

A Review of Research on the North-South Divergence of China's Regional Economy

Qianhui Xu

School of Business, East China University of Science and Technology, Shanghai, 200237, China

Abstract: The North-South divergence of regional economies has become an important change in China's regional development pattern in recent years. This paper integrates relevant studies from three perspectives: phenomenal characteristics, causal mechanisms, and policy responses. In terms of phenomena, the mainstream observation in the academic community is that the North-South divergence has intensified while the East-West gap has converged. Since 2012, the economic share of the northern region has continued to decline. Although there have been signs of narrowing in recent years, the North-South gap is still widening in most indicators. Existing studies reveal five causal mechanisms: differences in industrial structure, with northern heavy and chemical industries facing transformation pressure; gaps in innovation capacity, with the South showing more evident innovation-driven effects; differences in marketization processes, which explain the North-South wage gap; the nonlinear role of environmental regulation; and the fundamental influence of geographical location and openness. From the perspective of policy thinking, scholars have proposed an approach that combines “place-based” and “people-based” policies. They advocate giving full play to regional comparative advantages, promoting coordinated interaction among metropolitan areas, improving the transfer payment mechanism, and paying attention to the role of new factors such as the digital economy.

Keywords: Regional economy; North-South divergence; Coordinated regional development.

1. Introduction

Coordinated regional economic development is an important component of Chinese modernization and an inevitable requirement for achieving common prosperity. Since the reform and opening up, China has made remarkable achievements in economic development, but the problem of unbalanced regional development has continued to constrain high-quality economic development. For a long time, academic research on regional disparities in China has focused mainly on the gaps among the eastern, central, and western regions. In recent years, as China's economy has entered a new stage of development, regional economic disparities have shown a new feature: the increasingly prominent phenomenon of North-South divergence.

Zhang Xueliang et al. (2024) pointed out that after 2012, the northern region's share of the national economy declined continuously, falling from 42.9% to about 35.4% in 2019 [1]. Xu Xianchun et al. (2021), through a comprehensive analysis based on the “China Balanced Development Index,” found that gaps in balanced development between the North and the South were widening across different dimensions [2]. This situation not only reflects profound changes in China's regional economic pattern, but also reveals new challenges for the strategy of coordinated regional development.

The report to the 20th National Congress of the Communist Party of China clearly put forward strategic requirements for promoting coordinated regional development, providing an important policy background for studying the North-South economic divergence. A detailed analysis of the phenomena, causes, and mechanisms of the North-South economic divergence, as well as exploration of corresponding policy responses, can promote coordinated regional development and has important theoretical and practical significance for the realization of Chinese modernization.

While existing research has continued to grow, this field still faces problems such as scattered research perspectives,

insufficient integration of causal mechanisms, and a lack of systematic summaries of policy pathways. Based on this academic background and practical demand, this paper aims to systematically review the literature on the North-South divergence of China's regional economy, clarify its core characteristics, measurement results, and staged evolutionary patterns, reveal the multiple causes and internal mechanisms behind the formation of the North-South economic divergence, and summarize the policy responses proposed by existing studies. It thereby provides academic support and feasible guidance for further deepening theoretical research, optimizing regional policies, and promoting coordinated regional development to a higher level.

2. The Phenomenon and Extent of the North-South Economic Divergence

2.1. Basic Characteristics

Regarding the identification of the phenomenon of North-South economic divergence, the academic community has reached a relatively consistent view. Cai Fang and Jia Peng (2022) noted that the type of regional disparity in China has undergone an important transformation: the original East-West gap has turned into a North-South divergence [3]. The East-West gap pattern, which long dominated academic perspectives after the reform and opening up, has gradually given way to the new spatial representation of North-South divergence after China entered a new development stage. The core manifestation of this transformation is the continuous decline in the northern region's share of the national economic aggregate [4].

Nie Changfei and Hu Lele (2024) systematically analyzed the current state of the North-South gap and argued that the continuous decline in the northern region's share of national GDP is the core phenomenon of the North-South divergence [5]. At the same time, the North-South gap is no longer confined to the single dimension of total economic output;

rather, it has expanded comprehensively in multiple fields such as innovation drive, income level, human capital, and openness, showing systemic and composite divergence characteristics. Overall, North-South divergence has become the most prominent structural feature of China's regional development pattern in the new era, marking a new evolutionary stage in China's regional economic inequality [6].

