The Analysis of the Influence Factors of China's Outbound Tourism Market

He Liu^a

Shanghai University, Management, 200444, Shanghai, China

Abstract. Outbound tourism gets special attention from tourism academic circles and tourism companies recently. And now China has become the world's largest outbound tourism consumer. So this paper is written to research the influence factors of China's outbound tourism market, providing reference for the study of China's outbound tourism market. The literature study have found that the number of China's outbound tourism related to the duration of their leisure trips, exchange rate, residents' deposits and the number of tourism agency. By using of the econometric methods and R-studio, we build a multiple linear regression model. In the end, we get a conclusion by quantitative analysis of data and qualitative analysis of tourism's law. We found that there are linear relations exists in logarithm of the number of China's outbound tourism, the residents' deposits ,the logarithm of duration of their leisure trips and the logarithm of number of tourism agency.

1 Introduction

China's tourism development is very different from that of foreign countries. Foreign tourism is the result of market development, while China's tourism industry has obvious characteristics of political diplomacy at the beginning. The tourism administration and tourism services are mainly aimed at inbound visitors who have a high political status^[1]. Since the reform and opening up in the china, the social economy has made great progress, and the political attribute of China's tourism industry has been weakened gradually. In recent years, with the development and progress of social economy, the improvement of people's living standard and the improvement of service facilities, the tourism industry has achieved real and substantial development^[2].

People need two basic conditions to travel. The one is a certain amount of flowing capital, the other is enough free time^[3]. Especially, and the outbound travel is more demanding in terms of the quality of money and free time. In addition, the realization of outbound tourism should also have a certain amount of tourism experience and convenient tourism suppliers. China has been rated as the world's largest source of outbound tourists for many years

2 Literature research

In the reason of outbound tourism, professor Vera Shanshan Lin believe that compared with staying in China, the income level and cost of staying are two important

factors influencing Chinese residents' traveling abroad^[3]. Tony s. m. Tse and j. s. Perry Hobson studied China's outbound tourism through analyzing the macro-environment and found that social, economic and political factors had a significant impact^[4]. According to the domestic tourism demand prospects, Wei Xiaolan and Feng Zengsu think that economic factors have a significant impact on tourists' choice of travel scope. Per capita GNP above \$1000 will make people have international tourism motivation^[5].

In terms of influencing factors of outbound tourism, most studies use outbound tourists as a measure of outbound tourism scale. Deng Aiming found that the number of China's outbound tourists has a long-term equilibrium relationship with income levels and real exchange rates by analyzing of China's tourism sample data from 1993 to 2010^[6]. Professor Wu believes that outbound tourism is closely related to the exchange rate^[7]. Tong Yuquan takes the total number of Chinese outbound tourists as the explained variable, and per capita GDP, per capita net income of rural residents, per capita disposable income of urban residents, urbanization rate, exchange rate and Engel coefficient of urban households were selected as explanatory variables. Finally he found that Per capita GDP is the leading factor in determining outbound tourism^[8]. Du Jiang and Dai Bing thought that there are seven factors have a significant impact on the outbound tourism market. They are economic factors, political and diplomatic factors, air transport, macro-regulation and micro-regulation, destination

^a Corresponding author: 1013999035@qq.com

security, promotional activities and social culture [9].

3 Study design

3.1 Data source and variable Settings

Firstly outbound tourism should meet the necessary conditions for tourism, enough funds and sufficient free time. Free time is related to social development and individual choice. It is different from the holiday and unable to be counted efficiently; at the macro level, household savings can reflect the financial strength of residents from the side; outbound tourism is a special kind of trade import, involving economic exchanges. So it is necessary to research the effect of exchange rate; the language barrier is very obvious for outbound tourism. In order to get a better travel experience, we need to resort to the help of tourism service agencies. Generally speaking, the more days of people spending on outbound tourism, the fewer tourists. so we take the outbound travel days into research.

Based on the above study, five variables are selected in this paper. They are the number of outbound tourists from 2007 to 2015, the exchange rate of RMB, the amount of resident deposits, the number of travel agencies and travel days. The exchange rate and resident deposits can be getting from the official website of national bureau of statistics. The number of tourists and the agencies can be known from the statistical bulletin of national tourism administration. And the days can be getting from the reports and literature. table 1 is for specific data:

Table 1. Data summary.

