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**Article**

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*Original scientific paper*  
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## REGIONAL ECONOMIC DEVELOPMENT AND THE CHOICE OF TOURISM MODE

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### **Abstract:**

Tourism has become an important part of regional economic development and the choice of tourism mode has been an important factor affecting the development of tourism. From the perspective of revenue maximization, this paper constructs a selection model of ticket economy model and region-wide tourism model. Each tourist area has a threshold value of scenic spots. When the number of scenic spots exceeds the threshold value, it is more beneficial for regional development to choose the region-wide tourism mode; conversely, it is more beneficial for economic development to choose the ticket economy mode. Among the factors affecting the threshold value, there is a negative correlation between the threshold value and tourists' consumption in the scenic spot, the incremental effect of tourists brought by the cancellation of tickets, the distance between the scenic spot and the tourist source, the distance between scenic spots within the region and the diversity index of scenic spot business items. There is a positive correlation between ticket revenue, traffic conditions between tourist areas and tourist sources, traffic conditions in tourist areas and the level of scenic spots in the region.

Keywords: ticket economy, region-wide tourism, number of scenic spots, threshold, revenue

*JEL Classification:* R10, Z32

## INTRODUCTION

In 2002, Hangzhou removed the walls of West Lake, making it the first 5A scenic spot in China to be free of admission. Since then, the number of visitors to Hangzhou has doubled and doubled. Although Hangzhou lost a very considerable ticket revenue, the increased passenger flow has driven the overall development of local retail, catering, accommodation, transportation, culture and other tourism-related industries, realized industrial linkage. At the same time, the huge passenger flow also highlights the shortcomings of Hangzhou's tourism industry, which stimulates the improvement

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of Hangzhou's tourism services and further promotes the industrial upgrading of Hangzhou's service industry. After more than a decade of development, Hangzhou's comprehensive tourism income due to the cancellation of tickets has exceeded 100 billion yuan per year, far exceeding the income from tickets.

The success of Hangzhou's tourism model has caught the attention of the Chinese government. The then director of the China National Tourism Administration officially proposed the concept of region-wide tourism for the first time on behalf of the government based on the situation in Hangzhou and other regions. Region-wide tourism means a new regional development idea and mode, that in a certain area, where tourism is set as the dominant industry, the area realizes the organic integration of regional resources, industrial integration development, building and enjoying the society together and driving and promoting the coordinated development of economy and society by tourist industry through comprehensively, systematically optimizing and promoting the social, economic and cultural resources ,especially tourist resources, related industries, ecological environment, public service, system and mechanism, policies and regulations, civilization quality, etc.

The development of region-wide tourism has been publicly supported by China's top leadership, and the Chinese central government has formulated a series of relevant policies to support the development of the region-wide tourism model in China. Policy support and Hangzhou's pioneering effect have prompted many regions in China to follow suit and develop their own region-wide tourism plans. But is it the best beneficial for each region to develop region-wide tourism? There has been no concrete answer to that question. Based on the current situation of China's tourism development, this paper establishes a model to answer this question from the perspective of tourism regional comprehensive income.

Due to historical reasons, China's tourism industry started late and its development mode is relatively single. For a long time, it has been dominated by ticket economy mode. The excessive dependence on ticket economy not only blocks many tourists, reduces the stay time of tourists, but also reduces the social welfare (Yi2005). To make matters worse, it has made China's tourism industry stagnant and cannot be upgraded in time, which makes it difficult to adapt to the development of world tourism. According to the existing research, there are certain reasons for the development of the ticket economy. Lindberg and Aylward (1999), Wu and Yang (2005), Zhang, Cai and Qi (2017), Wang, and Yotsumoto (2019) believed that this was because tourism income was an important source of local economic income, and tourism destinations must rely on scenic spots to obtain economic income. Gao (2007), Xu and Dai (2006) conducted research from the perspective of tourism development, arguing that improper government management and immature tourism development are the reasons for excessive dependence on the ticket economy. Wu and Yang (2005) believed that the main problem of the increase in ticket prices in scenic spots was that “functional positioning is misplaced”, and the historical and cultural functions were forced to be changed into economic functions, and the value of the scenic spots was equated with the price. Obviously, local government's income is an important factor in the development of the ticket economy. However, the development of region-wide tourism needs to give up the dependence on ticket economy and reduce or even cancel the tickets of scenic spots, which will inevitably

cause the local government to lose part of the ticket revenue. Further, it will take years for the benefits of regional tourism to show up. In China, the promotion mechanism of officials makes local officials show short-sighted behavior (Liu, Gu and Chen, 2016), seldom choosing the selfless behavior of "predecessors planting trees and later generations enjoying the shade", instead, "a new broom sweeps clean", which resulting in the discontinuity of policies (Wen 2014; Liu, Gu and Chen, 2016), and further reducing the tourism destination government to develop the impetus of the region-wide tourism.

