

# An Analysis of the Spatio-temporal Disparities of Inbound Tourism Economy in Western China

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## **Abstract**

*Taking the 12 provinces of Western China (city, district) as the research unit and the tourism foreign exchange earnings as the measure, with the analysis methods of range, standard deviation, extreme ratio and coefficient of variation, this paper analyzes the spatio-temporal disparities of inbound tourism economy in western China. The results show that: the absolute difference and relative difference of inbound tourism economy in the western area shows a tendency to expand on the whole, the level of entry tourism economic development is extremely unbalanced and the gap is widening. Therefore, there is an urgent need to take and effective control measures to narrow the gap between regional internal and promote the regional coordinated development.*

**Key words:** Western China, inbound tourism economy, spatio-temporal disparities

## **1. Introduction**

As an important part of the third industry and the consumer economy, tourism plays an important role in international trade and national economy and many countries or regions have it as an effective means to narrow the regional difference. Especially, inbound tourism development level is an important symbol of

measuring the internationalization and maturity of tourism industry in a certain country or region. Because of its rich tourism resources, there is a great congenital advantage for developing tourism industry in the western China. In fact, since China implemented the strategy of west development in 1999, on the basis of fast development of the domestic tourism, inbound tourism development level in Western China has got a significant boost. Nonetheless, because of being restricted by tourism resources, social economy, traffic location, infrastructure and other conditions, a bigger difference exists in provincial inbound tourism economy development level of the western region. Therefore, it's helpful to understand the changing process, present situation and development trend of regional differences correctly by strengthening the analysis of space-time difference of inbound tourism economic in the western region and it has also important practical significance for narrowing the gap between regional economic development by making targeted, effective regional regulation policy to promote coordinated development of inbound tourism in western China. Regional difference of China's inbound tourism economic development has always been the hot topic of academic circles. But most of the relevant research has taken provincial or the three zones <sup>[1-6]</sup> as the research object exploring inbound tourism economic differences between Chinese provincials or among the three regions of the eastern, central and the western region. Yet research about analyzing evolution of the spatio-temporal disparities of inbound tourism economy from the level of region and zone is rare. Even so, the only research achievements also focuses on China's eastern coastal inbound tourism hotspots <sup>[7-9]</sup>, and the research about the difference of inbound tourism economic development in western China and its space-time evolution pattern, has not gotten enough attention among academics. Based on this, this paper analyzes the evolution characteristics of the western provincial inbound tourism economic differences of space and time taking western region of China as the research object, so as to provide decision basis for the establishment of inbound tourism coordinated development strategy of the western region.

## **2. Spatial and temporal scope definition of this study**

China's western development strategy was formally introduced in 1999 and determined the scope of the western development including 12 provinces, autonomous regions, municipalities directly under the central government (hereinafter referred to as the provinces) such as Chongqing, Sichuan, Guizhou, Yunnan, Tibet, Shanxi, Gansu, Qinghai, Ningxia, Xinjiang, Inner Mongolia, Guangxi which were collectively referred to as the western regions. There are two reasons why this paper takes the 12 provinces in Western China as the study unit of regional sample. Firstly, Chinese comprehensive development of regional tourism resources usually takes provinces as the regional unit and the development of tourism is taken as one part of land development and social economic development of the whole area; Secondly, under the condition of market economy, various provinces are relatively independent economic interests of entities and is regarded as the most important reference level of the national regional economy difference regulation change.

In the time range, this paper examines the changing trend of inbound tourism economy differences in Western region from 2004 to 2013, altogether 10 years. The reason lies in that tourism was taken as the pillar industry to give priority to the development and the key support in western provinces area since 2003. Although the inbound tourism has gotten a positive development based on the vigorous development of the domestic tourism, the entry tourism economic development level presents the difference which offers a factual basis for the Western regional tourism regulation policy. That is to say, the situation from 2004 to 2013 can roughly reflect the changing status of situation difference of 10 years' inbound tourism

development in the western provinces. Therefore, this paper chooses the years from 2004 to 2013 as the inspection time.

