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Logic and Path of China's Regional Economic Disparities: From Institutional Change, Factor Flow and Technological Innovation

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KEYWORDS

Regional Economic Disparities;
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ABSTRACT

This article employs the theories of institutional change, factor flow and technological innovation to deeply analyze the formation mechanism of regional economic disparities in China. Research shows that regional differences in institutional flexibility, obstacles to the flow of factors, and the gradient distribution of technological innovation jointly lead to the imbalance in regional development. By sorting out regional economic data and policy practices, a coordinated development path of building an elastic institutional environment, eliminating barriers to factor flow, and improving the diffusion mechanism of technological innovation is proposed, providing theoretical support for promoting balanced regional economic development.

LITERATURE REVIEW

The imbalance in China's regional economic development is a notable feature accompanying the process of reform and opening up. In terms of economic aggregate, Guangdong Province's GDP exceeded 13 trillion yuan in 2023, which is 8.3 times the combined GDP of Gansu, Qinghai, Ningxia and Xizang during the same period. In terms of development quality, the labor productivity per capita in the eastern region reached 186,000 yuan, which is 1.4 times that of the northeastern region[1]. This gap stems not only from differences in historical foundations and geographical conditions, but is also closely related to regional differentiation in institutional arrangements, factor allocation and innovation capabilities. The study of regional economic disparities has always been a core issue in the field of economics, and different schools of thought have continuously explored their formation mechanisms. The school of institutional economics emphasizes the decisive role of institutional arrangements in regional development. North pointed out that efficient systems can reduce transaction costs and stimulate productive activities, while rigid systems can suppress economic vitality[2]. Domestic scholars' research has further verified this view, finding that the eastern region, due to its early start in market-oriented reforms and low degree of government intervention, has formed a more flexible institutional environment. In 2023, the average marketization index of eastern provinces was 7.8, while that of the western region was only 4.2. This institutional difference directly affects the efficiency of regional economic growth[3]. In terms of the theory of factor flow, the neoclassical growth theory holds that the free flow of factors will gradually narrow regional disparities. However, in reality, there are significant barriers to factor flow.

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Relevant studies show that China's labor mobility presents a feature of "eastward concentration". In 2023, 81% of the cross-provincial mobility of migrant workers from the central and western regions flowed to the east. Capital flows are affected by the segmentation of the financial market. The social financing scale in the eastern region accounts for 58% of the national total. The financing costs of enterprises in the central and western regions are 1.2 to 1.5 percentage points higher than those in the eastern region. The imbalance in factor flows has exacerbated the regional development gap[4].From the perspective of technological innovation theory, Schumpeter's innovation theory emphasizes that technological progress is the core driving force of economic growth[5]. Subsequent research has found that China's technological innovation shows a distinct "gradient feature". The eastern region has gathered 70% of the country's high-tech enterprises and 68% of valid invention patents, forming a spatial pattern of "innovation polediffusion circle". In contrast, the technology absorption capacity of the central and western regions is relatively weak. In 2023, the transaction volume of technology contracts in these regions accounted for only 18% of the national total. The regional gap in technological innovation has become an important factor widening the economic development gap[6].

Overall, existing studies mostly explain regional disparities from a single dimension, such as emphasizing the role of policy preferences or focusing on the impact of geographical location. Although the causes of regional economic disparities have been revealed from different perspectives, there is a lack of systematic analysis of the interactive relationship among institutions, elements and innovation. This paper attempts to break through this single perspective and construct a collaborative analysis framework of "institutionelementinnovation", incorporating the dynamics of institutional change, the directionality of element flow and the accumulative nature of technological innovation into a unified analysis framework, deepening the understanding of the generation logic of regional economic differences, and revealing the generation logic of regional economic differences under the interaction of the three. And put forward targeted policy suggestions in combination with the regional coordinated development strategy of the new era.

