

Study of Liangjiang New Area and Tianfu New Area to Jointly Build the Inland Opening Door

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Abstract: In the process of promoting the construction of the Inner Gateway, the synergistic effect of the Liangjiang New Area and the Tianfu New Area is an important issue. To solve this problem, this study comprehensively assesses the practical effects of the Liangjiang New Area and Tianfu New Area in promoting regional economic integration, optimizing the industrial structure and improving openness by studying the calculation method of the nearest neighbour index and the volume of economic and trade exchange. The results showed that the spatial disparity between the two regions was close to or above 0.9 and the volume of economic and trade exchange in Tianfu New Area reached 677. The study showed that the strategy of the Liangjiang New Area and Tianfu New Area working together to form an internal opening gateway has significant advantages and provides a strong impetus for the quality development of the regional economy.

1. Introduction

Against a background of global economic integration, the potential for the hinterland to establish an open model is becoming an important factor for China's overall economic growth. The two national new zones in China's hinterland, Liangjiang New Area and Tianfu New Area, are not only strategically well located but also have significant policy advantages, providing an important platform for exploring new open economic systems in the hinterland and promoting the formation of a comprehensive open model. However, previous literature has been insufficient in studying the specific practices and challenges faced in the process of coordinated opening up of inland areas [1]. Most studies focus on the economic development or level of opening up of a single new area, lacking in-depth analysis and comparison of the synergy between the two new areas[2]. Therefore, this paper aims to fill this research gap. By systematically examining the economic development status, spatial layout characteristics, and degree of regional economic interaction and integration of Liangjiang New Area and Tianfu New Area, this paper reveals the practical paths and results of the two in jointly building an inland open gateway, and provides useful reference for the open development of inland areas.

This paper adopts a variety of research methods, which are developed from multiple dimensions,

including using the nearest neighbor index to evaluate the compactness of the new district's internal spatial layout, measuring the depth of cooperation and market activity between new areas by examining the volume of economic and trade exchanges, and analyzing a number of economic indicators to comprehensively evaluate the economic development trend of the new district. This paper first collects data on key economic indicators such as GDP scale, growth rate, total fixed asset investment, and local general public budget revenue of Liangjiang New Area and Tianfu New Area, and through comparative analysis, reveals the similarities and differences in economic development between the two new areas. Next, with the help of data on economic and trade volume, this paper deeply analyzes the degree of economic interaction and integration between new areas, as well as the profound impact of such interaction on regional economic development. Finally, by calculating the nearest neighbor index, this paper further analyzes the compactness of the new district's internal spatial layout, as well as the impact of this layout on the flow of factors, resource allocation, and industrial agglomeration within the new district. Through systematic investigation and in-depth analysis, the study not only enriches the theoretical research on the new inland open economic system, but also provides practical policy recommendations for the open development of inland areas.

2. Related Works

The issue of regional co-ordinated development has been widely discussed in academia, and Wang et al. used spatial equation modelling to assess the agglomeration of China's three largest economies in terms of factor allocation, industrial structure and urban development, and found a complex relationship between economic agglomeration, energy consumption intensity and carbon emission intensity [3]. On the other hand, Zhou et al. investigated the environmental and economic benefits of a co-operative regional air pollution prevention and control system using different cities in China [4]. Furthermore, Guo et al. used a differentiated approach to provide a detailed analysis of the role of the digital economy in promoting quality urban economic development [5]. Based on China's urban PM2.5 data from 2003 to 2021, Guo and Zhou et al. evaluated the ability of national new districts to reduce haze pollution and found that new districts can significantly suppress haze pollution and have spatial spillover effects, and innovation and agglomeration effects are the main mechanisms[6]. A study by Sun and You, analyzed empirically, found that digital financial inclusion has a dramatic effect on the economic vitality of cities by increasing levels of innovation and entrepreneurship [7].