### 3. Data sources and studying method

#### 3.1 Data sources

Measuring the difference of inbound tourism economy development situation is always based on some certain indexes which can measure the overall shape of every regional inbound tourism. Studying on inbound tourism from the angle of economy, foreign exchange earnings from tourism is mainly the optional index which can basically reflect the development state of inbound tourism economy of a country or region. In addition, relatively perfect of Chinese index system of international tourism statistics, earlier statistical time on tourism foreign exchange income provinces and more consistent statistical caliber can ensure comparability and continuity of the index. Therefore, this paper selects tourism foreign exchange earnings as indicators to measure the development differences in the western region of inbound tourism economy and data sources are chosen from China Tourism Statistical Bulletin published on the website of National Tourism Administration of China (2004-2013).

#### 3.2 Studying method

This article carries on the analysis about the time evolution characteristics of inbound tourism economy difference from two aspects: the absolute difference and relative difference of time change of tourism foreign exchange income. The former measures the difference of economic gross area which can be affected by the price index and dimension; the latter itself is a ratio without dimension, so it is not affected by the time and other factors and there are extensive comparability. In order to reflect accurately time evolution characteristics of the western region economic differences of inbound tourism, this paper uses range and standard deviation to measure the absolute difference of the inbound tourism economy in western region and uses extreme ratio and coefficient of variation to measure the relative difference of the inbound tourism economy in west area of china.

The range "R" is also called full pitch which reflects the maximum amplitude of inter regional absolute difference change and its calculating formula is:

$$R = X_{\max} - X_{\min}$$

Extreme ratio "K" is also called relative range which reflects the maximum amplitude of inter regional relative difference change and its calculating formula is:

$$K = X_{\max} / X_{\min}$$

Among them, Xmax is the maximum value of tourism foreign exchange income areas in Western China and Xmin is the minimum value of foreign exchange income area tourism in West china.

The standard deviation "σ" reflects the absolute discrete degree of regional tourism economy and its calculating formula is:

$$\sigma = \sqrt{\frac{1}{n} \sum_{i=1}^n (X_i - \bar{X})^2}$$

The coefficient of variation "CV" can measure relative discrete degree of the regional inbound tourism economy and its calculating formula is:

$$CV = \sigma / \bar{X}$$

Among them,  $X_i$  is tourism foreign exchange revenues of  $i$  region;  $\bar{X}$  is the average value of total tourism foreign exchange earnings of 12 provinces or regions in Western Region;  $n$  is the number of regions and this paper takes 12.

Studying on spatial pattern and evolution characteristics of inbound tourism economy in west area of China, using the analysis methods of regional economic spatial disparities, this paper takes 150%, 100% and 50% of average level of the total income of tourism foreign exchange in the western region as division standard of the inbound tourism economic spatial difference based on which to analyze basic spatial pattern and evolution trend of inter provincial differences of inbound tourism economy in West China

#### 4. The result analysis

##### 4.1 The time evolution of inbound tourism economy difference in western region

The results shown in Table 1 reflect the calculation value of differences and changes of inbound tourism development in western area according to the calculation formula of range, standard deviation, coefficient of variation and extreme ratio. To reflect economic development differences of inbound tourism of the western provinces and autonomous regions over the years more intuitively, the data in Table 1 is shown like Figure 1 and figure 2. From Table 1, figure 1 and figure2, the time evolution of inbound tourism economy difference in western region presents the following two characteristics:

(1) the degree of absolute differences is being increased. It is seen from table 1 and figure1, range and standard deviation increased to \$2406000000 and \$757502300 separately in 2013 from \$420740000 and 140979300 in 2004 which shows that the inbound tourism economic absolute differences of western region interprovincial in general continue to expand in the 10 years from 2004 ~ 2013. Seen from the range and standard deviation, absolute difference expansion of inbound tourism economy in the western region can be divided into two stages: the stage of gradual expansion from 2004 to 2009 and the stage of rapid expansion showing the overall gap evolution path from expanding gradually to widen the gap rapidly starting in 2010

(2) the relative difference has obvious fluctuation and shows mainly increasing trend. On the one hand, seen from table 1 and figure 2, after declined slightly than in 2005, extreme value increased year by year from 2006 to 2008, dropped significantly from 2009 to 2010, increased slightly in 2011, reached a maximum of 10 years in 2012, and in 2013 dropped sharply to the lowest rate for 10 years showing that relative difference of inbound tourism in western economy fluctuates obviously. On the other hand, taking 2008 as the division line, the coefficient of variation fluctuations in a slight growth before 2008 and reached a maximum of 10 years in 2008 because of the influence of Sichuan Wenchuan earthquake; after the year, its fluctuations shows downward trend in gradually, but is higher than the level before 2008 showing that the relative difference of inbound tourism economy in West China area is still larger and interprovincial inbound tourism development is not extremely balanced.