THEORETICAL FRAMEWORK: THE TRIPLE GENERATION MECHANISM OF REGIONAL ECONOMIC DISPARITIES

Institutional Change Theory and Differences in Regional Institutional Flexibility

The theory of institutional change holds that institutions are not static but are in a process of dynamic adjustment. Institutional resilience (that is, the ability of institutions to adapt to environmental changes) directly affects regional economic vitality. There are significant differences in the flexibility of regional systems in China: These differences not only profoundly affect the economic development speed of different regions, but also shape the distinctive regional economic ecosystems. The eastern region, taking the lead in reform and opening up, has formed an institutional innovation model of "trial and erroradjustmentsolidification". Take Yiwu, Zhejiang Province as an example. Its development process can be regarded as a classic case of how institutional flexibility has contributed to the economic take-off of a region. In the 1970s and 1980s, the local area started with the folk trade of "exchanging chicken feathers for sugar". Before the planned economy system was fully loosened, the local government of Yiwu, with its acute market insight and innovative courage, tacitly approved and gradually regulated the folk small commodity trading activities. With the continuous changes in market demand, the government has been constantly optimizing the business environment. From establishing small commodity markets to launching the "Run at Most Once" reform, it has been continuously improving the efficiency of government services. Today, Yiwu has developed into the world's largest small commodity market. The length of its negative list for market access is 30% shorter than the average in the central and western regions, and the efficiency of administrative approval is 40% higher. This flexible institutional environment has significantly reduced the institutional transaction costs of enterprises. Take the establishment time of enterprises as an example. In 2023, the average establishment time of private enterprises in the eastern region was only 2.3 days, while in the western region it was 4.1 days[7]. Meanwhile, the eastern region has also attracted a large number of high-quality domestic and foreign resources by establishing free trade pilot zones and carrying out institutional innovations in investment, trade, finance and other fields, further enhancing the regional economic competitiveness.

In contrast, the institutional adjustments in some central and western regions have lagged behind the development demands. Influenced by the legacy of the planned economy, the governments in these regions have more direct intervention in economic activities. Take a major energy province in the west as an example. For a long time, government-led energy development projects have occupied a large amount of resources and policy preferences, which has restricted the development space of the private economy. Data shows that in 2023, the proportion of state-owned capital in fixed asset investment in western provinces reached 38%, 15 percentage points higher than that in eastern provinces. The rigid institutional system not only increases the operating costs of enterprises but also suppresses the innovative drive of market entities. For instance, in the project approval process, some enterprises have to go through a series of complicated

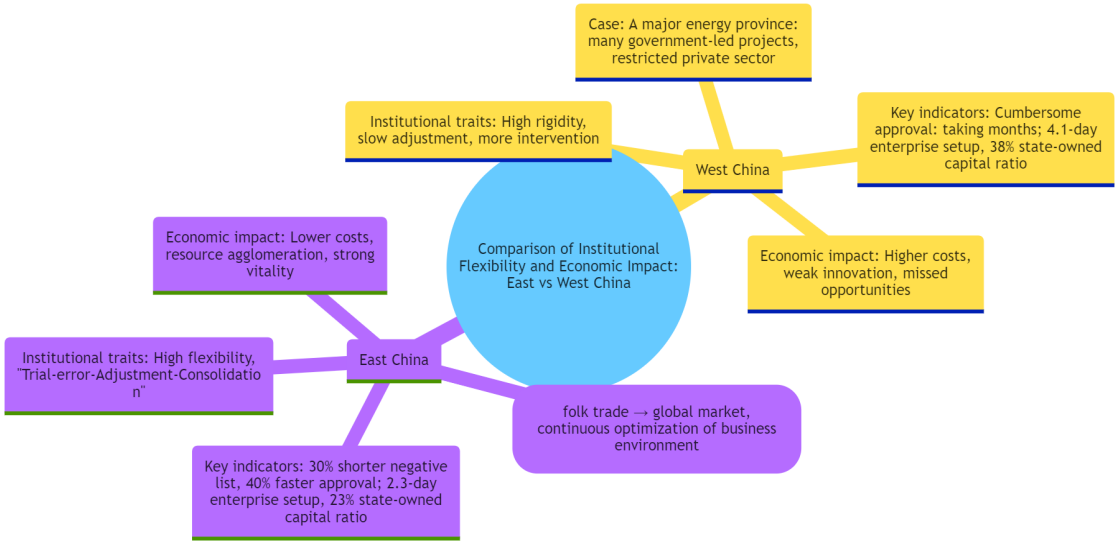

Figure 1 | Comparison of Institutional Flexibility and Economic Impact: East vs West China

procedures and spend months to obtain approval, thus missing out on market opportunities. In addition, the central and western regions also have obvious deficiencies in talent introduction policies and incentive mechanisms for scientific and technological innovation, making it difficult to form institutional advantages that can attract the aggregation of high-end elements. The rigidity of the system has restricted the release of the vitality of market entities[8] (**Figure 1**).

