Time Evolution and Application of Inbound Tourism Market in Five Northwest Provinces

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Abstract. The eastern part of China's inbound tourism has taken the lead in developing compared with the western part, resulting in the imbalance between the eastern and Western regions. Therefore, this paper analyses the evolution characteristics of the inbound tourism market in the western region, and is familiar with the distribution law of the inbound tourism market. It is of great significance to accurately locate the inbound tourist market and narrow the regional differences. In this paper, R/S analysis method is used to quantify the time-varying trend of the number of inbound overnight tourists in five northwest provinces. The results show that the changes of inbound overnight tourists in the five northwest provinces are unstable. The number of inbound overnight tourists in Shaanxi and Ningxia shows an increasing trend. The number and growth trend of inbound overnight tourists in Qinghai are lagging behind. The change trend of the number of overnight inbound tourism in Gansu Province is "weak" growth trend. The number of inbound overnight tourists in Xinjiang lacks strong growth momentum.

Introduction

The western region is the most abundant area of tourism resources in China, which has a strong attraction for international tourists. By studying the law of inbound tourism in the west, we can adopt appropriate countermeasures according to local conditions and make contributions to the development of the west.

Data Selection and Method Introduction

The data in this paper come from the "accommodation, catering and tourism" part of the annual Chinese statistical yearbook module in the official website of the National Statistical Bureau of the People's Republic of China. The specific data indicators selected are the number of overnight tourists (10,000 people) in the five northwest provinces of the Silk Road (Shaanxi, Gansu, Qinghai, Ningxia, Xinjiang and autonomous regions, respectively). [1-3]The selected year spans from 2000 to 2012.

This paper uses R/S analysis method to quantify the temporal and spatial variation trend of the number of overnight tourists in the five northwest provinces of the Silk Road Economic Belt, in order to visually show the trend of inbound tourism in the five northwest provinces of the Silk Road Economic Belt. R/S analysis is an important analytical tool in fractal theory. [4]

The main principles of R/S analysis are as follows:

For a time series $\{\delta(t)\}$,t=1,2……For any positive integer $N \geq 1$, Define mean series

$$\langle \delta \rangle_N = \frac{1}{N}\sum_{t=1}^{N}\delta(t) \qquad \text{N=1,2,…} \qquad (1)$$

The cumulative deviation is

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$$X(t,N)=\left\{\delta(u)-\langle\delta\rangle_N\right\}, \quad t\in[1,N] \tag{2}$$

Extreme difference is

$$R(N)=\max X(t,N)-\min X(t,N), \quad N=1,2,\ldots \tag{3}$$

Standard deviation is

$$S(N)=\left[\frac{1}{N}\sum_{t=1}^{N}\left(\delta(u)-\langle\delta\rangle_N\right)^2\right]^{\frac{1}{2}}, \quad N=1,2,\ldots \tag{4}$$

So,Hurst empirical relation is

$$R(N)/S(N)\sim(N)^H \tag{5}$$

$$R_t=2^{2H-1}-1 \tag{6}$$

In formula H is Hurst exponent and R_t is the first order autocorrelation coefficient of difference sequence. The autocorrelation value must be between - 1 and 1, i. e. $-1\le R_t\le 1$. It can be concluded that the value of H must be between $0\sim 1$, that is, $0\le H\le 1$. If the calculated H value is greater than 1, the case of $R_t>1$ will occur, indicating that there is some error in the calculation process. [5]

Hurst et al. have proved that if $\{\delta(t)\}$ and T are independent random sequences with limited variance, there is H = 0.5. Corresponding to different Hurst index H (0 < H < 1), According to the value of Hurst index, the sustainability or anti-sustainability strength of trend components can be judged, and the classification table of Hurst index is summarized. [6-8]

Results and discussion

Preliminary judgment on the changing trend of the number of inbound overnight tourists in five northwest provinces.

From Fig. 1 to Fig. 5, we can make a preliminary judgment on the changing trend of the number of inbound overnight tourists in the five northwest provinces. Firstly, through the observation of abscissa coordinates, we can see that the number of inbound overnight tourists in Shaanxi Province and Xinjiang Uygur Autonomous Region is much higher than that in other areas within the five northwest provinces of the Silk Road, and the scale of inbound overnight tourists in the two areas occupies an absolute advantage in the five northwest provinces of the Silk Road.

Form Judgment of the Quantity Curve of Inbound Overnight Tourists in the Five Northwest Provinces of the Silk Road.

Through comparison, it can be found that the number curves of inbound overnight tourists in Shaanxi, Gansu, Ningxia Hui Autonomous Region and Xinjiang Uygur Autonomous Region are similar. The number curves of inbound overnight tourists in the four regions belong to three types: obvious rising type, violent fluctuating type and shock rising type. It is noteworthy that the number curve of overnight tourists in Qinghai Province shows a downward trend from 2002 to 2003, from 2007 to 2008, and an upward trend from 2003 to 2007, from 2008 to 2011. However, the number of inbound overnight tourists does not show a more obvious growth, so the curve shape of the number of inbound overnight tourists can be summarized as "shock, the rising trend is not obvious".

