Study on Econometrics Model of Factors Influencing the Tourism Consumption

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Abstract

Tourism is a comprehensive industry involving food, shopping, lodging and entertainment industry. From 1990s, tourism in China has been developing continuously. This article aims to set up a model to analyze the factors that affect tourism consumption based on quantitative finance and propose suggestions for further development.

Keywords

Tourism, Influence Factors, Quantitative Finance, Model.

1. Introduction

With the incensement of people's material and cultural life, tourism has become the main way of spending leisure time for people. At present, the tourism market of China mainly consists of domestic tourism, outbound tourism and inbound tourism, in which domestic tourism is an important measure of the development of national tourism and economy. The development of our tourism always follows the principle of "moderate advance" and is based on developing domestic tourism market

With the development of economy and the increment of leisure time for citizens in China, there is a good opportunity for domestic tourism development. On average, the ratio of international tourism income and domestic tourism income is around 1:9 for a country. Compared to this international standard, the domestic tourism market of China is far left behind and therefore has great potential for development. Tourism consumption expenditure is an indispensable index of tourism economy measuring whether the tourism in one country or one region is developed or not. Under the background of expanding domestic market demand, tourism industry has become the new economic growth point and the proportion of tourism consumption in the overall national consumption is increasing gradually. However, in our tourism consumption structure, the consumption of urban residents takes up the dominant position. Therefore, studying the proportion of tourism consumption of urban residents in the overall consumption behavior is good for understanding tourism consumption, adjusting tourism development strategy and expanding domestic tourism market.

2. Possible Influence Tactors

Tourism industry is a comprehensive industry. The direct reason for its formulation and development is the development of social productivity. The increase of income and leisure time enables people to travel around. Therefore, both internal and external factors should be considered when analyzing the tourism consumption behavior. The internal factor is the motivation to travel, whether a person has the expectation and demand of going out for traveling. The external factor mainly consists of two aspects: adequate income and leisure time. The internal factor determines whether one is willing to travel, while external factor determines whether the travel plan is feasible.

In addition, as a kind of consumption behavior, tourism consumption is affected by economic factors and non-economic factors. Non-economic factors include individual consumption motivation, individual preference and national holiday arrangement etc. While economic factors mainly include two aspects:

2.1 Per Capita Disposal Income of Urban Residents

The income level of residents determines its tourism consumption level and whether a potential tourist can actualize his/her travel plans. In real life, there are numbers of factors affecting family consumption, such as income level, commodity price level, interest rate level, income distribution situation, consumer preference, family finance situation, consumption credit conditions, consumer age, system and social customs etc. Keynes believes that family income is with decisive significance among all these factors. Based on the consumption theory proposed by Keynes, one basic psychological rule exists in the relation between income and consumption, that is, with the increase of income, the consumption will increase too, but the increase of consumption is less than the increase of income. That is to say, marginal consumption has the tendency of decreasing.

2.2 Consumption Price Level of Urban Residents

Price level will affect the consumption behavior of residents. When nominal income is unchanged, if the price increases, one's purchasing power will decrease and consumption demand will also decrease. Therefore, per capita tourism consumption and price level are supposed to be negatively correlated.

2.3 Leisure Time

Based on the implement of new holiday regulation in China, the leisure time of residents becomes more concentrated, which is known as the "golden week" for tourism. It enables tourists to take a longer trip and visit more place, hence the tourism consumption expenditure will increase. The increase of leisure time is a good opportunity for the development of tourism, and the per capita tourism consumption is therefore supposed to increase.

3. Building Model and Relevant Analysis

3.1 Data Source and Model Hypothesis

Considering the factor of whether the new holiday regulation is implemented, a dummy variable (leisure time) is introduced in the model. In the model, Y is the dependent variable standing for per capita tourism consumption of urban residents. X, P, D are independent variables standing for per capita disposal income of urban residents, Consumption price level of urban residents and leisure time. The model can be expressed in the term:

$Y=\beta_0+\beta_1 X+\beta_2 P +\beta_3 D+\mu$, where β_0, β_1, β_2, β_3 are coefficients to be determined and μ is the error term.

Table 1. 1996 -2015 Statistical Data

Year	Y per capita tourism consumption of urban residents (yuan)	X per capita disposal income of urban residents (yuan)	P Consumption price level of residents	D Leisure time
1996	534.1	4838.9	108.8	0
1997	599.8	5160.3	103.1	0
1998	607	5425.1	99.4	0
1999	614.8	5854	98.7	1
2000	678.6	6280	100.8	1
2001	708.3	6859.6	100.7	1
2002	739.7	7702.8	99.0	1
2003	684.9	8472.2	100.9	1
2004	731.8	9421.6	103.3	1
2005	737.1	10493	101.6	1
2006	766.4	11759.5	101.5	1
2007	906.9	13785.8	104.5	1
2008	849.4	15780.8	105.6	1

2009	801.1	17174.7	99.1	1
2010	883.0	19109.4	103.2	1
2011	877.8	21809.8	105.4	1
2012	914.5	24564.7	102.7	1
2013	946.6	26955.1	103.2	1
2014	975.4	29381.0	102.4	1
2015	985.5	31194.8	101.5	1

(Data Source: National Bureau of statistics, statistical yearbook)

3.2 Model Estimation and Test

Using the software R, we analyze the data shown above in Table 1 and set up a regression model.

