

Research on the Homogenization Development of Beihai-Qinzhou-Fang Chenggang Urban Industries under Beibu Gulf Urban Agglomerations in China

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Abstract

This study examines the homogenized development of three closely related cities in Guangxi Province of China. The cities are Beihai, Qinzhou, and Fang Chenggang (otherwise called *Beiqinfang*), as an important part of Beibu Gulf urban agglomerations in China. The paper explored the current situation of Beiqinfang urban industries through quantitative research methods, applied correlation degree measurement index to conduct effective measurement on the isomorphism of Beiqinfang urban industrial development, in order to understand the current situation of industrial isomorphism among those areas, establish industrial dislocation development among Beiqinfang cities, and how to achieve sustainable development. We recommend that the three cities should actively avoid the mutual competition among them, so as to achieve effective resource allocation and prevent industrial homogenization.

Keywords: Urban agglomeration, City industry, Homogenization development, Beibu Gulf, China

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1. Introduction

On January 20th 2017, the State Council of China approved the construction of Beibu Gulf national urban agglomerations, and the Beihai-Qinzhou-Fang Chenggang (Beiqinfang) is an important part of the Beibu Gulf urban agglomerations. Under the background of constructing urban agglomerations (Li et al., 2020), and based on the research of urban resources (Ze et al., 2019), the development situation, and technological conditions, experts and scholars have been concerned about how to position urban development, formulate urban development strategies and development goals, and to determine the development direction and industrial structure, as well as actively avoid the mutual competition among cities, so as to realize effective resource allocation, prevent industrial homogenization, and reduce regional competitiveness. Domestic scholars also have put forward a lot of research findings for reference. For instance, in terms of urban positioning, Hu (2016) believes that city development must be based on its own reality and the overall planning of urban agglomerations, and the urban function positioning should be determined properly, to develop relevant industries, promote industrial agglomeration and integration, and finally formulate a reasonable system of division of labor and cooperation. Also, Li (2016) thinks that the urban development should set a reasonable positioning for the urban agglomerations and each city. Industries suitable for key development should be selected based on the positional selection, so as to realize dislocation development, promote regional coordinated development, construct a reasonable framework of regional industrial division and cooperation, and try to shape a reasonable division pattern. With regards to the coordinated development of urban industries, Huang (2016) indicated that based on the advantageous industry of each city, complementary advantages with other urban industries in the region should be coordinated actively, so as to reinforce cooperation, and achieve common development. Through research on breaking administrative barriers in industrial development, Luo (2016) found that the labor division and cooperation among industries should be given full play, to avoid homogeneous competition, and promote joint development of industrial clusters. In regard to the urban dislocation development, based on the urban industry dislocation development, Yuan (2017) suggested that it is better to make scientific planning and positioning on the city's industrial development, so as to realize regional coordinative development, avoid the homogenization and mutual competition of industries among cities, and shape unique industrial clusters among regions.

Generally speaking, scholars in China have done a lot of research on the dislocation development of urban industries (Xiaoxiao et al., 2020; Xueting et al., 2017) from different directions, such as positioning, coordinated development and dislocation development among cities, and have made some achievements. However, the research methods used were more focused on qualitative analysis and less quantitative analysis. This paper analyzes the dislocation development of Qinzhou, Beihai and Fang Chenggang using quantitative analysis method in order to promote healthy development amongst these cities.

2. Literature review

2.1 Basic economic situation of Beihai city

As a coastal open city in China, Beihai city is endowed with a good deep-water port, which has a convenient access to the sea in the southwest of China. At the same time, Beihai city is located at the western development region as well as the ASEAN economic group, which has a remarkable location advantage. Through its location advantage, Beihai city is able to greatly develop its economy, which keeps improving, and now it has strong economic performance indicators and highly developed in Guangxi Province of China.