Factor Flow Theory and Imbalance in Regional Factor Allocation

The core viewpoint of the factor flow theory lies in that the free and efficient flow of various production factors is the foundation for regional economies to reach equilibrium. However, in China's actual development, the flow of factors has shown a distinct feature of "one-way aggregation", and this unbalanced flow pattern has further exacerbated the imbalance in regional development.

From the perspective of labor factors, "peacocks flying southeast" has become a long-standing flow trend. According to the monitoring data of the National Bureau of Statistics, the net outflow of the working-age population aged 15 to 64 in the central and western regions reached 12 million in 2023. Behind this figure lies a large number of young and middle-aged laborers leaving their hometowns in search of better development opportunities. Among them, 80% of the outflow of labor force eventually flows into the manufacturing and service sectors in the eastern regionthe booming industrial clusters in the east have created a dense array of jobs, ranging from assembly lines in electronic assembly workshops to various positions in urban service industries, continuously absorbing labor from the central and western regions. This mobility directly leads to a consistently abundant supply of labor in the eastern region, providing a stable human resource support for local industrial expansion and economic growth. In contrast, the central and western regions are confronted with the predicament of "hollowing out of human capital", especially in rural areas where the average age of the left-behind labor force has reached 57. This group not only fails to meet the demands of modern agriculture and rural industrial upgrading in terms of physical strength and skills, but also faces a bottleneck of insufficient human resource reserves when cultivating local economic vitality in the central and western regions.

The flow of capital elements is restricted by the fragmented state of the financial system, presenting a significant "siphon effect". The eastern region, with its well-established capital market system formed over many years, including a multi-level equity market and an active venture capital environment, has a distinct advantage in the field of direct financing. In 2023, the proportion of direct financing in the eastern region reached 45%, and a large amount of social capital flowed into high-quality enterprises and emerging industries through stocks, bonds and other means. However, the proportion of direct financing in the central and western regions is only 22%[9]. The development of the financial market is relatively lagging behind, and enterprises rely more on traditional bank credit for financing. What is more notable is that under the current financial system, a large amount of funds flow from the underdeveloped central and western regions to the economically active eastern regions through the internal dispatch of the banking system, creating a "capital depression" effect. This one-way flow of funds has made the already tight capital supply in the central and western regions even scarcer. The financing costs for enterprises in these regions are generally 1.2 to 1.5 percentage points higher than those in the eastern regions, which has restrict-

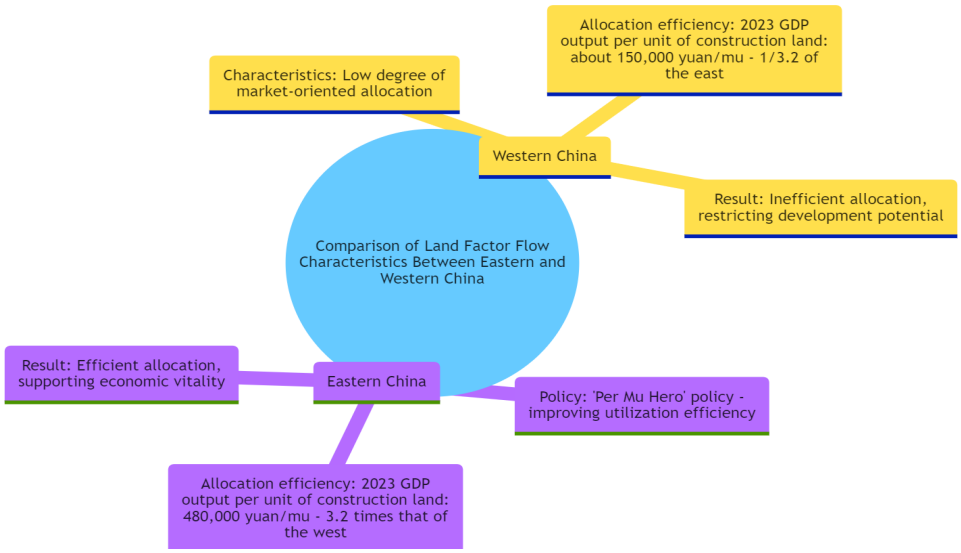

Figure 2 | Comparison of Land Factor Flow Characteristics Between Eastern and Western China

ed the pace of local industrial upgrading and innovation and entrepreneurship.

