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Research on the Integration Mechanism of New National System and Market Mechanism

Xiang Shaoxin*
School of Management, Yunnan Normal University, Kunming, 650092, China
***Corresponding author, E-mail: xshaox@163.com**

Abstract
This study explores in depth the integration mechanism of the new national system and market mechanism under the conditions of socialist market economy. The "novelty" of the new national system lies in its complementary and collaborative relationship with market mechanisms, rather than a simple replacement. The research constructs an analytical framework from three levels: theoretical logic, practical path, and challenge response, systematically analyzing the integration mechanism of the two in four dimensions: strategic orientation, resource allocation, organizational mobilization, and innovation ecology. Research has shown that the new national system is a new institutional arrangement and organizational model that organically combines government, market, and social entities. Its effective integration with market mechanisms is the key to solving the bottleneck problem of key core technologies and improving the overall efficiency of the national innovation system. In response to the problems of blurred boundaries, poor collaboration, and incompatible incentives in the current integration process, this article proposes optimization paths such as clarifying the boundary between government and market roles, innovating collaborative organizational models, and deepening scientific and technological system reforms, providing theoretical support and practical reference for key core technology research and development under the conditions of a sound socialist market economy.

Keywords:
New National System; Market mechanism; Fusion mechanism; Efficient market; a proactive government

1. Introduction

The current international scientific and technological competition landscape has undergone profound changes, with the wave of anti globalization and intensified technological competition. Key core technologies have become the strategic focus of great power games. Major developed countries have organized strategic scientific and technological breakthroughs through various forms, such as the United States strengthening its technological advantages through measures such as the Chip and Science Act (Mei, et al., 2025). In this context, China urgently needs to explore effective paths for tackling key core technologies in order to achieve the national strategic goals of high-level technological self-reliance and development of new quality productive forces. The Party Central Committee attaches great importance to the construction of a new national system. In 2022, the Central Committee for Deepening Reform approved the "Opinions on Improving the New National System for Key Core Technology Research and Development under the Conditions of Socialist Market

Economy", emphasizing the need to organically combine the government, market, and society, scientifically coordinate, concentrate efforts, optimize mechanisms, and work together to tackle key issues (Zhang, 2022). This policy orientation provides important guidance for studying the integration of the new national system and market mechanisms. Currently, the practice of the new nationwide system has been explored in multiple key areas, such as strategic emerging industries like chip manufacturing, aerospace, and biomedicine, all of which exhibit the characteristics of combining government strategic layout with market entity participation (Zhao Peng & Li, 2025). For example, in the semiconductor industry's research and development, the National Integrated Circuit Industry Investment Fund plays a guiding role with government funds, leveraging social capital exceeding one trillion yuan, while enterprises carry out research and development of chip design and manufacturing processes based on market demand, initially demonstrating the practical value of the integration of the two (Ma, 2025). However, from the perspective of practical effects, there are significant differences in the depth and efficiency of integration across different fields. In some areas, there is still a disconnect between government intervention and market autonomy, which further highlights the urgent need for in-depth research on the integration mechanism. Clarifying the integration logic of the new nationwide system and market mechanisms can not only provide theoretical guidance for technological breakthroughs in specific industries but also lay a solid institutional foundation for cultivating new productive forces.

2. Literature review

Domestic and foreign scholars have conducted various studies on the national system. The traditional national system (such as the "Two Bombs and One Satellite" model) has achieved significant results in specific historical periods, but it also has limitations such as detachment from the market, neglect of profitability and competitiveness, and insensitivity to changes in market demand (Sui, 2023). With the establishment and improvement of the socialist market economy system, the new national system has become a focus of academic attention. Western scholars have explored the role of government in technological innovation from the perspectives of national innovation systems and developmental state theory. Mariana Mazzucato proposed the theory of "entrepreneurial state", emphasizing that the state can not only repair market failures in promoting innovation, but also actively shape and create new markets (Mei, et al., 2025). Domestic research mainly focuses on the connotation, characteristics, scope of application, and relationship with market mechanisms of the new national system. The new national system is an institutional innovation under the conditions of socialist market economy, and its "novelty" lies in the organic combination of effective market and capable government (Wu & Wang, 2022). Research has shown that the new national system plays a crucial role in key core technology research areas characterized by high investment, high risk, and long cycles (Li□2020).

