equity incentive models and company performance in state-controlled listed companies. Therefore, it can be concluded that regardless of whether stock options or restricted stocks are used for incentives, they have no significant impact on the company's operational performance. This

finding contradicts the hypothesis that the restricted stock incentive model would have a more significant effect on improving company performance.

Table 7.8 Regression models of incentive mechanism and corporate performance

	(7) Performance	(8) Performance
MODE	1.3496**	0.2801
	(16.921)	(3.956)
Lev		-0.5112***
		(-3.963)
ROA		2.4588***
		(8.357)
Cash		1.5855***
		(6.981)
Tangible		2.6875***
		(12.479)
Growth		0.2220***
		(3.233)
Block_Holder		-2.0692***
		(-10.371)
Subsidy		1.5266
		(1.378)
_cons	1.9166***	3.5008***
	(6.835)	(12.823)
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
N	2,965	2,965
R^2	0.179	0.464
R^2_a	0.160	0.451

Note: *p<0.1, **p<0.05, ***p<0.01

5. Coverage of part of the workforce by equity-incentive plans helps improve the performance of state-controlled listed companies.

As Model (9) shows in Table 7.9, the coefficient on employee incentive (Emp_in) is 1.2221 and is significant at the 1 % level ($p < 0.01$), indicating that employee equity incentives significantly enhance firm performance. In other words, when a company grants equity to employees, it effectively stimulates their motivation and creativity, thereby promoting performance growth. In Model (10) the coefficient falls to 0.2712, yet remains significant at the 1 % level ($p < 0.01$). Compared with Model (9), the coefficient is markedly lower, suggesting that after controlling for leverage, profitability, cash constraints, and other factors, the performance-boosting effect of employee equity incentives, though still statistically significant, is diminished. These findings support Hypothesis 5, namely that including some employees in equity-incentive plans helps improve the performance of state-controlled listed companies, and refute the notion that such plans might trigger free-riding or other opportunistic behavior that harms performance.

Table 7.9 Regression models of employee incentive and corporate performance

	(9) Performance	(10) Performance
Emp_in	1.2221***	0.2712***
	(24.8749)	(5.2368)
Lev		-0.4076***
		(-3.1209)
ROA		2.3419***
		(7.9228)
Cash		1.5967***
		(7.0469)
Tangible		2.6165***
		(12.1294)
Growth		0.1842***
		(2.6638)
Block_Holder		-2.0425***
		(-10.3013)
Subsidy		1.6121
		(1.4583)
_cons	1.8303***	3.6356***
	(6.8583)	(13.8954)
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
N	2,965	2,965
R^2	0.2569	0.4630
R^2_a	0.2397	0.4515

Note: *p<0.1, **p<0.05, ***p<0.01

6.Equity-incentive coverage is not correlated with the performance of state-controlled listed companies.

Model (11) in Table 7.10 regresses equity-incentive coverage (the proportion of intended recipients to total employees) on corporate performance without controlling for other factors; the coefficient on coverage is 4.5317 and significant at the 1 % level ($p < 0.01$), indicating a positive effect on performance. However, after controlling for leverage, profitability, cash constraints, and other factors, Model (12) shows that the coefficient falls to 1.4547 and is not significant at the 5 % level ($p < 0.05$). This demonstrates a lack of significant positive correlation between incentive coverage and company performance, thereby refuting Hypothesis 6: expanding the coverage of equity incentives does not enhance performance.

Table 7.10 Regression models of incentive coverage and corporate performance

	(11) Performance	(12) Performance
In_extent	4.5317***	1.4547
	(20.2302)	(7.1746)
Lev		-0.4644***
		(-3.6209)
ROA		2.4749***
		(8.4671)
Cash		1.4288***

		(6.3107)
Tangible		2.7237***
		(12.8098)
Growth		0.1922***
		(2.8184)
Block_Holder		-1.9973***
		(-10.1343)
Subsidy		1.6020
		(1.4550)
_cons	0.8748***	3.3365***
	(3.1239)	(12.4886)
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
N	2,965	2,965
R^2	0.2098	0.4673
R^2_a	0.1915	0.4559

Note: *p<0.1, **p<0.05, ***p<0.01

7.4.5 Endogeneity test

This study examines how equity-incentive plans affect the performance of state-controlled listed companies. The underlying theory posits that a divergence of interests exists between such firms and their senior managers; equity incentives narrow this gap, motivating managers to act in the firm's long-term, overall interest and thereby enhancing performance. The statistical models presented in this chapter support that logic, yet they capture only a statistical association-not causality-between equity incentives and performance. Consequently, sample-selection bias may arise: firms that implement equity incentives may differ inherently from those that do not, and these differences, rather than the incentives themselves, could drive performance. For example, firms opting for incentives may already exhibit stronger profitability; they may adopt incentives for reasons unrelated to performance improvement; or weaker innovators may be less inclined to adopt such plans. Some firms may grant equity merely to reward past managerial contributions. If unaddressed, such factors can bias estimates of the true effect of equity incentives.