2.2. Multidimensional Measurement

The extent to which the North-South gap has widened is not uniform across different indicators, but its overall direction is highly consistent. Xu Xianchun et al. (2021) constructed the “China Balanced Development Index” and examined the North-South gap from six aspects: economic development, innovation-driven development, coordinated development, green development, open development, and shared development. They found that most indicators showed an expanding trend, with the gap in innovation capacity being the most significant [2].

From a spatial perspective, Zhang Chao et al. (2020), using spatial statistical analysis, found that after 2012 the North-South economic gap not only accelerated in terms of aggregate size, but also displayed obvious clustering characteristics in spatial distribution. Internal differences among southern provinces and among northern provinces remained relatively stable, while intergroup differences between the North and the South continued to widen [7]. Between urban agglomerations and underdeveloped areas, gaps between similar types of regions in the North and South were particularly prominent, indicating that the divergence is not a simple difference among administrative provinces, but a systemic fracture running through different levels of development [8].

From the perspective of international comparison, Xing Z., He C. et al. (2025), in a study using nighttime light data, applied the Dagum Gini coefficient and interpretable machine learning models to analyze the spatiotemporal changes in regional economic inequality at different scales in China. They pointed out that inequality at the provincial level rose gradually before 2003 and then declined, but the rate of decline slowed after 2012, while inequality at the prefecture and county levels increased slightly [9].

2.3. Staged Evolution

From the perspective of historical stages, the North-South divergence did not emerge overnight, but instead evolved at different rhythms across different historical periods. Since 1978, China's regional economic inequality has roughly gone through four stages: the initial emergence of regional differentiation brought about by the launch of marketization in the early reform period; the rise of the eastern coastal region after the 1990s under the deepening of market mechanisms; the narrowing of the East-West gap driven by regional coordination strategies represented by the Western Development Strategy in the 2000s; and the accelerated prominence of the North-South divergence since 2012 after China entered the stage of socioeconomic transformation. It is worth noting that this trend has shown signs of periodic narrowing in recent years: between 2021 and 2022, both the absolute level and relative proportion of the North-South gap narrowed, and the simultaneous narrowing of gaps in industrial output value and the real estate market was the main driver of this change [10]. Guo (2023), combining key

historical events, divided economic inequality after 1978 into four stages: the economic inequality stage, the market mechanism stage, the regional coordination stage, and the socioeconomic transformation stage [11].

3. Causes and Mechanisms of the North-South Economic Divergence

3.1. Differences in Industrial Structure

The perspective of industrial structure is the analytical framework most frequently discussed in the existing literature and has relatively strong explanatory power. Nie Changfei and Hu Lele (2024) pointed out that the North has long relied on heavy and chemical industries and therefore faces considerable transformation pressure under supply-side structural reform. In addition, provinces such as Henan, Shandong, and Heilongjiang undertake national food security functions, and their relatively high share of agriculture also constrains the diversification of their economic structures [5]. This argument is highly consistent with the logic of resource curse theory and path dependence theory; that is, excessive dependence on a particular mode of production can form structural lock-in under increasing returns to scale, ultimately causing regions to lose adaptability during periods of technological paradigm shift.

However, industrial structure itself is not exogenously given; rather, it is the endogenous result of historical policy choices and institutional arrangements. If North-South divergence is explained solely by differences in industrial structure, an obvious causal loop arises: does industrial structure lead to divergence, or do deeper institutional and policy logics both shape industrial structure and directly promote divergence? Studies by Li Zhiguo et al. (2021) and Zhang Xueliang et al. (2022) show that the digital economy can accelerate the upgrading of industrial structure, and that there are significant differences between the North and the South in the level of digital economy development [12]. This indicates that industrial structural transformation is also constrained by the speed of new technology diffusion. Therefore, the industrial-structure perspective must be used together with the innovation-capacity perspective in order to provide a more complete explanation. Zhang and Wang (2022) further analyzed the spatial effects and influence pathways through which the digital economy promotes high-quality economic development. They constructed two transmission mechanisms, entrepreneurship and innovation, and observed that the levels of the digital economy and high-quality development are generally improving, while North-South differences remain evident [13].

