The One-city Monopoly Index: Analysis of the Potential of Seven Cities in Sichuan to Become Provincial Sub-centres

Keyi Gou[1] Yan Liu[1,*]

[1] School of Public Affairs and Administration, University of Electronic Science and Technology of China, Chengdu, Sichuan, China
[*]Corresponding author. Email: liuyan7720@uestc.edu.cn

ABSTRACT
After forty years of development since reform and opening up, Sichuan Province has been ranked sixth and fourth in the country in terms of economic and population volume respectively. Behind the achievements in economic and social development lies the problem that Chengdu, as the capital city of the province, has become one of the very few provincial centre cities in China with a surprisingly high degree of urban primacy. In order to solve to some extent the acute problem of unbalanced and insufficient development in all aspects of the current Sichuan Province, the selection and construction of a sub-centre city in Sichuan Province becomes urgent for its future development. This paper uses the one-city monopoly index to investigate which of Sichuan's seven regional centres will come out on top in the race to lead the economic zone they radiate to seize the opportunity to usher in the second breakthrough after the reform and opening up in the new round of development of Sichuan. By comparing the one-city monopoly indexes of the seven cities horizontally and vertically in recent years, it can be seen that these cities will have a certain degree of radiation and driving effect on the economic zones in which they are located and even on the whole province, based on the driving effect of the urban areas of these cities on the whole city and their current development status. This will provide a basis for policy decisions on the selection and construction of provincial sub-center city in Sichuan Province, and provide analysis and recommendations on the current development status of each city to promote the regional coordinated development of each economic region in Sichuan and the whole province.

Keywords: *Urban primacy, Provincial sub-center city, Regional coordinated development.*

1. INTRODUCTION

The communiqué of the third plenary session of the 11th CPC Sichuan Committee states that it is necessary to promote regional coordinated development, to implement the "one trunk with many branches" development strategy, to build a new regional development pattern of "one trunk with many branches and five regions in coordination", and to promote the "main trunk" to lead and drive, the "many branches" to compete for development, and the "trunk" and "branches" to coordinate and link up. Furthermore, what is most important is that it is clear that "encourage and support the regional centre cities which are qualified to strive to become the provincial economic sub-centre", confirming Mianyang, Deyang, Leshan, Yibin, Luzhou, Nanchong and Dazhou as the seven regional centre cities. Among these seven cities, which of them will finally become the provincial sub-centre city of Sichuan Province has made the community pay close attention to the future development path of the seven cities. This article explores the potential of each city to become sub-centre of Sichuan Province in the future through their urban primacy.

Urban primacy, which is related to the one-city monopoly index, was first introduced by American urban economist Mark Jefferson in his study of

*Fund:This paper is supported by the Humanities and Social Sciences Research Fund of Ministry of Education (18YJC630105), Social Science Fund of Chengdu (2019R11) and Social Science Fund of the Science and Technology Department of Sichuan Province (2021JDR0218).

city-size distribution. He called the most populous city in a country the primate city, and the ratio of the population of the primate city to that of the second primate city the urban primacy. In China, the research of primacy has begun in the 1980s, such as Yan Minzhong, used the concept of urban primacy to analyze the specific conditions of all provinces of reform and opening-up from the founding of New China to 1978. Xu Xueqiang and others also used the urban primacy as a tool to analyze the differences between different provinces and urban groups in China[1]. As for the specific method of calculation, Zhou Yixing proposed the four-city index and the eleven-city index to reduce the error of the original 20 percent index. In addition, many scholars used the total economic volume and the proportion of the population to indicate the extent of concentration.

The concept of "provincial sub-centre city" was first proposed by Professor Qin Zunwen of the Hubei Academy of Social Sciences at the beginning of this century. Specifically, given the geographic shape of Hubei Province, which is a ninety-degree inverted "Y" shape, with a population of over 50 million and the provincial capital, Wuhan, being located in the eastern part of the province, its radiation and driving effect on the province is greatly limited, there is an objective need to seek and establish a "provincial sub-centre city" in the northwest and southwest of Hubei to play the role of "sub head" of the province. This idea of supporting the construction of "provincial sub-centre city" has been an important reference for the macro-regional planning of the provinces since the beginning of the new century.