For example, according to statistics in 2016, Beihai city achieved a gross domestic product (GDP) of 100.728 billion Yuan, accounting for 5.52% of the total GDP of Guangxi Province, namely 1824.507 billion Yuan. Estimated by the resident population of 1643700, the per capita GDP was 61,619 Yuan, which was 1.62 times of the per capita GDP of Guangxi Province, namely 38,042. Also, in 2016, the fiscal revenue of Beihai city was 16.631 billion Yuan, accounting for 6.78% of Guangxi's fiscal revenue, namely 245.405 billion Yuan. In the same year, Beihai city's total investment in social fixed assets was 101.110 billion Yuan, accounting for 5.73% of Guangxi's total investment in social fixed assets, namely 1765.295 billion Yuan, and the city's total retail sales of consumer goods was 22.534 billion Yuan, accounting for 3.21% of Guangxi's total retail sales of social consumer goods, namely 2.731 billion Yuan in the same period.

Table 1. Major Economic Index of Beihai city in 2016 (Unit: billion Yuan)

GDP	1007.28
Proportion of the whole province	5.52%
Per capita GDP (Yuan)	61619
Total fiscal revenue	166.31
Proportion of the whole province	6.78%
Fixed asset investment	1011.10
Proportion of the whole province	5.73%
Retail of consumer goods	225.34
Proportion of the whole province	3.21%

Note 1: The data is from Bulletin of national economic and social statistics in Beihai City, *Guangxi Statistical Yearbook, 2016*. 1USD=7.01 Yuan

2.2 The current situation of industrial structure of Beihai city

It can be seen from Table 2 that from 2010 to 2016, the proportion of the three industries in Beihai city is from high to low, which is two, three and one respectively. The proportion of the first industry in the whole industrial structure of Beihai city shows a decreasing trend (a small rebound in 2015); the proportion of the second industry in the whole industrial structure did not increase from 2010 to 2014, which reached the highest of 53.1% in 2014, and decreased in 2015 after that, it shows an upward trend again; the proportion of the tertiary industry in the whole industrial structure has been declining from 2010 to 2014, rising again in 2015, but falling again by 0.6% in 2016. Through this year's proportion change of Beihai city's industrial structure, it can be concluded that the economic development level of Beihai city is still in the initial stage of industrial development.

Table 2. Three Industrial GDPs and proportions in Beihai City from 2010 to 2016 (Unit: billion Yuan)

Year	Output value	Proportion
2016	175.09, 516.14, 316.05	17.4 : 51.2 : 31.4
2015	159.4, 450.1, 282.5	18 : 50 : 32
2014	151.36, 454.51, 250.15	17.7 : 53.1 : 29.2
2013	142.81, 373.65, 218.53	19.4 : 50.8 : 29.8
2012	128.07, 310, 192.73	20.3 : 49.1 : 30.6
2011	115.45, 207.39, 173.75	23.2 : 41.8 : 35
2010	87.2, 167.9, 146.36	21.7 : 41.8 : 36.5

Note 2: The data is from Bulletin of national economic and social statistics in Beihai city

2.3 Basic economic condition of Qinzhou city

Located in the south of China, Qinzhou city is positioned along the coast of the South China Sea. As the center of Beiqinfang in south of Beibu Gulf Economic Zone, it is the second largest port in the South China, according to Sun Yat Sen's general plan of the People's Republic of China. Besides, it is the most convenient access to the sea in southwest China. It has a lot of cultural and natural tourism resources such as Feng Zicai, Liu Yongfu, Sanniang

Bay, and so on.

According to statistics, the gross domestic product (GDP) of Beihai city in 2016 was 110.205 billion Yuan, accounting for 6.04% of the total GDP of Guangxi Province, namely 1824.507 billion Yuan. It has been estimated that by the resident population, the per capita GDP was 33,982 Yuan, which was 0.89 times of the per capita GDP of Guangxi Province, namely 38,042. The total fiscal revenue of Qinzhou city in 2016 was 15.408 billion Yuan, accounting for 6.28% of Guangxi's total fiscal revenue, namely 245,405 million Yuan. The social fixed asset investment of Qinzhou city in 2016 was 95.09 billion Yuan, accounting for 5.39% of Guangxi's social fixed asset investment, namely 1765.295 billion. The retail sale of consumer goods of Qinzhou city in 2016 was 37.363 billion Yuan, accounting for 5.32% of Guangxi's retail sale of consumer goods, namely 702.731 billion Yuan.