To mitigate this issue, Propensity Score Matching (PSM) is employed. Propensity scores are first estimated with a logit model; one-to-one nearest-neighbor matching is then conducted. Balance tests reveal significant mean differences among covariates before matching but none afterward, and all standardized biases fall below 10 %, indicating satisfactory balance. An OLS regression on the matched sample yields the results in Table 7.11: the equity-incentive coefficient is 0.3681 and remains significant at the 1 % level. Thus, even after PSM, Hypothesis 2 holds-equity incentives continue to exert a positive effect on corporate performance.

Table 7.11 Equity incentives and corporate performance

	(13) Performance	(14) Performance
Incentive	1.3466***	0.3681***
	(22.374)	(5.605)
Lev		-0.3267**
		(-2.031)
ROA		2.3350***
		(6.322)
Cash		1.0064***
		(3.622)
Tangible		3.0277***
		(11.460)
Growth		0.0083
		(0.096)
Block_Holder		-1.8379***
		(-7.531)
Subsidy		21.4356***
		(4.632)
_cons	1.9685***	3.1999***
	(7.269)	(10.703)
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
N	1,995	1,995
R^2	0.284	0.475
R^2_a	0.260	0.455

Note: *p<0.1, **p<0.05, ***p<0.01

7.4.6 Robustness checks

To confirm the robustness of the foregoing regression results, we conduct two additional tests: substituting the dependent variable and introducing lagged dependent variables.

1. Substituting the dependent variable

To further verify robustness, we replace the original dependent variable in the regressions and thus observe the impact of equity-incentive plans from a different perspective.

For senior executives, deciding to develop new products or launch new projects involves considerable uncertainty: although R&D inputs are fixed, numerous factors beyond management's control determine whether expected results will be achieved. Should an R&D effort underperform, it can adversely affect an executive's career prospects and performance evaluation; rational managers therefore tend to avoid such decisions, creating classic agency costs in the form of missed opportunities for the firm.

If an equity-incentive plan helps align the interests of the company and its executives, it can alter managerial behavior: executives may be more willing to pursue projects that enhance competitiveness and yield long-term benefits. Support for new-product development can thus be viewed as evidence that equity incentives reduce agency costs. Because undertaking these

projects necessarily increases R&D expenditure, we use firms' R&D spending (logged) as an instrumental variable to test whether equity incentives indeed modify managerial risk-aversion.

Following Hu (2025), we adopt the natural logarithm of R&D expenditure (R&D) as the substitute dependent variable. Regression results reported in Table 7.12 show that, after replacing the dependent variable in Model 1 with ln(R&D), the coefficient on equity incentives is 0.1585 and remains significant at the 1 % level ($p < 0.01$). This indicates that equity-incentive plans change managerial behavior, increasing investment in new products and projects-thereby constituting one channel through which performance is enhanced. The findings are consistent with those in Table 7.5, confirming the robustness of the earlier results.

Table 7.12 Regression model of equity incentives and R&D expenditure

	(15) **R&D**	**(16)** **R&D**
Incentive	0.6041***	0.1585***
	(26.715)	(6.425)
Lev		-0.2098***
		(-3.480)
ROA		1.0534***
		(7.622)
Cash		0.6202***
		(5.790)
Tangible		1.2331***
		(12.324)
Growth		0.0667**
		(2.053)
Block_Holder		-0.8983***
		(-9.635)
Subsidy		0.7851
		(1.521)
_cons	0.9215***	1.5923***
	(7.525)	(12.487)
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
N	2,965	2,965
R^2	0.275	0.461
R^2_a	0.258	0.447

Note: *p<0.1, **p<0.05, ***p<0.01

2. Lagged dependent variable

Because a considerable time lag exists between the introduction of an equity-incentive plan, the resulting change in managerial behaviour, and the eventual enhancement of corporate performance, we further evaluate the effect of equity incentives by using lagged dependent variables. Specifically, we lag the performance measure by two periods to assess the persistence of the performance-improvement effect. Table 7.13 presents the regression results with the lagged dependent variable. According to the regression model in Table 7.13, two periods after implementation the coefficient on Incentive is 0.8583 and 0.1961, respectively, both positive

and significant at the 1 % level, consistent with earlier findings and indicating the robustness of the previous empirical results.

Table 7.13 Regression model of equity incentives and corporate performance (lagged)

	(17) Performance	(18) Performance
L.Incentive	0.8583***	0.1961***
	(15.095)	(4.024)
Lev		-0.5052***
		(-3.635)
ROA		2.2732***
		(7.149)
Cash		1.5165***
		(6.346)
Tangible		2.7541***
		(12.050)
Growth		0.1987***
		(2.732)
Block_Holder		-2.3133***
		(-10.969)
Subsidy		1.0836
		(0.966)
_cons	2.0649***	3.7334***
	(7.068)	(13.227)
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
N	2,615	2,615
R^2	0.162	0.469
R^2_a	0.141	0.454

Note: *p<0.1, **p<0.05, ***p<0.01

7.4.7 Heterogeneity tests

In this chapter we assume that model parameters are identical across groups; to verify this assumption and safeguard predictive validity, we conduct subgroup regressions.

