

Spatiotemporal differentiation and influencing factors of tourism economy in Huaihe ecological economic belt

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Abstract: The development of the Huaihe River Eco-economic Belt has been upgraded to a national strategy to provide new opportunities for the rapid economic development of the Huai River Basin. Taking the Huai River Ecological Economic Belt as the research object, this article aims to analyze the regional pattern change of tourism economic development from 2006 to 2018 from the perspective of the gradient of tourism economic development level, absolute difference (extreme deviation, standard deviation) and relative difference (extreme ratio, coefficient of variation). The results show that, from the perspective of time, the differentiation of tourism economy in the Huaihe Economic Belt fluctuates and shrinks with the passage of time; from the perspective of space, the eastern region is a developed tourism region while the central and western regions are less developed. On the whole, the development of tourism in the Huai River Eco-economic Belt is uneven and the polarization phenomenon is more prominent, but the relative difference tends to shrink and the situation has improved greatly.

Keywords: tourism economy; temporal and spatial differentiation; Huaihe River Ecological Economic Zone

1. Introduction

Since the reform and opening up, the tourism industry has gradually developed into an important pillar of China's national economy and a booster for rapid economic development. Affected by the differences of various factors such as the natural environment, competition level, infrastructure, and transportation location in different regions, the regional tourism economy presents significant time volatility and spatial imbalance. The Huaihe River occupies an important position in my country's economic and social development, but it has been affected by factors such as natural resources and economic foundation for a long time, causing the economic development of its basin to be relatively backward. In October 2018, the State Council approved in principle the "Huaihe River Eco-economic Belt Development Plan", raising the construction of the Huaihe River Eco-economic Belt as a national strategy, providing a historic opportunity to promote the comprehensive management of the Huaihe River Basin. From 2006 to 2018, the total revenue of tourism economy in the Huaihe Economic Belt in GDP increased significantly, and the impact of temporal and spatial differences on the regional economy has become increasingly stronger. Through the study of the temporal and spatial differentiation of tourism economy, we can correctly recognize the role of tourism industry in the economic development of the Huaihe Ecological Economic Zone, evaluate the development level of tourism industry, and promote the coordinated development of tourism industry^[1].

In recent years, scholars at home and abroad have paid more and more attention to the "temporal and spatial differentiation of tourism economy". Judging from the existing research in this field, the source of foreign research began in the 1970s, and the research mainly focused on the regional temporal and spatial differentiation characteristics and the evolution of temporal and spatial patterns. Lyons (1991) used the coefficient of variation and the weighted coefficient of variation to explore the fairness of regional distribution in China from 1952 to 1987 , and obtained the phased changes in the inter-provincial gap; Tseryc (2001) used the expectation model to explore the impact of economic factors on tourism in different regions. Roberto Cellini, Tiziana Cuccia (2015) based on the exploratory analysis of the economic elasticity index of the tourism industry in various regions of Italy, and found the structural changes of the tourism economy during the Great Recession.

Domestic scholars have done a lot of research on the temporal and spatial differentiation of tourism economy, and they have carried out research from different angles. From the perspective of the study area, according to the different spatial scales, the study can be divided into four levels, namely, national, regional, provincial, and specific tourist attractions. For example, Wang Kaiyong (2014) studied the regional differentiation and ranking changes of tourism economy in the Yellow River Basin; from the perspective of research methods, the coefficient of variation, Gini coefficient, and ArcGIS spatial analysis are widely used. For example, Jiang Haining (2009) uses the coefficient of variation and Herfindahl index to conduct qualitative research on the differences between regions in Jiangsu Province; from the perspective of research content, it focuses on qualitative and quantitative research on regional differences and spatial governance. For example, Lu Lin (2005) analyzed the overall level and spatial structure characteristics of the changes in the tourism economy of 31 provinces and cities in the mainland , and obtained the law of differentiation^[2].

Throughout the research in this field, the results are relatively rich with the diversified methods and different the focus. However, in general, from a quantitative perspective, existing studies are relatively single in the selection of indicators, or have multiple collinearity problems, which cannot accurately reflect individual heterogeneity and the dynamic adjustment process of research; from a research perspective, there are more results of national or provincial studies, while there are few studies on the temporal and spatial differentiation of underdeveloped regions. In view of this, this article selects the Huai River Ecological Economic Belt as the research object to conduct differentiation and determination of influencing factors from the two dimensions of time and space, and tries to explore a new model for tourism construction in China's inland river basins, which has a certain impact on the sustainable and healthy development of the economic belt's tourism economy^[3].

