

# An Empirical Study on the Factors of Rural Service Industry in China

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**Abstract:** Based on the data of 30 provinces from 2012 to 2018, this paper chooses panel data model to analyze the impact of 12 factors on the development of rural service industry from three dimensions: market demand, market supply and system guarantee. The results showed that: Among the market demand factors, the service consumption tendency has no significant influence on the development level of rural service industry; other factors are significantly positive correlation with the development level of rural service industry. Among the market supply factors, human capital investment is positively related to the development level of rural service industry, but the influence of technology level is not significant. Among the system guarantee factors, the level of marketization, the degree of opening to the outside world and the level of development of rural service industry are positively correlated, and the degree of government intervention is negatively correlated with the development level of rural service industry.

## 1. Introduction

As a regional concept of service industry, Rural Service Industry has the same essential characteristics as general service industry, so it can follow the internal logical framework to study the factors influencing the development of service industry. To clarify the influencing factors of rural service industry can provide a basis for the industrial policy making of rural service industry. However, there are few empirical studies on the influencing factors of rural service industry in China. Based on the urban service industry influencing factor model, this paper introduces the theories of regional economics and rural non-agriculturalization, constructs the rural service industry influencing factor model. Based on the panel data of 30 provinces in China from 2012 to 2018, this paper empirically reveals the influence of market demand, factor supply and institutional change on the development of rural service industry in China.

## 2. Internal Mechanism of Influencing Factors of Rural Service Industry

### 2.1 Market Demand and Rural Services

The market demand is the first factor that has been concerned and discussed by scholars. It reflects the quantity of service goods that consumers are willing and able to buy in a certain period of time. Among the many factors that affect the development of rural service industry, the market demand provides the motive force for the development of Rural Service Industry and is the prerequisite for the formation and development of rural service industry.<sup>[1]</sup> First of all, as a form of regional agglomeration in service industry, the products produced, exchanged and consumed by rural service industry also have the characteristics of general service products, transferred and carried out simultaneously, this makes the service enterprises in rural areas in the process of production and reproduction not be far from demand, rural services in the status of compliance with demand; Secondly, the rural service industry is an industrial cluster formed by the aggregation of

several service enterprises in rural areas. According to the hypothesis of source market effect, if we want to attract service enterprises to take root in rural areas and to gather continuously, one of the first prerequisites is the creation of an effective and growing demand for services in rural areas, where specialized service providers are likely to emerge and provide services only if the demand for services expands to a certain scale.<sup>[2]</sup> According to Keynes's theory of demand determining supply, the impetus for industrial restructuring essentially results from a change in the structure of demand, when the market demand for services in rural areas changes with the level of income and the degree of specialization of social production, the market demand, through the transmission mechanism of the demand structure, triggers changes in the structure of the rural service industry, the industrial structure of rural service industry should be adapted to the market demand structure.<sup>[3]</sup>

Demand factors include: economic development level, income level, population density, industrialization level, service consumption tendency and so on.

## **2.2 Market Supply and Rural Services**

Industry Development is the result of market demand and factor supply. However, when the income of rural residents is in a certain condition in the short term, the market demand of rural residents for services will be bottleneck. The new economic growth theory holds that input of production factors such as labour, capital and technology is the direct cause of economic growth, the supply of production factors of service industry to rural areas has become the most important driving force for the development of its industry.<sup>[4]</sup>

The impact of the supply of factors that promote the development of rural service industry on the development of rural service industry mainly reflects two aspects, one is the initial supply of production factors, the other is the supply change of production factors, the former affects the industrial characteristics and spatial distribution of rural service industry, while the latter has a positive effect on the agglomeration and development of rural service industry.<sup>[5]</sup> The supply factor mainly refers to the supply of essential factors. In the industrial economy, Western economics holds that the factors of production mainly include labour, land, capital and entrepreneurs. With the development of science and technology and the improvement of intellectual property system, science and technology and information are regarded as independent elements.<sup>[6]</sup> In a service economy, the factors of production should be labour, capital, technology and information, the supply factors that affect the rural service industry mainly include: The level of labour, the level of capital investment, the level of technology, the level of information and so on.

