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Analysis of Shanghai Port's Impact on Shanghai's Economy

Mengyu Lei

School of Transport and Communications, Shanghai Maritime University, Shanghai, China.

Abstract

With the rapid development of the national economy, ports have played an increasingly important role in the process of urban economic development, and have become a new growth point for urban economic development. The status of the port has been increasingly improved, and the functions of the port have been continuously expanded. Shanghai Port has high-quality location conditions, exerts the port ’s powerful resource gathering and integration capabilities, drives the development of Shanghai and surrounding manufacturing industries, and thus provides huge development space for the development of the service industry. DEA model was used to analyze the effectiveness of Shanghai Port and Shanghai and the econometric model to analyze the correlation between Shanghai Port ’s container throughput and Shanghai ’s GDP, and gives some suggestions and countermeasures. The data results show that: In the study, only the 2017 input-output evaluation results were valid; in the Shanghai study, only the 2018 input-output evaluation results were valid; through observation and regression models, it was found that there is a high positive correlation between the two, and Shanghai Port has a regional economic impact. The leading role has a significant impact on Shanghai's GDP.

Keywords

DEA model, Econometric model, Shanghai Port, Shanghai.

1. Introduction

As a comprehensive transportation hub, the port is responsible for more than 80% of the global trade volume and 70% of the global economic and trade value [1]. The port has a gathering and radiating effect on the city. As a window for the city to open to the outside world, a city needs to conduct extensive and frequent exchanges with the outside world. It faces two fan-shaped hinterlands at home and abroad. As a window and gateway to the city, it is used to gather foreign capital., Equipment, technology, etc. Moreover, ports are playing an increasingly important role in the process of urban economic development and have become a new growth point for urban economic development. First, ports have brought output value, jobs and taxes to the city, which can bring direct economic benefits to society. Secondly, the port and its associated industries and service industries also provide absolute location advantages and provide opportunities for the rapid development of these industries. The changes in the relationship between ports and cities not only meet the needs of urban economic operations, but also promote urban economic development.

Shanghai is located at the core of the Yangtze River Delta Integration Demonstration Zone. It is at the forefront of reform and opening up. It can not only rely on the construction of four centers: an international economic center, a trade center, a financial center, and a shipping center. In 2013, the China (Shanghai) Pilot Free Trade Zone was formally established. The establishment of the China (Shanghai) Pilot Free Trade Zone promoted the development of my country's economy and strengthened the connection between my country and the world. The rapid development of the national economy, driven by the development of the national economy, foreign trade, and heavy

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industry, Shanghai Port has established trade in goods with more than 500 ports in 214 countries and regions around the world. It is a world-renowned port, mainly including: Yangshan Port, Waigaoqiao Port, Wu song Bulk Cargo Port. It can be seen in Figure 1 that in 2019, Shanghai Port completed a container throughput of 43.303 million TEUs, ranking first in the world for ten consecutive years. The status of the port has been improved day by day, and the functions of the port have been continuously expanded. Shanghai Port has high-quality location conditions. The port's strong resource aggregation and integration capabilities will be used to promote the development of the manufacturing industry in Shanghai and surrounding areas, thereby providing huge development space for the development of the service industry. The rapid development of the port economy of Shanghai Port has effectively supported the development of my country's economy, and exploring the interactive role of the port on the urban economy can drive the sound development of the urban economy, providing new ideas for the study of the port and port city economy.

