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The impact of Shanghai Port on urban economic development

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ABSTRACT. *The port not only greatly promotes the economic development of its city, but also drives the economic development of the surrounding area and the hinterland. Therefore, the port has a highly close relationship with its city. This paper introduces the present situation of Shanghai Port in port construction and operation, collection and distribution system construction and green port construction, and then analyzes the impact of Shanghai Port on Shanghai's economic development. Based on the relevant analysis and the actual situation of Shanghai Port, this paper puts forward some opportunities and challenges for the future development of Shanghai Port.*

KEYWORDS: *Shanghai Port, urban development, industrial transformation, port*

1. Development status of Shanghai Port

Located in the forefront of the Yangtze River Delta, Shanghai is located in the middle of the Chinese mainland coastline. It is located at the mouth of the Yangtze River and is at the intersection of the east-west transportation channel of the Yangtze River and the north-south transportation corridor. It is the main hub port of China's coastal areas and is open to the outside world and participates in the world economy cycle. As a world-famous port, Shanghai Port's container throughput ranks first in the world since 2010.

1.1 Basic content of moving target tracking in Wireless Sensor Networks

(1) port hardware conditions

Shanghai Port has five ports in Huangpu River: ZhanghuaBang, Jungong Road, Gongqing, Zhujiamen and Longwu. There are Baoshan, Luojing and Waigaoqiao ports on the South Bank of the Yangtze River Estuary. Container terminals are mainly Yangshan Port Area and Waigaoqiao Port Area. By the end of 2017, there

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were 213 terminal units in coastal ports of Shanghai Port, with 1195 berths in all kinds of wharfs, and The terminal is extended by 109.2 kilometers, including 224 berths of 10,000 tons and 526 million tons of cargo per year are available.

(2) Port operation

By the end of 2017, Shanghai Port has established trade relations with more than 500 ports in more than 200 countries and regions around the world. There are 285 international container liner routes and 3,285 sailings per month. It is the port with the most container routes, the most dense flights and the widest coverage in mainland China.

In 2017, Shanghai Port completed cargo throughput of 750.5079 million tons, an increase of 6.9% year-on-year. Among them, the port terminal was 705.46million tons, an increase of 9.4% year-on-year; the inland terminal was 45.92 million tons, down 20.8% year-on-year. Shanghai Port completed a container throughput of 40,233,100 TEUs, an increase of 8.3% year-on-year, ranking first in the world for eight consecutive years.

1.2 Construction of collection and distribution system

(1) road collection and distribution

The proportion of road collection and distribution of containerized goods in Shanghai Port has been the high, accounting for more than 50%. In recent years, with the expansion of water and water transfer business, the proportion of highway collection and distribution has been decreasing year by year, and the structure has been optimized[7].

The highway infrastructure in Shanghai continued to be built rapidly, the road layout was continuously improved, and the capacity of the road collection and distribution system was further improved. However, some roads still have congestion, especially the morning and evening peaks, which have affected the improvement of road collection and distribution efficiency to some extent.

(2) Waterway collection and transportation

The main transfer volume of Shanghai Port is from the ports along the Yangtze River. The annual container capacity can reach 10 million TEU, and it is the main driving force for the continued growth of Shanghai Port Containers. The radiation capacity of Shanghai in international, coastal and domestic trade transit is not strong yet, and the radiation capacity of international ports such as Japan and South Korea is relatively limited. On the other hand, there is not much freight in the Yangtze River Delta.

(3) Railway collection and transportation

In 2017, there were 5 port stations at Shanghai Port. Among them, there are two in Shanghai, and the number of sea-rail combined transport trains is 2. In 2017, the total number of sea-rail combined transport was 849,000 tons, and the container

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handled 57,000 TEUs, of which 40,450 TEUs were shipped by sea-rail combined transport railway.

Railway collection and distribution plays an important role in the future development of Shanghai Port. As port container throughput continues to increase, the reliance on one mode of transport structure will result in instability of the integrated transportation system. In addition, from the perspective of environmental protection, railway collection and distribution has less carbon emissions, and the development of railway collection and distribution can also alleviate the congestion of urban traffic caused by road transportation.

