

Study on the High Quality Development of Agricultural Economy in the Yangtze River Delta

Xuan Liu, Jinying Han, Yangshunzi Sun, Ye Chen

Anhui University of Finance and Economics, Bengbu City, Anhui Province, 233030, China

Abstract: The Yangtze River Delta is a leading area for the high-quality development of China's agricultural economy. Based on the data of the Yangtze River Delta from 2007 to 2019, this paper analyzes the current situation of high-quality agricultural development in the Yangtze River Delta and puts forward corresponding policy recommendations.

Keywords: Yangtze River Delta, Agricultural economy, High quality development.

1. Introduction

High quality development of agricultural economy is crucial to the realization of agricultural modernization. During the "Fourteenth Five Year Plan" period, the state attached importance to agricultural development and required to accelerate agricultural and rural modernization. Now China's economy has changed from a stage of rapid growth to a stage of high-quality development. China's requirements for agriculture have changed from high-yield development to high-quality development. High quality agricultural development is a comprehensive reflection of the total agricultural economy and agricultural economic benefits in a region.[1] Moreover, the high-quality development of agricultural economy is also an important guarantee for China to tackle poverty, promote rural revitalization and realize agricultural and rural modernization.[2] As one of the regions with the most dynamic economy, the highest degree of openness, and the strongest innovation ability in China, the Yangtze River Delta is also an important production area of a variety of agricultural products in China. Its high-quality integrated agricultural development is an important part of the high-quality economic development of the Yangtze River Delta.

2. Journals Reviewed

At present, a few scholars have done research on the high-quality development of agricultural economy in the Yangtze River Delta. The existing literature mainly focuses on the integration of high-quality agricultural development in the Yangtze River Delta, the evaluation model of high-quality agricultural development, and the research on the spatial and temporal differentiation of agriculture in the Yangtze River Delta. Research on the integration of high-quality agricultural development in the Yangtze River Delta: Han Changfu (2018) summarized high-quality agricultural development into "six highs" such as product quality and industrial benefits.[3] Zhang Feng (2021) believed that the high-quality integrated development of agriculture has a new era connotation, which is mainly represented by "four high and one strong" and "four major supports", including 9 main contents and 31 specific requirements.[4] Research on evaluation model of high-quality agricultural development: Xinling (2019) analyzed and evaluated high-quality agricultural development from different dimensions.[5] Research on temporal and spatial

differentiation of agriculture in the Yangtze River Delta: Gao Zhiying et al. (2018) introduced agricultural non-point source pollution as an unexpected output, and used the super efficiency DEA method based on SBM to calculate the agricultural ecological efficiency of 11 regions in the Yangtze River Economic Belt from 2006 to 2015.[6] Liu Lijia et al. (2021) conducted an empirical analysis on the economic growth effect of agricultural spatial matching quality by using the spatial lag model, and concluded that the matching degree of water and soil resources has a significant negative impact on agricultural economic growth in the Yangtze River Delta.[7]

To sum up, the academia has studied and analyzed the connotation and problems of high-quality agricultural development and the regional differences of green agricultural development from different perspectives, deepening the theoretical understanding of high-quality agricultural development, but these studies do not fully reflect the concept of high-quality national development. The existing research is limited to one aspect of the high-quality or integrated development of agriculture, which is difficult to meet the needs of the Yangtze River Delta to build a leading area of high-quality economic development in China. Based on the national strategic requirements, this topic organically combines the objectives and conditions of high-quality agricultural development, high-quality and integration, qualitative analysis and quantitative evaluation in combination with the time-space differences in the Yangtze River Delta. Through systematic analysis and evaluation, it comprehensively grasps the current situation and weaknesses of high-quality agricultural economic development in the Yangtze River Delta, and puts forward targeted countermeasures and suggestions.

3. Research Contents

(1) Systematic analysis and evaluation of high-quality economic development in the yangtze river delta region. High quality economic development in the Yangtze River Delta is an important guarantee to promote the high-quality agricultural development in the Yangtze River Delta. Through the construction of the evaluation system of the high-quality development index of three provinces and one city, four metropolitan areas and 41 cities in the Yangtze River Delta region, we comprehensively and objectively analyze and evaluate the high-quality development level and development trend of the Yangtze River Delta region.

(2) The driving mechanism that affects the spatial and temporal differentiation of agricultural development in the Yangtze River Delta. The spatial and temporal dimensions have an important impact on the agricultural distribution characteristics and development trends. The level of economic development and agricultural modernization are the driving factors that affect the spatial and temporal differentiation of agricultural development in the Yangtze River Delta. The government policy factors have a macro guiding effect on the study of the spatial and temporal differentiation of agricultural development in the Yangtze River Delta. By studying the spatio-temporal differentiation and driving mechanism of agricultural development in the Yangtze River Delta from 2007 to 2019, the spatio-temporal driving factors that affect the high-quality agricultural development in the Yangtze River Delta are revealed, providing a useful theoretical reference and practical

reference for the high-quality agricultural economic development in the Yangtze River Delta.

