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OMPARATIVE STUDY ON HINESE URBAN AGGLOMERATION DISTRI TS

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ABSTRA T: The formation and development of urban agglomeration districts are the inevitable trend of modern urban evolution. Owing to the differences of formation background, urbanized way and process of different cities in the world, the feature and formation mechanism of urban agglomeration districts in the world present obvious spatial differences. The paper inquires into the structure feature, formation mechanism and development trend of different kinds of Chinese urban agglomeration districts by studying four big urban agglomeration districts: Jing-Jin-Tang (Beijing-Tianjin-Tangshan), the middle and south of Liaoning, Hu-Ning-Hang (Shanghai-Nanjing-Hangzhou), and Zhujiang River delta. The paper wants to promote the formation and development of theory and practice system of Chinese urban agglomeration districts.

KEY WORDS: Chinese urban development, urban agglomeration district, comparative study

I. DEVELOPMENT SITUATION OF CHINESE URBAN AGGLOMERATION DISTRICTS

1. General Development Situation of Urban Agglomeration Districts

The four big urban agglomeration districts in China refer to the Jing-Jin-Tang (Beijing-Tianjin-Tangshan), the middle and south of Liaoning, Hu-Ning-Hang (Shanghai-Nanjing-Hangzhou) and Zhujiang River delta(Fig. 1). Up to the end of 1995, the total population of these four big urban agglomeration districts was 207 309 thousand, non-agricultural population was 75 453. 6 thousand, occupying 24. 03% and 31. 48% respectively of Chinese cities'. The urbanization level of four urban agglomeration districts was 36. 40%, 8. 7% higher than the average level of the whole nation . The gross domestic product (GDP) of the four districts is 11 682 286 million yuan (RMB), covering 37. 44% of the whole nation's (Table 1). So the economic development level and urbanization level of these four urban agglomeration districts

Table 1 Situation of Chinese four big urban agglomeration districts

Index	Jing-Jin-Tang	Mid and S of Liaoning	Hu-Ning-Hang	Zhujiang River delta	Total	Whole nation
Total population (10^4)	4219.78	3423.75	9763.96	3323.41	20730.9	86270
Land area (km^2)	77074	112189	121553.1	70452	381268	3327374
Non-agricultural population(10^4)	1538	1525.26	3139.48	1297.5	7545.36	23968
GDP (10^8 yuan)	2020.86	1734.98	5066.83	2860.2	11682.86	31203.7
Urbanization level(%)	37.52	44.55	32.15	39.04	36.4	27.78
Population density(person/km^2)	547.5	305.18	803.26	471.7	543.74	259.27
Area of built-up district(km^2)	1124	1049	1659	1318	5150	18976

Source: 1995 China Urban Statistical Yearbook

occupy a decisive position in China. Just as French geographer, Jean Gottmann said that urban agglomeration districts dominated economy, finance and trade activities of a country, even influenced the global economic activities.

2. Regional Difference of Urban Agglomeration Districts

The population, area, non-agricultural population and GDP of Hu-Ning-Hang urban agglomeration districts occupy the first places in Chinese four big urban agglomeration districts. The national income, gross value of industrial output, fixed assets investment per capita of the Zhujiang River delta occupy the first places in China(Table 2).

Table 2 Main economic indexes of Chinese four big urban agglomeration districts (yuan/person)

Index	Jing-Jin-Tang	Mid and S of Liaoning	Hu-Ning-Hang	Zhujiang River delta	Whole nation
GDP	4789	5067	5189.3	8606.2	3617
Gross value of industrial output	7986.3	9025.5	12032.6	15444	6570
Original fixed assets	3909.5	5608.8	2910.75	7655.2	3043.5
Total value of P and T communications service	134.7	87.2	105.95	130.9	66.6
Total value for goods	4595.5	4489	5790.6	10441	3125.7
Remaining sum of bank deposit	4780.4	4711.1	3979.7	8066.1	2777

Source: 1995 China Urban Statistical Yearbook

From the urbanization process, the yearly increasing speeds of urban population and non-agricultural population in the Zhujiang River delta occupy the first places in China(Table 3). The increasing speed of non-agricultural population in the Mid and S of Liaoning is only 1.8%.

