

Domestic Travel Propensity of China's Urban Residents Based on Analysis of Tourism Consumption

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China's national income has been rising incessantly since the 21st century and there is a dramatic increase in real disposable income. In this context, the contribution of tourism to GDP is also increasing. Urban residents are important participants in domestic travel market, and an analysis of their domestic travel propensity is of high necessity. Based on the statistics from 2007 to 2012, we construct a statistical equation for calculating the proportion of tourism expenditure of urban residents in average per capita income. Using the travel propensity index, the domestic travel propensity of urban residents is divided into four categories. The findings of this study can provide a new method for analyzing and predicting domestic travel market.

1. Introduction

China's economic development level has risen significantly since the 21st century. China now ranks the second after the US in terms of aggregate economic value. According to the statistics by National Bureau of Statistic, China's GDP per capita in 2012 reached the new highest of over 6100 US dollar and the annual per capita income of urban residents was 26959 RMB. The annual per capita disposable income of urban residents was 24565 RMB with a nominal rise of 12.6% compared with the previous year. If the price factor is not taken into consideration, the actual increase was 9.6%, which was higher by 1.2 percentage points compared with the previous year. Along with the increase of real disposable income, people show a growing propensity to travel. China's GDP per capita has already exceeded the threshold of 1000 US dollars, which is considered the lowest line for the domestic travel market to develop. China's domestic travel market has been prospering in recent years. In 2007, there were 1.61 billion people traveling within China, bringing about tourism revenue of 777.062 billion RMB. In 2012, 2.96 billion people traveled within China, and the corresponding tourism revenue exceeded 2200 billion RMB. The number of tourists traveling within China nearly doubled in five years and the tourism revenue of 2012 was over three times that of 2007. The volume of tourists traveling within China is 12.2 times that of inbound tourists, and the revenue associated with domestic travel is over 2 times that of outbound travel. China is now the largest tourism market in the world. It is generally believed that when GDP per capita exceeds 1000 US dollars, the tourism will enter a fast growth stage. Thus China's tourism industry is expected to grow more dramatically and play more important role in sustainable development of the economy. Urban residents are the main sources of tourists and tourism revenue. In 2012, there were 1.933 tourists who were urban residents, creating tourism revenue of 1767.7 billion RMB, accounting for 75% and 78%, respectively. Thus it is important to understand the domestic travel propensity of urban residents.

Tourism is a spiritual and aesthetic experience as well and is closely connected to people's income level. However, there are limited data available to show the quantitative relation between the two. Given the differences in geographical position of the city, tourism resources and people's life style (Bao Jigang (1999), Leonard J. (2002), and Liu, Deqian (2003)), the travel propensity varies for people in different places even if their income level is similar. Salary accounts for a major part of urban people's income. We build the quantitative model of the percentage of tourism expenditure in urban residents' salary using the statistics of 2007 to 2012. The domestic travel propensity of urban residents is analyzed using this model so as to predict the domestic travel market.

2. Constructing Domestic Tourism Expenditure Function

2.1 Experiment design

The statistics by the National Bureau of Statistics is used as the major data source. The urban household tourism expenditure and salary data of 39 cities in 2007 to 2012 are surveyed:

- (1) Travel rate of urban residents as a measure of urban residents' travel demand;
- (2) Expenditure per capita as a measure of the consumption level. The above two indices are based on domestic tourism sample survey.
- (3) Wage per capita as a measure of urban residents' income level. The wage data comes from the urban statistics in China Statistical Yearbook.
- (4) Tourism expenditure per capita as an indirect index from which the average tourism consumption of urban residents can be calculated.

To eliminate the effect of random fluctuation across the years, the average of six years from 2007 to 2012 is used in the calculation (National Bureau of Statistics of the People's Republic of China (2007), China National Tourism Administration (2008)).

2.2 Constructing domestic tourism expenditure function for urban residents

2.2.1 Tourism expenditure and tourism consumption

Before building the tourism expenditure function, the concept of tourism expenditure and tourism consumption must be distinguished.

Tourism consumption is a term in economic statistics, denoting the sum of all expenses arising from the tourism activities.

Tourism expenditure is a theoretical value of tourism consumption corresponding to a specific level of income. It is a value based on economic indices that can be calculated from cross-section data, though the travel itself may not necessarily happen.