## **2.3 Institutional Change and Rural Services**

Claque think that the service industry has the typical characteristics of institution-intensive, and point out that the development and evolution of service industry is not only influenced by the supply-demand mechanism in traditional analysis, but also restricted by the institutional environment in which the service industry is located.<sup>[7]</sup> Therefore, under the similar conditions of market demand and factor supply, a good institutional environment will undoubtedly promote the development of rural service industry. Niu Rui analyzes the relationship between the institutional environment and the development of regional service industry, and points out that there is a significant positive relationship between the institutional level and the growth of service industry. Although a good institutional environment can promote the development of regional service industry has become the consensus of the academic community and the government,<sup>[8]</sup> but there are still differences on the mechanism of its role in the service industry. In summary, there are two views on the internal mechanism of the impact of institutional environment on the development of service industry: one is that institutional change is the direct cause of promoting the development of regional service industry, various social relations and basic factors of production are restricted, stimulated and regulated.<sup>[9]</sup> Appropriate institutional changes of the government provide endogenous impetus for industrial development and evolution, and the institutional changes directly lead to changes in industrial structure and economic efficiency, the corresponding change is the composition of regional service industry. The second is that the effect of institutional change on the development of service industry is often interwoven and internalized in the factors affecting market

demand and supply, specifically, good institutional environment and effective institutional arrangements, it can stimulate the effective service demand of local consumers and give full play to the supply potential of various factors of production, thus promoting the development of the service industry.<sup>[10]</sup> The mechanism of the influence of the system on the rural service industry can be investigated from three aspects: the degree of government intervention, the level of marketization and the degree of opening to the outside world.

### 3. Variable Selection and Data Source

**Table 1.** Variable selection of metrological model

Variable property	Variable name	Symbols	Unit	Variable interpretation
Dependent variable	Development level of rural service industry	PSGdp	Yuan/person	Rural per capita value added of services
Independent variable	Level of economic development	Econ	Yuan/person	GDP per capita
Independent variable	Household income level	Revenue	Yuan	Per capita income of rural residents
Independent variable	Population density	Dens	10,000 people/Km <sup>2</sup>	Ratio of rural population to land area
Independent variable	Level of industrialization	Indu	%	Industrial output as a share of GDP
Independent variable	Propensity to consume	Tend	%	The proportion of residents' service consumption expenditure in total consumption expenditure
Independent variable	Labour force level	Labo	Man*Years	Township and Village Enterprises * Average number of years of schooling in rural areas
Independent variable	Level of capital investment	Cap	Yuan/person	Per capita fixed asset investment in rural services
Independent variable	Technical level	Tech	Item	Number of patents granted
Independent variable	Information level	Info		Informatization Development Index
Independent variable	Degree of government intervention	Gov	%	Public expenditure on services as a share of GDP
Independent variable	Marketization level	Mark	%	Share of private enterprises and self-employed persons in total employment
Independent variable	Degree of openness	Open	Dollars/person	Amount of foreign investment utilized per capita

Based on the data from China Statistical Yearbook, 12 explanatory variables were selected to analyze the rural per capita value added of service industries (PSgdp), as follows:

#### 4. Measurement Model

In order to reduce the heteroscedasticity of data, all variables are logarithmic, and the regression analysis of panel data model requires the variables to pass the mutation root test and the cointegration test on the basis of the single integer of the same order.

The unit root test shows that there is no unit root for Labour level and capital input level, and there is a unit root for all other variables. If the capital input level is removed, the labour force level is only measured by the average years of education in rural areas, which represents the human capital. Based on the data features, set the following panel data model:

$$\begin{aligned} \ln PSgdp_{it} = & \alpha + \beta_1 \ln Econ_{it} + \beta_2 \ln Reve_{it} + \beta_3 \ln Dens_{it} + \beta_4 \ln Indu_{it} + \beta_5 \ln Tend_{it} + \beta_6 \ln Educ_{it} \\ & + \beta_7 \ln Tech_{it} + \beta_8 \ln Info_{it} + \beta_9 \ln Gov_{it} + \beta_{10} \ln Mark_{it} + \beta_{11} \ln Open_{it} + \varepsilon_{it} \end{aligned}$$

#### 5. Empirical Results

The individual fixed effect and individual random effect are estimated in the panel model. Because the value of the P of the Hausman test of random effect is less than 1%, the original hypothesis is rejected, so the individual fixed effect model should be established. The estimated individual fixation effect is shown in Table 5. The demand factor, the supply factor and the system factor are gradually introduced into the estimation.