Although the above studies provide valuable insights in areas such as regional economy, environmental policy and digital finance, they still have some shortcomings. They failed to fully consider the impact of economic, social and environmental differences in different regions on implementation outcomes, and failed to conduct in-depth analysis of environmental risks and challenges in the planning, construction and operation of new areas. Therefore, this paper aims to comprehensively examine the synergy between regional economic and environmental policies from multiple dimensions. It not only focuses on key indicators such as economic agglomeration, energy intensity and carbon intensity, but also deeply explores the impact of new factors such as digital inclusive finance and national new district planning on the effectiveness of environmental policies, which will help provide more comprehensive and in-depth guidance for the high-quality development of the regional economy.

3. Methods

3.1 The necessity of Cooperation between Liangjiang New Area and Tianfu New Area

The 20th Party Congress Report attaches great importance to accelerating the construction of the Chengdu-Chongqing Twin Cities Economic Circle. *The draft Chengdu-Chongqing Economic Circle Construction Plan* clearly states that the Liangjiang New Area and Tianfu New Area will be the core areas, with the task of industrial guidance and prioritizing the implementation of national key strategic projects and demonstration projects. This is not only an important initiative to realize the spirit of the 20th Party Congress but also a top priority for building economic circulation between the twin cities of Chengdu and Chongqing.

The Liangjiang New Area and Tianfu New Area, which have the status of national-level new zones, have a strong industrial base and both have strong complementary advantages [8]. In recent years, as the core engines of economic and social development in Chongqing and Sichuan, these two new areas have taken the initiative to assume the key role of national-level new areas in implementing national strategies. They closely focus on the strategic goal of building an economic highland with strong influence nationwide, a leading area for scientific and technological innovation, a new highland for reform and opening up, and a model of high-quality livable life, continue to play a leading role, continuously enhance economic strength and radiation-driven efficiency, and have initially achieved remarkable results. On this basis, the Liangjiang New Area and the Tianfu New Area will deepen cooperation[9] and jointly build a new inland opening-up gateway, which will further upgrade the level of cooperation between the two places, promote coordinated regional economic development, and add strong impetus to the construction of the Chengdu-Chongqing Twin Cities Economic Circle.

3.2 Innovating Government Affairs and Building the Integrity Foundation of the Inland Open Gateway

At the second plenary session of the 20th Central Commission for Discipline Inspection, General Secretary emphasized that the establishment of a supervisory system with unified leadership, comprehensive coverage, authority and Party efficiency is of great significance for promoting the modernization of the state governance system and the ability to govern [10]. National-level new areas, as regions where policy dividends converge and where there are numerous infrastructure construction and land acquisition and demolition projects, face the corruption risks that may arise from the concentration of power after the secretary and director take on both responsibilities. To meet this challenge, the two districts have actively strengthened the building of grassroots party conduct and clean government. By integrating supervisory forces and improving the supervisory system, they are committed to solving corruption and work style problems around the people, improving public satisfaction and consolidating the party's ruling foundation.

1). Building a grassroots supervision network

In response to the problem of scattered and weak village supervision forces, the two districts have taken positive measures. Tianfu New District has selected and strengthened the deployment of disciplinary committee secretaries, disciplinary committee members, and disciplinary inspection members in the community, forming a comprehensive supervision system of "village (community) disciplinary committee + party and government style supervision post + sentinel", effectively solving the problem of "who will supervise" [11]. Liangjiang New District has strengthened the collaboration among street supervision groups, street disciplinary committees and neighborhood committee supervisors, innovatively implemented cross-supervision, and carried out special governance targeting projects that benefit and enrich the people and key areas of people's livelihood

to ensure that people's demands are responded to quickly and effectively.

