

The Impact Mechanism and Effect of Fiscal and Taxation Policies on the Upgrading of Regional Industrial Structure---Based on the Empirical Analysis of Guangdong, Hong Kong and Macao Bay Area

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Abstract. The coordinated development of The Guangdong, Hong Kong and Macao Greater Bay Area (Greater Bay Area) has already been a national strategy, and its plan is about to be introduced. One important factor that constrain the coordinated development of Greater Bay Area is that there has not yet built a sound coordination mechanism for interests, which is still not breaking the mindset of “a tiny piece of land”. In terms of interest coordination mechanism, the most important thing is the adjustment of fiscal and taxation policies. Since the coordinated development of Greater Bay Area has entered into a critical period of comprehensive advancement and key breakthroughs, reform and innovation of fiscal and taxation policies are needed in many aspects, such as industrial reconciliation and upgrading, ecological environment co-construction and sharing, technology-driven innovation and traffic facilities construction. In the process of achieving regional coordinated development of Greater Bay Area, the market helps to allocate resources, but the role of the market has certain limitations in regulating economic operations and the distribution of production factors. As an important tool to regulate the distribution of economic and resource factors, fiscal taxation policies can make up for the shortcomings of market regulation. Studying the current fiscal and fixation policies under the background of coordinated development and improving the fiscal and taxation policies that hinder regional coordinated development provide some help to promote the coordinated development of Greater Bay Area.

1. Research Background

The development of Guangdong, Hong Kong and Macao Greater Bay Area (Greater Bay Area) has been continuously promoted by the central and local governments since its introduction in 2008. As China's economy enters the “new normal” period, it is urgent to tap new momentum of economic development. First of all, the construction of Guangdong, Hong Kong and Macao Bay area will help to further optimize the spatial organization relationship of regional economy, promote the development of open economy, and grasp the commanding height of international economic industrial chain by deeply integrating into the world economic system. Secondly, during the process of deepening reform and opening up and promoting economic transformation and upgrading, Hong Kong and Macao, as the experimental fields of “one country, two systems”, contribute strong industrial foundation, profound reform genes and active innovation culture to the Greater Bay Area. Strengthening the construction of the Greater Bay Area can further give play to the unique advantages of the region, which is conducive to improving the level of opening up and economic development of Guangdong, Hong Kong and Macao. Finally, since the 21st century, the deep integration of Guangdong, Hong Kong and Macao industries has entered a new stage of coordinated industrial development. Strengthening the construction of the Great Bay area can deepen the social and economic ties between Hong Kong and Macao and the mainland, and promote the long-term prosperity and stable development of Hong Kong and Macao. It can be seen that the construction of the urban agglomeration of the Greater Bay Area is highly concerned by the government. These regional development patterns will enhance the overall economic strength of South China and even the countries and regions along the “The Belt and Road Initiative”.

2. Research Questions

It is necessary to establish a theoretical guiding framework to study the following issues: Is there a correlation between fiscal and taxation policies and industrial restructuring and how does it work? At present, how can we promote the balanced development and transformation and upgrading of China's industrial structure through the reform of fiscal system and policy? These topics are all worth studying.

3. Research Methods

This paper studies the development differences, regional comprehensive level and problems faced by coordinated development of Guangdong, Hong Kong and Macao Bay area. Data is selected from statistical yearbook of Guangdong, Hong Kong and Macao. STATA1.0 and MATLAB are chosen to do the empirical analysis. As the existing theoretical and empirical research cannot provide a comprehensive explanation for the mechanism and effect of fiscal and taxation policies affecting the upgrading of industrial structure, this paper combines the analytic hierarchy process (AHP) and the experts scoring method to analyze the fiscal and taxation policies into six dimensions of industrial structure upgrading.

The interview method (expert scoring method) similar to Delphi method is a combination of qualitative and quantitative methods. It is different from the dynamic panel data model with Chye as the explanatory variable, financial expenditure and tax as the core explanatory variables. It implies that the formulation of financial and tax policies cannot be separated from expert opinions, government guidance, and enterprise support. In order to further reflect the impact of financial and tax policies on the upgrading of regional industrial structure, the project firstly use AHP to analyze the impact of financial and tax policies on regional industrial structure. The factors are divided into different levels, and then the expert scoring method is used to analyze the assignment of each level. Finally, according to the matrix calculation, the weight of each index is obtained. Among the 10 experts, 6 are university economics professors and 4 are government economic analysts.

