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Strategy research on competition and co-operation of Shanghai Port and Ningbo Port

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Abstract

Along Yangtze River, there are a large number of ports as Shanghai, Suzhou Port, Nanjing Port, Nantong Port, Zhenjiang Port and Nantong Port, etc.The size of these ports is different and plays different roles. Shanghai international shipping center, is the first level of the Yangtze River port. Since Ningbo port and Zhoushan port consolidated to be Ningbo-zhoushan port, throughput of Ningbo-zhoushan port increased dramatically. The paper focus on Shanghai port and Ningbo-zhoushan port, through analysis of the conditions, infrastructure, distributing and throughput,we make sure of Shanghai port and Ningbo port's advantages and disadvantages

The paper took competition between Shanghai port and Ningbo port as research object, relatively comprehensively introduce basic situation of Shanghai port and Ningbo port, analyze two ports competitiveness; By establishing SWOT matrix of Shanghai port and Ningbo port between to analyze two ports competition and cooperation strategy.

Key words: Shanghai port Ningbo port SWOT

Contents

Chapter 1 Introduction

1.1 Background

Chinese ports handled a world record 58 million TEU in 2004, an increase of 10 million (20.8%) over the previous year (Ministry of Communications, (2004)). Vast port expansion schemes are planned in every coastal province and municipal governments are in heated competition for central government approval and foreign direct investment (FDI). As can be seen in figure 1, there are three main regions where, ostensibly, intense internecine competition exists between ports in mainland China. This analysis, however, focuses on mainland China's central eastern seaboard. In so doing, there are only really two ports that merit serious consideration; Shanghai and Ningbo (Airriess, C. A, 2001, pp.267–278). In justification of this assertion, in 2002 total container throughput for all the ports in the region was approximately 11,630,000 TEU, with Shanghai and Ningbo together accounting for more than 90% of this amount (Cheng, C., 2002, pp.25-28). By the end of 2004, the total figure for the region had almost doubled to 20,630,000 TEU, with the proportion accounted for by the two ports remaining approximately the same (Tao, H. and Wang, M., (2004)).

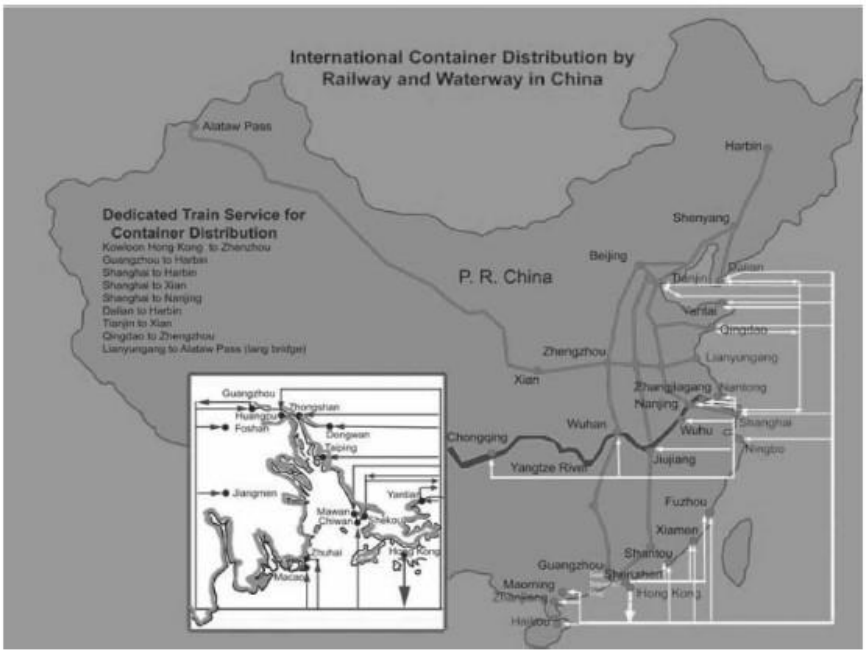

Figure 1.The three major geographical port groupings in mainland China.

A more recent picture of container throughput at both Shanghai and Ningbo container ports (see figure 3) reveals that the phenomenal growth of Shanghai's international container throughput has continued. It also shows, however, that the port of Ningbo now constitutes a significant threat to Shanghai's position as the leading container port on the central eastern seaboard of mainland China.

As can be seen in the graph, the (largely international) container throughput to the hinterlands of the two ports has continued to expand at a very high average annual growth rate of approximately 31% over the period 2004-2010. In addition, the graph reveals that Ningbo's market share of the two ports' total international container throughput has been consistently increasing over this period, at the expense of Shanghai.

By inspection of the comparative annual growth rates in throughput at the two ports over the period 2004-2010, some insight can be gained into why this has been the case. Figure 4 clearly shows the vastly superior growth at Ningbo compared to Shanghai over this period. Given its lower base in terms of absolute level of throughput, however, this is not a wholly unexpected result.

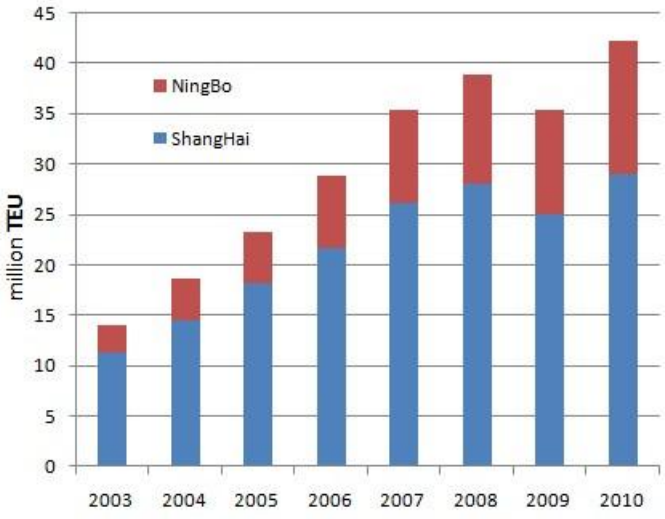

Figure 3.Recent container throughput for Shanghai and Ningbo.