Because the concept is so new, currently, the research on region-wide tourism focuses on concepts and connotations. Li (2013) used the "eight alls", that is, the all factor, the all industry, the all process, the all "time and space", the all-round, the all society, the all departments and all the tourists to explain the region-wide tourism, then took Beijing as an example to make a concert, and deep analysis of region-wide tourism. Lv (2013) believed that region-wide tourism was based on the overall perspective of the region to develop tourism, so that promoted the region-wide tourism brand image integration. Yang (2016) explained the connotation of the region-wide tourism from the perspective of industrial development in the region, and believed that the region-wide tourism should guide the development of other industries in the region through the tourism industry in the areas with rich tourism resources, so that the production factors of the region can be optimized allocation. Some scholars have analyzed how to develop region-wide tourism from the perspective of sharing economy (Zuo, Ming and Li, 2016; Wang 2017), the development of region-wide tourism need to combine the current idea of sharing economy to promote the comprehensive development of local industry.

The development of region-wide tourism requires not only scenic spots but also sufficient industrial support, to achieve sustainable tourism (Hardy, Beeton, and Pearson, 2002). If we blindly choose to develop region-wide tourism without considering the local actual situation, it may lead to the fact that the benefits brought by region-wide tourism are not enough to cover the original benefits brought by the ticket economy, and the gains are not worth the losses. Up to now, there have been a lot of researches on regional tourism, and the number is still increasing. However, there is no research has analyzed whether a tourism region should choose regional tourism or continue to stick to ticket economy. Based on the comprehensive income of local tourism development, this study establishes a model and analyzes the applicability of the two tourism models for the reference of local governments.

## 1. CONSTRUCTION OF THE SELECTION MODEL

Comprehensive income from tourism is the most fundamental index to judge the quality of tourism development. According to previous studies (Lin 2010; Wang and Sun, 2018; Zhang and Zhao, 2018), the factors affecting region-wide tourism income mainly include the resource abundance (number of scenic spots), location conditions (distance from tourist sources), ticket price, tourist flow of scenic spots, diversity of business projects, scenic spot grade, infrastructure construction, local economic development level, local traditional culture, etc. Among those factors, the most direct factors affecting the income of the scenic spot can be summarized as passenger flow

(the total number of times all tourists visit the scenic spot), ticket price, local consumption of tourists and costs incurred by the scenic spot. Therefore, the basic revenue model of scenic spots can be expressed as follows:

$$I = T * (P_1 + P_2 - C)$$

where,  $I$  represents the total revenue of the scenic spot,  $T$  represents the total number of visits to the scenic spot,  $P_1$  represents the admission revenue of the scenic spot,  $P_2$  represents the revenue generated by local consumption of tourists, and  $C$  represents the average cost of a single visit by a tourist.

### 1.1. SELECTION MODEL I

Based on the scenic income model, this paper will conduct a general analysis of the region and discuss the characteristics of the “head scenic spots”<sup>2</sup> that affect the scenic spot, and compare the total tourism revenue in the region between the ticket economy model and the region-wide tourism model, then draw conclusions. No “head scenic spots” in the area means that the main tourist scenic spots in the area are of a similar level, and there are no scenic spots that are more attractive to other scenic spots. Based on this, the following assumptions are made:

**Hypothesis 1:** Assume that there are  $N$  scenic spots in the area, and the consumption of each visitor is equal at any of the scenic spots in the area;

**Hypothesis 2:** Assume that regardless of which business model is used in the region, the total cost caused by visitors is equal;

**Hypothesis 3:** Assume that in the region-wide tourism mode, the scenic spots do not accept tickets;

**Hypothesis 4:** If the region has implemented a ticket economy model in the past and intends to switch from the current model to the region-wide tourism model, then it needs a certain conversion cost.

**Hypothesis 5:** the number of scenic spots visited by tourists  $X$  follows the Poisson distribution, that is

$$P(X = k) = \frac{\lambda^k}{k!} e^{-\lambda}, k = 0, 1, 2, \dots,$$

So, the average number of visitors to visit is  $\lambda$ ; in the two types of tourism (ticket economy and region-wide tourism), the average probability of visitors visiting each attraction is  $p_{ticket\ economy}, p_{region-wide\ tourism}$ ; and in two modes the average number of scenic spots visited by tourists is  $Np_{ticket\ economy}, Np_{region-wide\ tourism}$ .

In the ticket economy mode, the factors affecting tourism income include the number of scenic spots, ticket prices, tourist consumption levels and visitor costs; under the region-wide tourism model, the factors affecting tourism revenue include the number of scenic spots, consumer consumption levels, visitor costs, and tickets. The economy converts to the cost of the region-wide tourism model, so the regional income under the two modes is:

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<sup>2</sup>Head scenic spot means the most famous and representative tourist attraction in a region, it is also the most attractive tourist attraction in the region.

$$I_1 = \lambda_{ticket\ economy} * (P_1 + P_2 - C) \quad (1)$$

$$I_2 = \lambda_{region-wide\ tourism} (P_2 - C) - H \quad (2)$$

Where,  $I_1$  represents the tourism revenue under the ticket economy model;  $I_2$  represents the tourism revenue in the region-wide tourism mode;  $\lambda_{ticket\ economy}$ ,  $\lambda_{region-wide\ tourism}$  represents the average tourist visit of the region in the ticket economy and the region-wide tourism mode respectively.  $P_1$  represents the average ticket price of all scenic spots in the ticket economy mode;  $P_2$  represents the average consumption of each tourist in each scenic spot;  $C$  named visitor cost, represents the average cost of a visit by each person in each scenic spot, and  $H$  represents the necessary cost of transforming the ticket economy model into a region-wide tourism model.