In addition, in Sichuan, which is "less urbanised than the national average", the priority growth of metropolitan areas or regional cities has become the main spatial form of urbanisation. Simultaneous urbanisation in developed regions has gradually reduced the development gap between regions. In Latin America, excessive urbanisation has led to "growth poverty"; while in China, "under-urbanisation" has led to a widening of the regional development gap. Therefore, what level of urban primacy should a city have in order to drive urban development? How can it be raised or lowered to serve the overall development of the city? These are the questions we need to explore.

2. LITERATURE REVIEW

Throughout the theories related to regional urban development, in fact, it can be traced back to the beginning of the last century to see its theoretical origins. Firstly, it was the German urban geographer Chris Taller who, in his "The Central Areas of Southern Germany", elaborated the theory of the "central place", a place that provides "trade, financial, craft, administrative, cultural and spiritual services" to its surroundings. Since the influence and radiance of a central city is inversely proportional to its distance, the "provincial sub center city" we have cited are needed to maintain the influence and impact of the central city on the region.

In Duncan's "Metropolis and Region", it is also argued that a region is made up of closely interconnected towns of different sizes and functions that interact with each other in an organic whole known as an "urban system" or "town system". It emphasises the linkages, hierarchies and dynamics between towns and cities, with the cities in the sub-centres being secondary to the core cities and assisting the core cities to function better, taking on some of the key functions and exerting a strong radiating influence on the surrounding area.

Friedman also summarises the development of cities in three stages-the "model of space evolution". Stage 1: individual towns develop on their own, without influence on each other and operating independently; stage 2: a core city begins to emerge within a region, which has an impact on the entire region; stage 3: stronger sub-centres begin to emerge within the region, allowing the periphery to be radiated and the gap to be reduced, resulting in organic and coordinated development across the region.

The "theory of countermagnetic system", which was also developed by European scholars around the same time, suggests that the emergence of a system of towns in a region that counteracts the attractiveness of the central city to a certain extent requires the provision of a full range of local infrastructures to support production and development. On this basis, a cluster of towns and cities with a combination of integrated functions and other specialised towns can be formed. The modern city itself is dialectically centripetal and centrifugal at the same time. Industrial agglomeration, efficient connectivity and well-being are the pulling forces of modern cities, while environmental pollution, high cost of living and uneven distribution of social resources are the pushing forces[2]. Our "provincial sub center city" should then take the pushing force of the integrated function city as its breakthrough point and

centripetal force to make up for the shortcomings of regional development and to enhance its unique attractiveness[3]. This countermagnetic attraction is similar to that of the "provincial sub center city" mentioned here.

More researchers in China have started to use the New Economic Geography and New Growth tools to study the development differences and regional coordinated development of domestic regions. By developing a new economic geography model of knowledge spillovers, Tan Chengwen reveals the non-linear effects of knowledge spillovers and labour mobility on the evolution of regional growth divergences[4]. Large concentrations of skilled labour can have different effects on the relevant regions. At the regional level, the greater the concentration, the more beneficial it is to economic growth; while at the area-wide level, the impact can be both catalytic and counteracting or even inhibiting. To facilitate the guidance of the direction of industrial transfer and technology diffusion for regional coordinated development, Liu Anguo et al. also argue that there is a need to balance the two dimensions of enhancing the distribution advantages determined by the industrial scale economies and the economic efficiency determined by the technological innovation capacity. Based on the agglomerative economies, which includes external economies of scale theory, local market effects and factor flows, Chen Liangwen and Yang Kaizhong argue that in the context of factor flows, economic activities tend to reach a stable equilibrium of complete accumulation when external economies of scale and local market effects reach a certain level[5]. Moreover, under the influence of agglomerative economy effect, the factor flow between regions will not only fail to eliminate the regional gap, but also make it widen.