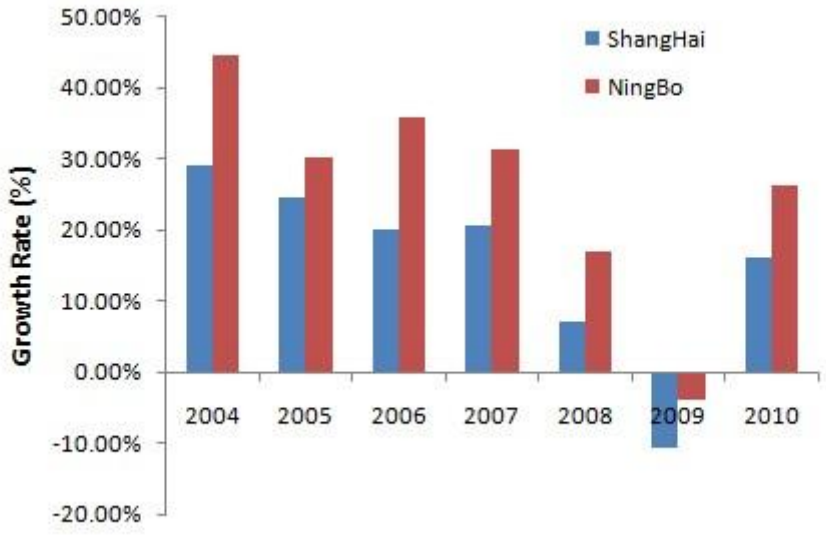

Figure 4 Recent annual growth rates in container throughput for Shanghai and Ningbo.

In 2004, Ningbo achieved its greatest ever annual increase in container throughput—44%. Spurred on by a tremendous expansion in the industrial output of its natural hinterland of Zhejiang province, as well as by the fact that it is one of just four credible transshipment hubs in the Chinese mainland (Chambers, S., (2010)), Ningbo handled just over 4 million TEU. In consequence, in terms of throughput handled, it moved from being ranked 23 to 17 in the world league of container ports and, by so doing, broke into the top 20 container ports for the first time (Containerization International Yearbook, (2005)).

1.2 Literature review

Port competition is always the focus of research. The main content of the port competitiveness includes cargo resource, investment and policy. Competition is based on service quality, port rates and facilities efficiency. The service quality includes discharge time in port, port management, financing, technical service, reliability, multimodal transport cost and efficiency.

K.Cullinane, Yahui Teng and Tengfei Wang (2005) analyze the relative competitiveness of the neighboring container ports of Shanghai and Ningbo in China and to develop a view of the likely future outcome of the competition between them. After assessing the demand for their services within what is hypothesized as a shared hinterland, current supply and future expansion plans are detailed and considered within the two ports' wider development strategies.

Claude Comtois and Jieshuang Dong (2007) canvass the port development of the Yangtze River Delta. Initially, they consider changes in container trade in the region since the 1990s.Competition between the ports of Ningbo and Shanghai are studied by measuring the overlapping hinterland of container distribution for Zhejiang province. Then they analyze the strategies pursued by international carriers and terminal operators to secure success in this increasingly competitive environment.

Marcella De Martino and Alfonso Morvillo (2008) hold the idea that Port Authority has a I fundamental role in identifying those resources the so called critical assets that encourage the development of inter organizational relationships between port actors in the value generation process.

Xin Shi (1998) defined the scope of port competition, analyzed two different types of port competition and discussed port competition under different market structure. Considering the long-term benefits, port should stress win-win strategy, cooperative competition, competition and cooperation should also exist between two ports.

Chenghong Wang (2003) expounded competition and cooperation of container ports, and analyzed competition and cooperation of Shanghai and Ningbo port. Huang JianYuan, Yan Yixin (2004) analyzed relevant struggle condition port of Chinese ports, and provided helpful ideas for further development.

1.3 Research significance

The paper first analyzes the new situations faced by the ports in this Delta and the necessity of co-operation among these ports. And based on the theory of co-operation game, it points out the construction of Shanghai international shipping center is a turning point for the ports in this delta transforming non-cooperative game into cooperative game, which is conducive to the formation of co-operation among these ports, thus forming effective cooperation on the basis of promoting benign competition among these ports, furthering the ports' interactive development, bringing the integral advantages of these regional ports into play, and achieving a win-win situation among these ports.

Chapter 2 Current Situation between Shanghai port and Ningbo Port

The Yangtze River port plays a very important role in the western economy and even the development of global economic integration as one of the important links of the Yangtze River transportation system. In the Yangtze River container transportation precision of today, lots of Yangtze River ports invested to improve measures, by providing container transportation services, participating in regional competition. The Yangtze River container shipping route and call of port continuously changed, the past transport extension could be converted into main, feeder port may had become the transport hub, therefore different ports take their own development strategy in order to be the transport hub.

2.1 Profile of ports competition

2.1.1 Ports competition classification

Port competition can have different classification, according to the main body of the competition， which can be divided into three levels: Competition of different port group; competition of different ports in the same port group. Another competition took place in accordance with the port area of also can be divided into three levels: competition between country or region ports; competition between country or region internal port; competition between the port companies in the same port.

Competition of different ports in the same port group is the fiercest field in port competition. Because the distance of the ports in the same port group is so near, almost the same hinterland, several ports face the problem that cargo interests choice

lack geographic location advantage. In order to attract hinterland source and feeder cargos, can only rely on port service quality and service to the price competition. And with the home country and regional government port to national or regional interests involved in the port, and make it a competitive level of port competition became fierce.

In general, the same port can by several port companies to run. Out of the profits, port of business company within each at the cost to take various measures for supply to embrace, the same port in different competition between companies is very tough. And with China's port separating the management structure of the further clear and port management, port of gradually down the competition between the companies will be more and fiercer.