II. MAIN FEATURES OF CHINESE URBAN AGGLOMERATION DISTRICTS

1. Common Features

(1) Large population density, agglomerated towns and high urbanization. The population

Table 3 Urbanization speeds of Chinese urban agglomeration districts (1984– 1995) (%)

District	Urban population	Non-agricultural population	Urban area	Area of built-up district
Jing-Jin-Tang	3.00	2.15	6.84	3.50
Mid and S of Liaoning	6.08	3.45	13.00	5.45
Hu-Ning-Hang	9.98	6.09	18.47	9.47
Zhujiang River delta	12.78	9.23	20.25	14.64

Source: 1995 China Urban Statistical Yearbook

density of chinese four big urban agglomeration districts is 437.4 person/km^2, far higher than the average level of the whole nation, 259.27 person/km^2. Urbanization level is 36.4%, 8.7% higher than average level. GDP per capita is 5635.48 yuan, 1.56 times higher than the average level.

(2) The primary level of central city is high. The population size of these cities are all increasing. The primary level of the four big urban agglomeration districts are all more than 1.5, that of Hu-Ning-Hang, the Zhujiang River delta are 3.11 and 3.09 respectively. The population size of Beijing, Shanghai, Guangzhou and Shenyang are all increasing(Table 4). At present time, the primary cities of Chinese urban agglomeration districts are still in an increasing stage, which is different from the urban development features of the western countries.

Table 4 Population changes of primary cities in Chinese four big urban agglomeration districts

	Population (10^4)						Yearly growth rate(%)	Increment (times)
	1936	1953	1970	1980	1989	1995		
Beijing	155.1	276.8	366.0	454.8	569.2	724.1	2.65	4.67
Shanghai	372.7	620.4	576.4	598.3	743.5	953.0	1.61	2.56
Guangzhou	122.2	159.8	187.5	228.9	288.4	380.3	1.94	3.11
Shenyang	52.7	229.9	224.6	284.4	357.2	468.9	3.77	8.90

(3) The regional urban function changes obviously. In megalopolis, the proportion of tertiary industries, such as commerce, trade, finance and insurance, rise quickly. Medium-sized cities become the main carriers of regional industry. Many specialized industrial and small commercial cities are rising.

(4) Spread ways of urban area diversified day by day. Megalopolises, such as Beijing and Shanghai, take the spreading to near suburban district as the dominant factor and come into the stage of suburb urbanization. Medium-sized cities stress spatial spread and are changing towards high-level buildings and diversified landscape. In the wide rural area, non-agricultural industries gather towards small cities and made them develop quickly by rural industrialization. So urbanization development pattern that has Chinese special feature has taken shape.

(5) City distribution changes obviously. Along with the networkization of regional infrastructure, cities form their distributions along transport axis and become different kinds of urban

distribution axis. Then, urban continuous region and urban spatial network become the main kind of urban distribution.

2. Individual characters

(1) Jing-Jin-Tang urban agglomeration district. This district has a population of 42 198 thousand and an area of 77 074 km^2, and consists of 7 central cities and 6 middle-sized and small cities. Main cities are Beijing, Tianjin, Tangshan, Qinhuangdao, Langfang, Changzhou and Zhouzhou (Fig. 1B). The dominant position of megalopolis is very obvious. The population, non-agricultural population of Jing-Jin-Tang are 85.5% and 90.2% of this district respectively. The urbanization level of megalopolis is 51.43%, but in the middle and small cities, it is only 11.5%.

The value of industrial output and total volume of retail sales of Beijing and Tianjin make up 85.7% and 87.4% of the whole district. The modern urban function, such as commerce and trade, finance, are advancing day by day, which shows the strong spread ability of urban function. Metropolitan areas develop quickly(Sun, 1992). The strong spread ability of megalopolis makes urban function regionalization and forms functional urban area which takes the original completed region as the core. In regional space, metropolitan areas form urban spatial system, which is Jing-Jin-Tang agglomeration district. It depends on the disposition of regional productive elements and transport network, takes the functional spread of central city as the basic power. Among Jing-Jin-Tang, there is a green land system that takes Jixian County as the core. This kind of urban spatial formation is just as Netherlands urban region(Wu *et al.*, 1996).

