Research on economic integration of Yangtze River Delta Based on principal component analysis

Yu Wang¹, *, Haiqing Ma² and Xuezhi Chen²
¹School of Finance, Anhui University of Finance and Economics, Bengbu Anhui 233030, China.
²Management Science and Engineering, Anhui University of Finance and Economics, Bengbu Anhui 233030, China.
* Corresponding Author: zclw12088@163.com

Abstract: The Yangtze River Delta region is one of the most important regions in China's economic development. This paper uses quantitative method and principal component analysis to establish an index system to evaluate the economic development of four provinces and cities in the Yangtze River Delta from 2014 to 2018, analyzes the regional economic development level of the Yangtze River Delta according to the index evaluation results, and finally puts forward the method to promote the high-quality integration of the Yangtze River Delta.

Keywords: Changjiang delta, Regional economic integration, Principal component analysis.

1. Introduction

The high-quality promotion of economic integration in the Yangtze River Delta is an important link for the success of the national strategy of integration in the Yangtze River Delta (Wu Daqi, 2019). From the perspective of regional economy, promoting high-quality integrated development in a large region can effectively improve the efficiency of resource allocation and release the new driving force of economic growth; From the perspective of innovation law, promoting high-quality integrated development in a large region can realize integrated innovation, accelerate the transformation of achievements and give birth to scientific and technological revolution; From the perspective of one's national will, one belt, one road, and the Yangtze River economic belt, will be effective in implementing the national strategy and promoting the development of high quality integration in a larger region. From the perspective
of long-term development, promoting high-quality integrated development in a large region can provide a path and guarantee for China's sustained and healthy economic development, and provide replicable and popularized experience and demonstration for the country's high-quality development. It can be said that the high-quality integrated development of the Yangtze River Delta is the requirement of the times and the national will (Wei Wei, 2019). As the leading area of China's economic development, the high-quality development of economic integration in the Yangtze River Delta is conducive to optimizing the rational allocation of regional resources, forming a situation of collaborative innovation, improving China's employment level and breaking the dual development pattern of urban and rural areas. To accelerate the high-quality development of economic integration in the Yangtze River Delta, we should promote quality reform, efficiency reform and dynamic reform, continue to be at the forefront of the country in terms of economic transformation and economic integration development, and develop into a world-class urban agglomeration with global influence and competitiveness. The historical development status and geographical location of the Yangtze River Delta determine its growth pole effect. The CPC Central Committee has entrusted the Yangtze River Delta with a higher positioning mission and responsibility (Xiao Jincheng, 2020).

2. Construction of index system

This paper selects 10 indicators: per capita GDP, total industrial production, total tertiary industry, general public budget income, general public budget income, total import, total export, per capita disposable income, per capita consumption expenditure and consumer price index, which reflect the level of economic development to a certain extent and show positive correlation. Since Shanghai is a city, while Anhui Province, Jiangsu Province and Zhejiang Province are provinces, that is, a collection of multiple cities, the scope of the two is different, so it is impossible to make a scientific comparison in terms of total indicators. Therefore, the method adopted in this paper is to count the permanent population of each province and city every year, and then calculate the data of the total index by the permanent population to obtain the per capita index. The per capita index can reflect its economic development level to a certain extent, and eliminate the shortcomings of different provinces, cities and regions. Therefore, the final 10 indicators studied in this paper are per capita GDP, per capita industrial production, per capita tertiary industry, per capita general public budget income, per capita general public budget income, per capita export, per capita import, per capita disposable income, per capita consumption expenditure and consumer price index.
3. Current situation of real estate development in the Yangtze River Delta