2). Improving supervision effectiveness and empower governance with science and technology

The two districts adhere to the principle of combining "human defense + technical defense", clarify the focus of supervision, and innovate supervision methods. Tianfu New Area has integrated the functions of multiple platforms, such as Sunshine Supervision One-Stop, Tianfu Comprehensive Supervision, Audit Big Data Center, etc., and built the Tianfu Smart Supervision System, which realizes closed-loop management of village supervision through the "three lists" (power, performance of duties, and evaluation). Liangjiang New District has used information technology to break down information barriers between departments, established an information sharing mechanism, formed a "big supervision" pattern for community party members, and achieved immediate processing and traceability of problem reports.

3). Deepening the culture of integrity and jointly creating a clean and upright atmosphere

The two districts will regard strengthening the construction of a clean culture in the new era as an important starting point for promoting anti-corruption and promoting integrity, and are committed to creating a good atmosphere of clean cadres, clean government, clear politics, and clear society. Tianfu New Area has implemented the construction of "Sunny Tianfu, Clean New Area" in depth, promoted the "Six-in-One" action of clean culture, created a number of clean demonstration units, and widely carried out cultural immersion and discipline education activities. Liangjiang New District has worked hard to improve its positions, innovate its carriers, and enrich its content, closely combining red culture with clean culture, and continuously promoting the clean culture to take root in the hearts of the people.

3.3 Innovating the Tax Environment to Promote the Construction of an Inland Open Gateway

1). Streamline administration and delegate power to deepen cooperation

The tax department of Tianfu New Area was selected as a model for the province to pilot first. The provincial bureau directly empowered it to have some provincial and municipal tax management authority and streamline the tax management approval process. At the same time, a direct communication bridge will be established between the tax departments of Liangjiang New Area and Tianfu New Area and the superior provincial and municipal tax bureaus to ensure that the two districts can obtain efficient and timely guidance and support in tax business and jointly promote the optimization of the tax environment.

2). Reforming of tax collection and management model

Promoting the integration and upgrading of tax collection and management systems, realize the transition from "one person, one machine, two systems" to "one person, one machine, one system", and improve work efficiency. The introduction of the "one machine for multiple uses" function of UnionPay POS machines and convenient methods such as QR code tax payment will enrich taxpayers' tax payment channels. In addition, the rights and responsibilities of the member units of the comprehensive tax administration system were clarified, and a long-term cooperation mechanism was established [12]. Tax services have been comprehensively upgraded: transforming into an all-round, all-weather, all-time tax service model, guiding taxpayers to shift from physical halls to online services, providing tax-related inquiry, declaration, tax payment, report submission and other services through diversified channels and levels, and continuously optimizing the tax experience.

3). Promoting the strategic linkage of "going out" and "bringing in"

Deepen international tax cooperation, carefully study and effectively implement tax agreements, and provide tax support for the international development of innovative enterprises [13]. Providing detailed guidance on foreign tax policies and tax treaties for "going global" enterprises, avoid

double taxation, assist in resolving international tax disputes, and promote integration with the international tax system. The optimization of tax services in free trade agreements and the promotion of preferential tax treatment under tax treaties will also be strengthened, we will ensure that the "brought-in" enterprises and individuals can fully enjoy the tax incentives and attract more international talents and capital to the inland open gateway jointly created by Liangjiang New Area and Tianfu New Area.

4. Results and Discussion

4.1 Importance of Coordination between the Two Regions

Based on the overall scale, structural characteristics and data availability of economic and social development, this paper will use the following six key evaluation indicators to form an evaluation system, namely, Gross Domestic Product (GDP), Total Population (TP), Total Retail Sales of Consumer Goods (RTS), Total Investment in Fixed Assets of the Whole Society (TIFA), Local Government Revenue (LGR), and total value of imports and exports (TVX) [14]. These indicators were used to assess the relative importance of the coordinated development of the Liangjiang New Area and Tianfu New Area segments after 2013, and the assessment results are summarized in Figure 1.