1. Effectiveness of equity incentive plans on different trading boards

Because China's securities market comprises distinct trading boards that serve companies with markedly different characteristics, we examine whether the performance impact of equity incentives varies across boards.

Given the divergent positioning and functions of the various A-share boards, state-controlled listed companies may display board-specific differences in their use of equity incentives. We therefore group the sample by listing board for the heterogeneity test. In view of the STAR Market's short trading history-Chapter 5 shows that equity-incentive practices there have yet to stabilize-we merge companies listed on the ChiNext board and the STAR Market into a single "non-main-board" group. This yields two subsamples: main-board state-controlled companies and non-main-board state-controlled companies. Separate regressions for

these groups produce the results shown in Table 7.14.

Table 7.14 Regression model of equity incentives and corporate performance (by trading board)

	(19) Main-board state-controlled listed companies Performance	(20) Non-main-board state-controlled listed companies Performance
Incentive	0.4293***	0.2173**
	(6.689)	(2.277)
Lev	-0.4513***	-0.5252**
	(-2.902)	(-2.212)
ROA	1.9083***	2.8160***
	(5.447)	(4.917)
Cash	1.4358***	1.0192***
	(5.008)	(2.603)
Tangible	2.6306***	2.5696***
	(10.093)	(6.570)
Growth	0.2107**	0.0136
	(2.456)	(0.109)
BlockHolder	-1.9062***	-2.0774***
	(-7.807)	(-5.796)
Subsidy	1.4257	4.8486
	(1.233)	(1.257)
_cons	3.3183***	3.6097***
	(10.105)	(7.184)
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
N	1,995	970
R^2	0.488	0.464
R^2_a	0.468	0.421

Note: *p<0.1, **p<0.05, ***p<0.01

After controlling for leverage, profitability, cash constraints, growth, government subsidies, and other factors, the coefficient on equity incentives for main-board companies is 0.4293 and is positive and significant at the 5 percent level, while the coefficient for non-main-board companies is 0.2173, likewise positive and significant at the 5 percent level. These findings indicate that equity incentive plans enhance performance in state-controlled listed companies across both trading-board categories.

2.Effectiveness of equity-incentive plans under different cash-flow conditions

Following Z. B. Ji et al. (2024), we split the sample at the median cash-flow level and run separate regressions to examine whether the impact of equity incentives differs across firms (Table 7.15). Companies with cash flow greater than or equal to the median are classified as high-cash-flow firms, and those below the median as low-cash-flow firms. The heterogeneity test yields the following results: High-cash-flow firms: the coefficient on Incentive is 0.0678 with a p-value of 0.698, indicating no significant effect of equity incentives on performance. Low-cash-flow firms: the coefficient on Incentive is 0.5031 and is significant at the 1 % level (p = 8.358), showing that equity incentives exert a strong positive impact on performance when

cash flow is constrained.

Table 7.15 Regression model of equity incentives and corporate performance (by cash-flow group)

	(21) High-cash-flow companies	(22) Low-cash-flow companies
Incentive	0.0678	0.5031***
	(0.698)	(8.358)
Lev	-0.2784	-0.4803***
	(-1.089)	(-3.437)
ROA	2.4633***	1.7967***
	(4.000)	(5.768)
Cash	0.0081	4.3400***
	(0.025)	(5.778)
Tangible	2.9128***	1.8413***
	(8.669)	(6.611)
Growth	0.0300	0.2753***
	(0.298)	(2.719)
BlockHolder	-3.4192***	-0.3168
	(-9.858)	(-1.327)
Subsidy	1.2448	9.1069***
	(0.941)	(3.109)
_cons	4.4774***	2.3305***
	(8.238)	(7.872)
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
N	1,067	1,898
R^2	0.371	0.389
R^2_a	0.328	0.365

Note: *p<0.1, **p<0.05,***p<0.01

7.5 Extended interpretation of the empirical findings

Although the statistical analysis in This study verifies a series of hypotheses, such as the positive impact of implementing equity incentive plans on improving the performance of state-controlled listed companies, it is important to note that there are significant differences in the model coefficients before and after controlling for control variables. For example, in the two models shown in Table 7.5, while the coefficients for whether to implement an equity incentive plan (Incentive) are both significant at the 1% significance level (p<0.01), the values differ greatly, being 1.3237 and 0.3623, respectively. This suggests that the control variables have a significant impact on improving company performance. Specifically, for each control variable: Leverage (Lev): the coefficient is -0.4496 and significant at the 1 % level (p < 0.01), showing a significant negative relationship between leverage and performance. The higher the ratio of total liabilities to total assets, the lower the firm's performance, suggesting that a heavy debt burden may suppress performance.

Profitability (ROA): the coefficient is 2.2390 and significant at the 1 % level, indicating a

strong positive association between operating profit-to-asset ratio and performance. Higher profitability clearly underpins better firm performance.