(2) Mid and S of Liaoning urban agglomeration district. This district has a population of 32 327.5 thousand and an area of 112 189 km^2, and consists of 9 central cities and 8 middle-sized and small cities. Main cities are Shenyang, Fushun, Anshan, Benxi, Dalian, Liaoyang, Yingkou, Dandong and Tieling (Fig. 1A). In this district, there are many large cities which develop balancedly. Industrial cities form the main body in this district(Hao *et al.*, 1985). There is obvious division and cooperation system. Shenyang and Dalian are the spread cores in this district. Urban development distribution is pushing on from the south and north to the middle.

The urbanization process of this district began early, but since the 1980s, the development speed has fallen behind the other three urban agglomeration districts.

(3) Hu-Ning-Hang urban agglomeration district. This district has a population of 97 639.6 thousand and an area of 121 553 km^2, and consists of 14 central cities and 28 middle-sized and small cities. Main Cities are Shanghai, Nanjing, Hangzhou, Wuxi, Suzhou, Nantong, Changshu, Changzhou, Zhejiang, Ningbo, Yangzhou, Tiaxing, Shaoxing, Yixing etc. (Fig. 1C). Hu-Ning-Hang is an urban agglomeration district with the largest size and the most population in China. Its processing industry, commerce and trade are highly developed, and its

functional level occupies the first place in the whole nation.

Many cities are distributed along Jing-Hu (Beijing-Shanghai) and Hu-Hang (Shanghai-Hangzhou) railways and the Changjiang River. Economic urban-rural integration is very developed. The main functions of megalopolises spread obviously, which makes many urbanized areas come into being and shows the development trend of urban continuous region along the main transport lines. The spatial structure which takes Shanghai as the head and the Changjiang River delta as the south and north flanks has formed.

(4) Zhujiang River delta urban agglomeration district. This district has a population of 33 234 thousand and an area of 70 452 km^2, and consists of 8 central cities and 16 middle-sized and small cities. Main cities are Guangzhou, Shenzhen, Zhuhai, Jiangmen, Zhaoqing, Foshan, Dongguan and Shude (Fig. 1D). The growth rate of town population stands in the forefront of the whole nation, especially the growth rate of non-agricultural population, being 4.2% higher than the average level (1984–1995).

The main special characters of this district are rapid development, large number and high development level of middle-sized and small cities.

The urban spatial distribution with Guangzhou as the pinnacle, around the mouth of the Zhujiang River, along Guang–Shen (Guangzhou–Shenzhen), Guang–Zhu (Guangzhou–Zhuhai) transport lines has formed. After Hongkong and Macau return to China, the Zhujiang River delta will become an urban spatial network which has several cores, such as Guangzhou-Foshan, Zhuhai-Macau, Shenzhen-Hongkong. This district will enter a higher development stage.

III. FORMATION MECHANISM OF CHINESE URBAN AGGLOMERATION DISTRICTS

Political element is the premise factor forming Jing-Jin-Tang agglomeration district. As the capital and municipality directly under the Central Government, Beijing and Tianjin's political position has made them have priority to support productive force distribution and urban construction by central finance, which makes regional elements gather towards central cities, changes the function and increases the economic ability of these two cities.

Functional spread of central cities is the important power of forming Jing-Jin-Tang urban agglomeration district. Development of regional transport network, especially the construction of expressway around Jing-Jin-Tang, has quickened the formation of this district.

Spatial distribution and combination state of mineral resources is the base of forming Mid and S of Liaoning agglomeration district. Mineral resources exploitation and the building of regional heavy and chemical industry system is the basic power of forming Mid and S of Liaoning urban agglomeration district.

In Hu-Ning-Hang urban agglomeration district, agriculture is highly developed, handicraft industry, commerce and urban development have a long history. The comprehensive industrial

base of Shanghai and the construction of important industrial cities, such as Nanjing, Hangzhou and Suzhou, are the main power of developing large cities in Hu-Ning-Hang. The functional spread of large cities and rapid development of small township enterprises are the basic power of forming Hu-Ning-Hang urban agglomeration district.