(3) The influence of space-time dimension on agricultural distribution characteristics and development trend. The agricultural spatial matching quality is defined from the two perspectives of water and soil resources matching and industrial comparative advantage matching, and the matching quality of 41 cities in the Yangtze River Delta is quantified. Through horizontal and vertical comparison of the total planting area, planting area of main crops and yield data of 41 cities in the Yangtze River Delta region, the temporal and spatial characteristics and change trend of the planting industry in the Yangtze River Delta region from 2007 to 2019 are systematically analyzed from two aspects of industry and region, so as to analyze the impact of temporal and spatial dimensions on agricultural distribution characteristics and development trend.

Table 1. In 2019, 41 cities in the Yangtze River Delta achieved high-quality agricultural economic development

Yangtze River Delta	City	D ⁺	D ⁻	Comprehensive score	Sort
Shanghai	Shanghai	0.2137	0.1143	0.3485	41
Zhejiang Province	Nanjing	0.1767	0.1467	0.4536	27
	Wuxi	0.1993	0.1127	0.3612	40
	Xuzhou	0.1464	0.1609	0.5236	10
	Changzhou	0.1744	0.1312	0.4293	32
	Suzhou	0.1989	0.1165	0.3693	38
	Nantong	0.1545	0.1469	0.4874	19
	Lianyungang City	0.1555	0.1590	0.5056	14
	Huai'an	0.1366	0.1615	0.5418	4
	Yancheng	0.1174	0.1985	0.6284	1
	Yangzhou City	0.1500	0.1552	0.5085	12
	Zhenjiang City	0.1657	0.1574	0.4872	20
	Taizhou	0.1381	0.1605	0.5375	6
	Suqian	0.1436	0.1649	0.5346	7
Jiangsu Province	Hangzhou	0.1709	0.1441	0.4575	26
	Ningbo	0.1820	0.1225	0.4023	35
	Wenzhou City	0.1878	0.1095	0.3682	39
	Jiaxing	0.1753	0.1353	0.4355	29
	Huzhou	0.1550	0.1597	0.5074	13
	Shaoxing	0.1613	0.1366	0.4587	25
	Jinhua	0.1796	0.1122	0.3844	37
	Quzhou	0.1501	0.1533	0.5051	15
	Zhoushan City	0.1309	0.1836	0.5839	2
	Taizhou	0.1673	0.1289	0.4352	30
Shanghai	Lishui	0.1493	0.1462	0.4948	17
	Hefei	0.1762	0.1285	0.4217	34
	Wuhu	0.1670	0.1437	0.4625	24
	Bengbu	0.1433	0.1772	0.5528	3
	Huainan	0.1562	0.1757	0.5293	8
	Ma'anshan City	0.1543	0.1629	0.5136	11
	Huaibei	0.1667	0.1637	0.4954	16
	tongling	0.1819	0.1386	0.4324	31
	Anqing	0.1582	0.1528	0.4912	18
	Huangshan City	0.1545	0.1813	0.5399	5
	Chuzhou	0.1580	0.1403	0.4703	22
	Fuyang	0.1820	0.1362	0.4280	33
	Suzhou	0.1732	0.1362	0.4402	28
	Lu'an	0.1878	0.1185	0.3868	36
	Bozhou	0.1438	0.1584	0.5242	9
Chizhou	0.1637	0.1439	0.4678	23	
Xuancheng City	0.1531	0.1436	0.4840	21	

Table 2. Temporal and spatial evolution of high-quality development of agricultural economy in three provinces and one city

Year	2007		2010		2013		2016		2019	
Region	score	sort	score	sort	score	sort	score	sort	score	sort
Shanghai	0.4273	4	0.4690	3	0.5058	3	0.4509	3	0.4596	4
Jiangsu Province	0.5150	2	0.5013	2	0.5088	2	0.5292	2	0.5403	2
Zhejiang Province	0.4499	3	0.4236	4	0.4214	4	0.4104	4	0.4664	3
Anhui Province	0.6783	1	0.6200	1	0.5547	1	0.6608	1	0.6152	1

(D^+): Distance between scalar value and optimal solution ;

(D^-): Distance between index value and worst solution

4. Research Conclusions and Policy Recommendations

4.1. Research conclusion

(1) The overall level of high-quality development of agricultural economy in the Yangtze River Delta region has been continuously improved. Although the comprehensive score of high-quality development of agricultural economy in the Yangtze River Delta from 2007 to 2019 has declined in some years, it has shown a steady upward trend on the whole. As time goes on, the high-quality development of agricultural economy has reached a certain level, and the comprehensive score is constantly close to 1. The growth rate of high-quality development of agricultural economy is also declining, reaching a stable state.