The degree of market-based allocation of land factors varies significantly among regions. The eastern region has incorporated land use efficiency into the enterprise assessment system through innovative policies such as "judging heroes by per mu output", compelling enterprises to enhance the output benefits per unit of land. Data from 2023 shows that the GDP output per unit of construction land in the eastern region reached 480,000 yuan per mu, which is 3.2 times that of the western region[10]. This efficient allocation not only directs the limited land resources to industries with higher added value, but also promotes the optimization and upgrading of the industrial structure. However, the degree of market-based allocation of land factors in the western region is relatively low. There are still many administrative interventions in the links of land transfer and circulation, which makes it difficult for land resources to concentrate in high-efficiency fields. In some areas, there is even a coexistence of idle land and inefficient utilization. This inefficient allocation of land factors directly restricts the release of development potential in the central and western regions and has become a major obstacle in their economic catch-up process (**Figure 2**).

Technological Innovation Theory and Regional Innovation Capacity Gradient

The theory of technological innovation reveals that the cumulative and path-dependent nature of innovation activities will naturally give rise to regional innovation gradients. In China, this gradient presents a distinct pattern of "the east taking the lead, the central region following, and the west catching up", and continuously influences regional economic balance through industrial transmission.

The eastern region, relying on years of innovation accumulation, has established a closed-loop innovation chain of "basic researchapplication developmenttechnology transfer". Each link in this chain has formed an efficient and coordinated operation mechanism: basic research relies on top universities and research institutes to lay a solid foundation, application development is led by enterprises to meet market demands, and the transformation of achievements is quickly implemented with the help of a complete intermediary service system. The R&D investment data for 2023 clearly demonstrates this advantagethe R&D investment intensities of Beijing, Shanghai and Guangdong reached 6.8%, 4.2% and 3.4% respectively, all significantly exceeding the national average of 2.55%. Abundant investment in research and development has given rise to significant technological breakthroughs. In the field of artificial intelligence, enterprises in the eastern region hold over 70% of the country's core algorithm patents. In the field of biomedicine, the technology transfer rate of innovation clusters such as Zhangjiang Medicine Valley and Beijing Zhongguancun Life Science Park is 30% higher than the national average. This technological advantage is directly reflected in the international innovation competitiveness. The number of PCT international patent applications in the eastern region accounts for 72% of the national total, which means that the recognition and layout capacity of its technological achievements on a global scale far exceed those of other regions[11].

The innovation capabilities of the central and western regions are constrained by "dual shortcomings". On the one hand, the long-term insufficiency of R&D investment has become a major obstacle to innovation activities. In 2023, the proportion of R&D expenditure to GDP in the western region was only 1.2%, which was less than one-third of that in the developed eastern prov-

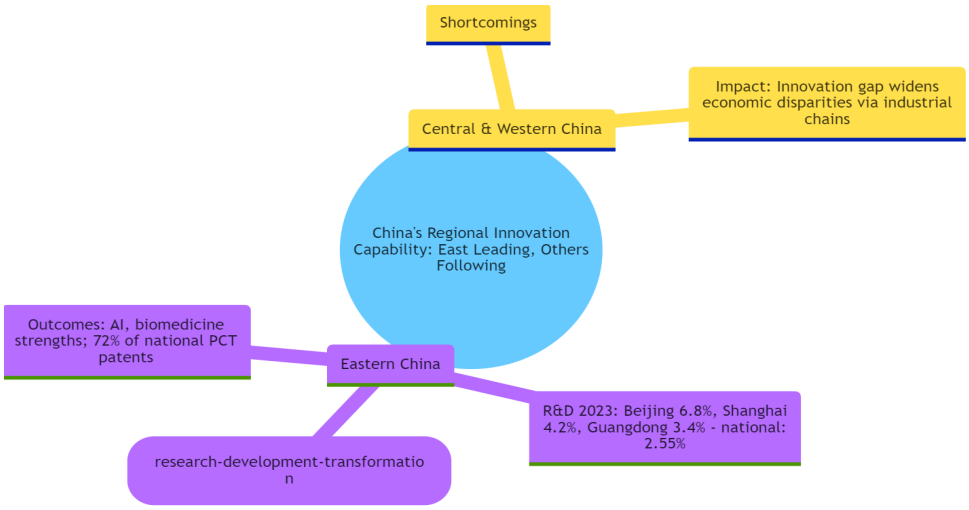

Figure 3 l China's Regional Innovation Capability: East Leading, Others Following

