

Research on the Role of Industrial Structure Transformation and Upgrading in Guangdong-Hong Kong-Macao Bay Area

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Abstract: After more than 40 years of reform and opening up, Guangdong-Hong Kong and Macao regions with their own characteristics of industrial models for our country to participate in the global economic competition has laid a good foundation for development. Therefore, studying the industrial structure of Guangdong-Hong Kong and Macao Bay Area has not only theoretical significance but also practical significance for the development of our country's economy. Firstly, this paper analyzes the current situation of the industrial structure development of Guangdong-Hong Kong and Macao Bay Area, and then expounds the factors affecting the development of the industrial structure of Guangdong-Hong Kong and Macao Bay Area. Finally, the paper puts forward corresponding policy suggestions on the optimization and upgrading of industrial structure in Guangdong-Hong Kong and Macao Bay Area.

1. Introduction

The state of industrial structure and the ability to optimize upgrading is an important driving force to promote the development of a country's economy, and the development of the country's economy plays a non-negligible role. Guangdong-Hong Kong and Macao Bay Area (In this paper, "Guangdong-Hong Kong and Macao Bay Area" is abbreviated to GBA) is a new large economic area in our country, which plays an important role in maintaining regional economic stability and promoting national economic construction. The region has some advantages in terms of geographical location, land resources, human resources, technology and policy support, but there are still huge differences compared with the international Bay Area region [1]. Therefore, this paper takes the industrial structure of GBA as the starting point, analyzes the present situation of the industrial structure development of the Bay area and expounds the factors affecting the development of the industrial structure of the Bay Area, this is not only important to upgrade the industrial structure of the Bay Area, but also has a certain theoretical and practical significance for the economic development of GBA and even the whole country.

2. The Analysis of the Development of Industrial Structure in Guangdong-Hong Kong and Macao Bay Area

The GBA comprises nine cities in Guangdong province, namely Guangzhou, Shenzhen, Foshan, Zhaoqing, Dongguan, Huizhou, Zhuhai, Zhongshan and Jiangmen, and two special administrative regions. The transformation and upgrading of industrial structure plays an important role in the economic development of a country. Only on the basis of fully understanding the status quo of industrial development in these cities can we better conduct a more in-depth study of industrial development. Firstly, this section from the GBA overall industrial structure development situation analysis. Secondly, from the Pearl River Delta, Hong Kong and Macao, the three parts to specific analysis of industrial development within the region [2].

2.1. The Overall Development of Guangdong-Hong Kong and Macao Bay Area

The GBA includes nine cities and two special administrative regions, Hong Kong and Macao. The overall development of each region is different. Based on the analysis of the data of GBA in 2020, the paper finds that the largest area is Zhaoqing, with a total area of 14,891.23 square kilometers. The smallest area is Macao, it's only 32.9 square kilometers. In terms of gross domestic product (GDP), Shenzhen had the highest GDP in 2020 at 2.767024 trillion yuan, while Macau had the lowest GDP at 194.4 billion patacas. In terms of per capita GDP, HK has the highest per capita GDP at HK\$362,310 and Zhaoqing has the lowest per capita GDP at 56,317.81yuan. In terms of population at the end of the year, Guangzhou had the largest population, with 18,740,300, while Macau had the smallest population, with 683,100. The detailed data on the overall development of GBA in 2020 are shown in Table 1.

2.2. The Industrial Development of the Pearl River Delta

2.2.1. The Overall Industrial Development of the Pearl River Delta

There are nine Pearl River Delta cities in the Bay Area, namely Guangzhou, Shenzhen, Zhuhai, Huizhou, Zhongshan, Zhaoqing, Foshan, Dongguan and Jiangmen. In the Pearl River Delta region, the first tier is Guangzhou and Shenzhen; the second tier is Foshan and Dongguan, and the third tier is Zhuhai, Huizhou, Zhongshan, Zhaoqing and Jiangmen. In 2020, Guangdong's GDP was 1,107,609 billion yuan, of which the Pearl River Delta GDP reached 8,952,393 billion yuan, accounting for 80.8% of the province's total GDP. Therefore, the Pearl River Delta plays an important role in the economy of Guangdong province. At present, the nine cities have formed an industrial development model with the strategic emerging industries as the lead and advanced manufacturing and modern service industries as the main parts [3].