As an important engine of China's economic and social development, the Yangtze River Delta occupies a large market scale in the early stage of the real estate market. With the rapid development of local real estate markets, the Yangtze River Delta will account for about 19% of the national commercial housing sales area by 2018. In terms of house prices, the growth rate of house prices in cities in the Yangtze River Delta reached a historical peak in 2017, and then fell in 2018. Among them, the growth rate of first and second tier cities fell significantly. In 2018, the growth rate of house prices in third and fourth tier cities exceeded that of first and second tier cities. After a period of rapid price rise cycle, the growth of house prices in the first and second tier cities is weak, the house prices in the third and fourth tier cities maintain a strong growth momentum, and the house prices in the third and fourth tier cities will become a hot area of real estate development in the Yangtze River Delta. In terms of sales area, the growth rate of the first and second tier cities in the Yangtze River Delta is higher than the national average, and the sales area of the third and fourth tier cities in the Yangtze River Delta has increased rapidly in recent two years, which shows that the real estate development of the third and fourth tier cities in the Yangtze River Delta is still in a rapid development stage. Although the growth rate of urban sales area in the Yangtze River Delta has declined to a certain extent, the house prices of the first, second and third and fourth tier in the Yangtze River Delta have increased by 4.5% and 12% year-on-year respectively in 18 years. From the perspective of the land market, the transaction area of all types of land in the Yangtze River Delta accounted for 32% of 300 cities in 2018. Due to the high land price, the transfer fee accounted for 37% of 300 cities. From the perspective of trend, the scale of land transfer fee has gradually increased since 2016. In 2016, it was mainly driven by the sharp rise of floor price, and the volume and price rose in 17 years. In 18 years, the transaction surface of land market increased by 14% year-on-year, the floor price fell by 12% year-on-year, and the overall scale of land transfer fee increased slightly by 0.1% compared with 17 years. The heat of the land market does not decrease, which also shows that real estate developers are optimistic about the future housing market in the Yangtze River Delta, and the market expectation continues to be optimistic. Urban agglomeration is the main form of China's new urbanization. It is not only an important carrier to expand development space and release space, but also an important platform to participate in international competition and cooperation. The report of the 19th National Congress proposed to build an urban pattern of coordinated development of large, medium and small cities and small towns with urban agglomeration as the main body. With the advancement of urbanization in China, there are many large and medium-sized urban groups in China, such as Beijing Tianjin
Hebei Urban Agglomeration, Pearl River Delta urban agglomeration, Yangtze River Delta Urban Agglomeration and so on.

As the top urban agglomeration with the largest scale, the largest economic aggregate and a high degree of integration in China's urban agglomeration, the development of 26 cities in the Yangtze River Delta is relatively balanced. Shanghai ranks first in China with more than 3 trillion GDP. At the same time, four cities in the region have exceeded 1 trillion yuan and seven cities have exceeded 500 billion yuan. A solid foundation for economic development has laid a good foundation for sustainable integrated development in the Yangtze River Delta. However, looking at the global representative urban agglomerations, the Yangtze River Delta urban agglomerations are still relatively backward compared with the urban agglomerations of the United States, Japan, Europe and the United Kingdom. In addition, due to the large population base and other factors, the per capita GDP of the Yangtze River Delta is even more backward, which also indicates that the Yangtze River Delta urban agglomerations have great room for improvement and development potential.

In this context, the Yangtze River Delta regional integration plan was issued. 2018 is a year of intensive implementation of regional integration policies in the Yangtze River Delta. In March 2019, the development of regional integration in the Yangtze River Delta was officially included in the government work report, and it is required to prepare and implement the development plan outline. The planning outline focuses on the following aspects: Industrial chain integration pays more attention to "taking the group with the area".

At present, the Yangtze River Delta has formed a more reasonable pattern of industrial division of labor. The economies of three provinces, one city and four places have their own emphases and characteristics, and are highly complementary, which has laid a solid foundation for integrated development. Integration means to realize the efficient integration and distribution of resources through the integrated development of urban agglomeration. It emphasizes the coordinated development within urban agglomeration rather than supporting and driving the development of surrounding areas through the radiation and diffusion of Shanghai elements. Shanghai acts as an operating system platform to attract first-class talents all over the world and the country and provide talents, funds and platforms for the Yangtze River Delta; Jiangsu's collective economy is developed, and its advantage lies in the manufacturing industry; There are many private enterprises in Zhejiang, and the Internet and digital economy are developing rapidly; The new industrialization of science and education is the highlight of Anhui. Infrastructure integration to improve the quality of regional cooperation. The first is to realize the interconnection of transportation in the Yangtze River Delta, such as roads, rail transit, airports, ports and so on; Second, in energy
mutual aid and protection, especially promoting new energy cooperation; Third, build information network and complete 5g deployment in 2020; Fourth, strengthen innovation drive, promote the construction of science and innovation corridor, and promote industrial cross administrative regional cooperation; Fifth, strengthen ecological management; Sixth, improve integrated public services and realize integration in justice, education, medical treatment, elderly care, tourism and other aspects. Integration of transportation facilities to shorten the space-time distance. High tolls, incomplete bridge tolls and inconvenient "dead end roads" will increase transportation costs and hinder the development of regional integration. The Yangtze River Delta is implementing the "broken road" and canceling provincial toll stations; At the same time, more high-speed railways will be covered to expand the scope of the "one hour economic circle". At present, the reconstruction scale of rail transit in key cities in the Yangtze River Delta has increased by more than 60%. The construction of interconnection helps to promote the flow of people in the metropolitan area and drive the economic development in the economic circle.