Year	The number of outbound tourists	Exchange rate	Resident deposits (yuan)	The number of agencies	Travel days
2007	4095.4	7.604	172534.2	18943	2.1
2008	4584.44	6.9451	217885.4	20110	2.4
2009	4765.63	6.831	260771.7	20399	3.2
2010	5738.65	6.7695	303302.5	22784	4
2011	7025	6.4588	343635.9	23690	4.2
2012	8318.27	6.3125	399551	24944	4.3
2013	9818.52	6.1932	447601.6	26054	4.9
2014	10700	6.2166	485261.3	26650	5.1
2015	11700	6.2284	526508.5	27621	5.3

Table 2. The definition of variables.

Symbol	Measuring way	Meaning
Y	Take the logarithm of the number of outbound tourists	Explained variable
X1	Take the logarithm of exchange rate	Monetary conditions
X2	Take the logarithm of number of agencies	Ease of access to information
X3	the amount of resident deposits	Economic strength
X4	Take the logarithm of travel days	Time cost

3.2 Research models and assumptions

In this paper, the following equation is constructed by using the multiple linear regression model and combining

the economic theory with the operation law of tourism:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4$$

Among them, “ β ” is the coefficient.

Based on the above analysis, the following hypotheses are proposed:

- (1) The lower the exchange rate, the less people travel abroad
- (2) The more total household savings, the more people travel abroad
- (3) The more travel agencies, the more people travel abroad
- (4) The longer the days of outbound travel, the less people travel abroad

4 Empirical test

This paper uses R-studio software for data analysis. The detailed analysis steps are shown below.

4.1 Stationary test

This paper has time series data. Classical regression analysis has an important hypothesis. It is that the data is stable.

4.1.1 Graphic test of stability

Figure 1 is the result:

It can be seen from the figure that the time series data is non-stationary.

Figure 1. Test of stability.

4.1.2 Unit root test for stability

Table 3 is the result:

Table 3. Unit root test.

The independent variables	X ₁	X ₂	X ₃	X ₄
t	0.007557	0.001866	0.0001758	0.0118

We can found that $t < 0.05$, so the data does not have a unit root.

4.1.3 Co-integration test

Co-integration means that there is a common trend of randomness. It is aimed to determine whether a set of linear combinations of nonstationary sequences have stable equilibrium relations. The result is below:

Table 4. Co-integration test.

DF	t	n
-4.0347	0.0014	0.1135

Because that $t < 0.05$, the data in this paper has stationarity and can be analyzed by regression.

4.2 Variable correlation analysis

Pearson's coefficient can accurately reflect the degree of correlation between two variables. It is represented by r and describes the degree of linear correlation between two variables. The greater the absolute value of r , the stronger the correlation. Table 5 shows the result.

Table 5. Correlation analysis.

Independent variable	X ₁	X ₂	X ₃	X ₄
r	-0.9227	0.989502	0.993557	0.928283

All correlation coefficients(r) are between 0.70 and 0.99. So these variables are highly correlated with the number of outbound tourists.

4.3 Establishment of multiple regression model

Multiple linear regression models can be established by regression analysis:

$$Y = -4.592 - 0.147 * X_1 + 1.939 * X_2 + 8.174 * 10^{(-7)} * X_3 + 0.347 * X_4$$

4.3.1 Test of goodness of fit

Index R^2 can describe the fitting degree of multiple linear regression equation and data. $R^2 = S_{\text{回}} / S_{\text{总}}$

The larger index is, the better the fitting degree of the model is.

4.3.2 Significance test of equation (F test)

The index F can be used to indicate whether the linear relationship between the depended and all independent variables is significant in general.

4.3.3 Significance test of variables (t test)

We can see the influence degree of each independent variable on the dependent variable by this test. If the effect is not significant, it should be eliminated.

4.3.4 DW test

Because sequence autocorrelation has a great influence on the rationality of multiple linear regression models, we use DW test to determine whether there is sequence autocorrelation between each independent variable. In practical problems, when the value of DW statistic is around 2, it can be concluded that the regression model is effective.

4.3.5 Test results statistics

Table 6. The test result.

Parameter	R ²	F	DW
Result	0.991	231	2.402

Table 7. T test.

