The Dynamical Relationship between the Spatial Agglomeration of Chinese Cultural Creative Industry and the Development of Economy

Jiang Yao¹ & Dr. Gao Changchun²

¹,² Glorious Sun School of Business and Management Donghua University

Abstract: The theoretical studies of cultural creative industry were far behind its actual development in China, so it is meaning to study more. This paper measured the degrees of spatial agglomeration of all Chinese provinces’ cultural creative industries from 2008 to 2013 based on the theory of location quotient (LQ) to investigates the regional disparities at province level with the support of ArcMap software. Afterwards, we fit the relationship between the spatial agglomeration of all provinces’ cultural creative industries and economic development in dynamic condition by the most simple regression model. The empirical results show that: the relationship between the spatial agglomeration of cultural creative industry and GDP is quadratic equation of one unknown instead of a double logarithmic model in statics. What’s more, the influence of each province is different. The North China has a significant positive effect, the Northeast China and Central-south China present significant reverse effects. However, the influences of the South China, Southwest China and Northwest China are not significant. Also, the East China has both effects.

1. Introduction

Since the 1990s, the role of cultural creative industry, a sunrise industry, to national economy and social development has become more and more important in developed countries. Creative economy has created some 22 billion dollars every day throughout the world in recent years, and increased at the rate of 5%[1]. However, the theoretical studies of cultural creative industry were far behind its actual development. In accordance with the published papers and books, the concept of cultural creative industry has not been determined. In 1947, German Horkheimer and Adorno put forward the concept of cultural industry [2]. In 1998, ‘Creative Industry’ was proposed by British Creative Industry Task Force in “Creative Industries Mapping Document” [3] . Then, there were two views related to the definition of cultural creative industry [7-10]. In terms of theoretical research or actual analysis, we think the above definitions all reveal the nature of cultural creative industry, even if the names are not same exactly. The core components of creative industry are: creativity is the core content of products; using symbolic meaning to create value; intellectual property is protected [11]. Therefore , it is meaningful to study among industries or areas if we could define the scope and caliber clearly as required.

Along with the rapid development of regional economy, the influence of the spatial agglomeration of cultural creative industry to economy is becoming more and more clearly. So, the study of the spatial agglomeration of cultural creative industry is gradually developed. Domestic and international scholars both start to study it from various aspects. Spatial agglomeration concerns economics, geography and et al, which is beginning with the research of manufacturing industry [12-18]. Foreign scholars started early, and it was the initial attention to the special location of creative industry for Zukin (1982) to study the ‘Loft’ [19]. The process of spatial agglomeration of innovation and production activities with the global and local indicators which was carried out thanks to an original databank across 85 industrial sectors and 784 Italian Local Labor Systems from 1978 to 1995, and the influence of specialization or diversity externalities in the area to the innovative output in a particular local industry were studied [20]. Creative industries had a clear affinity for the CBD fringe and inner city, and different kinds of creative industries precincts lied in different cities [21]. The effect of business economic on industrial agglomeration was verified by using the data of cultural creative industries in Silicon Valley [22]. The creative class has a positive and significant effect on employment growth and new business formation at the regional level due to an analysis based on data for more than 450 regions in eight European countries [23]. Applying location quotient,
principal component factor and cluster analyses to all 308 Portuguese municipalities, for ten core creative groups, we found that only the knowledge-intensive activities densely concentrated and co-located in highly developed, large urban centrals [24]. As an emerging industry, it is difficult to assess the implicit value of cultural creative industry, which leads to most of the research of its spatial agglomeration rests on qualitative study in China [25-28]. There are three kinds of empirical studies: using Location Quotient, Gini coefficient, Moran’s I, EG index and et al to estimate the degree of spatial agglomeration of cultural creative industry [29-31], analyzing the dynamic factors for the formation of spatial agglomeration [32,33], and discussing the influences [34].

Taken together, quantitative research is less than qualitative research on the spatial agglomeration of cultural creative industry. Also, most of the existing quantitative studies are split into the Time-series research that is focused on one metropolis like Beijing or Shanghai and the Cross-section analysis that is based on one point. In recent years, a double logarithmic model used for describing the relationship between the spatial agglomeration of Chinese cultural creative industry and the development of economy in static condition was already mooted by some researchers [35]. Would this model still hold if the object changes into dynamic panel data concerning various years and areas? Does the model keep same or change among different provinces? We will solve these questions in the following. This paper is divided into five sections. In Sect.2, we research on the data sources and research method. Next in Sect.3, we measure the spatial distribution of China’s cultural creative industry. Then in Sect.4, we analyze the influence of the spatial agglomeration of cultural creative industry to economic development. Finally, Sect.4 presents the conclusion and insufficiency of our analysis.