Table 2. Output of Estimated Model

Coefficient	Estimate	Std.Error	T value	Pr(>|t|)
(intercept)	1.377e+02	4.199 e+02	0.328	0.74724
X	1.225e-02	1.279 e-03	9.580	4.98e-08***
P	3.658e+00	4.060e+00	0.901	0.38088
D	1.008e+02	3.096 e+01	3.516	0.00286**
Residual standard error:41.17 on 16 bdegrees of freedom				
Multiple R-squared:0.9221				
Adjusted R-squared:0.9075				
F-statistic:63.14 on 3 and 16 DF				
p-value:4.361e-09				

Notes: Signif. Codes 0'***' 0.001'**' 0.01'*'0.05'.' 0.1''1

From the outcome of the program we can see that the correlation between per capita tourism consumption of urban residents (P) and the consumption price level of urban residents (P) is not statistically significant. （p=0.74724>0.05）,therefore we remove P and set up a new model: $Y= \beta_0 + \beta_1 X + \beta_2 D + \mu$.

Table 3. Output of Adjusted Model

Coefficient	Estimate	Std.Error	T value	Pr(|t|)
(intercept)	5.154e+02	2.444 e+01	21.089	1.26e-13***
X	1.262e-02	1.208 e-03	10.448	8.12e-09***
D	9.858e+01	2.63 e+01	3.444	0.0031**
Residual standard error:40.94 on 17 degrees of freedom				
Multiple R-squared:0.9182				
Adjusted R-squared:0.9085				
F-statistic:95.36 on 2 and 17 DF				
p-value:5.756 e-10				

Notes: Signif. Codes 0'***' 0.001'**' 0.01'*'0.05'.' 0.1''1

We can see that the R square of the model is 0.9182,which means that 91.82% of the dependent variable can be explained by the independent variables.

The p value is 5.756*10-10<0.05, so the linear correlation is statistically significant.

The p value of each independent variable coefficient is less than 0.05, passing the significance test, so all the independent variables have statistically significant correlation with the dependent variable.

Therefore we have the final model: $Y = 515.4 + 0.01262 \cdot X + 98.58 \cdot D$

3.3 Explanation and Suggestions for the Model

It can be seen from regression equation $Y = 515.4 + 0.01262*X + 98.58*D$ that if the per capita disposal income of urban residents increases, about 1.262% of the increase is spent on tourism consumption. This indicates that the demand for tourism is not high in China. Possible reason could be the low life standard in undeveloped parts of China and the traditional consumption concepts in China which appreciates saving than spending. Except for necessary expenditure, most of the disposable income of residents will be saved in bank accounts or be used for investment. As a result, the per capita tourism consumption of our urban resident accounts for small proportion of per capita disposable income. It also indicates that at current stage, our tourism market is not developed completely and there is great potential. It can be seen that after implementing the new holiday regulation which creates the 'golden week', the tourism consumption expenditure of urban resident increases greatly. We can see that such policy has positive effects on promoting tourism consumption.

Since 2010, great changes has taken place for global economic. The influence of the global financial crisis is greater than expected. However, the economy of China keeps its growth and the tourism market is steady. Events such as Shanghai World Expo in 2010 motivates the tourism consumption increase in eastern area.

Based on the analysis above and combining our economic development situation, the following suggestions are proposed for the development of tourism industry:

3.3.1 Prepare reasonable price system for tourism products

Consumers have expected tourism expenditure, once the price exceeds the expected expenditure, the consumer will turn tourism consumption into other substitutes. If the price is lower than expected, consumers will consider increase the proportion of tourism consumption. Therefore, in every part of tourism market, the price setting must be reasonable to improve consumption and therefore attain more economical profit. Making use of price leverage to make market regulation properly and keep the relatively stability of three sets of price system in tourism low season, flat season and peak season is beneficial for the market stabilization. Tourism consumption demand is with great price elasticity because the substitutive consumption is strong. For the current situation with low consumption level and inadequate domestic market demand, deep research on whether to focus on high-end consumers or to expand the market to lower-end market is required .

3.3.2 Speed up economic development, increase people's income and promote tourism consumption

The development of world tourism consumption proves that tourism consumption is determined by two factors, first is the purchase power of consumers and second is the disposable time of consumers. From the macroscopic view, economic development and life quality is the crucial assurance of realizing continuous tourism consumption. Therefore, government at each level should follow the requirement of science outlook on development and take economic development as the first priority. At current stage, the government should develop industry, raise employment rate and increase the income of residents, providing adequate material conditions for tourism consumption for residents.

3.3.3 Improve tourism laws and regulations and standardize tourism market

Certain backwardness exists in our tourism legislation compared with the fast development of tourism industry. There are many cases in which travel agencies breaking contract during the trip, such as changing hotel star level, lowering dining standard, delaying travel time and changing travel plans without authorization. All these problems have affected the consumption enthusiasm of tourists. At present, the operation of domestic tourism market is lack of standardization. Especially in holiday seasons, the severity of the problems tends to increase. Therefore, it is urgent to improve tourism regulations, standardize operation behavior of tourism enterprises and create favorable tourism environment.

4. Conclusion

After testing, the domestic tourism consumption model proposed in this paper fits the real condition of domestic tourism consumption well, which can provide theoretical instructions for tourism management department in practice. However, the development of China's domestic tourism market only started in recent years, so the trend of tourism consumption is not stable yet. There are also many other factors affecting tourism market that change in different time cycles, so the model is supposed to vary by time. Only primary discussion is done in this thesis and further research will be applied based on it.

Acknowledgements

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