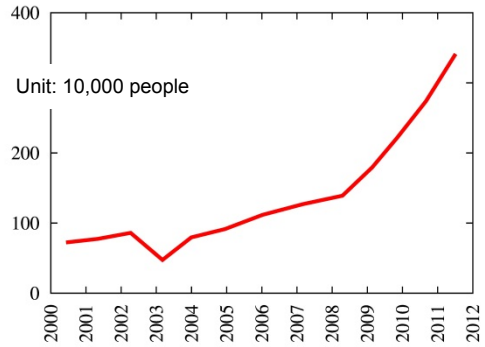

Figure. 1 Changes in the Number of Inbound Overnight Tourists in Shaanxi Province

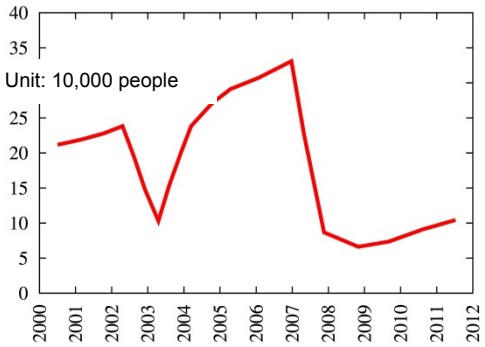

Figure. 2 Changes in the Number of Inbound Overnight Tourists in Gansu Province

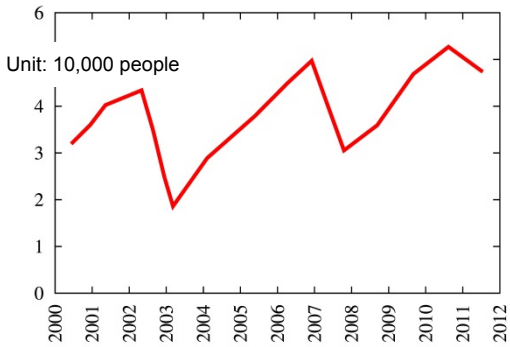

Figure. 3 Changes in the number of inbound overnight tourists in Qinghai Province

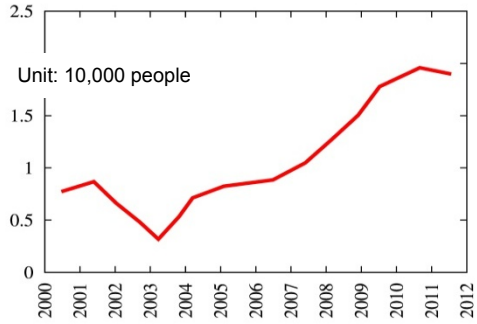

Figure. 4 Changes in the Number of Overnight Tourists Entering Ningxia Hui Autonomous Region

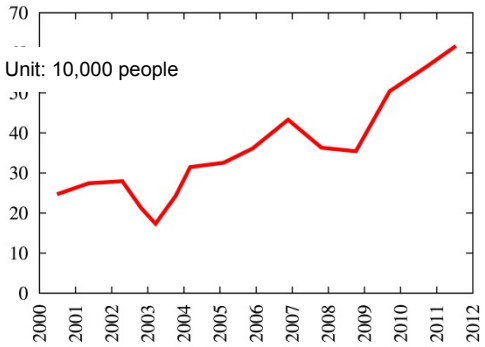

Figure. 5 Changes in the number of inbound overnight tourists in Xinjiang Uygur Autonomous Region

Quantitative description of the number of inbound overnight tourists.

According to the calculation method of Hurst index mentioned above, the number of inbound overnight tourists in the five northwestern provinces of the Silk Road is calculated. The Hurst index value of inbound overnight tourists in the five northwestern provinces of the Silk Road is shown in Table 1. [9-10]

Table 1 Increasing Trend of Overnight Inbound Tourists in Five Northwest Provinces Hurst Index

Province	Hurst index value	Persistent strength
Shaanxi	0.7056	Stronger
Gansu	0.6209	Weaker
Qinghai	0.4628	Anti sustainability
Ningxia	0.7728	strong
Xinjiang	0.5241	Very weak

From Table 1, the Hurst index of the number of inbound overnight tourists in the five northwestern provinces of the Silk Road shows a pluralistic change. Among them, the Hurst index of the number of inbound overnight tourists in Ningxia is 0.7728, which ranks first among the five northwest provinces of the Silk Road, and its sustainability intensity is "strong", which shows that the growth trend of the number of inbound overnight tourists in Ningxia is very strong. The Hurst index of the number of inbound overnight tourists in Shaanxi Province is 0.7056, and the sustainability intensity is "strong". The growth trend is basically consistent with the growth trend of tourism foreign exchange income. In addition to Shaanxi and Ningxia, the growth of the number of overnight tourists in the other three areas of the five northwest provinces of the Silk Road is obviously lacking in stamina. The Hurst index values of Gansu and Xinjiang are 0.6209 and 0.5241 respectively, and their persistence intensity is "weak" and "very weak", respectively. Compared with the growth of Tourism Foreign Exchange income in the two areas, there is a clear backward trend. It is noteworthy that the change trend of the number of inbound overnight tourists in Qinghai, whose Hurst index value is 0.4628, shows a certain "anti-sustainability", that is, the trend of the overall increase in the past indicates the overall decrease in the future, and vice versa. Although its sustainability intensity is "very weak", the trend of "anti-sustainability" has added more uncertainties to the change of overnight tourists in Qinghai.

Conclusion

The growth trend of inbound overnight tourists in Shaanxi and Ningxia is relatively consistent. Not only does the intensity of sustainability show a "strong" or "strong" change, but also the growth trend is stronger than the average level of the five northwest provinces along the Silk Road. There are differences in the curve shape of the number of inbound overnight tourists in Qinghai, and the number of inbound overnight tourists in Qinghai has a "counter-sustainability" change. In addition, the growth trend of the number of inbound overnight tourists in Qinghai lags behind the average level of the five northwest provinces of the Silk Road. The change trend of the number of overnight inbound tourism in Gansu Province is "weak" growth trend. The number of inbound overnight tourists in Xinjiang lacks strong growth.

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