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Research on port-city economic interaction effect between Shanghai and Yangshan Port

Yifan Xu

WORLD MARITIME UNIVERSITY

Shanghai, China

RESEARCH ON PORT-CITY ECONOMIC INTERACTION EFFECT BETWEEN SHANGHAI AND YANGSHAN PORT

By

XU YIFAN

China

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MASTER OF SCIENCE

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DECLARATION

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the University.

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Xu Yifan
…….

Supervised by
Professor Zhen Hong
Shanghai Maritime University

Assessor
World Maritime University

Co-Assessor
Shanghai Maritime University

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ABSTRACT

Title of Dissertation: **Research on port-city economic interaction effect between Shanghai and Yangshan Port**

Degree: **Master of Science in International Transportation and Logistics**

The integration of port and port city is a strategic choice of urban economy development .It has intrinsic positive connection with the urban economy development. Harbor leading market Shanghai has developed the harbor enterprise vigorously, becomes the key target of national construction, and is listed as the object of constructing the international shipping center and financial center by the Local authority. This article take Shanghai and the Yangshan port as the object, study port city economy interaction effect, and then provide certain suggestions and inspires for port city Shanghai.

Key words：Yangshan port, Shanghai, Economy, Interaction effects

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CHAPTER ONE: INTRODUCTION

1.1. Background

The development of port and the port city complement each other. Location of the port is an important element for port city which may provide sufficient production elements. With the development of the port, the port and its adjacent area will reach its most dynamic and potential economic growth step by step in a certain range, with the help of the advantage of its location and the economic growth in water, land, and air transportation hub, so as to attract more productivity elements to its focus. Focus on results usually will produce agglomeration economy effect, which will further attract other regional productivity elements, and make them together to the port areas further to accelerate and focus economic activities. The concentration of economic activities correspondingly drive the population, science and technology, culture and other activities, the concentration also put higher requirement to port and its adjacent area on corresponding facilities, which promoted the construction with all kinds of facilities. This cycle which is the process of expanding eventually lead a development to the port and the surrounding area. The promoting effect between port and port city is obvious, and I'm sure the effect will be stronger in the future. According to the development tendency, international shipping industry has experienced the era of container transport and intermodal transport, and it will enter a new comprehensive logistics era. For the port, the trend for comprehensive transportation hub will also become apparently. So the role of Yangshan Port becomes more and more important.

The port city has a strong reaction to the port. It's the foundation to port-related industry, and also positively related to the port's development. Greater scale of the port city provides a greater development space, especially for the big port city like Shanghai, the concentration and diffusion of the energy flow which contains population, logistics, information, capital and economy would greatly expand the space for development. Port city of various service facilities and transportation,

communication conditions are the main material for port's development. By having the developed manufacture and commerce industry, the international financial institutions, consultancy and communication network and other service facilities, Shanghai possess nearly all necessary conditions for Yangshan Port industry continuing to extending and radiation.

The integration of port and port city is a strategic choice of urban economy development. It has intrinsic positive connection with the urban economy development. Harbor leading Shanghai market has developed the harbor enterprise vigorously that becomes the key target of national construction, and also listed as the object of constructing the international shipping center and financial center by the local authority. This article take Shanghai and the Yangshan port as the object, study port city economy interaction effect and then provide certain suggestions and inspires for port-city Shanghai.

1.2. Literature Review

According to the structure of this paper, my references are mainly about port-city relationships and its evolution and development. As the reason that this article take Shanghai and the Yangshan port as the object, the main references are Chinese version not in English.

All these references can be divided into three parts. The first part is about the port-city relationship. The second part is related to the port-city development or its evolution. The last part is about the problems or the challenges happened to port-city.

1.2.1. Literature about the port-city relationship

The relationship between ports and cities is complex. Our country is now in a period of rapid economic growth, the port throughput is always the first for many years, but the

development of port cities falls behind relatively. The most important reason is that there is not effective interactive relation between ports and the cities. The practice at home and abroad shows that the positive interactive development between ports and cities is important. It can solve the problems basically such as port city's slow development and less competitive ability. It is also the key factor that can determine whether the port cities can realize sustainable development.

Though at present many scholars have made a large number of researches about the interactive between ports and cities, the effect of guiding practice is weak. Particularly, there are several problems concerning the interactive mechanism of port-city system, the evolution of the relationship between ports and cities and the judgments and evaluation on the harmonious development of port system and city system, which are not be well solved.

One of the references investigates the nature of port-city relationships in two major port regions of the world, Europe and Asia. This reference is well analyzed through either isolated case studies or general models; it proposes a complementary approach based on urban and port indicators available for 121 port cities. In terms of demographic size and container traffic, it shows the decline of port-urban dependence, stemming from changes in global transportation and urban development. However, European and Asian port cities are not identically confronted to the same challenges, notably in terms of their hinterlands. A factor analysis highlights a regional differentiation of port-city relationships according to their insertion in both urban and port systems, with a core-periphery dualism in Europe and a port-city hierarchy in Asia. Thus, the distance to inland markets for European ports and the size of coastal markets for Asian ports are the main factors to explain the nature of port-city relationships in the two areas. It helps to evaluate which European and Asian port cities are comparable beyond their cargo volumes, by putting together micro (local environments) and macro (regional patterns) factors.

As the example for Shanghai and the Yangshan port, Meng Shaodong said in his paper "Marketing analysis about Shanghai and the Yangshan Port", the port-city had a strong reaction to the port. The port-city is a strong backup for the port industry and it is a positive correlated to the development of port. The bigger the port-city is the more development space the port will get. Especially for Shanghai such international port city, people, logistics, information and economic energy flow concentration and diffusion will greatly expands port development space. The service facilities and transportation, communication condition of the port-city are the main foundation for port development. Shanghai owns developed business, international financial institutions, consulting institutions and communication network as well as other service facilities, which provides the necessary conditions for Yangshan port to continue expanding.

The Yangshan port and Shanghai is interdependence, Shanghai as the relationship of Yangshan port facilities carrier, is the support of Yangshan industry development. However Yangshan port as one of the important part of Shanghai, it plays an important role to promoting the city economy.

1.2.2. Literature about the port-city development or its evolution

DUCRUET and Sung-Woo LEE, in their paper "Port-City Evolution and Regional Competition", reviews a number of urban and port issues regarding their complementary and contradictory aspects about the evolution of port cities. The main purpose is to verify how port function is more or less important to local economies, compared to other functions, through a temporal and global approach. Based on a matrix of port-city centrality and intermediacy, the main indicators available for international comparison are urban population and container throughput. An analysis of 653 places between 1970 and 2005 period is provided, using the relative concentration index proposed by Vallega. The appropriate geographical scale to measure the relative evolution of port cities at a global level is discussed. Results tend

to question previous models which consider functional and spatial separation between the city and its port as an ineluctable process. The port-city evolution appears to be gradual rather than linear or chaotic, and in many cases largely influenced by regional factors and local strategies.

They think the trends of port-city separation described by Murphey (1989) based on colonial Asian cities and the model of Hoyle (1989) based on European port cities are confirmed on a world scale, but several cases do not match. Highly urbanized port cities may have seen their port function decline over time, but many of them have managed to overcome the difficulties of port competition and urban growth, thanks to efficient planning policies and exceptional locational advantages, as seen in the Asian consolidation model of Lee (2005) based on Hong Kong and Singapore. However, although there is a common achievement in avoiding port decline, addressing a new model of port-city relationships is difficult, because there is a subtle combination of local and regional factors during the adaptation to globalization.

Also port-city evolution appears to be gradual, and there are only few examples of sudden change like from general city to hub port and vice-versa. In terms of policy implications, this evidence argues in favor of long-term urban and port strategies. This also has an academic implication, referring to the works of Rodrigue et al. (1997) on transportation and spatial cycles applied to maritime systems. The redistribution of flows between different types of port cities over time indicates important regional shifts within the world system but, also, shows the ability of local players in inserting efficiently their place in evermore complex trading and logistic networks. Although containerization has spread globally, the continuous growth of world trade and maritime traffics shall not blur the very uneven adaptation of local and regional structures to the global pattern.

1.2.3. Literature about the problems or the challenges happened to port-city

The paper “Development Challenges in the Evolving Port-City Interface”, which written by Tom Daamen M.Sc., Delft University of Technology and Marcel van Gils M.A., Erasmus University Rotterdam, mentioned that in the past research on the development of the urban waterfront has mainly focused on the regeneration of derelict and obsolete port areas. However, little to no studies has been done on urban development issues in the area between the evolving port and its city. In Europe, this new and more complex development problem is currently emerging, and generates questions about the way it should be managed. They try to seeking the answer such questions by reflecting the results of two case studies – Rotterdam and Hamburg – on the theoretical division between the process and content of spatial developments.

The transparency in the strategies deployed in Rotterdam and Hamburg is surely a common and very positive factor, but the very mediating and careful way of working in the Dutch port-city lacks the result of a clear plan with a broad political support – something that followed only until over a year later. The Leap across the Elbe initiative does not lack any political or port commitment, but the publicly presented competing visions of the Hamburg business community do not appear to be very constructive for the process. In short, both port-cities seem to have lost the support for a vision or plan that meets the demands of all the critical stakeholders, which means that a new round of negotiations and discussions is probably at hand. The plans presented in both cases reflect a certain amount of abstraction or ‘openness’ in how specific locations will be filled in when the time comes. Locations are roughly designated for economic, leisure or housing functions, but no blue prints or programs have been presented. Hence, planning practices in both cities take account of the port-city dynamic and the impossibility to plan large-scale interventions in the existing port-city ‘top down’.

