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Analysis of the Impact effect of Tourism Development on Rural Revitalization

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Abstract: Under the new pattern of double-cycle development, the high-quality development of rural revitalization has become the key to expanding domestic demand. As the key to developing rural revitalization, it is of great significance to analyze its impact on rural revitalization to the construction of domestic cycle. According to the relevant data of the tourism industry in Anhui Province from 2001 to 2020, six indicators were selected from the three levels of infrastructure, social demand and industrial support, and then the per capita disposable income in rural areas was taken as an index to measure the development of rural revitalization, and a multiple linear regression model was established to analyze the impact of the development of the tourism industry on rural revitalization. Finally, suggestions are put forward on how to effectively promote the rural revitalization and development of the tourism industry.

Keywords: Rural revitalization, Tourism industry, Impact effect, Multiple linear regression.

1. Literature Review

Studying the development of circular economy of rural revitalization under the new pattern of double circulation has an important reference value for the iteration of rural tourism mode. Domestic scholars have done a lot of research on related issues. For example,Qi Zhang and others used the MGWR model to analyze the role of tourism development on the urban-rural income gap[1]; Aixia Fan conducted a comprehensive evaluation and analysis of the performance of tourism poverty alleviation in the western Yunnan area, providing a quantitative basis for the development of the rural revitalization strategy[2]; Based on Minghua Tian , the panel data of less developed counties in Anhui province in the stage of poverty alleviation, etc., and studied the poverty reduction effect of rural tourism development[3]; Weixia Hu evaluated and analyzed the rural performance level of tourism guidance, and put forward optimization suggestions[4]; Ying Luo analyzed the poverty reduction effect of the three rural tourism development modes[5]; Zhijun Chen discussed the influence effect and action mechanism of tourism development in rural tourism areas on rural revitalization[6].

2. Research Design

2.1. Variable Selection

This paper, on the basis of the existing research, in Anhui province as the research object, considering the influence of tourism industry on the revitalization of the rural, mainly from the infrastructure, social demand, industry support level selected star hotel number, travel agency number, tourism annual reception, tourism revenue, domestic per capita tourism consumption and tourism revenue of GDP six indicators, with rural residents per capita disposable income to measure rural revitalization. The data required in this paper are mainly from the National Bureau of Statistics and the Anhui Provincial Statistical Yearbook.

2.2. Model Setting

According to the analysis, the above factors may have an impact on per capita disposable income, so the overall regression model can be set as:

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_k X_k + \mu_i$$

3. Empirical Analysis and Inspection

3.1. Return to the results

With rural per capita disposable income (Y_i), a multiple linear regression model was established as the dependent variable and 6 influencing factors as the independent variables, and was estimated by OLS least squares method. The results are shown in Table 1:

Table 1. Parameter estimation results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3898.245	1503.770	2.592314	0.0223
X1	-4.597016	5.025565	-0.914726	0.3770
X2	3.911904	1.799737	2.173597	0.0488
X3	0.918409	0.184176	4.986596	0.0002
X4	-5.917597	1.477880	-4.004112	0.0015
X5	-0.782177	3.767396	-0.207618	0.8387
X6	-77521.47	12661.33	-6.122696	0.0000
R-squared	0.992870	Mean dependent var		7233.034
Adjusted R-squared	0.989579	S.D. dependent var		4857.604
S.E. of regression	495.8742	Akaike info criterion		15.51974
Sum squared resid	3196586.	Schwarz criterion		15.86825
Log likelihood	-148.1974	Hannan-Quinn criter.		15.58777
F-statistic	301.7142	Durbin-Watson stat		1.920767
Prob(F-statistic)	0.000000			

3.2. Economic significance test

According to the parameter estimation results of the regression equation, the per capita disposable income is positively correlated with X2 (number of travel agencies) and X3 (annual tourist reception person), and X1 (number of star hotels), X4 (total tourism revenue), X5 (domestic per capita tourism consumption) and X6 (proportion of total tourism revenue in GDP). Generally speaking, the increase of total tourism revenue will promote the increase of per capita disposable income, and the increase of domestic per capita tourism consumption is positively correlated with per capita disposable income, but the result is to the contrary, so it is speculated that the model may have econometric problems and needs to be corrected.