Cash Constraints (Cash): the coefficient is 1.3135 and significant at the 1 % level, implying that a higher proportion of cash and cash equivalents to total assets (i.e., fewer cash constraints) is linked to better performance. Adequate cash reserves thus contribute to operating performance.

Asset Structure (Tangible): the coefficient is 2.6662 and significant at the 1 % level, indicating that a higher ratio of net fixed assets to total assets corresponds to better performance-evidence that tangible assets play an important role in operations and performance enhancement.

The coefficient on Growth is 0.1545 and is significant at the 5 % level ($p < 0.05$). This implies a positive relationship between a company's revenue-growth rate and its performance: the stronger a firm's growth, the more likely its performance is to improve, although the effect is somewhat less pronounced than for certain other variables.

The coefficient on Block_Holder is -1.9432 and is significant at the 1 % level ($p < 0.01$). This indicates a significant negative correlation between the shareholding ratio of the largest shareholder and corporate performance, suggesting that a highly concentrated ownership structure may exert an adverse impact on performance.

The relationship between the control variables and company performance indicates that implementing an equity incentive plan is just one of the factors influencing the performance improvement of state-controlled listed companies. The effectiveness of equity incentives in improving the performance of these companies relies on the coordination with other factors such as the company's debt ratio, profitability, and asset structure. Therefore, when deciding whether to implement an equity incentive plan and designing it, the company should consider these factors represented by the control variables. A comprehensive judgment should be made by integrating the company's ownership structure, asset structure, financial performance, and other relevant factors to ensure that the implementation of the equity incentive plan achieves the optimal incentive effect.

7.6 Conclusion

As the material foundation and political guarantee of socialism with Chinese characteristics, state-owned enterprises (SOEs) are the main driving force behind the vigorous development of China's economy. In the era of technological innovation led by artificial intelligence, state-controlled listed companies, as representatives of large state-owned enterprises, are

increasingly becoming the fundamental drivers of China's sustained economic growth due to their innovation, creativity, and sustainable development capabilities. Therefore, the Communist Party of China has always regarded strengthening and enlarging state-owned enterprises as a core policy of China's national development strategy. The report of the 20th National Congress of the Communist Party of China emphasizes "deepening state-owned enterprise (SOE) reform, accelerating the optimization of state-owned capital and the restructuring of state-owned enterprises, and promoting the strengthening, optimizing, and expanding of state-owned capital and enterprises," reiterating the core position and important mission of state-owned enterprises in the construction of Chinese modernization. Furthermore, the Third Plenary Session of the 20th Central Committee of the Communist Party of China made significant arrangements for deepening SOE reforms, requiring the "deepening of SOE reforms, improving management and supervisory mechanisms," and emphasizing improving corporate governance as a key part of SOE reform, aiming to establish a modern corporate system with clear responsibilities, transparent authority, coordinated operations, and effective checks and balances.

Given the pronounced separation of ownership and control in state-controlled listed companies, senior executives serve as the decision-makers, implementers, and direct participants in corporate operations. Implementing equity-incentive plans is therefore crucial for narrowing the divergence of interests between executives and the company, altering executives' risk preferences and behavioral logic, and fully activating managerial motivation. Using A-share state-controlled listed companies as a research sample and applying econometric methods, this chapter investigates the impact of equity-incentive plans on corporate performance. The statistical analysis yields the following main conclusions:

First, the implementation of an equity-incentive plan is positively correlated with improved performance in state-controlled listed companies, and the magnitude of the improvement rises with incentive intensity-the greater the intensity, the more pronounced the performance gain. This indicates that granting equity to senior executives and a portion of employees can effectively boost corporate performance. The core reason lies in the pronounced separation of ownership and control in such firms: executives' risk preferences and behavioral logic have significant bearing on corporate outcomes. By narrowing the interest gap between the company and its executives, equity incentives encourage decisions that favor the firm's overall and long-term interests. At the same time, allowing executives and employees to share in performance gains through share ownership strengthens their sense of responsibility and belonging, lowers agency costs, and thus lifts operating performance.

Secondly, the study finds no significant difference in the impact of different equity incentive models on the performance improvement of state-controlled listed companies. Although there are substantial differences in the costs of obtaining and holding risks between stock options and restricted stock, with stock option incentives having asymmetric returns and risks, where recipients enjoy the benefits of the stock while not bearing the risk of stock price decline, the data from this study does not support the hypothesis that restricted stock has a more significant effect on improving company performance. In practice, more than 80% of equity incentive plans in state-controlled listed companies currently use restricted stock as an incentive tool. This suggests that the choice of incentive tool depends more on practical needs rather than having a clear impact on improving company performance.

Third, the effectiveness of equity-incentive plans varies by industry. The analysis shows that such plans have a more pronounced positive effect on performance in high-tech firms. This finding further substantiates the theoretical logic of equity incentives: by realigning executives' incentives, the plans prompt managers to adopt a more proactive stance when facing the uncertainties and risks inherent in innovation, thereby encouraging greater investment in new technologies, products, and projects.