**Table1 The absolute and relative difference of inbound tourism economy in the western area of China (2004~2013)**

Y	AD ( 10 thousand dollar )		RD	
	R	SD	ER	CV
2004	42074	14097.93	247.05	0.8136
2005	52571	17560.45	229.57	0.8156
2006	65601	21087.35	270.96	0.8208
2007	85697	27125.36	329.34	0.8131
2008	100454	31954.70	334.73	1.0190
2009	116800	35838.56	293	0.9937
2010	131800	42518.43	220.67	0.9691
2011	160280	52580.40	259.52	0.9054
2012	194200	64454.34	389.40	0.9166
2013	240600	75750.23	201.50	0.9468

Absolute Difference=AD

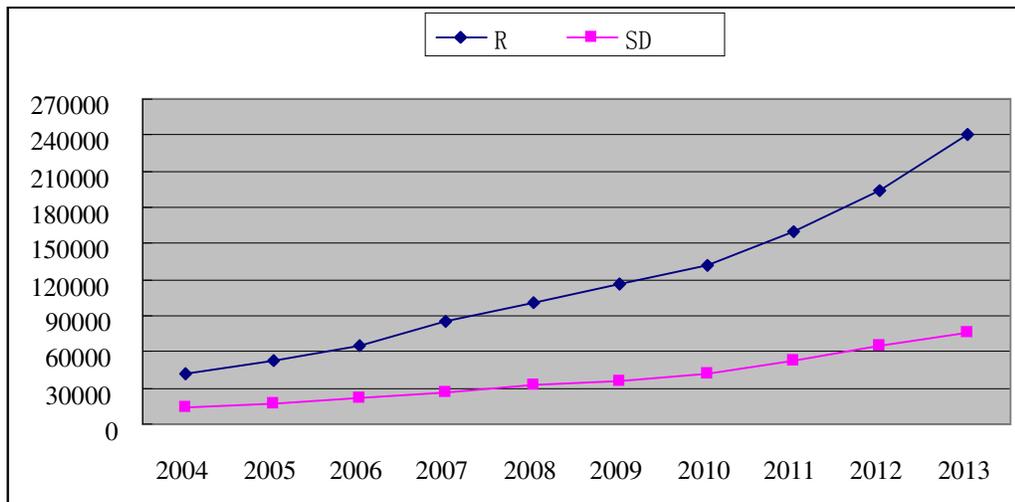
Relative Difference=RD

Rang=R

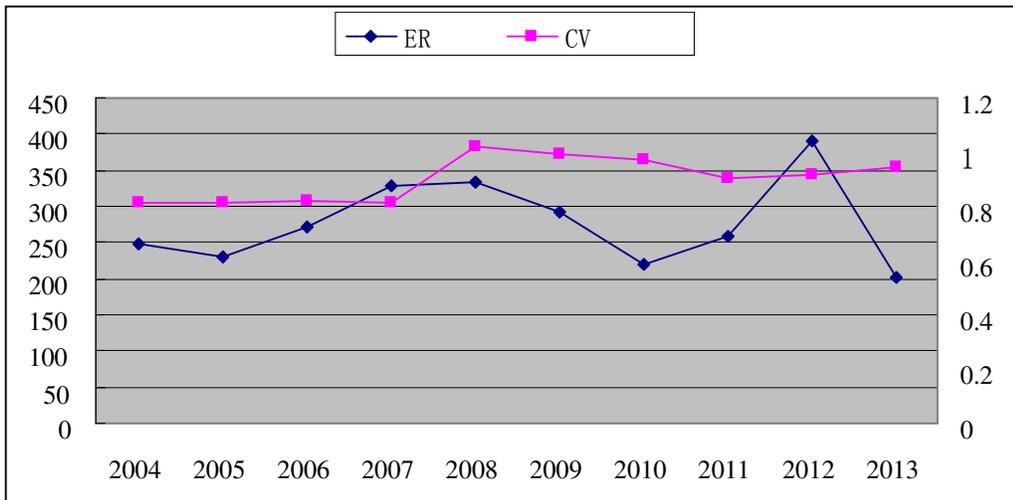
Standard Deviation=SD

Extreme Ratio=ER

The Coefficient of Variation=CV



**Figure1 The absolute differences of inbound tourism economy in the western area of China (2004~2013)**



**Figure2 The relative differences of inbound tourism economy in the western area of China (2004~2013)**

#### 4.2 The spatial pattern of inbound tourism economy difference in the western region

Choosing 150%, 100% and 50% of average level of tourism Foreign Exchange of the annual total income in the western area in 2004, 2009, 2013 as the division standard of inbound tourism economic spatial difference and determining them for four big space grade of inbound tourism economy: the developed regions, less developed regions, underdeveloped areas and backward areas in turn, the results in Table 2 can be gotten which present the following characteristic of the spatial pattern of inbound tourism economy in the western region:

(1) The pattern of space difference has no fundamental change in 10 years. Yunnan, Shaanxi, Guangxi has been the developed areas of inbound tourism economy in the western region and Guizhou, Gansu, Tibet, Qinghai, and Ningxia has been backward areas of inbound tourism economy in western region.

(2) Sichuan has previously been a developed area of inbound tourism economy in and before 2007 in west area of China, but its tourism has suffered heavy losses since the Wenchuan big earthquake of 2008. Therefore, its inbound tourism economy is rising since 2009, but the overall recovery was slow and is still in the western underdeveloped areas of inbound tourism economy.