2. Research methods

2.1 Data selection

The Huaihe River Eco-economic Belt flows through 25 prefecture-level cities and 4 counties (cities) covering the five provinces of Anhui, Jiangsu, Shandong, Henan and Hubei. There are 25 prefecture-level cities: Bozhou, Bengbu, Suzhou, Huaibei, Fuyang, Huainan, Chuzhou, Lu'an in Anhui province; Zaozhuang, Linyi, Heze, Jining in Shandong Province; Suqian, Xuzhou, Yancheng, Huai'an, Lianyungang, Yangzhou, Taizhou in Jiangsu Province; Xinyang, Zhumadian, Luohe, Pingdingshan, Zhoukou, Shangqiu in Henan Province. It covers an area of 280,000 square kilometers and has a population of about 180 million people. In order to unify the research units, this paper selects 25 prefecture-level cities in the Huai River Ecological Economic Zone as the basic research units. The total tourism economic revenue, total domestic tourism revenue and international foreign exchange tourism revenue of 25 prefecture-level cities in the Huaihe Ecological Economic Zone are selected as the research indicators. The relevant data comes from the "Statistical Yearbook" of the five provinces from 2006 to 2018^[4].

2.2 Research methods

2.2.1 The gradient of tourism economic development level

This method is used to measure the comprehensive level of local tourism economy. The calculation formula is:

$$T = \frac{x_i}{\bar{x}}$$

In this formula, x_i refers to the domestic and inbound tourism income of the cities in the Huaihe Economic Belt from 2006 to 2018, \bar{x} is the average value of the domestic and inbound tourism income of the 25 regions from 2006 to 2018. When $T > 1.5$, the area is a developed tourism area; when $1 < T \leq 1.5$, the area is a less developed tourism area; when $0.5 < T \leq 1$, the area is a general tourism area; when $0 < T \leq 0.5$, the area is an underdeveloped tourism area.

2.2.2 Absolute difference and relative difference

Absolute differences (extreme deviation, standard deviation) and relative differences (extreme ratio, coefficient of variation) can be used to observe the temporal and spatial changes of regional economic differences. The absolute difference is mainly used to observe the overall level of the economy; the relative difference is mainly used to observe the regional economic growth rate. Calculated as follows:

Very poor: $R = Y_{\max} - Y_{\min}$

Pole ratio: $Q = Y_{\max} / Y_{\min}$

Standard deviation: $S = \sqrt{\frac{1}{n} \sum_{i=1}^n (Y_i - \bar{Y})^2}$

Coefficient of variation: $V = S / \bar{Y}$

Y_{\max} And Y_{\min} represent tourism maximum and minimum total economic income of 25 cities. 3. Spatial and temporal differentiation of tourism economy in the Huaihe Ecological Economic Zone

3.1 Differentiation of economic development level

This paper calculated the tourism economic development level gradient of the Huaihe River Ecological Economic Zone from 2006 to 2018, and analyzed the differences in tourism economic development in various regions by using the results of its development level to show the four-year level gradient^[5].

First of all, in terms of domestic tourism revenue, Yangzhou and Xuzhou in Jiangsu Province, as well as Linyi and Jining in Shandong always rank high. First, at the level of domestic tourism income in 2006, Yangzhou, Xuzhou in Jiangsu Province, Linyi and Jining in Shandong Province were 3.28 times, 2.76 times, 2.3 times, and 2.8 times of the average domestic tourism income level of the Huaihe Economic Zone; in 2018, it was 2.75 times, 2.33 times, 2.49 times and 1.97 times, always ranking high. It can be seen that Yangzhou, Xuzhou, Jining and other places have always been among the top in terms of inbound tourism income. After 2012, affected by the global economic downturn, tourism foreign exchange income in Yangzhou, Xuzhou and other places in Jiangsu has experienced negative growth, and inbound tourism income is not ideal and the gap with other regions has decreased, but it is still higher than the average level of tourism income in the Huaihe Economic Zone. In Luohe, Huaibei and other places, the local domestic tourism income and inbound tourism income have been far below the average domestic tourism income level of the Huaihe Economic Zone for more than ten years, and even less than 30% of the average level^[6].