According to the Poisson's theorem, in the  $n$ -Bernoulli trial, the probability of occurrence of event  $A$  in one test is  $p_n$  (related to the number of trials  $n$ ), if  $n \rightarrow \infty$ , then  $np_n \rightarrow \lambda$ , and

$$\lim_{n \rightarrow \infty} \binom{n}{k} p_n^k (1 - p_n)^{n-k} = \frac{\lambda^k}{k!} e^{-\lambda}.$$

Therefore, equations (1) and (2) can be expressed as:

$$I_1 = N p_{ticket\ economy} * (P_1 + P_2 - C) \quad (3)$$

$$I_2 = N p_{region-wide\ tourism} (P_2 - C) - H \quad (4)$$

Without loss of generality, combining with hypothesis 3, let

$$p_{region-wide\ tourism} = p_{ticket\ economy} + \delta, \quad \delta > 0 \quad (5)$$

where  $\delta$  represents the incremental effect of tourists after canceling the ticket.

For a region to choose the ticket economy model or the region-wide tourism model is more effective, the most direct way is to compare the income of the two models, using  $\Delta I$  to indicate the difference between the income of the two business models, i.e.,

$$\begin{aligned} \Delta I &= I_2 - I_1 \\ &= N [p_{region-wide\ tourism} (P_2 - C) - p_{ticket\ economy} * (P_1 + P_2 - C)] - H \end{aligned} \quad (6)$$

Let  $\Delta I = 0$ , when the two modes are equal, the number of scenic spots in the area is  $N^*$  as follows:

$$\begin{aligned} N^* &= \frac{H}{p_{region-wide\ tourism} (P_2 - C) - p_{ticket\ economy} * (P_1 + P_2 - C)} \\ &= \frac{H}{\delta * (P_2 - C) - p_{ticket\ economy} * P_1}. \end{aligned} \quad (7)$$

Obviously, when  $\delta * (P_2 - C) - p_{ticket\ economy} * P_1 \leq 0$ ,  $N^* \leq 0$ , as shown in Fig. 1, at this time, the income from the region-wide tourism income cannot exceed the ticket economy. The reason for this situation is mainly because the proportion of ticket income is too large, and the proportion of consumption in the scenic area is too low. In this case, it is very inappropriate to choose the region-wide tourism mode, but whether it is suitable for the ticket economy requires a specific analysis of local tourism resources. For example, ticket sales in some places are an important source of local income (Zhang, et, al., 2017); but some places are caused by

imbalances between tourism resources' supply and demand, they have less tourism resources, such as world cultural heritage<sup>3</sup>.

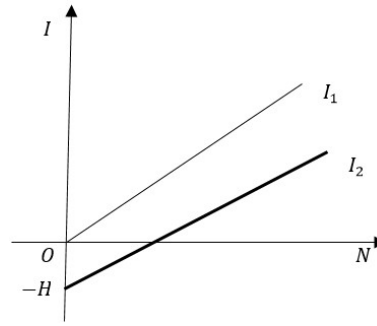


Figure 1

Therefore, only when  $\delta * (P_2 - C) - p_{ticket\ economy} * P_1 > 0, N^* > 0$ , as shown in Fig. 2, it is possible to develop region-wide tourism, and when  $N > N^*, \Delta I = I_2 - I_1 > 0$ , comparing with the ticket economy model, the development of region-wide tourism is more beneficial to the economic development of a region; when  $N < N^*, \Delta I = I_2 - I_1 < 0$ ; comparing with the region-wide tourism model, the development of the ticket economy is more beneficial to the economic development of a region.

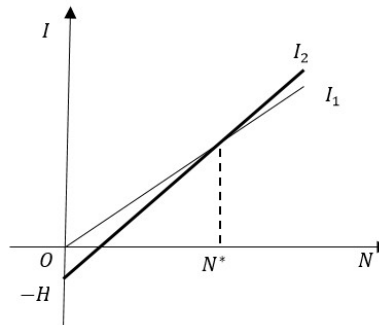


Figure 2

Obviously, the threshold  $N^*$  is different in different regions, so further analysis can be obtained by combining equations (3), (4), (5) and (7) :

<sup>3</sup>Guangrui Zhang, Xiaolan Wei, Deqian Liu. (2005). China Tourism Development from 2003 to 2005: Analysis and Forecast. Beijing, ON: Social Science Academic Press.

$$\begin{cases} \frac{\partial N^*}{\partial H} > 0, \\ \frac{\partial N^*}{\partial P_1} > 0, \\ \frac{\partial N^*}{\partial P_2} < 0, \\ \frac{\partial N^*}{\partial C} > 0, \\ \frac{\partial N^*}{\partial \delta} < 0, \end{cases} \quad (8)$$