Variable	t
Intercept	-1.397
X ₁	-0.239
X ₂	2.58
X ₃	2.803
X ₄	-2.171

Table 6 shows that $R^2 > 95\%$, so multivariate linear equations fit well. Next we can find that $F(4, 5) = 6.256$ with 95% confidence and $F \gg F(4, 5)$, so in general, the independent variables of the equation have a significant influence on the dependent variables. The value of DW is close to 2, indicating that there is no sequence correlation in the regression model.

We can know that when $\alpha = 0.1$, $t_{2/\alpha}(5) = 2.015$. Table 7 shows the t value of X_1 is less than 2.015. So the effect of X_1 is not significant.

4.3.6 Heteroscedasticity test

If the linear regression model has heteroscedasticity, then the regression equation cannot be established. The paper use Breusch-Pagan to test. Table 8 is the result:

Table 8. Heteroscedasticity test.

BP	df	p-value
3.524	4	0.4742

$P > 0.05$, so there is no heteroscedasticity in the regression model with 95% confidence.

4.4 Model optimization

In order to remove the independent variables with insignificant effects, the backward stepwise regression method is used to optimize model. The stop-judgment criterion is the exact AIC criterion.

Table 9 is the result:

Table 9. Stepwise regression result.

Variable		Remove X ₁	None	Remove X ₂	Remove X ₃	Remove X ₄
First	AIC	-73.736	-71.863	-65.046	-64.086	-66.857
Second	AIC		-73.736	-66.655	-66.022	-68.333

The AIC in <none> is the result when no variables are deleted. When remove the X₁, the AIC decreased. But if remove other variables, the AIC would increase. So remove the X₁.

The revised regression equation is below:

$$Y = -4.856 + 1.969 * X_2 + 8.186 * 10^{-7} * X_3 - 0.331 * X_4$$

4.5 Optimization model test

Table 10. Optimization model test.

Parameter	R ²	F	DW	p
Result	0.993	379.5	2.38	2.57*10 ⁻⁶

Table 11. T test of optimization model.

	Intercept	X ₂	X ₃	X ₄
t	-1.742	2.952	3.11 7	-2.526
p		0.03	0.02	0.05

The result showed that both R² and F are greater than the original. The number of DW is also closer to 2. So the new model has a better fit.

4.6 Results analysis

The final multiple linear regression model is:

$$Y = -4.856 + 1.969 * X_2 + 8.186 * 10^{-7} * X_3 - 0.331 * X_4$$

We can find that there are linear relations exists in logarithm of the number of China's outbound tourism, the residents' deposits, the logarithm of duration of their leisure trips and the logarithm of number of tourism agency. And there is no linear correlation between the total number of outbound tourists and the exchange rate. From the perspective of economic theory, the exchange rate is lower and the number of outbound tourists is decreased. According to experts, from the perspective of clients' consultation and reservation, exchange rate is not the primary consideration in tourism decision-making. Most tourists go abroad only once or twice a year, or just for the first time. Their travel plans are usually completed two months in advance and they will not change their plans easily due to exchange rate fluctuations. Therefore, exchange rate fluctuations have had little impact on the number of outbound tourists in recent years^[10].

5 Conclusion

This paper studies the influencing factors of outbound

tourism by means of econometrics and the development law of tourism industry. There is a positive correlation between the logarithm of outbound tourists and the logarithm of number of travel agencies. There is a positive correlation between logarithm of outbound tourists and the total amount of resident deposits. There is a negative correlation between the logarithm of outbound tourists and the logarithm of travel days. China's booming outbound tourism market owes much to the country's rapid economic growth, including rising living standards and disposable income. Secondly, the increase in the number of travel agencies provides much convenient information for outbound tourists. Finally, the improvement of traffic conditions and the convenience of visa and others have saved the time and cost of outbound tourists and promoted the continuous prosperity of China's outbound tourism market.

So in the future, firstly the government should ensure the healthy and stable development of the outbound tourism market. Secondly, it is necessary to develop inbound tourism while properly guiding citizens to travel abroad. Finally, it is important to insist the supply-side structural reform proposed in the 13th five-year plan of china. And promote the balance between supply and demand and the transformation and upgrading of the tourism industry.

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