Correspondingly, competition between the port companies in the same port is not fierce, the highest level of competition of different ports in the same port group. The main body of port market competition is between different ports, this kind of competition and ports not only the business operations of companies, but the local government action because of involving difference of port area economy development.

2.1.2 Ports competition coverage

The main content of the port competition is for the source (including hinterland source and transit goods), at the same time, because density and service level of the ship in the port is the important condition to attract source, the competition between the ports has also meant to attract ships.

For competition of the hinterland cargo

The intercross hinterland is not only in the ports in port group, but also occurred in ports in different port hinterland service, as a result, competition for cargo resource there takes place in ports in the same port group, ports in different port group and companies in the same port. In other conditions are basically same, cargos interests will choose the port which occupies the advantage of transport costs and transport time. Thus, the competition for the cargos is mainly import and export by the any two ports and the cost of cargos not significantly different.

For the competition of transit cargo

The transit cargos means that need to pass through one port but not for the purpose of local city consumption to continue transport. For a port, whether some cargos are transit cargo, mainly due to if it is transported through inland transportation into the city. For the shipping industry, transit cargo transport means cargos import and export all by ship. As the feeder port is not the destination of transit cargo, which feeder port to be called does not depend on distance between port and final consumption area. It is largely depend on which port can provide the most excellent service to make the total transportation cost lowest. Especially with the mainstreaming of the trend of container transportation, competition of international transit is increasingly fierce

2.1.3 Ports competition features

The government factors of port competition.

Due to the port is the foundation of the national economy, priority developing project and put more emphasis by governments, all levels of government incline policy fund to ports in order to compete local sea transport advantage. In this sense, the current port company competition is not entirely market competition, and it’s partially the competition for the policy. The support of local government for port development

policy and construction of infrastructures is also the way to show port competitiveness.

Location factor of port competition

The foundation of port company competition is service quality and validity of work and infrastructures, but the port location of port company is largely crucial, including port geographical position, sea route and depth of berth; It is also includes city conditions of port, such as urban economic development level, environmental conditions: and service function of port city, such as financial services, etc.; Transportation conditions, such as roads and railway, aviation, smooth water transportation, etc. All of these factors will directly affect the shipowner and cargos interests' choice.

The focus of port competition is resource

Port is the infrastructure of national economy, and feasibility argument put more emphasis on social benefit rather than economic benefits. It is determined by sociality which is different from the general commercial investment results that competition target of port is cargo resource.

2.2 Current situation of Shanghai Port

Shanghai is located in China's economic highly developed Yangtze River delta with economic hinterland and abundant container resource. The superior river condition makes it one of the most important transportation hubs in China. Port city, Shanghai, as the country's greatest economic center city, concentrated many kinds of modern service function such as the financial, insurance, trade, information and talents, its urban competitiveness leads in big cities all over China.

With the rapid development of economy and trade, Shanghai also the rapid develops to be the famous international container port. The 20 world's largest container liner companies, 76 international shipping companies and 10 foreign ship's classification society are set agent in Shanghai. Shanghai port container raised from 6.34 million TEU in 2001 to 29.06 million TEU in 2010, world largest container port.

2.3 Current situation of Ningbo Port

Ningbo port is located in the Yangtze River delta, constituted by Beilun Zhenhai and Ningbo these three ports. Ningbo port is a comprehensiveness port consists of inland port and sea port. Natural conditions of Beilun are pretty good, main fairway of which is more than 50 meters depth. Big container ships can be handled throughout the whole year. In terms of land transport, Ningbo port transportation network is sustaining improvement and hinterland further expanded. Therefore, in the container transportation, Ningbo port has made a great progress, its container throughput reach 13.00 million TEU in 2010, fourth in the domestic ports.

In order to deal with the increasingly fierce competition at home and abroad, Ningbo port and Zhoushan port merger to be Ningbo-zhoushan port in 2006.

Chapter 3 The competition and co-operation between Shanghai Port and Ningbo Port

3.1 The competition between Shanghai Port and Ningbo Port

Competition is motility to improve efficiency and innovation. Competition between Ningbo-zhoushan port and Shanghai port is inevitable and necessary.

3.1.1 The inevitability of competition of Shanghai Port and Ningbo Port

3.1.1.1 The competition of port planning and construction

Since 2006, Ningbo-zhoushan port made integrated operation and large-scale construction aim to build the largest deepwater port in China and international container transit ports. At the same time, it will become an international hub port; Shanghai was the largest container transport hub port, which devoted to construct the Shanghai international shipping center, international logistics center and international container transport hub. Therefore, two ports are speeding up the construction of port projects in. Although large-scale construction of port projects can satisfy the future transport demand of Yangtze River delta, infrastructure construction of two ports is reduplicate. As a result, competition of port cargo resource is inevitable, especially the competition of container source.

3.1.1.2 The competition of port status

At present, direction of Shanghai port is to be constructed as Shanghai international shipping center and international logistics center, and Ningbo port is to be constructed as international container transshipment ports, meanwhile, the developing as ore, coal,

crude oil, grain and other water-water transshipment business. The ultimate goal is to the world comprehensive big port. In some extent, location, port-built conditions, goods flow and flow of the container transport of Ningbo-zhoushan port constructed as intercontinental deep-water port is better than Shanghai. Therefore, competition of the port status for two ports cannot be avoided.

3.1.1.3 Competition of port investment

Investment of Ningbo-zhoushan port and Shanghai port mostly come from countries. At present, two ports increase project construction and renovation which certainly will exacerbate competition for national investment. In addition, huge amount of two port construction funds and expanse financing method will prick up competition of investment by banks, consortium and companies.

3.1.1.4 Competition of port hinterland and transit cargos resource

Cargo resource is the main content of the port competition. Port ship density and service level is the important condition to attract cargos, so the competition between the ports has also meant to attract ships. The phenomenon always occurs in the same character ports. Hinterland of Ningbo-zhoushan port and Shanghai port is overlap, and cargos import and export is high homogeneity. Shanghai stanchion cargo includes containers coal and steel, and Ningbo-zhoushan port is container, ore, coal, crude oil.

