

Research on the Impact of Rural Three-Industry Integration Development on Farmers' Income Increase from the Perspective of Rural Revitalization

-- Take Anhui Province as an Example

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Abstract

Starting from 2021, rural revitalization has officially replaced poverty alleviation as a new strategic guideline for rural reform. In order to solve the problem of rural areas, it is necessary to accelerate the development of the primary, secondary and tertiary industries in rural areas, that is, to realize the integration of rural tertiary industries. Promoting the increase of farmers' income through the integration of rural three industries is an important task of rural revitalization. This paper selects the panel data of 9 prefecture-level cities in Anhui Province from 2012 to 2019 for analysis, analyzes the impact and mechanism of rural tertiary industry integration on farmers' income increase by constructing a quantitative model of the effect of rural primary, secondary and tertiary industries integration on farmers' income, provides policy suggestions for the realization path of farmers' income increase under the background of rural revitalization, and puts forward suggestions on the integration path of rural tertiary industry according to local conditions for rural revitalization, which is of great practical significance for the smooth implementation of the integration of rural tertiary industry.

Keywords

Integration of Three Industries; Increase Farmers' Income; Rural Revitalization.

1. Introduction

1.1. Introduction Background

With the continuous and in-depth development of China's urbanization and industrialization process, the imbalance between urban and rural development, and insufficient development within rural areas have become the primary problems that the Party and the people urgently need to solve. Industrial integration refers to the industrial form and economic growth mode of mutual penetration, mutual inclusion and integrated development of different fields in the same industry, industrial chain and industrial network that have emerged successively in time and are structurally at different levels ([1]Chen Shiqing, 2019). The integration of primary, secondary and tertiary industries in rural areas also belongs to the category of industrial integration. On the basis of retaining the primary industry, the integration of three industries vigorously develops the secondary and tertiary industries through the process of industrial intersection, industrial penetration and industrial reorganization, so that the economic development of rural areas will enter a new era, thereby improving the living conditions of farmers. In the process of China's rural reform, Anhui Province has always been at the forefront of the country, and whether the integration of three industries in its rural areas can promote the increase of farmers' income is a question worth studying.

1.2. Research Significance

At the beginning of the 21st century, under the correct leadership of the Communist Party of China, the gap between urban and rural areas gradually narrowed, and the harmonious development of cities and villages made common progress. However, there is still a current situation of uncoordinated development, so vigorously developing the integration of three industries is the best choice to promote farmers' income and narrow the gap between poverty and wealth.

Anhui is a major agricultural province and a major grain producing province in the country. In the past five years, Anhui Province has vigorously promoted the adjustment of agricultural structure and improved agricultural efficiency. Vigorously developing the agricultural product processing industry, especially new industries and new formats such as e-commerce, leisure agriculture and rural tourism, have flourished, which has increased the added value of agriculture and promoted the employment of farmers. Taking the rural economic development of Anhui Province as an example, this paper deeply studies the influencing factors of tertiary integration on farmers' income, and has reference significance for promoting the integration of rural tertiary industry in similar areas.

1.3. Application Value

Based on the conclusions of the data calculation and comprehensive theoretical analysis of this project, reasonable policy suggestions are put forward to deepen the integrated development of the three agricultural industries and broaden the channels for increasing agricultural income in Anhui Province. At the same time, it puts forward suggestions for optimizing development in the current problems in the process of integrating the three industries to promote farmers' income.

2. Analysis of Factors of the Effect of Rural Primary, Secondary and Tertiary Industries Integration on Farmers' Income

Target layer	Guidelines layer	Purpose of evaluation	variable	Variable description
The degree of integration of primary, secondary and tertiary industries in rural areas	Agricultural industry chain extension and integration	Measure the level of rural industrial integration to extend the agricultural industrial chain, promote the processing and transformation of agricultural products and improve the added value of agricultural commodities	The ratio of the added value of agricultural product processing industry to the added value of agriculture	The added value of agricultural products above designated size (agricultural and sideline food, food, wine, beverage, tea, tobacco).
	Agricultural versatility comes into play	Measure the level of agricultural production, leisure, ecological environmental protection and other functions	Agricultural product production	Per capita ownership of major agricultural products (e.g. grain, medicinal herbs, tea, fruits, etc.)
			Proportion of tourism revenue	Tourism revenue and share of regional GDP
			Agro-ecological environment level	The proportion of agricultural fertilizer application to the sown area of major crops
	Development and integration of agricultural service elements	Measure the penetration and integration of rural service industries such as agricultural science and technology services and financial investment services into agriculture	The level of development of agricultural services	Output value of agriculture, forestry, animal husbandry and fishery services
			Level of agricultural technological progress	The power of agricultural machinery accounts for the proportion of primary industry value
			Level of rural financial services	The total per capita financial deposits and loans in rural areas account for the proportion of regional GDP