However, as we have seen in the Rotterdam case, a bottom-up strategy is very fragile. Especially in continental Europe, a combining approach like in Hamburg seems most effective, with the remark that it is crucial to keep track of the changing interests of critical stakeholders. Opposed to ways of working in the past, we are now involved in

an urban development practice that should stress a desired becoming in preference to a desired result, present vision as a discourse and not as a fixed plan, promote options rather than choices, and set a qualitative direction instead of a quantitative goal. Connecting process to content means allowing for change to occur – both by and in the port and the city. Both should allow themselves to think outside of strict procedures, and provide room for improvisation and exploration in the contemporary port-city interface. True co-existence can only be achieved by co-operation in and co-production of a sustainable port-city territory.

1.3. Research Methodology and Structure

This paper is an attempt to overcome some limitations, arguing if it is sufficient to use basic urban and port indicators to verify general models. Based on previous works on Shanghai and Yangshan Port, it verifies the combinations of port and urban functions through a principal component analysis. This methodology is a mean to highlight key issue about the importance of ports in local economies.

1.3.1. Selection of research method

The qualitative research method is chosen to study the question as below,
Is there any economic interaction effect between Shanghai and the Yangshan port?
Is the relationship strong enough to control the port-city economy?

When I analyze the relations between Shanghai and the Yangshan port, I chose to use SPSS which is statistical analysis software to complete correlation analysis.

1.3.2. Structure

Chapter 1 is the introduction of this dissertation and also the background for the relations between port and port-city.

Chapter 2 gives the description of some data support which are correlation analysis based on the statistical analysis software SPSS, and get some results in the end.

Chapter 3 describes the foundation for Shanghai economics and goodness to Yangshan Port then lists the opportunities for port-city development between Shanghai and Yangshan Port.

Chapter 4 will put forward some challenges to the development of port-city interaction including the competitions among ports in the Yangtze River delta, bad conditions in Yangshan Port and economic risk to the port-city interaction.

Chapter 5 gives the solutions and suggestions to the problem which listed on Chapter 4.

Finally, the conclusions will be given in Chapter 6.

CHAPTER 2 PORT-CITY ECONOMIC RELATIONSHIPS BETWEEN SHANGHAI AND YANGSHAN PORT

2.1. Correlation analysis based on the statistical analysis software SPSS

2.1.1. Background of Yangshan Port

The Yangshan deep-water port is a new port in Hangzhou Bay south of Shanghai. It became an open port on December 10, 2005 and the whole project planning would continue until 2020. Built to circumvent growth limitations for the Port of Shanghai as a result of shallow waters, it allows berths with depths of up to 15 meters to be built, and is capable of handling the largest container ships today. The port achieves this by building on the offshore islands of Greater and Lesser Yangshan (part of the Zhou Shan archipelago), which have been amalgamated by land reclamation and connected to the mainland via the Donghai Bridge, the latter of which was opened on 1 December 2005 as the second longest ocean bridge in the world at 32.5 km in length.

In 2000/2001, the decision was made to commence construction on the first of four phases. Now the Yangshan deep-water port has finished its construction for the third phase. In the first phase, it completed the quay line for 1.6 km and 5 container deep-water berths which can handle 5th and 6th generation container ships. Now the third phase has been completed by 2010 with seven berths, with phase 3A scheduled to be opened by the end of 2007. When fully completed in 2020, the port will have four phases in operation with 30 berths capable of handling 15 million TEUs annually. The total cost of Yangshan port may reach US$ 12 billion over 20 years.

In order to analysis the relations between Shanghai economics and Yangshan Port, the variables and related data requirements of the research questions are needed as below:

Table 2-1: Annual index of the Yangshan port

Year	Container Throughput (1,000TEUs)	No. Berth	Quay line length (m)	Designed capacity (1,000TEUs)
2006	3230	5	1600	2200
2007	6108	9	3000	4300
2008	8228	13	4350	7100
2009	8700	16	5600	9300

Source: The website of Yangshan Port Free Trade Zone

To analysis the port-city economic interaction effect between Shanghai and Yangshan Port, we must understand Shanghai's economic development. In this paper, I chose to use the following indexes as the research data.

Table 2-2: Shanghai annual GDP

Year	2006	2007	2008	2009
GDP(Billion)	1,036.637	1,218.885	1,369.815	1,490.093

Source: Shanghai Statistics Bureau (http://www.stats-sh.gov.cn/2008shtj/index.asp)

Table 2-3: Shanghai citizens living level

Year	GDP per Capita (RMB)	Urban per capita disposable income (RMB)	Rural per capita disposable income (RMB)	Urban per capita household life on consumer spending	Rural per capita household life on consumer spending
2006	57 695	20 668	9 213	14 762	8 006
2007	66 367	23 623	10 222	17 255	8 845
2008	73 124	26 675	11 385	19 398	9 115
2009	80 198	28838	12324	20992	9804

Source: Shanghai Statistics Bureau (http://www.stats-sh.gov.cn/2008shtj/index.asp)

In order to analysis the port-city economic interaction effect between Shanghai and Yangshan Port, it should be considering not only the relation in total economy but also analysis the correlation between Yangshan Port and all economy area, so I listed Shanghai industrial structure distribution here.

Table 2-4: Shanghai industrial structure distribution

Year	Contribution value for each industry		
	Primary Industry (Billion)	Secondary Industry (Billion)	Tertiary Industry (Billion)
2006	9.380	502.837	524.420
2007	10.184	567.851	640.850
2008	11.180	623.592	735.043
2009	11.382	593.996	884.715

Source: Shanghai Statistics Bureau (http://www.stats-sh.gov.cn/2008shtj/index.asp)

2.1.2. Data processing and Pearson correlation coefficients

The development of Yangshan port and Shanghai economic are coordinated, this can be proved by the conclusion of correlation analysis. I decided to use Pearson correlation coefficients as analysis indicator which is a part in the software SPSS.

Pearson correlation coefficient is also called, Pearson product torque related, it use “r” as the degree of correlation. The formula is:

The meaning of $$r = \frac{\sum_{i=1}^{n}(x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^{n}(x_i - \bar{x})^2 \sum_{i=1}^{n}(y_i - \bar{y})^2}}$$ each index:

x_i ——corresponding number for the selection index x

$\bar{x}$ ——mean number for the selection index x

y_i ——corresponding number for the selection index y

$\bar{y}$ ——mean number for the selection index y

r ——Correlation coefficient

Pearson correlation coefficient also called simple correlation coefficient, when |r|=1, it called completely linear correlation. When 0<|r|<1, it called exist related. When |r|>1, it called positive correlation. When |r|<0, it called negative correlation. Sample correlation coefficient is calculated according to the sample observation that different samples will cause the different value. It can be proofed that sample correlation coefficient is general correlation coefficient's consistent estimator.

Calculating t statistic is to test Pearson correlation coefficient of the statistics:

$$t = \frac{r}{\sqrt{\frac{1-r^2}{(n-2)}}}$$

The meaning of each index:

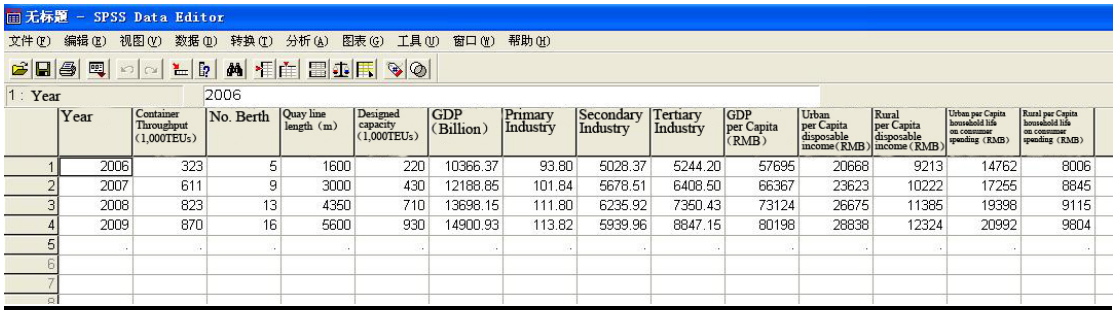
r ——Correlation coefficient

In this formula the "t" statistic obey the freedom for (n-2) distribution, according to the given significant level and degrees of freedom (n - 2), to search t distribution table in corresponding critical value (or p value). If $|t| > t_{a/2}$ (or $p < \alpha$) , that means the r value is statistically significant. If $|t| \leq t_{a/2}$ (or $p \geq \alpha$) , that means the r value is not statistically significant.