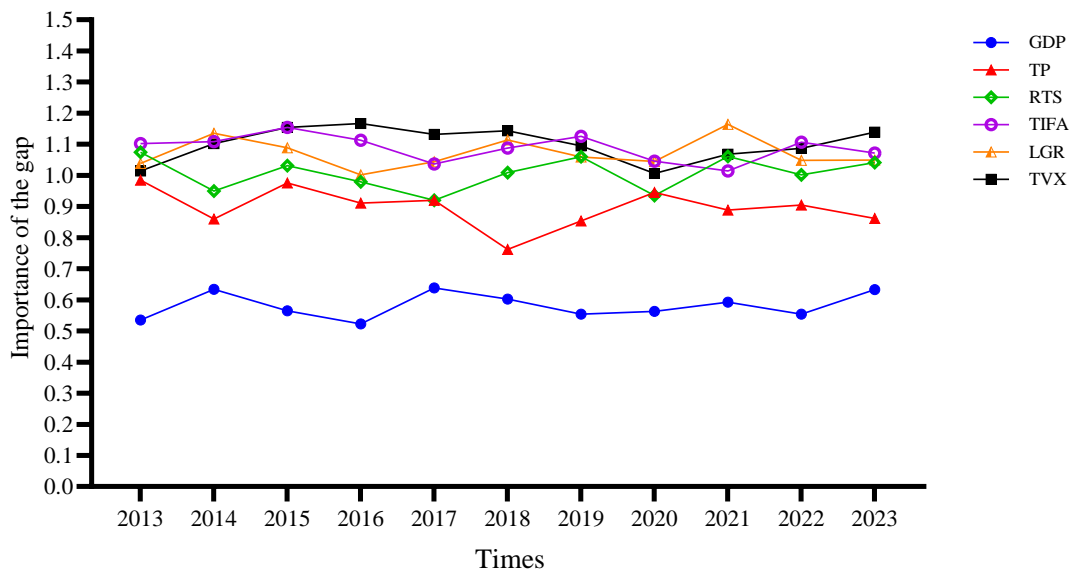


Figure 1: Importance of coordination between two regions

In Figure 1, Liangjiang New Area and Tianfu New Area both show stable development trends in key economic indicators, but each has its own emphasis. In terms of GDP, the growth of the two areas fluctuates greatly, but the overall trend is upward. In terms of local fiscal revenue, both districts experience fluctuations in some years, but the overall fiscal revenue level increases. The total import and export value shows that the foreign trade activities of the two districts are relatively active. Overall, the two regions have their own special characteristics on the path to co-ordinated development. Both regions must continue to monitor the dynamics of relevant indicators, adapt and optimize their respective development strategies in order to achieve a higher level of regional co-ordinated development.

The study calculated the sub-item concentration rates of the development space gap between the two new districts, as shown in Table 1.

Table 1: Concentration rate of development space distances between national new areas

Name	GDP	TIFA	LGR	TVX
Liangjiang New Area	0.557	0.412	0.589	0.461
Tianfu New Area	0.751	0.739	0.814	0.721
Between two districts	0.934	0.945	0.901	0.963

In Table 1, the sub-item concentration rates of indicators related to GDP, total fixed asset investment, local general public budget revenue and total population of Tianfu New Area are higher than those of Liangjiang New Area, showing stronger comprehensive development strength. The sub-item concentration rates of the development space gap between the two districts are close to or exceed 0.9, indicating that the gap between the two districts in these key indicators is quite significant. Tianfu New Area has performed better in various economic indicators, while Liangjiang New Area needs to increase its development efforts to narrow the development gap with Tianfu New Area. In the future, the two areas should continue to strengthen exchanges and cooperation to jointly promote the coordinated development of the regional economy.

4.2 Development Achievements of National-Level New Areas

This study examines the economic performance of the National New Zones in 2022, focusing on the synergies and outstanding achievements of the Liangjiang and Tianfu New Zones, which were the main driving forces behind the construction of the internal open gateway. The aim of the study is to provide a detailed analysis of the specific practices and achievements of the National New Zones in promoting regional economic integration, optimizing industrial structure and increasing openness. The specific results are summarized in Table 2.

