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The effect of latest shipping alliance on shipping industry

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Declaration

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

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

Supervised by

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Thanks to everyone I met in WMU and SMU.

And best regards to my parents and relatives.

Abstract

Over the past decade, the rapid development of strategic alliances in the international container liner shipping market has had a profound and extensive impact on the shipping market. This paper uses the theory of modern industrial organization to analyze the concrete forms and relationships of alliance behavior, market performance and liner transport market structure of container shipping enterprises. Combining with the specific characteristics of international container liner transport market, the paper analyses the development trend of shipping alliance and its impact on the development of international container liner transport industry and port. At the same time, it puts forward China's development measures to deal with the development of liner shipping industry and ports. Firstly, the background and significance of this study, the research status at home and abroad and the theoretical basis of this paper are briefly described. Secondly, the shipping alliance is clearly defined. Then, the background, development process and current situation of the shipping alliance are analyzed, as well as the causes of the shipping alliance and the instability factors of its members, so as to facilitate future analysis. Then it analyses the influence of the latest shipping alliance on the development of container liner shipping industry from both positive and negative aspects. Then it analyses the impact of the latest shipping alliance on port development from the positive and negative aspects. In view of the negative impact, it puts forward the Countermeasures for the development of China's port shipping industry. Finally, the paper summarizes and prospects. Through analysis and research, this paper holds that the establishment of the latest shipping alliance is indeed conducive to improving the performance of liner shipping enterprises; the particularity of the international shipping industry determines that the scale of the shipping alliance will be further expanded, the cooperation among liner companies within the alliance will be closer, and the members of the alliance will tend to be stable; at the same time, the alliance among container liner shipping enterprises will promote the international assembly. The market share of container liner transport gradually concentrates in the hands of several major liner transport enterprises, which makes the whole international container liner transport industry in a relatively stable state. The purpose of this paper is to provide some reference for the development of international container liner shipping industry and China's port transport industry.

Keywords: Shipping; Container liners; Port; Shipping alliance; Effect

Contents

1. The introduction

1.1 Research background and significance

Since the global financial crisis and the new normal of China's economy, the crisis of excess capacity in shipping industry has become prominent, and the profitability of shipping enterprises has declined sharply, even falling into the predicament of years of losses (Ji-Hong, 2008). At present, the global shipping industry has started the wave of mergers and acquisitions, and "group heating" has become a major theme of the industry, and a large-scale acquisition and integration drama is still on. Global liner companies have responded to the economic crisis by forming three major alliances: 2M, Ocean Alliance and THE Alliance, and ordering large ships for scale effect. However, port enterprises lies on guns, facing the challenge of large-scale shipping to the infrastructure of port enterprises, port enterprises either spend a lot of money to improve the original infrastructure, or face the end of being abandoned. The arrival of the era of shipping super-alliance has brought great pressure to the port industry (Notteboom, 2017). Therefore, the establishment of Port Alliance has become an inevitable choice for the global port enterprises to cope with the current situation. Strengthening cooperation with the ports along the maritime Silk Road, realizing regional port interaction, and promoting the comprehensive competitiveness of regional port groups (belts) will become the main development of port logistics industry in China in the future.

With the new routes of 2M and O4 coming into operation, the liner market has begun to form the three major shipping alliances, including the 2M Alliance, OCEAN Alliance, and THE Alliance (Hirata, 2017). Throughout the shipping market, the four major alliances comprise 17 large liner companies, of which 16 are in the top 20 in the world, accounting for nearly 80% of the global container shipping business. At present, the international economic recovery is weak, the recovery is slow, the shipping market continues to be depressed due to the aggravation of the imbalance between supply and demand, the demand for quantity of goods is sluggish, and the price of shipping routes fluctuates at a low level. Faced with the severe market situation, the industry leaders are holding a group to warm up on the basis of strict control of operating costs, striving to enhance competitiveness and ensure market advantages. It can be said that the competition pattern of shipping market in the new era has evolved from the competition among shipping companies to the competition

among shipping alliances, and the era of competition among major alliances has gradually opened. Under the background, on the one hand, shipping alliance is conducive to enhance industry concentration and the success rate of price, prevent vicious competition, and promote the re-integration of shipping capacity, improve the profitability of shipping companies. On the other hand, the current shipping market is facing a long period of low-speed growth, resulting in imbalance between supply and demand of transport capacity. In short, shipping alliance has a great impact on the structure of shipping market and the development of shipping companies. Therefore, this paper mainly explores the impact of shipping alliance on shipping market.