Finally, the scope of employees covered by equity incentive plans does not have a significant impact on company performance. Although equity incentive plans in state-controlled listed companies typically cover various levels of management and some employees, the results of this study, after controlling for a range of variables, show that there is no statistically significant correlation between the proportion of employees targeted for incentives and the improvement in company performance. Therefore, the significance of covering a large number of employees in equity incentive plans may primarily reflect the fairness of the plan and the nature of employee stock ownership, rather than being based on the theoretical foundation and implementation objectives of equity incentives.

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Chapter 8: Research Conclusions and Policy Recommendations

Based on a review of equity incentive-related theories, This study has revisited the practices, results, and experiences of representative countries in equity incentives, provided a detailed review of the development history of equity incentive policies and practices in Chinese state-controlled listed companies, and empirically verified the actual effects of their equity incentive plans using state-controlled listed companies as the sample. At the same time, this study also proposes targeted policy recommendations in light of its findings and conclusions. Building on the previous research, this chapter aims to summarize the core conclusions of the study and propose targeted policy recommendations, in response to the study's research questions, analyze the limitations of the study, and suggest directions for future research.

8.1 Research conclusions

This study is grounded in the theory of managerial power regarding equity incentive ideas, building the underlying logic of equity incentive implementation in state-controlled listed companies on the reality of the high separation between ownership and management. It posits that granting senior executives of state-controlled listed companies a certain amount of company stock can bridge the gap in interests between executives and the company, which not only helps to unlock the executives' potential but also improves corporate governance efficiency. Based on this theoretical assumption, This study compares the equity incentive systems of Chinese state-controlled listed companies with those of countries such as the United States, Germany, France, Japan, and South Korea, reviews the historical evolution of equity incentive policies in state-controlled companies, examines the practices of equity incentives in these companies, and uses this analysis to derive a theoretical model for equity incentives in state-controlled listed companies, while also testing the actual effects of these incentive plans. From the research, the following conclusions have been drawn in response to the research questions and also as a result of the theoretical and regulatory framework research.

First, equity incentives, as a governance mechanism, draw on a rich theoretical foundation that spans information economics, human-capital theory, stakeholder theory and managerial-power theory. Information economics regards equity incentives a s a device for mitigating information asymmetry, fostering transparency and cooperation, and steering employees

toward the firm's long-term objectives. Human-capital theory sees executives as owners of valuable human capital entitled to residual claims, with equity grants operationalising that entitlement. Stakeholder theory broadens the framework to encompass employees, management, shareholders and other stakeholders, positioning equity incentives as a means of balancing their interests and promoting sustainable corporate success. Managerial-power theory, recognising the separation of ownership and control, advocates share allocations that realign the power balance between managers and shareholders and match residual control rights with residual income rights.

Second, an examination of three representative equity-governance models-the United States, Germany-France and Japan-South Korea-shows that each has evolved to address shared challenges such as incomplete governance structures, inadequate protection of shareholder rights and under-developed board-oversight mechanisms. Although these models differ in emphasis, they all pursue the core objective of safeguarding investor interests and promoting the firm's long-term, steady development. Accordingly, they strengthen shareholder protection, secure board independence and oversight effectiveness, and enhance the transparency and fairness of governance; taken together, these measures constitute a relatively integrated governance architecture. A comparison with China's experience indicates that effective equity governance demands concerted action by government, regulators, companies and investors; that shareholder-rights protection, board independence and transparent, equitable governance are decisive for outcomes; and that corporate social responsibility, public reputation and sustainable development have become indispensable elements of contemporary governance.

Third, a comprehensive review of the evolution of equity-incentive regulation in China's state-controlled listed companies allows this study to restate the framework's essential features. Because of the public-ownership character of state enterprises, the regime imposes notably stricter eligibility requirements, tighter limits on the total shares that may be granted and more rigorous caps on incentive intensity than those applied to private firms. Looking ahead, continued reform of state-enterprise supervision and the further maturation of China's capital market are expected to broaden the adoption of equity incentives among state-controlled listed companies and to diversify the instruments through which such incentives are delivered.

Fourth, to portray a comprehensive and multidimensional picture of equity-incentive practice in Chinese state-controlled listed companies, thus responding to the first research question, this study adopts both macro- and micro-level perspectives: after mapping the landscape as a whole, it conducts a case study of Hangzhou Hikvision Digital Technology Co., Ltd. The analysis shows that equity incentives in state-controlled listed companies are shaped

by the dual identities of state-owned enterprise and publicly traded firm, entailing more complex policy considerations and stricter, more intricate regulation than in non-state-controlled counterparts. In practice, these schemes feature relatively broad coverage yet comparatively modest incentive intensity; because large numbers of employees are included, the instruments serve not only to motivate but also to reward, with grants functioning as recognition of work performance.

