Thinking on the Development of Chengdu-Chongqing Dual-City Economic Circle based on ACEP Model

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Abstract

Chengdu-Chongqing region is an important economic development engine in the western region of our country. Promoting the construction of the dual-city district economic Circle in the Chengdu-Chongqing region is a key node for the coordinated development of the region. To explore the variety of models and measurement methods used in the development of urban agglomerations, this article mainly selects the ACEP index which is used in the report on urban agglomeration integration issued by the China Development Research Foundation to discuss the development level of Chengdu-Chongqing urban agglomeration, by comparing the level of integration with that of the Beijing-Tianjin-Hebei region and the Yangtze River Delta Economic Zone region, and through a detailed analysis of the exponential changes in the process of integration, the deficiencies of the Chengdu-Chongqing region in the process of urban agglomeration integration are found on the degree of economic agglomeration, regional connectivity, public service equalization and income equalization, this paper puts forward some suggestions on the development of dual-city district economic circle in Chengdu-Chongqing region.

Keywords

Chengdu-Chongqing Dual-city; ACEP Model.

1. Introduction

"Chengyu" is composed of Chengdu and Chongqing. Chengdu and Chongqing originally belonged to the same province. The reason why Chengdu and Chongqing were separated from the administrative system was to take into account the issue of resource allocation within China's administrative framework. Under the traditional planned economy system, the higher the administrative level, the stronger the ability to allocate resources. As the provincial capital of Sichuan, Chongqing's administrative level is lower than that of Chengdu, which determines that it is difficult to mobilize effective resources. When Chongqing was classified as a municipality directly under the Central Government, Chongqing quickly broke through the shackles of the original provincial administrative framework and promoted the western region's economic development. When the economy develops to a certain extent in the later period, how to adopt the most appropriate policy to promote regional development? With the deepening of the extent about China's reform and opening up, the Chengdu-Chongqing region increasingly needs to have more in-depth exchanges of resource allocation. Therefore, the current government continues to promote the process of "the construction of the Chengdu-Chongqing dual-city economic circle". It can be said that the adjustment of the policy takes into account the specific development of the Chengdu-Chongqing area in different time periods.

2. Index Comparison of Chengdu-Chongqing Economic Circle, Yangtze River Delta, Jingjinji District

The Chengdu-Chongqing region has a special geographical location, and further west is the Sichuan-Tibet region. In 2018, the GDP of the Chengdu-Chongqing region reached 5455.3 billion yuan, accounting for 29.60% of the western region. The Chengdu-Chongqing region has become an important engine for economic development in the western region. At present, how to explore the integrated development of China's dual-core urban agglomeration has become an important proposition facing China's regional economics. The construction of the dual-city economic circle in the Chengdu-Chongqing region is to explore a feasible idea for the integrated development of dual-core urban agglomeration.

To promote the development of Chengdu-Chongqing region from an economic center in the western region to an important economic center with national influence, it is also of strategic significance to study the level of integrated development of urban agglomerations in the Chengdu-Chongqing region. The author has participated in the research on the level of urban agglomeration integration and the construction of the ACEP model in the research group of the China Development Research Foundation. This article will mainly draw on the ACEP index applied during the internship of the China Development Research Foundation to compare the index changes of Chengdu-Chongqing area with Beijing-Tianjin-Hebei and Yangtze River Delta regions, so as to discover the shortcomings of the Chengdu-Chongqing region in the process of urban agglomeration integration and obtain enlightenment for the construction of the Chengdu-Chongqing region dual-city economic circle.

