

Research on Urban-Rural Integration Development in the Yangtze River Delta Region under the Perspective of Common Prosperity

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Abstract—Taking common wealth as the research perspective, the entropy method is used to measure the level of urban-rural integration development in the Yangtze River Delta region from 2014 to 2021, and the Gini coefficient are used to analyze the level characteristics of urban-rural integration development in the Yangtze River Delta region, as well as combining with the two-way fixed model to explore the upgrading effect of the organic combination of the market and the government on urban-rural integration. The main conclusions are: (1) The overall level of urban-rural integration and development shows a spiral upward trend, with Jiangsu and Zhejiang provinces far ahead. (2) Regional differences in urban-rural integration development are obvious, but the overall trend is fluctuating downward. (3) The organic combination of market and government can have a significant enhancement effect on urban-rural integrated development. In terms of sub-dimensions, the significant positive effect of the organic combination of market and government on shared integration is dominated by economic development, spatial openness, green ecology, and scientific and technological innovation, while shared integration does not show a significant enhancement effect.

Keywords—Urban-rural integrated development; market; government; Yangtze River Delta region.

I. INTRODUCTION

Integrated urban-rural development is an important hand in realizing high-quality social development and a key breakthrough in cracking the imbalance and inadequacy of development between urban and rural areas. However, because economic development has long been constrained by the traditional urban-rural dichotomy, problems such as the wide gap between the incomes and consumption of urban and rural residents, difficulties in the free movement of factors, and imbalances in the allocation of infrastructure and public service facilities remain prominent. Therefore, breaking down urban-rural barriers and resolving imbalances and inadequacies in regional development is the key to easing urban-rural conflicts, narrowing the urban-rural gap, and realizing coordinated urban-rural development, as well as a necessary requirement for advancing the common good.

The combination of the market as the invisible hand and the government as the visible hand can effectively solve the current problems of insufficient and unbalanced development of urban and rural areas.²⁰²² In April, the CPC Central Committee and State Council's "Opinions on Accelerating the Construction of a National Unified Big Market" re-emphasized the importance of building the market and the government. The organic combination of market and government can allocate public resources more rationally, penetrate resources into rural areas, share public services, narrow the gap between urban and rural areas, and realize integrated urban and rural development. The Yangtze River Delta region is located in the eastern part of China, at the lower reaches of the Yangtze River, and the level of integrated urban-rural development is at the forefront of the country, one of the regions with the strongest comprehensive strength in China. As a model leading region, what is the level of integrated urban-rural development in the region? Has it

achieved coordinated regional development? What are the roles of the market and the government in urban-rural integrated development? Clarifying the meaning of integrated urban-rural development is of great significance to the realization of integrated development in the Yangtze River Delta and the promotion of integrated urban-rural development in other regions.

This paper selects 40 prefecture-level cities in the Yangtze River Delta from 2014 to 2021 as the research sample. The data were mainly obtained from provincial and municipal statistical yearbooks, the website of the Ministry of Rural Agriculture and various types of public information

II. THEORETICAL ANALYSIS OF INTEGRATED URBAN-RURAL DEVELOPMENT

(i) Construction of an evaluation indicator system

Urban-rural integration is the process of shifting the economic structure of urban and rural areas from dualism to monism^[1], emphasizing the free flow of production factors, such as population, capital, energy, and information technology, between urban and rural areas^[2], and is a dynamic and balanced development that establishes a unified market, facilitates the flow of factors, as well as optimizes the allocation of resources^[3]. Promoting the common prosperity of all people is the rightful meaning and important goal of building a modern socialist country as China rides on the momentum to start a new journey. To realize common prosperity, not only do we need to do a good job of "cake", but also "share the cake". General Secretary Xi Jinping also pointed out that "the most arduous and burdensome task in promoting common prosperity still lies in the countryside", which profoundly reveals that the imbalance between urban and rural development is the primary problem facing China in promoting the realization of common prosperity. In order to solve the

problem of structural imbalance between urban and rural areas, taking the road of integrated urban-rural development is a necessary step in reshaping urban-rural relations and promoting the realization of common prosperity.