3.2. Innovation Capacity and Human Capital

The gap in innovation capacity is regarded by many studies as a key driving force behind the North-South divergence. Xu Xianchun et al. (2021), based on the measurement results of the China Balanced Development Index, showed that among all sub-dimensional indicators, the North-South gap in innovation capacity is the most prominent [2]. Liu Bin and Pan Tong (2022) further examined the micro-level mechanism and found that local governments' innovation-driven measures in the South have a significantly stronger effect on improving enterprise productivity than those in the North. The underlying mechanism is that the South's more equitable and open market-oriented institutions provide institutional soil for innovation diffusion [14]. Zhou et al.

(2024) pointed out that the continuous strengthening of innovation agglomeration effects has deepened the North-South innovation divide, and together with the continuous southward flow of human capital, has formed a self-reinforcing cycle [4]. Therefore, the gap in innovation capacity is essentially a comprehensive reflection of differences in the degree of marketization and the institutional environment, rather than an isolated technological variable. In other words, innovation capacity as an explanatory variable is itself also something to be explained: the more active market mechanism and more open institutional environment in the South help attract talent and stimulate innovation while also promoting the efficient transformation of innovation outcomes. Therefore, treating innovation capacity as an independent cause may, to some extent, obscure the more fundamental institutional logic behind it.

3.3. Marketization Process and Institutional Environment

Compared with the perspectives of industrial structure and innovation capacity, the explanatory power of the institutional environment and the marketization process may be underestimated in the existing literature. The study by Wan Haiyuan et al. (2021) shows that differences in the marketization index can explain nearly 40% of the widening North-South wage gap, which already represents a fairly high level of explanatory power in economic research [15]. Hao Xianyin and Zhang Nianming (2023), from the perspective of uneven policy allocation, further pointed out that major policies such as the establishment of special economic zones, accession to the World Trade Organization, and the construction of free trade zones have long been tilted toward the southeastern coastal region. The uneven spatial allocation of macroeconomic policies is therefore a structural driving force behind North-South divergence that cannot be ignored [16].

Their studies are logically highly complementary. Taken together, policy imbalance, differentiation in the level of marketization, differences in the efficiency of factor allocation, and the widening of wage and output gaps constitute a relatively clear causal chain. In comparison, this chain has explanatory priority over explanations that emphasize industrial structure or innovation capacity alone, because it is closer to the starting point of the divergence process. However, existing literature still lacks systematic empirical testing of this logical chain. In particular, identifying the effects of policy bias faces the difficulty of constructing counterfactuals, which is the main methodological limitation of this perspective.

3.4. Environmental Regulation and Green Development

Placing ecological protection in a more prominent position is one of the salient features of implementing the new development philosophy. Therefore, the Chinese government has implemented strict environmental regulation measures to improve the ecological environment and has achieved significant results. There is a complex nonlinear relationship between environmental regulation and the North-South economic gap. Based on panel data from 285 prefecture-level cities from 2008 to 2021, Wang et al. (2023) discussed whether environmental regulation can narrow the North-South economic gap. Their study found that the relationship between the two is complex and nonlinear, and that regional

fintech development can promote the upgrading of industrial gradient structures and the improvement of industrial ownership structures, thereby helping to narrow the North-South economic gap [17]. The contribution of this finding lies in breaking the simplified assumption in previous studies that environmental regulation is either linearly beneficial or linearly harmful. It reveals that policy effects are highly dependent on the level of regional development. Research shows that environmental regulation and regional economic growth display a significant U-shaped nonlinear relationship. Compared with the North, the southern region has obvious advantages in the development of market-oriented consumer and producer tertiary industries. This superior industrial structure can effectively absorb the positive externalities generated by environmental improvement and transform them into substantive economic benefits, thereby significantly buffering the inhibitory effect of environmental regulation on economic growth in its early stage [18].