2.2.2. The Specific Industrial Development of the Pearl River Delta

Although the Pearl River Delta plays an important role in the economy of the province, the level of economic development of the nine cities within the Pearl River Delta varies considerably, the development of industrial structure is not consistent with the internal synergy [4]. The development of industrial structure in 2020 is Pearl River Delta in Table 2.

Table 1: The overall development of GBA in 2020

City	Land area (square kilometers)	GDP (billion yuan)	Per GDP(yuan)	Year-end population (tens of thousands)
Guangzhou	7249.27	25019.11	135047.17	1874.03
Shenzhen	1997.47	27670.24	159309.11	1763.38
Zhuhai	1736.46	3481.94	145645.19	244.96
Foshan	3797.72	10816.47	114156.80	951.88
Huizhou	11347.39	4221.79	70190.54	605.72
Dongguan	2460.08	9650.19	92176.10	1048.36
Zhongshan	1783.67	3151.59	71477.62	443.11
Jiangmen	9506.92	3200.95	66984.47	480.41
Zhaoqing	14891.23	2311.65	56317.81	411.69
Hong Kong	1110.2	27107①	362310①	742.83
Macao	32.9	1944②	285314②	68.31

1) Source: 2021 Guangdong Statistical Yearbook.

2) Data in this table are Census and Statistics Department from the Bureau of Statistics and census of Hong Kong and Macao. The gross domestic product (GDP) of the Hong Kong Special Administrative Region (HKSAR) and the Macao Special Administrative Region (Macao SAR) shall be “Gross domestic product (GDP)”. The exchange rates in this table are calculated at HK \$100 = 88.93 yuan, 100 patacas = 86.39 Yuan and US \$100 = 689.76 yuan. 1 is HK \$. 2 patacas.

3) In this table, the land area of Guangzhou, Shenzhen, Zhuhai, Foshan, Huizhou, Dongguan, Zhongshan, Jiangmen and Zhaoqing is 2018.

As can be seen from the above table, Guangzhou has the highest tertiary sector of the economy share of GDP at 72.51%, while Shenzhen has the lowest primary industry share of GDP at 0.09%. According to the distribution of the three industrial structures in the table, the upgrading patterns of the industrial structure of Guangzhou, Shenzhen and Zhuhai are similar and belong to the leading type of industrial structure upgrading. These three cities are mainly developing tertiary sector of the economy, the proportion of tertiary sector of the economy to GDP is over 50%. The industrial structure is mainly based on high and new technology, with emphasis on R & D and talent training. The second priority is the development of secondary sector of the economy. The proportion of primary sector of the economy to GDP is relatively low, not exceeding 2%.

The three cities of Foshan, Dongguan and Huizhou share similar industrial structures. The three cities are mainly developing secondary sector of the economy, with secondary sector of the economy accounting for more than 50% of GDP, followed by tertiary sector of the economy. The proportion of primary sector of the economy primary sector of the economy in Dongguan and Foshan was relatively low, at 0.31% and 1.52% respectively.

The industrial structure of Zhongshan, Jiangmen, Zhaoqing is relatively backward. The proportion of primary industry in GDP is relatively large. For example, the proportion of primary industry in GDP is 18.92% in Zhaoqing, 8.57% in Jiangmen, and 2.27% in Zhongshan among the three cities. Compared with other cities in the Pearl River Delta, the proportion of primary industry is too high, while the proportion of secondary and tertiary industries is too low.