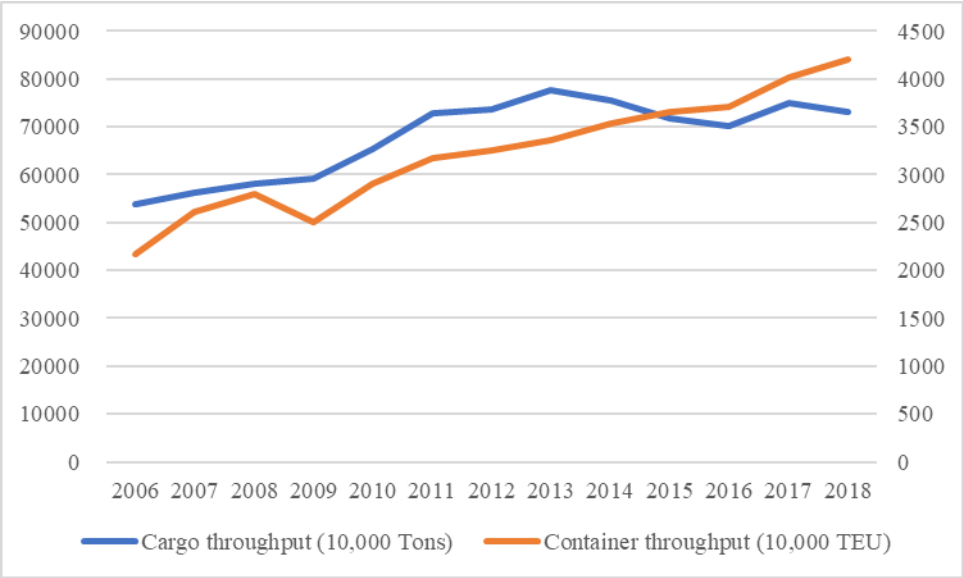

Figure.1 Changes in container throughput and cargo throughput of Shanghai Port from 2006 to 2019

2. Literature review

As a link between the local economy and the global economy, port cities are necessary to study the interaction between ports and cities, and to study the impact of ports on the port city's economy. It is necessary for the whole society to fully understand the great contribution of port development to social and economic development. Many scholars at home and abroad have analyzed the impact of ports on urban economic development.

Research state in China. Ren (2012) used the method of AHP (analytic hierarchy process) and DEA to study the coordination evaluation of the port group in the Yangtze River Delta on regional economic development, and concluded that the port group in the Yangtze River Delta can promote the development of the regional economy to a certain extent. , And the effect is obvious[2]. Xiao(2014) used the system dynamics model and combined with Tianjin Port's operating conditions from 2001 to 2010 to simulate the impact of Tianjin Port on Tianjin's economic contribution[3]. Chen and Chen(2018) used the AHP to evaluate the competitiveness of Fujian's ports, and proposed policies and measures to optimize the industrial layout, accelerate the construction of the distribution system, improve the comprehensive port service system, and improve the port service level[4]. Zhang (2018) used the method of establishing an index system-entropy method to calculate the comprehensive level-gray correlation analysis to divide the relevance degree of the port to the hinterland economy and put forward suggestions for the development of the regional economy by the port group[5]. Zheng

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et al., (2016) used a linear regression model and adopted a quaternary linear regression analysis to study the correlation between the container throughput of Xiamen Port and the main economic indicators of Xiamen[6]. Shan et al., (2014) combined the data of 41 major ports in my country from 2003 to 2010, using econometric analysis, port throughput has a positive impact on the city's economic growth[7]. Sui (2014) used an econometric model to analyze the correlation between the container throughput of Huanghua Port and the GDP of Cangzhou City, and the results showed that the container throughput was positively correlated with the GDP of Cangzhou City, and the port played a role in promoting the urban economy[8].

Current status of foreign research. Bottasso et al., (2014) used a spatial panel econometric model that controls spatial fixed effects to analyze the impact of ports in 13 European countries on local development from 1998 to 2008, and dealt with the impact of ports on the local economy may be negligible[9]. Chang et al., (2014) took South Africa as an example and used the Leontiefs price model to study how the port sector affects the input-output relationship of the relevant economy[10]. Park and Seo (2016) used an econometric model that enhanced the Solow model to affect the impact of Korean seaports on local economies. The results showed that freight without sufficient throughput would hinder regional economic growth, and freight ports with sufficient throughput would affect the regional economy. Economic growth has contributed[11]. Santos et al., (2018) used an input-output model to analyze the economic impact of the port at the regional and national levels, which confirmed the importance of the port of Lisbon to the Portuguese economy[12].