4. Empirical Analysis

In order to study the impact of fiscal and tax policies on the upgrading of regional structural industries, this paper divides the decision-making level into six dimensions: industrial structure distribution, industrial structure type, fiscal decentralization, financial expenditure, transfer payment and tax preference.

Based on the interviewed experts' scores and the matrix calculation, the weight of each index is obtained as shown in table 4.2. Taking the distribution of industrial structure as an example, the evaluation criteria set $H = \{\text{very poor, poor, medium, good, very good}\}$ is established, and the corresponding score of each evaluation is $\{20, 40, 60, 80, 100\}$.

Table 4.1 Index weight table

Decision Layer	Decision Layer Indicator Code	Level One	Level One Indicator Code	Level Two	Level Two Indicator Code	Comprehensive Weight
Industrial Structure Distribution	0.1514	Government's Role Orientation	0.2266	Clear Government's Role Orientation	1	0.03430724
		Government Organization Structure	0.1739	Sound Government Organization Structure	1	0.02632846
		Tertiary Industry	0.0614	Third Industry Ratio	0.75	0.00697197

				Tertiary Industry Growth Rate	0.25	0.00232399
				Internal Evaluation	0.6667	0.054314942
			0.5381	External Evaluation	0.3333	0.027153398
				Income Relationship	0.6667	0.027958351
			0.6667	Expenditure Relationship	0.3333	0.013977079
Industrial Structure Type	0.0629			Tax Reduction and Amount	0.6267	0.013138496
				Rationality of The Way Funds Are Used	0.2797	0.00586379
			0.3333	Debt Interest Payment	0.0936	0.001962284
				Public Debt of Construction	0.6667	0.004160728
			0.0819	Public Debt of Finance	0.3333	0.002080052
				Tax Revenue Growth Rate	0.215	0.003871303
Fiscal Decentralization	0.0762			Tax Collection and Management Model	0.2154	0.003878505
			0.2363	Tax Risk Control	0.2883	0.005191147
				Tax Collection Income	0.2813	0.005065105
			0.6817	Budget Execution Rate	1	0.051946
			0.0736	Financial Expenditure	1	0.025738
			0.5495	Recurring Expenditure / Capital Expenditure	1	0.19216
Financial Expenditure	0.3497			Budget Expenditure	0.75	0.064939
			0.2476	Scale Final Expenditure	0.25	0.021646
			0.1293	Annual Budget Implementation	1	0.045216
Transfer Payment	0.2731			Government Transfer Payment Multiplier	1	0.204825

				Allocation to Non-Profit Organizations	0.6267	0.042788
		Corporate Transfer Payment	0.25	Donation to Non-profit Organizations	0.2797	0.019097
				Personal Injury Compensation for Non-corporate Employees Annual Tax	0.0936	0.006391
		Tax Relief	0.1148	Reduction and Exemption Amount	1	0.009965
		Additional Deduction	0.2469	Annual Deduction Amount	1	0.021431
Tax Incentives	0.0868	Accelerated Depreciation	0.0889	Annual Tax Credit Amount	1	0.007717
		Reduced Income	0.3654	Annual Deducted Income Amount	1	0.031717
		Tax credit	0.184	Annual Tax Credit Amount	1	0.015971

From the perspective of indicators, fiscal and tax policies have a positive incentive effect on the upgrading of regional industrial structure. The index coefficient between them is positive. Besides, the horizontal comparison of indicators show that the factor weight of financial expenditure is the largest, which means the greatest impact. From the perspective of secondary indicators, the financial adjustment of expenditure structure has the greatest impact. In order to optimize the regional industrial layout, we need to improve the relevant fiscal and tax policy system.