To sum up, Guangzhou, Shenzhen and Zhuhai are currently Pearl River Delta to develop high and new technologies such as tertiary sector of the economy, followed by secondary sector of the economy, with a relatively low share of primary industries. Foshan, Dongguan and Huizhou are the main secondary sector of the economy of development, followed by the tertiary sector of the economy of development, and the proportion of primary industry is also relatively low. While the industrial structure of Zhongshan, Jiangmen and Zhaoqing is relatively backward, a higher percentage of the primary sector of the economy.

Table 2: Pearl River Delta industrial structure development in 2020

City	Primary sector of the economy as a percentage of GDP	Secondary sector of the economy as share of GDP	Tertiary sector of the economy as share of GDP
Guangzhou	1.15%	26.34%	72.51%
Shenzhen	0.09%	37.78%	62.13%
Zhuhai	1.72%	43.39%	54.88%
Huizhou	5.19%	50.56%	44.25%
Zhongshan	2.27%	49.40%	48.33%
Zhaoqing	18.92%	39.03%	42.06%
Foshan	1.52%	56.35%	42.13%
Dongguan	0.31%	53.81%	45.87%
Jiangmen	8.57%	41.65%	49.77%

1) Source: 2021 Guangdong Statistical Yearbook.

2.2. The Current Situation of Industrial Development in Hong Kong

Hong Kong is a leading international financial centre, Shipping Centre and Trade Centre in the world. Its container throughput is among the highest in the world and it is internationally recognized as a free economy. Apart from having a highly international business environment, a liberalized economic system and a standardized legal system, it also has an excellent regional geographic location [5]. In 2020, its GDP was HK \$2.7107 trillion and its GDP per capita was HK \$362,310. It is mainly a tertiary sector of the economy economy, the traditional tertiary sector of the economy are trade and logistics, financial services, business services and tourism, which are the major industries supporting Hong Kong's economic development.

The gross domestic product in 2018 was HK \$2,845.317 billion. Compared with the nine cities in the Pearl River Delta, the industrial structure of the territory is relatively advanced and reasonable. It is mainly based on tertiary sector of the economy and supplemented by secondary sector of the economy. The tertiary sector of the economy share of GDP was 93.44%, the secondary sector of the economy share was 6.5% and the primary sector of the economy share was 0.06% in 2018. Generally speaking, compared with the nine cities in the Pearl River Delta, the industrial structure of Hong Kong has a higher level of development, reasonable distribution and relatively perfect development.

2.3. The Current Situation of Industrial Development in Macao

Macao is located in the south-central part of the GBA, across the sea from Shenzhen and Zhuhai. Due to its geographical location and limited area, the development of its industrial structure is relatively limited, and its land area is very small, with a total area of only 32.9 square kilometers. Macao is an international free port, the industry is mainly tertiary sector of the economy, with a population of 683,100 at the end of 2020, making it one of the most densely populated areas in the world and which is one of the world's four largest casinos. Its famous industries are gambling, tourism, light industry, hotels and all kinds of entertainment venues. Its industrial structure is relatively simple and its ability to resist risks to the economy is poor, by the external environmental impact is also greater [6].

Macao's industrial structure has mainly formed a situation in which the gaming industry is the center of the development of other industries. The gaming industry is the leading industry in Macao's industrial development, and the gaming industry has led to the rise of Macao's tourism and convention and exhibition industries, the development of these industries has further stimulated the development of Macao's construction and real estate business, as well as the hotel, retail and wholesale business. In 2020, the region's GDP was 194.4 billion patacas, with a relatively high per capita GDP of 285,314 patacas, with tertiary sector of the economy accounting for about 95 percent

of GDP and secondary sector of the economy 5 percent. In general, due to the geographical conditions and area restrictions, the industrial structure of Macao is mainly tertiary sector of the economy, supplemented by secondary sector of the economy and rarely seen primary industry, thus forming a unique industrial structure of Macao.