It can be seen that the polarization of the tourism economy within the Huaihe Economic Zone is serious. In order to more intuitively reflect the difference in the level of tourism economic development in the Huaihe Eco-economic Zone, this paper uses ArcGIS software to draw the differentiation pattern. It can be seen that Yangzhou City in Jiangsu Province, Jining City and other places in Shandong Province have always been at the top of the "bipolar core" of domestic tourism revenue and inbound tourism revenue. This indicates that cities with strong comprehensive tourism strength have strong attractions for domestic and inbound tourism^[7]. However, the level of tourism development in underdeveloped areas such as Suzhou and Luohe has been low for more than ten years, and the development trend has hardly increased, which falls far behind than other cities. This is mainly due to the large differences in infrastructure, local economic development levels, and tourism resource endowments in different regions. The balance of tourism development in the Huaihe Economic Zone needs to be further strengthened^[8].

3.2 Absolute difference and relative difference

Calculating the tourism income of 25 prefecture-level cities in the Huaihe Economic Zone from 2006 to 2018, and domestic and foreign tourism income, it can obtain the results of regional absolute and relative differences .

First of all, from the perspective of absolute difference, from 2006 to 2018, the absolute difference in domestic tourism income continued to increase, that is, the gap in the total level of domestic tourism economy within the Huaihe River Ecological Economic Zone continued to expand; the absolute difference in foreign exchange income from international tourism fluctuated and decreased. That is, the gap in the total level of the international foreign exchange tourism economy within the Huaihe Ecological Economic Zone has been narrowing.

Secondly, from the perspective of relative differences: From 2006 to 2018 , the extreme ratio of domestic and international foreign exchange tourism income and the coefficient of variation showed a trend of decreasing fluctuations, that is, the difference in economic growth rate decreased; it can be seen that the international foreign exchange the extreme ratio of tourism income in 2006 was 284.802 , and it became 55.302 in 2018. The ratio has changed greatly, and the difference in growth rate has narrowed significantly. However, because the contribution rate of international foreign exchange tourism income to the total tourism economic income is relatively small, the income of domestic tourism economy can better represent the changes in the growth rate of tourism economy in the Huaihe Ecological Economic Zone^[9].

4. Discussion and Conclusion Based on the measurement of tourism economic data of 25 prefecture-level cities in the Huaihe Ecological Economic Zone from 2006 to 2018, this paper draws the following conclusions:

(1)After calculating the gradient of tourism economic development level, it can be seen that the overall development level of the Huaihe Economic Belt has a significant difference. In terms of domestic tourism revenue and international tourism revenue, the economic level of tourism in cities such as Yangzhou and Xuzhou in Jiangsu, and Zaozhuang and Linyi in Shandong has always been high in the region. Yangzhou is at the top of the "bipolar core"; while provinces like Suzhou and Anhui, and cities like Huaibei and Luohe in Hebei Province are far below the average level of domestic tourism income in the Huaihe Economic Zone, and the spatial economic polarization is extremely serious. The eastern region is higher than the central and western regions, and the uneven development of regional tourism economy is prominent.

(2)From 2006 to 2018, the absolute gap between domestic tourism income and international foreign exchange tourism income of Huaihe River Economic Zone has been increasing, while the absolute gap between international foreign exchange tourism income has been decreasing. ; Volatility is reduced by the relative difference in foreign exchange earnings from tourism at home and abroad, which indicates that the gap in the development speed between regions has decreased.

The Huai River Ecological Economic Zone has a good tourism endowment, but it still needs to be further improved from scale to quality to improve the uneven development situation. For relatively developed regions, it is necessary to use its own advantages in various aspects to enhance influence and competitiveness, and strengthen the radiation and leading role of the whole region; for underdeveloped regions, it is necessary to strengthen policy support and actively explore cultural and tourism integration. In addition, it shall strengthen infrastructure construction to promote the coordinated development of tourism in the Huaihe Economic Belt.

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