Domestic research on Shanghai Port. Sun (2018) studied the Granger causality of the economic development of Shanghai Port City, and concluded that the throughput of Shanghai port is the Granger reason for the economic development of Shanghai, and Shanghai Port has greatly promoted the development of the port industry[13]. Zhang (2007) used the vector autoregressive model and the vector error correction model to analyze the effect of the port on the regional economy, and concluded that the short-term fluctuation of the cargo throughput of Shanghai Port will have an important impact on the short-term fluctuation of Shanghai's economic growth[14].

It can be seen from the above literature that great achievements have been made in the study of port city relations. A large number of theories, methods and models are used in the evaluation of port city relations, covering many fields such as the evolution, trend, mutual promotion and restriction of port city development, and the role of port city coordination. This paper uses the data of Shanghai and Shanghai Port from 2006 to 2018 to construct a DEA model, analyzes the efficiency of Shanghai Port, constructs an input-output model for port development and urban economic development, and evaluates the impact of Shanghai Port on Shanghai’s economy. Then through the econometric model, the Shanghai Port container throughput and Shanghai's GDP are used for regression analysis to study the correlation analysis of Shanghai Port to Shanghai's economy.

3. DEA model and econometric model

3.1 DEA model

The model shows that this paper adopts the DEA-VRS model to study the impact of Shanghai Port on Shanghai’s economy. Data Envelopment Analysis (DEA) can be regarded as a new method of statistical analysis. DEA models mainly include CCR model and BCC model.

Advantages of the DEA model: First, it is a method for evaluating the production efficiency of decision-making units with multiple inputs and multiple outputs. Since DEA does not need to specify the production function form of input and output, it can be used to evaluate the efficiency of decision-making units with more complex production relations; secondly, the DEA model measures the efficiency of DEA without being affected by the unit of input-output data; , The weights of input and output variables in the DEA model are generated by mathematical planning, and there is no need to set the weights of input and output in advance.

This article adopts a longitudinal comparison method, collects data from Shanghai and Shanghai Port from 2006 to 2018 to analyze the impact of Shanghai Port on Shanghai’s economy, and selects several

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important input and output indicators through the principle of comprehensiveness and feasibility. The most representative, decision-making units are represented by different years, that is, DMU_1 represents 2006, and so on, there are 13 decision-making units respectively, so as to longitudinally evaluate the impact of the port on the urban economy.

3.1.1 Selection of indicators for Shanghai Port

In the port input indicators, the number of berth and the length of coastal terminals in Shanghai Port have been selected over the years; the output indicators have selected container throughput and total imports and exports.

(1) Coastal wharf length: The length of the wharf mainly reflects the working efficiency of the port.

(2) The number of berths in the terminal: the construction of the terminal is very helpful to the improvement of the working capacity of the port. The number of berths in the terminal reflects the scale of the port, and the construction of the terminal plays a key role in the port's throughput and output indicators.

(3) Container throughput: Container throughput is an important indicator to measure the output of a port. Shanghai Port is the second largest cargo throughput port in China and the largest container port in the world, so container throughput is used as the port's output indicator.

(4) Total import and export: In recent years, my country's foreign trade has been frequent and the scale of trade has expanded rapidly. China's share in the international market is also increasing. Therefore, the total import and export volume can reflect the degree of openness of a country and also play an important role in the development of the city's economy.

Table 1. Shanghai Port longitudinal comparison port effectiveness evaluation index data (2006-2018)

Years	Length of coastal wharf (10,000 meters)	Number of berths (units)	Shanghai's total import and export volume (100 million US dollars)	Container throughput (ten thousand TEU)
2006	9.16	1 140	2 274.89	2 171.9
2007	10.15	1 155	2 829.73	2 615.2
2008	11.49	1 203	3 221.38	2 800.6
2009	11.68	1 145	2 777.31	2 500.2
2010	11.92	1 218	3 688.69	2 906.9
2011	11.97	1 226	4 374.36	3 173.9
2012	12.29	1 245	4 367.58	3 252.9
2013	12.40	1 253	4 413.98	3 361.7
2014	12.60	1 282	4 666.22	3 528.5
2015	12.69	1 300	4 517.33	3 653.7
2016	10.92	1 152	4 338.05	3 713.3
2017	10.61	1 078	4 761.23	4 023.3
2018	14.92	1 978	5 156.49	4 201.0

From the 2006-2018 "Shanghai Statistical Yearbook", "China Port Yearbook", and the 2018 Shanghai National Economic and Social Development Statistical Bulletin, we can get the length of Shanghai Port, the number of berths in Shanghai Port, Shanghai's total import and export volume, and Shanghai Port. Four indicators of container throughput.