Fifth, in response to the second and third research questions, based on the "principal-agent" theory and the specific situation of state-controlled listed companies, this study theoretically constructs an equity incentive model for senior executives. Based on this model, when designing the equity grant ratio for state-controlled listed companies, it is necessary to set the incentive ratio within a specific range according to the company's size and historical performance, aiming to maximize the management's effort return under the condition that the dilution cost is controllable. Meanwhile, the equity incentive lock-up period should adhere to the "two-year lock-up + three-year phased unlocking" model, which strengthens the commitment of management to long-term value, while avoiding the fear of market fluctuations caused by an excessively long lock-up period, thereby ensuring that management continues to focus on strategic execution.

Sixth, in response to the second and third research questions, this study takes A-share state-controlled listed companies as its empirical sample and applies statistical methods to examine the performance effects of equity incentive plans. The empirical results show the following.

On the one hand, a positive correlation emerges between the adoption of equity-incentive schemes and the performance of state-controlled listed companies, and the magnitude of performance improvement is tied to incentive intensity: the greater the incentive strength, the more pronounced the gains. Statistical tests further show that this effect is industry-specific. In high-technology sectors, equity incentives exert a particularly strong influence on corporate performance, implying that such schemes can indeed reshape executive behaviour. Faced with the risks and pressures inherent in decision-making under uncertainty, incentivised managers adopt a more proactive stance, spurring the firm to invest in new technologies, products and projects.

On the other hand, although most state-controlled listed companies employ restricted-stock plans and extend coverage to a substantial share of employees, the empirical results indicate no significant performance differential across alternative incentive instruments, nor does the breadth of employee coverage materially affect performance. This suggests that the prevalent use of restricted stock and the broad inclusion of employees may be driven by considerations

beyond performance enhancement-chiefly a desire to signal fairness and to blend features of an employee stock-ownership plan-rather than by strict adherence to the theoretical logic or original objectives of equity incentives.

8.2 Research innovations

Taking account of the research questions posed, the methods employed and the findings obtained, this study's innovations are manifested in three principal respects.

First, it provides a genealogical explanation of the policy and regulatory regime governing equity incentives in Chinese state-controlled listed companies. This study provides a panoramic examination of the historical evolution and institutional content of the regulatory policies for equity incentives in Chinese state-controlled listed companies, and has completed a systematic restatement of the legal norms in this field. Given that the equity incentive system is nested within the dual regulatory framework of securities supervision for listed companies and state-owned assets management, and the ongoing deepening of China's state-owned enterprise reform, the relevant regulatory framework is in a state of dynamic adjustment. This has led to a significant composite and time-sensitive characteristic of the institutional environment. By constructing the "Equity Incentive Regulatory System Spectrum Framework," this studyintegrates the complex regulatory system. The framework systematically deconstructs the evolving trajectory of regulatory policies over different periods, focusing on their goal orientation, tool innovation, and constraint intensity. It clarifies the normative interaction logic between securities regulators and state-owned assets regulators in areas such as information disclosure requirements and incentive cost control, while also revealing the adaptation paths of policy experimentation mechanisms in innovative practices such as the differentiated authorization in the Sci-Tech Innovation Board (STAR Market). This research paradigm provides a structured foundation for understanding the development trends and core principles of the regulatory policies for equity incentives in China's state-controlled listed companies.

Second, the study offers a theoretical exposition of how equity incentives enhance performance in state-controlled listed companies. Recognising these firms' hybrid identity-combining state-ownership attributes with the characteristics of publicly traded companies-and the marked separation of ownership and control, the analysis adopts a principal-agent framework to construct a theoretical model linking executive equity incentives to improved corporate performance. The model explicates, at the theoretical level, the internal transmission channel through which equity-incentive schemes raise performance: by granting senior

executives a defined share of residual claims, the schemes bridge the structural divergence between their individual utility functions and the goal of maximising firm value, thereby optimising their risk-taking preferences in strategic decisions and their commitment to long-term investment. This theoretical architecture underscores the pivotal role of property-rights configuration in reconciling the tension between state-capital supervision and market-oriented operational efficiency, and it provides a rigorous paradigm for explaining the micro-level mechanism by which equity incentives affect performance.

Third, the study uncovers the dual institutional character and practical heterogeneity of equity incentives in state-controlled listed companies. The theoretical innovation of this study lies in its coupling analysis of macro-institutional characteristics and micro-practice forms, which systematically reveals the composite institutional nature of equity incentives in Chinese state-controlled listed companies. The study finds that these incentive arrangements are deeply rooted in the dual institutional foundations of state-owned enterprises' public attributes and listed companies' market attributes. Their uniqueness is characterized by: on one hand, they are subject to more stringent multi-regulatory constraints compared to non-state-controlled enterprises (including the prevention of state asset loss, control of total compensation, and the transmission of policy goals), leading to the formation of a unique tension in practice, where "wide coverage of incentives" coexists with "weakened incentive intensity." On the other hand, this gives rise to an extension of the functions of incentive tools-beyond alleviating core agency costs, equity incentive plans simultaneously carry the attribute of universal rewards for ordinary employees' historical contributions, reflecting the dual value transmission of strengthening organizational identity and sharing development outcomes through equity grants. This finding not only deconstructs the institutional causes of the deviation of equity incentives from the classic agency theory assumptions in the state-controlled context but also establishes the "policy regulation-functional differentiation" analytical paradigm as a theoretically appropriate framework for understanding the distinctive characteristics of Chinese corporate governance practices.

