
| RESEARCH ARTICLE

Cultural Cluster Development in the Yangtze River Delta: Realistic Bottlenecks, Driving Mechanisms, and Strategies

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| ABSTRACT

Regional economic integration has emerged as a significant focus for China in the post-pandemic era, as the nation seeks to establish mutually beneficial relationships with external economies and promote national development. In this study, the entropy method is employed to construct an index system tailored specifically to the four provinces within the Yangtze River Delta region. This research aims to explore the advantages and challenges of regional economic integration in China by conducting a comparative analysis of the Yangtze River Delta. The study also evaluates the merits and drawbacks of different integration models, drawing on examples from developed countries. The ultimate goal of the research is to provide insights and recommendations for China's regional economic integration, thus contributing to the country's overall prosperity.

| KEYWORDS

Regional economic integration in China; The Yangtze River Delta; The entropy method.

| ARTICLE INFORMATION

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1. Introduction

1.1 Research Background

The global economic landscape has experienced considerable transformations in recent years, primarily due to the far-reaching consequences of the COVID-19 pandemic. As the world's second-largest economy, China has encountered tremendous challenges in sustaining its growth momentum and safeguarding the welfare of its population. Consequently, the Chinese government has underscored the significance of regional economic integration as a vital strategy to catalyze economic recovery, foster sustainable development, and bolster global competitiveness. Thus, comprehending the driving factors and impediments associated with regional economic integration in China has emerged as an urgent matter for policymakers, businesses, and researchers alike.

1.2 Literature Review

Regional economic integration (REI) refers to the process of reducing or eliminating barriers to trade and investment among countries within a geographic area, with the aim of enhancing economic cooperation and development (World Bank, 2020b). REI can take various forms, such as free trade agreements, customs unions, common markets and economic unions. REI can bring benefits to participating countries, such as expanding market access, increasing competitiveness, promoting innovation, facilitating technology transfer and achieving economies of scale (Chen & Yang, 2018). However, REI also poses challenges, such as adjusting to trade liberalization, harmonizing policies and regulations, balancing national interests and regional goals, and addressing social and environmental issues (Zhang & Zhang, 2019).

China has been actively pursuing REI in recent years, both within Asia and beyond. China is a member of the Regional Comprehensive Economic Partnership (RCEP), which is the world's largest trade bloc that covers 15 countries in Asia-Pacific

(Iwamoto, 2022). China is also applying to join the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), which is another major trade agreement that involves 11 countries in Asia-Pacific (Wei et al., 2022).

Moreover, China has initiated or strengthened several mega-region initiatives within its own territory, such as the Yangtze River Delta Integration, the Greater Bay Area Development and the Beijing-Tianjin-Hebei Integration. These initiatives aim to foster economic development through technology and innovation that supports high-tech or services hubs (X. Yang et al., 2019).

This research aims to investigate the benefits and challenges of REI in China with a comparative analysis of the Yangtze River Delta. Additionally, the study examines the merits and drawbacks of different integration models, drawing on examples from developed countries. The objective of the study is to provide insights and recommendations for China's REI, ultimately contributing to the country's overall prosperity.

1.3 Research Method

Prior international studies suggest a significant correlation between the quality of regional economic development and factors such as social welfare, public services, and ecological environment. In an empirical analysis of Italy's economic development quality, it was found that the quality of regional economic development is assessed using comprehensive indicators that encompass human development, urban ecosystem health, public services, and social welfare (Sabatini, 2006). This analysis also highlights the scarcity correlation between social capital and development indicators. Taking inspiration from this approach, the present study adopts a similar set of comprehensive indicators to analyze regional integration across different regions of China.

1.4 Problem Statement and Objectives

Despite the growing importance of regional economic integration in China, there is a lack of comprehensive analysis of its benefits, challenges, and optimal strategies.

This study aims to address the existing gap in understanding regional economic integration in China by pursuing the following objectives: Firstly, we will assess the benefits and challenges of regional economic integration, focusing on the Yangtze River Delta. Secondly, we will compare and contrast the merits and drawbacks of various integration models by drawing on examples from developed countries. Finally, the study will offer recommendations on how China can effectively implement regional economic integration strategies in order to promote inclusive growth, enhance global competitiveness, and achieve sustainable development. Through these objectives, we aspire to provide valuable insights for the successful advancement of regional economic integration in China.

By achieving these objectives, the study aims to contribute valuable insights for policymakers, businesses, and researchers to better understand and navigate the complex landscape of regional economic integration in China.