3.1.2 The necessity of competition of Shanghai Port and Ningbo Port

3.1.2.1 Competition helps port development

In recent years, Shanghai port and Ningbo-zhoushan port compete for container hub not only weaken the power, but make two port container businesses advance. The

speed of container terminal construction and joint venture cooperation has lots of achievements (Boke Mao. (2005)). It is obvious that if Ningbo-zhoushan port and Shanghai port can develop appropriate competition, and they can completely achieve a win-win situation in competition. In addition, the competition between the ports can not only promote the development of ports, but also shipping companies make profit through ports competition of freight rates. In the last two years shipping company benefit ratio dramatically increased, so the order for large ship, port investment and construction of hub port and deep-water further strengthened. International liner companies capital largely intervention will help to port classification system. Moderate competition between Ningbo-zhoushan port and Shanghai port will promote the construction of system among Yangtze River delta ports.

3.1.2.2 Competition is helpful to improve the cluster benefits

Competition between Shanghai port and Ningbo-zhoushan port which is also in Yangtze River delta is internal port group competition, and internal competition is an important factor to improve the efficiency of the cluster. Competition between Shanghai port and Ningbo-zhoushan port helps to recognize their own advantages and avoid excessive competition, reduce repetitive construction and waste of resources due to blind competition. In addition, Shanghai port and Ningbo-zhoushan port are similar in labor market conditions, transaction costs and supplier base. Appropriate competition conduces to professional products and services, so as to enhance the competitiveness of the Yangtze River delta ports cluster.

3.2 The cooperation between Shanghai Port and Ningbo Port

3.2.1 The necessity of cooperation

3.2.1.1 The need of Yangtze River delta port group

At present, ports in Yangtze River delta are speeding up the path of construction, and the competition between each other is more and more fierce. In this context, none but sufficiently exert the advantage of natural deep water of Ningbo-zhoushan port and scale of Shanghai port can promote the coordinated development which is beneficial to maintain dominance in the Yangtze River delta ports group and promote the construction of Shanghai international shipping center. Two ports' good cooperation also helps to improve the whole competitive ability of port group and promote the whole Yangtze River delta port groups' sustainable development.

3.2.1.2 The need to the international competition

Shanghai port and Ningbo-zhoushan port are not only faced competition from domestic port, but also other main port in the Asia-pacific region, especially the port of Busan. With the rapid economic development of Yangtze River delta, the cargo quantity of hinterland and supply of container have rapid increased. China and South Korea commence to concentrate on the Yangtze River delta huge market, sustaining increasing the force of port construction and prepare for disputing new sources. When Shanghai which is in Yangtze River delta develops to be international shipping center, at the same time, the northeast Asia international shipping center status as their own development objectives. Northeast Asia container transportation data showed in 1995-2001 that Shanghai Busan and Tokyo will most likely to be northeast Asia shipping center recently; the next 10 years other two ports may also enter the race for the transit center of northeast Asia status (Song D W., (2002)). Shanghai port faced how to keep increasing competitiveness by holding cargo resource. Some scholars

pointed that the solution of the problems need to the cooperation of Shanghai port and other Yangtze River delta ports, especially relations to Ningbo-zhoushan port which was in possession of good and natural advantage of deep water. Otherwise, it will not only affect the goal to be Shanghai international shipping center of northeast Asia, but also influence the ability of Shanghai port and promotion of Yangtze River delta ports competitiveness.

3.2.1.3 The need of Shanghai international shipping center construction

To construct Shanghai international shipping center is the inevitable way to exert the best benefit of Yangtze River delta port group, in the aspect of economic and geographic location, Shanghai can be Shanghai international shipping center. The international shipping center need to have modern deep water port, a perfect transportation network, Freeport policy support and standardization of the shipping trading, high efficiency of the shipping services and abundant international transfer cargos. It means that the establishment of shipping center mainly consists of shipping services, information and related soft force, not the port facilities and throughput. For Shanghai port speaking, hard power is the basis for the development of the soft power, and soft power is sign of the Shanghai international shipping center (Shuo, M., (2007)). To see from the construction standard of international shipping center above, there are certain disadvantages in Shanghai currently, such as port soft environment construction need to increase, port service environment and efficiency needs to be further improved, the resources still need to be integrated more effectively. Therefore, the development of Shanghai should focus on sustaining promoting development of the soft power construction such as shipping services and information to build up a truly international shipping center as soon as possible. It needs support from ports around Shanghai port, especially cooperation between Shanghai port and Ningbo-zhoushan port.

3.2.2 The possibility of cooperation

3.2.2.1 Port complementary functions

Port function orientation determined the future direction of the port. The core of Shanghai international shipping center is the construction of the deep water container hubs, and orientation of Yangshan port is the overseas international container transshipment business which important function is "water-water transit". In recent years throughput of Shanghai port and Ningbo port-zhoushan port increase simultaneously proves possibility of cooperation of two ports.

3.2.2.2 Port natural conditions complementary

Deep fairway of Ningbo-zhoushan port can accept more than 6 generation container and 300000 DWT bulk cargo ships berthing and discharged. The condition is better than Shanghai Yangshan port, and it also can adapt future large-scale requirements of the ship. If Yangshan port cannot work because of special climate influence, Ningbo-zhoushan port is the first backup choice. Ningbo-zhoushan port can stick to large-scale development, different to Shanghai port development, if Ningbo-zhoushan port is constructed to be a large transit port, it can make up defect of natural conditions in Shanghai port, and also, it can save costs for governing fairway. The complementary natural conditions of two ports make the foundation for future cooperation.