Fourth, the statistical tests conducted on equity-incentive performance in Chinese state-controlled listed companies yield two core findings.

1. The analysis confirms a positive, dose-dependent relationship between incentive intensity and corporate performance-especially pronounced in high-technology industries-and clarifies the behavioural mechanism at work. Implementing equity-incentive schemes significantly improves overall performance, and the magnitude of that improvement rises in step with incentive strength (for example, the number of shares granted or the proportion of

equity value). Most striking, the effect is markedly stronger in firms operating at the technological frontier. This result not only validates the efficacy of equity incentives in the state-controlled setting but also illuminates how they operate: by reshaping executives' risk preferences and decision patterns, the incentives prompt managers to adopt a more venturesome stance in the face of uncertainty, thereby catalysing substantive exploration of new technologies, products and projects. In turn, the finding provides critical empirical support for the strategic role of equity incentives in state-owned, innovation-driven enterprises central to national development goals.

2. This study challenges the traditional understanding of the selection of equity incentive tools and the scope of coverage. The statistical analysis leads to an counterintuitive conclusion: although state-controlled listed companies in China generally prefer to use restricted stock as an incentive tool and tend to include a significant proportion of employees (far beyond core executives and technical personnel) in the incentive pool, the impact of different incentive models (such as comparing restricted stock with stock options) on performance improvement is not statistically significant. Similarly, expanding the scope of incentive coverage for employees did not yield observable additional performance gains. This finding carries profound theoretical and practical implications. It strongly suggests that in the design of equity incentive schemes, the choice of the "restricted stock" model and the prevalence of the "wide coverage" strategy in state-controlled listed companies may be driven by factors significantly deviating from the classic incentive theory framework aimed at directly improving performance (such as agency theory and human capital theory). Instead, this model is more likely driven by considerations of internal fairness, universal employee welfare (giving it the characteristics of a "quasi-employee stock ownership plan"), and responses to policy guidance, among other non-economic objectives. This reveals the unique institutional logic and multi-goal balancing demands in the design of incentive mechanisms in state-owned enterprises, making an important contribution and contextual adjustment to existing equity incentive theory in the context of state-owned economies.

8.3 Policy recommendations

The equity-incentive practices of China's state-controlled listed companies are rooted in the reality-highlighted by managerial-power theory-of a pronounced separation between ownership and control; their core purpose is to narrow managerial-corporate interest misalignment, unlock executive potential and enhance governance efficiency by granting managers shares in the firm.

Through cross-national comparison, policy mapping, case analysis and model construction, this study has disentangled the complex landscape of incentives in state-controlled enterprises. The empirical results expose a central tension: on the one hand, incentive intensity is strongly and positively correlated with performance, especially in high-technology sectors; on the other, the widespread use of restricted stock and the broad inclusion of employees have not produced the expected differentiated performance outcomes. This implies that current practice may have drifted from the performance-centred logic of incentives toward broader goals such as fairness and inclusiveness. An optimised incentive system that aligns with the distinctive features and strategic mandates of state-owned enterprises is therefore urgently needed; the following recommendations are proposed.

First, an incentive-intensity calibration mechanism tailored to industry characteristics should be introduced. Both theoretical and empirical research confirm that the intensity of equity incentives is the core variable driving performance improvement. While current policies impose strict limits on the total amount and proportion of incentives (such as generally capping executive incentive ratios at 1%-2%), which help control equity dilution costs, they may also weaken the attractiveness of incentives for key talent. It is recommended to establish a flexible intensity grading system: for state-owned technology enterprises in strategic emerging industries (such as next-generation information technology, biomedicine, and high-end equipment), it should be allowed to exceed the existing upper limits and raise the total incentive amount for key R&D and management teams to the range of 3%-5%. The intensity design should introduce a "performance intensity linkage coefficient"-adjusting the number of shares granted dynamically using indicators of the company's innovation capabilities (such as R&D expenditure ratio, invention patent density) and the industry prosperity index as adjustment variables. Additionally, while strictly adhering to the "two-year lock-up + three-year phased unlocking" model confirmed by research, an "innovation milestone unlocking clause" can be added: when the company achieves a significant technological breakthrough or a new product's market share target, it would allow partial unlocking of rights in advance, providing immediate incentives for breakthrough innovations.