2. Measurement and Driving Mechanism of Regional Integration in Yangtze River Delta

2.1 Measurement Method

In this study, the entropy method is employed to construct an index system tailored specifically to the four provinces within the Yangtze River Delta region. This measurement approach draws from international experiences while addressing the limitations of previous research. Rather than relying on the subjective nature of the analytic hierarchy process, which involves expert judgment in assigning weights to indicators, this study utilizes a structural equation model to optimize the evaluation model of the indicator system. By utilizing data from the National Bureau of Statistics, the entropy method provides a more objective measurement by calculating the weights.

2.2 Selection of Indicators

This study encompasses multiple dimensions of regional integration, including economic integration, public service integration, infrastructure integration, science and technology integration, and ecological environment integration. These dimensions are evaluated using diverse indicators to provide a comprehensive assessment of the achievements of regional integration.

Table 1: Notations

First Level Indicator	Secondary indicators	Measurement Method	Unit	Attributes (+/-)	Weights
Economic Integration	Economic Development Level	GDP	10,000 RMB	Positive indicators	0.06804
		GDP per capita	RMB	Positive indicators	0.03808
	Industrial structure optimization level	Share of secondary industry in GDP	%	Positive indicators	0.02964
		Share of tertiary sector in GDP	%	Positive indicators	0.02955
	Government Effectiveness	Fiscal spending as a percentage of GDP	%	Positive indicators	0.06441
	Export & Imports	Total imports and exports as a percentage of GDP	%	Positive indicators	0.10221
	Consumption level	Retail Sales of Consumer Goods per capita	RMB	Positive indicators	0.03280
Public Service Integration	Disposable income	Disposable income per resident	RMB	Positive indicators	0.04244
	Level of livelihood	Minimum Living Standard Scheme for Urban Resident	RMB/person/month	Positive indicators	0.04212
		Minimum Living Standard Scheme for Rural Resident	RMB/person/month	Positive indicators	0.03670
	Level of health	Health expenditure per capita	RMB	Positive indicators	0.05010
	Employment	Urban registered unemployment rate	%	Positive indicators	0.02979
Infrastructure Integration	Railroad network construction	Railroad mileage/land area	KM per 10,000 KM2	Positive indicators	0.09441
	Highway Network Construction	Highway mileage/land area	KM per 10,000 KM2	Positive indicators	0.05921
	Inland waterway construction	Inland waterway mileage/land area	KM per 10,000 KM2	Positive indicators	0.08345
Technology Integration	Science and technology output	Number of valid invention patents per capita	Units / 10,000 people	Positive indicators	0.05156
	Investment in Education	Education expenditure per capita	RMB	Positive indicators	0.03478
Ecological and Environmental Integration	Environmental Management	Investment in environmental infrastructure construction in towns and cities per capita	RMB	Positive indicators	0.01866
		Per capita industrial pollution control completed investment	RMB	Positive indicators	0.06962
	Quality of air	Air Quality Index	N/A	Positive indicators	0.02242

2.2.1 The Layer of Economic Integration

To evaluate economic integration, this study considers indicators such as the level of economic development, optimization of industrial structure, government efficiency, degree of openness to international trade, and residents' consumption power.

Specifically, the indicators used for measurement include per capita GDP, the contribution of different industries to GDP, fiscal expenditure, the proportion of imports and export to GDP, and per capita social retail sales.

2.2.2 The Layer of Public Services Integration

The evaluation of public service integration involves assessing indicators such as the level of disposable income (per capita disposable income of residents), living standards (urban and rural minimum living security standards), health services (per capita health expenditure), and employment (unemployment rate).

2.2.3 The Layer of Infrastructure Integration

Infrastructure integration is evaluated by examining indicators such as the level of railway network development (proportion of railway operating mileage to total land area), the level of highway network construction (proportion of highway operating mileage to total land area), and the development of inland waterways (proportion of inland waterway mileage to land area).

2.2.4 The Layer of Science and Technology Integration

To assess science and technology integration, the study utilizes indicators such as the number of effective invention patents per capita and per capita education expenditure, which reflect the level of technological output and educational investment in the respective regions.

2.2.5 The Layer of Ecology Integration

Ecological environment integration is evaluated through the comparison of indicators such as environmental governance and air quality. Specifically, the indicators used include per capita investment in urban environmental infrastructure construction, per capita investment in industrial pollution control, and air quality index.