3.2.2.3 Complementary shipping services

Shanghai has a superior shipping environment. With a long history of shipping industry, great shipping culture and stable shipping industry foundation, Shanghai has become the most concentrated areas of shipping service industry in China. Ningbo-zhoushan port also has a long history of shipping, where APEC port service

network conference was held in June, 2007, fully shows that international port service as shipping, logistics, trade and other industry had further strengthened. By the end of 2007, establishment of Ningbo international shipping service center will strengthen ability of Ningbo port. Ningbo port aggregates port customs clearance, service, logistics, and information as one of the international shipping service center which will provide high quality service, improve port comprehensive competitiveness, and support powerful software for port development, therefore, it is possible for Shanghai and Ningbo port to make cooperation in shipping.

Chapter 4 Competition analysis of shanghai port and Ningbo port

4.1 Analysis of demand and supply between Shanghai port and Ningbo port

4.1.1 Demand

The demand for using either Shanghai Port or Ningbo Port for the handling international container movements can be seen very similarly in figure 4. It is clear that geography and, most especially, the proximity of the origin or destination of a shipment to one or other of the two ports, is a major determinant of which of the ports is preferred for the handling of a particular container movement.

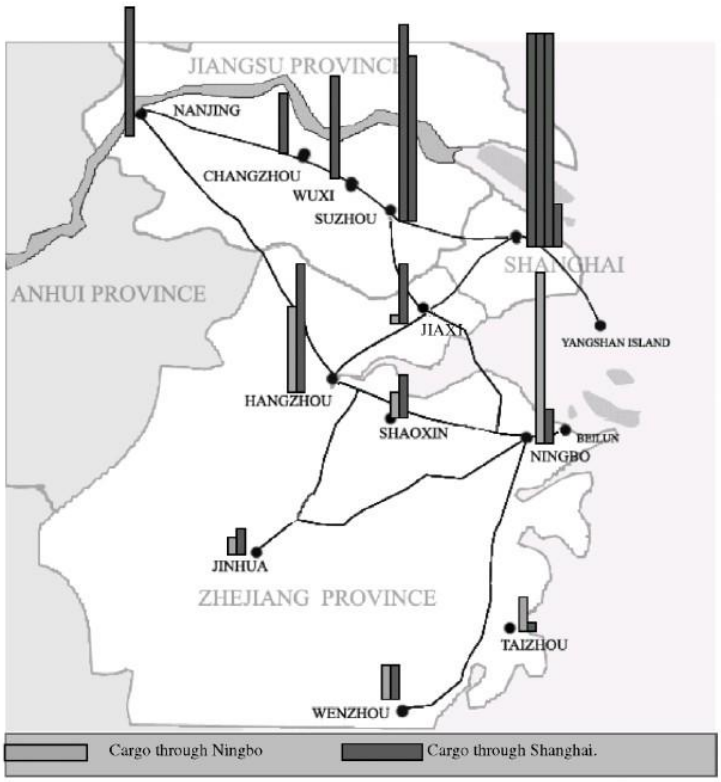

Figure 4.The distribution of cargo origins and destinations in the Shanghai–Ningbo hinterland.

4.1.2 Current and future supply

✓ Shanghai container port

Container throughput at the port of Shanghai grew by a massive annual rate of 7.11% to 28 million TEU in 2008. Because of the impact of financial crisis, container throughput fall to25 million TEU in 2009. In 2010, container throughput at the port of Shanghai accounts for 23.9 million TEU until October, which made Shanghai the world's largest container port in 2010, ousting Singapore from the top.

The Shanghai municipal government has made valiant efforts to improve the capacity of Shanghai port. The Waigaoqiao deepwater project, which was started in 1993, is one of the largest port constructions in China. The goal of the project is to create a harbor area of 1.63 square kilometers with a depth of 13 meters, capable of accommodating up to four container ships of 4,000 TEU. Although Phase V of this project became operational in 2004, it still needs time to be fully completed and questions remain over the feasibility of maintaining a 13-metre depth due to the silting of the river.

Currently, a maximum draught restriction of 11 meters greatly impedes the further development of Shanghai as a truly international container hub port. Many dredging projects are underway or being planned in the Yangtze River estuary to solve this problem. The deepening of the navigational channel through the mouth of the Yangtze River has been in progress since 1998 and the entire project will take ten years, with second and third stages to be opened up to overseas investment. Upon completion, the 48-kilometre channel will be expanded to 300 meters wide and 12.5 meters deep (14 meters at high tide). This will be an important improvement since, at present, some vessels docking in the Huangpu River have to discharge part of their cargo in advance due to draught limitations and some have to back out because they are unable to turn in the river. However, even this depth will be insufficient to raise Shanghai to the present international standard of 16 meters for a deep-water port.

Prompted by the insurmountable draft restrictions and associated need for large scale and continuous dredging, the current focus of infrastructure development in Shanghai port is the relatively recent decision to build a new deep-water container port with a maximum draught restriction of 15 meters. This is known as the 'Yangshan Deepwater Project' (Kosowatz, J., (2004)). The total investment required for this 20-year project is US$40–50 billion. This new port will be at Yangshan (a group of islands lying 27.5 kilometers from Shanghai's southern coast) and will be linked with the city of Shanghai by the construction of a 31-kilometre bridge. The average water depth in the area of the islands is over 15 meters.

- ✓ Ningbo container port

Ningbo is widely considered to be China's finest natural deep-water harbor (Chambers, S., (2005)) and for the past seven years has registered the highest annual growth rate in container throughput in the whole of mainland China. In contrast to the implicit criticism that has been leveled at the potentially low number of operational days that might be possible at Yangshan, Ningbo port works an average of 355 days a year, with the islands just offshore from the port providing a natural shelter from the elements. Beilun container terminal constitutes the main part of Ningbo container port and comprises two container berths with designed annual throughput capacity of 0.5 million TEU. The water depth is currently 13.5 meters which means that a Panamax containership of 80,000 deadweight tons (dwt) is now the maximum size of vessel that is capable of berthing there.