2.2.2 Tourism expenditure function for urban residents

Suppose the domestic tourism expenditure of urban residents is Y and the average wage is X . The scatter plot showing the relationship between the two is drawn according to statistics of 39 cities from 2007 to 2012.

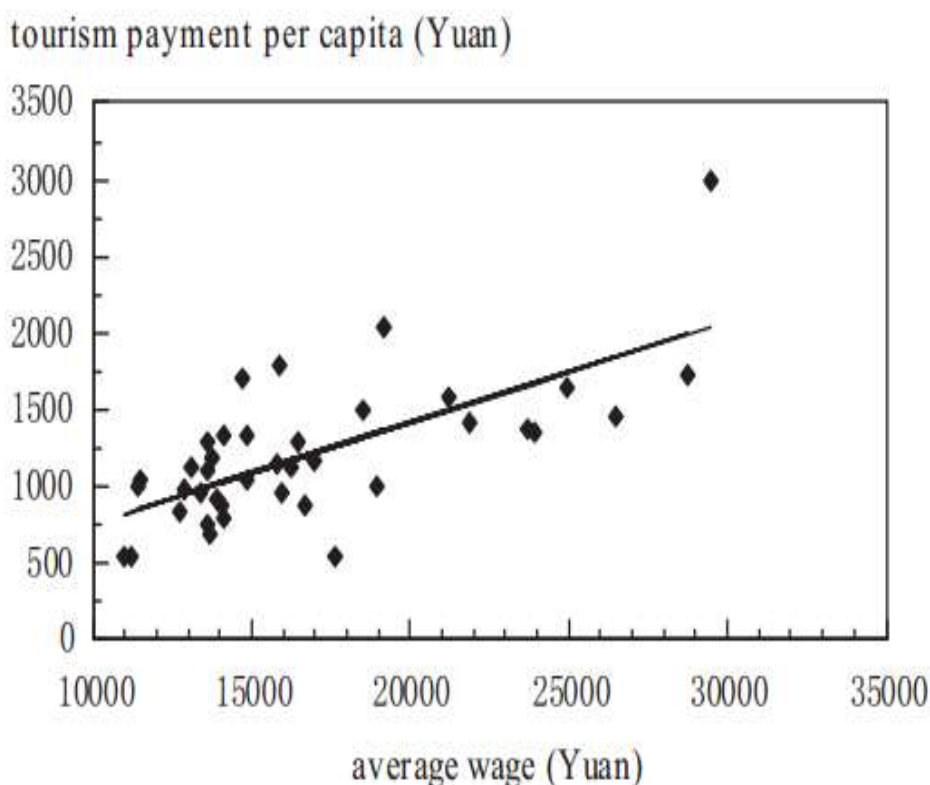


Figure 1: Relation between domestic tourism expenditure and average wage

Obviously, tourism expenditure is linearly correlated with average wage, as indicated by the equation $Y = a + bX$. The regression equation derived from the linear function is

$$(1) Y = 108.952 + 0.06557X \quad (\text{average GDP} \geq 1000 \text{ US dollars per individual})$$

The correlation coefficient $r = 0.701$.

This equation is the standard equation of domestic tourism expenditure which reflects the relationship between tourism spending capacity of urban residents and average wage. For every increase of wage by 1000 RMB, the tourism consumption will increase by an average of 65.6 RMB.

3. Classification of Domestic Travel Propensity of Urban Residents

3.1 Formula of domestic travel propensity

Travel propensity of urban residents is not only influenced by the income level, but also by other non-economic factors: tourism resources of the city, natural and humanistic environment of the city, geographical position of the city, resident quality, tourism psychology and life style. For example, residents of Sanya, Hainan Province are less likely to travel to coastal cities, and the residents in Islamic culture are less like to eat hotpot in Chengdu.