The above studies have laid the foundation for a deeper understanding of the new national system and provided useful references, but there is a lack of in-depth exploration of the integration mechanism between the government and the market in the specific context of China. The exploration of the micro mechanism, dynamic process, and systematic integration framework of how the two are integrated is still insufficient. Some domestic scholars have also conducted research from the perspective of industry segmentation, such as in the fields of new energy and artificial intelligence, exploring the synergistic effects of government subsidies, tax incentives, and market competition mechanisms under the new nationwide system. However, such research

often focuses on a single industry or specific policy tools, lacking a systematic cross-sectoral induction (Bian & Bai, 2025). Although Western scholars' research emphasizes the positive role of the government in innovation, their theoretical construction is based on the Western market economy system, failing to fully consider China's institutional advantages of "adhering to the leadership of the Party" and "the whole country working as one", and it is difficult to explain the unique logic of the integration of the nationwide system with market mechanisms with Chinese characteristics (Chen & Xie, 2024). The fragmentation and insufficient theoretical adaptability of existing research make it urgent to construct an integrated mechanism analysis framework that fits the Chinese context. This study aims to fill this research gap and construct a systematic fusion analysis framework.

3. Theoretical basis and logical inevitability of the integration of the new national system and market mechanism

3.1 Concept Definition

The new national system is a new institutional arrangement and organizational model under the conditions of socialist market economy, which aims to serve the strategic needs of the country, overcome key core technologies, and achieve the organic combination of government, market, and society (Sui, 2023). Its "novelty" is mainly reflected in adhering to the leadership of the Party, fully leveraging the decisive role of the market in resource allocation, and better playing the role of the government, abandoning the shortcomings of the traditional national system that relies too much on government power to allocate resources.

The market mechanism is a way to allocate resources through mechanisms such as price, competition, supply and demand, and is the foundation for stimulating innovation vitality and improving efficiency. In the field of technological innovation, the role of the market is mainly manifested as its guiding role in the direction of technology research and development, route selection, and allocation of various innovative resources.

3.2 Theoretical Basis

The market failure theory suggests that the government needs to compensate for institutional deficiencies, inadequate infrastructure, and network coordination failures in the innovation system. This theory provides a basis for government intervention in technological innovation and suggests that the government should play a role in areas of market failure.

The market construction theory emphasizes that the government can not only repair market failures, but also actively shape and create new markets. This theory goes beyond the traditional "market failure" framework and emphasizes the positive role of the government in leading innovation directions and creating new economic spaces. (Mei, et al., 2025).

The theory of collaborative governance holds that the collaborative interaction of multiple subjects is the key to complex innovation activities. The new national system involves multiple entities such as the government, enterprises, universities, and research institutes, and requires the establishment of a collaborative governance mechanism to achieve common goals (Mei, et al., 2025).

This study is based on the integrated application of the above three theories, deeply analyzing the mechanism of the new national system and market mechanism, and the integration mechanism. Based on this, it analyzes the challenges faced in the current integration and proposes creative countermeasures and suggestions.