3. THE ROLE AND ASSESSMENT OF PROVINCIAL SUB-CENTER CITY

The relationship between the "provincial sub-centre cities" and the provincial capital can be compared to the "main attacker" and the "second passer" in volleyball[6]. Many of Chinese provinces are so vast and populous that many countries in the world are not as large as one of our provinces, which poses a serious test to our provincial socio-economic development. The provincial capital city is generally the "main attacker" of its own province and has a leading role in the overall situation, while our "provincial sub-centre cities" play a coordinating and complementary role in this system: Firstly, the "provincial sub center city" must firstly convey the influence of the provincial capital city, and not only simply convey it but also amplify its influence; secondly, amplifying the effect of a provincial capital city does not only depend on the signal strength of a "total base station", it must also have its own "signal source", otherwise it will gradually be swallowed up by the provincial capital city. It is not indispensable to have a "provincial sub-centre city" in a province, for in some small provinces where the provincial capital is located in the centre, the provincial capital city is perfectly capable of shouldering the responsibility of being the leader of regional development. Therefore, on the other hand, there are several requirements for the emergence of "provincial sub center city": first, the "provincial sub-centre city" should keep a certain distance from the provincial capital city or other "provincial sub-centre cities", otherwise it will be easily "annexed" by cities with a higher level of influence than itself, and in this case it will be difficult to nurture the independence of the "provincial sub-centre city", e.g. Foshan in Guangdong Province is gradually becoming part of the Greater Guangzhou region for the process of "Guangfo integration"; second, a "provincial sub-centre city" must be well established in terms of its own infrastructure, for example, its urban population and GDP should be "below one and above ten thousand" in a province. However, it must be clearly understood that in the current "GDP-focused era", GDP is not the only indicator of whether a city is a provincial centre or a "provincial sub-centre city". In theory, the main provincial centre should be the political, economic, cultural, educational and transport centre of the region, but there are exceptions. For example, the economic centre of Jiangsu province is Suzhou, located in the south of the country, and even so, Nanjing's status as the provincial capital is hard to shake.

4. OVERVIEW OF THE SEVEN MAJOR REGIONAL CENTRAL CITIES IN SICHUAN

The following is a brief description of the seven cities in Sichuan that are competing for the provincial sub-centre, in terms of economy, population and transport etc.

4.1 Urban Population and Area

In terms of urban population, Nanchong and Dazhou have a considerable advantage, at around 7 million, while the rest of the cities are mostly at around 5 million. The urbanisation rate in most cities has not yet exceeded 50%, but the population of urban areas has already exceeded one million people, with huge population potential to support the future development of each city. In terms of urban area, except for Leshan and Deyang, the rest of the cities have exceeded 100 square kilometres and most of the entire city area is above 2,000 square metres, which gives them considerable room for urban development. But overall, it is difficult to find a city that is far ahead in all indicators.(see "Table 1")

Table 1. Area and population profile of the seven cities in 2020

City	Total population of the city (10,000)	Urban population (10,000)	Total urban area (km²)	Urban area (km²)	Built-up urban area (km²)	Urban resident population (10,000)	Urbanisation rate (%)
Mianyang	528.5	223.25	20248	2751.4	162.61	486.8	35.77
Yibin	551	259.19	13266	4775	152.47	458.9	37.87
Nanchong	719.3	193.7	12477	2527	153	560.8	49.72
Deyang	382.3	127.53	5910	1096	93.06	345.6	53.9
Luzhou	508	159.57	12236	2132	172	425.4	41.33
Leshan	348	123.62	12723	2506	78.31	316	53.36
Dazhou	652.8	180.56	16582	3133	115.1	538.5	47.17

4.2 Urban Location

From the overall perspective of the Sichuan Province, it is divided into five economic zones: Chengdu Plain Economic Zone, Northeast Sichuan Economic Zone, South Sichuan Economic Zone, Panxi Economic Zone and Northwest Sichuan Ecological Economic Zone. And of these seven regional centre cities: Mianyang, Deyang and Leshan are located in the Chengdu Plain Economic Zone; Nanchong and Dazhou are located in the Northeast Sichuan Economic Zone; Yibin and Luzhou are located in the South Sichuan Economic Zone. From the perspective of the Chengdu-Chongqing urban agglomeration planning and metropolitan area construction, Mianyang, Deyang and Leshan are located in the Chengdemianle urban agglomeration; Nanchong is located in the dense urban area of Nansuiguang; Yibin and Luzhou are located in dense urban areas in Southern Sichuan; Dazhou is located in Dawan dense urban area. In addition, Yibin and Dazhou are also located in the South Sichuan urban agglomeration, which adds to the policy support and industrial clustering of both cities.