At present, most of the published books and articles are about the background and development status of shipping alliances, or the benefits of shipping alliances to alliance enterprises (Ji-Hong, 2018). However, there is relatively little research on shipping alliances from an industrial perspective. The shipping alliance originally came into being in order to adapt to the characteristics of the shipping market in the new situation, and it will inevitably have a great impact on the international shipping industry.

Since the produce of shipping alliance, it has aroused hot attention on its development trend. In the end, this paper will make a thorough analysis and Discussion on this issue in the light of international anti-monopoly measures. At the same time, the extensive formation and development of shipping alliances have gradually changed the original international competition pattern and game rules, so it is necessary to analyze the impact of shipping alliances on the development of international container liner shipping industry. Combined with the actual situation of China's international container liner shipping industry, this paper analyses and studies the countermeasures that shipping enterprises should take to adapt to the new market environment. At the same time, it also puts forward relevant policy recommendations from the perspective of industry management.

Port is the hub of land and water transportation and logistics. It has always been called "gateway" and "window", and plays an important role in a country's economic activities (Huang, 2004). Establishing a port alliance in the current market environment has great significance: first, integrating resources to improve the efficiency of port services; second, co-financing, optimizing port infrastructure construction, responding to shipping super-alliance to meet the needs of large-scale ships; third, promoting information sharing, mutual benefit and win-win; fourth, technology sharing, enhancing service competitiveness.

1.2 Literature review

1.2.1 Research abroad

Heaver, T., Meersman, H. et, al (2010) made an analysis on the effect of shipping Alliances on European Shipping and Port Competition, they made an research on the consecutively at the different forms of co-operation in liner shipping, market behavior in a port environment, the industrial and economic reasons behind co-operation, and the consequences for port competition in Europe in his article *Do Mergers and Alliances Influence European Shipping and Port Competition*.

Photis M. Panayides and Robert Wiedmer (2011) started from a general framework of co-operative liner services, and in-depth analyses of the global alliances in liner shipping are obtained in the article of *Strategic alliances in container liner shipping*. These formations E Grand Alliance, New World Alliance and CKYH Alliance are compared with alternative forms of collaboration in the liner shipping industry. The analysis of alliance announcements which are related to operational and strategic changes indicates that the "global alliances" cannot be regarded as closed corporate-like entities. In effect, service agreements are not only negotiated with the focal members of the specific alliance. Instead, every service is arranged individually and under specific conditions. By understanding the dynamics within alliances, we are able to develop an assessment relating to the stability of collaborations. Ultimately, these insights direct us to several paths for future research.

In their article *Liner shipping alliances and their impact on shipping connectivity in Southeast Asia*, Wei Yim Yap and Seyed Mehdi Zahraei (2015) aims to analyze the impact of these developments on the state of shipping connectivity for major container transshipment hubs in Southeast Asia. The research finds that significant service rationalization took place in the period that saw 38 per cent reduction in the number of shipping services called at the ports. Participation in alliance arrangement was revealed to be important for shipping lines to compete successfully on the Asia–Europe trade route in the new shipping landscape. Terminal operators should expect further rationalization of services should overcapacity persist. Maintaining hub status would require the ability to accommodate the strategic, operational and commercial requirements of the entire alliance rather than just focusing on the key shipping line.

1.2.2 Research at home

Through the analysis of shipping market share, industry concentration index and relative concentration index (HHI index), Yu Yongqi (2017) expounds its influence on container shipping market structure, and draws the conclusion that the continuous development of shipping alliance will improve the concentration of shipping market and make the structure of shipping market evolve into a monopolistic market structure in the article of *The Impact of Shipping Alliance Development on Container Shipping Market Structure*. In addition, the development of shipping alliance can also improve the service level of shipping enterprises and promote the transformation of port planning along the line and the development of new routes.

In the article of *Evolution Analysis of Shipping Alliance Based on Asymmetric Evolutionary Game*, Shen Wei (2018) studied the behavioral strategies of cooperation and competition of 2*2 shipping enterprises. According to different behavioral strategies, an evolutionary game model of behavior was established, and its evolutionary trend was dynamically analyzed by using replicators. The equilibrium and stabilization strategies of the two are given. The results show that the trend of competition and cooperation of shipping enterprises is closely related to the revenue and income distribution of shipping alliances and the emergence of "speculative behavior" will reduce the overall revenue of shipping alliances.

