Analysis of Residents' Consumption in China's Domestic Tourism

Suting Liu, Fang Chen

Abstract: Tourism, as a new type of advanced social consumption, integrates the material life consumption and the cultural life consumption organically through tourism consumption. This article adopts econometric statistics methods for domestic tourism consumption in 1997-2016 and establishes a multiple regression model to study the intrinsic interactions between tourism consumption, domestic tourist numbers and total residents' consumption. Based on the results, it makes reasonable forecasts on the future growth of tourism consumption.

Keywords: Total Domestic Tourism Consumption; Residents' Total Consumption; Multiple Regression Model; Multicollinearity;

I. INTRODUCTION

1.1. Research Background

From 1997 to 2016, the total spending of Chinese residents on domestic tourism increased from 211.27 billion yuan to 39.3 billion yuan; The total cost of urban residents' tourism increased from 155.18 billion yuan to 32241.3 billion yuan; the domestic tourism consumption of rural residents increased from 56.09 billion yuan to 714.78 billion yuan; The total consumption of residents increased from 366.263 billion yuan to 293.431 billion yuan, and the number of tourists has also increased in large numbers every year. As China's comprehensive construction of a well-to-do society continues to advance, China's tourism industry will occupy more and more positions in the field of economic development: China's sustained and rapid economic growth will surely play a fundamental supporting role for growth; The income of urban and rural residents will grow steadily. By 2020, the per capita GDP will reach around US$3,500 or even more. This will enter the world's tourism industry as an explosive growth stage for tourism. China's National Development and Reform Commission stated that by 2020 tourism spending will reach 7 trillion yuan.

This article does not investigate the influencing factors of domestic tourism revenue. It aims to use a multiple regression model to explore the internal relationship between domestic tourism consumption and household consumption, and to reasonably predict the future consumption trends.

II. STUDY VARIABLES SELECTION

In order to study the intrinsic relationship between tourism consumption, domestic tourism, and total household consumption, variables are divided into explanatory variables and interpreted variables.

2.1. Explained variables

Total Domestic Tourism Consumption (Y): It is the total amount of domestic residents spending on tourism throughout the year. The annual increase in tourism reflects the state of national consumption to a certain extent, and it is also a part of creating national consumption and re-income distribution.

2.2. Explanatory variables

(1) Total Domestic Tourists (X2): The number of domestic tourists is one of the important factors for the residents' spending on tourism in China. The increase or decrease in the number of tourists has a certain impact on domestic tourism consumption.

(2) Total Domestic Travel Cost of Urban Residents (X3), Total Domestic Travel Cost for Rural Residents (X4): Due to differences in income between urban and rural areas, consumption of urban and rural residents will have a certain impact on total domestic tourism consumption. Setting these two variables can further analyze changes in urban and rural tourism consumption.

(3) Total Resident Consumption (X5): The development of the tourism industry will drive the development of other industries in the country and, to a certain extent, will increase the residents' annual consumption expenditure.

III. MODEL SETTING ESTIMATES AND CORRECTIONS

This article selects data from the National Bureau of Statistics for the period of 1997-2016.Use Eviews software to analyze the variable: total domestic tourism spending (billion yuan), domestic tourists (million person-times), urban residents' total domestic travel expenses (billion yuan), rural residents' total domestic travel expenses (billion yuan), household consumption (billion yuan), etc.

3.1. Regression Analysis

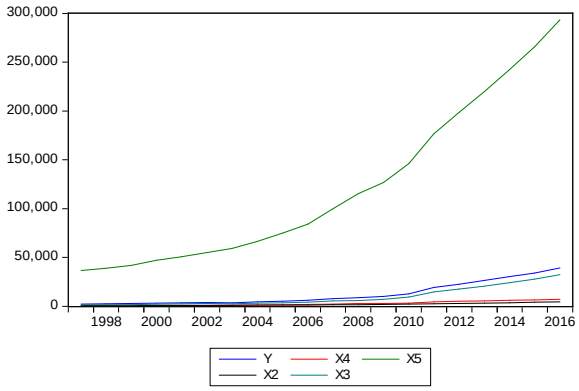

Figure 1. Linear Regression Analysis

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From the linear correlation analysis of tourism consumption and its explanatory variables, it can be seen that there are obvious differences between Explanatory variables and interpreted variables, and the direction of change is basically the same and there is a certain correlation between them. Explore setting it as a multiple linear regression model:

$$Y_i=\beta_1+\beta_2X_2+\beta_3X_3+\beta_4X_4+\beta_5X_5+u_i$$

3.2. Using E views for OLS Estimation, the Estimated Results are as Follows:

Dependent Variable: Y
Method: Least Squares
Date: 03/30/18 Time: 08:34
Sample: 1997 2016
Included observations: 20

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-11.19997	9.461432	-1.183750	0.2549
X2	-0.014140	0.040624	-0.348076	0.7326
X3	0.999276	0.001260	792.8392	0.0000
X4	0.986424	0.012164	81.09259	0.0000
X5	0.000669	0.000589	1.134955	0.2742