It can be known from equation (8) that the threshold value  $N^*$ , the ticket income  $P_1$  in the ticket economy mode, and cost  $C$  are positively related to the switching cost  $H$  of the ticket economy to the region-wide tourism, that is, the higher switching cost  $H$ , the higher threshold  $N^*$ , and so do  $P_1$  and cost  $C$ . In these cases, according to the model, the number of scenic spots required for the development of region-wide tourism within the region will also be very large. It is not conducive under the mode of region-wide tourism, adopting ticket economy model may be more suitable for local tourism development. The average consumption  $P_2$  of tourists in the scenic spot is negatively correlated with the threshold  $N^*$ , and the higher average consumption  $P_2$  of tourists in the scenic spot will produce a lower threshold value  $N^*$ , in this case, it is more beneficial to develop region-wide tourism, and it is also reflected from the side that the more developed the tourism industry is, the more favorable it is for the development of region-wide tourism. The incremental effect  $\delta$  caused by the cancellation of tickets is negatively correlated with the threshold  $N^*$ . The higher  $\delta$  is, the lower  $N^*$  is. The incremental effect of tourists of canceling the ticket reflects the price elasticity of tourism demand, the larger the incremental effect is, the greater the elasticity of tourism demand will be, and the more favorable it will be to cancel tickets and develop region-wide tourism.

## 1.2. SELECTION MODEL II

It can be seen from model (I) that the main factors affecting the income of scenic spots are tourists' willingness to travel to the local area (probability of visiting the scenic area), the ticket revenue of the scenic area, tourists' consumption in the local area and the management cost of the scenic area. Therefore, this part of the paper discusses the factors affecting the income of scenic spots.

There are many factors that affect tourists' willingness to travel to a certain area, such as resource grade, local condition, tourism market factors (e.g., size, range), product orientation, business value, participation of residents and profit model, etc. (Wu, Zhang and Qiu, 2017). The location factor<sup>4</sup> is one of the most important factors affecting tourism development (Lin, 2010). For China, tourism development in the east (where the source of tourists is located) is far better than that in the west (far away from the source of tourists). This means that the willingness of a visitor to go to

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<sup>4</sup>The geographical location of the scenic spot, especially for the source of tourists.



a place is positively related to the distance between the visitor and the area. The traffic situation between tourists and tourist destinations is also an important factor affecting the willingness of tourists (Li, and Chen, 2019). Zhang and Zhao (2018) has shown that improving transportation infrastructure can effectively increase local tourism income. Obviously, the conditions of the transportation infrastructure are positively related to the willingness of tourists to travel to the area (Lumsdon, Downward, and Rhoden, 2006; Gronau 2017). Generally speaking, in a certain area, the average distance between local tourist scenic spots affects the average number of tourists visiting tourist scenic spots (McKercher, 2018). The closer the average distance is, the more tourist scenic spots are visited by tourists, and vice versa; The local traffic conditions will affect the number of tourists visiting tourist scenic spots. The convenient transportation places can effectively close the average distance between the scenic spots, so the number of tourists visiting local tourist scenic spots is positively related to local traffic conditions.

Based on the above discussion, let

$$\begin{cases} p_{\text{ticket economy}} = p(d_1, d_2, F_1, F_2) \\ p_{\text{region-wi tourism}} = p(d_1, d_2, F_1, F_2) + \delta, \delta > 0 \end{cases} \quad (9)$$

and satisfied

$$\begin{cases} \frac{\partial p}{\partial d_1} < 0, \\ \frac{\partial p}{\partial d_2} < 0, \\ \frac{\partial p}{\partial F_1} > 0, \\ \frac{\partial p}{\partial F_2} > 0, \end{cases} \quad (10)$$

where,  $d_1$  represents the distance between the tourist area and the tourist source,  $d_2$  represents the average distance between all scenic spots in the area,  $F_1$  represents the traffic conditions between the tourist area and the tourist source, and  $F_2$  represents the traffic conditions in the area.

Besides, the scenic area business diversity index is a very important factor affecting the tourism income of a certain area, it reflects the comprehensive ability of the scenic spot to provide services such as eating, living, traveling, traveling, purchasing and entertainment, and it is an important manifestation of the development of tourism-related industries in the region, the high scenic area business diversity index means that tourists consume high in the scenic spot (Wang and Sun, 2018). According to Wang and Sun (2018), the scenic area business diversity index can be recorded as:  $v = -\sum_{i=1}^N W_i \ln W_i$ , where,  $W_i$  represents the proportion of various types of operating income to total income.

There is a "head scenic spots" in the tourism resources of each region, and the level of the scenic spot has a great impact on the tourism revenue of the region, especially on ticket revenue. Generally speaking, tickets with higher scenic level are often higher. Therefore, the ticket price  $P_1$  is expressed as a function of the scenic level,  $P_1 = P_1(r)$ , and the average per capita consumption  $P_2$  of each tourist attraction

is expressed as a function of the scenic area business diversity index  $v$ ,  $P_2 = P_2(v)$ , obviously,

$$\begin{cases} \frac{\partial P_1}{\partial r} > 0, \\ \frac{\partial P_2}{\partial v} > 0. \end{cases} \quad (11)$$