2.1. Defination of ACEP Index

Table 1. The meaning and calculation method of each variable in the ACEP index

Variable	Meaning	Calculation Method
A	Economic agglomeration level	Regional real GDP /Total area
C	Regional connectivity	(Total regional passenger transport /Total area)*0.5+(Regional freight volume/ Total area)*0.5
E	The level of regional income equilibrium	$1 - Gini$(Per capita income)
P	The level of equalization of regional public services	$1 - Gini$(Per capita fiscal expenditure)

ACEP index is a new measurement method of regional integration. It describes regional integration from four aspects: economic agglomeration (A), regional connectivity (C), economic equalization (E), and policy coordination (P). It can overcome the inherent shortcomings of traditional integrated measurement methods and it is sensitive to changes in macroeconomic policies and economic activities. The higher the index, the higher the level of regional integration. Specifically, the calculation method is as follows: $ACEP = A^{\alpha} * C^{\beta} * E^{\gamma} * P^{\delta} * 100$. $A = D * S$ is the level of economic agglomeration after share adjustment; D is the level of regional economic agglomeration measured by the density of the regional economy; S is the economic share measured by the proportion of GDP; C is the regional connectivity measured by the density of the regional road network; E is the level of equalization of regional income measured by the Gini coefficient (calculated by Stata); P is the level of equalization of regional basic public service expenditures measured by the Gini coefficient, reflecting the coordination of regional governments. On the whole, regional economic agglomeration contributes the most

to the improvement of the integration index, followed by the improvement of transportation connectivity.

2.2. Analysis based on ACEP Index

In the past ten years, the Chengdu-Chongqing urban agglomeration has improved in terms of economic agglomeration, connectivity, income equalization and public service equalization, and its overall level of integration has also been significantly improved. According to the viewpoint of new economic geography, economic development will naturally lead to agglomeration of resources and elements in certain areas, and this will bring about two results: Firstly, the agglomeration strengthens the connection between the core area and the peripheral area. As a result, the connectivity with the peripheral areas is improved; Secondly, with the transfer of population elements from the marginal area to the core area, the income and public services of the entire area tend to be equal.
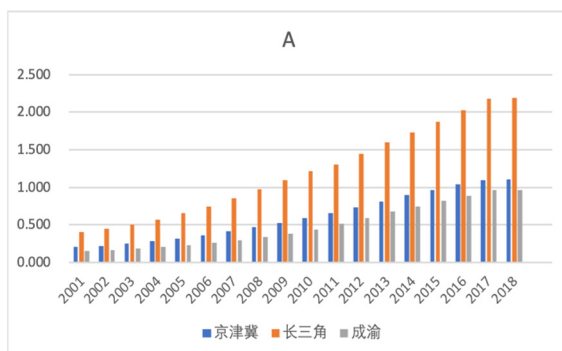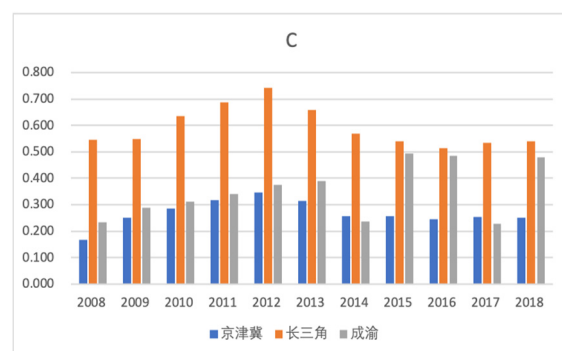