3. Measurement Result

3.1 Measurement Result of Composite Indicators

Table 2: Measurement Result of Composite Indicators

Year	Shanghai City	Jiangsu Province	Zhejiang Province	Anhui Province	Coefficient of variation
2014	0.595	0.360	0.244	0.103	0.639
2015	0.641	0.378	0.261	0.117	0.635
2016	0.707	0.399	0.283	0.148	0.619
2017	0.735	0.409	0.291	0.169	0.606
2018	0.715	0.459	0.319	0.179	0.547
2019	0.760	0.471	0.339	0.216	0.523
2020	0.716	0.488	0.371	0.235	0.450
Average annual growth rate	0.031	0.052	0.073	0.147	
Coefficient of variation	0.083	0.116	0.148	0.291	

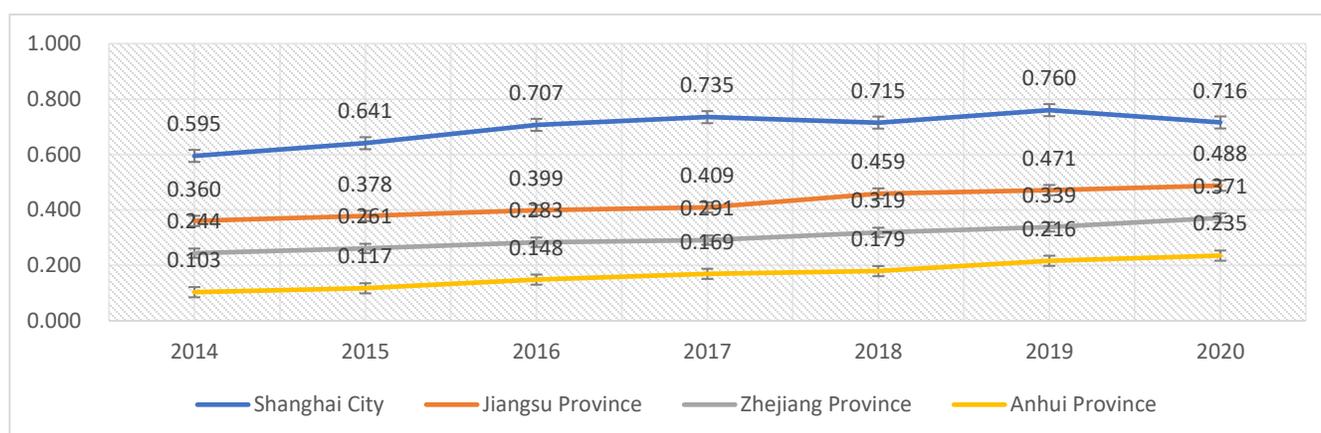


Figure 1: Measurement Result of Composite Indicators

Using the entropy method, we calculate the integration of different regions, indicated in Table 2. It is obvious to see that the integration of Shanghai City is much higher than the integration of other regions; the index of it every year is higher than 0.5.

This is primarily because the government of Shanghai attaches great importance to the development of regional integration and takes a series of measures to vigorously promote integration. For instance, the Master Plan of Shanghai City (2016 ~ 2040) proposes that Shanghai will be built into an outstanding global city by 2040. It should always uphold one principle, that is, accelerating the improvement of the mechanism of urban-rural integration and focusing on urban and rural planning, infrastructure, public services and other aspects. In addition, its development concept should run through the designated main line so as to break through the existing bottleneck and achieve the transcendental development of Shanghai.

In addition, in recent years, with the gradual deepening of the concept of coordination, all localities have gradually attached importance to the development of regional integration level, and a series of measures adopted have also achieved remarkable results and the degree of integration development of various localities has developed rapidly during the research period, especially Anhui Province, with an average annual growth rate of 21.59%, followed by Anhui Province, with an average annual growth rate of 14.7%, and the level of integration has increased significantly.

3.2 Measurement Result of Subsystem

Table 3: Measurement Result of Subsystem

Province	Economic Integration	Public Service Integration	Infrastructure Integration	Technology Integration	Ecological and Environmental Integration
Shanghai City	0.233	0.129	0.224	0.062	0.048
Jiangsu Province	0.167	0.073	0.102	0.037	0.044
Zhejiang Province	0.120	0.092	0.022	0.029	0.038
Anhui Province	0.050	0.042	0.036	0.009	0.030