Under the conditions of other assumptions, combining equations (7), (9), (10), (11), we can get

$$N^* = \frac{H}{\delta * (P_2(v) - C) - p(d_1, d_2, F_1, F_2)P_1(r)}, \quad (12)$$

and taking the partial derivatives of  $N^*$  with respect to those factors separately:

$$\frac{\partial N^*}{\partial \delta} = \frac{-H * (P_2(v) - C)}{[\delta * (P_2(v) - C) - p(d_1, d_2, F_1, F_2)P_1(r)]^2} < 0, \quad (13)$$

$$\frac{\partial N^*}{\partial d_1} = \frac{\delta \frac{\partial p}{\partial d_1} H}{[\delta * (P_2(v) - C) - p(d_1, d_2, F_1, F_2)P_1(r)]^2} < 0, \quad (14)$$

$$\frac{\partial N^*}{\partial d_2} = \frac{\delta \frac{\partial p}{\partial d_2} H}{[\delta * (P_2(v) - C) - p(d_1, d_2, F_1, F_2)P_1(r)]^2} < 0, \quad (15)$$

$$\frac{\partial N^*}{\partial F_1} = \frac{\delta \frac{\partial p}{\partial F_1} H}{[\delta * (P_2(v) - C) - p(d_1, d_2, F_1, F_2)P_1(r)]^2} > 0, \quad (16)$$

$$\frac{\partial N^*}{\partial F_2} = \frac{\delta \frac{\partial p}{\partial F_2} H}{[\delta * (P_2(v) - C) - p(d_1, d_2, F_1, F_2)P_1(r)]^2} > 0, \quad (17)$$

$$\frac{\partial N^*}{\partial v} = \frac{-\delta \frac{\partial P_2}{\partial v} H}{[\delta * (P_2(v) - C) - p(d_1, d_2, F_1, F_2)P_1(r)]^2} < 0, \quad (18)$$

$$\frac{\partial N^*}{\partial r} = \frac{p \frac{\partial P_1}{\partial r} H}{[\delta * (P_2(v) - C) - p(d_1, d_2, F_1, F_2)P_1(r)]^2} > 0. \quad (19)$$

From the above results, it is easy to get that the incremental effect of tourists after canceling the ticket is negatively correlated with the threshold  $N^*$  (equation (13)), that is, if the attraction of scenic area after canceling the ticket is very large, that is, the  $\delta$  is large, which is very beneficial to the development of the region-wide tourism. The distance between scenic spots and tourist sources  $d_1$  is negatively correlated with the threshold value  $N^*$  (equation (14)), which indicates that scenic spots farther away from the source of tourists are more suitable they are for the development of region-wide tourism. When there is a long distance between the tourist source and the tourist destination, tourists often spend more money and time on the journey. In order to ensure the quality of tourism, they need to stay at the destination for more time to make up for the negative effects brought by the journey. The average distance between scenic spots in the region  $d_2$  is negatively correlated with the threshold value  $N^*$  (equation (15)), the larger the average distance is, the smaller the threshold  $N^*$  is. This indicates that in a given area, it is appropriate to develop region-wide tourism if

the scenic spots are relatively scattered. To develop region-wide tourism, this region can effectively drive other industries (such as urban transportation and consumption outside scenic spots) through tourism, and promote local development as a whole. The distance between tourist areas and tourist sources  $F_1$  has a positive correlation with the threshold value  $N^*$  (equation (16)), which indicates that places far away from tourist sources have higher requirements for the development of region-wide tourism. If those place want to develop region-wide tourism, they need more scenic spots. The basic traffic condition  $F_2$  in the region has a positive correlation with the threshold value  $N^*$  (equation (17)), which indicates that if the threshold value  $N^*$  is raised in the place with good traffic conditions in the current city, it will be unfavorable for the selection and development of region-wide tourism. But as long as the number of scenic spots in the region is large enough, the development of region-wide tourism is appropriate. The smaller the local threshold  $N^*$  with a high scenic area business diversity index of the scenic spot is, the more favorable it is for the development of the region-wide tourism (equation (18)). The higher the scenic area business diversity index of the scenic spot is, the more favorable it will be for the tourism consumption of the region (Wang, Sun, 2018). Head scenic spots' level  $r$  is positively correlated with the threshold  $N^*$  (equation (19)), which indicates that it is very suitable to develop the ticket economy in the areas where head scenic spots is in high level, and high-level tourist scenic spots are often the main contributors to visitor flow, so the ticket revenue will also account for a higher proportion of total tourism revenue.

### 1.3. SELECTION MODEL III

Under the region-wide tourism model, the total number of visits to each attraction has increased because there is no entrance fee, and according to the definition of region-wide tourism (Li, 2016), the average consumption of each tourist in each scenic spot is also increased. At the same time, as the total number of visits increases, the cost of managing the scenic spots will also increase. Therefore, Hypothesis 1 and Hypothesis 2 need to be modified.

Assuming that consumer consumption in the region-wide tourism model is set to  $k_1 P_2$ , where  $k_1 \geq 1$ , and  $P_2$  represents the consumption income in the region under the original model; under the region-wide tourism, the management cost generated by the tourists is  $k_2 C$ , where  $k_2 \geq 1$ , and  $C$  represents the cost of developing tourism in the region under the original model.