Second, it is essential to promote the transition of incentive tools from a "universal benefits" model to a "tiered customization" approach. The current "one-size-fits-all" model, primarily driven by restricted stock, blurs the lines between incentives and benefits. Cases like Hikvision demonstrate that including a large number of regular employees in incentive plans is more focused on rewarding historical contributions rather than linking them to future performance. To address this, it is recommended to create a "core - key - all staff" three-tier toolbox. For the

core layer, which includes executives and strategic scientists, the focus should be on promoting a composite tool that combines restricted stock and performance stock options. The option exercise price should be linked to innovation-related KPIs, such as the progress of R&D pipelines and the localization rate of core technologies, ensuring that the rewards are directly tied to long-term strategic objectives. For the key layer, which includes mid-level managers and key technical talents, pilot programs like the "project co-investment system" and "virtual equity plans" should be introduced. The co-investment system would require key personnel to invest their own funds and share the returns from significant R&D or M&A projects, while the virtual equity plan would use virtual dividend rights to reduce actual equity dilution while maintaining the sense of ownership in value creation for key talents. for the all staff layer, the existing universal incentive plans should be converted into an Employee Stock Ownership Plan (ESOP), which clearly distinguishes its welfare attribute. The ESOP should be independent of the executive incentive pool, with funding primarily from employees' voluntary contributions and supplemented by company subsidies, ensuring that core incentive resources are not crowded out.

Finally, performance evaluation must move beyond a narrow financial focus to incorporate the social value that state-owned enterprises are mandated to create. A multidimensional assessment system should therefore be constructed: the innovation dimension would track indicators such as progress on key technological breakthroughs, localisation rates of core technologies and the firm's role in standards-setting; the financial dimension would pivot toward long-horizon value metrics, emphasising EVA improvement and capitalised R&D ratios while down-weighting short-term profit targets; and the social dimension would capture non-financial outcomes-employee satisfaction and skills enhancement, supply-chain spill-overs, the degree of autonomous control over critical technologies and the retention rate of pivotal talent-thereby aligning incentive pay-offs with the strategic mission of state capital.

8.4 Research limitations and future directions

8.4.1 Limitations

Although the present study employs multi-dimensional empirical analysis to illuminate the core regularities and internal tensions of equity incentives in Chinese state-controlled listed companies, its explanatory reach is constrained by the boundaries of the theoretical framework, the characteristics of the available data and methodological scope. These constraints reveal

blind spots in current understanding and, simultaneously, point toward research avenues of significant theoretical and practical value.

First, the granularity of industry classification is coarse. While the analysis identifies heightened sensitivity to incentive intensity in the broad "high-technology" sector, the heterogeneity within that category is masked: the innovation cycles, risk profiles and human-capital intensity of a chip-design house and a biotech reagent firm differ markedly, yet both are subsumed under the same label, leaving incentive-intensity recommendations insufficiently tailored to sub-sectors. Conversely, traditional manufacturers undergoing digital transformation-e.g., machinery or chemical firms with high R&D intensity-are not properly captured, causing them to be excluded from flexible-incentive policies and leading to systematic underestimation.

Second, Another limitation is the insufficient focus on the dynamic nature of institutional change. This study utilizes cross-sectional data based on a specific policy period. However, due to the constraints of the research tools, dynamic factors that could influence corporate behavior were not incorporated into the analysis. For example, the dynamic impact of significant reform measures on corporate incentive behaviors was not considered. The evolution of company strategies from "pilot observation" to "routine implementation" is a process that spans time, and the learning curve effect of early adopters might distort performance attribution. Additionally, the evolution of employees' perceptions of equity incentives (from welfare expectations to shared risks) lacked longitudinal tracking data to provide supporting insights.

Finally, there is a need to optimize research methods by conducting a "process ethnography" of equity incentives. This involves creating conditions for in-depth on-site observations of decision-making processes in shareholder meetings, boards of directors, employee representative meetings, and regulatory bodies when reviewing incentive plans. By opening the "black box" of incentive plan formulation, the study can incorporate key stakeholders and interested parties involved in the governance of state-owned listed companies into the analysis model. This would allow for further measurement of the impact these stakeholders have on the development, implementation, and effectiveness of equity incentive plans.

8.4.2 Future research directions

First, incentive-fit studies should explore finer industry segments. While high-technology fields show higher sensitivity to equity incentives, broad industry groups mask key differences among specialised areas. Technology-intensive sectors vary in innovation cycles, risk levels, and

reliance on key talent. Future work should define optimal incentive ranges for each niche, test how effects differ across technological profiles, and create ways to identify traditional firms in transition. For industries such as machinery or basic chemicals, flexible rules are needed to recognise digital transformation and prevent gaps caused by fixed labels.

Second, research tools must better track institutional change. Static cross-section data cannot capture the lasting effects of major policy shifts on incentive behaviour. Scholars should build policy-response tracking models that trace how schemes change before and after regulatory turning points to see how shocks spread through firms. Long-run text analysis of governance documents, using semantic methods, can reveal step-by-step shifts in incentive logic and measure the move from early trials to mature systems. Repeated panel surveys, paired with behavioural data, can follow how employees' views of equity incentives shift from welfare to risk-sharing and map the joint change in risk attitudes and loyalty.

Finally, new methods are needed for "process ethnography" of equity incentives. Researchers should, where possible, observe meetings of shareholders, boards, employee councils, and regulators as they shape plans, opening the black box of design. By including all actors in state-controlled listed firms, scholars can measure how each group influences the design, roll-out, and impact of equity-incentive programmes.

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