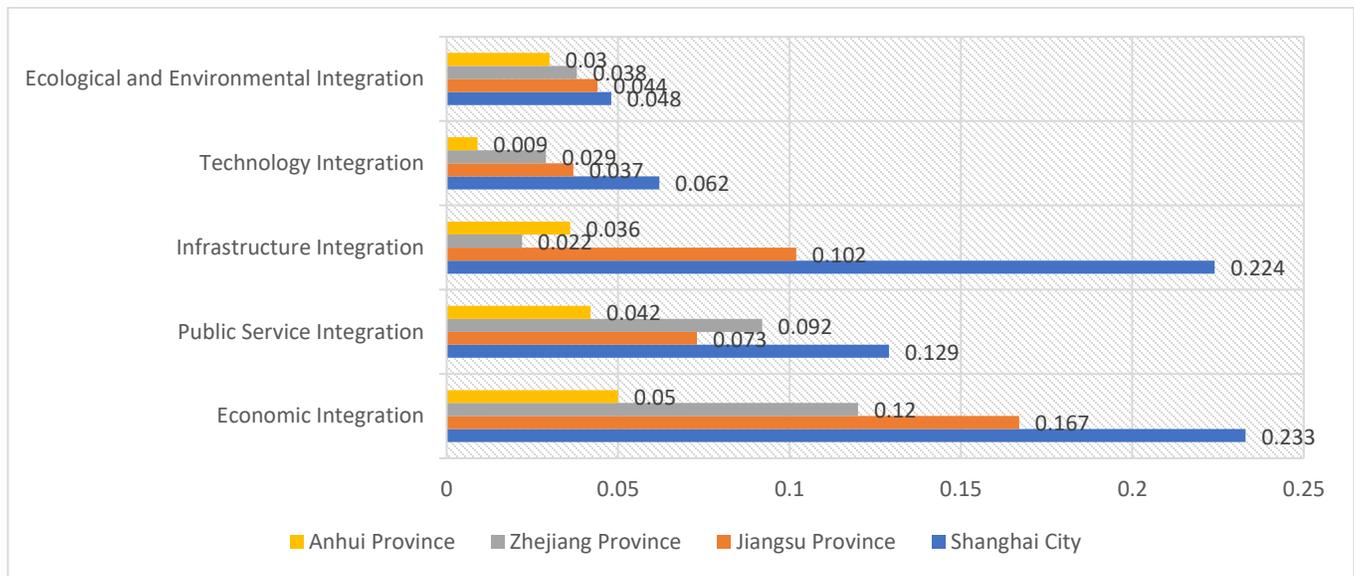


Figure 2: Measurement Result of Subsystem

Table 3 shows the average values of each subsystem of regional integrated development from 2014 to 2020. It can be seen that in addition to Shanghai and overseas, there are certain shortcomings in the integrated development of various regions: the development status of public services in Jiangsu does not match other indicators, which hinders its further development. Although Zhejiang Province's economic and public service level is relatively high, its Infrastructure Integration level does not match other indicators, hindering its development. In addition, Anhui Province has low indicators except for Infrastructure Integration, resulting in a low level of integration.

4. The Analysis of Yangtze River Delta

4.1 Economic Integration

Economic factors play an integral role in measuring the balance of regional economic development. At the enterprise level, enterprises can conduct cross-regional operations for the purpose of optimizing resource allocation, expanding their markets, and achieving economies of scale. A regional industrial division of labor and cooperation occurs at the city level, and cities form an upstream and downstream industrial linkage mechanism based on their own factor endowments and industrial base. This enables the transfer of production factors to high-efficiency industries, accelerates the elimination of backward production capacity, and streamlines the industrial structure of regional regions. A regional economic integration process can also be enhanced by improving the coordination of regional economic development. On the contrary, problems associated with regional economic integration, such as serious industrial overlap and unclear competition and cooperation relations, would result in a waste of resources, aggravate the imbalance of regional economies, and ultimately adversely affect regional economic development.

When it comes to the Yangtze River Delta, according to the “China Urban Agglomeration Integration Report” of the China Development Research Foundation for 2022, it has been determined that between 2006 and 2020, the Gini coefficient of per capita GDP in the Yangtze River Delta decreased by 46.2%, ranking first in the country, and urban agglomerations had more balanced internal economic development.

4.2 Public Service Integration

The synchronization of institutional planning between different administrative divisions of the city cluster is critical to the coordinated development of the region from the perspective of institutional integration. In the context of fiscal decentralization and incentives for officials to be fostered, local governments may adopt regional protection policies for local advantageous industries, promoting local goods while excluding foreign goods, forming policy barriers, and lowering regional economic integration levels. In particular, with the downward pressure on China’s economic growth under the impact of the pandemic, the current economic situation provides additional incentives for local governments to engage in market segmentation, which intensifies excessive interregional competition, resulting in resource wastage and hampering the flow of interregional factors and facilitating regional integration. By announcing its “Opinions on Accelerating the Construction of a National Market” in 2022, the State Council further demonstrates the importance of institutional integration for sustainable regional economic development, which proposes the establishment of a unified national market system so as to facilitate the circulation of factors.

In order to establish a joint mayors’ meeting system, the Yangtze River Delta region established the Yangtze River Delta Cities Economic Coordination Council in 1997 (Xiang et al., 2019), following the principle of “three regions uniting and industry governing together”, which has played an active role in breaking down regional barriers and improving people’s sense of regional identity, as opposed to the lax economic and political communication. The Yangtze River Delta region has a higher level of coordinated development between cities, with the radiation of large cities to small cities. The Yangtze River Delta as a whole is transforming into an “asset-light” region with significant industrial heterogeneity.

