

The Industrial Transfer and Industrial Agglomeration in the Process of the Integration in Beijing, Tianjin and Hebei

Mingyao Wang^{1, a}, Qiong Tong^{2, b}

¹School of economics and management, Beijing Jiaotong University, China

²School of economics and management, Beijing Jiaotong University, China

^awangmingyaoming@163.com, ^bqtong@bjtu.edu.cn

Keywords: Beijing, Tianjin and Hebei; industrial transfer; transportation cost; regional specialization; labor

Abstract. As the third largest urban agglomeration in the Yangtze River Delta and the Pearl River Delta, Beijing Tianjin Hebei region is in a very important strategic position in China. In order to ease Beijing non capital function, solve Beijing urban diseases, optimize the core function of the capital and make this region to be a world-class city group with international competitiveness, this paper analyzes the characteristics and advantages of the industrial development in Beijing, Tianjin and Hebei region from three aspects including transportation, regional specialization and labor force, and puts forward the way to the development of Beijing, Tianjin and Hebei Province according to their own characteristics.

1. Introduction

With the global integration and the further deepening of international division of labor, urban agglomeration has become a regional space unit to participate in the international competition. To form a healthy development of the city group, we should not only construct the infrastructure to protect the city to be more smoothly carried out exchanges and communication flow of personnel, but also pay attention to the coordinated development between the industry in various regions, define their strengths and develop their own industries with comparative advantage.

Comparing with the development of Yangtze River Delta and Pearl River Delta region, the development of the Beijing Tianjin Hebei region shows a significant imbalance phenomenon. Beijing, as a fastest growing growth pole in Beijing Tianjin and Hebei region, shows no obvious stimulating the development of Tianjin and Hebei. Although the three regions are geographical proximity, they have not formed coordination the multifunctional, interactive city circle between the cities. Therefore, the purpose of this paper is to analyze their comparative advantages from the aspects of transportation, industrial concentration and labor, and then find out specific factors that restrict the development of Beijing Tianjin Hebei and puts forward corresponding suggestions.

2 Analysis of the Influence Factors of Industrial Agglomeration in Beijing Tianjin Hebei region

Krugman put forward the “center periphery” model in the “increasing returns to scale and economic geography” published in 1991, which analyze how the regional integration to lead the industry in the same area average concentration of equilibrium change to a local equilibrium. On the basis of the “center periphery” model, many scholars have introduced new variables to analyze their impact on the industrial agglomeration. For example, Martin and Rogers (1995) studied the effect of infrastructure on regional agglomeration of manufacturing industries. Puga (1999) introduces the cross industry flow of labor into the center - periphery model, and emphasizes the importance of the elasticity of labor supply to the formation of industrial agglomeration. Fujita, Krugman and Venables (1999) were further analyzed on the basis of the center periphery model, and find that the relationship between the transportation cost and the geographical agglomeration of firms is not a monotonic relationship. Based on the research above, this paper will analyze the influence factors of industrial agglomeration in Beijing, Tianjin and Hebei region from three aspects: transportation, regional

specialization and labor force.

2.1 The Impact of Transportation on the Industrial Agglomeration. Industrial agglomeration is accompanied by the different stages of industrial development. In the early stage of production, the product should belong to knowledge intensive products. With the knowledge spillover effect, other areas began to imitate and improve the production of the product, the production location of the product increased and showed the characteristics of capital and technology intensive. Because of the development of high-speed railway, highway and other means of transport, the cost of transport is gradually reduced, the enterprises with less production cost have greater production advantages, thus they can complete the industrial transfer in different stages.

At present, the city group formed a comprehensive transportation system covering a variety of modes of transport including aviation, railway and highway port. The development of transportation facilities is on the same level as Yangtze River Delta and Pearl River Delta, which laid a solid foundation for promoting the coordinated development of Beijing Tianjin Hebei region.

Although Beijing Tianjin Hebei has made remarkable achievements in the construction of transportation infrastructure network, according to the requirement for Beijing Tianjin Hebei collaborative development, many problems still exist in terms of Beijing and Tianjin city group development in the transport structure, infrastructure and institutional mechanisms.

In terms of passenger traffic, passenger transport is over reliance on car traffic, which makes environment and traffic have the dual pressure, lacking multi-level rail transportation system that can support a group of world-class city high. At present, the Beijing Tianjin Hebei has no real suburban railway, intercity rail is only between Beijing and Tianjin, which could not satisfy the need for intercity passenger and development of industry.