Table 2: Overview of various economic indicators of national-level new district development in 2022

Name	GDP scale (in billions of yuan)	GDP growth rate (%)	TIFA(in billions of yuan)	LGR(in billions of yuan)
Pudong New Area	9714.71	5.50	935.06	847.15
Binhai New Area	9679.75	6.13	879.12	184.82
West Coast New Area	9510.00	8.65	1477.52	647.35
Liangjiang New Area	9375.76	6.40	1941.06	514.49
Tianfu New Area	8945.05	7.12	1685.31	177.82
Jinpu New Area	9906.66	9.73	555.44	864.14
Jiangbei New Area	9847.73	6.94	532.47	635.36
Xiangjiang New Area	9040.67	6.58	2405.59	925.07
Fuzhou New Area	9703.96	6.40	749.25	21.98
Nansha New Area	9392.89	7.57	866.13	365.63

From the data in Table 2, we can see that Liangjiang New Area and Tianfu New Area show strong economic growth in 2022. The GDP of Liangjiang New Area is close to 940 billion yuan, with a growth rate of 6.4%, and the total fixed asset investment reaches 194.106 billion yuan; the GDP of Tianfu New Area is close to 895 billion yuan, with a growth rate of 7.12%, and the total fixed asset investment is 168.531 billion yuan. The two districts rank high among national-level new districts, reflecting their core role as inland opening gateways. Although the two districts have differences in individual indicators compared with other new districts, overall, the two districts have

made remarkable achievements in promoting regional economic integration, optimizing industrial structure, and improving the level of opening up, setting an example for the economic development of inland areas.

In order to provide a more comprehensive, dynamic and accurate assessment of the development efficiency of the new zones, the study not only focuses on static economic data but also analyzes the volume of economic and trade exchange between the ten new zones. As an important indicator of the degree of regional economic interaction and integration, the volume of economic and trade exchange can clearly reflect the depth of cooperation and market opportunities in the new zones. The specific results are summarized in Figure 2.

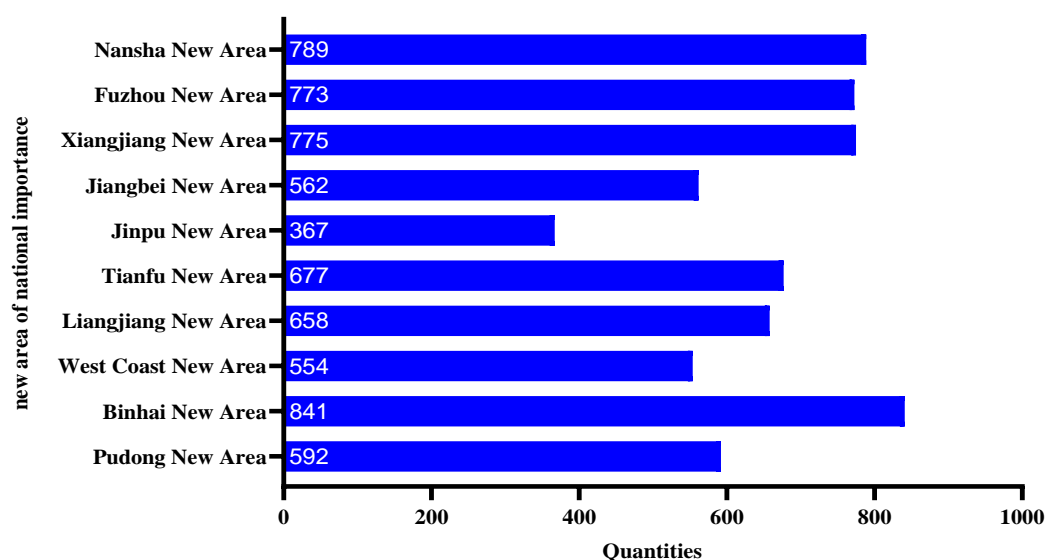


Figure 2: Economic and trade volume of national new areas

According to the data in Figure 2, the emergency trade volume of Tianfu New Area can reach 677, and the economic trade volume of Liangjiang New Area is 658. The trade volume of the two areas is maintained at a relatively high level, indicating that the two areas have strong vitality in regional economic interaction and integration.