Table 3. Major Economic Index of Qinzhou city in 2016 (Unit: billion Yuan)

GDP	1102.05
Proportion of the whole province	6.04%
Per capita GDP (Yuan)	33982
Total fiscal revenue	154.08
Proportion of the whole province	6.28%
Fixed asset investment	950.9
Proportion of the whole province	5.39%
Retails of consumer goods	373.63
Proportion of the whole province	5.32%

Note 3: The data is from Bulletin of national economic and social statistics in Beihai City, *Guangxi Statistical Yearbook, 2016*

2.4 The current situation of industrial structure in Qinzhou city

Since 2011, the industrial structure of Qinzhou city has been continuously optimized, especially in the proportion of the three industrial structures. Proportion of the first industry keeps declining, and the proportion of the second and the third industry keep increasing, which indicates that with the development of social economy, the urban industrial structure will constantly change. In particular, transformation of agricultural population and labor force, as well as the improvement of production technology, has led to the decline of the proportion of the primary industry in the whole national economy. This is an inevitable result of social development and industrial revolution.

Table 4. Three Industrial GDPs and proportions in Qinzhou city from 2010 to 2016 (Unit: Billion Yuan)

Year	Output value	Proportion
2016	221.12, 481.89, 399.04	20.1 : 43.7 : 36.2
2015	205.18, 381.75, 357.49	21.7 : 40.4 : 37.9
2014	193.91, 338.94, 322.12	22.7 : 39.6 : 37.7
2013	181.77, 316.85, 255.13	21.1 : 42.1 : 33.8
2012	168.23, 328.98, 227.27	23.2 : 45.4 : 31.4
2011	157.5, 284.8, 206	24.1 : 45.0 : 30.9
2010	132.35, 205.49, 166.34	26.2 : 40.8 : 33

Note 4: The data is from Bulletin of national economic and social statistics in Qinzhou city

It can be seen in Table 4 that from 2010 to 2016, the proportion of the three industrial structures in Qinzhou city has been constantly adjusted and changed. In the three industrial structures, the first industrial structure shows an overall declining trend, with a slight increase in 2014. The proportion of the second industry in the three industrial structures shows a wave-like trend of increase-decline-increase, indicating that the proportion of the second industry of Qinzhou city in the national economy is not stable. The proportion of the third industry is similar to the second industry, whose proportion in the national economy keeps changing in different years, but shows an overall increasing trend. It can be seen from the proportion of the three industrial structures of Qinzhou city that the industrial structure of Qinzhou city has been optimized and adjusted since 2011. The position and role of the second and third industries in the national economy of Qinzhou city have been reinforced constantly, and the city keeps developing towards an industrialized one.

2.5 Basic economic condition of Fang Chenggang city

Fang Chenggang city is located within the Beibu Gulf Economic Zone. It is the only city in China which maintains a sea-land relation with ASEAN countries. With its easy transportation, it is a convenient access to the sea in the southwest of China. It has five national ports, among which Dongxing Port carries the largest number of customs

clearance by land in China, with convenient contact with ASEAN countries. The first nuclear power plant in the western region, Hongsha nuclear power station, is under construction there. In addition, it has developed iron and steel industries and non-ferrous metal processing industry. Relying on its ports, the city is greatly developing the heavy industry cluster focusing on heavy industry. According to statistics in 2016, gross domestic product (GDP) of Fang Chenggang city was 67.612 billion Yuan, accounting for 3.71% of the total GDP of 1824.507 billion yuan in Guangxi Province. Calculated by the resident population, the per capita GDP was 73,197 Yuan, which was 1.92 times of the per capita GDP of 38,042 in Guangxi Province. In 2016, the total fiscal revenue of Fang Chenggang city was 7.561 billion Yuan, accounting for 3.08% of the total fiscal revenue of Guangxi Province, namely 245,405 million. In 2016, the total investment of social fixed assets in Fang Chenggang city was 60.014 billion Yuan, accounting for 3.40% of the total investment of social fixed assets in Guangxi Province, namely 1765.295 billion Yuan. In 2016, the total retail sales of social consumer goods in Fang Chenggang city was 11.189 billion Yuan, accounting for 1.59% of the total retail sales of social consumer goods in Guangxi Province, namely 702.731 billion Yuan.