2. Data Sources and Research Method

2.1. Research Scope and Data Sources

China held the Second National Economic Census in 2008 and the Third National Economic Census in 2013. During this period, per capital GDP increased from 810247 yuan to 1458443 yuan and the average annual growth rate reached up to about 16%. It means that Chinese economy develops quickly within this time, so we choose 2008 and 2013 as the starting and end point of our research. According to Communiqué on Major Data of The Second National Economic Census, Communiqué of The Third National Economic Census and China Statistic Yearbook 2009-2014 compiled by National Bureau of Statistics of China, this article defines the research scope of 30 provinces and municipalities of Chinese mainland (missing the data of Gansu Province). Beijing released ‘Cultural Creative Industry Classification Standard’ in 2006 and divided cultural creative industry into nine sectors, namely: Culture and Art; Press and Public; Radio, Television and Film; Software, Network and Computer Service; Advertising and Exhibition; Business of Art; Design Service; Tourism and Leisure Entertainment and Other Ancillary Service. On the basis of it and being compatible with China’s National Economical Industry Classification, we choose three leading trades as our object of this study: Information transmission, computer services and software; culture, sports and entertainment; scientific research and technical services.

2.2. Research Method

Location Quotient was put forward by Hagget and was a universal method for research on spatial agglomeration [36]. Its formula is:

$$\text{quotient}_{i} = \frac{e_i}{E_i} \times \frac{E_j}{e_j}$$

(1)

Where quotient$_i$ is the quotient of cultural creative trade employees in region $i$; $e_i$ is the quantity of cultural creative trade employees in region $i$; $E_i$ is the quantity of cultural creative trade employees in China; $e_j$ is the quantity of cultural creative industrial employees in region $i$; $E_j$ is the quantity of cultural creative industrial employees in China. If quotient$_i$ > 1 in a region, it reflects that the region has a larger scale and higher degree of spatial agglomeration than the average of whole country.

3. The Spatial Distribution of China’s Cultural Creative Industry

3.1. The Degree of Spatial Agglomeration

We calculate the location quotient of three leading trades with the formula (1) from 2008 to 2013. In order to compare clearly and conveniently, we use unweighted average method to measure the comprehensive degree of spatial agglomeration, noted as LQ. According to the calculate results, the location quotient of cultural creative industry in Beijing is the highest and holds a safe lead to other provinces. Although the location quotient of cultural creative industry in Beijing declines slightly in 2009, it still keeps the location quotient over 3.0. After that, the location quotient of cultural creative industry in Beijing continues rising and reaches 3.51 in 2013, which is as 14.6 times as the location quotient of cultural creative industry in Yunnan, the province scores the lowest. On the contrary, the location quotient of cultural creative industry in Yunnan is always the minimum and keeps falling during this period.

In China’s four municipalities, the location quotient of cultural creative industry in Beijing, Tianjin and
Shanghai which lie in the east of China all have a higher degree than the national average. As for China’s geographic area, there is unbalanced distribution of cultural creative industry in the North China as Beijing and Tianjin have high location quotient while Hebei, Shanxi and Neimenggu all have low. The Northeast China has balance of distribution and three provinces all get high scores. There is a slight imbalance of spatial distribution in the East China. The degree of agglomeration in Shanghai, Zhejiang and Fujian are high, while the location quotient of Jiangsu, a developed economy, is far below the national average values. In the Central-south China, all provinces, except for Henan, locate in the position of average level. The Southwest China is at a disadvantage in the whole, even if the location quotient of Guizhou Province reaches the national average. In the Northwest China, Xinjiang and Shan’xi both have high location quotient scores, especially for Xinjiang, whose location quotient of cultural creative industry exceeds a lot of economically developed provinces. For the perspective of economic circle, the agglomeration of cultural creative industry in Beijing-Tianjin-Hebei develops great because the role of Beijing. However, the location quotient of the Yagzte River Delta region is not in a leading position.

3.2. The Development Trend of Spatial Distribution

So as to show the development trend of the spatial distribution of China’s cultural creative industry, we add different color into the maps from 2008 to 2013. The region whose color is deeper, the location quotient is higher, as the following figure:

![Figure 1: The Spatial Distribution of Chinese Cultural Creative Industry from 2008 to 2013](image)

From a general view, the spatial distribution of China’s cultural creative industry is gradually centralizing to the east and north regions during this period from 2008 to 2013. The location quotient of the North China declines in 2010 and 2011, but increases rapidly in the following two years and keeps locating in medium high. According to the order of timeline, the region which changes greatest is Xinjiang. In 2008, its location quotient lies in the middle. After continuous declination in 2009 and 2010, the location quotient of Xinjiang’s cultural creative industry returns to the medium level. However, its location quotient gets a low scores in 2012 once again. In the last year, the location quotient of cultural creative industry in Xinjiang rises significantly and presents a very high concentration level. Conversely, the location quotient of cultural creative industry in the central region of China keeps smooth and steady during this time.