Fig 1. Standardization A
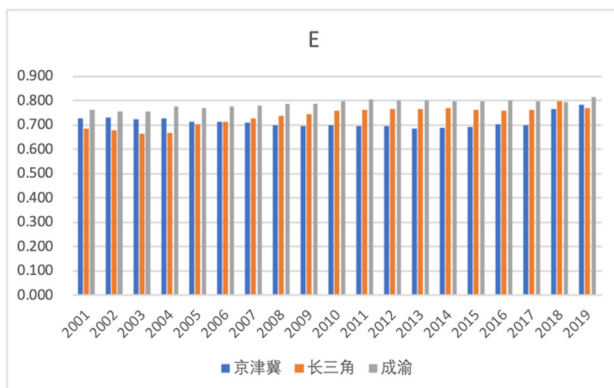

Fig 2. Standardization C
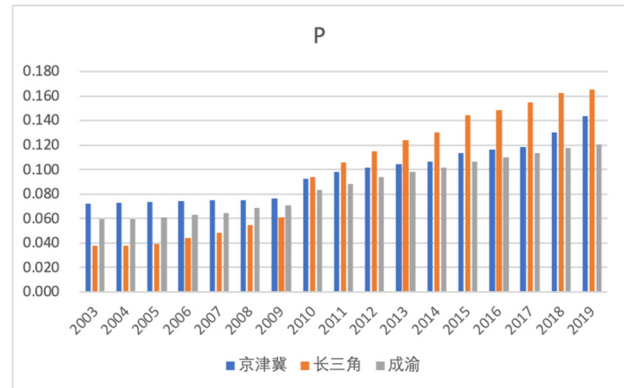

Fig 3. Standardization E

Fig 4. Standardization P

Table 2. Comparison of the degree of integration between Chengdu-Chongqing region and other regions in the country in 2018

Region	A	C	E	P
Beijing-Tianjin-Hebei	1.09	0.25	0.79	0.14
Pearl River Delta	4.17	1.09	0.71	0.15
Yangtze River Delta	2.19	0.54	0.77	0.16
Shandong Peninsula	1.79	0.35	0.76	0.15
Central Plains	0.68	0.34	0.76	0.12
Central South Liaoning	0.87	0.35	0.69	0.11
Chengdu-Chongqing	0.96	0.48	0.81	0.12
Changzhutan	0.83	0.32	0.72	0.14
Wuhan	1.14	0.37	0.62	0.17

Table 3. Differences in ACEP indicators between Beijing-Tianjin-Hebei, Pearl River Delta and Yangtze River Delta

2018	Beijing-Tianjin-Hebei	Yangtze River Delta	Chengdu-Chongqing
ACEP Index	32.2540	56.7936	28.6765
A Index	1.094	2.186	0.964
C Index	0.253	0.543	0.482
E Index	0.785	0.769	0.814
P Index	0.144	0.164	0.12

The Beijing-Tianjin-Hebei and Yangtze River Delta urban agglomerations are two highly integrated urban agglomerations, which belong to the second and first echelons of the integration level of urban agglomerations. By comparing the ACEP indexes of the three, it is more conducive to discover problems existing in the development process of Chengdu-Chongqing urban agglomeration. The result is shown in the figure. The original data in this article comes from "China City Statistical Yearbook", statistical yearbooks and statistical bulletins of various provinces and cities.

From the perspective of economic agglomeration indicator A, the three urban agglomerations are all showing an upward trend. The economic agglomeration of the Yangtze River Delta urban agglomeration is much higher than that of the Chengdu-Chongqing urban agglomeration. The development of the Chengdu-Chongqing economic circle needs to further increase the economic agglomeration. The Chengdu-Chongqing Economic Circle is located in the central and western regions, and the Beijing-Tianjin-Hebei and Yangtze River Delta urban agglomerations are close to the eastern coastal areas. The degree of economic development is higher and the developed cities are more concentrated. From the perspective of connectivity index C, the regional connectivity of the Chengdu-Chongqing region is much lower than that of the Yangtze River Delta region and slightly higher than that of the Beijing-Tianjin-Hebei region. From the perspective of income equalization indicator E, the Chengdu-Chongqing region is still doing very well. Based on the data of 0.814 in 2018, it is slightly higher than the other two regions. From the perspective of the public service equalization index P, the Chengdu-Chongqing region has been lower than the Beijing-Tianjin-Hebei and the Yangtze River Delta in recent years.