(3) Inbound tourism economy of Chongqing and Inner Mongolia has been in the middle or upper level in the western area. Tourism economy of Chongqing grows steadily in recent years which have been from the less developed area of Western inbound tourism economy into developed areas; while Inner Mongolia inbound tourism economy is still in the less developed area on the whole.

(4) Xinjiang inbound tourism economy has been at a lower level in the western area, between the less developed and backward areas and on the whole belongs to the less developed area.

**Table 2 Level classification of inbound tourism economy development of western region**

Year	Basic Type	dr	ldr	udr	br
	Division standard	> 150%	100% ~ 150%	50% ~ 100%	< 50%
2004	Index section (10000 \$ )	> 25993	17328 ~25993	8664 ~17328	< 8664
	provinces	Yunnan Shan xi Sichuan Guangxi	Inner Mongolia, Chongqing	Xinjiang	Guizhou Gansu Tibet Qinghai Ningxia
2009	Index section (10000 \$ )	> 54100	36067 ~ 54100	18033 ~ 36067	< 18033
	provinces	Yunnan Shan xi Guangxi InnerMongolia	Chongqing	Sichuan	Xinjiang Guizhou Gansu Tibet Qinghai Ningxia
2013	Index section (10000 \$ )	> 120013	80008 ~120013	40004 ~80008	< 40004
	provinces	Yunnan Shan xi Guangxi Chongqing	Inner Mongolia	Sichuan Xinjiang	Guizhou Gansu Tibet Qinghai Ningxia

developed regions=dr

less developed regions=ldr

underdeveloped regions=udr

backward regions=br

## 5. Conclusion

Taking 12 provinces in Western China area as the research basic unit, taking tourism foreign exchange earnings as a measure index, using method of range, standard deviation, extreme ratio and coefficient of variation etc., this paper studies the inbound tourism economy differences in the western region and gets the following results:

(1) Seeing from the time, the absolute difference of inbound tourism economy in the western region of China showed an enlarging trend and although relative difference is fluctuating, it also showed a growing trend.

(2) In space, there are great differences in inbound tourism development level of different regions in the western China. The provinces of higher levels of inbound tourism economic development include Shaanxi, Yunnan and Guangxi, and that of Tibet, Qinghai, and Ningxia is very low. It's obvious that the inbound tourism development of the western regions is extremely unbalanced.

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