3.3 Logical Necessity of Fusion

The integration of the new national system and market mechanism is logically inevitable. Firstly, due to the characteristics of key core technologies. This type of technology has characteristics such as high investment, high risk, long cycle, and strong externalities, and there is a risk of "failure" solely relying on the market or government (Li, 2020). The market mechanism is difficult to effectively incentivize long-term, high-risk original innovation, and pure government leadership may lead to a disconnect from market demand. Secondly, this is an inherent requirement of the socialist market economy. The socialist market economy system abandons the binary opposition between the market and the government, emphasizing that both the government and the market are indispensable in the process of economic development. The new national system is a manifestation of the organic combination of "efficient market" and "proactive government". Thirdly, this is necessary to address the shortcomings of the traditional national system. While the traditional national system has achieved significant results, it also has shortcomings such as relying too much on government power to allocate resources and neglecting market profitability and competitiveness. Introducing market mechanisms can compensate for the shortcomings of traditional systems in terms of sustained incentives, dynamic adjustment, and risk diversification, providing a "micro foundation" for the national system. In addition, the external demands for reshaping the global technology governance landscape are also driving the integration of the national system and the market system. Against the backdrop of deglobalization, barriers to international cooperation in the technology sector are increasing, and the cross-border flow of key core technologies is strictly restricted. Countries are strengthening the autonomy and security of their local technology systems (Zheng, et al., 2025). As the world's second-largest economy, China must integrate into the global innovation network while ensuring technological security. This requires a new type of national system to concentrate efforts on breaking through "bottleneck" technologies, while leveraging market mechanisms to enhance the international competitiveness and commercialization level of technology. Only by achieving synergy between the government and the market can China balance security and openness in global technology competition and occupy high-end links in the innovation value chain.

4.Construction of the Integration Mechanism of Three New National Systems and Market Mechanisms

Based on in-depth theoretical analysis and practical investigation, this article constructs a new integrated analysis framework of the national system and market mechanism that includes four core dimensions, as shown in Table 1.

Table 1: Integration Mechanism of New National System and Market Mechanism

Integration dimension	Government focus (having a government)	Market focus (efficient market)	Fusion mechanism and manifestation
Strategic leadership and demand anchoring	National will embodiment, top-level design, strategic planning, and direction guidance.	Market demand feedback, application scenario driven, efficiency signal.	Strategic demand coupling mechanism: The national strategic guidance and market demand signals feedback and dynamically adjust each other, ensuring that the research direction reflects both the national will and the future of the industry.
Resource element allocation and incentives	Basic research investment, inclusive policies, guidance funds, government procurement.	Competitive R&D investment, venture capital, efficiency first, profit oriented.	Incentive compatibility mechanism: Government funds leverage social capital, policy tools compensate for insufficient initial market investment, and share benefits and risks.
Organizational mobilization and collaborative implementation	Establish an innovation consortium, coordinate interests, and avoid fragmentation.	Enterprise leadership, contractual spirit, supply chain collaboration, and paid sharing of achievements.	Networked collaborative mechanism: Build a research and development platform or alliance involving multiple parties, including government, industry, academia, research, and funding, to form a cross disciplinary and cross subject collaborative innovation network.
Institutional Environment and Innovation Ecology	Establish institutional systems for intellectual property protection, technological evaluation, talent incentives, and fault tolerance and exemption.	Establish healthy competition, industrial clusters, industry standards, and venture capital.	Ecological nourishment mechanism: The government creates a stable and predictable institutional environment to ensure market vitality; Market practice feedback continues to optimize institutional design, forming a positive cycle.

This framework system elaborates on the integration mechanism of the new national system and market mechanism in various dimensions:

In the dimensions of strategic guidance and demand anchoring, the government plays a strategic guiding role, while the market provides demand signals, and the two are integrated through a strategic demand coupling mechanism. For example, in the development of the new energy vehicle industry, the state formulates the "New Energy Vehicle Industry Development Plan" to provide strategic guidance, while market demand guides enterprises to make targeted research and development investments (Editorial Department, 2020).

In terms of resource allocation and incentive dimensions, the government provides support through basic research investment and inclusive policies, while the market provides incentives through competitive research and development investment and venture capital, forming an incentive compatibility mechanism. Statistics show that in recent years, enterprises have accounted for over 70% of the total research and experimental development funds in society, further consolidating their position as innovation entities (Editorial Department, 2020).

In terms of organizational mobilization and collaborative implementation, the government is responsible for establishing innovation consortia and coordinating interests, while market entities participate through contractual spirit and supply chain collaboration, forming a networked collaborative mechanism. The national innovation platform led by central enterprises integrates universities, research institutes, and upstream and downstream enterprises to form a full chain innovation of "basic research application development industrial transformation" (Zhai, 2025).