In the 1980s, policy of opening to the outside world provided a juncture developing the Zhujiang River delta urban agglomeration district. New vigour was poured into this district and the development of non-agricultural industry and the construction of regional basic facilities were spurred by importing funds and techniques. Rapid development of small township enterprises and local economy is the main power forming the Zhujiang River delta urban agglomeration district. Rapid development of small township enterprises advanced the process of rural urbanization. Which made the small towns in the Zhujiang River delta increase greatly and the density of small towns highest in China. Moreover, the geographical position of Foshan, Jiangmen and Huizhou is very advantageous, which makes them import foreign funds and develop export-oriented industry. Special preferential policy made Shenzhen and Zhuhai develop quickly .

IV. DEVELOPMENT OF CHINESE URBAN AGGLOMERATION DISTRICTS IN THE FUTURE

(1) Jing-Jin-Tang district

Speed the functional spread of central cities. Construct the big cities of Tangshan, Qinhuangdao and the middle cities of Langfang, Baoding and some small towns. Limit the development of heavy and chemical industry in Beijing. Strengthen city function of commerce and trade finance and insurance of Beijing. Turn the development direction of heavy and chemical industry to Tangshan, Langfang and Baoding. Build Beijing urban agglomeration area and Beijing-Tianjin, Beijing-Baoding agglomeration belt. Build new urban belt around the Bohai Sea depending on the port superiority of Qinhuangdao, Wangtan, Tianjin and Huanghua(Wu *et al.*, 1996).

(2) The middle and south of Liaoning district

Transfer the functional structure of big cities, strengthen economic vigour. Improve the productive ability of processing industry, build processing industry system based on raw and processed material instead of the system of excavation industry and raw and processed material industry. Central city, Shenyang, should lay stress of commerce and trade, finance, real estate, information, high and new technology industry so as to be the central city in the northeast area. Make use of the industrial spread of big cities, build some middle and small cities, such as Haicheng, Wafangdian, Gaizhou, Pulandian and Tieling. Along Shen-Da(Shenyang-Dalian) communication line, build some towns . Form some town areas which take Shenyang, Anshan and Dalian as the centres respectively.

(3) Hu-Ning-Hang district

Take Pudong development as the juncture to make Shanghai the central city of commerce, trade and finance in East Asia. Having international function is the inexorable way of Shanghai.

Compressing and transferring the traditional industry of big cities is one of the main direction of adjusting city function. Local point of city distribution should turn to Changshu, Jiangyin, Rugao, Yixing, Jurong and Lishui, and bring along the areas around these towns. Develop Jiaxing, Yuhang, Xiaoshan, Shangyu and Yuyan, build a city belt along Hangzhou Bay. Build the railway of Nanjing– Chongrong – Yixing– Changxing– Hangzhou (about 280 km) which can raise the city density along the line. A regional pattern with Shanghai as the centre, Shanghaig– Nanjing– Hangzhou railway as the axis and the south and north of the Changjiang River delta as the flanks will be formed.

(4) Zhujiang River delta district

Improve the structural grade of city function, strengthen economic reserve strength. Put stress on improving technology level and development technology-intensive industry. Make the Zhujiang River delta district be a new industrial base and the urban agglomeration district which has high grade structure.

Take the development of developing industry and the modern tertiary industry as regional general target, based on regional superiority of different cities, define the functional structure of different kinds of cities, form clear division system of city function.

Strengthen the development of Guangzhou and Shenzhen, make them two megalopolises in the Zhujiang River delta district and bring the leading role into play.

Form the urban agglomeration belt around the mouth of the Zhujiang River by building Foshan– Zhuhai highway and Lingdingyang Bridge. Moreover, build Guangzhou– Enping, Guangzhou– Huizhou communication lines, form the city belt which takes the Zhujiang River delta as the flanks.

After Hongkong and Macao return to China, the Zhujiang River delta will be a regional pattern of urban spatial network which takes Guangzhou-Foshan, Shenzhen-Hongkong as the cores, Guangzhou-Zhuhai-Macao and Guangzhou-Shenzhen-Hongkong as the first grade city belts, and the two flanks of the Zhujiang River delta as the second city belts.

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