3.5. Geographical Location and Degree of Openness

The geographical-location perspective provides an underlying historical and spatial logic for understanding the North-South divergence. Ren et al. (2021) pointed out that the South's long coastline naturally fit the export-oriented growth model after the reform and opening up, whereas the resource-dependent heavy industrial model formed in the North during the planned-economy period gradually lost its comparative advantage during market-oriented transformation [19]. Sun Jiuwen and Yi Shuchang (2022) further pointed out that temporal differences in the degree of openness allowed the southern region to accumulate first-mover advantages in global value chains, while the relatively lagging openness of the northern inland region intensified divergence [20].

The explanatory framework based on geographical location has strong long-term explanatory power, but geographical location itself is a relatively stable structural condition and cannot explain the dynamic acceleration of divergence since 2012. As Nie Changfei and Hu Lele (2024) observed [5], the rapid widening of the North-South gap has an obvious time-breakpoint characteristic. This change occurred under the premise that geographical conditions had not undergone any fundamental change, indicating that geographical location only provides the background condition for divergence. What truly converts potential differences in endowments into real economic divergence is still the combined effect of industrial transformation paths, the rhythm of institutional change, and policy choices.

4. Policy Responses and Research Prospects

4.1. Policy Response Strategies

In response to the problem of North-South economic divergence, scholars have proposed various policy responses. Li Lanbing (2020) constructed a logical framework and theoretical explanation for coordinated regional development. Starting from the two policy paths of “place-based” and “people-based” approaches, Li argued that under the premise of considering economic growth, it is necessary to achieve a transformation from uncoordinated development to coordinated development [21].

Nian et al. (2024) used a counterfactual analysis framework to study the economic growth effects of two types of regional

policies, namely “place-based” and “people-based” policies, and explored the optimal policy combinations under different market environments. The study found that “people-based” policies often rely on market mechanisms to allocate resources and cannot solve spatial market failures caused by geographical location, weak infrastructure, and other factors. By contrast, “place-based” policies emphasize direct government intervention in specific regions [22].

Fang Jincheng et al. (2023), based on a quasi-natural experiment involving the launch of government data platforms, discussed whether public data openness can promote coordinated regional development. They found that it helps narrow regional development gaps and provides a new idea for promoting coordinated regional development in the digital era. In addition, related studies show that more southern cities were approved as “Broadband China” demonstration cities, and that this policy has a more significant promoting effect on high-quality economic development in the southern region [23].

Zhang Xueliang et al. (2024) systematically summarized the achievements and trends of coordinated regional development in the new era. They found that a pattern of regional linkage development based on the spatial system of “central cities, metropolitan areas, and urban agglomerations” has initially taken shape. Metropolitan areas and urban agglomerations have become important spatial carriers for promoting new types of regional cooperation, the linkage pattern of major national regional strategies has been continuously improved, and the regional plate pattern has shifted toward a “ π -shaped” structure. The study proposed establishing a modern new development system characterized by “three dimensions of production, life, and ecology; four highs; and diversity” to guide coordinated regional development [1].

Liu et al. (2024) pointed out that solving the North-South gap requires new thinking. It is necessary to give full play to regional advantages, follow the pattern in which industries and population concentrate in advantageous regions, and formulate development measures adapted to local conditions for key growth areas, ecologically fragile areas, and energy-rich areas. The government should arrange efficient transfer payments for important ecological function zones, major agricultural production areas, and economically underdeveloped regions [10].

4.2. Research Prospects

Based on the existing research, future studies on the North-South economic divergence need to pay attention to the following aspects. First, research perspectives should focus more on the new characteristics of North-South divergence under the new development pattern, especially the development opportunities of the northern region under the dual-circulation framework. Second, theoretical mechanisms should further clarify the relationship between new factors, such as the digital economy and new quality productive forces, and North-South divergence. Third, the digital economy has become an important force for promoting regional development, and the mechanism through which this economic form helps narrow the North-South gap deserves in-depth analysis. Fourth, policy practices in developed countries for addressing unbalanced regional development may be drawn upon. Fifth, in terms of policy evaluation, objective testing of the effects of coordinated regional development policies should be strengthened in order to

provide a basis for policy optimization.