3.3. Statistical inference test

According to the corrected dependent coefficient $\overline{R}^2$ = 0.98.96> 0.8, the model fits the sample data well; At a significant level $\alpha = 0.05$, the p-value corresponding to the F test is 0, indicating a significant regression equation; the effect of the six explanatory variables is statistically significant; the p-value corresponding to the respective t-test of the explanatory variable is less than 0.05, indicating a significant effect on the explained variable. According to the test results, there are variables that have failed the test.

3.4. Multiple collinearity test

According to the results of economic significance test and statistical inference test, it can be inferred that the model is likely to have multicollinearity, so the variance expansion factor method is used to test the model. From the test results in Table 2 show that the variance expansion factors VIF of explanatory variables X3, X4 and X6 are all greater than 10. Thus, there is severe multicollinearity between the explanatory variables.

Table 2. Results of the variance expansion factor test

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	195433.8	13.95860	NA
X3	0.008538	833.8735	364.5359
X4	0.693199	600.8445	297.1871
X6	76219478	86.82520	18.56774

3.5. adjustment of model

Due to the severe multicollinearity, stepwise regression was used to correct the model, and the results are shown in Table 3:

Table 3. The stepwise regression results

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
C	3536.237	442.0790	7.999106	0.0000
X3	1.201946	0.092402	13.00786	0.0000
X4	-8.295979	0.832586	-9.964112	0.0000
X6	-81293.03	8730.377	-9.311514	0.0000

R-squared	0.990007	Mean dependent var	7233.034
Adjusted R-squared	0.988133	S.D. dependent var	4857.604
S.E. of regression	529.1685	Akaike info criterion	15.55735
Sum squared resid	4480309.	Schwarz criterion	15.75649
Log likelihood	-151.5735	Hannan-Quinn criter.	15.59622
F-statistic	528.3560	Durbin-Watson stat	1.998249
Prob(F-statistic)	0.000000		

The determination coefficient of the modified model $\overline{R}^2$ = 0.9881> 0.8 indicates that the model is more fit to the sample data; the F =528.356, the corresponding adjoint probability p = 0.0000, indicates that the adjusted equation joint significance test is the pass; the corresponding p value of the respective t test of the explanatory variable is less than 0.05, that is, the explanatory variable can significantly affect the explanatory variable.

3.6. Autocorrelation test

If the model has autocorrelation, will estimate the effectiveness of the F test and t-test results, that is, the prediction accuracy of the model is reduced, using partial correlation coefficient to test whether the model is autocorrelation, the results are shown in figure 1, from the bar chart of the partial correlation coefficient, the model has fourth order autocorrelation.

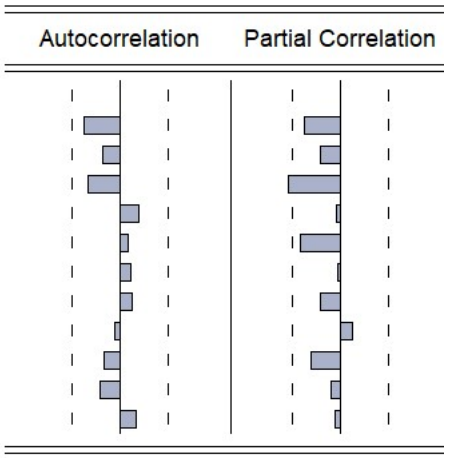

Figure 1. Partial correlation coefficient test results

The model was corrected using the generalized difference method, and the results are shown in Table 4. The partial correlation coefficient is tested for the corrected model, and

the results are shown in Figure 2, which shows that there is no autocorrelation in the corrected model.