Passenger transport and the transport function are too excessive concentrative in the capital, network system development is not perfect, thus restricting the efficiency of passenger transport service. In terms of freight, the development of multimodal transport lags behind, road transportation and other advanced transport model promote with difficulty, leading to the development of traffic can not be better for the development of the industry.

Therefore, in order to make the industry better coordinated development, promote the flow of personnel and resources between the region, we must give priority to the development of transportation, so that the development of transportation and industry development more coordinated.

2.2 Analysis on the Impact of Regional Specialization on Industrial Transfer. Specialization in production is the production of highly concentrated performance in space, it is in accordance with the rules of regional division of labor, uses the special favorable conditions in specific areas to produce certain type of product, and then exports to the maximum economic benefit. There are many ways to judge the degree of regional specialization, here we use location quotient to determine whether an industry is a regional professional sector. Location quotient is the ratio between the proportion of the output value of a specific sector in a region and the proportion of the total industrial output value of the region and the proportion of the total industrial output value of the whole country.

The calculation function is as follows :

$$\text{Location quotient of } j \text{ department in } i \text{ area} = \frac{\text{output value of } j \text{ sector in } i \text{ region} / \text{gross industrial output value of } i \text{ region}}{\text{national output value of } j \text{ sector} / \text{national gross industrial output value}} \quad (1)$$

If the location quotient is greater than 1, it is said that the industry is the region's professional sector. The bigger of the location quotient, the higher of the professional level will be. If the location quotient is less than 1, it shows that the industry is the local subsistence sector.

Although with the development of the industry, the phenomenon of industrial agglomeration has not only limited to the second industry, but also gradually to the third industry transfer. But in general, the second industry is still the most obvious phenomenon of industrial agglomeration. Therefore, this paper mainly takes the manufacturing industry as the research object, and selects 19 industries in the manufacturing industry as the research sample. We selected the 3 years' data in Beijing, Tianjin, Hebei to calculate the location quotient, and got industrial location quotients which are more than 1 as

follows:

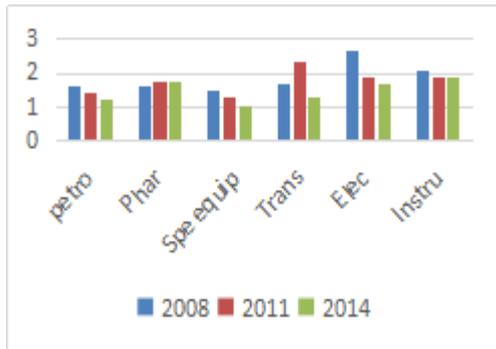


Figure 1 Location quotient greater than 1 of the industry in Beijing

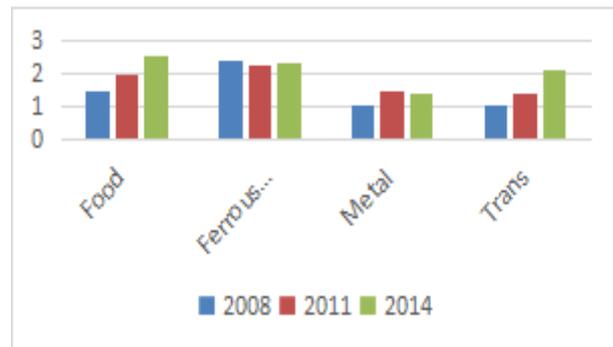


Figure 2 Location quotient greater than 1 of the industry in Tianjin

In the figures, "petro" means petrochemical industry, "phar" means pharmaceutical manufacturing, "spe" equip means special equipment manufacturing, trans means transportation equipment manufacturing industry, "elec" means electronic manufacturing industry, "instru" means instrument manufacturing industry, "food" means food manufacturing industry, "ferrous" means ferrous metal smelting industry and "metal" means metal products industry.

The industry which location quotient greater than 1 is only black metal smelting and rolling processing industry in Hebei in the past three years. From the three regions that the location quotients which are more than 1, the dominant industries in Beijing are mainly traffic equipment, computer, medicine and other high-tech industries, Tianjin's dominant industry is inclined to heavy industry, such as ferrous metals and metal products industry. From the industry in Hebei province, we can clearly see the gap between Hebei and Beijing, Tianjin. Beijing has six high degree of specialization of the industry, Tianjin has four, but Hebei has only one, which means that Hebei should find their own advantage industry, using their own geographical advantages, strengthen industrial agglomeration and improve their professional level.