Table 5. Major Economic Index of Fang Chenggang City in 2016 (Unit: billion Yuan)

GDP	676.12
Proportion of the whole province	3.71%
Per capita GDP (Yuan)	73197
Total fiscal revenue	75.61
Proportion of the whole province	3.08%
Fixed asset investment	600.14
Proportion of the whole province	3.40%
Retails of consumer goods	111.89
Proportion of the whole province	1.59%

Note 5: The data is from Bulletin of national economic and social statistics in Beihai City, *Guangxi Statistical Yearbook, 2016*

2.6 The current situation of industrial structure in Fang Chenggang city

The economy of Fang Chenggang city is mutually related to the change and development of industrial structure. In a developing society, with the gathering of production materials and technology, the development of regional economy is inevitable. At the same time, the development of social production will definitely adjust the whole industrial structure. The survival of the fittest will further promote the healthy, reasonable, and orderly development of the industry again. Since 2011, with development of social economy, the industrial structure of Fang Chenggang city has been constantly optimized and adjusted, especially the proportion of the second industry in the whole national economic structure, which reached 57.1% in 2016, nearly 60%, and other industries also are undergoing change and adjustment.

Table 6. Three Industrial GDPs and proportions in Fang Chenggang City from 2010 to 2016 (Unit: billion Yuan)

Year	Output value	Proportion
2016	80.88, 386.26, 208.98	12.0 : 57.1 : 30.9
2015	75.75, 353, 191.98	12.2 : 56.9 : 30.9
2014	70.84, 340.36, 177.74	12.0 : 57.8 : 30.2
2013	68.45, 296.08, 160.61	13.0 : 56.4 : 30.6
2012	61.65, 243.28, 152.60	13.5 : 53.2 : 33.3
2011	57.70, 224.27, 137.86	13.7 : 53.5 : 32.8
2010	47.84, 164.87, 106.83	15.0 : 51.6 : 33.4

Note 6: The data is from Bulletin of national economic and social statistics in Fang Chenggang city

From Table 6 above, it can be seen that from 2010 to 2016, the structural proportion of the three industries in Fang Chenggang city has been constantly changing. Among them, the structural proportion of the first industry in Fang Chenggang city keeps declining (a slight increase of 0.2% in 2015). The second industry shows an increasing trend (a slight decline in individual years), while the third industry shows a declining trend. Fang Chenggang city has experienced an industrial structure of second, third, and first industry. Now it is still in the initial stage of industrialization.

3. Research method

3.1 Industrial structure similarity index

Industrial structure similarity index is a measurement method first proposed by the international industrial research center of the United Nations Industrial Development Organization. Since then, it has been applied in the practical research of industrial structure homogenization by a lot of scholars at home and abroad.

Its specific expression is as follows:

In the formula, S_{ij} indicates the similarity degree of industrial structure, and the subscripted “n” indicates the selected industry in the region. X_{in} and X_{jn} indicate the proportion of some department “n” in the whole industrial structure in this region.

In this formula, it is assumed that if $S_{ij} = 1$, it means that the industrial structure of the selected cities “i” and “j” is isomorphic, that is, in the same industry “n” of the two cities, the share of output value of an industrial sector n in both two cities is equal. If $S_{ij} = 0$, it means that there is an absolute labor division in the industries of two selected cities. If $S_{ij} \leq 1$, it means there is a certain labor division in the industries of the two selected cities. Therefore, the larger S_{ij} is, the less obvious the industrial division of the two selected cities is, and the more serious the industrial isomorphism is, which means corresponding industrial structure is in need of adjustment. Otherwise, it means the industrial structure division of the two selected cities is clear, and the isomorphism degree among industries is not high. In the current academic field, in the actual calculation of industrial structure similarity index, that $S_{ij} = 0.90$ is usually used as the break point, to distinguish the analysis and research of the homogenization degree of industrial structure between two cities. This paper also applies this standard for relevant data calculation.