In the dimensions of institutional environment and innovation ecology, the government is responsible for building institutional systems, and the market forms a benign competitive environment. The two interact through ecological nourishment mechanisms. The government creates a stable and predictable institutional environment to ensure market vitality; Market practice feedback continues to optimize institutional design, forming a positive cycle.

The integration of mechanism between the new nationwide system and market mechanisms also exhibits dynamic characteristics across different stages of technological innovation, where the weight of government and market roles undergoes differentiated adjustments (Liu & Liu, 2024). In the basic research stage, the government bears the primary responsibility for investment, strengthening the foundation of innovation through national laboratories, key research and development plans, etc., while market entities can participate in exploring application scenarios for basic research. In the application development stage, market entities become the main players in research and development, while the government reduces the risks of corporate research and development through policies such as tax relief and intellectual property protection. In the industrialization stage, market mechanisms dominate resource allocation, with enterprises commercializing technological achievements based on market supply and demand, while the government is only responsible for maintaining market order and fair competition (Zhou & Li, 2024). Taking the research and development of lithography machines as an example, during the basic research stage of tackling core technological challenges, the state supports universities and research institutes through special funds to conduct basic research on photoresists, optical components, etc. In the manufacturing and market promotion stage of the entire machine, enterprises take the lead in integrating industrial chain resources and optimizing product design based on the market demand of the semiconductor industry, which is a typical manifestation of this dynamic integration (Zhou & Li, 2024).

5. The main challenges facing current integration

5.1 The boundary between government and market is blurred

In the current process of integrating the new national system with market mechanisms, a common phenomenon is that the government either intervenes in microeconomic activities offside or lacks basic research, environmental creation, etc (Li, 2020). On the one hand, the government sometimes excessively intervenes in competitive research and development processes that should be market driven, affecting market efficiency; On the other hand, the government's investment in basic research and the supply of common technologies is still insufficient, and there is a phenomenon of "deficiency".

5.2 Poor collaboration mechanism

There are barriers between innovation entities, insufficient coupling between government, industry, academia, research, and application, and an imperfect mechanism for distributing benefits and sharing risks. Although China has established various forms of innovation consortia, most of them are still in the shallow cooperation stage, lacking deep collaboration and long-term mechanisms. The information asymmetry and inconsistent goals among various entities have affected the effectiveness of collaborative innovation.

5.3 Incompatibility of Evaluation Incentives

The current technology evaluation system still has a "paper only" tendency, and there is insufficient incentive for enterprises to invest in key core technologies in the long term(Li Weiliang□2020). Financial capital lacks patience for long-term, high-risk research and development activities, and there is a contradiction between short-term profit seeking and long-term innovation (Cao J& Zhang, 2025). In 2023, the annual R&D investment of central enterprises will reach 1.1 trillion yuan, exceeding one trillion yuan for three consecutive years. However, how to improve the efficiency of investment is still a difficult problem to be solved (Zhai, 2025).

.5.4 Insufficient resilience of innovation ecosystem

There are problems in China's innovation ecosystem, such as weak basic research support, a shortage of high-end talents, especially strategic scientists, and poor channels for the transformation of scientific and technological achievements. Although China's total R&D investment ranks among the top in the world, the proportion of basic research is relatively low, and the original innovation capability is insufficient. In addition, the institutional environment for intellectual property protection and the transformation of scientific and technological achievements still needs to be further improved. Meanwhile, the uneven development of regional innovation ecosystems also restricts the overall effectiveness of integration. The eastern coastal areas of China are densely populated with innovation resources, have mature market mechanisms, and enjoy high efficiency in government-enterprise collaboration; whereas the central and western regions face issues such as a shortage of innovative talents, insufficient vitality of market entities, and a single channel for the transformation of scientific and technological achievements, making it difficult for the policy dividends of the new nationwide system to be effectively implemented (Gao & Xie, 2025). This regional disparity makes it difficult to achieve optimal allocation of innovation resources nationwide (Yan & Wen, 2025), and some characteristic industries in the central and western regions struggle to obtain sufficient market support for technological breakthroughs, which also affects the integrity and synergy of the integration of the new nationwide system and market mechanisms.