inces. Limited investment is hard to support systematic basic research, resulting in weak original innovation capabilities. Most enterprises still remain at the stage of technological imitation. On the other hand, the low conversion rate of innovation achievements has led to a predicament where "research and development and industry are two separate entities". Even in provinces like Shaanxi and Sichuan, where scientific and educational resources are relatively concentrated and there are a considerable number of universities and research institutes, the industrialization rate of their patents is still less than 35%, far lower than the average level of 55% in the eastern region. Delving into the root cause, this is not only related to the incomplete industrial chain and the absence of pilot production in the central and western regions, but also constrained by the scarcity of intermediary services for technology transferthe "valley of death" from laboratory achievements to market products is hard to cross, and a large number of patents can only remain on paper.

This gradient difference in innovation capabilities does not exist in isolation but continuously amplifies regional economic disparities through the transmission of industrial chains. The eastern region, relying on its technological advantages, firmly occupies the high-end links of the industrial chain and dominates high value-added fields such as R&D design and core component production. Due to insufficient innovation capabilities, the central and western regions are mostly locked in low value-added links such as processing and assembly, and are in a weak position in the distribution of the value chain. This "high-endlow-end" industrial division of labor pattern has led to an imbalance in regional economic development, which, driven by continuous technological innovation, has shown a trend of widening disparities (**Figure 3**).

REALISTIC MANIFESTATIONS OF REGIONAL ECONOMIC DISPARITIES

Regional Differentiation of Institutional Environment

The marketization index shows that in 2023, Guangdong and Zhejiang scored 8.2 and 7.9 respectively in terms of marketization, while Qinghai and Gansu were less than 4.5. The differences in the institutional environment are directly reflected in the business environment. Indicators such as the time for business establishment and the processing time for construction permits in the eastern region are all better than those in the central and western regions. In 2023, the growth rate of private investment in the eastern region reached 8.7%, 3.2 percentage points higher than that in the western region[12].

Spatial Imbalance in Factor Allocation

In 2023, the eastern region accounted for 39% of the country's permanent resident population, yet it gathered 52% of the country's employed population, 58% of the social financing scale, and 65% of college graduates. The excessive concentration of factors has led to a "crowding effect" in the eastern region (such as excessively high land costs), while the central and western regions are facing insufficient factor supply. In 2023, the average labor shortage of large-scale industrial enterprises in the western region reached 15%.

Gradient Gap in Innovation Capacity

The added value of high-tech industries in the eastern region accounted for 25.6% of the total added value of designated-size industrial enterprises, while in the western region it was only 12.3%. The added value of the core industries of the digital economy in the eastern region accounted for 9.8% of the GDP, which was 2.6

Table1 I A Comparison of the Actual Manifestations of Regional Economic Disparities in China

Dimensions of Disparity	Characteristics of Eastern China	Characteristics of Central & Western China
Institutional Environment Divergence	High marketization, favorable business environment, strong private investment vitality	Low marketization, lagging business environment, slow growth of private investment
Factor Allocation Imbalance	High factor agglomeration (employment, financing, talent, etc.)	Inadequate factor supply (e.g., large labor shortage)
Innovation Capability Gap	High proportion of high-tech and digital economy, leading high-end industrial chain links	Low proportion of high-tech and digital economy, mainly undertaking low-end industrial chain links

times that of the western region. The gap in innovation capabilities has led to a vertical differentiation of "high-end to low-end" in regional industrial division of labor. The eastern region dominates the R&D and design links, while the central and western regions mostly undertake processing and assembly tasks, resulting in a significant disparity in value chain benefits.

PATH SELECTION FOR COORDINATED REGIONAL DEVELOPMENT

Build a Flexible and Inclusive Institutional Environment

To break the constraints of insufficient institutional flexibility on the development of the central and western regions, it is necessary to adopt a dual approach of pilot breakthroughs and mechanism optimization. The implementation of the "Institutional Flexibility Pilot Zone" construction in key regions such as the Chengdu-Chongqing Twin-City Economic Circle and Xi 'an, a national central city, does not simply replicate the experience of the eastern regions. Instead, it involves simplifying the business start-up process and compressing the approval procedures that have been formed in the "streamlining administration, delegating power, improving regulation and upgrading services" reform in the eastern regions. Transform into quantifiable and scalable standardized institutional normsfor instance, compile core indicators such as the list of materials required for enterprise registration and the approval time limit into a unified operation manual to ensure the stable implementation of the reform's effectiveness. This process needs to be combined with the industrial characteristics of the central and western regions, and explore more targeted institutional innovations in advantageous fields such as energy and agriculture. The goal is to reduce the time for starting a business in the central and western regions to within three days by 2025, gradually narrowing the institutional efficiency gap with the eastern regions.