4. The Influence of Agglomeration to Economical Development

To solve the problem that the relationship between the spatial agglomeration and economic development in dynamic condition proposed in the Introduction, we try to build the most concise regression model to explore this from the initial state. By drawing graphs about the spatial agglomeration and GDP from 2008 to 2013, we find quadratic equation of one unknown is better than others. The model is as the following:

\[
GDP=a_1+a_2LQ^2
\]

(2)

After being through Unit Root Test and Cointegration Test, we decide to use fixed-effect variable-coefficient model by Hausman Test. The regression results are on the table 1.

<table>
<thead>
<tr>
<th>Province</th>
<th>GDP=a_1+a_2LQ^2</th>
</tr>
</thead>
<tbody>
<tr>
<td>a_1</td>
<td>a_2</td>
</tr>
<tr>
<td>Beijing</td>
<td>-33507.3</td>
</tr>
<tr>
<td>Tianjin</td>
<td>-3661.12</td>
</tr>
<tr>
<td>Hebei</td>
<td>-42382.9</td>
</tr>
<tr>
<td>Shanxi</td>
<td>5491.673</td>
</tr>
<tr>
<td>Neimenggu</td>
<td>28169.45</td>
</tr>
</tbody>
</table>

Table 1: Regression Results
Firstly, this paper defines the research scope of 30 provinces and municipalities of Chinese mainland. Economic development has not reflected the role of its fledgling cultural creative industry to non-significant relationship. It may be because the spatial agglomeration of cultural creative industry to explain the relationship between the spatial agglomeration and economic development. Although the spatial agglomeration of cultural creative industry develop well in the Northeast China, the speed of economic development is behind many provinces. The regression results of the East China show huge differences. The coefficients of Shanghai, Zhejiang and Fujian whose spatial agglomeration are high are negative while other provinces present positive effects. It can explain two practical problems for us: the first one is that why dose Shanghai, Zhejiang and Fujian keep rapid growth of economy with continuous decline of the spatial agglomeration; the second one is that although the spatial agglomeration of Jiangsu Province is lower than national average, its economy and spatial agglomeration of cultural creative industry keeps synchronous growth recently. This two points are consistent with our previous research. All provinces in the Central-south China have significant relationship. Guangdong Province in the South China appears negative relationship and it is quite significant. This is why the spatial agglomeration decreases but the economy is developing with great rapidly in Guangdong. In the Southwest China, the spatial agglomeration of Yunnan and Guizhou’s cultural creative industry are diminishing while GDP are increasing, which conforms to the regression model. Except for Shan’xi Province, the Northwest China presents negative and non-significant relationship. It may be because the role of its fledgling cultural creative industry to economic development has not reflected.

5. Conclusion

Firstly, this paper defines the research scope of 30 provinces and municipalities of Chinese mainland.
(missing the data of Gansu Province). Then, we adopt Location Quotient to measure the degree of spatial agglomeration of cultural creative industry from 2008 to 2013 and analyze the tendency of location distribution. Lastly, using the most concise model to fit the role of spatial agglomeration to economic development. The results show that the relationship between the spatial agglomeration of Chinese cultural creative industry and GDP in dynamic condition is quadratic equation of one unknown instead of double logarithmic model in static. What’s more, different provinces have different influence coefficients. The regions with high agglomeration degrees have significant relationship, such as the North China has positive influence and the North China and the Central-south China have negative effects. On the contrary, the areas with low agglomeration degrees have non-significant relationship, like the South China, the Southwest China and the Northwest China. The East China has both positive and negative influence. Provinces with high agglomeration degrees have significant negative relationship and provinces with low agglomeration degrees have positive relationship. It is meaningful for all regions with high spatial agglomeration of cultural creative industry to balance the relationship with economic development.

However, there are three insufficient points in this article. First of all, in this national research, we lack the analysis of Gansu Province because of the missing of data. In the second place, we use Location Quotient which is the most commonly method among related academic research to measure the degree of spatial agglomeration, but we cannot make sure that Location Quotient which comes from the studies for manufacturing industries is completely suitable for cultural creative industry, an industry with special characteristics. In the end, not all coefficients in our model are significant, so we have to improve the model further.

6. Acknowledgements

This work was supported by “study on value network modular design and value creation model of creative industries cluster - 71373040”.

7. References

[21]Hutton T. Reconstructed production landscapes in the postmodern city: applied design and creative services in