It can be seen that the gap between the Chengdu-Chongqing region and the Beijing-Tianjin-Hebei and Yangtze River Delta urban agglomerations is mainly in three aspects: economic agglomeration, connectivity, and equalization of public services; Of course, in the short term, It is not realistic to cross the Beijing-Tianjin-Hebei region of the second echelon and directly catch up with the Yangtze River Delta region of the first echelon. For example, in the past ten years, the Chengdu-Chongqing region has achieved an average annual growth rate of about 10% in the A indicator. At this rate, it will take about 25 years for the Chengdu-Chongqing region to reach the current level of the Yangtze River Delta region in A indicator. Therefore, the Chengdu-Chongqing region still has a lot of room for improvement in terms of agglomeration, connectivity, equalization of public services, and the final level of integration. The main driving factors of integration in different regions are different. In the Yangtze River Delta and the Beijing-Tianjin-Hebei region, the contribution of policy coordination to integration is more prominent than that of the Chengdu-Chongqing region. For the Chengdu-Chongqing area, how to improve the level of economic agglomeration and the connectivity of the regional road network is the key to speeding up the integration process. The following content will provide suggestions for promoting the integration process of Chengdu-Chongqing region by analyzing the gap of the ACEP index of the three city groups.

3. The Development Path of Chengdu-Chongqing Economic Circle is Analyzed through the Comparison of Three Urban Agglomerations ACEP Index

3.1. From the Perspective of Economic Agglomeration Index A- Strengthening the Concentration of Production Factors and Promoting Industrial Transformation and Upgrading

Strengthening economic agglomeration and increasing regional economic density require further acceleration of industrial transformation and upgrading. The two places should promote differential cooperation, optimize industrial structure, and radiate the surrounding areas with the high-density cooperation between Chengdu and Chongqing to increase economic agglomeration. Although the Chengdu-Chongqing dual-city economic circle is supported by the natural Bashu cultural foundation, since Chongqing became a municipality directly under the Central Government, the Chengdu-Chongqing region has produced subtle competitive relations. Administrative barriers have caused serious local protection and market segmentation, and have brought huge challenges to the development of regional collaborative innovation. Therefore, when formulating specific policies for the Chengdu-Chongqing dual-city economic circle, local governments should combine their own comparative advantages to adopt differential cooperation to realize the functional heterogeneity of urban agglomerations and promote rational industrial layout. The government should strengthen the connection and integration of regional related plans (especially urban planning), so that Chengdu and Chongqing and neighboring cities such as Neijiang, Ziyang, Suining, and Guang'an can deepen the planning connection, and jointly build an important engine for the integrated development of Chengdu-Chongqing region.

In addition, industrial clusters should be built to improve production efficiency. Industrial clusters are an important factor to improve production efficiency and enhance regional competitiveness. The Chengdu-Chongqing double-city economic circle is an inland economy. Strengthening industrial clusters is particularly important for promoting economic development. The Chengdu-Chongqing region's industrial clusters are in their infancy stage, and only have certain advantages in a few industries such as machinery and equipment manufacturing and automobiles. These industries are basically capital and technology-intensive industries with large economies of scale. It is difficult to complete the supply chain in the counties except for the core areas. Therefore, the government should consider optimizing the industrial layout based on the comparative advantages of different regions, strengthening the awareness of cross-regional collaboration, and realizing cross-regional industrial clusters.

3.2. From the Perspective of Regional Connectivity Index C -Strengthening Infrastructure Development and Enhancing Connectivity

The middle zone between Chongqing and Chengdu has not yet formed a secondary hub city with a connecting function, which makes the degree of integration of the urban agglomeration not high. From the perspective of connectivity index C, although the regional connectivity of Chengdu-Chongqing region is slightly higher than that of Beijing-Tianjin-Hebei region, it is much lower than that of Yangtze River Delta. The development degree of urban agglomerations in Chengdu-Chongqing region is still lower than that of developed regions.

To enhance the ability of collaborative innovation and development, we must strengthen the construction of a series of infrastructure such as transportation and lay a solid foundation. Then the barriers to the development of other cities in the region due to limited resources can be lifted, and only after the interconnection of resources can the region gain overall development. At present, the Chengdu-Chongqing urban agglomeration has not done enough to promote major internal and external transportation links, and many projects have been in a state of

stagnation for a long time. The integrated transportation plan for western Chongqing is not quite reasonable. The expressway is not well connected with the urban roads in the main urban area of Chongqing. It is necessary to further strengthen the interconnection of transportation infrastructure in the region, especially to strengthen the connection of hub cities, and improve the water, land, and air combined transportation system.