3.2 Location quotient

Location quotient, also known as local specialization index, was first proposed by American scholar Haggett (1966). It is used to measure the agglomeration level of regional industrial sectors in regional space. Its specific expression is as follows:

In the formula, LQ_{ij} indicates the specialization index of the city, among which q_{ij} indicates the specific output value of “i” industry in j city, and q_j indicates the total output value of all the industries in j city. Q_i indicates the total output value of “i” industry in all the regions of the whole nation, and q indicates the total output value of all the industries in all the regions of the whole nation.

In this formula, it is assumed that when $LQ_{ij} > 1$, this means that the urban industrial specialization degree is greater, and the urban industries are of strong local nation. Otherwise, it means that the urban industrial specialization degree is low, and the urban industries are of weak local nation.

For the research on the current development situation of urban industry, the current common practice is to combine industrial structure similarity index and local specialization index. Through the calculation results of the above two indexes, the industrial development of regions and cities are compared and analyzed, so as to realize mutual reference and cooperation.

3.3 An empirical analysis on the homogenization of Beiqinfang urban industry

In this paper, the industrial added value of the second industries above the scale in the national economy of Beiqinfang area is adopted as the data source for industrial isomorphism index and local specialization index. This is mainly because in the Beiqinfang area, geographical location and economic level among regions are similar, and therefore there is no much difference among people’s income level and consumption level. Thus, the differences between the development of the first and third industries in the three cities of Beiqinfang cannot be well expressed. The second industry, as the pillar industry in the national economy, is of great significance on the development of the national economy of its city. The development of the second industry in the region will promote the rapid development of economy of the whole region. In the development of human history, it is not difficult to find that the current major developed countries in the world became developed through the industrial revolution, and the second industry in the industrial revolution took an absolutely leading position in the economic development at that time. Therefore, this paper seeks to examine the industrial development of Beiqinfang area through corresponding research on the main industries in the second industry of the three cities in the Beiqinfang area.

3.4 An analysis on the industrial structure similarity index

On the research of industrial dislocation development of Beiqinfang, this paper adopts industrial structure similarity index to take relevant measurement on the specific industrial isomorphism degree of Beiqinfang cities. The data of industrial output value above scale in Beiqinfang area from 2011 to 2016 was adopted to measure the similarity index of local industrial structure, including 13 major industries, namely agricultural and sideline products processing industry; wood processing and wood, bamboo, rattan, palm and grass products industry; paper and paper products industry; petroleum processing, coking and nuclear fuel processing industry; chemical raw materials and chemical products manufacturing industry; pharmaceutical manufacturing industry; non-metallic

mineral products industry; ferrous metal smelting and rolling processing industry; electric power, thermal production and supply industry; ferrous metal mining and processing industry; non-ferrous metal mining and processing industry; non-ferrous metal smelting and rolling processing industry; wine, beverage and refined tea manufacturing industry.

Table 7. Comparison of industrial structure similarity indexes above major scale in the three cities of Beiqinfang area in previous years

Year	Beihai - Qinzhou	Beihai – Fang Chenggang	Qinzhou - Fang Chenggang
2016	0.6833	0.6712	0.5004
2015	0.6839	0.7023	0.4136
2014	0.8367	0.6200	0.3285
2013	0.9045	0.5624	0.3143
2012	0.9534	0.4497	0.2309
2011	0.4522	0.8209	0.1728

Note 7: The data is calculated from the data collated by relevant departments of the Statistics Bureau of Beiqinfang (Beihai, Qinzhou, and Fang Chenggang).

It can be seen from Table 7 that the industrial isomorphism degree in Beiqinfang area is not high, and there is no obvious competition between industries in Beiqinfang area, except that there is high industrial isomorphism degree between Beihai and Qinzhou in 2012 and 2013 (reaching over 0.9 of the evaluation standard), while the industrial isomorphism degree has shown a declining trend since 2013, down to 0.6 by 2016. In other years, the industrial isomorphism among industries above scale in Beiqinfang area is at a low level, especially in Qinzhou and Fang Chenggang. However, it still shows an increasing trend within a reasonable range. The industrial isomorphism degree of Beihai and Fang Chenggang remained at 0.82 in 2011, which was under the industrial isomorphism evaluation standard, while in other years the isomorphism degree lingered around 0.4-0.7, showing a more reasonable trend among industries.