2.3 Influence of Population Employment Structure on Industrial Transfer. The proportion of the three industries employment structure is the most basic index to reflect the rationalization of the industrial structure, at the same time, the proportion of the three industry also reflects the level of industrial structure. According to Kuznets law, the number of employment of the three industries has a certain change rule. The proportion of the primary industry employment fell, while the second and the service industry employment proportion gradually increased. The three industrial employment structure in Beijing, Tianjin and Hebei are basically follow this rule.

The following three Figures are the change in the industrial employment for three times of Beijing, Tianjin and Hebei.

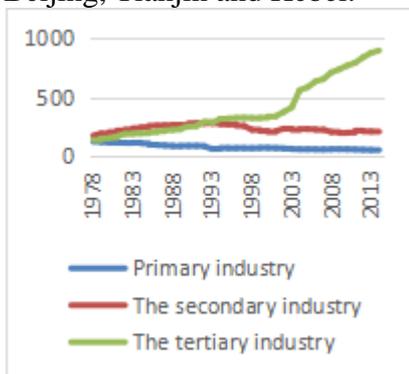


Figure 3 Changes in employment in Beijing

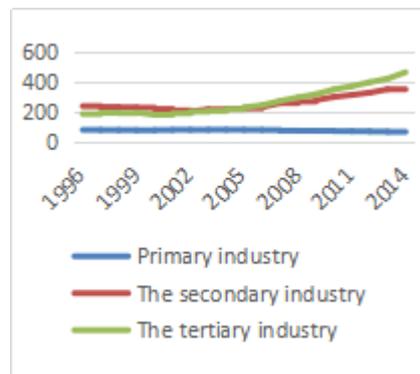


Figure 4 Changes in employment in Tianjin

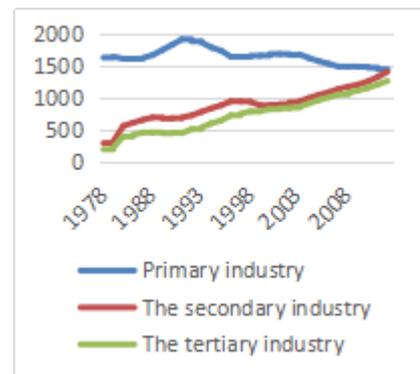


Figure 5 Changes in employment in Hebei

the differences between regions in industrial development stage, industrial structure and industrial policy.

Based on the evolution law of the three industrial structure, the industrial development stage of Beijing is higher than that of Tianjin, and the Tianjin area is higher than that of Hebei province. From the industrial structure, the industrial structure in Beijing is relatively more advanced, dominated by the service industry, Tianjin's advanced industries are the manufacturing and service industries. While in Hebei Province, agriculture and resource industry have a large proportion, industrial upgrading is more urgent.

3 Conclusion

This paper analyzes the industrial characteristic and transfer of in Beijing, Tianjin and Hebei region from the aspects of transportation, specialization index and three industry employment. Through the research we draw the following conclusions: the professional index increased year by year in the three provinces, which means that the regional economic integration promotes the implementation of industrial division in Jingjinji region. From the number of employment between Beijing and Tianjin, the Beijing area has quickly realized industrial upgrading, while the Tianjin and Hebei area are still dominated by industry, which is also related to Beijing's industry transfer to Tianjin and Hebei.

With the coordinated development of Beijing, Tianjin and Hebei increased to the national strategy, Beijing, Tianjin and Hebei integration has become the focus of people's attention, so how to promote the coordinated development of Beijing, Tianjin and Hebei effectively is particularly important. The specific ideas are as follows: First, break the administrative division and construct the collaborative innovation community. Second, with collaborative innovation as the guide, build a new pattern of regional division of labor. Finally, to improve the transportation integration, provide support for collaborative innovation.

References

- [1]. CHEN Hongxia: LI Guoping. Empirical Study on Effect of Industrial Structure Change on Regional Economic Growth of Beijing-Tianjin-Hebei Metropolitan Region(2011)
- [2]. Xia Tang, Shaoshen Cai: Analyze the Effect of the Economic Growth of Industrial Transfer from the East to Shaanxi Province(2012)
- [3]. Dluhosch: Industrial Location and Economic Integration(2000)