3. The Factors of Guangdong-Hong Kong and Macao Bay Area Industrial Structure Upgrade

Industrial structure refers to the proportion of agriculture, industry and service industry in a country's economic structure. The rationalization of industrial structure involves not only the adjustment of production scale, but also the improvement of inter-industry relationship, and the coordination of capital, technology and talents. This section examines how policy, transport, legal and human resources factors have constrained the upgrading of the Bay Area industrial structure [7].

3.1. Policy Factor

The construction of the Bay Area was identified as a national strategy at the national two sessions in 2017 and included in the government work report, this shows that the state attaches great importance to GBA, which brings great opportunities to promote the economic development and industrial structure upgrading of GBA and its surrounding areas[8].

The administrative regions involved in GBA mainly include Guangdong Province, the Hong Kong Special Administrative Region and the Macao Special Administrative Region, and specifically small cities, including nine cities in Guangdong Province, they are Guangzhou, Shenzhen, Zhuhai, Huizhou, Zhongshan, Zhaoqing, Foshan, Dongguan and Jiangmen. Whether it is between large administrative regions or between specific cities, these regions all have strong local administrative characteristics, the development of GBA also requires high degree of cooperation and implementation of regional leaders. Therefore, the degree of implementation and coordination of policies among different regions is one of the important factors restricting the upgrading of the industrial structure in GBA, and the development of which will be restricted.

3.2. Traffic Factor

The perfect transportation infrastructure between regions will not only bring into play their own comparative advantages, and will form a situation of complementary advantages among regions, but also produce “Agglomeration effect”, which accelerates the accumulation of talents, capital and technology in this area and produces “Spillover effect”, which drives the development of other industries and forms industrial convergence. Thus promoting the optimization and upgrading of industrial structure, the industrial structure of GBA is affected by the traffic between different areas [9].

Firstly, GBA covers a relatively large area of 56,000 square kilometers, including three administrative regions and three customs areas, which make it more difficult for traffic to flow. Secondly, the distribution of transport infrastructure in Guangdong has been uneven. Except for Guangzhou and Shenzhen, the level of transport infrastructure varies greatly among cities in Guangdong province. The traffic in the urban agglomerations among the nine cities in the Pearl River delta is underdeveloped, Guangzhou, Shenzhen and Dongguan show the center of the peripheral city decline in the structure. At the same time, the major cities in Guangdong province are also separated by the Pearl River. The land distance between the cities is too long, and the differential spatial classification structure leads to the serious imbalance of regional development, although the Hong Kong–Zhuhai–Macau Bridge has been completed, its role in promoting the Guangdong-Hong Kong-Macao Bay Area has yet to be fully developed due to insufficient supply of supporting infrastructure and imperfect traffic management policies [10]. Therefore, the factors of

transportation infrastructure restrict the upgrading of industrial structure in GBA.

3.3. Legal Factor

Guangdong, Hong Kong and Macao have adopted different laws and regulations on economic and trade circulation, resulting in the lack of a relatively free and fair market competition environment in the region, as well as the lack of a sound way to resolve commercial disputes, all these have a certain impact on the upgrading of industrial structure in GBA. Although the GBA between the corresponding legal barriers, but the reasons are not the same [11].

First of all, GBA was put forward against the background of “One Country, Two Systems and Three Customs Areas”, so it is inevitable that it will face the issue of “Three jurisdictions”, although the flow of factors between the Grand-Bay region has been improving under the joint promotion of market forces and administrative forces. The problem of cross-regional legal barriers has not been well solved, as different cities have different historical legacies, there are still some problems even in the context of One Country, Two Systems co-operation. Finally, the three places have yet to reach a consensus on the resolution of disputes, there is no corresponding model law to solve the regulatory differences and the lack of better interface between international standards, and these factors have an impact on the settlement of legal barriers in the Bay Area. It can be seen that legal factors also restrict GBA for industrial structure upgrading.