Overall, North-South economic divergence is the result of the joint action of multiple factors. These factors include not only basic conditions such as natural endowments and historical accumulation, but also developmental elements such as industrial structure, innovation capacity, and institutional environment. Narrowing the North-South gap requires comprehensive policy measures and multidimensional efforts. It is necessary to respect the objective laws of economic development, better leverage the dual roles of government and the market, and promote the formation of a regional economic pattern characterized by complementary advantages and high-quality development.

5. Conclusion

Focusing on the important real-world issue of the North-South divergence of China's regional economy, this paper systematically reviews domestic and international research literature from three dimensions: phenomenal characteristics, causal mechanisms, and policy responses. The main conclusions are as follows.

First, the core driving mechanism of North-South divergence lies in the superimposed reinforcement of institutional, industrial, and innovation-related factors, rather than the independent effect of any single variable. The comprehensive analysis in this paper shows that the above factors are not independent of one another, but are interrelated through deeper institutional logic. Uneven policy allocation causes regional differentiation in the degree of marketization. Differences in the degree of marketization then affect the implementation effects of innovation-driven measures and the direction of factor flows. The North-South gap in innovation capacity in turn reinforces the differentiated pattern of industrial structure. Therefore, the institutional environment and the degree of marketization are the root variables with the greatest explanatory priority in this causal chain. Their explanatory power has been systematically underestimated in the existing literature and deserves focused attention in future research.

Second, the structural root of the accelerated North-South divergence since 2012 lies in the intensification of the deep contradiction between the northern economy's path dependence on the old growth model and the requirements of the new stage of development. Structural conditions such as differences in geographical location have existed for a long time and are not sufficient in themselves to explain the acceleration of divergence in a specific period. This paper argues that around 2012, the impact of supply-side structural reform on heavy and chemical industries, the continued dividends of global value chain restructuring for open coastal economies, and the amplification of innovation-capacity gaps caused by the rise of the digital economy formed a superimposed effect. This effect rapidly made visible the lag of northern economies in structural transformation. This judgment means that North-South divergence is essentially the spatial manifestation of unequal regional transformation capacities during China's transition from factor-driven growth to innovation-driven growth. It is not simply an extension of the East-West gradient, nor is it a natural manifestation of inherent North-South differences in endowments.

Third, the existing policy response framework still has obvious limitations in theoretical logic, and policy design needs to shift from compensating for gaps to activating capabilities. Given that the causes of North-South divergence

have clear institutional roots, relying solely on place-based tools such as transfer payments or infrastructure investment is unlikely to fundamentally change the endogenous growth momentum of the northern economy. Such tools may even delay structural adjustment by reinforcing local governments' dependence on transfer income. Future policy design should pay greater attention to improving the quality of institutional provision and the business environment in the northern region. At the same time, it should use metropolitan areas and urban agglomerations as spatial carriers to promote the coordinated agglomeration of regional innovation resources, thereby realizing a policy transition from passively narrowing gaps to actively cultivating endogenous regional capacity.