4.3 Overview of Basic Transportation

Overall, Mianyang, Luzhou and Nanchong have better transport infrastructure conditions, and the rest of the cities are scrambling to make up for their shortcomings.(see "Table 2")

Table 2. Overview of basic transport of the seven cities in 2020

City	Number of First Class Train Stations	Highway mileage (km)	Rank of airports	National ranking of airports in terms of passenger throughput
Mianyang	2	412	4D	49
Yibin	0	282	4C	94
Deyang	0	205.5	nil	nil
Nanchong	1	574.06	4C	98
Luzhou	0	455	4C	63
Dazhou	1	417	4C	119
Leshan	1	471	4C (Under construction)	null

4.4 GDP Growth Rate and Share of the Five Economic Regions to Which the Seven Major Cities of Sichuan Belong

In 2020, the Chengdu Plain Economic Zone's GDP grew by 4.0% year-on-year, accounting for 60.7% of the province's GDP and further revealing its radiation-driven role; the South Sichuan Economic Zone and Northeast Sichuan Economic Zone continued to develop strongly, with GDP growth rates of 4.2% and 3.8% respectively, accounting for 16.2% and 15.6% of the province's GDP respectively. (see "Table 3")

Table 3. 2020 GDP growth rates and share data of five economic zones in Sichuan seven cities

Economic Zone	City	Growth rate	Share
Chengdu Plain Economic Zone	Mianyang	4%	60.7%
	Deyang		
	Leshan		
South Sichuan Economic Zone	Yibin	4.2%	16.2%
	Luzhou		
Northeast Sichuan Economic Zone	Nanchong	3.8%	15.6%
	Dazhou		

5. MEASUREMENT AND ANALYSIS OF THE "ONE-CITY MONOPOLY INDEX" IN THE SEVEN CITIES

5.1 The Formula and Measurement Results of the "One-city Monopoly Index"

The traditional method of measuring the "one-city monopoly" phenomenon is to calculate the proportion of GDP or population of the core city to the total GDP or population of the province. However, this approach is slightly biased as it ignores the spatial correlation between the provincial distribution of GDP and the provincial distribution of population. The Theil index, also known as Theil's entropy measure, was first introduced by Theil in 1967 when he examined income disparities between different countries. The total income gap between different countries, expressed by the Theil index, is equal to the weighted sum of the logarithms of the ratio of each country's share of income to its share of population. The weight is the share of income of the country. Its formula is as follows:

$$T = \sum_{i=1}^{n} y_i \log \frac{y_i}{p_i}$$

Here y_i stands for the proportion of income to total income in the first country and pi stands for the proportion of population to total population in the first country. The higher the Theil index, the greater the difference in income distribution; conversely, the smaller the Theil index, the more balanced the income distribution. The "one-city monopoly index" can be used to describe the difference between the core category of cities in a province and the areas outside the core cities. Based on this idea, the proportion of each country's income in the Theil index is replaced by the proportion of GDP in the metropolitan area (A) and the proportion of GDP in areas outside the metropolitan area (100-A). Correspondingly, the population proportion is replaced by the proportion

of metropolitan population (B) and the population ratio (100-B). (see "Table 5") The "one-city monopoly index", which reflects the difference between the population ratio and the GDP of the metropolis and the rest of the province, is then obtained. The specific "one-city monopoly" index (OMI) is:

$$OMI = Alog\frac{A}{B} + (100 - A)\, log\frac{100 - A}{100 - B}$$

A represents the proportion of GDP in the core cities in the province; (100-A) represents the proportion of GPD except for the core cities in the province; B represents the proportion of population in the core cities in the province; (100-B) represents the proportion of population except for the core cities. In this paper, in order to find out the driving effect of the priority development of urban areas on the overall development of the municipality, the above-mentioned part involving core cities can be replaced by the GDP and population data of urban areas. Through data collection and calculation, the one-city monopoly index for urban areas of the seven regional central cities in Sichuan Province is shown in "Table 4".