2.1.3. Analytic process:

Step 1: Input data

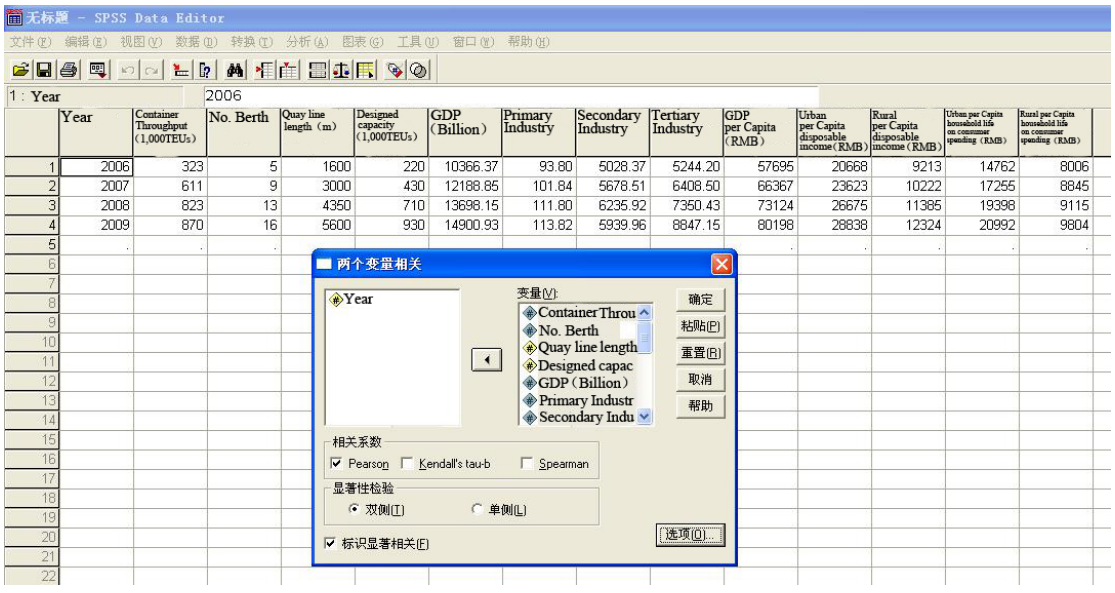
Picture 2-1: Step One



	Year	Container Throughput (1,000TEUs)	No. Berth	Quay line length (m)	Designed capacity (1,000TEUs)	GDP (Billion)	Primary Industry	Secondary Industry	Tertiary Industry	GDP per Capita (RMB)	Urban per Capita disposable income (RMB)	Rural per Capita disposable income (RMB)	Urban per Capita household life on consumer spending (RMB)	Rural per Capita household life on consumer spending (RMB)
1	2006	323	5	1600	220	10366.37	93.80	5028.37	5244.20	57695	20668	9213	14762	8006
2	2007	611	9	3000	430	12188.85	101.84	5678.51	6408.50	66367	23623	10222	17255	8845
3	2008	823	13	4350	710	13698.15	111.80	6235.92	7350.43	73124	26675	11385	19398	9115
4	2009	870	16	5600	930	14900.93	113.82	5939.96	8847.15	80198	28838	12324	20992	9804
5	.	.	.	.	.	.	.	.	.	.	.	.	.	.
6														
7														

Step 2: Chose the indicators and set relevant parameters

Picture 2-2: Step Two



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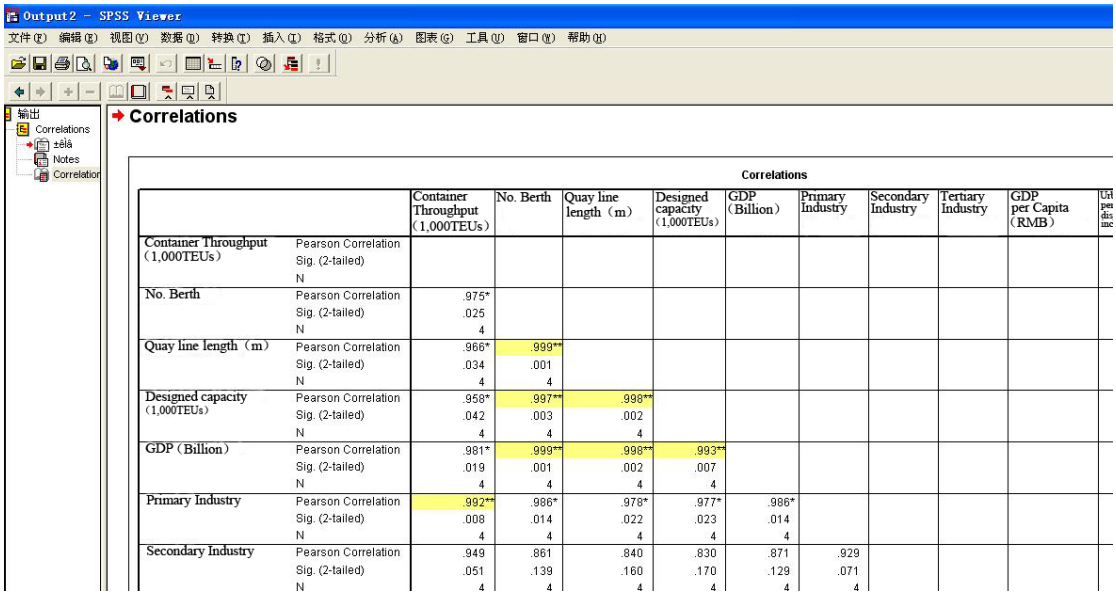
5	.	.	.	.	.	.	.	.	.	.	.	.	.	.

Step 3: Output results (See Appendix I)

Picture 2-3: Step Three



Consequences:

1) According to the correlation between GDP and other indicators related to Yangshan Port, as follow:

Table 2-5: Correlation coefficient with GDP

		Container Throughput (1,000TEUs)	No. Berth	Quay line length (m)	Designed capacity (1,000TEUs)
GDP (Billion)	Correlation coefficient-r	0.981	0.999	0.998	0.993

Source: Appendix I (Analysis results)

All the indicators are larger than 0.98 which means Yangshan Port's development is closely related to the development of Shanghai economy.

2) According to the correlation between Shanghai Industry values and Yangshan Port's indicators as follow:

Table 2-6: Correlation coefficient with industry

		Container Throughput (1,000TEUs)	No. Berth	Quay line length (m)	Designed capacity (1,000TEUs)
Primary Industry	Correlation coefficient-r	**0.992**	0.986	0.978	0.977
Secondary Industry	Correlation coefficient-r	0.949	0.861	0.840	0.830
Tertiary Industry	Correlation coefficient-r	0.935	0.988	0.994	0.991

Source: Appendix I (Analysis results)

We can see from the table that Berth Number, Quay line length and Designed capacity are more related to tertiary industry, which also explained that the shipping industry is belong to tertiary industry. On the other hand, all these 'r' values are approach one that means Yangshan Port also correlation with the development of Shanghai industry.

3) According to the correlation between quality of life in Shanghai and Yangshan Port's index, as follow:

Table 2-7: Correlation coefficient with quality of life in Shanghai and Yangshan Port

		Container Throughput (1,000TEUs)	No. Berth	Quay line length (m)	Designed capacity (1,000TEUs)
GDP per Capita (RMB)	Correlation coefficient-r	0.970	0.998	**0.999**	0.995
Urban per capita disposable income (RMB)	Correlation coefficient-r	0.976	**1.000**	0.999	0.997
Rural per capita disposable income (RMB)	Correlation coefficient-r	0.964	0.999	0.999	1.000
Urban per capita household life on consumer spending	Correlation coefficient-r	0.982	0.999	0.997	0.993
Rural per capita household life on consumer spending	Correlation coefficient-r	0.952	0.980	0.984	0.972

Source: Appendix I (Analysis results)

From this table we can indicate that level of people's life in Shanghai is closely related to the development of Yangshan Port, because among all these the indexes, the degree of correlation are very high which almost over 0.95. It is due to the improvement of people's living standard that make people increased their demand of domestic and foreign products, and these increased demands lead to the shipping industry better and better especially on containers' imports and exports. So this kind of closely correlation just proofs the relation between Yangshan Port's development and Shanghai economy. They are as economic ties which affect each other.

2.2. Correlation analysis between Shipping cycle and economic cycle

The economic cycle is the periodic fluctuation of the economy between periods of growth and contraction. The major phases of the economic cycle are expansion, prosperity, contraction and recession. Governments and central banks often intervene to smooth the peaks and valleys of the economic cycle. For example, the Federal reserve may restrict the money supply in good times to slow the expansion phase of the economic cycle, and deficit spend and cut interest rates to ease the recessionary phase of an economic cycle.

Shipping industry also has clear cyclical characteristics, and the shipping cycle is very closely related to the economic cycle. That means in order to research the port-city interaction, it's important to analyze the correlation between shipping cycle and the economic cycle. In this paper, I choose to analyze the Transportation Sentiment Indicator (which shipping cycle is one part of it) and the Economic Sentiment Indicator.