To do a good job of the "cake", the urban-rural integrated development of the Yangtze River Delta region is promoted from the co-construction and integration, which mainly consists of economic development, spatial openness, green ecology and scientific and technological innovation. First, the integration of economic development enhances the flow effect of rural surplus labor between urban and rural sectors^[4], making the urban-rural dual economy integrated into a single economy, which has an important economic support role in promoting urban-rural integrated development. The urban and rural per capita gross regional product and local financial income are selected to reflect this. Secondly, spatial openness and integration emphasizes that urban-rural integrated development must focus on the spatial connection between urban and rural areas, and that by accelerating the construction of transportation facilities in cities and towns, it can revitalize the dormant resources, maximize the promotion of the development concept of "common prosperity", and realize the process of dynamic balance between urban and rural spaces. Urban spatial expansion, highway network density and land urbanization level are selected to reflect this. Thirdly, ecological theory suggests that urban-rural integrated development is a harmonious coexistence of man and nature, jointly realizing sustainable development, and that urban and rural areas should jointly build a better home, which is of great significance to the practice of urban-rural integrated development in the new era. The level of urban and rural greening and urban and rural energy conservation and emission reduction are selected to reflect this. Fourth, at present, the level of scientific and technological innovation in urban and rural areas is still at a relatively low level, giving full play to the role of innovation and integrated development as the first driving force to lead development, and through the innovation of products, technology and other innovations, it can transform the traditional mode of economic development and effectively break down the urban-rural barriers^[5]. The patent authorization index, the number of trademark authorization and the innovation and entrepreneurship index are selected to reflect.

In order to divide the "cake" properly, and in keeping with the development trend of urban-rural integration, it is necessary to reshape the new urban-rural relationship into one of "factor sharing and common development", and to resolutely break down the institutional barriers that impede the free flow of factors between urban and rural areas. First, at present, the problem of "hollowing out" of the countryside still exists, but the one-way flow from the countryside to the towns and cities or from the towns and cities to the countryside is not the original purpose of urban-rural integrated development; urban-rural integrated development should be to bring the countryside along with the towns and cities, and to form a new type of urban-rural-industrial relationship in which workers and peasants are mutually reinforcing, urban and rural areas complement each other, and develop in a coordinated manner for the common prosperity of all. The proportion of non-

agricultural to agricultural employment and the level of urbanization of the population are selected to reflect this. Second, downplaying the barriers and differences in treatment in education, medical care and social security is the top-level design for promoting the sharing of basic public services between urban and rural areas and the integrated development of urban and rural areas. The urban-rural per capita disposable income ratio, urban-rural per capita consumption expenditure ratio, urban-rural medical care level differences, urban-rural cultural, educational and recreational differences, and urban-rural transportation and communication differences are selected to reflect this. Thirdly, the shortcomings of agricultural and rural development are still obvious, the supply of basic public services in rural areas is still insufficient, and the shortage of professionals for rural revitalization is obvious, which seriously restricts the integrated development of urban and rural areas^[6], and it is possible to narrow the gap between urban and rural areas and share the fruits of development by appropriately tilting towards the "Three Rural Areas", accelerating the priority development of agricultural and rural modernization, and revitalizing the development of the countryside. Sharing the fruits of development. The proportion of local financial support for agriculture, the degree of rural digital finance, rural Internet penetration rate and rural cell phone penetration rate are selected to reflect.

In view of this, this paper, based on the existing research and real data, finally constructs a measurement system of urban-rural integration in the Yangtze River Delta region covering 2 subsystems, 7 guideline layers and 18 indicators based on the principles of data accessibility, operability, comparability, scientificity and comprehensiveness (Table 1).

(ii) Enhancing effect of the organic combination of market and government on urban-rural integrated development

The integrated development of urban and rural areas is inseparable from the organic unity of the market and the government, and the two are complementary, coordinated and organically combined to enhance the impact of the rural digital economy on the integrated development of urban and rural areas in the Yangtze River Delta region. The organic combination of market and government is not a simple reciprocal combination, but the organic unity of Yang advantage, make up for the shortcomings^[7], on the one hand, with the government as the guide, the economic level has improved significantly, the market operation mechanism has gradually matured, in the face of the ever-changing new industry, new tools, such as the application of big data, digital technology, etc., to make decisions, formulate policies in a more transparent and open manner, and to optimize the allocation of public products, Improve the opportunities for urban and rural residents to enjoy their rights on an equal footing; on the other hand, by taking the market as the lead, relying on the decisive role of resource allocation in the market to obtain efficient market returns, and giving full play to its scale and agglomeration effects, it is possible to strengthen investment in urban and rural infrastructures, improve the efficiency of labor production, narrow the gap between urban and rural areas, and jointly promote urban-rural integration and development.