Therefore, under the condition that other assumptions remain unchanged, equation (6) can be expressed as follows:

$$N^* = \frac{H}{p_{\text{region-wid tourism}}[k_1(P_2) - k_2 C] - p_{\text{ticket economy}} * (P_1 + P_2 + P_3 - C)}$$

If  $k_1 = k_2 = k$ , then we have

$$N^* = \frac{H}{(P_2 - C)[p_{\text{ticket economy}}(k - 1) + \delta k] - p_{\text{ticket economy}} P_1} \quad (20)$$

Comparing equation (7) and (20), when considering the incremental stimulation of tourists brought by region-wide tourism, the value of  $N^*$  is further reduced ( $k > 1$ ), so the original conclusion does not change.

### 3.SUMMARY

Based on the above analysis, we find that the number of scenic spots in the tourist area is a very important factor in choosing the region-wide tourism model and the ticket economy model. Generally speaking, the higher the number of scenic spots in tourist areas, the more advantageous it is to develop region-wide tourism. Among them, the number of tourist scenic spots in each place is more or less relative to the threshold number  $N^*$  of the scenic spot in the region. Considering the specific factors affecting the threshold  $N^*$ , the following conclusions can be drawn:

**Table1:** the Selection of Tourism Model

Tourism Model		Number of scenic spots	
		more	less
Distance from visitors	far	region-wide tourism	Not suitable for development tourism
	near	region-wide tourism or ticket economy	ticket economy
Average distance between scenic spots	far	region-wide tourism	Not suitable for development tourism
	near	ticket economy	ticket economy
Tourist conditions from tourist sources to tourist destinations	good	region-wide tourism or ticket economy	ticket economy
	bad	region-wide tourism	Not suitable for development tourism
Transportation conditions in tourist destinations	good	ticket economy	ticket economy
	bad	region-wide tourism	Not suitable for development tourism
The scenic area business diversity index	high	region-wide tourism	region-wide tourism
	low	ticket economy	Not suitable for development tourism
the level of head attraction	high	region-wide tourism or ticket economy	ticket economy
	low	region-wide tourism	Not suitable for development tourism

### 4.THE CHOICE OF ZHAOSU COUNTY

Zhaosu County is located in the upper reaches of the Ili River in the northwestern part of the Xinjiang Uygur Autonomous Region. It is a high-level inter-mountain basin in

the southwest corner of the Ili region. The boundary line is more than 200 kilometers long, bordering the Republic of Kazakhstan in the west and the Hark Mountain and the Baying in the south. Chengxian County and Wensu County are opposite each other; the east is bounded by the DaxietaiAleqiaomu Mountain and the Turks; the north is the main peak of the Arakkar Mountain and adjacent to Chabuchar County. Zhaosu County has a vast territory and many tourist scenic spots. It is the only county in Xinjiang without deserts and Gobi. It is a very suitable place for tourism.

According to the data of Sina.com<sup>5</sup> and the “Interim Measures for the Administration of Tickets for Zhaosu County Scenic Spots (Points)”<sup>6</sup>, as of August 31, 2017, Zhaosu County received a total of 1,241,800 domestic tourists; the tourism income was 447 million yuan; The ticket price is 100 yuan / person, and the calculated ticket income is about 124 million yuan.

According to the survey data in Xinjiang<sup>7</sup>, 39% of the respondents have never been to Xinjiang before, 31% of the respondents have been to Xinjiang before but have not been to Zhaosu, 24% of the respondents have been to Zhaosu before, and 6% of the respondents are not clear about Zhaosu. Therefore, by taking the number of tourists to Xinjiang as the basis, it can be concluded that the proportion of people willing to travel to Zhaosu is  $p_{ticket\ economy} = \frac{24}{24+31}$ , so  $\delta = 1 - p_{ticket\ economy} = \frac{31}{24+31}$ , so equation (7) can be expressed as:

$$N^* = \frac{H/15}{\frac{31}{55}(4.47 - C) - 1.24 * \frac{24}{55}} \quad (21)$$

Assuming that the operating cost borne by Zhaosu due to tourism is 100 million yuan ( $C = 1$ ), then equation (21) can be expressed as:

$$N^* = \frac{H * 11}{3.37 * 93 - 1.24 * 72} = 0.047H. \quad (22)$$

Obviously, if Zhaosu county needs 5 billion to develop region-wide tourism, according to the equation (22), the threshold of Zhaosu  $N^* = 2.35$ . According to “the Zhaosu county tourism scenic area (spot) ticket management interim measures (trial)”, there are 6 scenic spots covered by the packages that are Xiata Scenic Area, Gedeng

<sup>5</sup><http://news.sina.com.cn/c/2017-09-14/doc-ifykyfwq7253245.shtml>

<sup>6</sup><http://www.zhaosu.gov.cn/info/1065/5455.htm>

<sup>7</sup>See the attachment

<sup>8</sup>According to the “highway engineering technical standard” promulgated on January 29, 2004, the design traffic volume of expressways and first-grade highways with trunk functions should be predicted by 20 years, the design traffic volume of first-grade highways with distribution functions and second-grade and third-grade highways should be predicted by 15 years, and the fourth-grade highways can be determined according to the actual situation. Generally speaking, the benefits of a single investment are many years, so the conversion cost H needs to be calculated on average to every year. According to the standard, 15 years were selected for this study. So the switching cost every year is H/15.