In resource-based provinces, the boundary between the government and the market needs to be redefined through the "government service list" system. The list will clarify the scope of the government's rights and responsibilities in project approval and resource allocation, and eliminate unnecessary administrative intervention. For instance, the approval process for mine development projects will be reduced by 30% from the current procedures, enabling enterprises to have greater autonomy in technological transformation, market expansion and other aspects. At the same time, a dynamic adjustment mechanism for the list should be established. Service contents should be regularly optimized based on feedback from enterprises and the demands of industrial development, shifting from "government-led" to "market-oriented" to unleash the vitality of the private economy.

Smooth the Two-Way Flow Channels of Factors

The smoothness of labor mobility is directly related to the balance of regional human resources. The construction of a unified national social security transfer and continuation platform should focus on "seamless connection throughout the entire process". The platform should not only realize the "one-stop online processing" for the cross-provincial transfer of endowment insurance relations, but also integrate the transfer functions of related rights and interests such as medical insurance and housing provident fund. Through data sharing, it should eliminate the proof barriers for handling in different places, so that migrant workers do not have to run around for procedures during their mobility, and effectively solve the pain point of "easy mobility but difficult household registration". In response to the aging problem of the rural left-behind labor force in the central and western regions, vocational skills training programs can be implemented simultaneously. By integrating local characteristic industries, local skilled talents can be cultivated to reduce excessive reliance on external labor.

Innovation in cross-regional capital allocation needs to take into account both "guidance" and "incentives". The "Regional Coordinated Development Fund" with a scale of no less than 100 billion yuan should adopt a market-oriented operation model and set up sub-funds

to meet the financing needs of different industries in the central and western regions. Priority support should be given to strategic industries such as new energy and advanced manufacturing. For eastern enterprises participating in investment in the central and western regions, in addition to tax reduction and exemption, It is possible to explore linking investment quotas with scarce resources such as carbon emission rights and land use indicators, to form a virtuous cycle where "capital flows into the central and western regions and returns are fed back to the eastern regions". Meanwhile, it is necessary to improve the local financial system in the central and western regions, encourage city commercial banks and rural commercial banks to deeply cultivate the local market, and lower the financing threshold for small and medium-sized enterprises.

The key to the reform of land factors lies in activating the potential value of land in the central and western regions. The pilot program for the entry of collectively-owned business land into the market needs to clearly define the scope of entry, transaction rules and income distribution mechanisms. It should allow farmers to share the increased value through methods such as land management rights shareholding. At the same time, a cross-regional land index trading market should be established to connect the land demand in the eastern region with the surplus indicators in the central and western regions. This not only ensures the development space in the eastern region but also brings capital injection to the central and western regions. Realize the transformation of "land quotas into capital".

Build an Innovative and Coordinated Development Network

The cooperation mechanism of "R&D in the east + transformation in the central and western regions" requires the establishment of a physical connection platform. Support universities and research institutions in the eastern region to set up technology transfer bases in the industrial concentration areas of the central and western regions. These bases should not only undertake the function of technology implementation but also act as "technology brokers"conducting in-depth research on the technological demands of enterprises in the central and western regions in the early stage and guiding research and development institutions in the eastern region to tackle key problems in a targeted manner. In the medium term, provide pilot plant sites and equipment support to reduce the enterprise's conversion costs. In the later stage, assist in connecting with market resources to form a closed loop of "research and development transformation industrialization". The goal is to keep the average annual growth rate of technology contract transaction volume in the central and western regions stable at over 25% by 2027, gradually narrowing the technological gap with the eastern regions.