As a result, this paper proposes hypothesis H1: the organic combination of market and government has a significant upgrading effect on urban-rural integration development.

TABLE 1. Indicator system for the level of urban-rural integration and development

Level 1 Indicators	Level 3 Indicators	Level 4 Indicators	Indicator Properties
Co-construction and integration	economic development	Per capita GDP in urban and rural areas	+
		Local revenues	+
	spatial openness	Urban spatial expansion	+
		Level of land urbanization	+
	green ecology	Level of urban and rural greening	+
		Energy saving and emission reduction in urban and rural areas	+
technological innovation	Patent Licensing Index	+	
	Innovation and Entrepreneurship Index	+	
Shared Integration	population structure	Share of non-farm and agricultural employment	+
		Level of population urbanization	+
	social life	Ratio of disposable income per capita in urban and rural areas	-
		Differences in the level of medical care between urban and rural areas	-
		Urban/rural cultural, educational and recreational disparities	-
		Differences in transportation and communication between urban and rural areas	-
	Rural tilt	Percentage of local financial support for agriculture	+
		Rural Internet penetration	+
		Rural cell phone penetration	+
		Extent of digitalized rural finance	+

III. ANALYSIS OF RESULTS

(i) Characteristics of the level of urban-rural integration and development in the Yangtze River Delta region

1. Characteristics of the overall development level of urban-rural integration development. The average level of urban-rural integration development in the Yangtze River Delta region from 2014 to 2021 shows an upward spiral growth, but there is still much room for improvement in the overall level. In terms of administrative divisions, the mean values of the urban-rural integration development level in Jiangsu, Zhejiang and Anhui provinces increase from 0.408, 0.414 and 0.297 in 2014 to 0.459, 0.463 and 0.338 in 2021, respectively, and the overall increase of the three provinces is 12.50%, 11.84% and 13.80%, respectively. By comparing the results of the whole sample with the three administrative divisions, the urban-rural integration development of Jiangsu Province and Zhejiang Province is in a far advanced position compared with that of Anhui Province, and is higher than the average level of the Yangtze River Delta region, and is always in a leading position. This is mainly due to the region's good location and resource advantages, relatively optimized industrial structure, and the concentration of high-end factors such as advanced technology, professional talents and digital information, which makes the economic development vitality and development level higher than that of Anhui Province. In Anhui Province, due to the development of rural areas is still in the back position, the development of cities and towns alone cannot make the coordinated development of the region, but will make the gap between urban and rural areas increase, but the 2017-2021 is in a continuous upward trend, the increase is slow, the region's urban-rural integration of high-quality economic development still has a large space for improvement.

2. Characteristics of regional differences in urban-rural integration and development. In order to clarify the specific performance of the differences in the level of urban-rural integration and development in the Yangtze River Delta

region and the extent of differences in being at different levels of urban-rural integration and development, this study comprehensively analyzed the three indicators, namely, the Tel index, the Gini coefficient and the logarithmic mean of deviation, and at the same time calculated the average value of the three indicators to analyze the average level of differences.