The nearest neighbor index of national new districts is an important geographic spatial distribution indicator used to evaluate the relative position and proximity between various elements within the new district. Therefore, the study further investigated and calculated the nearest neighbor index of 10 national new districts, and the results are shown in Figure 3.

According to the data in Figure 3, the nearest neighbor index of Pudong New Area and Tianfu New Area is relatively low, at 1.04 and 1.08, respectively, indicating that the relative position and proximity of the elements within these new areas are relatively close and the spatial distribution is relatively concentrated. In contrast, the nearest neighbor indexes of Binhai New Area, Jiangbei New Area, Xiangjiang New Area and Nansha New Area are relatively high, at 1.82, 1.87, 1.81 and 1.71, respectively, indicating that the relative positions and proximity between the elements within these new areas are relatively loose and the spatial distribution is relatively dispersed. The differences in the nearest neighbor indexes of the new districts reflect the different characteristics of the spatial distribution within the new districts. In the future, new district planning should consider optimizing the spatial layout and improving the proximity between elements to promote efficient and coordinated development within the new districts.

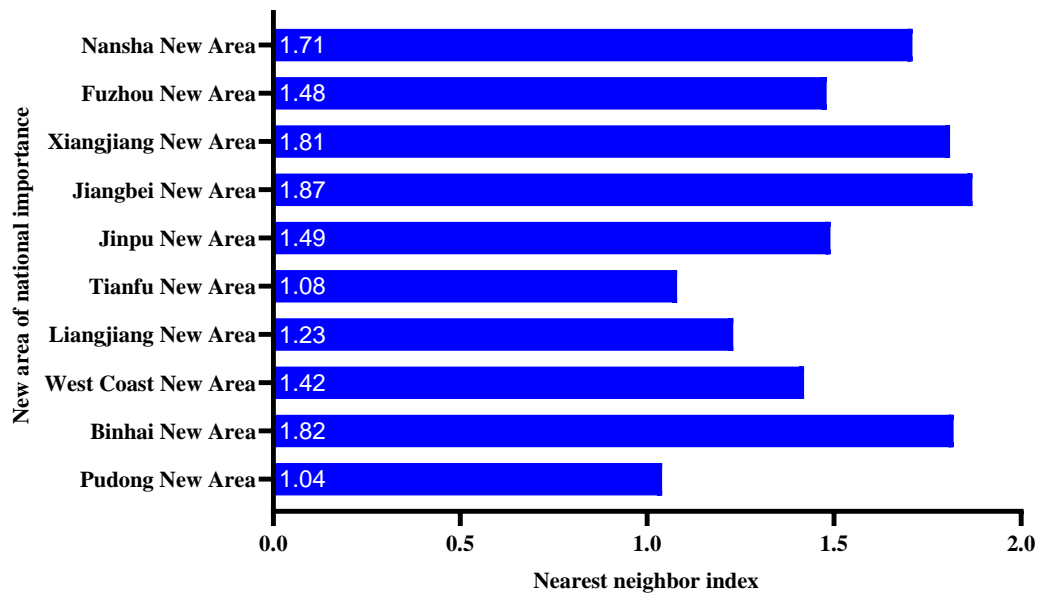


Figure 3: Nearest neighbor index of national new districts

5. Conclusion

In the study of Liangjiang New Area and Tianfu New Area working together to build an inland open gateway, this paper found that the two new areas performed strongly in economic indicators, with compact spatial layout and frequent economic and trade exchanges, showing a high degree of synergy. These findings not only reveal the remarkable achievements of the two new areas in promoting regional economic integration, optimizing industrial structure, and improving the level of openness, but also further prove the importance of exploring and practicing the new inland open economic system in promoting economic development in inland areas. However, this study also has certain limitations, such as the uncertainty in data collection and processing, and the complexity of the synergy mechanism of the new interval. Therefore, future research should further deepen the understanding of the synergy mechanism of new areas and strengthen the innovation of data collection and processing methods to more accurately evaluate the contribution of new areas in promoting the open development of inland areas. At the same time, comparative analysis shows that there are certain differences between Liangjiang New Area and Tianfu New Area in economic development paths, spatial layout characteristics and regional economic interaction patterns. These differences provide diverse references and lessons for other new areas in inland areas.