Because of the comparatively short distance between the container ports of Shanghai and Ningbo (204 kilometers by rail), their close co-operation is encouraged by the Chinese government. In September 1997, a cross-regional container terminal administrative organization, the Shanghai Port Group, was established to regulate competition and to maintain and promote the pace of development of container ports in Shanghai, Zhejiang and Jiangsu provinces (see figure 4). However, because

mainland China's current port policies are characterized by a decentralized approach that stimulates competition, the management of the ports has appeared to pay much more attention to establishing themselves as hub ports for the regions of mainland China that they serve (Wang, J. J., Ng, A.K. Y. and Olivier, D.,2004,pp.237-250).

4.1.3 Competitiveness

4.1.3.1 Price (direct cost to liner companies)

Port charges in mainland China are based very closely on a standard rate specified by China's Ministry of Communications. It includes separate charges for stevedoring, piloting and tugs. Currently, Shanghai and Ningbo both adopt a more flexible pricing policy than sticking simply to the centrally set standard rates. Their approach is characterized by a differentiation between large and small customers, especially with respect to the stevedoring charge. Generally, large mainline operators receive a 10% discount compared with coastal liner operators. As at the time of writing, in June 2005, the stevedoring charges listed in Table 1 reflect the average level prevailing in various Shanghai and Ningbo terminals.

The piloting tariffs are all based on a Ministry of Communications standard rate. For distances less than 10 nautical miles, the rate is 0.5 RMB per net ton. For any distance above 10 nautical miles, the rate for the rest of the voyage is 0.005 RMB per net ton per nautical mile. Since the piloting distance for Ningbo is relatively shorter than for the terminals in Shanghai, especially SCT, so the piloting charges payable in Ningbo are generally less than those prevailing in Shanghai.

The tug tariffs for the ports of Shanghai and Ningbo are given in Tables 2 and 3.

Stevedoring, piloting and tug charges are the three major port costs incurred in calling at a mainland Chinese port. Together, they account for about 90% of the total direct cost of a vessel's call at port. By broadly comparing the cost associated with the port calls of ships of similar size, it is self-evident that Ningbo possesses a definite price advantage.

Table 1. Stevedoring charges in Shanghai and Ningbo container terminals in remnimbi (June 2009)

Terminal	20ft full	20ft empty	40ft full	40ft empty	Compared with MOC
MOC rate	425.5	294.1	683.3	441.1	
SCT	504.9	353.5	757.4	530.2	About 120%
SPICT					About 100%
Waigaoqiao	383	264.7	547.5	397	About 90%
NBCT					About 90%
BL2CT					About 85%

Table 2. Shanghai port tug tariff in remnimbi (June 2009)

Length of vessel (meters)	>220	180-220	155-180	122-155	95-122	<95
SCT	58600	45200	35200	33100	18400	17800
Waigaoqiao	59200	48800	43500	34200	32600	27300

Table 3. Ningbo port tug tariff in remnimbi (June 2009)

Length of vessel (meters)	>320	251-320	171-250	121-170	<120
	48760	39000	31620	22140	14700

4.1.3.2 Generalized cost: the impact of infrastructure improvements within and outside the ports on both direct and indirect costs

The ongoing investment in expanding the scale and improving the efficiency of container handling facilities in both Shanghai and in Ningbo has already been shown. This is likely to lead to a reduction in both direct and indirect costs for liner shipping companies. The former as ports reap economies of scale in container handling and the

latter by virtue of productivity enhancements.

There are other investments in infrastructure outside of the ports that are likely to support the trend towards a reduction in generalized cost by bringing about efficiency improvements in inland logistics systems. Some of these are well known—such as the 'Three Gorges Dam' project which will improve the navigability of the Yangtze River to allow ships of up to 10,000 tons to transit as far upriver as Chongqing. Additional berthing is being provided at a total cost of approximately US$120 million, by the construction of an inland container terminal of 400,000 TEU capacity in the city of Wanzhou, just south west of Chongqing. For obvious reasons, SIPG is endeavouring to develop a modern container logistics and distribution network along the Yangtze River Valley and is doing so in conjunction with the major Yangtze River ports of Nanjing and Wuhan, as well as with Chongqing. A recent announcement from the Ministry of Communications details how an investment of US$1.21 billion over the next 17 years will expand still further the navigability of the river, so that ships of 50,000 dwt can transit as far upstream as Nanking. The plan revolves around the objective of attaining a shipping capacity of 800 million tonnes and 8 million TEU of containers by 2010. It is also critically important to recognize, however, that there are also ongoing improvements to road and rail systems that serve both Shanghai and Ningbo.

Other critical infrastructure developments are less well known, however. One of these is the Hangzhou Bay Bridge project. The Hangzhou Bay Bridge started construction in 2003. It will be completed in 2008 and is due to be in service during 2009. Its total length is 36 kilometres and has six lanes. Both sides of the bridge will connect directly with expressways so, at least on the basis of current traffic forecasts of car ownership and use in the region, there should not be any congestion problems.

This will have a direct impact on the competitive arena in which Shanghai and Ningbo are engaged. Looking again at the map shown earlier, it can be seen that this bridge will greatly shorten the distance from the southern central provinces to Shanghai and from the north and western provinces to Ningbo. Focusing solely on the likely greater benefit of this for Ningbo, this will lead to a modelled average reduction

in road haul costs of 600 RMB for each TEU moved from Suzhou, Wuxi, Changzhou and Nanjing to Ningbo, and 700 RMB for each TEU from Shanghai to Ningbo. This averages out to approximately a 30% cut in road haul costs compared to the current situation and, as such, is likely to have a significant effect on the port choice of international container shipments.

As part of the impetus for further developing the port of Ningbo and enhancing its competitiveness, the regional government in Zhejiang province is studying proposals for expanding the existing nearby ports of Zhoushan and Taizhou as potential feeder ports for Ningbo, as well as building a brand-new container terminal at Jiaxing. Simply in terms of feedering capacity for Ningbo alone, these plans imply the potential for an extra 12 berths with an annual handling capacity of 4 million TEU.