3.4. Talent Factor

High-quality and sufficient human resources are the fundamental driving force to promote the sustainable and stable development of a region's economy, as well as the driving force to promote the upgrading of its industrial structure. In the general environment of rising labor costs in our country, the advantages brought about by the demographic dividend are gradually lost, and all regions understand that only through high-end talent to create labor value, to avoid the economic stagnation brought about by the demographic dividend, GBA Area needs the support of non-technology and talents. By the end of 2020, the permanent population of GBA had reached 86,346,800. Compared with other bay areas in the world, the proportion of talents in GBA was significantly lower [12].

Firstly, the existence of a “One Country, Two Systems” basic political system in GBA, which includes three customs zones, has to some extent restricted the flow of talent. The quality of urban development and the city's sense of belonging are also important factors affecting the flow of talent. GBA has attracted a large number of talents to the area through high welfare benefits. However, the corresponding supporting infrastructure for living in some places has yet to be perfected, and these talents cannot be retained specifically, this is a topic worth discussing. Therefore, high-quality and sufficient human resources are the only way to achieve sustainable and stable economic growth, and will have an important impact on GBA's industrial restructuring and upgrading.

4. Policy Suggestions on Industrial Structure Optimization and Upgrading in Guangdong-Hong Kong and Macao Bay Area

4.1. Give Full Play to the Role of the Government and Do a Good Job in Supporting Industrial Policies

The publication of the outline of the development plan for the GBA in 2019 marks the arrival of a new era. The outline clearly calls for GBA to become a vibrant global city and a national science, Technology and Innovation Centre. This shows that the state attaches great importance to the GBA, which is an economic cooperation zone built with state support, with state-level policy support. However, the government departments of GBA should also strengthen co-operation and

communication, and formulate tertiary sector of the economy support policies in accordance with the different industrial characteristics of each region, to provide strong support for high-tech industry and smart manufacturing industry, in order to promote GBA industrial structure adjustment and upgrading [13].

4.2. Promote Coordinated Exchanges among Regions and Strengthen Infrastructure Development

The construction of infrastructure is related to the national economy and People's livelihood of a country and plays an important role in promoting the coordinated development of regional economy. GBA involves nine cities in the Pearl River Delta and two special administrative regions, Hong Kong and Macao, the infrastructure construction of the area needs further improvement. We will build transit and container centers for our products, build up infrastructure for roads, aviation, maritime transport and telecommunications, and ensure timely communication and exchange of information on industrial restructuring between Grand-Bay and the rest of the country, transportation and other aspects can meet the standard [14]. According to the actual situation of industrial development should do a good job of industrial base adjustment. The cities of GBA should also strengthen their ties with each other and promote coordinated economic development between regions. For example, Shenzhen is dominated by Qianhai, and Guangzhou is dominated by Nansha. Through the important platform of GBA, in the process of urban cooperation to play a leading role by the point with a line, then with a line with a surface, to promote industrial restructuring and upgrading.

4.3. Raise Awareness of Laws and Regulations and Create a Sound Environment for the Rule of Law

The Bay Area of Guangdong, Hong Kong and Macao is faced with “Three legal regions”, because of its special status, regional factors and historical left-over problems. There are legal barriers between Grand-Bay and the lack of a fair and free economic and trade environment. In order to transform and upgrade the industrial structure, it is necessary to establish the corresponding dispute settlement mechanism and a good legal environment to protect it, to ensure that the adjustment of the industrial structure can be carried out within the scope of legality and compliance. The problems encountered in the upgrading of industrial structure can be solved within the framework of the law, and systematic standards for the settlement of legal disputes can ensure the adjustment of industrial structure up to the standard.