6. Suggestions for Optimizing Fusion Efficiency

6.1 Clarify the boundary between government and market roles

The government should focus on strategic planning, environmental development, investment in basic research, rule making, and market regulation, while the market should take the lead in competitive research and

development, achievement transformation, and industrial application. Specifically, for technological innovations of different natures, differentiation strategies should be adopted: for key core technologies with clear goals, small quantities, and requiring significant investment, government coordination needs to play a key role; Venture capital should play a key role in innovation activities with unclear goals and large quantities.

6.2 Innovative Collaborative Organizational Model

The state should encourage and promote mechanisms such as "unveiling and leading", "horse racing", and innovation alliances, and strengthen the integration of industry, academia, and research with enterprises as the main body. At the same time, we should explore the establishment of a "national strategic technology market", stabilize market expectations through demand side policies such as institutionalized procurement, and drive technological iteration (Zhai, 2025). The successful experience of Japan's semiconductor national system (Super LSI project) shows that the project must be led by real experts, and personnel and budget power must be entrusted to experts rather than officials. At the same time, efforts must be made to create a mechanism that is both competitive and cooperative (Sun, 2025).

6.3 Deepening the reform of the scientific and technological system

In terms of technological system reform, the country should improve trust based management of scientific research funds, such as the "lump sum system" and "negative list", to improve the efficiency of scientific research fund utilization(Cao & Zhang, 2025); Establish a scientific and technological talent evaluation system guided by practical contributions, and eliminate the tendency of "only focusing on papers"; Strengthen the protection and application of intellectual property rights, and stimulate innovation vitality. Statistics show that since the launch of ChatGPT, the US defense and security departments have paid $700 million for artificial intelligence projects, demonstrating the US government's emphasis and support for AI technology, forming a three-level boosting mechanism of "venture capital enterprise research and development government procurement" (Mei, et al., 2025).

6.4 Building a high-level innovation ecosystem

Firstly, we should increase investment in basic research and enhance our original innovation capabilities; Secondly, we need to develop 'patient capital' and guide financial capital to invest more in early-stage scientific and technological innovation(Ding & Ma, 2025); At the same time, we should vigorously cultivate strategic scientists and form a growth echelon (Bai, 2025); In addition, we should deepen the construction of a unified national market, break down barriers to factor flow, and provide a broader stage for integration. The basic research layout of the United States in the field of artificial intelligence can be traced back to the 1950s. Since the Dartmouth Conference first proposed the concept of "artificial intelligence" in 1956, the National Science Foundation (NSF) of the United States has continuously funded research on underlying technologies such as neural networks and machine learning. This long-term investment has laid a solid foundation for technological innovation (Mei, et al., 2025).

7. Conclusion

This study systematically explores the integration mechanism of the new national system and market mechanism, and draws the following main conclusions:

The organic integration of the new national system and market mechanism is an effective path to overcome key core technologies, and its essence is the dialectical unity of "national strategic leadership" and "market mechanism foundation". The two are embedded and synergistically enhanced through four dimensions: strategic anchoring, resource allocation, organizational mobilization, and ecological construction.

The new national system is an important institutional innovation under the conditions of socialist market economy, and its success lies in the organic combination of effective market and capable government. Compared with the traditional national system, the new national system pays more attention to the decisive role of the market in resource allocation and respects the laws of the market economy.

The current integration process still faces many challenges and needs to be continuously optimized through systematic reforms. The problems of blurred boundaries between the government and the market, poor coordination mechanisms, and incompatible evaluation incentives have constrained the full play of integration efficiency, and solutions need to be sought from the perspective of institutional mechanisms.

In short, the integration of the new national system and market mechanisms is a complex and systematic project that requires a combination of theoretical innovation and practical exploration, continuous optimization of the system and mechanisms, in order to fully leverage the advantages of the socialist system with Chinese characteristics, achieve breakthroughs in key core technologies, and help achieve high-level technological self-reliance and self-improvement.

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