4.3 Infrastructure Integration

From the perspective of infrastructure, the interconnection of interregional transportation can effectively promote the growth of the regional economy and is an indispensable condition for regional economic integration. Firstly, with regard to cargo transportation, perfect transportation infrastructure can effectively reduce logistics costs, improve transportation efficiency, and thus foster the coordination of economic resources, facilitate the upgradation of regional industrial structure, ultimately weakening regional economic barriers and expanding the scale of the regional economy. Secondly, concerning talent flow, convenient transportation can reduce the time cost of population movement among cities, accelerate the flow of knowledge, technology and other elements, and further realize “talent sharing”, thereby optimizing the allocation of talent. Finally, for the coordinated development of regional industries, optimizing the structure of transportation infrastructure would promote the division of labor and regional cooperation, thereby benefiting industrial transfer and the specialized division of labor among cities and strengthening the economic ties within the region.

Compared to other regions in China, the construction of transportation infrastructure in the Yangtze River Delta region was initiated relatively earlier, and thus it promoted the development of regional integration. Firstly, the regional transportation network coverage of the Yangtze River Delta region is above 4.5km/km², a relatively high level. Secondly, through the analysis of the degree of interregional transportation connection, we can conclude that the Yangtze River Delta region emphasizes the construction of a comprehensive multi-level transportation network of water, land, air and rail. The four coastal provinces even jointly signed the “Yangtze River Delta Region Interprovincial Transportation Connectivity Construction Cooperation Agreement” in 2018, and in the agreement, 54 key projects ranging from railways, highways and waterways were initiated to promote “complementary functions and resource integration” within the region. Thirdly, concerning port linkage, the Yangtze River Delta region possesses the first and third ports (Shanghai Port and Ningbo Zhoushan Port) in the world in terms of container throughput. It takes the Yangtze

River as the intersection and is equipped with vast inland and coastal hinterland resources, and the port cargo and container throughput in the Yangtze River Delta region, respectively, accounted for 41.8% and 34% of China in 2021.

4.4 Technology Integration

Technology is closely linked to urban development and its functional value of it is reflected in optimizing the supply side, driving the demand side, as well as sharing scientific and technological achievements. At this stage, the research on technology integration primarily focuses on the construction of the sharing of human and technological resources, emphasizing the need to build an ecosystem of technology integration in regional economic integration and then promote the integration and development of science, technology and other resources.

Firstly, the Yangtze River Delta has a large number of Internet enterprises, which also reflects the strong scientific and technological support of their regions and provides the scientific and technological motive power for the upgrading and development of the industry. Secondly, from the perspective of resource sharing of talent technology between regions, compared with other regions in China, the talent flow in the Yangtze River Delta region is relatively sufficient. According to the "2020 City Talent Attraction Ranking", the net inflow of talent in the Yangtze River Delta in 2019 accounted for 5.0%, and the talent agglomeration trend in the Yangtze River Delta region has been notable in recent years. With the development of emerging cultural markets, the culture of the Yangtze River Delta region has shown showed a diversified and integrated development trend(Li et al., 2019).

4.5 Ecological and Environmental Integration

The development of regional integration needs to pay attention to the governance of the ecological environment. On the one hand, it is necessary to ensure that urban planning and environmental planning are promoted simultaneously and taken into account in an overall manner. On the other hand, we should attach importance to the rational utilization of natural resources and realize the efficient flow and rational allocation of resources among regions.

The Yangtze River Delta region has made many explorations in the construction of cross-regional ecological civilization. For example, promoting the construction of the Yangtze River Delta Ecological and Green Integrated Development Demonstration Zone, exploring the establishment of unified ecological and environmental standards and a unified environmental supervision and law enforcement system, and achieving remarkable results in pollution control, all of which have accelerated the process of green ecological integration in the Yangtze River Delta to a certain extent, and also promoted regional integration development (Wang et al., 2022).

5. Extended Studies

At present, the regional integration in China has a certain gap compared with some developed countries. Through the empirical study of the regional integration of developed countries, including the U.K., Germany, the U.S.A., and Japan, we may be able to find something worth learning to help promote the regional integration of China.

5.1 The Two-tier Governance of the Greater London

Firstly, let us take a dive into the two-tier governance of Greater London. It is to establish a unified and highly authoritative regional governance institution on top of the governments of each administrative region within Greater London, forming a "two-tier system" decentralized governance mode. The regional governance institution is only responsible for coordinating cross-regional affairs, and its work focuses on comprehensive plans for the whole region in an attempt to resolve regional conflicts and contradictions. Meanwhile, the specific affairs in each administrative region are still managed by the local government, and thus a two-tier governance model with a clear division of functions is formed. This mode not only takes the unified and coordinated development of the whole region into account but also maintains the independence of the existing local governments and avoids direct intervention in local governments and private sectors. This is in line with Western philosophy and administrative style, and it thus has been adopted in many parts of the West.