Stele Scenic Area, Shengyou Temple Scenic Area, Grassland Stone Man Scenic Area, Shuixian Cave Scenic Area, Princess Xijun Cemetery Scenic Area, which means  $N = 6 > 2.35 = N^*$ . Therefore, it is more advantageous for Zhaosu County to choose to develop region-wide tourism.

## CONCLUSION

Region-wide tourism is an effective way to promote the comprehensive development of regional economy and an important direction of tourism development in the future. Under the mode of region-wide tourism, some regions which have rich tourism resources can take tourism as the leading industry to drive the comprehensive development of local industry and effectively drive the ecological development of economy. According to the actual situation of various regions, however, it may not be a very good choice for some regions to develop region-wide tourism in the short term, and the ticket economy plays a more important role in the development of local areas.

As shown in the above table 1, it is very suitable for the development of region-wide tourism in places with many scenic spots and far away from the source of tourists (such as Xinjiang); the development of region-wide tourism and ticket economy are both suitable in where there are many scenic spots and is close to source of tourists, such as Beijing. The two models both can bring a very large economic benefits, but relying too much on the ticket economy, then constantly increasing the ticket price does deprive some people of the right to enjoy resources (Yi2005), so this paper recommends giving priority to region-wide tourism; it is very suitable for the development of ticket economy for places with a few scenic spots and close to the source of tourists; if the number of scenic spots is not only small, and the region is also far from the source of tourists, this kind of places are not suitable for the development of tourism.

Region-wide tourism and ticket economy may be both suitable for the areas where there are a large number of scenic spots, and the scenic spots are relatively concentrated. If these areas have to make a choice, there is a need to compare the respective advantages of the number of scenic spots and the concentration of scenic spots. If the number of scenic spots is dominant, the region-wide tourism mode shall be chosen, and if the concentration of scenic spots is dominant, the ticket economy mode shall be chosen. For places with many scenic spots and they are relatively scattered locations, this paper holds that it is very appropriate to develop region-wide tourism in those places. Region-wide tourism model can connect scattered scenic spots through infrastructure construction, drive other industries with tourism, and develop "tourism +" model to improve the economy, society and people's livelihood of this region to a better condition. For places where scenic spots are concentrated but the number is relatively small, this paper suggests developing the ticket economy model to ensure their tourism income, such as Tai'an City, Shandong province. However, areas with few and scattered scenic spots, without special scenic spots (such as world cultural heritage sites and national nature reserves) are not suitable for tourism development.

Regardless of the traffic conditions between the tourist destination and the tourist source or the traffic conditions within the tourist area, the better the current traffic

conditions, the better the development of the ticket economy. However, as long as the number of scenic spots in the region is large enough, developing region-wide tourism is still the best choice. For those places with poor transportation conditions, if the number of scenic spots is large, region-wide tourism can be developed. However, in areas with few scenic spots and poor traffic conditions, it is relatively more beneficial for the local government to develop ticket economy if there is a higher-level scenic spot. If there is no higher-level scenic spot, then the region is not suitable for tourism development.

The scenic area business diversity index is a comprehensive performance of various local industries. The high scenic area business diversity index indicates that tourism-related industries are relatively developed in the area, and the local consumption income brought by tourism is at a relatively high level. It is very beneficial to develop region-wide tourism under such conditions. The development of tourism-related industries is also one of the typical characteristics of region-wide tourism. Therefore, if the tourism-related industries in the tourist areas are very booming, it is more appropriate to develop region-wide tourism in the region. So, improving the tourism-related industries and increasing the number of the tourism-related industries are the effective approaches for developing region-wide tourism.

The head-scenic-spot level of the scenic area is a very important factor affecting ticket sold. In most areas of China, head scenic spots often the biggest contributor to passenger flow. According to the analysis in the previous section, in a region with a higher-level scenic spot (such as World Heritage, National 5A Level Scenic Spot), if there are many scenic spots and rich tourism resources in the region, then region-wide tourism is the preferred mode of tourism development in the region; If there are no other tourism resources in the area other than head scenic spots, in order to ensure the development of local tourism, the ticket economy is the preferred mode of tourism development in the region.

#### DISCUSSION

This paper presents a theoretical model that chooses the more appropriate tourism model for a region where intends to develop tourism, and gives some suggestions for the places. There are also several limitations to this research. We have done many qualitative analysis which may give some ambiguous views. The choice of tourism mode is not absolute in some places, such as Beijing. Beijing has many good scenic spots and perfect relevant industrial system, but there are so many tourists that no matter what choice has been made, the comprehensive tourism income of Beijing will be not significantly affected. Second, in analyzing the model choice of Zhaosu County, not all factors (such as traffic, geographical location, and industrial development) were taken into account, and only the number of tourists was calculated, but this did not affect the final conclusion. Third, we have not taken the visitors' stay time into account. The stay time is a crucial factor for visitor's consumption (Martinez-Garcia and Raya, 2008; Alegre, and Pou, 2006), which plays an important role in comprehensive income. Notwithstanding these limitations, we believe our resolution is of great reference value for local governments.