1.3 Green port construction

The energy consumption per unit throughput of Shanghai Port has decreased from 6.04 tons of standard coal per ton in 2010 to 5.0 tons of standard coal per ton in 2017. Yangshan Phase IV has become the largest and most automated terminal in the world, with zero emissions in the port area. The high-voltage shore power facilities of Wusong Cruise Port Phase I and Yangshan Guandong Wharf were completed and put into use. The replacement ratio of LNG cards in Shanghai Port Area has reached 72%, and 75% of the tire cranes have completed the hybrid power transformation.

2. The impact of Shanghai Port on the urban economy

From the study of the economic development of some important port cities in China, we can see that the rapid development of cities such as Dalian, Qingdao, Tianjin, Fuzhou, Xiamen, Guangzhou, Shenzhen and Hong Kong is closely related to the development and rise of ports.

2.1 Promoting the Overall Development of Urban Economy

The port economy is a combination of the land economy and the marine economy. It drives the development of the port industry and then drives the growth of the local economy. Therefore, it can be said that the port is an accelerator for regional economic development. In order to further analyze and compare the relationship between port development and economic development, the gross cargo throughput and container cargo throughput of Shanghai Port are selected as the characteristic indicators of port development, and Shanghai GDP and total import and export are selected as the indicators of Shanghai's overall economic development. Through the comparison of the two indicators in Figure 2-1, it can be seen that Shanghai's GDP and total import and export volume and Shanghai Port's cargo throughput and container throughput have maintained a trend of increasing trend, and correlation analysis, Shanghai GDP. The correlation coefficient with cargo throughput and container throughput of Shanghai Port is 0.870 and 0.972 respectively. The correlation coefficient between Shanghai's total import and export

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volume and Shanghai Port cargo throughput and container throughput is 0.968 and 0.903, respectively. Therefore, Shanghai Port is inseparable from the development of the city economy.

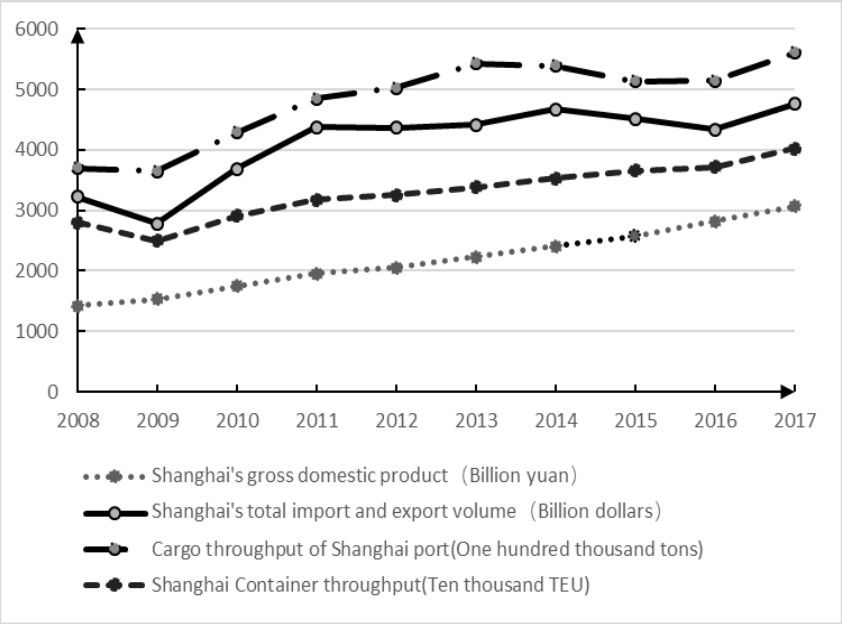

Figure. 1 Statistics of Shanghai Port Goods and Shanghai Economic Indicators from 2008 to 2017