4.4. Attach Importance to the Development of Talents and Enhance the Convenience of Daily Life

GBA is an economic cooperation zone built on the background of one country, two systems, three customs areas and three currencies, which has led to huge differences in the way people live and work in the region. The upgrading of the industrial structure of GBA cannot be done without high-tech talents. In order to attract and retain high-tech talents in the Bay Area, in addition to providing a corresponding industrial incentive system, we should subsidize the R & D funds of high-tech talents to meet the requirements of their high-salary treatment, and at the same time ensure that the supporting infrastructure construction closely related to their lives also keeps pace with them, to enhance the sense of belonging and happiness of talent. In the light of the goal of industrial restructuring, we should do a good job in providing basic living security and optimizing the functions of convenience, for example, in the areas of medical care, housing purchase restrictions, mutual provident fund and transportation infrastructure, to do a good job of basic security functions. Only by solving their worries and improving their well-being can they be better

engaged in work and promote the adjustment and upgrading of industrial structure.

5. Conclusion

GBA as a whole has a relatively large economic volume, but there is still a certain gap compared with the world-class bay area, in order to better promote the economic development of it, on the urgent requirements of the Bay Area to optimize the industrial structure, to promote the adjustment and upgrading of the industrial structure of it, to strengthen the links between cities, through the “Point with line”, then to the way of “Line with surface” to promote the entire Bay Area industrial structure optimization and upgrading, to enhance the overall strength of GBA, to promote the economic development of our country.

References

- [1] Jian Shengqian. *Study on the industrial structure optimization strategy of Guangdong-Hong Kong and Macao Bay Area .The popular investment guide.* 2019
- [2] Qin Chenglin, Pan Dandan. *Industrial structure upgrading and economic performance analysis of Guangdong-Hong Kong and Macao Bay Area. Economics and Management Review.* 2020
- [3] Xie Jing, Zou Yang, Ning Qiqi. *The impact of Bay Area Economic Development Strategy on regional economic growth: an empirical study based on Guangdong-Hong Kong and Macao Bay Area. Contemporary Finance.* 2020
- [4] Zhang Yu. *Study on the coordinated development of industries in Guangdong-Hong Kong and Macao Bay Area. Dalian Maritime University.* 2020
- [5] Wang Siwen. *The study on the industrial structure and optimization path of Guangdong-Hong Kong and Macao Bay Area—A perspective of international comparison of Grand-Baie. The D.C. economy.* 2020
- [6] Dan Jing, Zhang Wenwen. *Industrial structure transformation and Total factor productivity in Guangdong-Hong Kong and Macao Bay Area under high-quality development. Exploring economic issues.* 2021
- [7] Zhang Zhen, Zhou Licai, Xu Jiahui, Yang Xia. *The impact of industrial structure changes in Guangdong-Hong Kong and Macao Bay Area on Total factor productivity in the new era. Resource Development and marketing.* 2021
- [8] Yang Wantao. *Development countermeasures of industrial ecological construction in Guangdong-Hong Kong and Macao Bay Area--an analysis based on influencing factors. Business Economics.* 2021
- [9] Zhou Ying, Xu Xiuyu. *Financial innovation and the transformation and upgrading of industrial structure: an empirical analysis based on the data of major cities in Guangdong-Hong Kong and Macao Bay Area. China Economic and trade journal.* 2021
- [10] Zhang Jiashan. *Impact of high-speed rail on the industrial structure of Guangdong-Hong Kong and Macao Bay Area. Jilin University.* 2021
- [11] Cha Tingjun. *A comparative analysis of the industrial structure of Guangdong-Hong Kong and Macao Bay Area. City Watch.* 2021
- [12] Gan Zhipeng. *An analysis of the industrial structure and optimization path of Guangdong-Hong Kong and Macao Bay Area from the perspective of international comparison of Grand-Baie. The Journal of Economic Research.* 2021
- [13] Yang Xinhong. *A study on the coordinated development of industries in Guangdong-Hong Kong and Macao Bay Area. Lingnan journal.* 2021
- [14] Hu Qiongqiong, Zhan Qian. *Transformation, upgrading and optimization of industrial structure to promote high-quality economic development in Guangdong-Hong Kong and Macao Bay Area. Economic outlook around Bohai Sea.* 2021