The propensity to travel and tourism consumption are deeply influenced by other factors beside economic factors. This hypothesis is verified by statistics of 39 cities in 6 years. These non-economic factors are collectively represented by travel propensity index which is greatly varied from one city to another:

$$P = \left(\frac{R_t}{T_t}\right) \times 100\% = (e_1 + e_2 + e_3 + e_4 + e_5 + e_6)$$

where R_t is the actual tourism consumption; T_t is the theoretical tourism expenditure based on average wage. To account for the non-economic factors, we employ Delphi method and use $e_1, e_2, e_3, e_4, e_5, e_6$ to denote the quantity of tourism resources, travel rate, proportion of sightseeing tour, length of travel, proportion of business travel, and proportion of travel for visiting relatives, respectively. In this way, the influence of natural and humanistic environment, geographical position, resident quality, tourism psychology and life style is assessed quantitatively (Ning Shimin (2000), Song Yongmei (2006)).

3.2 Classification of travel propensity index of residents in each city

For a certain city, the travel propensity index is relatively stable. Formula (2) is used to calculate the travel propensity index of 39 cities, which may have weak, moderate or strong intensity.

The results of the calculation are shown in Table 1.

Table 1: Intensity of travel propensity of residents in each city

Index	Weak	Moderate		Strong
		Moderately weak	Moderately strong	
Travel propensity index	$P < 90\%$	$90\% < P < 105\%$	$105\% < P < 120\%$	$120\% < P$
City	Shanghai, Nanchang, Shenyang, Xiamen, Changsha, Zhengzhou, Guiyang, Ningbo, Chengdu, Hohhot, Guangzhou, Hefei, Hangzhou, Taiyuan, Dalian	Wuxi, Jinan, Shijiazhuang, Kunming, Haikou, Beijing, Nanjing, Nanning	Guilin, Tianjin, Xi'an, Qingdao, Suzhou, Chongqing, Wuhan	Shenzhen, Changchun, Urumqi, Zhuhai, Fuzhou, Yinchuan, Xi'ning, Harbin, Lanzhou

(1) Weak travel propensity: The travel propensity index is less than 90%, and the income level is too low to support tourism spending. Thus the residents have now wish for domestic travel.

(2) Moderate travel propensity: The propensity can be moderately weak or moderately strong. For the former, the travel propensity index is 90% to 105%, which is very close to the threshold value. The residents are not interested in domestic travel because the high-income residents prefer travel outbound, while the low-income residents rarely travel. The travel propensity index is 105% to 120% for moderately strong propensity. That is, the actual tourism consumption of the residents is slightly higher than the threshold and the residents are more interested in domestic travel.

(3) Strong travel propensity: The travel propensity index is above 120%. That is, the actual tourism consumption is higher than the threshold and the residents are very interested in domestic travel.

3.3 Features of travel propensity of residents in each city

Self-organizing map (SOM) is used to discuss the effect of non-economic factors on domestic travel propensity for each city.

SOM is particularly effective for recognition of categories that are implicit, confounding and have non-linear distribution. Due to limited space, the details of SOM are not provided.

where

$$E_{ij} = \frac{e_{ij} - \bar{e}_j}{s_j}$$

$$\bar{e}_j = \frac{1}{39} \sum_{i=1}^{39} x_{ij}$$

$$s_j = \sqrt{\frac{1}{38} \sum_{i=1}^{39} (x_{ij} - \bar{e}_j)^2}, (i = 1, 2, \dots, 39, j = 1, 2, 3, 4, 5, 6, 7)$$

When SOM training stops, the weighted distance between the winning neurons is calculated using distance method. Then 39 cities can be divided into 6 categories, and the cities falling under each category are shown in Table 2:

Table 2: Classification of cities by travel propensity of residents

Category	City
1	Beijing, Shenyang, Dalian, Guilin, Chengdu, Guiyang, Kunming
2	Shanghai, Ningbo, Guangzhou, Chongqing
3	Taiyuan, Nanjing, Nanchang, Jinan, Qingdao, Nanning
4	Tianjin, Suzhou, Hangzhou, Hefei, Fuzhou, Zhuhai, Lanzhou
5	Shijiazhuang, Hohhot, Wuxi, Xiamen, Zhengzhou, Wuhan, Changsha, Haikou, Xi'an
6	Changchun, Harbin, Shenzhen, Xi'ning, Yinchuan, Urumqi

Based on the classification by travel propensity index, the following conclusions are drawn:

Cities in category 1 have high travel rate but less tourism consumption per capita. Sightseeing tour and leisure tour are the dominant types of travel, and the proportion of leisure tour is the highest among all categories. Leisure tour is associated with less tourism consumption and is a more common form of tourism. The reason is that these cities have good environment with rich leisure activities. Residents of these cities prefer to spend their leisure times nearby.