3.3. From the Perspective of Income Equalization Indicator E- Narrowing the Income Distribution Gap and Promoting the Coordinated Development of Regions

It can be seen from the Gini coefficient in the E index that although the urbanization level of the Yangtze River Delta and the Beijing-Tianjin-Hebei urban agglomeration is higher than that of the Chengdu-Chongqing area, the Gini coefficient is also higher, which means that the income distribution gap is large. This seems to be inconsistent with popular expectations? Generally speaking, the urban agglomeration strategy narrows the urban-rural income gap by promoting economic growth and capital agglomeration, and achieves poverty reduction by promoting economic growth and deepening the degree of openness to the outside world. But there are also policy traps that can cause crowding effects and rent-seeking behavior. If the factors are too concentrated in the central city, it will weaken the surrounding areas, resulting in diminishing returns and congestion effects, which is not conducive to the overall advantage of the region. This is a problem in the development of the Yangtze River Delta and the Beijing-Tianjin-Hebei urban agglomeration, and it can be used as a reference for the development of the Chengdu-Chongqing region. The Chengdu-Chongqing area is bred by its unique geographical environment, and the people have a natural psychological state of enjoying life. The local income distribution gap is not large, but with the development of the next stage of industry and the advancement of the integration of urban agglomerations. The Chengdu-Chongqing area will also encounter policy traps like Yangtze River Delta and the Beijing-Tianjin-Hebei urban agglomeration. Reasonably planning the industrial layout and driving the coordinated development of the surrounding areas and the central area are issues that should be paid attention to in the development process of the Chengdu-Chongqing region.

3.4. From the Perspective if Public Service Equalization Indicator P -Enriching the Public Service Resources, Improving the Governance System

In addition to the obvious economic differences in the development of cities in the region, there are also obvious differences in public service resources. Public services are directly related to people's livelihood and often play a decisive role in attracting high-quality human resources. Take the degree of medical resources as an example, most of Chengdu's high-quality medical resources are concentrated on land less than 400 square kilometers in the city center. Although this area has high-quality public service resources, it also carries a super high population with the highest population density. It is 10 times that of other areas in the same city, but the land area is less than one-twentieth of the area of the city. It can be seen that public service resources have not yet formed effective equalization among the counties in Chengdu. From the perspective of the economic circle, realizing the equalization of public services in the region, so as to further balance the population and regional economic development is a long way to go.

4. Conclusion

Whether it is through the development of industrial clusters, increasing the rate of transformation of scientific and technological innovation capabilities to improve the economic agglomeration index, or improving public service infrastructures such as education, health care and transportation, they all hope to promote the regional economic development by improving the economic relations among the subjects, narrowing the gap through the mechanism of

division of labour, transmission and radiation. The Yangtze River Delta and the Jingjinji have developed well-developed, large-scale, and well-defined industrial clusters, within which cities have developed a synergy and strong economic linkages. However, there are still some problems in Chengdu-Chongqing urban agglomerations. The infrastructure is not as perfect as the eastern urban agglomerations, and the agglomeration effect of industrial clusters is weak, these are not conducive to the Chengdu-Chongqing economic circle to achieve the real coordinated development of cities. Since then, for the Chengdu-Chongqing economic circle to gain more room for development, then, starting with the four indicators, it is very important to strengthen the industrial cluster, improve the information sharing mechanism, promote the transformation rate of science and technology innovation, and improve the construction of public service infrastructure. At present, Belt and Road construction and the construction of new land and sea routes in the west have provided a strategic basis for the development of the dual city district economic circle in the Chengdu-Chongqing region, the next step in the Chengdu-Chongqing region should be to deepen the policy of coordinated development of the two centers and radiation to drive the surrounding urban areas, to achieve coordinated development of the interests of individual urban points and regional common interests, drive the construction of Chengdu-Chongqing economic circle to a new stage.

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