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3.1.2 Selection of indicators in Shanghai

Urban indicators are all aspects of the city's macroeconomics. This article selects several representative indicators of Shanghai. The input indicators are: fixed asset investment and the number of employees; the output indicators are: Shanghai's GDP and total retail sales of consumer goods.

(1) Investment in fixed assets: As an input indicator for cities, investment in fixed assets reflects the intensity of investment in urban construction. The greater the amount of asset input, the greater the output benefit.

(2) Number of employees: The population of Shanghai is growing slowly, and excellent talents play a very important role in the development of the city. Therefore, the number of employees can be used as an important investment indicator.

(3) Shanghai GDP: The most intuitive way to observe the economic development of a city is to observe its GDP value. GDP is one of the most important output indicators of a city.

(4) Total retail sales of consumer goods: total retail sales of consumer goods include retail sales of various economic types of wholesale and retail, trade, catering, manufacturing, and other industries to urban and rural residents and social organizations, and farmers to non-agricultural residents. . This indicator can reflect not only the degree of economic activity, but also the quality and level of life of the people. Therefore, the total retail sales of consumer goods can be used as an output indicator for the city.

Table 2. Shanghai Longitudinal Comparison of Urban Effectiveness Evaluation Index Data (2006-2018)

Years	Fixed asset investment (100 million yuan)	Number of employees (10,000)	GDP (100 million yuan)	The total retail sales of social consumer goods (100 million yuan)
2006	3 925.09	885.51	10718.04	3 360.41
2007	4 458.61	909.08	12668.89	3 847.79
2008	4 829.45	1 053.24	14276.79	4 577.23
2009	5 273.33	1 064.42	15287.56	5 173.24
2010	5 317.67	1 090.76	17436.85	6 186.58
2011	5 067.09	1 104.33	19539.07	6 814.80
2012	5 254.38	1 115.50	20558.98	7 412.30
2013	5 647.79	1 368.91	22264.06	8 556.96
2014	6 016.43	1 365.63	24068.2	9 303.49
2015	6 352.70	1 361.51	25659.18	10 131.50
2016	6 755.88	1 365.24	28183.51	10 946.57
2017	7 246.60	1 372.65	30632.99	11 745.96
2018	7623.42	1 375.66	32679.87	12 668.69

From the 2006-2018 "Shanghai Statistical Yearbook", "China Port Yearbook", and the 2018 Shanghai National Economic and Social Development Statistical Bulletin, we can obtain Shanghai's fixed asset investment, Shanghai's number of employees, Shanghai's gross national economy and Shanghai Four indicators of total retail sales of consumer goods in the city.

$$\mathrm{Min}[\theta - \varepsilon(s_1^- + s_2^- + s_3^- + \cdots . + s_m^-) + \varepsilon((s_1^+ + s_2^+ + s_3^+ + \cdots . + s_m^+)] \quad (1)$$

$s.t.$

$$\sum_{j=1}^{n} \lambda_j x_{ij} + s_i^- = \theta x_{ijo},\ i = 1,2, \ldots\ldots, m \quad (2)$$

$$\sum_{j=1}^{n} \lambda_j y_{rj} + s_r^+ = \theta y_{rj0},\ r = 1,2, \ldots\ldots, p \quad (3)$$

$$\sum_{j=1}^{n} \lambda_j = 1, \qquad j = 1,2,3, \ldots\ldots, n \quad (4)$$

$$\lambda \geq 0, s_i^-, s_r^+ \geq 0 \quad (5)$$

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$$C_I(X_J) = \begin{bmatrix} X_{1\,1} & \cdots & X_{1\,12} \\ X_{2\,1} & \cdots & X_{2\,12} \end{bmatrix} \tag{6}$$

$$C_O(Y_J) = \begin{bmatrix} Y_{1\,1} & \cdots & Y_{1\,12} \\ Y_{2\,1} & \cdots & Y_{2\,12} \end{bmatrix} \tag{7}$$