Data source: Shanghai Statistical Yearbook, Shanghai Traffic Commission

2.2 Promoting the Interactive Development of Regional Related Industries

On the basis of the direct impact on port cities, ports also exert radiation effects on the hinterland of ports through the collection and distribution network, so as to realize the interactive development of port city economy and other urban economies. Shanghai Port relies on the convenient collection and distribution system with the Yangtze River Delta, and its radiation effect is very obvious. In 2017, the radiation coefficient of Shanghai Port (the ratio of the foreign trade volume generated by the port to the foreign trade volume generated by the province and the city) was as high as 1.85[6]. Among them, the radiation coefficients of Jiangsu Province and Zhejiang Province are about 0.6 and 0.7 respectively. A considerable amount of foreign trade goods enters and exits through the Shanghai port in Jiangsu and Zhejiang provinces. In the past 10 years, the economic growth of the Yangtze River Delta has an average annual growth rate of 18%. In terms of growth, the Shanghai Port has an obvious

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radiation effect in the economic and foreign trade development of the Yangtze River Delta.

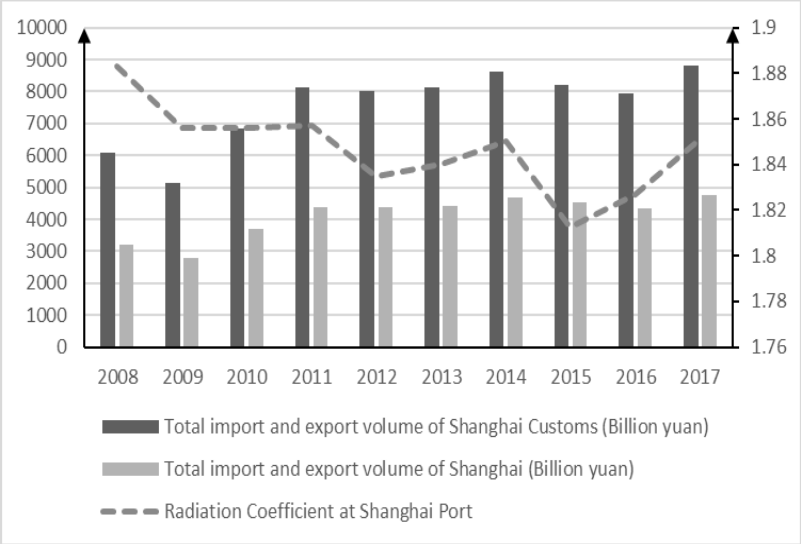

Figure. 2 Development of Shanghai's Import and Export Trade from 2008 to 2017

Data source: Shanghai Statistical Bureau

3. The development opportunities and challenges of Shanghai Port

3.1 The development opportunity of Shanghai Port

(1) Economic globalization and the "Belt and Road" strategy

Economic globalization has brought good opportunities for the development of Shanghai Port. In the process of economic globalization, Shanghai will seize a new round of international capital and industrial transfer opportunities, take advantage the economic base of the Yangtze River Delta, talents, policies and water resources to fully integrate into the international economy and fully play its role. Use domestic and international markets, two resources, to participate in a wider range, broader areas and higher levels of international economic and technological cooperation[8]. In accepting the international economic transfer, the Yangtze River Delta region will accelerate the development of high-tech industries, which will certainly drive the growth of foreign trade cargo throughput such as energy and raw materials in Shanghai. It will inevitably require the expansion of port service functions, vigorously develop modern logistics, and improve service quality.

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(2) "Changjiang Economic Belt" development strategy

The sustained and rapid development of economic and trade in the Yangtze River Delta region will be the most important driving force for the development of Shanghai Port. According to the World Bank's forecast, by 2020, China's trade imports will reach 10% of the world's total. In 2040, the combined national strength of China and Japan will bring about a substantial increase in shipping volume[8]. The Yangtze River Delta region is one of the fastest and most stable regions in China's economic development. The development level of advanced manufacturing ranks among the top in the country. As the Yangtze River Delta region attracts a large number of foreign investment, its investment effect will gradually appear in the future. Therefore, the economic development momentum in the Yangtze River Delta region is strong and will definitely drive the development of the shipping industry.