Table 4. Correction results of the generalized difference method

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2064.234	1591.361	1.297150	0.2190
X1	-8.964547	2.933538	-3.055883	0.0100
X2	2.205584	1.302870	1.692865	0.1163
X3	0.830019	0.118502	7.004263	0.0000
X4	-5.631021	0.997553	-5.644835	0.0001
X5	5.084640	3.861948	1.316600	0.2126
X6	-58282.25	10803.72	-5.394647	0.0002
AR(4)	-1.000000	0.654391	-1.528139	0.1524

R-squared	0.995484	Mean dependent var	7233.034
Adjusted R-squared	0.992849	S.D. dependent var	4857.604
S.E. of regression	410.7631	Akaike info criterion	19.44731
Sum squared resid	2024716.	Schwarz criterion	19.84560
Log likelihood	-186.4731	Hannan-Quinn criter.	19.52506
F-statistic	377.8775	Durbin-Watson stat	1.734262
Prob(F-statistic)	0.000000		

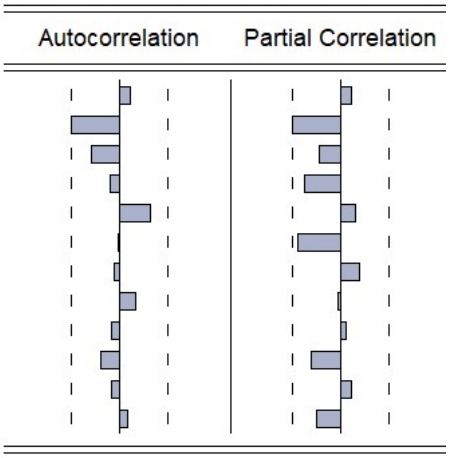

Figure 2. Results of the partial correlation coefficients tested for the generalized difference model

3.7. Heteroscedastic test

If the model has a heteroscedastic difference, the standard error of the parameters can be not estimated correctly, resulting in a reduced reliability of the F test and the t-test, so the ARCH test can be used to test whether the model has a heteroscedastic difference. Assuming no heteroscedasticity in the null model, given a significance level $\alpha = 0.05, nR^2 =$ 0.378005 with a corresponding adjoint probability of p= 0.5387> 0.05, accepting the null hypothesis, indicating that the regression model has no ARCH effect, i. e., no heteroscedasticity.

Table 5. Results of the A R C H test

Heteroskedasticity Test: ARCH

F-statistic	0.345080	Prob. F(1,17)	0.5646
Obs*R-squared	0.378005	Prob. Chi-Square(1)	0.5387

4. Conclusion and Suggestion

Analysis results, rural per capita disposable income and travel agencies, tourism reception, domestic per capita tourism consumption is positive correlation, rural per capita disposable income by travel agencies, tourism and domestic tourism consumption, namely the number of travel agencies, tourism and domestic per capita tourism consumption per growth of 1%, rural per capita disposable income will increase by 2.206%, 0.830% and 5.085% respectively. Under the background of the new development pattern of double circulation, the high-quality and rapid development of the tourism industry will promote the implementation of the rural revitalization work. Now the following suggestions are put forward on how to more effectively promote the rural revitalization of the tourism industry:

(1) Improve infrastructure and provide fundamental guarantee. Most of China's high-quality tourism resources are distributed in rural areas. The improvement of rural infrastructure is conducive to creating better opportunities for the development of rural tourism, further promoting the implementation of the rural revitalization strategy, and developing rural areas in a long-term and efficient way.

(2) We will strengthen industrial support and promote rural revitalization. Double cycle development under the new pattern, the high quality development of tourism industry cannot leave the government support and macro-control, industry support is not only the power of the tourism industry development, is also the key to rural revitalization, the government should make full use of local tourism resources, develop characteristic tourism projects, release the endogenous power of rural tourism development, promote the rapid development of rural economy.

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