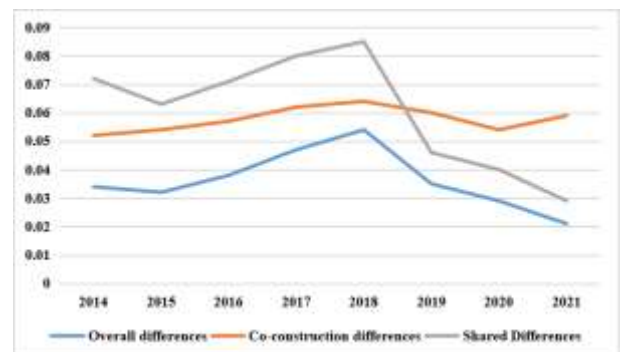


Fig. 1. Characteristics of regional differences in urban-rural integration and development

From Figure 1, it can be clearly seen that the overall level of urban-rural integration and development shows a fluctuating downward trend, which indicates that the differences in urban-rural integration and development between cities in the Yangtze River Delta region have shrunk, and that the trend of development of regional coordination in the Yangtze River Delta region has been generally positive. From the trend of changes in the differences in sub-dimensions, sharing integration shows a fluctuating downward trend, which indicates that all regions are making great efforts to optimize the demographic structure, share public services, and focus on rural construction, whereas sharing integration, despite the downward trend in 2018-2021, shows a rebound trend in the overall regional disparity of sharing integration, which shows that the different regions in boosting economic development, increasing spatial expansion, improving green ecology, and promoting scientific and technological innovation are still

wide, and the reform of co-convergence still needs to be carried out.

(ii) *Enhancing effect of the organic combination of market and government on urban-rural integrated development*

1. Variable description. Explained variable: the level of urban-rural integration development (Urb); core explanatory variables: the level of marketization (Mar) refers to the capital market where the existing market price can fully reflect all the relevant available information, combined with the Fan Gang index^[8] and Liang Qi^[9], to derive the level of marketization of each city, and the level of government construction (Gov) was selected to measure the level of government construction in the degree of fiscal transparency. The organic combination of market and government is then expressed by the cross-multiplication term of the marketization level and the government construction level (Mar*Gov), reflecting the joint role of the market and the government in the integrated development of urban and rural areas; Control variables: referring to the existing research results, human capital (Hum), scientific and technological innovation (Tec), and industrial structure (Str) are selected.

2. Construction of econometric model. In order to examine the enhancement effect of the organic combination of market and government on urban-rural integration development in the Yangtze River Delta region, a benchmark regression model is constructed:

$$Urb_{i,t} = \alpha_0 + \beta_0 Mar_{i,t} + \beta_1 X_{i,t} + \mu_i + \varphi_t + \varepsilon_{i,t} \quad (1)$$

$$Urb_{i,t} = \alpha_0 + \beta_0 Gov_{i,t} + \beta_1 X_{i,t} + \mu_i + \varphi_t + \varepsilon_{i,t} \quad (2)$$

$$Urb_{i,t} = \alpha_0 + \beta_0 Mar_{i,t} \times Gov_{i,t} + \beta_1 X_{i,t} + \mu_i + \varphi_t + \varepsilon_{i,t} \quad (3)$$

3. Analysis of benchmark regression results. Judging from the results of F test, LM test and Hausman test, the fixed effect model is finally selected for estimation, and the regression results are shown in Table 2. On the basis of columns (2)-(3) that both market and government have significant positive effects on urban-rural integration development at the 1% level, the cross-multiplier of marketization level and government construction level is introduced to analyze whether the organic combination of market and government has a significant upgrading effect on urban-rural integration development, which verifies the validity of hypothesis 1. In terms of dimensions, the significant positive effect of the organic combination of market and government on shared integration is dominated by economic development, spatial openness, green ecology and scientific and technological innovation, while shared integration does not show a significant enhancement effect. Finally, the robustness test using the replacement variable measure and elimination of outliers shows that both the organic combination of market and government can significantly promote the development of urban-rural integration, which indicates that the findings of the study are robust and reliable.

IV. RECOMMENDATIONS FOR COUNTERMEASURES

First, we will continue to promote the integrated development of urban and rural areas by means of joint construction, sharing and integration. Specifically, it is necessary to increase investment in science and technology

innovation, enhance the integration level of science and technology innovation development in the Yangtze River Delta region, promote the optimization and upgrading of its industrial structure, inject new vitality into the development of urban and rural industries, and then promote its urban-rural integrated development; change the concept of development, and reconceptualize urban-rural integrated development in terms of economy, factors, space, green ecology, etc., under the guidance of common prosperity and the new mode of common construction, shared governance and sharing. development, so as to realize a new pattern of development in which urban and rural public utilities in the Yangtze River Delta region are built together, urban and rural residents are governed together and urban and rural resources are shared; to share public services in an inclusive manner and strive to realize that people in the Yangtze River Delta region share the fruits of urban-rural integrated development, which not only involves optimizing the demographic structure, increasing the strength of local financial support for agriculture, strengthening the construction of digital infrastructure in rural areas, and endeavoring to narrow the urban-rural gap, so as to facilitate material sharing.