BCC model, the efficiency value sought is the pure technical efficiency value, and the scale efficiency value of the decision-making unitDMU_j (scale efficiency=comprehensive technical efficiency/pure technical efficiency) can also be calculated. When $\theta^* = 1$and its slack variable $s_i^{*-} = 0, s_r^{*+} = 0$, the decision-making unit DMU_j is considered to be DMU valid, otherwise, the decision-making unit DMU_j is considered is invalid for DMU.

3.2 Econometric model

There are many industries involved in the development of the port economy. The total port economy can be represented by the port's container throughput, and the GDP can be used to represent the economy of a region. The regional economy mainly comes from the 2019 Shanghai Statistical Yearbook. The next step is to use regression analysis model to study the economic impact of Shanghai Port and Shanghai.

Establishment of econometric model:

$$\mathrm{Y} = \mathrm{a} + \mathrm{bX} + \mu \tag{8}$$

Y-Shanghai's annual GDP

X-Port's annual container throughput

μ-random error

b-The average impact of port container throughput on GDP

Sample data collection and selection, the container throughput of Shanghai Port from 2006 to 2018 and the GDP of Shanghai from 2006 to 2018 are collected. The specific data are shown in Table 3:

Table 3. Shanghai Port's container throughput and Shanghai GDP Raw data

Years	Container throughput (ten thousand TEU)	GDP (100 million yuan)
2006	2 171.9	10718.04
2007	2 615.2	12668.89
2008	2 800.6	14276.79
2009	2 500.2	15287.56
2010	2 906.9	17436.85
2011	3 173.9	19539.07
2012	3 252.9	20558.98
2013	3 361.7	22264.06
2014	3 528.5	24068.2
2015	3 653.7	25659.18
2016	3 713.3	28183.51
2017	4 023.3	30632.99
2018	4 201.0	32679.87

4. Results

4.1 DEA analysis

This paper uses DEAP 2.1 software to analyze the effectiveness data of Shanghai Port and Shanghai. The data is based on Table 1 Shanghai Port Longitudinal Comparison Port Effectiveness Evaluation Index Data (2006-2018), Table 2 Shanghai Longitudinal Comparison City Effectiveness Evaluation Indicator data (2006-2018). The final output data of DEAP 2.1 is the comprehensive efficiency, pure

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technical efficiency, scale efficiency and scale efficiency of different decision-making units (years). Among them, pure technical efficiency represents the input elements of the decision-making unit (year) at the optimal scale, and the output capacity that can be obtained1.

After sorting out the input-output effectiveness index data of Shanghai Port and Shanghai, use the DEAP 2.1 program to analyze the input-output effectiveness of the two and the results are as follows:

Table 4. Validity analysis results of input-output index data of Shanghai Port

Years	Crste efficiency	Vrste efficiency	Scale efficiency	
2006	0.625	1	0.625	irs
2007	0.679	0.964	0.705	irs
2008	0.643	0.904	0.711	irs
2009	0.585	0.941	0.621	irs
2010	0.69	0.887	0.778	irs
2011	0.814	0.881	0.924	irs
2012	0.794	0.866	0.917	irs
2013	0.798	0.86	0.927	irs
2014	0.825	0.841	0.981	irs
2015	0.793	0.831	0.954	irs
2016	0.897	0.949	0.945	irs
2017	1	1	1	-
2018	0.77	1	0.77	drs
Mean	0.763	0.917	0.835	

It can be seen from Table 4 that a total of 13 samples from 2006 to 2018 (drs: diminishing scale efficiency; irs: increasing scale efficiency; -: constant scale efficiency. It can be seen from the table that only Shanghai Port in 2017 The comprehensive efficiency of input-output is equal to 1, which means that the input-output evaluation results for this year are valid; from 0.625 in 2006 to 1 in 2017, the comprehensive efficiency has shown an increasing state, and economies of scale have been increasing until In 2018, the pure technical efficiency value is higher than the scale efficiency and the scale efficiency is diminishing, which may be due to the unreasonable allocation of port resources.