Table 4. One-city monopoly index for urban areas in seven regional central cities in Sichuan

City	Urban area share of city's GDP (%) (A)			Urban area share of city's population (%) (B)			One-City Monopoly Index		
Year	2010	2015	2020	2010	2015	2020	2010	2015	2020
Mianyang	48.34	47.63	55.3	26.62	29.35	45.86	4.64708	3.203726	0.7769
Deyang	31.10	28.67	35.61	17.55	21.26	36.9	2.36104	0.664176	0.0137
Yibin	37.44	40.48	61.23	17.16	23.92	47.04	5.04389	2.904848	1.6721
Nanchong	38.35	36.20	37.74	30.97	30.34	34.54	0.53570	0.33938	0.09698
Luzhou	51.61	52.84	54.74	32.96	33.32	37.51	3.19966	3.486272	2.6451
Dazhou	14.90	27.92	33.25	8.28	29.70	33.53	1.03673	0.034624	0.0007
Leshan	48.20	47.96	44.15	36.48	37.67	39.12	1.24754	0.951068	0.2276

a Data sources: 1. Editorial Committee and Editorial and Publishing Staff of Sichuan Statistical Almanac-2020 Editorial Committee and Editorial and Publishing Staff of Sichuan Statistical Almanac-2020. Zeng Junlin, Chief Editor, Sichuan Statistical Almanac, China Statistics Press, 2020, 4-5, Almanac.

b Data sources: 2. Editorial Committee of Sichuan Statistical Almanac-2015 Editorial Committee of Sichuan Statistical Almanac-2015. Xiong Jianzhong, Chief Editor, Sichuan Statistical Almanac, China Statistics Press, 2015, 4-5, Almanac.

c Data sources: 3. Editorial Committee of Sichuan Statistical Almanac-2010. Sichuan Statistical Almanac, China Statistics Press, 2010, P4-P5, Almanac.

Table 5. One-city dominance index degree range breakdown

Range	0<OCI≦2	2<OCI≦4	OCI>4
Feature	Urban dominance is not evident	Urban dominance is evident	Urban dominance is prominent

5.2 Analysis of One-city Monopoly Index by Cities

In 2020, the phenomenon of "one-city monopoly" was prominent in none of the seven cities, but only evident in Luzhou and not in Deyang, Nanchong, Dazhou, Yibin and Mianyang. The results show that the phenomenon of "one-city monopoly" is relatively prominent in two cities in the southern Sichuan economic zone. The main reasons for this are as follows: first, geographical characteristics. Western China is characterised by rugged terrain, a poor combination of light, heat, water and soil, remoteness and difficult transportation. The second reason is the unique historical and cultural background. Western China is a multi-ethnic region with a low density of population and highly qualified labour, a weak non-agricultural industrial base, and a low level of development in terms of marketisation, globalisation and urbanisation.

From 2010 to 2020, the "one-city monopoly" phenomenon continues to slowly expand and then begins to decline in Luzhou, continues to decline significantly in Mianyang, gradually increases in Leshan, and decreases relatively steadily in Nanchong. In the rest of the cities, the decrease in the "one-city monopoly" phenomenon is first large and then small. Apart from geographical, historical and cultural factors, another important reason for the variation in the one-city monopoly index or the development gap within a city is the role of

institutional factors. The Chinese urban hierarchy has always been top-down, with all resources being deployed through the upper levels, and this fundamental feature has undoubtedly had a decisive influence on the socio-economic development of Chinese cities. Luzhou, Nanchong, Leshan and Dazhou are selected to analyse the development logic involved.

In Luzhou, during the decade 2010 to 2020, the one-city monopoly index slowly expanded and then got under control and started to decline. Luzhou's "China (Sichuan) Pilot Free Trade Zone", which has been inaugurated since 2017, is located within the Longmatan district of Luzhou, a transit point for the coordinated opening of the inland coast. On the other hand, it can also coordinate with the construction of the Chengdu Tianfu New Area and the land and water transportation on the Qingbaijiang Railway Rong-Europe Line in Chengdu, creating a new high point for opening up in Sichuan and even in the west. For Luzhou, the four zones-the Lingang Zone, the Luzhou National Hi-tech Industrial Development Zone, the China Baijiu Golden Triangle Liquor Industry Park and the Luzhou Airport Industrial Park-are interlinked to promote the sustainable and stable development of Luzhou's local baijiu, electronic information and emerging industries.