4. Results and Discussion

This paper starts from research on the dislocation development of urban industries. Therefore, when using location quotient method, it reassigns the letters in the formula, so as to better apply it to the research on the dislocation development of urban industries in the Beiqinfang area. As the location quotient method has been illustrated previously, it is not emphasized here. This section mainly focuses on the settlement structure of the location quotient of the main industries in the Beiqinfang area.

Table 8. Local specialization index of Beiqinfang Area

Year	Industries	A	B	C	D	E	F	G	H	I	J	K	L	M
		2016	Beihai	0.66	0.10	1.68	0.19	0.07	2.02	0.16	0.13	0.01	-	-
	Qinzhou	0.68	0.51	0.41	0.25	0.40	2.27	3.00	1.15	0.54	1.47	1.45	-	-
	Fang Chenggang	1.73	0.26	1.26	0.31	0.38	-	-	-	-	-	-	1.07	0.88
2015	Beihai	0.72	0.08	1.47	0.19	0.07	1.80	0.10	0.02	0.01	-	-	-	-
	Qinzhou	0.64	0.53	0.33	0.24	0.35	2.81	2.39	1.09	0.54	1.31	1.66	-	-
	Fang Chenggang	1.58	0.24	1.17	0.20	0.37	-	-	-	-	-	-	0.97	0.95
2014	Beihai	0.73	0.06	0.93	0.19	0.07	2.07	0.11	0.02	0.01	-	-	-	-
	Qinzhou	0.64	0.38	0.24	0.27	0.24	3.22	1.56	1.07	0.48	0.92	1.15	-	-
	Fang Chenggang	1.49	0.20	0.85	0.23	0.35	-	-	-	-	-	-	0.90	0.61
2013	Beihai	0.70	0.14	0.71	0.20	0.07	2.20	0.15	0.02	0.01	-	-	-	-
	Qinzhou	0.70	0.32	0.22	0.30	0.23	3.51	1.21	0.92	0.37	0.74	-	-	-
	Fang Chenggang	1.85	0.19	0.78	0.25	0.33	-	-	-	-	-	-	0.37	0.03
2012	Beihai	0.62	0.12	0.45	0.20	0.07	2.13	0.17	0.02	0.01	-	-	-	-
	Qinzhou	0.71	0.20	0.23	0.31	0.16	4.66	0.97	0.46	0.32	-	-	-	-
	Fang Chenggang	1.93	0.19	0.55	0.25	0.29	-	-	-	-	-	-	0.34	-
2011	Beihai	0.48	0.28	0.38	0.21	0.09	0.28	0.17	-	0.07	-	-	-	-
	Qinzhou	0.57	0.18	0.25	0.36	0.13	5.28	0.05	0.56	0.40	0.23	-	-	-
	Fang Chenggang	1.89	0.27	0.43	0.30	0.27	-	-	-	-	-	-	-	-

Note 8: The data is from Bulletin of national economic and social statistics in Beiqinfang area, and China Statistical Yearbook (“-“in the table means the data of corresponding industry in that year is missed.)

It can be seen from Table 8 that among the main industrial sectors in Beihai city from 2011 to 2016, a high

level of local specialization is shown in the petroleum processing, coking and nuclear fuel processing industry, as well as ferrous metal smelting and rolling industry, while other industries are all under the standard of local specialization index evaluation, which shows a relatively low level. From 2011 to 2016, Qinzhou city mainly focused on petroleum processing, coking and nuclear fuel processing industry, wood processing and wood, bamboo, rattan, pawl and grass products industry, paper and paper products industry, ferrous metal mining and processing industry, non-ferrous metal mining and beneficiation industry, which all showed a high specialization level, while other industries were all under the standard of local specialization index evaluation. Fang Chenggang city has showed a certain high specialization level in agricultural and sideline food processing industry, wine, beverage and refined tea manufacturing industry, ferrous metal smelting and rolling processing industry, while other industries are all under the standard of local specialization index evaluation, which shows a relatively low specialization level.