Cities in category 2 have higher travel rate and high proportion of sightseeing tour. The tourism consumption per capita is higher, the length of tour is short and the places not far from their homes are preferred destinations. These cities are economically developed with higher income per capita. The residents of these

cities generally choose more “eventful” travel routes. But due to tight working schedule, the length of the tour is usually short.

Cities of category 3 have lower travel rate but higher tourism consumption per capita, and the proportion of sightseeing tour is high. Cities falling into this category are mostly provincial capitals that enjoy rich tourism resources. The residents have fewer opportunities to travel on business. This explains the low travel rate. Since the income level is higher than that of ordinary cities, the tourism consumption per capita is higher.

Cities of category 4 show indistinct features in each index. This means the tourism demand of the residents is diversified.

Cities of category 5 have a high proportion of travel for visiting relatives. The residents in these cities show a transition from preference for sightseeing tour alone to more diversified tourism demand.

Cities of category 6 are featured by high tourism consumption and long stay. This can be explained by the fact that these cities are relatively remote geographically and the residents have to make a long journey to arrive at the economically developed regions.

The travel propensity of residents in each city is shown in Table 3:

Table 3: Travel propensity of each city

		Category 1	Category 2	Category 3
Features of travel propensity		High travel rate but less tourism consumption per capita. Sightseeing tour and leisure tour are the dominant types of travel.	High travel rate and high proportion of sightseeing tour.	Low travel rate but high tourism consumption per capita, and the proportion of sightseeing tour is high
Travel propensity	Weak	Chengdu, Dalian, Shenyang, Guiyang	Shanghai, Ningbo, Guangzhou	Taiyuan, Nanchang
	Moderate	Beijing, Guilin, Kunming	Chongqing	Nanjing, Jinan, Qingdao, Nanning
	Strong			
		Category 4	Category 5	Category 6
Features of travel propensity		Indistinct features in each index and more diversified tourism demand.	High proportion of travel for visiting relatives.	High tourism consumption and long stay
Travel propensity	Weak	Hangzhou, Hefei	Hohhot, Xiamen, Zhengzhou, Changsha	
	Moderate	Tianjin, Suzhou	Shijiazhuang, Wuxi, Wuhan, Haikou, Xi'an	
	Strong	Fuzhou, Zhuhai, Lanzhou		Changchun, Shenzhen, Xi'ning, Yinchuan, Urumai, Harbin

4. Conclusions

Based on the concept of tourism consumption and tourism expenditure and using statistics of 39 cities in 6 years, the domestic travel propensity of urban residents is investigated. The following conclusions are drawn:

(1) The main influence factor of domestic tourism consumption is income level. The non-economic factors include geographical position, tourism resources of the city, resident quality and life style.

(2) By linking travel rate of urban residents to tourism expenditure per capita, we obtain a comprehensive index, the tourism spending capacity, which is positively related to the income level. For every increase of average wage by 1000 RMB, the tourism consumption increases by 65.5 RMB.

(3) The travel propensity index of 39 cities is of weak, moderate or strong intensity, corresponding to different travel propensity features.

The formula of domestic travel propensity of urban residents constructed in this study provides a new tool for predicting the regional travel market.

References

- Bao J.G., 1999, Introduction to Tourism Management [M]. Beijing: Higher Education Press, 49-51.
- China National Tourism Administration. Sample Survey of China's Domestic Tourism [R] China Travel & Tourism Press, 2008.
- Likorish L.J. & Jenkins C.L., 2002, Translated by Cheng, Jinneng. Introduction to Tourism [J] Beijing: China Travel & Tourism Press, 62-64.
- Liu D.Q., 2003, Demands in tourism at home: its present and future [J] Social Scientist, 17(1): 11-22;
- National Bureau of Statistics of the People's Republic of China. China Statistical Yearbook [M] China Statistics Press, 2007.
- Ning S.M., 2003, Trends of tourism study [J] Tourism Tribune, 3: 75-76.
- Song Y.M., 2006, The statistical analysis of domestic tourism purchase capacity of urban residents in China [J] Urban Problems, 2: 54-58.