Second, emphasize the important roles of the market and the government in urban-rural integrated development to form a new driving force for sustained development. The organic combination of market and government has a significant enhancing effect on urban-rural integrated development, so it is important not only to give full play to the market's decisive role in resource allocation and to promote the free flow of factors between urban and rural areas, but also to give full play to the government's active role in enhancing its position as an environment maker, increasing the degree of transparency of government finances, and reducing problems such as asymmetry of information between urban and rural areas. The market as an invisible hand, the government as a tangible hand, properly balance the relationship between the two, the market and the government organic combination of the rural digital economy empowerment to play a "plus" effect, and further help urban-rural integration and development.

Third, we should take measures to compensate for the regional differences between the Yangtze River Delta region and maintain its differentiated and synergistic development. Since there is obvious regional heterogeneity in the impact of rural digital economy on urban-rural integrated development in the Yangtze River Delta region with different economic levels, administrative divisions, and natural geographical conditions, it is necessary to analyze specific problems and take countermeasures according to local conditions in the process of developing the rural digital economy, instead of "grabbing everything by the handful". Therefore, it is necessary to analyze specific problems and adopt countermeasures according to local conditions in the process of developing the rural digital economy, instead of "grabbing everything in one way". First of all, for the economic and geographical advantages of the region, not only in their own development advantages under the premise of efforts to narrow the gap between urban and rural areas, but also to Nanjing, Shanghai, Hangzhou and other central cities as a benchmark, the formation of the role of the radiation to the surrounding cities, driving the construction of

rural areas backward areas of rural development and construction of the countryside, narrowing the gap between the regions. Secondly, for the economically and geographically disadvantaged areas, due to the imperfect rural infrastructure, backward level of agricultural production, low level of education of farmers and other problems still exist, it is necessary to firstly enhance the level of agricultural development, stimulate the enthusiasm of farmers, improve the conversion and application rate, and realize the modernization

of agriculture, so as to promote the integration of urban and rural areas; in addition, it is also necessary to improve the regional cooperation mechanism of digital countryside between the various regions, and to strengthen the role of the market and government in the integration of urban and rural areas. integration, break down the urban-rural barriers, and guarantee the synergistic development of the Yangtze River Delta regions on the basis of their own differentiation.

TABLE 2. Results of regression estimation

Variability	Regression to Baseline			Co-construction and Integration			Shared Integration		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Mar*Gov	0.10*** (0.03)			0.15*** (0.02)			-0.08** (0.03)		
Mar		0.07*** (0.03)			0.12*** (0.04)			-0.08* (0.04)	
Gov			0.05*** (0.01)			0.03** (0.01)			0.07*** (0.01)
ln Hum	0.10*** (0.02)	0.09*** (0.02)	0.11*** (0.03)	0.21*** (0.06)	0.22*** (0.06)	0.18*** (0.03)	0.12*** (0.04)	0.11*** (0.04)	0.05 (0.04)
Str	0.155*** (0.022)	0.16*** (0.02)	0.13*** (0.02)	-0.01 (0.02)	-0.001 (0.02)	0.05** (0.02)	-0.001 (0.03)	-0.001 (0.03)	0.20*** (0.04)
Tec	0.10*** (0.02)	0.10*** (0.02)	0.09*** (0.02)	0.20*** (0.02)	0.19*** (0.02)	0.19*** (0.02)	0.01 (0.02)	0.01 (0.02)	0.010 (0.03)
_Cons	0.27*** (0.01)	0.26*** (0.01)	0.25*** (0.01)	0.12*** (0.02)	0.11*** (0.02)	0.11*** (0.02)	0.40*** (0.01)	0.41*** (0.01)	0.37*** (0.02)
N	320	320	320	320	320	320	320	320	320

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