According to the calculation result, this paper obtains the development scores of Guangdong (Guangzhou, Shenzhen, Zhuhai, Foshan, Zhongshan, Dongguan, Zhaoqing, Jiangmen, Huizhou), Hong Kong and Macao in 2013-2017. In order to facilitate the comparison, 10 basic scores are added to the existing scores, the final results are obtained.

Table 4.2 Scores of Guangdong, Hong Kong and Macao

	2013	2014	2015	2016	2017	Total
Guangdong	9.960765	10.04006	10.0194	10.02577	9.998158	50.04415
Hong Kong	9.834911	9.838418	9.838136	9.838287	9.838534	49.18829
Macao	9.855592	9.858161	9.851156	9.850787	9.849314	49.26501
Total	29.651268	29.736639	29.708692	29.71484	29.68601	

Based on the empirical results, it can be seen that the maximum value is Guangdong in 2014, the minimum value is Hong Kong in 2013, and from the total score, the year with the highest score is 2014. The year with the lowest score is 2013, indicating that with the development of economy, the overall trend of industrial structure upgrading is better. In terms of three regions, Guangdong ranks the first, Macao second, Hong Kong third, and Macao is slightly higher than Hong Kong. The main reason is related to and application of fiscal and tax policies. Guangdong region relies on the regional advantages of the mainland region, and can enjoy more related benefits in policy. The coordinated development of Guangdong, Hong Kong and Macao Bay has entered a critical period of comprehensive promotion and key breakthrough. The reform and innovation of fiscal and tax

policies are needed in the aspects of industrial restructuring, adjustment and upgrading, co-construction and sharing of ecological environment, driving of scientific and technological innovation, and construction of transportation facilities.

5. Conclusions

Firstly, there are obvious spatial heterogeneity and strategic competitive characteristics in the industrial structure upgrading of Guangdong Hong Kong Macao Bay area. The industrial development between regions, especially between neighboring regions, is not independent of each other, but has obvious spatial spillover effect. That is to say, the industrial structure upgrading of this region will also be significantly affected by the industrial development of neighboring regions and other economic and social factors, which requires the government Positive response.

Second, to optimize the spatial structure and form a new pattern of Guangdong, Hong Kong and Macao Bay area, it is necessary to integrate the industrial resources, form the unique spatial organization structure of the bay area, changing from the point axis development structure to the network development structure.

Last but not least, we should improve the level of innovation and create new impetus. We need to give full play to Hong Kong's leading role in innovation. Further explore the new path of Guangdong-Hong Kong manufacturing industry cooperation and development, and promote the flow of innovation resources between the two areas; at the same time, strengthen the contact with international R & D institutions, and build an international R & D cooperation platform for Guangdong Hong Kong Macao Bay Area based on productive service industry, so as to upgrade the industrial transformation of Guangdong Level. On the other hand, we should vigorously promote the process of manufacturing industry service, improve the industrial technology content, and form the core competitiveness, by providing services for the manufacturing industry of Guangdong, Hong Kong, Macao and even the whole country. Take Hong Kong, Shenzhen and Guangzhou as platforms to attract high-quality innovation elements to settle down, including R & D departments of multinational companies, international research institutions, scientific research institutions of colleges and universities, and R & D talents, so as to strengthen the R & D force; in addition, it is necessary to encourage enterprises break through local resources restrict and enhance the control over global innovation resources.

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References

- [1] N.-N. The fiscal support on development of shale gas industry. *Tax. Res.* 2014, 355, 21–24.
- [2] Li, B.-Q. Research of Financial Policy and Taxations to Promote Renewable Energy Development. Ph.D. Thesis; Ministry of Finance: Beijing, China, 2010.
- [3] Yong Jiang, Yalin Lei, Li Li. Mechanism of Fiscal and Taxation Policies in the Geothermal Industry in China. *Energies* 2016, 9, 709; doi:10.3390/en9090709
- [4] Shen yong, Song xiaodong, Lao yueqiang. Developing the bay area economy to build a bridgehead of the maritime silk road [N]. *Shenzhen special zone news*, 2014-12-02.
- [5] Tan gang, shen yong. Guangdong-hong kong-macao greater bay area: building a new economic highland of the world bay area [N]. *Shenzhen special zone news*, 2017-03-04.