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References

[1] Feng Y, Li Y, Nie C. The effect of place-based policy on urban land green use efficiency: Evidence from the Pilot Free-Trade Zone establishment in China [J]. *Land*, 2023, 12(3): 701-705.

- [2] Chen X, Di Q, Jia W, et al. Spatial correlation network of pollution and carbon emission reductions coupled with high-quality economic development in three Chinese urban agglomerations[J]. *Sustainable Cities and Society*, 2023, 94(1): 104552-104554.
- [3] Wang Y, Yin S, Fang X, et al. Interaction of economic agglomeration, energy conservation and emission reduction: Evidence from three major urban agglomerations in China[J]. *Energy*, 2022, 241(1): 122519-122520.
- [4] Zhou D, Zhong Z, Chen L, et al. Can the joint regional air pollution control policy achieve a win-win outcome for the environment and economy? Evidence from China[J]. *Economic Analysis and Policy*, 2022, 74(1): 13-33.
- [5] Guo B, Wang Y, Zhang H, et al. Impact of the digital economy on high-quality urban economic development: Evidence from Chinese cities[J]. *Economic Modelling*, 2023, 120(1): 106194-106201.
- [6] Guo C, Zhou J. Can policy advantages be transformed into environmental benefits? City-level evidence from a quasi-natural experiment in China[J]. *Clean Technologies and Environmental Policy*, 2024, 1(1): 1-32.
- [7] Sun Y, You X. Do digital inclusive finance, innovation, and entrepreneurship activities stimulate vitality of the urban economy? Empirical evidence from the Yangtze River Delta, China[J]. *Technology in Society*, 2023, 72(1): 102200-102221.
- [8] Hu Yuexing. Two districts and two engines, jointly singing the "Tale of Two Cities of Education" - A brief analysis of the collaborative development path of education in Chengdu Tianfu New Area and Chongqing Liangjiang New Area [J]. *Scientific Consulting (Science and Technology Management)*, 2022, (09): 1-3.
- [9] Hu M, Zhang H, Tang J, et al. Zoning and optimization strategies of land spatial ecological restoration in liangjiang new area of chongqing based on the supply-demand relationship of ecosystem services[J]. *Land*, 2023, 12(6): 1255-1257.
- [10] Liu Y, Yang R, Sun M, et al. Regional sustainable development strategy based on the coordination between ecology and economy: A case study of Sichuan Province, China[J]. *Ecological Indicators*, 2022, 134(1): 108445-108447.
- [11] Zhang H, Geng C, Wei J. Coordinated development between green finance and environmental performance in China: The spatial-temporal difference and driving factors[J]. *Journal of Cleaner Production*, 2022, 346(1): 131150-131161.
- [12] Lun Ruoshen, Wang Shumei. Constraints and breakthroughs of inter-provincial coordinated development in the central region in the new era [J]. *Regional Economic Review*, 2024, (06): 58-64.
- [13] Tan Xiaoke. Research on the coordinated development of the tertiary industry in Chengdu and Chongqing under the background of digital economy [J]. *Market Weekly*, 2024, 37(31): 66-69.
- [14] Zhu Haiyan. Dilemma and solution of coordinated development of adjacent areas of Sichuan and Chongqing: empirical research based on Dazhou, Liangping and Kaizhou [J]. *Contemporary County Economy*, 2024, (09): 54-57.