Overall, this mode can simplify the organization, avoid duplication of construction, and carry out authoritative and efficient unified coordination for regional integration. As Syrett (2006) believes, the establishment of the two-tier governance and mayor of London is precisely because the previous governance mechanism could not meet the needs of London's sustainable economic development to support its role as a major global city, while the new governance mechanism has already achieved some success in promoting the sustainable economic development of London and maintaining its status as a global city and a popular investment destination. Without the new mode, he argues, it would be difficult for London to win the right to host the 2012 Olympics (Syrett, 2006). But at the same time, we cannot ignore the disadvantages of this mode, that is, in the process of moving from dispersion to concentration, the opinions of various stakeholders cannot be fully expressed, which may further affect policy formulation and implementation, hence if China uses this governance mode for reference, the process of localization should place more weight on opinions of various stakeholders and how to comprehensively take all them into consideration.

5.2 The Authorization Coordination Mode of Metropolregion Frankfurt/Rhein-Main

After analyzing the case of Britain, let's move on to the advanced case of a continental country—Germany. The authorization coordination mode of Metropolregion Frankfurt/Rhein-Main in Germany is of reference significance to the integration of China. The Metropolregion Frankfurt/Rhein-Main, as one of the most prosperous regions in Germany, consists of 11 metropolitan areas, including the core city of Frankfurt and major areas such as Wiesbaden, Darmstadt and Offenbach. It also extends to the neighbouring Rhineland-Falz region of Mainz and Aschaffenburg in Bavaria. The coordination of this region is mainly based on the Frankfurt/Rhine-Main Metropolitan Plan Association, which is responsible for coordinating urban construction, land planning, transportation and environmental governance. Regional transportation can be regarded as a successful example of the coordination of the region. Intercity cooperation involving the layout of industrial zones is often coordinated by the regional chambers of commerce and industry.

The success of the authorization coordination mode may lie in the fact that it does not develop megacities; instead, it focuses on developing one or two central cities as the core and cooperating with surrounding cities to develop together. On the contrary, the Yangtze River Delta at present is vigorously developing the megacity Shanghai, which lacks the radiating and driving role of other central cities. If more regional central cities (such as Hangzhou, Nanjing, etc.) can exert their radiating effect better, their regional integration would be much faster.

5.3 The Integration Mode of the Greater New York City Area

The integration mode of the Greater New York City Area in the U.S. is different from that of Europe. The area has not formed a unified and authoritative metropolitan government so far, and it currently adopts a loose management coordination mode—a special governance mode. It does not establish a unified governance body or a comprehensive joint consultation body but sets up special coordination and governance organizations in various forms and contents to deal with special issues. For example, the Regional Plan Association (RPA) of the Greater New York City Area is responsible for development planning of the area, including development research, advisory tasks in transportation, energy, housing, environment, social development, cultural facilities, etc., but it does not have executive power. In some specific areas of coordination, this area relies on a number of special governing bodies, such as the Port Authority of New York and New Jersey (PANYNJ), which is mainly responsible for building transportation links between New Jersey and Manhattan and coordinating regional public transportation. To be succinct, setting up additional special governance organizations, which may be comprised of related experts, is to let “professionals do professional things”.

5.4 “Wide-Area Cooperation” in Japan

In addition to the region integration modes with different characteristics as aforesaid, there is also a mode that gathers the strengths of each mode, that is, the mixed governance mode. Japan's regional governance mode of “Wide-Area Cooperation” is deemed as a mixture of various modes and simultaneously combines the local conditions of Japan, adopting methods like business delegation, partial business combination and wide area union, and setting up common institutions, consultative councils, and regional development organizations. Also, Japan's mode includes a more clearly defined financial source and division of authority, so in view of the state of excessive “administrative power” yet insufficient “financial power” of local governments, its effect is remarkable. If the Yangtze River Delta Region also chooses the mixed governance mode as Japan did, it should select the parts suitable for its own economic and social development, according to the local conditions.