5. Conclusion and suggestion for future research

According to the calculation structure of industrial isomorphism index and local specialization index of Beiqinfang area, the industrial isomorphism in Beiqinfang area is not obvious (This paper adopts the break point of regional isomorphism division, and calculates that the industrial isomorphism index of Beihai and Qinzhou exceeded 0.9534 and 0.9045 respectively in 2012 and 2013. Since 2014. However, the isomorphism index has dropped below the criterion, namely 0.90. In 2016, it declined to 0.6833.) Based on the industrial similarity index, location quotient, and industrial types of regions, in the Beiqinfang area, Beihai and Qinzhou cities have certain degree of industrial isomorphism in the petrochemical industry. In the future development, sustainable and healthy development of petrochemical industry in Beihai and Qinzhou should be facilitated reasonably and effectively, so as to stimulate the industrial vitality among regions, and avoid unhealthy mutual competition.

5.1 Positioning and strategies of the dislocation development of Beiqinfang urban industries

According to the Beibu Gulf Urban Agglomeration approved by the State Council of China, Guangxi Implementation Proposal of Beibu Gulf Urban Agglomeration Development Plan released by Guangxi government, and other files, Beihai, Qinzhou, and Fang Chenggang cities are the important components and node cities of Beibu Gulf Urban Agglomeration. Nanning is to be the core city, and Beihai, Fang Chenggang, Qinzhou, Yulin and Chongzuo are to be the important node cities, to construct the framework of Guangxi Beibu Gulf urban agglomeration – “One bay with two axes, and one core with two poles”. It is to promote urbanization and development, radiate and promote the development of coastal towns, strengthen land and sea space management and control, and build livable cities and blue bay urban agglomeration.

The industry positioning of Beiqinfang area is as follows: Beihai city will focus on the development of high-tech industries and export processing industries, such as electronic information, biopharmaceutical, and marine development, so as to expand the free trade and logistics function of export processing regions, protect a good ecological environment, and construct a livable coastal city with beautiful and comfortable living environment. Qinzhou and Fang Chenggang cities will take advantages of the deep-water ports, and build free trade port areas, develop coastal heavy chemical industry and port logistics. The two cities will become the processing, manufacturing and logistics bases utilizing two markets and two resources.

5.2 Establish effective cooperation and sharing mechanism among regions

With the constant development and improvement of regional economy, the economy among regions will gradually develop towards integration. Therefore, under the socialist market economy, the decisive role of the market in the resources optimal allocation should be given full play. Meanwhile, the macro-control role of the government should be thought highly of, so as to make sure that the regional economy will develop along a reasonable track. The economic activities among regions are complementary to each other, which promote the free circulation of various elements among regions. It is also important to establish a reasonable and effective cooperation and sharing mechanism to help avoid local protection among regions, prevent serious resources waste in the economic development caused by unreasonable competition. Thus, things should be considered from the perspective of region as a whole in the development of the industrial structure of Beiqinfang cities. With regards to the development of regional urban industry, resource sharing mechanism of each factor market among regions should be established. In particular, effective communication on the choice of urban industrial development should be reinforced among regional governments. Things should be considered from the perspective of region as a whole, and healthy development of regional economy can finally be achieved by breaking the economic protection barriers of city governments in the development of the economy.

5.3 Establish dislocation development, and coordinate the complementary resources

There is need to establish the idea of dislocation development. In the development of the city industrial economy, Beiqinfang governments should establish the idea of industrial dislocation development, and plan their industrial

layouts reasonably from the two perspectives, namely the city and the region. In the selection of the urban industry, its development should not be limited to the short-term development goal, but should be considered from the long-term perspective of the city and the region. The city should be based on its own situation, and give full play to its comparative advantages, and at the same time, it should learn from developed regions, and develop long-term industries.