The Transportation Sentiment Indicator and the Economic Sentiment Indicator in these years are as follow:

Table 2-8: The Transportation Sentiment Indicator and the Economic Sentiment Indicator

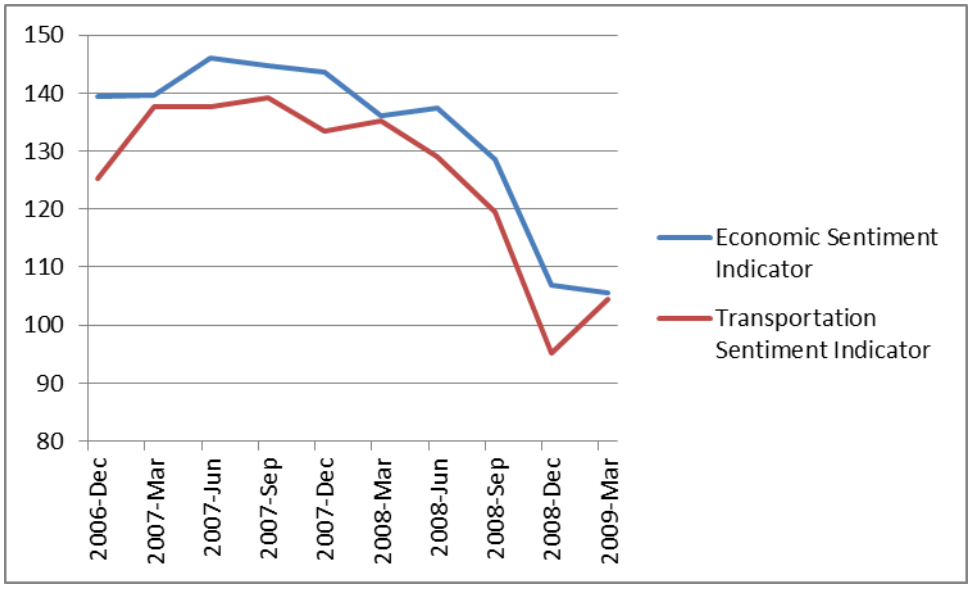
	Economic Sentiment Indicator	Transportation Sentiment Indicator
2006-12	139.4	125.3
2007-3	139.7	137.7
2007-6	146.0	137.7
2007-9	144.7	139.2
2007-12	143.6	133.4
2008-3	136.2	135.1

2008-6	137.4	129.0
2008-9	128.6	119.6
2008-12	107.0	95.2
2009-3	105.6	104.5

Source: Shanghai Statistics Bureau (http://www.stats-sh.gov.cn/2008shtj/index.asp)

We can get this chart from table above:

Chart 2-1: The Transportation Sentiment Indicator and the Economic Sentiment Indicator



Although the transportation sentiment indicator lags behind economic sentiment indicator, both trends are almost the same. So the shipping cycle have the same trend with the economic cycle, the correlations between shipping cycle and economic cycle both in Shanghai are exist.

2.3. Correlation analysis results

We have already prove that Yangshan Port is strongly correlation with Shanghai

economic through the correlation analysis above, and in the section of Correlation analysis between shipping cycle and the economic cycle, the same trend has also been proved. There has no doubt that there has a strong relation between port and city.

By comprehensive analysis of the above aspects, I can be sure that the Yangshan port and the Shanghai economic development are extremely relevant. It is because of this connection that we can make good use of this relationship to port-city, namely interactive development of integration in port-city development. Also is considering their own advantages to promote the development of each other, at the same time trying to solve the existing problems and challenges that can make port-city a better interaction development.

CHAPTER 3 ANALYSIS ON ECONOMIC INTERACTION' S FOUNDATION AND OPPORTUNITIES BETWEEN SHANGHAI AND YANGSHAN PORT

3.1. Port-city Introduction

3.1.1. Port-city relationships

It is now generally recognized that maritime trades have had an increasing influence on ports and port-city relationships over the last decades, following the container revolution and the new spatial distribution of industrial activities. Although containerization has spread globally and homogenously, it has also encountered a regional diversity of heritages and practices. The responses of port cities to global economic change reveal important differences between world regions, notably in terms of waterfront redevelopment in Europe and America (Hoyle, 2000) and port-city planning in the Northern and Southern hemispheres (Carmona, halshs-00458067, version 1 - 19 Feb 2010 Author manuscript, published in "Ports, cities, and global supply chains, Ash gate (Ed.) (2007) 157-172" 2 2003). Thus, transport players that are willing to insert the port city within the global transport chain must cope with normalized logistic systems which are managed by an ever-reducing number of powerful global companies (e.g., shippers, shipping lines, freight forwarders, logistic agents) and local and regional specificities in terms of economic development and spatial planning. Between global insertion and local impediments, a wide variety of situations can be found.

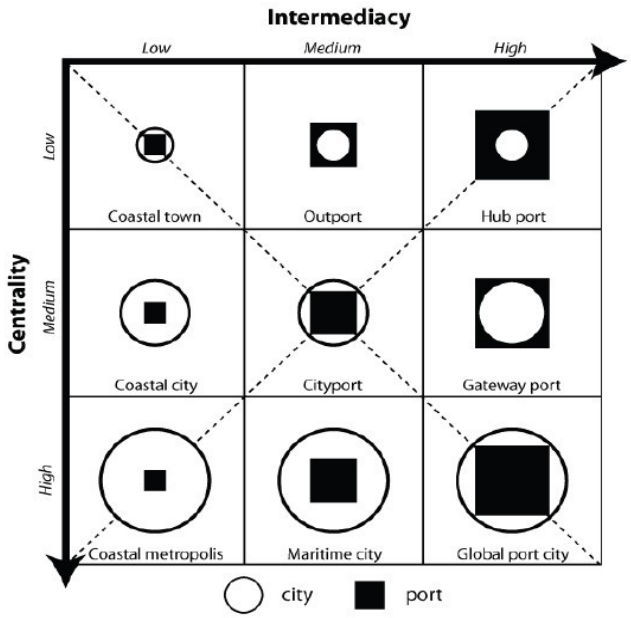
Port cities are strategic nodes for major trading regions such as Europe and Asia, especially in a world where more than 90% of trade volumes occur by sea (Rodrigues, 2006). However, their roles are different for several reasons, such as the history of trade and urban settlements, the geographical layout, and the current level of regional integration. In Asia, port cities are vital propellers of development, to the expense of

inland cities. They have become the new cores of their national economies (Gipouloux, 2001). Although the different roles have been studied from historical and geographical perspective in Europe (Hoyle and Pindar, 1992; Lawton and Lee, 2002) and Asia (Basu, 1985; Broeze, 1989, 1997; Lee, 2005) through several case studies, few scholars have attempted a direct comparison. According to some of them, Western models of port-city growth are not applicable to Asian countries (Arasaratnam, 1992), but for others, it is fruitful to analyze how port regions adapt differently to a same global phenomena, such as waterfront redevelopment (Hoyle, 2000a).

3.1.2 Port-city matrix

Ducruet (2005) has produced a matrix of port-city relationships based on the concepts of centrality and intermediacy that had been developed by Fleming and Hayuth (1994). This matrix provides a useful starting point (see Figure 1). The matrix considers that centrality is an urban functional measure, while intermediacy is an essentially maritime-based measure.

Picture 3-1: Port-city Matrix



Source: adapted from Ducruet, 2004b

In Figure 1, an upper left–lower right diagonal illustrates the hierarchical combination of centrality and intermediacy (Fleming and Hayuth, 1994) while the lower left–upper right one marks their opposition. The city-port, as defined by Hoyle and Pindar (1981, 1992) is a state of equilibrium between the coastal town and the global port city in terms of size and between the hub and the general city in terms of function. This underlines the fact that, in reality, few port cities might be considered city-ports because of the recurrent disequilibria between these two main orientations.

3.1.3. The role of the hinterland in Asia

In Asia, as settlement patterns are mostly coastal, port cities are the most important markets for ports. The colonial model in South and South East Asia has had the effect to combine urban and port levels along trading regions, through the establishment of depots and entre-pots in strategic locations such as Singapore and Hong Kong. In fact, most primary Asian cities are port cities, and still now keep a high share in the volume of goods transported to and from Europe and North America. The rapid development of North-East Asia gave birth to some of the world's most combined models of port-city relationships, such as free trade zones in Taiwan, Korea, China and the enormous reclamations in Japan in the 1970s and 1980s.

As a consequence of physical geography (island states) and historical coastal concentration, inland transportation and markets are still underdeveloped. The lack of inland connections between South and East Asia, and between South Korea, Japan, Taiwan, Philippines and the continent, is preventing ports from connecting other countries' markets. Then in Asia, ports and cities have been developing and improving their functions in a symbiotic way. Intermodal transportations are also a secondary concern, except from some specific cases like air-sea in Hong Kong and Singapore, sea-river in Shanghai.

3.1.4. Integration level and port competitions in Asia

In Asia, the absence of a single market doesn't prevent ports from competing with each other, mostly on "extra" freight such as transshipment flows. In the recent 10 years, a number of ports have emerged to as to offer this type of service (hub) for an efficient distribution of freight to secondary ports. Singapore and Hong Kong, the world's busiest container ports, have been challenged in the throughput ranking by mostly hub ports such as Busan, Kaohsiung, Lame Chabang, Port Klang and Shanghai.

In fact, port competition is more dramatic for hub functions than for hinterlands. However, increasing integration of East Asian economies, that leads to increasing intra-regional waterborne trade, and the congestion level of the oldest nodes, that implies rising costs (e.g. handling charges), bring out new patterns of port development, like in the Pearl River Delta with the emergence of Shenzhen ports (Wang and Slack, 2000), and the complex network of port terminals arising from public and private operators' global strategies with a particular Asian trend (Slack and Wang, 2002). The risk for Asian ports is to rely heavily on the short-term transshipment opportunities offered by the concentration of shipping lines.