References

- [1] Zhang, X. L., Wang, Y. H., & Han, H. M. (2024). Achievements, trends, and prospects of coordinated regional development since the new era. *Journal of Finance and Economics*, 50(12), 4-18. <https://doi.org/10.16538/j.cnki.jfe.2024.12.001>
- [2] Xu, X. C., Lei, Z. K., Dou, Y. Y., et al. (2021). A study of the gap in balanced development between northern and southern China: A comprehensive analysis based on the "China balanced development index". *China Industrial Economics*, (2), 5-22. <https://doi.org/10.12081/pku.1006-480X.2021.02.001>
- [3] Cai, F., & Jia, P. (2022). Changes in the types of regional gaps in China and their policy implications. *China Industrial Economics*, (12), 5-13. <https://doi.org/10.12081/pku.1006-480X.2022.12.001>
- [4] Zhou, R., & Zheng, Z. (2024). Multidimensional spatial inequality in China and its relationship with economic growth. *Humanities and Social Sciences Communications*, 11, 3961. <https://doi.org/10.1057/s41599-024-03548-4>
- [5] Nie, C. F., & Hu, L. L. (2024). A study on the current situation, causes, and governance of China's north-south gap: A literature review. *Journal of Hubei University of Economics*, 22(3), 5-20.
- [6] Liu, B. L., Zhu, J. F., & Zhou, Y. L. (2020). The evolution of China's regional economic theory and future prospects. *Management World*, 36(2), 182-194, 226. <https://doi.org/10.19744/j.cnki.11-1235/f.2020.00023>
- [7] Zhang, C., Zhong, C. B., Jiang, T. Y., et al. (2020). Spatiotemporal differentiation of coordinated regional development in China and its influencing factors. *Economic Geography*, (9), 15-26.
- [8] Fan, J., Zhao, H., & Guo, R. (2022). New trends in changes in China's regional development gap and coping strategies. *Economic Geography*, 42(1), 1-11.
- [9] Xing, Z., He, C., & Lin, J. (2025). Evolution and influencing factors of regional economic inequality in China based on data from nighttime lights. *Science China Earth Sciences*. <https://doi.org/10.1007/s11430-024-2474-9>
- [10] Liu, X. L., Sun, Y. Y., Li, S., et al. (2024). The analysis on the historical evolution and the developing trend of China's north-south gap. *Journal of South China Normal University (Social Science Edition)*, (3), 16-29.
- [11] Guo, Y. (2023). Evolution and stages of China's economic inequality from 1978 to 2018. *PLOS ONE*, 18(7), e0288873. <https://doi.org/10.1371/journal.pone.0288873>
- [12] Li, Z. G., Che, S., & Wang, J. (2021). Digital economy development and industrial structure transformation and upgrading: A heterogeneity test based on 275 Chinese cities. *Journal of Guangdong University of Finance & Economics*, 36(5), 27-40.
- [13] Zhang, Y., Wang, M., & Liu, T. (2022). Spatial effect of digital economy on high-quality economic development in China and its influence path. *Geographical Research*, 41(7), 1826-1844. <https://doi.org/10.11821/dlxyj020210748>
- [14] Liu, B., & Pan, T. (2022). Local government innovation drive and China's north-south economic gap: A study from the perspective of enterprise productivity. *Journal of Finance and Economics*, 48(2), 18-32. <https://doi.org/10.16538/j.cnki.jfe.2022.02.002>
- [15] Wan, H. Y., Chen, J. P., & Wang, Y. F. (2021). New changes in China's north-south wage gap and its marketization causes. *Chinese Journal of Population Science*, (4), 18-32, 126.
- [16] Hao, X. Y., & Zhang, N. M. (2023). The evolutionary context and promotion path of China's regional development strategy in the new era. *Management World*, (1), 56-67. <https://doi.org/10.19744/j.cnki.11-1235/f.2023.00006>
- [17] Wang, X., et al. (2023). Does environmental regulation narrow the north-south economic gap? *Journal of Environmental Management*, 336, 117670. <https://doi.org/10.1016/j.jenvman.2023.117670>
- [18] Ji, X. L., Xue, Q. H., & Wei, J. (2023). Environmental regulation and the digital economy: An analysis of the inducing and amplifying factors of China's north-south economic differences. *China Population, Resources and Environment*, 33(12), 94-108.
- [19] R, Z., Chai, X., & Yu, J. (2021). Weekend long read: Why China's north-south economic gap keeps getting bigger. *Caixin Global*.
- [20] Sun, J. W., & Yi, S. C. (2022). Practical innovation and key tasks of coordinated regional development in China. *Journal of Zhejiang Gongshang University*, (2), 102-110.
- [21] Li, L. B. (2020). The logical framework and theoretical explanation of coordinated regional development in China. *China Economic Quarterly*, 19(4), 1189-1216. <https://doi.org/10.13821/j.cnki.ceq.2020.04.007>
- [22] Nian, M., Zhang, H., & Wang, Y. (2024). The growth contribution of China's regional coordinated development strategy—On the dispute of regional policy paths. *China Finance and Economic Review*, 13(4), 24-44. <https://doi.org/10.1515/cfer-2024-0018>
- [23] Fang, J. C., Liu, Y., Gao, H. Y., et al. (2023). Can public data openness promote coordinated regional development? A quasi-natural experiment from the launch of government data platforms. *Management World*, (9), 124-141. <https://doi.org/10.19744/j.cnki.11-1235/f.2023.00071>