## REFERENCES

- Alegre, J., and Pou, L. 2006. The length of stay in the demand for tourism. *Tourism management*, 27(6), 1343-1355.
- Gronau, W. 2017. Encouraging behavioural change towards sustainable tourism: a German approach to free public transport for tourists. *Journal of sustainable Tourism*, 25(2), 265-275.
- Guangrui Zhang, Xiaolan Wei, and Deqian Liu. 2005. China Tourism Development from 2003 to 2005: Analysis and Forecast. Beijing, ON: Social Science Academic Press.
- Guohua Wang. 2017. On the Path and Methods of the Strategic Implementation of Region-wide tourism. *Journal of Beijing Union University ( Humanities and Social Sciences)*, 15(03):12-18.
- Hardy, A., Beeton, R. J., and Pearson, L. 2002. Sustainable tourism: An overview of the concept and its position in relation to conceptualisations of tourism. *Journal of sustainable tourism*, 10(6), 475-496.
- Jinzao Li. 2016. From scenic tourism to region-wide tourism, strive to create a new situation of China's "13th Five-Year" tourism development. *Hainan : National Tourism Conference*.
- Junfan Lv. 2013. Taking the "Ocean Region-wide tourism" as a Service for the "Five in One" Modernization Construction: A Case Study of Liaoning Coastal Economic Zone. *Proceedings of the 2013 China Tourism Science Annual Conference. Beijing: China Tourism Academy*.
- Keqiang Li. 2018. Government working report. Beijing : The state council.
- Li, M., and Chen, J. 2019. High-speed rail network in China: the contribution of fast trains to regional tourism and economic development. *Tourism Review*.
- Lindberg, K., and Aylward, B. 1999. Price responsiveness in the developing country nature tourism context: review and Costa Rican case study. *Journal of Leisure Research*, 31(3), 281-299.
- Lumsdon, L., Downward, P., and Rhoden, S. 2006. Transport for tourism: can public transport encourage a modal shift in the day visitor market?. *Journal of Sustainable tourism*, 14(2), 139-156.
- Martinez-Garcia E, and Raya J M. 2008. Length of stay for low-cost tourism, *Tourism management*, 29(6): 1064-1075.
- McKercher, B. 2018. The impact of distance on tourism: a tourism geography law. *Tourism geographies*, 20(5), 905-909.
- Minmin Zhang, Xinliang Cai, and Jianxiong Qin. 2017. Research on the Reasonable Ticket Pricing Strategy for China's Scenic Spots. *Prices Monthly*, (04):24-27.
- Renwei Wu, and Jimei Yang. 2005. A Study of the Problems, Misunderstandings and Countermeasures of Heritage Tourism Development in China: Thoughts about the Price Hike of World Heritage in Beijing, *Tourism Science*, (02):19-23.
- Shaohua Yi. 2005. Cold thinking on the hot ticket price increase in scenic spots. *Price:Theory& Practice*, (01):18-19.
- Sheng Liu, Naihua Gu, and Xiuying Chen. 2016. Policy Discontinuity, Institutional Environment and Sustainable Growth of Service Sector: Based on Perspective of Provincial Leaders' Turnover, *Finance & Trade Economics*, (10):147-161.



- Shunli Gao. 2007. Why is the persistent illness of "zero negative group fee" in tourism not cured for a long time? *China Economic Weekly*, (38):34.
- Wang, L., and Yotsumoto, Y. 2019. Conflict in tourism development in rural China. *Tourism Management*, 70, 188-200.
- Wenjun Zuo, Qingzhong Ming, and Yuanyuan Li. 2016. A Study of Characteristics, Developing Momentum and Paths to the Region-based Tourism. *Journal of Leshan Normal University*, 31(11):91-96+136.
- Wu, W., Zhang, L., and Qiu, F. 2017. Determinants of tourism ticket pricing for ancient villages and towns: Case studies from Jiangsu, Zhejiang, Shanghai and Anhui provinces. *Tourism Management*, 58, 270-275.
- Xi Zhang, and Xin Zhao. 2018. The Impact of Transport Infrastructure and Its Spillover on Tourism: Based on the Data of Hotel, Travel Agencies and Scenic Spot. *Business Management Journal*, 40(04):118-133.
- Xinjia Li, and Lingyun Zhang, Cui. (2013). Comprehensive tourism: idea innovation on building a world- class tourism destination. *Human Geography*, 28(03):130-134.
- Yanbing Wen, 2014. A New Broom Sweeps Clean: Is There Chinese –Style Political Business Cycle? *Finance & Trade Economics*, (11):111-124.
- Yuanyuan Lin. 2010. Studying on Economic Performance of China Region-wide tourism Industry and its Effecting Facto. Unpublished doctoral dissertation, Nanjing University of Aeronautics and Astronautics The Graduate School College of Economics and Management, Nanjing.
- Zhenzhi Yang. 2016 The connotation and development stage of region-wide tourism. *Tourism tribune*, 31(12):1-3.