R-squared	1.000000	Mean dependent var	12452.44
Adjusted R-squared	1.000000	S.D. dependent var	11860.02
S.E. of regression	8.181977	Akaike info criterion	7.254063
Sum squared resid	1004.171	Schwarz criterion	7.502996
Log likelihood	-67.54063	Hannan-Quinn criter.	7.302657
F-statistic	9980399.	Durbin-Watson stat	2.600561
Prob(F-statistic)	0.000000		

Figure 2. OLS Estimation Parameters

$$\hat{Y}_i=-11.19997-0.014140X_2+0.999276X_3+0.986424X_4+0.000669X_5$$
$$(9.461432)\ (0.040624)\ (0.001260)\ (0.012164)\ (0.000598)$$
$$t=(-1.18375)\ (-0.348076)\ (792.8392)\ (81.09259)\ (1.134955)$$
$$R^2=1.0000 \quad \bar{R}^2=1.0000 \quad F=9980399 \quad D\text{-}W=2.600561$$

It can be obtained that Adjusted R-squared is 1 and the explanatory variables X2, X3, X4, and X5 explain the vast majority of differences explained by the explanatory variable Y. This is consistent with theoretical judgments and empirical judgments. However, the coefficient of X2 is negative and has not passed the economic significance test. The t-statistics of X2 and X5 are also less than 2 and have not passed the t-test. Initially determine the existence of multiple collinearity between economic variables.

Then calculate the matrix of the correlation coefficient:

	X2	X3	X4	X5
X2	1.000000	0.987568	0.996956	0.999072
X3	0.987568	1.000000	0.983532	0.985152
X4	0.996956	0.983532	1.000000	0.997412
X5	0.999072	0.985152	0.997412	1.000000

Figure 3 Correlation Coefficient

By calculating the correlation coefficient of each explanatory variable, it can be seen that the correlation coefficient between the explanatory variables is high, confirming that multicollinearity does exist.

3.3. Model Correction

(1) Eliminating multicollinearity for the one-way regression of Y on X2, X3, X4, and X5, respectively, results are shown in the following table:

Table 1 Unary Regression Variables:

variable	X2	X3	X4	X5
Coefficient	9.702447	1.219984	5.401609	0.141595
t-Statistic	-8.631396	5.835865	-4.438051	-6.878890
Adjusted R-squared	0.982642	0.998838	0.976877	0.978689

Sort by R2 size: *X3>X2>X5>X4*.

(2) On the basis of X2, using stepwise regression to deal with multicollinearity existing between explanatory variables. Due to the large number of results, the regression results passed the test are as follows:

Table 2 Stepwise Regression Equation Table

Y X2	Regression equation	R-squared	F-statistic
X3	$\hat{Y}_i$=750.9059+1.219984X_3	0.998899	16332.61
X2 X3	$\hat{Y}_i$=-523.6743+1.868510X_2+0.989747X_3	0.999800	42591.20
X2 X4	$\hat{Y}_i$=-5523.287+9.282338X_2+0.235254 X_4	0.983567	508.7364
X3 X4	$\hat{Y}_i$=-5.295258+0.999624X_3+1.002496X_4	1.000000	19525551
X3 X5	$\hat{Y}_i$=-302.0110+1.006063 X_3+0.025450 X_5	0.999832	50636.43
X2 X3 X4	$\hat{Y}_i$=-13.70575+0.02393X_2+0.99898X_3+0.9920X_4	1.000000	13071705
X2 X3 X5	$\hat{Y}_i$=-363.0845+0.42088X_2+1.0001X_3+0.019987X_5	0.999835	32298.57
X3 X4 X5	$\hat{Y}_i$=-13.4256+0.99908X_3+0.985864X_4+0.0005X_5	1.000000	14080615
X2 X3 X4 X5	$\hat{Y}_i$=-11.19997-0.014140X_2+0.999276X_3+0.986424X_4+0.000669X_5	1.000000	9980399

From the table, the optimal equation:

$$\hat{Y}_i=-13.4256+0.99908X_3+0.9859X_4+0.0005X_5$$

R-squared=1, F=14080615, Durbin-Watson stat=2.58, the coefficients of the independent variables are all positive, and the t-test of regression parameters is statistically significant in regression. From this equation, we can see that under the assumption that other variables are constant, the total consumption of urban residents will increase by 100 million yuan, the total domestic tourism consumption will increase by 0.99908 trillion yuan, and the total consumption of rural residents will increase by 100 million yuan. An increase of 0.99859 billion yuan; the total consumption of residents increased by 100 million yuan, the total domestic tourism increased by 905 million yuan.

IV. CONCLUSION ANALYSIS

From the multiple linear regression model, it can be concluded that the level of tourism consumption is increasing and domestic tourism consumption is expected to reach RMB 7 trillion in 2020. The variables such as the total cost of urban residents, the total consumption of rural residents, and the total consumption of residents all have a significant impact on the total consumption of domestic tourism. Among them, the influence of rural residents on tourism has more room for development. To promote the continuous improvement of rural residents' income, farmers' demand for tourism is also increasing. The per capita spending on rural residents will increase further in the future. The contribution will continue to increase. When other factors are constant, the increase in household consumption, that is, for every additional 100 million yuan in consumption, there are 905 million yuan in tourism spending, and the consumption level is often accompanied by an increase in income and national economic growth, indicating that with the increase in consumption levels. The people's investment in tourism consumption is higher.

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