Figure 1. Indicator system chart

In order to measure the level of rural primary, secondary and tertiary industry integration, by referring to the literature research of Li Yun et al. (2017), the comprehensive data factors are constructed, starting from the multi-dimensional perspective of the internal connection of the system, based on the three dimensions of agricultural industry chain extension, agricultural multi-functionality and agricultural service elements, and taking Anhui Province as an example, this project constructs a rural primary, secondary and tertiary industry integration measurement and evaluation index system.

Drawing on the research results of Cao Yixia and other scholars, on the basis of considering the availability of data, the fuzzy comprehensive evaluation method was used to measure the integration degree of rural primary, secondary and tertiary industries in various cities in Anhui Province. All index data were collected from 2012 to 2019, from the Anhui Statistical Yearbook, the statistical yearbooks of various cities and statistical bulletins. Due to the different data dimensions of each index, equation (1) is used to process the data without dimension, t represents the year, n represents the number of indicators (this article only lists positive polarity indicators); Since the value of 0 will appear when dimensionless processing data, its logarithm is meaningless, so the method of coordinate translation (0.01 of the translation amount) is adopted, and the calculation method of formula (3) is used to finally obtain the integration degree of rural primary, secondary and tertiary industries in various cities in Anhui Province from 2012 to 2019.

$$X_m = \begin{cases} \frac{x_m - \min(x_m)}{\max(x_m) - \min(x_m)} \\ \frac{\max(x_m) - x_m}{\max(x_m) - \min(x_m)} \end{cases} \tag{1}$$

$$p_m = \frac{X_m}{\sum_{t=1}^m X_m},$$

$$e_n = -K \sum_{t=1}^m p_m \ln(p_m), \tag{2}$$

$$d_n = 1 - e_n,$$

$$w_n = \frac{d_n}{\sum_{t=1}^m d_n}$$

$$f(X_{it}) = \sum_{t=1}^n w_n X_m \tag{3}$$

As can be seen from Figure 2, the overall level of rural tertiary industry integration in various cities in Anhui Province showed a steady upward trend between 2012 and 2019. 2015 was a turning point in the growth rate significantly, which may be due to the fact that in 2015, the Central Document No. 1 first proposed "promoting the integrated development of rural primary, secondary and tertiary industries", which accelerated the integration of rural industries.

In this paper, the panel data of nine prefecture-level cities in Anhui Province are analyzed by using the spatial panel model method and the system generalized moment method (GMM system), and the potential endogenous problems in the model are solved by using the explanatory variables and their lagging variables as tool variables. The lagging first, second and third periods ($Y(-1, -3)$) of per capita disposable income of rural residents were used as

instrumental variables to estimate the panel data of various cities in Anhui Province, and the robustness test was carried out by the generalized moment of the system, and the results were shown in Model 1, Model 2 and Model 3.

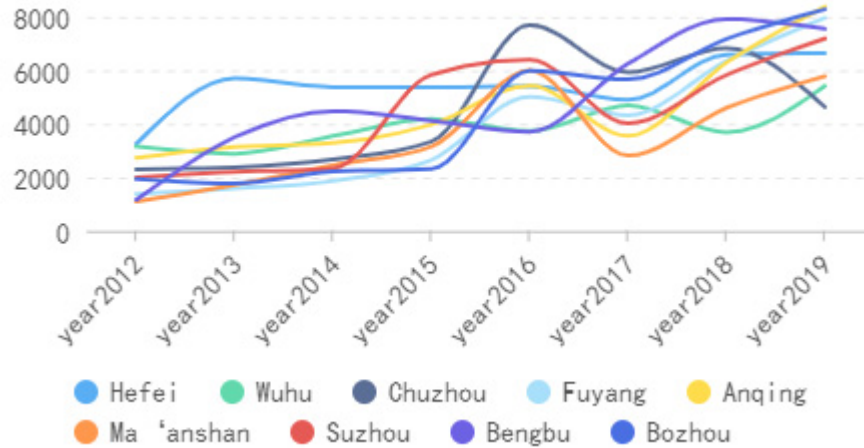


Figure 2. Three-industry integration degree in 10 prefecture-level cities in Anhui Province from 2012 to 2019