3.2. Advantages for Yangshan Port

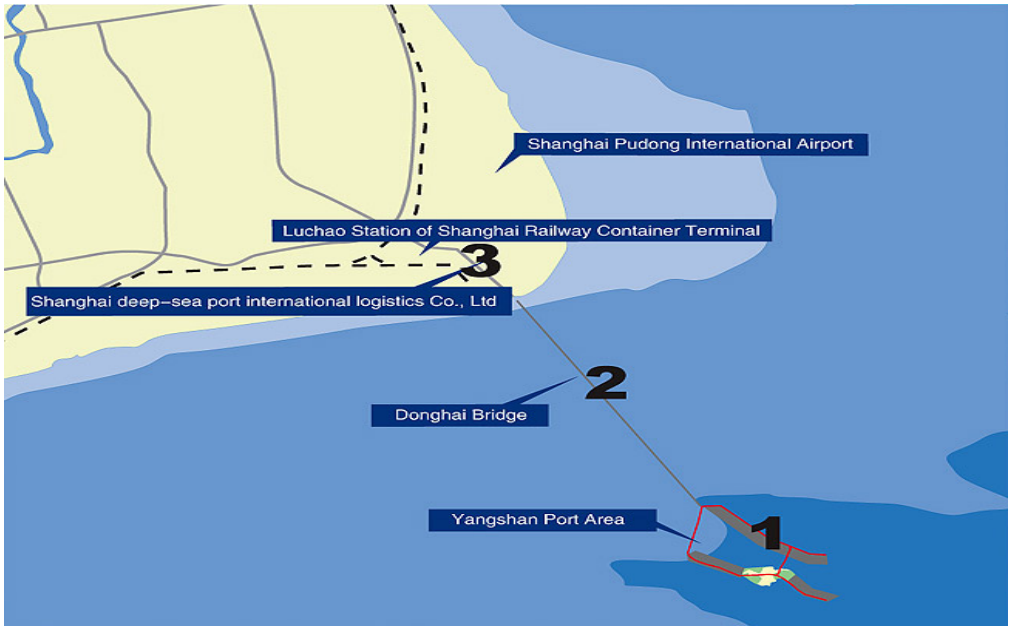
With the development of social economy, science and technology level, the modern port strongly promotes the international exchange and the development of the economy. As the only deep water port in Shanghai, Yangshan Port has its unique resource advantage which can be showed as follow:

3.2.1. The superior geographical position

The great advantage of Yangshan Port lies on its geographical location and geographical conditions. In general, when a city located in intersection area of river

and sea, that would be most conditions to become a shipping center. In China, Shanghai has its incomparable geographical advantage, which its economy hinterlands are the most developed area which contains NingBo, Hangzhou delta region, almost all the containers came from internal, the value of transit shipments are very low (less than 2%). And in a long-term situation, the Yangtze River gold waterway effect is gradually appeared that might let the Yangtze area from Yangtze estuary to Chongqing become the hinterland of Shanghai. Therefore, the superior geographical position, sufficient supplies are the strongest adventures to Yangshan port's development, and these advantages also help Shanghai to become the international shipping center. At present, the evolution of large-scale shipping is very fast and a ship which draft 14.5 meters of cases has emerged. Because of this situation that the Yangtze estuary waterway sediment deposition is in a severe case, and the water depth in Waigaoqiao Port is only 10 meters, some large container ships are restricted by the water depth. These vessels must reduce their load so as to enter in the port. Yangshan port is away from Shanghai for 17 miles which has the capacity of the six generation container ships, the water depth reach to 16 meters and the port has many shipping lines. Yangshan Port has a great condition to construct a large container terminal.

Picture 3-2: The map of Yangshan Port area



Yangshan Port consist of three parts as this map shows, i.e. the Wharf in the Yangshan (Yangshan Port Area), East China Sea Bridge (Donghai Bridge) and the supplementary park in the Luchao Port (No.3 in the map). Situated in the Yangshan Island, one of the islands in the waters of Zhejiang Province and 32 Km away from Luchao Port in Shanghai's Pudong District, it is blessed with 16m deep water, a symbol of natural qualified port. 72Km from Yangtze River Estuary, it is connected with outside water via Hangzeyang in the east with a distance of 104Km with international oceanic lanes. The sea-lane inside the Port is 67Km in length.

3.2.2. The goods of import and export are sufficient

Yangshan port relies on Shanghai and other cities in Yangtze River delta hinterland, its goods of import and export are sufficient.

First of all is the goods resource form local Shanghai. At present, many world famous multinational companies have become the export-oriented economy "leaders" in Pudong District, for example GM, Intel, Bell, Sharp, SONY, Kodak and other transnational companies that invested in Pudong and formed a fairly large high-tech industry chain, the added value of products are also constantly increasing. There is no doubt that these raw materials from those enterprises inputting and outputting products will bring a lot of supply to Yangshan Port.

Secondly, the goods resource is also offered by the neighboring cities. It's estimated that the proportion of export containers in Shanghai between local and non-local are 49:51. Among this, Jiangsu Province and Zhejiang Province are the two main resources for export containers. As an example for Jiangsu Province, the total import and export of foreign trade will directly influence the container cargoes of Jiangsu Province. As one of the important container resource area, Jiangsu Province increases Shanghai export containers about 30%, import and export growth will no doubt rank the Shanghai port as first.

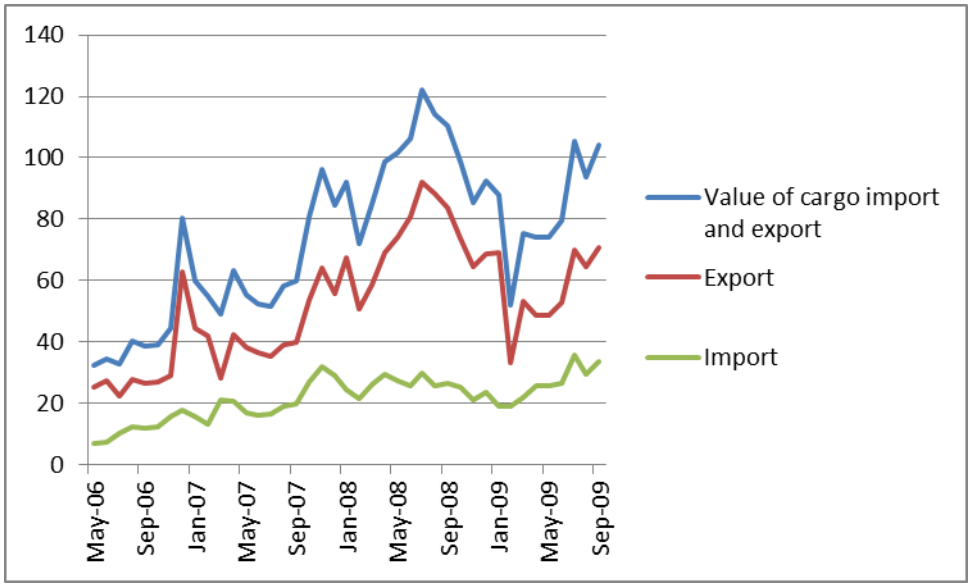
Table 3-1: The statistic table for cargo value in Yangshan Port

Outside trade	Year	2006-5	2006-6	2006-7	2006-8	2006-9	2006-10	2006-11
	Value of cargo import and export	32.17	34.54	32.68	40.2	38.64	39.01	44.48
	Export	25.13	27.28	22.45	27.7	26.71	26.8	28.85
	Import	7.04	7.26	10.23	12.5	11.93	12.21	15.63
	Year	2006-12	2007-1	2007-2	2007-3	2007-4	2007-5	2007-6
	Value of cargo import and export	80.55	60.1	55	48.9	63.1	55.3	52.4
	Export	62.93	44.3	41.8	28	42.4	38.3	36.4
	Import	17.62	15.8	13.2	20.9	20.7	17	16
	Year	2007-7	2007-8	2007-9	2007-10	2007-11	2007-12	2008-1
	Value of cargo import and export	51.7	58.1	59.83	80.64	96.07	84.7	91.9
	Export	35.1	38.9	40.06	53.76	64.04	55.8	67.3
	Import	16.6	19.2	19.77	26.88	32.03	28.9	24.6
	Year	2008-2	2008-3	2008-4	2008-5	2008-6	2008-7	2008-8
	Value of cargo import and export	72	85	98.6	101.6	106.4	122	114.1
	Export	50.6	58.7	69.3	74.1	80.6	92.2	88.3
	Import	21.4	26.3	29.3	27.5	25.8	29.8	25.8
	Year	2008-9	2008-10	2008-11	2008-12	2009-1	2009-2	2009-3
	Value of cargo import and export	110.6	98.6	85.5	92.3	87.9	51.97	75.16
	Export	83.9	73.5	64.5	68.6	69	32.99	53.11
	Import	26.7	25.1	21	23.7	18.9	18.98	22.05
	Year	2009-4	2009-5	2009-6	2009-7	2009-8	2009-9	
	Value of cargo import and export	74.23	74.23	79.41	105.51	93.75	104.16	
	Export	48.72	48.72	52.77	69.78	64.36	70.64	
	Import	25.51	25.51	26.64	35.73	29.39	33.52	

Source: The website of Yangshan Port Free Trade Zone (http://www.ysftpa.gov.cn)

In order to getting a reasonable result from the table above, I draw a chart as below:

Chart 3-1: The statistic table for cargo value in Yangshan Port



From the above graph, it can be seen that the throughput in Yangshan Port is always keep growing. In 2008, the financial crisis cause a serious strike to our country's economy, and the crisis also affect seriously to shipping industry. Fortunately, in 2009 the Yangshan Port's throughputs begin to increase again.

3.2.3. The policy advantage to Yangshan Port

The Yangshan deep-water port construction is a national strategy, the construction of Yangshan Bonded Port is a typical example.

The Yangshan Bonded Port consists of Yangshan port area, dry land part and Donghai Bridge, the operation area is about 8.14 square kilometers. Yangshan port free trade zone, approved by the state council, on December 10, 2005, Yangshan Port free trade zone opened at the same time with the Yangshan Port and it is also the first Bonded Port in China.