Nanchong is the most populous of the seven cities, with a total population of 7,237,100 as of 2020. "Silk City" is another synonym, but with its pillar industry, the silk industry, gradually suffering from the impact of economic reforms and regional administrative divisions at a later stage, the city's economy has also suffered a serious blow. In recent years, Nanchong has stepped up investment in Geely Automobile, Sanhuan Electronics Factory, Xinda Group, Yanjing Beer and Huiyuan Juice, and its one-city monopoly index has continued to decline.

Mianyang, Deyang, Yibin and Luzhou, typified by Dazhou, are all on a steady downward trend, but in general the trend is one of rapid decline followed by slow decline. It can be seen that they all completed their urban expansion between 2015-2020, incorporating the slightly less developed surrounding counties into the urban area. On the other hand, the cities were all hit to varying degrees by the Wenchuan earthquake between 2010-2015. In addition, the bigger county economies have contributed to the continued decline in the one-city monopoly index. In 2015, for example, Dazhou's GDP ranking had Dazhu County, Xuanhan County, Qu County and Dachuan District, which was then Daxian County, all ranked above the urban area, while in the turn of the year 2020, its old urban area ranking remains at fifth place. Sichuan has a total of 10 county-level cities in addition to Chengdu and the county-level cities that serve as the capital, and the four cities related in size here occupy half of them, which are visible in the economic development of the counties. After 2015, the economy of each place has exceeded the 100 billion and 200 billion mark, the trend driven by the main urban areas gradually emerged, and is also the reason for the gradual narrowing in the later years.

Since its foundation, Leshan has been home to the largest number of municipal districts among the seven cities. In December 1996, Mount Emei-the Great Buddha of Leshan became a World Cultural and Natural Heritage Site, and in 2014, Dongfeng Weir became a World Irrigation Heritage Site, bringing considerable economic benefits for its rich tourism resources. With the rise of the tourism boom in the surrounding districts and counties, its one-city monopoly index has declined slightly. But after 2015, with its tourism industry riddled with problems, its economic development has been severely hit, and also its pillar industries of metallurgy and ironmaking in Shawan District have been somewhat affected by the general environment at home and abroad. Compared to the other seven cities, its economic output also slipped from sixth to last place.

5.3 Summary of the Analysis of the One-city Monopoly Index in Seven Cities

Urban systems consist of a series of towns and cities of different levels and sizes, with different functional sectors and closely interconnected within a relatively complete region or country with a central city at its core. It includes the following two types: monocentric cities and polycentric city-regions. The former refers to a metropolitan region surrounded by many small and medium-sized cities and satellite towns at different levels, with a large city at its core. The latter refers to a polycentric urban cluster consisting of several large and medium-sized cities of similar size and surrounding towns. However, as can be seen from the above, the one-city monopoly index of the seven cities in Sichuan appears to be at a moderate to low level overall, which can lead to a certain degree to the poor radiation drive of the central city. The reasons for this are as follows:

Firstly, the pilot project of "expanding the power of counties" has been launched. Since 2007, Sichuan has established two batches of pilot counties for the "expansion of county power", with a total of 57 pilot counties in the province, and seven cities occupying 34 seats. This has greatly expanded the powers of the counties within the city, giving them sufficient power to deploy resources and promoting a larger and stronger county economy, but on the other hand, also competing with the central urban areas for many resources. For example, in Dazhou, a typical city, the urban area has been difficult to expand and strengthen over a ten-year period, while all other counties in the region have been listed as pilot counties for the "expansion of county power".

Secondly, the ability to integrate resources is not strong. For example, Deyang is a typical combination city and until today its districts and counties have a very weak identification with the central city. Even the urban area has more influence on the districts and counties than the nearby cities of Chengdu and Mianyang. The districts and counties are separate, with decentralised and fragmented management. The difficulties in effectively integrating talents, capital and technology, coupled with the geographical location between the second and third largest cities in Sichuan and the lack of close ties, as well as local protectionist thinking, have led to Deyang's lack of momentum in the later stages of development and the gradual loss of its position as the third leading city in Sichuan.