(3) Golden waterway integrated three-dimensional traffic corridor

The dredging project of the Yangtze River Golden Waterway, which is being vigorously promoted by the state, will provide strong support for the development of the hinterland economy of Shanghai Port. Under the joint promotion of the relevant national ministries and commissions and the seven municipal governments along the Yangtze River, the project is gradually deepening, the Yangtze River. The basin is the main deep hinterland of Shanghai Port. The development of the Yangtze River will inevitably provide a steady stream of development for Shanghai Port.

(4) New Area of Shanghai Free Trade Zone

The Shanghai Free Trade Zone is positioned as a special economic function zone and will be the commanding height of China's service economy. The new trade zone has launched a series of institutional innovations such as finance, logistics and taxation to establish an institutional system with investment and trade liberalization as the core. The new trade zone has attracted a group of intelligent manufacturing companies to settle in Lingang, which will better serve Lingang as a world-class intelligent manufacturing industry center, and then can bring the development of animal industry, coupled with the introduction of some attractive The logistics preferential policy will inevitably promote the prosperity of the port logistics industry.

3.2 System hardware platform

(1) The rising of surrounding ports

Although the construction of the “Yangtze River Economic Belt” strategy and the construction of the integrated three-dimensional traffic corridor of the Golden Waterway have brought rare strategic opportunities to Shanghai Port, at the same time, it has brought many challenges to the development of Shanghai Port.

From Shanghai Port's own point of view, with the rapid development of the Yangtze River Economic Belt, Shanghai's service of the entire Yangtze River

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Economic Belt has put forward higher requirements for the full use of the Shanghai Port coastline and its own collection and distribution system [8].

From the perspective of the external environment, on the one hand, the "Yangtze River Economic Belt" strategy has brought unprecedented attention to the development of the Eurasian Continental Bridge. The opening of freight trains such as Fuxinou, Rongxinou, Hanxinou, Xiangxinou, Lanxinou, Suxinou, etc. it will be transport high-value goods in the middle and upper reaches of the Yangtze River to ports such as Hamburg and Rotterdam within half a month. On the other hand, with the rapid development of the port construction in the middle and lower reaches of the Yangtze River, especially the deep of the -12.5meter Yangtze River channel below Nanjing, containers and bulk cargo at major ports along the Yangtze River can be directly transported to other parts of the world. Near Shanghai, Ningbo-Zhoushan Port has been ranked as the world's largest port in cargo throughput for several years. Container throughput is only slightly lower than Shanghai Port, which poses a huge challenge to the status of Shanghai Port Hub Port.

(2) Shortage of port resources

The length of the shoreline within the jurisdiction of Shanghai Port and Navigation is 596.6 km. The utilized shoreline is about 157.4 km, accounting for 26.4% of the total length of the shoreline. The length of the port shoreline (including public handling, enterprise-specific, passenger tourism, port and shipping services and official management) is 154 km, accounting for 97.8% of the utilized shoreline. The deepwater shoreline has been almost exhausted. From the existing throughput capacity, the annual design throughput capacity of Shanghai Port container is 19.83 million TEU. In 2017, the annual cargo throughput of Shanghai Port reached 750 million tons. Among them, the annual throughput of container is 402.331 million standard containers, which continues to be the first in the world. The annual throughput of container in Yangshan Deepwater Port Area accounts for 41.14% of the total annual throughput of container of the whole port. At present, the port's throughput capacity has become saturated and overloaded. The port coastline and port land resources are in short supply, and the structural contradiction of the port is prominent.

4. Conclusion

In summary, the port economy is a growth pole for Shanghai. The development of the port economy and the development of Shanghai's overall economy have a guiding and promoting role. In order to further enhance Shanghai's core competitiveness and promote economic growth, we should constantly explore new operational management models that are in line with Shanghai's own actual conditions. Increase the industrial layout of Shanghai Port and fully serve the industrial layout of the Yangtze River Delta Economic Zone. The formation of cities, ports and shipping industry clusters around the port will form a benign interaction between ports, industries, cities and the environment, and promote the continuous development of the economy.

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