5.5 Summary

Most of the governance modes described above remain at the national level, but there are benefits to be gained from governance modes at higher levels. For example, the close union of European countries—the EU—is a unified state union formed by the original administrative bodies in the region, which is a flexible association similar to a confederation, yet each administrative body still maintains its independence. The administrative bodies concerned have ceded some of their powers for regional development and coordination to the EU. The EU has established permanent and authoritative administrative institutions, formulated legally effective rules and regulations, clearly defined the scope and content of jurisdiction, operated unified planning yet separately implemented management and coordination mechanisms, and gradually realized the integration of factor markets, communications and transportation, infrastructure, social development and cultural construction within Europe. It has the sole authority in the common field of management and governance, but it is not equipped with the right to interfere in the internal affairs of member states. Generally speaking, this mode is to establish an authoritative regional institution and implement unified and coordinated governance while maintaining the independence of all the existing administrative subjects. For a large regional scope with different administrative systems, this mode of coordination and integration is a better choice.

Through the five cases above, we could draw at least six enlightenments: Firstly, most of the current laws and regulations on integration in China are too broad, and the way the EU uses laws to strengthen the authority and regulate its integration is worth learning. Secondly, in order to optimize the allocation of resources, it is necessary to continue to enhance the infrastructure in the region. Thirdly, the establishment of specialized advisory and supervisory bodies, as has been remarked about the U.S., is a

momentous guarantee for regional integration. Fourthly, to achieve balanced development in various regions, stable financial sources and balancing policies are always of paramount importance. Fifthly, the establishment of governance institutions should be in line with local political, economic, social and cultural characteristics, thereby facilitating the coordinated economic and social development of the region more effectively. Sixthly, regional integration requires the diverse participation of wider stakeholders, but China currently lacks alliances with private institutions and various associations, and it has a long way to go in terms of diverse participation.

6. Relevant Proposals

Firstly, the establishment of relevant laws contributes to the strengthening of the authority of regional coordination bodies. The relevant laws and regulations of China are comparatively too broad, and China should learn from foreign countries how laws are used to regulate and guide integration processes. An effective mechanism for synergizing policy-making. In order to improve uniformity in policy formulation, consistency in regulations, and synergy in implementation, it is necessary to establish mechanisms for the communication and coordination of institutional rules and major policies in key areas. A unified market access system should be implemented in addition to the national list of negative market access. In addition to strengthening policy synergies, establishing an intergovernmental consultation mechanism for business registration, land management, environmental protection, investment and financing, fiscal sharing, human resources management and public services, and forming synergistic programmes based on agreed views, governments at all levels formulate relevant policy measures. In order to standardize policies related to investment and talent attraction, unified rules should be established. Enhance synergy between policy implementation and law enforcement activities in areas such as environmental protection, food safety supervision, and intellectual property protection.

In addition, it is imperative that the region's infrastructure be improved in order to facilitate the integration and coordination of its resources. The improvement of the layout of regional oil and gas facilities and the promotion of the interconnection of oil and gas pipeline networks, for example. Ensure that the construction of regional power grids is accelerated. Grid backbones must be strengthened, interconnections must be enhanced, and the capacities of regional power exchanges and supply guarantee services must be increased. Ensure that power grids and intelligent applications are constructed and renovated. Additionally, the region can work together to promote the construction of new energy facilities. Promote offshore wind power construction in a coordinated manner. Develop offshore wind power and photovoltaic power generation in accordance with local conditions. Encourage the development of new energy sources, such as wind, solar, and biomass, by leading energy companies across provinces.

Thirdly, establishing a specialized advisory and supervisory body is an essential component of regional integration. Optimize the overall regional credit environment by strengthening regional cooperation in credit building. It focuses on the provision of public services, food and drug safety, urban management, tourism throughout the region, ecological and environmental protection, and production safety. An integrated cross-regional credit joint disciplinary system will be implemented with mutual recognition of standards for breach of trust, interactive information sharing, and interchangeable pathways for disciplinary actions. Implement a public credit information sharing platform in the Yangtze River Delta and exchange and share information with the national credit information sharing platform. Promoting supply-side reform in the credit service industry will allow specialized and distinctive credit backbone service organizations to be developed and regional credit service industries to be developed.

The fourth aspect of achieving a balanced development of the regions in the region is the establishment of stable financial sources and the development of policies that balance the interests of the local communities. Create a conducive environment for employment and entrepreneurship by cooperating. Increase the level of employment and entrepreneurship by improving the employment and entrepreneurship services system, as well as promoting efficient resource allocation. Create a level playing field for talent development by formulating a relatively unified policy on talent mobility, attraction, and entrepreneurship. Developing targeted projects and programs to assist college graduates, migrant workers, and ex-servicemen in finding employment and starting their own businesses. Launch large-scale vocational skills training to improve workers' ability to find jobs and start businesses. Strengthen collaboration in labour security supervision and enhance collaborative handling of labour and personnel disputes.