There is need to make a reasonable industrial development plan. In the selection of urban industry development, Beiqinfang governments should start from the development plan of this area by corresponding with superior government departments. At the same time, they should combine with their own resource conditions, make their own overall urban development proposals, formulate the planning layout of urban industries in Beiqinfang area in terms of regions, and make practical corresponding industrial development plan. With market-oriented, Beiqinfang takes the comparative advantages of each city, makes full use of the advantageous resources of each city, greatly develop coastal industry, high-tech industry and modern service industry with high starting point and high quality, undertake industrial transfer, and form an industrial structure with great distinction and competitiveness.

Cultivate the market subject of dislocation development. As the main body of urban industry, enterprises play important role in supporting the urban economic development. Facing ASEAN countries, connecting the southwest and serving the Beibu Gulf, Beiqinfang should make full use of its unique regional advantages. Cooperation within the country and with other countries should be reinforced to expand the open cooperative platform of Beiqinfang area, build a modern coastal port cluster and a logistics center among regions, greatly introduce relevant market subjects, establish its own industrial cluster in Beiqinfang area, attract greater investment, and undertake the industrial transfer in Guangdong and other developed areas. Based on its own advantages, Beihai city focuses on the development of high-tech industries and export processing industries, such as electronic information, biopharmaceutical, and marine development. By making full use of the advantages of deep-water ports, Qinzhou and Fang Chenggang cities are to establish free trade ports, and develop coastal heavy chemical industries and port logistics. At the same time, mutually supporting capacity among industries in Beiqinfang area should be cultivated, so as to strengthen the mutual cooperation among urban industries, give full play to the “multiplier effect” of regional economy on urban industries, construct regional urban industrial chain, and strengthen the competitiveness of the Beiqinfang area in Beibu Gulf urban agglomeration.

5.4 Promote the transformation of government behavior and role

Urban governments also play important roles in the development of urban industry, among which the industrial policy of urban government will determine the formation and development of urban industry, which is also an important factor causing urban industry isomorphism. Therefore, to promote the transformation of government's behavior and role is very vital to the construction of a reasonable regional industrial layout. Firstly, establish a service-oriented government. In the development of urban industry, the role of market and government should both be given full play. The market should play a decisive role in the economic development, and at the same time, the government's macro-control in the economic development should be enhanced. Combination of the two will better serve the development of urban industrial economy. When the market regulation fails, causing isomorphism of mutual competition in the development of urban industry, the government should play a role in macro-control and lead the urban industry towards a reasonable direction of dislocation development. Secondly, deepen reforms in the performance appraisal system in the government. Due to the current performance appraisal system in China, some local governments only think from their own cities, for the so-called performance, while ignoring the overall interests of regional development. This has caused mutual competition between the urban industries development, leading to serious resource waste, which is not conducive to the construction of resource-saving society required for sustainable economic development.

5.5 Building regional industrial clusters of Beiqinfang area

Introduce industrial clusters. This means there are many industries with different scales, levels and grades within a region, but there is a mutual relationship among them, and they form a closely related industrial development network through various connections. As the geographical location and development level of Beiqinfang area are similar, in the industrial development, through reasonable planning and industrial development guidance, the location advantages of the Beiqinfang area can make good use of, to strengthen the industrial cooperation of Beiqinfang area, improve resource utilization efficiency, formulate a complete regional industrial chain, cultivate regional industrial brands, enhance regional comprehensive competitiveness, strengthen the beneficial position of Beiqinfang area in the fierce industrial competition, and accelerate the rapid development of regional economy through joint forces as proposed earlier by Cui (2012).

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Appendix

Name of industries

- A→Agricultural and sideline products processing industry
B→Chemical raw materials and chemical products manufacturing industry
C→Ferrous metal smelting and rolling processing industry
D→Electric power, thermal production and supply industry
E→Non-metallic mineral products industry
F→Petroleum processing, coking and nuclear fuel processing industry
G→Wood processing and wood, bamboo, rattan, palm and grass products industry
H→Paper and paper products industry
I→Pharmaceutical manufacturing industry
J→Ferrous metal mining and processing industry
K→Non-ferrous metal mining and processing industry
L→Wine, beverage and refined tea manufacturing industry
M→Non-ferrous metal smelting and rolling processing industry