Table 5. Validity analysis results of Shanghai input-output index data

Years	Crste efficiency	Vrste efficiency	Scale efficiency	
2006	0.637	1	0.637	irs
2007	0.663	1	0.663	irs
2008	0.69	0.918	0.751	irs
2009	0.676	0.92	0.735	irs
2010	0.765	0.949	0.806	irs
2011	0.9	1	0.9	irs
2012	0.913	1	0.913	irs
2013	0.92	1	0.92	irs
2014	0.933	0.996	0.937	irs
2015	0.96	1	0.96	irs
2016	0.975	1	0.975	irs
2017	0.986	0.997	0.989	irs
2018	1	1	1	-
Mean	0.847	0.983	0.86	

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It can be seen from Table 5 that a total of 13 samples were taken from 2006 to 2018 (drs: decreasing scale efficiency; irs: increasing scale efficiency; -scale efficiency unchanged. It can be seen from Table 4 that only the comprehensive technical efficiency reached in 2018 This means that the input-output evaluation results of Shanghai this year are valid and invalid in other years. The overall efficiency has been steadily increasing during the 13 years from 2006 to 2018, and the annual technical efficiency is higher than the scale efficiency High. The overall economies of scale show an increasing state. After sorting, the input-output effectiveness evaluation results of Shanghai Port and Shanghai over the years are shown in Table 6 below:

Table 6. Results of comparative evaluation of input-output effectiveness of Shanghai Port and Shanghai

Years	Port validity value	Effective	Years	City validity value	Effective
2006	0.625	No	2006	0.637	No
2007	0.679	No	2007	0.663	No
2008	0.643	No	2008	0.69	No
2009	0.585	No	2009	0.676	No
2010	0.69	No	2010	0.765	No
2011	0.814	No	2011	0.9	No
2012	0.794	No	2012	0.913	No
2013	0.798	No	2013	0.92	No
2014	0.825	No	2014	0.933	No
2015	0.793	No	2015	0.96	No
2016	0.897	No	2016	0.975	No
2017	1	Yes	2017	0.986	No
2018	0.77	No	2018	1	Yes

Analysis of model evaluation results. Table 6 intuitively reflects the effectiveness of Shanghai Port and Shanghai's input and output indicators from 2006 to 2018, the relationship between port and city effectiveness, and port effectiveness, indicators for 2006-2016 and 2018 All are invalid, and the 2017 data are valid. In the effectiveness of cities, the indicators for 2006-2017 are all invalid, and the indicators for 2018 are valid. It can be divided according to the years of valid and invalid values of ports and cities as shown in Figure 2:

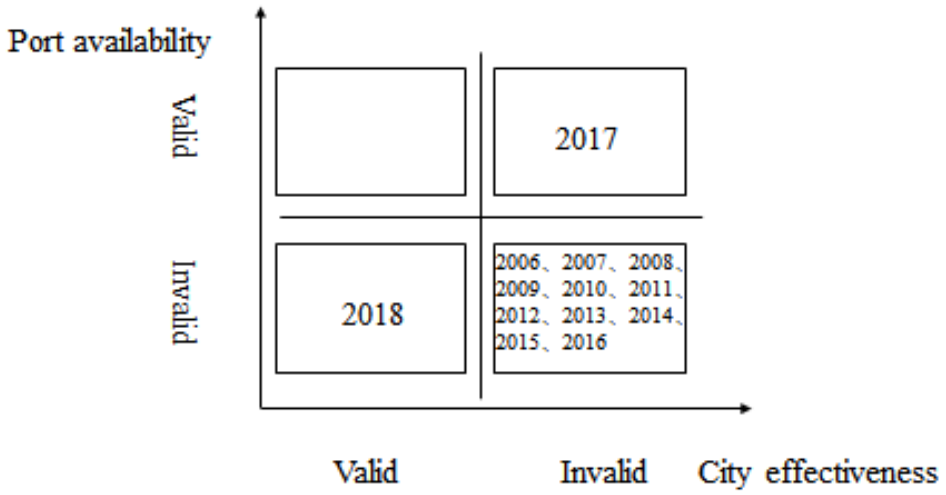

Figure.2 Classification of the effectiveness of Shanghai Port and Shanghai

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From Figure 2, the effectiveness of Shanghai Port and Shanghai can be classified into three categories. The first is that the port's decision-making unit is effective but the city is ineffective, showing that the port promotes Shanghai's economic development. Such a year is 2017; the second is the effectiveness of the city but the port is invalid, indicating that the city promotes the economic development of the port. There is 2018; the third thing is invalid, indicating that there are problems in the development of Shanghai Port and the city, and it is necessary to coordinate the development of the relationship between Hong Kong and the city. Such years include 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016.

4.2 Analysis of econometric model

Model parameter calculation

This model takes the annual container throughput of Shanghai Port as X (independent variable) and Shanghai's annual GDP as Y (dependent variable). Then the SPSS software is used for processing and analysis. The data results are shown in Tables 7, 8 and 9.

Table 7. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.983[a]	.966	.963	1336.42195

a. Predictors: (Constant), Ten thousand TEU

Among them: the goodness of fit of the R-model

R=0.949, that is, the linear correlation coefficient between the data and the model description value is 0.983, showing a positive linear correlation;

R=0.966, the value of R is between 0 and 1, that is, the change in container throughput of the port can effectively predict the change in GDP.

Table 8. ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	561749624.956	1	561749624.956	314.525	.000[b]
	Residual	19646259.814	11	1786023.619		
	Total	581395884.769	12			

The significance of F-R

From the table: F=315.292, Sig=0.000< α=0.1, the mark is that the linear regression has strong significance, that is, the linear regression model is statistically significant.

Table 9. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-15290.864	2083.744		-7.338	.000
	Ten thousand TEU	11.282	.636	.983	17.735	.000

Regression analysis results, through the above analysis, we used SPSS software to process, and obtained the port's container throughput as X, and the direct Shanghai GDP as Y. The specific computer is shown in the table.

a =-15292.106, b=11.282

Unary linear regression expression: $Y = -15292.106 + 11.282X$

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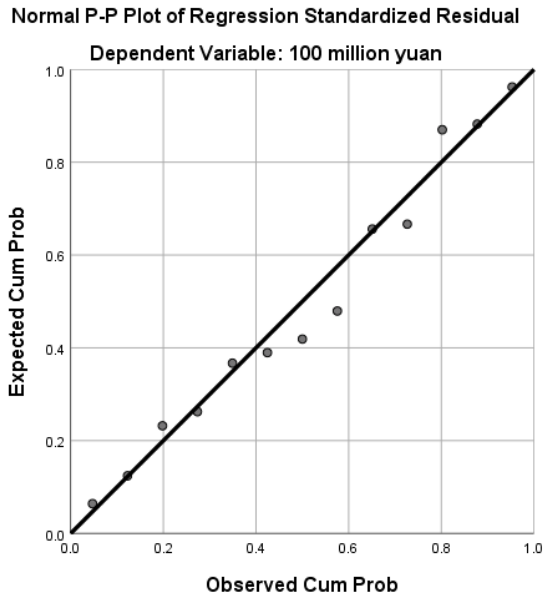

Figure.3 Fitting diagram of GDP and container throughput

Through the above analysis, we can see that the change in port container throughput has an impact on the direct GDP of the hinterland. From Figure 3, we can see that there is a high degree of positive correlation between the two. We observe the regression model and find that, Shanghai Port can play a leading role in the regional economy and has a significant impact on Shanghai's GDP.