Support for innovation in the central and western regions should reflect "precise allocation". The 35% proportion of the central government's science and technology expenditure allocated to the central and western regions should be mainly inclined towards two types of fields: one is the innovation of characteristic industries in line with the resource endowments of the central and western regions, such as new energy technology in the northwest and biomedicine in the southwest. The second is the construction of platforms to address the shortcomings in basic innovation. In the layout of the 10 national-level technology innovation centers, each center focuses on 1 to 2 specific industries, and is equipped with professional incubators and industrial parks to cultivate a complete ecosystem from technology research and development to industrial clusters. Meanwhile, innovative enterprises in the eastern regions are encouraged to transfer their pilot production and manufacturing processes to the central and western regions, thereby enhancing local innovation capabilities through "technology spillover".

CONCLUSION

The differences in regional economic development in China are the result of the long-term interaction among institutional adaptability, the state of factor flow and innovation capacity. From an institutional perspective, the eastern region has formed an institutional ecosystem that can flexibly respond to market changes through continuous reform and exploration. In contrast, the central and western regions are constrained by the lag in institutional adjustments and the inertia of administrative intervention, making it difficult for market entities to fully unleash their vitality. This divergence in institutional adaptability constitutes the fundamental differences in regional development.

The imbalance in factor allocation stems from the unidirectionality of flow and efficiency differences: The eastern region has become the core of factor convergence due to the agglomeration effect of industries, while the central and western regions are facing a structural shortage of factor supply. This allocation deviation not only affects the efficiency of resource utilization but also solidifies the initial condition gap for regional development.

The gradient differentiation of innovation capabilities is transmitted through the industrial chain to form hierarchical differences in development momentum: The eastern region has established a complete innovation chain from basic research to technology transfer, thus occupying high-value links in the industrial chain. Due to the breakage of the innovation chain, the central and western regions are mostly in low value-added links in industrial division of labor, resulting in a continuous weakness in development momentum.

Narrowing regional disparities cannot rely solely on external support; instead, a new mechanism of "institutional adaptationelement symbiosisinnovation linkage" needs to be established. Specifically, through institutional innovation pilot projects in key regions such as Chengdu-Chongqing and Xi 'an, the adaptability of the systems in the central and western regions should be enhanced. Relying on mechanisms such as the connection of social security and the marketization of land factors, promote the two-way balanced flow of factors. Build an innovation network of "R&D in the east + transformation in the central and western regions" to activate the innovation potential of the central and western regions.

Ultimately, it is necessary to form a development pattern in which each region relies on its own endowment, releases vitality through institutional synergy, enhances efficiency by means of factor flow, and breaks through bottlenecks through innovation-driven linkage, promoting the regional economy to shift from imbalance to coordination and achieving an overall leap in high-quality development.

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References

1. National Bureau of Statistics. (2024). China Statistical Yearbook 2024. Beijing: China Statistics Press.
2. North, D. C. (1990). Institutions, Institutional Change and Economic Performance. Cambridge University Press. https://10.1017/CBO9780511808667
3. Li, Y, & Zhang J. (2022). Institutional change and regional economic performance in China. Journal of Comparative Economics, 50(3), 767-784 https://0.1016/j.jce2022.05.002
4. Wang, Y. & Liu, Z. (2023). Factor mobility and regional economic convergence in China. Journal of Asian Economics 85, 101654. https://10.1016/j.asieco.2023.101654
5. Schumpeter, J. A. (1934). The Theory of Economic Development. Harvard University Press.
6. Chen, X, & Zhao Y. (2024). Technological innovation and regional economic divergence in China. Journal of Regional Science, 64(2), 256-278. https://10.1111/jors.12624
7. Zhou, H., & Wu, J. (2023). Institutional innovation and regional economic development in China: A case study of Yiwu, China Economic Journal, 16 (3), 325-342. https://10.1080/17538963.2023.2216641
8. Liu, X, & Sun L. (2022). Government intervention and regional economic development in China. Economic Research Journal, 57(8), 38-53. https://10.3969/j.issn.1002-5863.2022.08.003
9. Zhang, Y, & Wang M. (2023). Financial market segmentation and regional capital allocation in China. China Finance Review International, 13(2), 239-260. https://10.1108/CFRI-06-2022-0134
10. Li, H., & Chen, Y. (2022). Land market reform and regional economic growth in China. Urban Studies, 59(14) 3003-3018. https://10.1177/00420980221093211
11. Ministry of Science and Technology (2024). China Science and Technology Statistical Yearbook 2024. Beijing: China Statistics Press.
12. Fan, G., & Wang, X. (2022). Marketization and regional economic development in China. China Economic Review, 74 10.1016 https://101892/j.carolcarrollhieco.2022.101892