4.2 SWOT analysis of Shanghai port and Ningbo port

SWOT Analysis

Situation:

With the high growth rate of Shanghai port and Ningbo port, the two ports are more competitive with each other. It’s obviously necessary to make a SWOT Analysis to these two ports.

	Shanghai	**Ningbo**
Location (trade route and scope of shippers and consignee)	A	A
Assets (access, depth, harbor, types of facilities; specialized	A	A

equipment and storage, available capacities and dedicated berth)		
Experiences (with vessels, commodities, different forms of cargo)	A	B
Manpower (skill, social climate, motivation, professionalism, contact with customers)	A	A
Performance (utilization, delay, productivity)	B	A
Adaptability	A	A
Complementary service (cargo, ship, logistics, trade, information, communications)	A	B
Financial conditions (ability to invest, relative access to funds, cost of capital and operation)	A	B
Charge	B	A

✧ **Strengths**

Shanghai

Shanghai, as an international shipping center, has a tremendously competitive advantage in shipping industry, with its strengths as followed:

Complementary service

As an international port, Shanghai has a perfect complementary service system, which includes cargo, ship, logistics, trade, information, communications etc and lots of shippers and consignee prefer shanghai instead of other ports because of that.

The support of central government

As an international hub port, the central government has invested a lot in Shanghai port including Yangshan deep-water port project and Donghai bridge project. Also, much investment form central government are given to Shanghai for the SISC.

Ningbo

Ningbo, with its natural advantages and adjacent to Shanghai geographically, has developed rapidly in the recent years, and its strengths is followed:

Natural deep-water harbor

Ningbo is widely considered to be China's finest natural deep-water harbor and Beilun container terminal constitutes the main part of Ningbo container port and comprises two container berths with designed annual throughput capacity of 0.5 million TEUs. The water depth is currently 13.5 meters which means that a Panamax containership of 80,000 deadweight tons is now the maximum size of vessel that is capable of berthing there. Compared with Shanghai port, the natural deep-water is an absolutely competitive advantage of Ningbo.

Low charge

Port charges in mainland China are based very closely on a standard rate specified by China's Ministry of Communications. It includes separate charges for stevedoring, piloting and tugs. Actually, Ningbo port's charge is less than other ports especially Shanghai in term of the three kinds of charges. That makes Ningbo possesses a definite price advantage.

✧ **Weaknesses**

Shanghai

However, Shanghai port also has its weaknesses in term of operation of the port, which is main obstacle of Shanghai developing into an international container hub port：

Draught limitation

Currently, a maximum draught restriction of 11 meters greatly impedes the further development of Shanghai as a truly international container hub port. Upon completion, the 48-kilometre channel will be expanded to 300 meters wide and 12.5 meters deep (14 meters at high tide). This will be an important improvement since, at present, some vessels docking in the Huangpu River have to discharge part of their cargo in advance due to draught limitations and some have to back out because they are unable to turn in the river.

High charge

Port charges in mainland China are based very closely on a standard rate specified by China's Ministry of Communications. It includes separate charges for stevedoring, piloting and tugs. Actually, Shanghai's port charge is more than other ports such as Ningbo in term of the three kinds of charges.

Utilization

As to utilization, the utilization of Yangshan deep-water port is less than that of Ningbo. The workday of Ningbo port is 360 days which is more than that of Shanghai port, and as well as the efficiency of the operation of port.

Ningbo

As a powerful competitor to Shanghai, Ningbo also has its weaknesses, which is followed:

Competition on hinterland

As a neighbor city adjacent to Shanghai, Ningbo's hinterland is YRD including Zhejiang province and Jiangsu province, which is also the hinterland of Shanghai. That means Shanghai and Ningbo have a competition on hinterland. However, Shanghai port, as an international hub port, has its great competitive advantage over Ningbo on some extend, so Ningbo has to face up with such tough situation.

✧ **Opportunities**

Shanghai

In 1996, the State Council suggested setting up the Yangtze River Delta International Shipping Center, which was later referred to as the Shanghai International Shipping Center (SISC) on most occasions. The centre includes a group of ten ports in the three adjacent provincial units—Jiangsu, Shanghai, and Zhejiang. Among these ports, Shanghai port was regarded as the dragon head. The centre had two objectives: to group container terminals and allocate its capacities properly in order to prevent duplicated constructions from happening, so that resources can be used rationally, and to combine advantages of each port and to form an international container hub centre at Shanghai.

For the SISC, the central government invests a lot in SISC construction to build Shanghai port as in international hub port, including the Yangshan deep-water port project and Donghai bridge project. This is a great opportunity for Shanghai to be more competitive compared with other ports.

Ningbo

In 2009, the cargo throughout of Ningbo-zhoushan port is 0.57 billion, which makes Ningbo-zhoushan port NO.1 compared with Shanghai port's 0.5 billion. It is no doubt that the integration of Ningbo and zhoushan is not simply '1+1=2', and it is absolutely a great opportunity for Ningbo to become more competitive among the shipping ports around the world.

✧ **Threats**

Shanghai

In the recent years, with the rapidly growth and development of other ports such as Ningbo, Hongkong domestically and Pushan, Singapore, Kaohsiung internationally, Shanghai port is faced up with a great threat.

In china, due to the price advantage of Ningbo port, a lot of cargos go through Ningbo port instead of Shanghai port which would be a great loss to Shanghai in term of throughput. At the same time, the international cargos sometimes also don't go pass Shanghai port. To some extend, Shanghai should pay attention to it, as it is a extremely imperative problem to Shanghai.

Ningbo

It's obvious that Ningbo is faced up with the threat from the competition of the port around especially Shanghai port. Due to the situation of the two ports are very similar to each other, Ningbo will suffer a great competition from Shanghai not only on bulk cargo but also container shipping.

Strategy

According to the SWOT analysis about Shanghai and Ningbo port, we make the SWOT matrix, and we choose SO Strategy for Shanghai's future development and WO Strategy for Ningbo.