The main Yangshan port tax policy can be divided into three parts: Foreign goods bond in port area; domestic goods shall be regarded as export goods that to implement drawback when bring into port area; within the port, the taxes between enterprise's goods trade and consumption are free. According to the above policy, Yangshan port Bonded Port set domestic free trade zone, export processing zones, Bonded Logistics Park these three advantages in all. Now it is the first port in our country which consist land areas of bonded logistics, it is also the highest preferential policy, the most complete function and the most obvious areas in location advantage area.

With the policy advantage from the state and local government, the speed of Yangshan port's development is always tremendous, and its contributions to Shanghai economic are also increasingly and prominently.

3.3. Foundation for Shanghai economics

As the most directly economic hinterland for Yangshan Port, the rise of Shanghai economic development plays a vital role to Yangshan Port.

3.3.1. A leader in container shipping

Shipping industry is a reflection of the national comprehensive strength. Shanghai is always the leader in China shipping industry. The contrast to Shanghai and Hong Kong container throughput table as below:

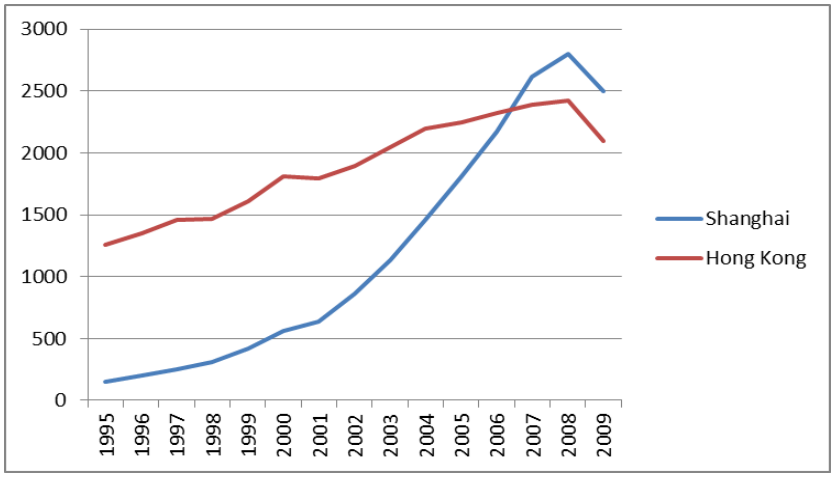
Table 3-2: Container throughput in Shanghai and Hong Kong

Year	Container Throughput (1,000TEUs)	
	Shanghai	Hong Kong
1995	152.6	1255
1996	197.1	1346
1997	252.8	1458
1998	306.6	1470
1999	421.6	1610
2000	561.2	1810
2001	634.0	1790
2002	861.2	1893.4
2003	1 128.3	2044.9
2004	1 455.4	2193
2005	1 808.4	2243
2006	2 171.9	2323
2007	2 615.2	2388
2008	2 800.6	2424
2009	2 500.1	2093

Source: Shanghai Statistics Bureau

The chart based on the table as below:

Chart 3-2: Container throughput in Shanghai and Hong Kong



According to these two pictures, in 2000, Shanghai port container throughput is 5.61 million TEU, ranked in the sixth of the world. Even though Shanghai is the world's ten largest container ports, but compared with "the first class" Hong Kong and Singapore, Shanghai still had a long way to go. At that time, Hong Kong and Singapore's container throughput are 18.1 million TEU and 17.04 million TEU. After 2003, Shanghai Port become the world's third port, but compare to the Hong Kong and Singapore, Shanghai is still not a good competitor. But in 2006, Shanghai container throughput breakthrough 20 million TEU mark, and it’s the first time shorten the distance with Hong Kong and Singapore within 5 million TEU. Now the world three main container shipping lines has two big shipping lines in Shanghai which is Pacific lines and the Euro-Asian shipping lines. These two big routes is also the most main lines in the world, the traffic volumes account for three routes are more than 70% of the total volume. At present, making the Shanghai port as a center, the Jiangsu section of the Yangtze River downstream of the ports and Zhejiang Ningbo Port for the wing, Shanghai mixed port is already taking its shape.

3.3.2. The strong foundation for Shanghai economy

Shanghai economic foundation is very strong. We can see from the statistics of GDP for major cities in China, Shanghai is always the No.1.

Table 3-3: Statistics of GDP for major cities in China

Year	2009		2008		2007		2006	
Rank	Area	GDP (Billion)	Area	GDP (Billion)	Area	GDP (Billion)	Area	GDP (Billion)
1	Shanghai	1490.09	Shanghai	1369.8	Shanghai	1218.8	Shanghai	1033.6
2	Beijing	1186.59	Beijing	1006.24	Beijing	912	Beijing	787
3	Guangzhou	908	Guangzhou	756.94	Guangzhou	674.4	Guangzhou	606.8
4	Shenzhen	824.5	Shenzhen	721.99	Shenzhen	665.7	Shenzhen	581.4
5	Tianjin	750	Suzhou	669.98	Suzhou	581.4	Suzhou	482
6	Suzhou	740	Tianjin	607.11	Tianjin	514	Tianjin	435.9
7	Chongqing	652.7	Hangzhou	436.95	Chongqing	416	Chongqing	348.6
8	Hangzhou	509.87	Wuxi	435.58	Hangzhou	397	Hangzhou	344.1
9	Wuxi	500	Qingdao	428.69	Wuxi	390	Wuxi	336
10	Foshan	474.256	Foshan	422.93	Qingdao	370	Qingdao	320.7
11	Wuhan	450	Chongqing	420.77	Foshan	355	Foshan	292.7
12	Dalian	441	Shenyang	369.56	Chengdu	332.3	Chengdu	287
13	Shenyang	435.9	Ningbo	364.46	Ningbo	329.1	Ningbo	286.4
14	Ningbo	421.46	Dalian	361.9	Nanjing	320.7	Nanjing	277.4
15	Nanjing	417	Wuhan	359.87	Wuhan	310	Wuhan	268.2

Source: Provinces Statistics Bureau

Shanghai has many factors for its economic development, such as infrastructure, technology and talent. According to statistics, in 2009 Shanghai economic growth is 3.1% in the first quarter, the second quarter increase to 7.9%, in the third quarter recovery, it climbed to 9.8%, the whole year is expected to reach 8.2%. This shows Shanghai has strong resistance ability to general economic recession.

Shanghai shipping center has developed for several years, the infrastructures and many kinds of services are also been improved. In 2007, the registered international shipping agent enterprises in Shanghai is increased to the number of 132, the international ship management enterprise increased from 8 to 17, the non-vessel shipping business enterprise also increased from 329 to 747. At the time when the shipping elements constantly gathering in Shanghai, caused by the U.S. subprime mortgage crisis, it may make some financial market shipping business focus from Europe to Asia, transfer to Shanghai will be the first choice which they made, Shanghai shipping financial market is faced with a good opportunity. The development of Shanghai economy will no doubt bring a big chance to Yangshan Port.

3.3.3. The relevant policy support

Constructing Shanghai international shipping center is the national strategy in China and also the foundation to build Shanghai international economic, financial and trade center. Shipping service function is the important part of the international shipping center construction; also it is the symbol of Shanghai international shipping center. Seeing around the world, no matter what the old British shipping center, or the contemporary Hong Kong, Singapore international shipping center, they all through that process.

Review of the development of the global shipping history, it is not difficult to find that the worlds' shipping center whatever the rise or fall is always relying on the great national trade and powerful economic support. The construction of Shanghai international shipping center has a good policy support. At present, Shanghai's financial industry has already formed its shape, for example the securities, money, foreign exchange, futures, gold, property transactions, reinsurance market's collection , these elements form a modern financial market system, which provide the possibility to the financial sector for shipping the innovation. On the other hand, the shipbuilding industry in Shanghai is very flourishing as well as the repairing industry, as long as

finance, information, intermediary and other supporting services develop quick, it will attract more ships to Shanghai shipping industry. It’s obviously that with these policy advantages as the powerful supporting, Shanghai's economy will get a rapid development, and with this opportunity, Yangshan Port becoming an international port would come true soon.