(2) The high quality development level of agricultural economy in three provinces and one city in the Yangtze River Delta is significantly different. In the listed 5-year data of three provinces and one city, although the comprehensive score gap of three provinces and one city has been reduced, there are still some differences in the high-quality development level of agricultural economy in three provinces and one city. In 2019, 41 cities in the Yangtze River Delta ranked among the top 10 in terms of comprehensive scores for high-quality agricultural economic development. Jiangsu Province accounted for 5 cities, Anhui Province accounted for 4 cities, while Zhejiang Province only accounted for 1 city, and Shanghai ranked last in terms of comprehensive scores. In 2019, the average comprehensive score of high-quality development of agricultural economy in 41 cities was 0.4729, but the comprehensive score of most regions was quite different from it, and the comprehensive score of each city fluctuated significantly. Among 13 cities in Jiangsu Province, only 4 cities have a comprehensive score lower than the average comprehensive score of 0.4729 in 41 cities, while 7 cities in 11 cities in Zhejiang Province have a comprehensive score lower than the average comprehensive score of 0.4729 in 41 cities. Among them, Yancheng, which has the highest comprehensive score for high-quality agricultural economic development, is 1.8032 times the lowest comprehensive score in Shanghai.

(3) There is a small gap in the high-quality development level of agricultural economy among Jiangsu, Zhejiang and Anhui provinces. In 2019, the average comprehensive score of all cities in Jiangsu Province, Zhejiang Province and Anhui Province was 0.4898, 0.4575 and 0.4775 respectively in the estimation of high-quality development level of agricultural economy of 41 cities in the Yangtze River Delta. All cities in the three provinces fluctuate around the average comprehensive score of each province, and the comprehensive score of each city in the province is relatively

stable. Among the 13 cities in Jiangsu Province, the comprehensive score of 6 cities is lower than the average comprehensive score of Jiangsu Province, and 7 cities are higher than the average comprehensive score of Jiangsu Province; Among the 11 cities in Zhejiang Province, there are 5 cities whose comprehensive scores are below and above the average comprehensive scores of Zhejiang Province, among which Hangzhou's comprehensive scores are the same as the average comprehensive scores of Zhejiang Province; Among the 16 cities in Anhui Province, there are 8 cities above and 8 cities below the average comprehensive score of Anhui Province. The high-quality development level of agricultural economy of each city in the three provinces fluctuates around the corresponding average value of each province, and the gap between cities in the province is not obvious.

(4) The green development of agricultural economy has a significant impact on the high-quality development of agricultural economy in the Yangtze River Delta. According to the original data, the green development dimension of agricultural economy has the greatest impact on the high-quality development of agricultural economy, followed by the agricultural economic structure. However, the weight of agricultural economic innovation development and rural socio-economic development is far lower than that of the former two alone. It can be seen that the green development level of agricultural economy in each city is significantly different. Improving agricultural governance, carrying out innovative reform of agricultural green development, and reducing the green development level of agricultural economy in each city are powerful ways to improve the high-quality development of agricultural economy.

4.2. Countermeasures and suggestions

(1) Accelerate agricultural modernization in the process of Yangtze River Delta integration. Agriculture will be three provinces and one city that is associated with high quality and economic development, formed a strong overall, give full play to the regional advantage industry, constantly coordinate problems existing in each area, the key problem jointly overcome difficult, strengthen agriculture internal contact three provinces and one city, and to experience exchanges and cooperation, the implementation of relevant agricultural modernization project.

(2) Promote cooperation among three provinces and one city. All governments should give full play to their role of guidance and supervision, timely grasp the latest trends in the high-quality development of agricultural economy, coordinate the relationship between various industries, reasonably increase agricultural financial investment, provide a sound agricultural service system for the high-quality development of agricultural economy, and constantly narrow the gap between regions in the high-quality development of

agricultural economy.

(3) Adhere to the green development path of agricultural economy. The agricultural industry should reduce all kinds of energy consumption, increase investment in agricultural environmental pollution control, use scientific and technological innovation to find a high-quality agricultural production, operation and management system, produce high-quality agricultural products, realize agricultural green development, and provide fundamental guarantee for the sustainable development of agricultural economy.

(4) Increase investment in agricultural science and technology innovation, carry out industrial structure reform and improve the agricultural economic structure. The weight of agricultural economic innovation and development in the four dimensions is not high, which shows that the difference of agricultural innovation level in each region is smaller than that in the other three dimensions, which does not mean that agricultural innovation and development is not important to the improvement of high-quality development level of agricultural economy. From the original data, there is still a certain gap between the agricultural innovation ability of three provinces and one city in the Yangtze River Delta and the advanced innovation level of international agricultural high-quality development. Therefore, all regions should increase investment in agricultural scientific and technological innovation, integrate the scientific and technological resources of three provinces and one city, establish agricultural scientific and technological alliance, improve the agricultural economic structure, optimize the agricultural scientific and technological innovation system,

and realize large-scale agricultural production.

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