Fifthly, the establishment of governance institutions should be in line with the political, economic, social, and cultural characteristics of the locality in order to facilitate a more coordinated economic and social development of the region. The concept of social governance should be promoted for the purpose of promoting common construction, governance, and sharing. Build a safe Yangtze River Delta by strengthening and innovating social governance, raising social awareness, strengthening the rule of law, enhancing intelligence, and enhancing professionalism. Establish a public legal service system covering all residents of the region and incorporate local regulations and government rules on social governance. Establish a standard system and planning system for the prevention and control of urban public security risks, and strengthen the construction of urban management and social security prevention and control systems. Improve the mechanism for joint prevention and control of major regional disasters and

accidents, and improve the overall emergency plan and relevant special plans. Ensure that cross-regional and cross-departmental synergies, information sharing, and emergency drills are strengthened, and promote the integration of disaster prevention, mitigation, and relief in key cities and metropolitan areas. Promote grid-based service management throughout the region and establish and improve grassroots social governance networks.

Furthermore, the process of regional integration requires the participation of all interested parties in a pluralistic manner. There are currently no alliances with private institutions and associations, and the region has a long way to go in terms of pluralistic participation. A synergistic linkage mechanism should be established between the various players in the market. Allow the role of market mechanisms to play a more significant role in unleashing the vitality and creativity of market participants. Enhance cross-regional cooperation among state-owned companies and deepen the reform of state-owned companies. Create an optimum environment for the development of the private sector, encourage cross-regional mergers and acquisitions, restructurings, and private sector participation in major infrastructure projects, and promote high-quality development of the private sector.

7. Conclusion

In conclusion, this study aimed to investigate the benefits, challenges, and integration models of regional economic integration in China by conducting a comparative analysis of different regions and drawing insights from developed countries. We found that regional economic integration can stimulate economic growth, enhance competitiveness, and enable resource sharing among regions while also posing challenges such as regional disparities, environmental concerns, and cultural differences. Our examination of integration models from developed countries revealed that tailored approaches are more effective than a one-size-fits-all solution. Based on these findings, we provided recommendations for policymakers, businesses, society, and individuals.

Our research contributes to the existing literature by offering a comprehensive analysis of regional economic integration in China and suggesting strategies for successfully promoting it. However, limitations include the potential for rapidly changing circumstances to impact the relevance of our findings and recommendations, and further research is needed to explore the long-term implications of regional economic integration in China.

Firstly, our research highlights that regional economic integration can enhance economic growth, increase competitiveness, and facilitate resource sharing among different regions. However, it also presents challenges such as potential regional disparities, environmental concerns, and cultural differences. Policymakers must take these factors into consideration when designing integration strategies.

Secondly, our examination of integration models from developed countries indicates that no one-size-fits-all solution exists. Instead, tailored approaches should be adopted to suit the unique characteristics and development needs of each region in China.

In light of these findings, we propose recommendations for various stakeholders. Policymakers should implement a balanced development approach, ensuring that regional integration benefits all regions and minimizes potential inequalities. Businesses and industries should embrace opportunities for collaboration, innovation, and resource sharing across regions, thus fostering a more resilient and competitive economy. Society and local communities should be actively involved in regional integration efforts, contributing to sustainable development and preservation of cultural heritage. Individuals should adopt a mindset of lifelong learning and skill development to better adapt to the changing economic landscape brought about by regional integration.

Efforts are underway to strengthen coordination and cooperation among the provinces and cities within the Yangtze River Delta region, aiming to establish a unified and efficient institutional mechanism for regional governance. These initiatives also prioritize the development of a green and low-carbon marine economy, with a focus on enhancing the protection and restoration of the marine ecological environment (Quan et al., 2021). Concurrently, there is a strong emphasis on fostering innovation and integration within marine industries to create a globally competitive, world-class marine economic cluster (He, 2020). Moreover, improving infrastructure and public services within the region is a key aspect, specifically targeting the enhancement of connectivity and accessibility in the transportation, energy, and information sectors (Zhang et al., 2020). Lastly, achieving a balanced urban-rural development and revitalizing rural areas are important goals, necessitating the optimization of spatial layout and functional distribution of cities and towns in the region (MDPI, 2023).

Some limitations of this study include the potential for rapidly changing circumstances to affect the relevance of our findings and recommendations. Additionally, further research is needed to explore the long-term implications of regional economic integration in China.

In conclusion, this study offers valuable insights for promoting regional economic integration in China, which can contribute to inclusive growth, enhanced global competitiveness, and sustainable development. By addressing the challenges and capitalizing

on the opportunities presented by regional economic integration, China can ensure a prosperous future for its people and continue to thrive on the global stage.

Overall, this study offers valuable insights into promoting regional economic integration in China, contributing to inclusive growth, enhanced global competitiveness, and sustainable development. By addressing the challenges and capitalizing on the opportunities presented by regional economic integration, China can secure a prosperous future for its people and continue to thrive on the global stage.

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