3.3.4. The help of the cities in Yangtze River basin

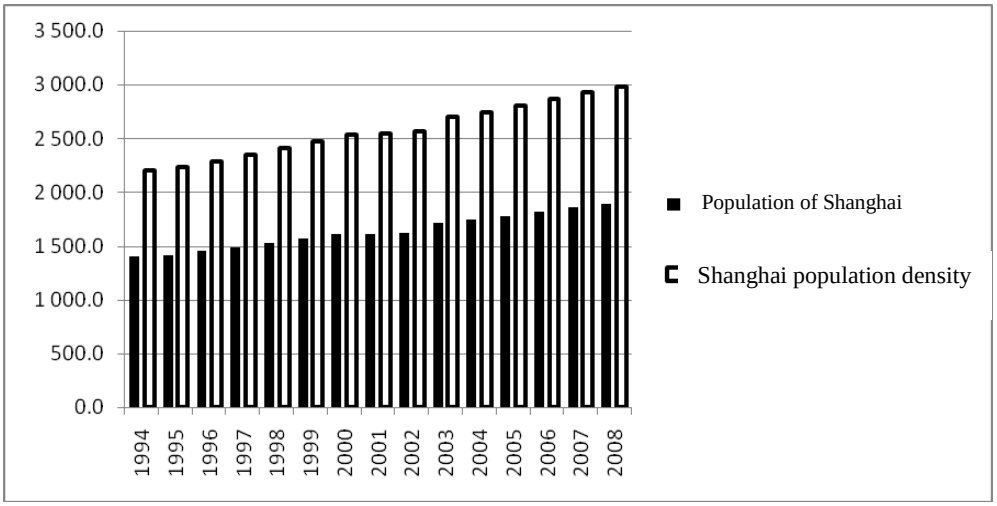
The development of Shanghai is not isolated. Look around the Yangtze River basin areas, the cities gives a positive support to the economic development in Shanghai. According to preliminary statistics, 90% of Shanghai foreign trade and 60% of the domestic trade container source are located in the Yangtze River basin. So whether now or in the future, keep and improve the Yangtze River basin’s market share is the core target of container port development. At present, the main port runner SIPG has established cooperation through the assets in the link along the Yangtze with Wuhan and Nanjing, Jiujiang, Changsha, Jiangyin, Chongqing, and other ports. In recent years, through the implementation of the Yangtze River development strategy, the import and export goods in Yangtze River from Shanghai port to many provinces and cities are rising. According to some date, the total exports volume from Hubei Province to Shanghai port, the proportion of the total amount container accounts for about 98% of exports, the province Jiangxi through the Shanghai waterway transshipment containers of the provincial total amount, 97% of the total amount of the port container; Hunan through the Shanghai port container quantity of import and export accounts for about 40% of the total amount of the province; Anhui through the Yangtze river from Shanghai import and export of goods import and export of goods 25% of the provincial in total. The strategy goal for SIPG is relying on the output of the management, capital and technology, to develop the Yangtze River container market, with radiation service and assembling goods, in the progress of serving the Yangtze River delta and the Yangtze basin to realize group resources allocation, and make progress through win-win principle.

Now, Shanghai is carrying out the Yangtze River strategy, the northeast and international strategy, gradually realize the global excellent multinational terminal built which is the long-term goal of the SIPG. Whether the unique geographical position, good basic hardware facilities, or obvious to port ability, to have the world's three major port of Shanghai before it, the dream that "making an international shipping center" is not far away.

3.3.5. The cultural advantages

Shanghai has a large population which is a unique advantage for Shanghai economic development. Shanghai owns the largest populations in China and Shanghai's population density is the most densely populated province of China. Shanghai population density reach to 3000 people per square kilometer in 2008, which is 20 times more than China's population density. The high population density would bring many advantages and economic benefits to Shanghai, such as improving business, service industry, traffic and transportation, telecommunication industry, as well as industrial operation efficiency. The high efficiency means the increase of income. This is an important factor for Shanghai's economic staying the first place. The bar chart below intuitively reflects the Shanghai's population situation.

Chart 3-3: Population of Shanghai and Population density in Shanghai



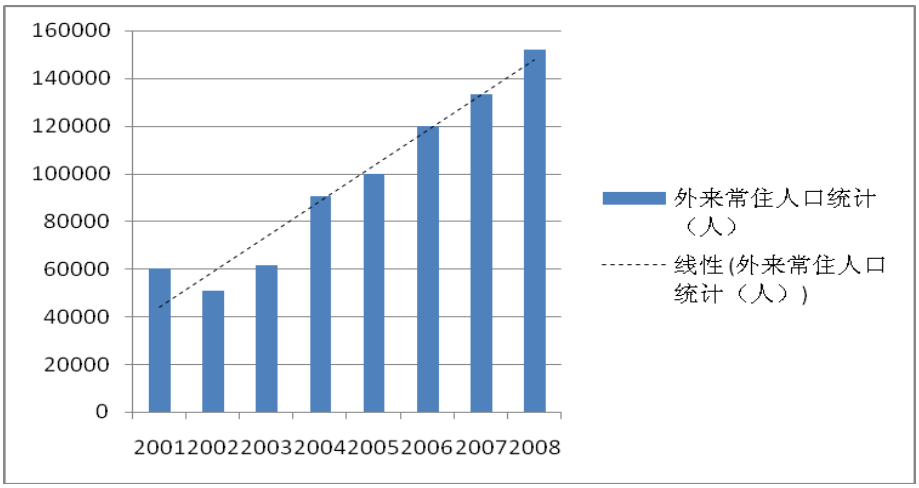
Source: Shanghai Statistics Bureau

Shanghai has not only plenty of the population resources, but also has strong number of talented person. Local people in Shanghai have a high level of education. And with a developed economic situation Shanghai attract more and more talents from other cities especially from rural. Not only the domestic first-class talents come together to Shanghai, Shanghai's sustained rapid economic development has attracted more and more foreigners to come to employment. As the figure shows that foreigners in Shanghai permanent population increases year by year.

According to statistics, these foreigners are mainly from Japan, the United States, South Korea, Singapore, Germany, France, Canada and other countries, most of them work in the foreign investment enterprise or foreign enterprise resident representative office. In recent years, the multinational company regional headquarters, R&D center, and finance, insurance, foreign bank, investment consultation institutions, accounting firm are making their home in Shanghai, the modern service industry in Shanghai developed rapidly to employ talents from foreign countries and create a broad market space. In addition, Shanghai introduced many preferential policies to foreigners who residence and employment in Shanghai, that also attracted large overseas talents to

employment. I believe that these advantages would be better to speed up the development of Shanghai harbor city integration process.

Chart 3-4: Population of foreign permanent resident



CHAPTER 4 CHALLENGES TO THE DEVELOPMENT OF PORT-CITY INTERACTION

Although the development of Yangshan Port and Shanghai economy has a solid foundation and strong advantage, the integration development between port and port-city still faces with many challenges and problems.

4.1. Competitions among ports in the Yangtze River delta

When Shanghai began to construct the international shipping center, many ports in Yangtze River Delta were also prepared for competitions. Since 2006, Ningbo-Zhoushan Port has begun their integrated operation and large-scale construction. Their goal is to build the largest deep-water port in China and an international port with the function of container transport, and finally become an international energy shipping terminal. On the other hand, Shanghai Port tries to build an international shipping center and logistic center, and Yangshan Port designed as an international container terminal port. Therefore, it may bring competition among cargo resource, especially on containers.

The competition between Shanghai Port and Ningbo Port on resource is always strong. This table below is the container throughput for Shanghai and Ningbo Port:

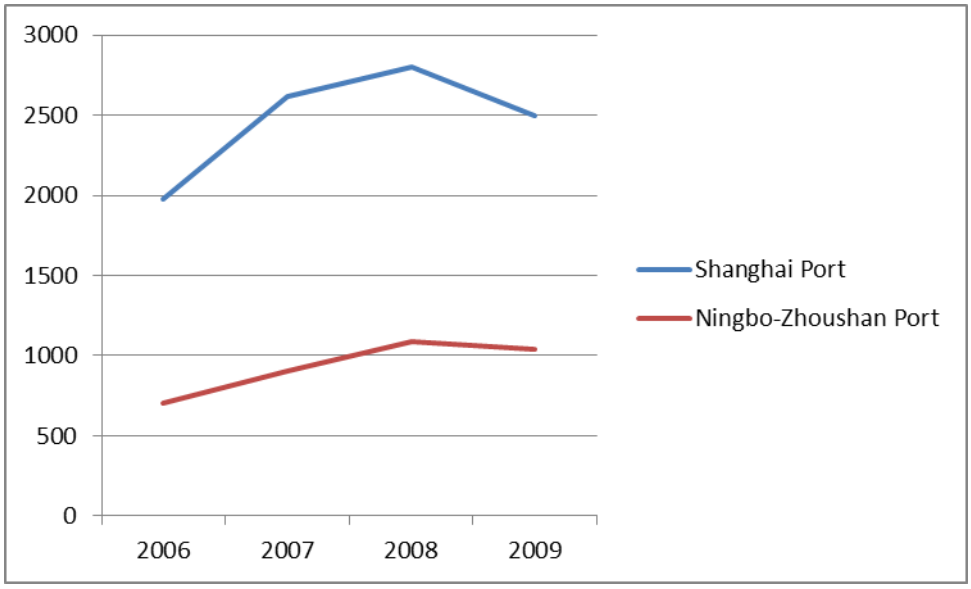
Table 4-1: Container throughput for Shanghai and Ningbo Port

Port	Container Throughput (10,000 TEUS)			
	Year			
	2006	2007	2008	2009
Shanghai Port	1978.4	2615	2800.6	2500.1
Ningbo-Zhoushan Port	700	900	1084.6	1042.3

Source: The website of Shanghai Port and Ningbo Port

This table is made into chart in order to analyze the data directly.

Chart 4-1: Container throughput for Shanghai and Ningbo Port



This chart shows that Ningbo-Zhoushan Port developed as the same speed as Shanghai Port, but under the 2008 financial crisis, Shanghai Port suffered a bigger loss than Ningbo-Zhoushan Port. It indicates that Ningbo Port brings a pressure to Shanghai Port.

The competition between Shanghai Port and Ningbo-Zhoushan Port is not only on the

cargo sources but in the port status and port investment. Currently, Shanghai port aims at the international shipping center and international logistics center for integrative ports as its development direction. Ningbo-Zhoushan Port is developing ore, coal, crude oil, grain and other water transshipment business when it constructs the port as the international container transit port, and the final goal is to become the comprehensive Port in world class. At some points, the location of Ningbo-Zhoushan Port, port conditions, goods flow is better than Shanghai to build as container deep-water port. Therefore, the competition of these two ports cannot be avoided. In short, Yangshan Port-city development faces the test from surrounding ports, how to make use of these challenges are the problems which must be solved.