SWOT Matrix

Matrix	Opportunities	Threats
Strengths	SO Strategy	ST Strategy
Weaknesses	WO Strategy	WT Strategy

■ Shanghai——SO Strategy

Shanghai, as an international hub port, should take SO Strategy as its development Strategy, it means Shanghai should aim at SISC with its advantages which are Complementary service and the support of the central government. As we can see SISC is a good opportunity for Shanghai to become more competitive especially when it is faced up with the challenge of Ningbo port. So Shanghai should use its strengths to make full use of SISC to make itself be worthy of the name—international hub port.

■ Ningbo——WO Strategy

With the integration of Ningbo and Zhoushan, Ningbo has become more and more competitive in term of bulk and container throughput. As we can see, Ningbo' cargo throughput exceeded Shanghai's in 2009, we take this opportunity as the key for Ningbo to compete with Shanghai, with making full use of the advantages that brought by the Ningbo-zhoushan integration project.

4.3 Competition and cooperation suggestions between Shanghai port and Ningbo port

Shanghai port and Ningbo-zhoushan port are located in the Yangtze River delta with great port group effects and fierce competition, and at the same time, two ports have the same profit, which is increasing total amount of throughput of two ports as well while speeding up the construction of Shanghai international shipping center. Therefore, in order to enhance the overall regional ports's competitive and achieve a win-win purpose, Ningbo-zhoushan port and Shanghai port cannot simply take competition or cooperation, but take competition and cooperation strategy.

4.3.1 Overall planning, integration of resources, and coordinated development

Although Shanghai port and Ningbo-zhoushan port are both located in Yangtze River delta, the administrative area segmentation and system is totally different, which partially influence interaction development processes of two ports. Therefore, central and local government must be take overall arrangement in two ports layout and investment, integrate two port resources at a high level to create better conditions for t industry development, broaden more industry development space, promote two ports coordinated development and finally achieve win-win strategy.

4.3.2 Clear port orientation, dislocation of the development

Two ports could consider establishing combined port, which is Shanghai container transportation hub and Ningbo energy feeder. Shanghai port development orientation should be using its abundant soft environment resources to provide high value-added service with continuous innovation, further exert advantage of comprehensive services, and speed up the construction of the Yangshan large container terminal and port logistics system. Ningbo-zhoushan port is good port location to build center of raw materials industry for overseas resources, fairway depth can completely satisfy requirement of ocean transportation including mineral, crude oil and coal, and it is also the ideal location for energy transfer port such as ore, crude oil, coal and other bulk project construction. Therefore, Ningbo port can be energy feeder to serve for hinterland.

Year	Shanghai port		Ningbo port	
	Throughput(TEU)	Increase (%)	Throughput(TEU)	Increase (%)
2008	2800	7.1	1084	15.8
2009	2506	-10.5	1042	-4
2010	2906	16	1300	25

Two ports different developments can both avoid dislocation competition and beneficial to construction of Shanghai container transportation hub, accelerate building Shanghai international shipping and logistics center, and also it helps to construction of professional energy feeder of Ningbo-zhoushan port.

4.3.3 Speed up informatization construction and promote port logistics industry development

At present, both two ports take port logistics industry as support to upgrade port comprehensive competitiveness, and two ports should establish a unified logistics system to increase two ports logistics industry development by informatization. Focus on developing and perfecting the shipping information system and shipping trading system, formed two port public management system, expand information network, accelerate electronic data interchange (EDI) system and logistics information technology system operation, to make it a Yangtze River delta logistics control center providing high quality intermediary and information services for domestic and foreign cargos transport. In view of the uniform logistics construction goal, it should set up two ports logistics information coordination work team, convoke work conference regularly, carry out technical cooperation and promote two ports logistics system.

4.3.4 Speed up the shipping services development, cooperation and promote shipping soft environment construction

Under the uniform target to establishing Shanghai international shipping center, two ports should learn international shipping center construction experience from foreign advanced ports such as Singapore port, London port, Rotterdam port, and strengthen the cooperation on the soft environment construction. Two ports should enhance the cooperation including shipping service company, shipping research institutions,

shipping consultation, shipping professionals and shipping education, positively broaden shipping and logistics development, provide value-added services for port customers, and further improve port comprehensive competitiveness, create a more brilliant development and policy environment, and further improve soft power of Shanghai international shipping center. The relevant shipping departments should be promote two ports make full use of existing shipping elements to develop soft environment as Shanghai shipping exchange may publish shipping and its supporting company qualification credit evaluation report, in order to improve the credibility of shipping services and service level, which is essential condition for soft environment construction. It should improve local shipping services company internationalization, increase shipping service function development, strengthen technology and high value-added of modern shipping service function, promote financial center or financial services center construction and speed up training professionals can participate in the international competition to meet the requirement of Shanghai international shipping center construction. Issuing relevant policy regulation in port management, shipping services, financial services and revenue to effectively supervise related policy, provide good revenue environment, reduce the gap in shipping services and shipping research areas between two ports and international advanced level, issue related industry guide and regulations and finally establish perfect shipping service industry and system.

Chapter 5 Conclusion

The paper took competition between Shanghai port and Ningbo port as research object, relatively comprehensively introduce basic situation of Shanghai port and Ningbo port, analyze two ports competitiveness; By establishing SWOT matrix of Shanghai port and Ningbo port between to analyze two ports competition and cooperation strategy.

Focus on the following works:

1) Relatively comprehensive introduce basic situation of Shanghai port and Ningbo port and analyze two ports;

2) Analyze from both demand and supply of Shanghai and Ningbo port, and propose by means of strategy from SWOT analysis;

3) Discuss the competition and cooperation strategy for Shanghai port and Ningbo port.

Because of the limited theoretical level, practical experience and material, many and mistakes in the paper, such as establishment of comprehensive competitiveness of Shanghai and Ningbo port, game theory model are failure to complete. In the SWOT analysis, there were the factors are not comprehensively considered. I hope these deficiencies can be deeply discussed future.

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