**Table 2.** Estimation of the factors influencing the development of rural service industry

Variable	Development level of rural service industry (LnPSgdp)		
	Fixed-effect model I	Fixed-effect model II	Fixed-effect model III
LnEcon	0.878*** (4.65)	0.781*** (3.37)	0.575*** (5.57)
LnReve	0.297(1.29)	0.403 <sup>c</sup> (1.43)	0.829*** (7.74)
LnIndu	1.257*** (7.39)	1.171*** (6.80)	0.729*** (2.18)
LnTend	0.024(0.13)	0.059(0.33)	0.37 (1.08)
LnDens	0.066(1.14)	0.032(0.37)	0.18*** (3.81)
LnEdu		0.576(1.27)	0.413 <sup>c</sup> (1.49)
LnTech		0.010*** (2.85)	0.015(0.58)
LnInfo		-1.041 <sup>c</sup> (-1.45)	-0.28** (-2.08)
LnMark			0.09*** (2.51)
LnOpen			0.046** (2.21)
LnGov			-0.403*** (-9.81)
R <sup>2</sup>	0.903	0.963	0.97
F	343.9	249.3	246.3
D-W	1.285	0.294	0.57

Note: C is significant at 15% significance level, \* is significant at 10% significance level, \*\* is significant at 5% significance level and \*\*\* is Significant at 1% significance level, the data in parentheses are t statistics.

From the results of Table 2, it can be seen that in the fixed-effect model which only considers the demand factor, only two variables, economic development level and industrialization level, are significant, and the coefficients are positive, 0.878 and 1.257, respectively, after the gradual introduction of supply factors and institutional factors, the level of economic development and industrialization is still significant at the level of 1%, but the coefficient value is decreasing. The level of economic development and industrialization is an important factor that affects the development of rural service industry.

Of the three models, model III has the best explanation effect, the adjusted R<sup>2</sup> is 0.978, and the

estimated values of most variables are significant, so model III is chosen as the final result. From the final results, except the service type consumption tendency variable is not significant, the demand related factor estimate result is significant, indicated that the demand factor is the important influence factor of the rural service industry development.

Among them, the influence coefficient of resident income level is the biggest, 0.829, and is significant at 1% level, the influence coefficient of economic development level is 0.575, the influence coefficient of industrialization level is 0.729, and the influence Coefficient of population density is 0.18, all were significant at 1% level. The estimation of service consumption tendency in the three models is not significant, which indicates that the service consumption tendency has no direct effect on the development level of rural service industry. In the supply factor, human capital is only significant at the level of 15%, and the technical level is not significant. The reason is that the overall level of China's rural service industry is relatively low. The development of traditional service industry depends on the quantity of labour and capital, but not on the level of human capital and technology. The influence Coefficient of informatization level on the development of rural service industry is negative, and it is significant at 1% level. It shows that the higher informatization level, the lower development level of rural service industry. The possible reason is that the substitution effect of informationization in rural areas is greater than the complementary effect, that is, the higher the level of informationization, the stronger the ability to obtain information, and the smaller the demand for adjacent services, which may lead to insufficient demand for local services. However, the effect of informatization on the development of rural service industry may have "threshold effect", that is, when informatization level is below a critical value, it will hinder the development of rural service industry, when it is above a certain critical value, it will promote the development of rural service industry. The empirical results show the reverse effect, and it is precisely because the level of rural informatization in China has been in a low state. Among the policy factors, the Coefficient of marketization level is 0.09, and it is significant at 1% level, which indicates that the marketization level affects the development level of rural service industry. The increasing level of marketization in various regions of our country has a positive impact on the development of the rural service industry; the Coefficient of the degree of opening up is 0.046, which is significant at the level of 5%, that is, for every 1 percentage point increase in the degree of opening up, the development level of rural service industry increased by 0.046 percentage points. The Coefficient of the degree of government intervention is negative and significant at the level of 1%, the value is 0.403, that is, the development level of rural service industry decreases by 0.403 percentage points for each increase of the degree of government intervention. This shows that there is excessive government intervention in the development of rural service industry, which seriously hinders the development of rural service industry.

## Conclusion

This study selects data from 30 provinces in China from 2012 to 2018, and chooses panel data model from three dimensions: market demand, market supply and institutional guarantee, this paper selects 12 factors to analyze the impact on the development of rural service industry. The results show that among the demand factors, the service consumption tendency has no significant effect on the development level of rural service industry; other factors are significantly positive correlation with the development level of rural service industry. Among the supply factors, only 15% of human capital investment is positively correlated with the development level of rural service industry, while the influence of technical level is not significant, the development of traditional service industry depends on the quantity of labour and capital, but not on the level of human capital and technology. There is a significant negative correlation between the informatization level and the development level of rural service industry, because the improvement of informatization level will reduce the demand for local service. Among the policy factors, the level of marketization, the degree of opening to the outside world and the level of development of rural service industry are positively correlated, while the level of government intervention is negatively correlated. It shows that the improvement of marketization level and open degree of economy will promote the

development of rural service industry, and too much government intervention will hinder the development of rural service industry.

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