Thirdly, the county was quickly removed and established as a district this year. The one-city monopoly index is measured by allocating the GDP of the place equally to each person. In recent years, cities such as Mianyang, Yibin and Deyang have made adjustments to their districts and counties, incorporating surrounding counties that were not as developed as urban areas into urban areas, which can result in the relative growth in population in urban areas exceeding the proportion of GDP growth. Although in the short term this has affected the presentation of the one-city monopoly index to some extent, it has also facilitated the development of the city in later years in terms of labour, land, natural resources and administrative systems.

6. SUGGESTIONS FOR BALANCED REGIONAL DEVELOPMENT BASED ON THE ONE-CITY MONOPOLY INDEX

6.1 Ample Room for Improving the One-city Monopoly Index in Seven Cities

The seven cities in Sichuan need to increase their one-city monopoly index to varying degrees from the current one. In fact, the "one-city monopoly phenomenon" contributes to the vitality of cities through the influx of population. Cities with an influx of people have more jobs, while cities with an outflow of people have fewer jobs. Population follows industry, which in turn determines the rise and fall of cities. Population movement is also driven by efficiency and effectiveness. Central cities have greater efficiency and greater income and therefore have a strong ability to attract people.

First, in most urban regional systems, political resources are highly concentrated in urban areas. For example, institutions such as the Party Committee, the National People's Congress, the government and the Chinese People's Political Consultative Conference are concentrated in urban areas. Not only do they occupy prime locations with easy access and commercial prosperity, but they also control the power to allocate resources. The correspondence between the level of power and the regional level, and the overlap between political and economic centres, are typical features of China's urban development.

Second, in general, the higher the level of administration of an area, the more development resources or major projects it will have access to. As urban areas have more political resources, high-quality infrastructure such as transportation and high-quality public services such as healthcare and education are mainly allocated to urban areas. The policy preference of financial resources to urban areas not only gives it access to more budgetary funds and public finance construction land targets, but also makes it more attractive to talented people and foreign investment, thus providing more development opportunities. In an atmosphere where infrastructure and public services are heavily skewed towards urban areas, planning and policies tend to prioritise urban development.

Thirdly, competition and cooperation are common within urban areas, and it is the tension between competition and cooperation that drives cities to greater scale and higher levels. As urban areas have a strong centripetal force in the region, they can continuously absorb technology, capital, resources and business from the surrounding economic hinterland, thus squeezing the

development space of other cities in the region. The loss of capital, technology and talent will lead to a rise in regional protectionism of the surrounding counties. The neighbouring cities then find ways to prevent the outflow of advantageous local resources or the entry of external goods, adopting market blockades to protect local interests. This will, on the one hand, intensify market competition; on the other hand, it will urge the national or provincial governments to limit the development of urban areas to a certain extent to meet the needs of sustainable development in other areas. Under the concept of urban and region coordinated development, it is increasingly recognised that collaborative competition is preferable to pure competition.

6.2 Avoiding Blindly Expanding the Development of Central Cities in the Long Term

However, it is not a matter of making the central city bigger without limit while compressing the development of the surrounding areas. Previous studies have also argued that if the urban population of any country is excessively concentrated in one city, it is bound to exacerbate the imbalance in regional development. In fact, this view is not entirely correct. On the one hand, in the process of urban development, the concentration and dispersion of population is related to its stage and pattern of development. On the other hand, the coordination between urbanisation and economic development depends to a large extent on the capacity of cities to generate employment, rather than on the concentration of urban population.

"One-city monopoly" is a complex phenomenon in the urbanisation and regional development process in both developed and developing countries. Urbanisation is a long-term development process, and there are huge regional differences. In central and western China, where most cities are in the middle stage of industrialisation, the phenomenon of "one-city monopoly" still exists as an objective necessity. Only by continuously improving the core competitiveness of central urban areas can we better participate in global and regional cooperation and competition, and promote high-quality development of metropolitan areas and city clusters as well as provincial economies. On the other hand, metropolitan areas and urban clusters with an influx of population remain the most important spatial carriers of increased employment in the future. Therefore, administrative instruments should be used cautiously to ease the population of large cities. In particular, irrational urban governance strategies should be adjusted, for example through measures to eliminate "low-end populations". The capacity of urban areas and urban economic zones to attract employment should be fully exploited to create more service sector jobs and increase market size to meet the real needs of urban residents.