4. Prediction of future real estate development trend in the Yangtze River Delta

The integration of the Yangtze River Delta will highlight the driving role of Shanghai in regional integration, focus on the development of high-end industries, layout emerging strategic industries, and promote the construction of Shanghai as a headquarters economy, scientific and technological innovation center and global financial center. Under the background of gathering high-end talents and advanced producer service enterprises, industrial communities with highly mixed functions and innovative office space with smart ecology will become a new trend of office development in first and second tier cities. Under the background of how far the urban functional demand brought by the same urbanization effect is, diversified experience commerce, ecologically livable international community and intelligent integrated public service system will become a new urban functional trend, which also indicates that the real estate industry will develop in a more intensive, high-quality, intelligent and humanized direction, and urban development will bring new growth opportunities for the development of the real estate industry.

The establishment of the integrated demonstration zone will promote the development of Qingpu District in Shanghai, Wujiang District in Suzhou and Jiashan County in Jiaxing. The Yangtze River Delta integration plan has been implemented, and detailed policies have been issued continuously. Anhui Province, Jiangsu Province and Zhejiang Province have continuously strengthened the docking of plans, aiming to establish a pilot area for regional integration. In February 2018, the Yangtze River Delta Regional
Cooperation Office was officially established, and then the integration demonstration area has been determined. It is mainly located at the intersection of Shanghai, Jiangsu and Zhejiang provinces and cities, including Wujiang District of Suzhou, Jiashan County of Jiaxing City and Qingpu District of Shanghai. The determination of the demonstration area will promote the rapid development of these three regions. Among them, the policy supports the traffic construction in three regions, including 21 "broken roads". Among them, the Qingpu YINGDIAN Road Kunshan Jindian road project was completed on May 30, and the construction of other projects is also stepping up; On the other hand, Qingpu District will build a tourism alliance with Kunshan City, Wujiang City and Jiashan County. The deepening of transportation infrastructure and regional cooperation will drive the development of Qingpu District.

The real estate development in the third and fourth tier cities will usher in new opportunities. The Yangtze River Delta has always been the focus of national developers, especially in some low-lying areas with mining space. The integration of the Yangtze River Delta focuses on strengthening the construction of transportation integration. Its transportation infrastructure construction has always been higher than that of other cities in China. The diversification, integration and networking of transportation network make the connection between the Yangtze River Delta closer. In particular, the development of transportation in the third and fourth tier cities has brought new development opportunities for real estate enterprises, the increasing improvement of urban external and internal transportation network, high-speed railway, urban railway and subway, will strengthen the flow of people between regions, which will bring incremental development to the third and fourth tier real estate market.

5. Summary

We will strengthen the transformation of innovative achievements, give full play to the advantages of Anhui colleges and universities, take advantage of the construction of the Yangtze River Delta Innovation community through platforms such as Hefei comprehensive national science center and the demonstration area for undertaking industrial transfer in Wanjiang urban belt, arrange high-growth industries with high scientific and technological content and strong driving ability, introduce and cultivate a number of leading enterprises with international competitiveness, and realize high-quality development through industrial introduction. With the pull of regional market integration in the Yangtze River Delta, we will promote the free and smooth flow of factors. Anhui should find the correct industrial positioning and give full play to its comparative advantages.

It is a pioneer in the application of artificial intelligence and a beneficiary of the renewal of traditional industries. Taking advantage of its advantages in manufacturing,
technology R & D and proximity to the high-end market, we will focus on increasing R & D investment in the fields of industrial robot manufacturing and application and intelligent industrial software, strive for major breakthroughs and achieve national leadership. At the same time, we should pay attention to protecting the competitive advantages of traditional industries, absorb the employment of labor force in the province through the transformation and upgrading of traditional industries, and promote the coordinated development of industrialization and urbanization. For Jiangsu and Zhejiang provinces, they have been in the second and third positions alternately for a long time, and they compete with each other and are developing rapidly. For Jiangsu Province, the long-term score of residents' living standard factor is low, indicating that people's living standard needs to be improved, and the government should improve workers' salary and social welfare. Jiangsu Province has developed heavy industry and advanced manufacturing industry, strong state-owned enterprises and rich scientific and educational resources; The light industry and tourism in Zhejiang Province are prosperous, the private economy and network economy are developed, and the private capital is abundant. There are strong differences and complementarities in the economic structure between the two provinces. In order to promote the integration construction of the Yangtze River Delta, the two provinces can strengthen the cooperation between the two provinces, eliminate local protectionism and market segmentation, narrow the regional development gap, achieve regional common prosperity and build a more efficient, fair and sustainable regional coordinated development pattern of the Yangtze River Delta through the way of "core labor, multipolar coordination and overall development".

**Acknowledgements**

This paper belongs to the phased research results of the Provincial College Students' innovation training program of Anhui University of Finance and economics, Research on economic integration of Yangtze River Delta Based on principal component analysis (Project No: S202110378388).

**References**