Dependent variable	Per capita net income of rural residents(y)					
	model	model 1		model 2		model 3
variable	Partial regression coefficient	t statistical value	Partial regression coefficient	t statistical value	Partial regression coefficient	t statistical value
con _{it}	0.01	2.11 (0.07*)	0.03	2.1 (0.00*)	0.43	1.72 (0.092*)
edu _{it}	0.11	5.64 (0.001**)	0.154	2.4 -0.32	-0.001	-2.9 (0.006**)
ocu _{it}	0.05	0.663 -0.69	0.281	1.91 (0.002*)	0.43	1.81 (0.073*)
inv _{it}	0.0026	0.911 -0.64	0.0003	0.01 -0.33	-0.0003	-0.34 -0.73
ecde _{it}	-0.022	1.146 (0.005**)	-0.03	-8.2 -0.33	-0.008	-0.7 -0.48
Y(-1)	0.89	14.85 (0.000**)	-	-	-	-
Y(-2)	-	-	0.49	3.13 (0.003*)	1.25	5.75 (0.00**)
Y(-3)	-	-	-	-	-	-
Observations	45		45		45	
Residual-related testing(rho)	1.011 (0.01**)		1.183 -0.38		-0.59 -0.55	
Hanson J testing	82.24 (0.000**)		7.716 (0.05*)		0.48 -0.78	

Figure 3. Panel Data System Generalized Moment Estimation

It can be seen from the estimated results in Figure 3 that the integration of rural primary, secondary and tertiary industries has a significant positive impact on the per capita net income of farmers, and the control variables such as rural human capital, agricultural technology level, agriculture and animal husbandry, and fixed asset investment in fishery also have obvious

positive effects on farmers' income. Among them, increasing rural human capital can effectively increase its contribution to the rural economy and help increase farmers' income. Modern agriculture projects technological progress, contributes to the development of productive forces, increases and improves the production conditions of farmers, and promotes income growth; Increased investment in fixed assets in agriculture, forestry, livestock and fisheries can help optimize agricultural production conditions, improve working conditions and, indirectly, contribute to the growth of rural incomes.

3. Research Findings and Recommendations

Based on the research background of Anhui Province, this paper calculates the integration degree of rural primary, secondary and tertiary industries in various cities by constructing an index system, and then uses the spatial error panel regression model to analyze the effect of the integrated development of rural primary, secondary and tertiary industries on farmers' income, and draws the following main research conclusions:

First of all, the integration degree of tertiary industries in various cities in Anhui Province increased year by year from 2012 to 2019.

Secondly, the integration of rural tertiary industries has a significant impact on the net income of rural residents, and the deepening of the integration of rural tertiary industries and tertiary industries in Anhui Province significantly promotes the income of rural residents in the province. Moreover, the independent variables of rural human capital, agricultural technology level, agriculture, forestry, animal husbandry and fishery fixed asset investment also significantly promoted farmers' income.

3.1. Policy Implications

In summary, this paper puts forward the following policy implications:

First, actively develop multiple functions of agriculture and explore a variety of industrial integration methods. In light of local conditions, promote the exploration of various ways, types and modes of rural industrial integration, actively promote internal integration, optimize the structure of agriculture and animal husbandry, and promote the integration of agriculture and forestry and the development of green agriculture. Promote the primary processing, finishing and comprehensive utilization and processing of agricultural products, and promote the in-depth integration of agricultural fish tourism, education, culture, health and pension industries. Actively promote the "Internet +" modern agricultural action, explore and develop new forms of agriculture, combine modern information technology with agricultural production, management and services, and develop creative agriculture.

Second, establish a multi-form interest linkage mechanism for rural industry integration.

Actively promote the innovation and development of order agriculture, realize profit sharing, guide leading enterprises to establish stable supply and marketing relationships with farmers, family farms and farmer cooperatives, provide loan guarantees, subsidize farmers to participate in agricultural insurance, and build joint brands. Actively promote the "three changes" reform, encourage the development of joint-stock cooperation, guide enterprises to adopt the form of "guaranteed income + dividends according to shares", explore the formation of a profit-sharing mechanism for cooperative companies and cooperative enterprises to obtain shares by farmers with land management rights, and let farmers share the profits of processing and sales.

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