7. CONCLUSION

In the context of the rapid development of Sichuan Province, the race for the seven cities to become the sub-centre of Sichuan remains fierce. The main reasons for this are as follows: (1) Since the 3rd Plenary Session of the 11th Provincial Party Committee, Sichuan Province has established the "one trunk with many branches" strategy as a new provincial-level strategy, and has explicitly "encouraged and supported regional central cities that have the conditions to become the province's economic sub-centre". Up until now, five major economic zones have been planned and city cluster plans have been introduced and implemented, but there has yet to be a city that can completely pull ahead of the rest. (2) The cities are at a relatively low level of economic development and urbanisation, but maintain a high rate of development. They are a major platform to support China's high quality economic development as well as a focus for China's current and future development and have great potential for development. With significant advantages in terms of space, population, resources and policies, these central cities will undoubtedly become the future growth poles of the regional economy. (3) One of the most important issues in Sichuan's regional development is the unbalanced and uncoordinated problem, which is now led by different economic zones and different regional hub cities through differentiated and synergistic development to achieve multi-point and multi-plate and multi-support development, including the strengthening of the county economy.

Therefore, on the one hand, the continued growth of the county economies of the cities is inevitable and their growth should not be overly curbed under the guise of "promoting balanced regional development". However, by controlling the "growth boundary", the industrial structure, land use structure and urban spatial structure can be optimised and collaboration between cities at different levels can be strengthened. On the other

hand, the development of urban areas can improve the overall core competitiveness of a city, but at the same time it may also lead to the widening of the gap between urban and regional development. Therefore, the ranking of city GDP should not be pursued blindly, but with due consideration to the balanced development of each region. Equity also means having a consideration of efficiency, and the focus should not just be on the efficiency of individual urban areas, but on overall efficiency. Urban areas are responsible for promoting the all-round development of the city's economy, society, culture and ecology, and through the spillover effect of urban areas, a higher quality of regional coordinated development can be achieved. It is important to note that the development of a single urban area is not the ultimate goal of an urban cluster. The creation of an urban cluster with a competitive economy, a friendly society and an attractive living and ecological environment is the core objective of regional development.

In the process of industrialisation and urbanisation, spatial unbalanced and balanced development alternate. The two are closely related and inseparable. In other words, regional development is a unification of balanced and unbalanced development. The primary goal of unbalanced development is the pursuit of efficiency, while the primary goal of balanced development is the pursuit of equity. In under-developed regions, there is a greater sense of catching up with efficiency. In developed regions, the quest for social justice is more pronounced. Therefore, even in a phase dominated by unbalanced development, the concept of balanced regional development cannot be completely abandoned.

AUTHORS' CONTRIBUTIONS

Keyi Gou is responsible for data collecting and wrote the manuscript, and Yan Liu contributed to revising and editing.

REFERENCES

[1] Xu Xueqiang, Ye Jia'an. Interprovincial differences in urbanization in China [J]. *Journal of Geography*, 1986(01):8-22.

[2] Wang Chunyang, Meng Weidong,Zhou Jingxiang. Spatial evolution of urban agglomerations in China in the era of high-speed rail: agglomeration or diffusion [J]. *Modern Economic Science*, 2018,40(03):103-113+128.

[3] Lei Zhongmin, Kang Junjie. Evaluation of urban primacy: theoretical framework and empirical analysis [J]. *Urban Development Studies*, 2010, 17(04):33-38.

[4] Tan Chengwen. Research on economic growth and accumulation based on population movement and knowledge spillover [D]. PhD Thesis, Peking University, 2002.

[5] Chen Liangwen, Yang Kaizhong. The causes of regional economic disparities in China: A perspective of factor mobility and agglomeration economy [J]. *Modern Economic Science*, 2007(03):35-42+124.

[6] Ding Renzhong, Zhang Hang. The interaction between urban primacy and regional economic growth — based on spatial multiple forms analysis [J]. *Modern Economic Science*, 2020,42(05):16-27.