5. Conclusion

This article analyzes the impact of Shanghai Port on Shanghai's economy through DEA model and econometric model, and draws conclusions. Through the DEA model analysis, it is found that in the Shanghai Port study, only the comprehensive input-output efficiency of Shanghai Port in 2017 was equal to 1, which means that the input-output evaluation results for this year were valid; in the Shanghai study Only in 2018, the comprehensive technical efficiency reached 1, which means that the input-output evaluation results of Shanghai this year are valid. Through the analysis of the econometric model, the container throughput of Shanghai Port and the total GDP of Shanghai are correlated. Through the observation of the regression model, it is found that there is a high degree of positive correlation between the two. The port of Shanghai plays a leading role in the regional economy and contributes to the GDP of Shanghai. The impact is significant. To enhance the role of the port in promoting the urban economy, some suggestions and countermeasures are listed below: (1) Further promote the transformation and upgrading of the port industry. Relying on the unique geographical advantages, we will guide the agglomeration of industries, do a good job in port industrial parks and industrial parks, and promote the economic development of port cities. (2) Promote the degree of opening of the port. Shanghai Port is the largest container port in China. It is necessary to further expand the degree of opening of Shanghai Port, increase multiple modes of transportation, form sea-rail combined transportation, and improve the efficiency of cargo traffic. (3) Optimize the urban transportation system, realize the efficient connection of arterial highways and urban internal transportation, and promote the optimization and adjustment of logistics transportation and urban transportation. Only by improving the urban transportation system can the main functions of Shanghai Port be better played and promote Shanghai Economic development of the city. (4) Strengthen the ecological environment protection of the port, raise the threshold of industrial undertaking, introduce environmentally friendly industries, and promote the sustainable development of the regional economy.

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References

[1] Hashem Omrani & Mehdi Keshavarz: A performance evaluation model for supply chain of shipping company in Iran: an application of the relational network DEA, Maritime Policy & Management, vol.40 (2016), 121-135.

[2] C.H. Ren: Research on the Coordinated Development of the Port Group in the Yangtze River Delta and the Regional Economy (MS., Wuhan University of Technology, China 2012).

[3] L.L. Xiao:Research on Tianjin Port Regional Economic Contribution (MS., Tianjin University, China 2014).

[4] Chen Z, Chen W. Analysis of Countermeasures to Enhance the Competitiveness of Fujian Port[C]// International Conference on Economic Development & Education Management. 0.

[5] Q. Zhang: Research on the Influence of Shandong Port Group on Regional Economy (MS., Qufu Normal University, China 2018).

[6] W.R. Zheng, T.R. Zhou,H. P. Wang: An Econometric Analysis of Xiamen's Container Throughput and Economic Influencing Factors, (Business Economy, China 2016),No.9,p.50-52.

[7] Shan J, Yu M, Lee C Y, et al. An empirical investigation of the seaport's economic impact: Evidence from major ports in China, Transportation Research Part E-logistics and Transportation Review, (2014), 41-53.

[8] S.F. Sui:Analysis of Huanghua Port's Impact on Regional Economy (MS., ShanDong University, China 2014).

[9] Bottasso A, Conti M, Ferrari C, et al. Ports and regional development: A spatial analysis on a panel of European regions, Transportation Research, vol.65(2014), 44-55.

[10] Chang Y, Shin S, Lee P T, et al. Economic impact of port sectors on South African economy: An input–output analysis, Transport Policy, (2014), 333-340.

[11] Park J S, Seo Y. The impact of seaports on the regional economies in South Korea: Panel evidence from the augmented Solow model, Transportation Research Part E-logistics and Transportation Review,(2016), 107-119.

[12] Santos A, Salvador R, Dias J, et al. Assessment of port economic impacts on regional economy with a case study on the Port of Lisbon, Maritime Policy & Management, vol. 45(2018), 684-698.

[13] W.Q. Sun: The Interactive Relationship between Shanghai Port and Urban Economic Development, Modern Industry, vol.04 (2018), 53-54.

[14] M.X. Zhang: Research on the Dynamic Impact of Shanghai Port on Regional Economy (MS., Shanghai Maritime University, China 2007).