4.2. Bad conditions in Yangshan Port

Although the geographic position for Yangshan Port is very superior, which has good depth of water conditions for super large ships docked, it is an advantage to attract source of goods, but due to the seas, far from inland, the Port with many defects in isolation will be inevitable.

4.2.1. Climate conditions in Yangshan Port

Yangshan port is located in the open sea areas which directly affects by typhoon without any effective natural barriers. Once appear the typhoon, the harbor cannot work, and container ships have to change their berth in time. It is estimated that, the actual years working days in Yangshan port is about 300 days, then it will be a huge challenges to the plan, “a whole year working plan”, put forward by Yangshan Port.

4.2.2. Problems in transportation structure

Yangshan Port city is 85 kilometers away from Shanghai; the connection between Luchao Port and Yangshan Port is the Donghai Bridge. Compare to other global ports,

the existing road traffic arrangement is not reasonable. At present, the port containers rely too much on highway transportation. Over 80% of container transportation in Shanghai port is through container trucks to complete. Hence, it brings highway system a great pressure. And the proportion of railway and inland water transportation is too small, especially railway transportation accounts for only 1%, relying on a certain kind of way transportation structure which has caused a comprehensive transportation system problems, especially for the Yangshan Port which the bridge is the only way link to the port, once the bridge is on emergency, it would greatly influence the operation in Yangshan Port. Last but not least, lacking of railway connection makes Yangshan Port hard to reach the design capacity of 15 million TEU containers. It is an indispensable condition for Shanghai international shipping center to keep an unobstructed container transportation construction. Some foreign port, such as Rotterdam, Hamburg, Antwerp, Long beach, their proportion for highway, railway and water way container transportation is around 60:20:20. So Yangshan Port still has a big problem in its transportation structure.

4.2.3. High logistics cost

Since the railway transport cannot direct to Yangshan Port, the goods in and out must increase long highway transportation and the cost of logistics reloading, it has become the fact in Yangshan Port. After Yangshan port opens, some new charges have not been finalized yet, but the trucking charges for freight enterprise from Waigaoqiao to Yangshan port has increased to 600 RMB/TEU and 900 RMB /FEU. Yangshan free trade zone started at Dec, 2005, the seventeen Europe shipping lines which are in Waigaoqiao before, all moved to Yangshan Port. According to relevant department estimates, the cost for one TEU increased 600RMB, one FEU increased 800RMB. If the containers transported to Nanjing Port or Zhenjiang Port, though the shipping cost will increase about 800 to 1200RMB per TEU, the land cost can save more than 1000RMB per TEU. Many Europe shipping line companies started to move some volume of container to Ningbo Port. In 2005, the total port container throughput in

Shanghai Port is 18.084 million TEU. Among them, the international transshipment containers is around 403, 000 TEU which increased over 40% than 2004. Although the growth rate is a larger extent, the transit shipment quantity is only accounted for 2% of the total. Compare to other big transit port, for example, Hong Kong, Singapore, Busan, Kaohsiung, their container transshipment proportion are more than 40%, among them Singapore is over 80%.

4.2.4. Economic risk to the port-city interaction

Recently, the 2007 financial crisis caused a heavy blow to each country all over the world, no exception to China. And the influence to Shanghai is problematic. Some domestic expert analysis points that the reason caused downturn in Shanghai is due to the no timely adjustment on the industrial structure, not caused by the impact of the global financial crisis. Shanghai as the financial center in China, the financial industry only contains its GDP about 12%, and some real financial center in the world such as London and New York the proportion of financial and high level service industry is about 70% and 66%, but Shanghai is only 35%.

So for Shanghai, how to deal with the impact of the global financial crisis, as well as how to change their development pattern is the problem to be considered and solved.

CHAPTER 5 SOLUTIONS

5.1. Win-win principle

Yangtze River Delta is one of the fastest development areas in China. Three Ports in this area which is Yangshan Port, Ningbo Port and Suzhou Port, their internal structure has been changed. The research shows that the rapid economic development in the Yangtze delta needs ports, not a single point port, but group of ports. The construction of Yangshan Port aims to make Shanghai and even the entire Yangtze River Delta became northeast Asia international shipping center. With the help of Ningbo-Zhoushan port-city integration, Shanghai international shipping center will develop more quick. Yangshan port construction and Ningbo-Zhoushan Port development are not "you win I lose" but can become common development. Shanghai Port and Ningbo-Zhoushan Port have their own traditional economic hinterland and goods source, these two ports are always on a rapid development trend. Ningbo-Zhoushan Port has the more excellent natural conditions which Yangshan Port does not have, and water to water transit shipments, large tonnage bulk cargo, national strategic materials storage ability. For a long-term situation, these two ports will lack of transport capacity for a long period of time. So the relationship of these ports is the competition and cooperation. Under the background of economic integration in Yangtze River Delta regional, the trend between the ports is win-win principle.

I suggest that with the help of National ministry of construction, in order to competition with other shipping center over the world, merging and recombination should be started to prove the strength of all ports in the Yangtze River Delta regional. The goal of Port resource integration is to reduce the competition, according to the main port, main port, and regional port, feed port, and giving each port reasonable position.

5.2. Optimizing the bad conditions in Yangshan Port

Transportation conditions directly affect the direction of the source, Shanghai is going to construct Yangshan Port as the international shipping terminal, and it is urgent things to perfect the port and urban transportation conditions. In this paper, I combined related experts suggestions and offer the following solutions:

a) Optimizing the structure of container transportation

It is necessary to keep container transportation unobstructed in order to make Shanghai the international shipping center. No matter consider the economic benefits, the stability of the system or the environment protection, optimizing the container transport way structure is one of the most effective way. Shanghai should strengthen the guidance, and gradually raise the proportion of water transportation, railway, that would improve the transportation mode structure in Shanghai Port. The best way is to reach the proportion of highway, railway and waterway to 70%, 10%, 20%, in the year of 2020, it should reach to 60%, 10%, 30%, and finally truly formed an all-round container transportation system.

b) Speed up the railway construction in Pudong District

The short-term goal is that the main railway goes into the Logistics Park and Waigaoqiao port, the long-term goal is to make the railway into the Yangshan Port, which finally realizes the rail transport seamless connection. On the other hand, highway transport is still the main way for container transportation, so when improving the railway and the waterway conditions the road network should be further improved and optimized.

c) Establish the logistics base, and promote the container intermodal transportation.

To increase the spread of rail transport, inland water container transportation, attracting more freight enterprise use the railway and waterway transportation means. Providing preferential policies to those who use railway, waterway and launch multimodal transport enterprise, such as taxes discount, lower bank interest rates for a long time, so as to encourage more enterprises participate in intermodal transportation.

After commissioning of Yangshan Port, there is much container from the Yangtze River regional that moved to Yangshan Port. According to the requirements of the code, at present the ship inland river ships cannot directly into the sea area, they must reload to a sea-going ships, it not only increases the loading and unloading expenses and transportation costs, but also reduces the transportation efficiency. In order to guarantee the safety of Yangshan Port operation, river-sea combined transportation is necessary. From the view of economic, container ship which in river-sea is carrying amount of the box from 100 to 400 TEU.

5.3. Strengthen the soft environment construction between Shanghai and Yangshan Port

According to the special geographical environment and open port requirements of Yangshan Port, the advanced infrastructure and complete information system are the conditions to improve the working efficiency and attract customers. In order to build a Yangshan Deep-water Port as a modern information network with world-class level of modern digital harbor, Yangshan Port should construct a comprehensive information service platform; this platform should include infrastructure, application software and the emergency response center.

In addition to the above aspects, further opening policy in Shanghai Port-city will help to speed up the development on integration. In order to adapt to the international port competition, Yangshan Port must be further doing a lot in bonded port policy, to

improve the Yangshan port of openness. In short, Yangshan Port has the condition to be the international standard "Freeport". At the same time, Shanghai will also speed up the pace, think something new and gradually put forward some preferential policies.

5.4. Optimization the Shanghai economic structure

Changing the structure of economic growth will be the theme for country's future economic development. Shanghai needs to change the elements of development mode, transforming and developing a second mode. Firstly, Shanghai should greatly develop the knowledge-based economy to industrialization, and service-oriented economy, optimizing the environment and service. Secondly, the independent innovation will mainly support for economic growth. In the large-scale international industrial transfer caused by the world economic crisis, the need of independent innovation becomes more and more intensely. Thirdly, Shanghai must make good use of the hinterland of resources in Yangtze River Delta, to further strengthen the first position in the Yangtze River Delta and form the optimal allocation of resources elements in global services platform, finally promoting urban group of Yangtze River Delta of the win-win principle development.

CHAPTER 6 CONCLUSIONS

Through to the research on Yangshan Port and the Shanghai economic interaction effect, we can clearly get these conclusions: the development of Yangshan Port is closely related to Shanghai economy development. The economics of port-city interaction does exist. So as to develop Shanghai economy, speeding up the process for developing Yangshan Port is a must. At the same time, in order to make Yangshan Port as an international shipping terminal, the strong support of Shanghai economy is also a necessary. There is no doubt that port and city shall work together for common prosperity and development, but they are surely going to face many problems and difficulties, this paper put forward some feasible suggestions and solutions for Yangshan Port and Shanghai.

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