Huang Shunquan (2014) uses the theory of modern industrial organization to analyze the concrete forms and relationships of alliance behavior, market performance and liner shipping market structure of container shipping enterprises in his 2004 article of *Analysis on the Industrial Organization of Shipping Alliance*. Combining with the specific characteristics of international container liner shipping market, he analyses the development trend of shipping alliance and its impact on the development of international container liner shipping industry. At the same time, he puts forward China's liner shipping industry measures to be taken by the transport industry.

1.3 The theoretical basis and research method

1.3.1 The theoretical basis

(1) Game theory

The game reflects the business relationship of two or more participants whose interests are interrelated and interdependent. The basic concepts of game theory include participants, actions, strategies, payment functions and alliances (Jones, 2014). Participants refer to decision-makers who choose actions to maximize their own utility in the game. They can be individuals or collectives and play the role of decision-makers in the game (Zeng, 2015). The choice that participants can make and produce a particular result is called action, which is the decision variable of participants. Strategies are the rules by which participants choose action, i.e. a combination of actions. Payment function is the level of utility that participants get from the game, and it is the mathematical function of all participants' actions or strategies. It reflects the results of all participants' actions and combinations in the game.

According to the above concept of game theory, the game analysis of liner shipping industry should include all kinds of participants, such as liner shipping companies, port operators, and so on. The interests of these participants depend on each other and influence each other. For convenience, the participants in this paper only refer to container liner shipping companies in the shipping market. The simplification of liner companies' payment function is mainly affected by the decision-making of other participants.

(2) Cooperative game theory

In the game of N participants, each participant should consider whether to act alone or cooperate with others (Jianli, 2009). Moreover, when he is excluded from other participants, he should also consider whether to find ways to let some of them betray their faith and find new partners. Therefore, in the cooperative game, for each participant, the key is to determine which participants can get the greatest reward by forming alliances with them. In order to solve this problem, we must first introduce two important concepts in cooperative game: characteristic function and the core of N players' game. Another important concept in cooperative game theory is alliance, which is usually expressed by the strategic subset of participants in cooperative game.

Based on the Cooperative game theory, the correlation between each Participant game and get the maximum reward is analyzed.

1.3.2 Research method

(1) Literature review

This paper uses Internet resources to search the relevant literature on shipping alliances, which provides a theoretical basis for the study of this paper.

(2) Inductive Summarization

This paper collects and searches the literature about the latest shipping alliances, summarizes these literatures, analyses the impact of the latest shipping alliances on the shipping industry and ports, and puts forward its development countermeasures.

2. Overview of Shipping Alliance

2.1 The concept of shipping alliance

2.1.1 Definition

In the international shipping market, container liner shipping alliance can be divided into broad sense and narrow sense. Generalized shipping alliance is a joint operation agreement signed by two or more operators in order to achieve their own strategic objectives, under the premise of maintaining their independent legal status, and within the scope of their agreement, each operator cooperates (Chen, 2009). In the narrow sense, shipping alliance only refers to an agreement signed by two or more operators covering all joint business routes between them, generally involving joint operations of several main routes, such as Asia/North America, Asia-Europe and Europe/North America routes. If members of the alliance want to cooperate with members outside the alliance within the range of routes covered by the alliance agreement, they need to obtain the consent of other members of the alliance, except those not covered by the original alliance agreement. This is considered to be the most typical shipping alliance.

2.1.2 The forms

The main forms of shipping alliance are operational alliance, financial alliance and logistics alliance (Huang, 2015). Generally speaking, more is the operational alliance. In fact, because the operation alliance is the main form, there are often forms of cooperation between Financial Alliance and logistics alliance, and they interact with each other.

1. Operational Alliance

Operating alliances take various forms, such as joint operation of ships, mutual chartering of ships, exchange or sharing of space. The main objective of such alliances is to improve service levels and reduce capital investment. The level of service can be greatly improved without additional investment. The members of the alliance need not formulate common goals, but only meet their own long-term planning.

Operating alliance is the most important part of shipping alliance, which is mainly divided into box purchase, box exchange, capacity sharing and facilities sharing (Shen, 2005). It is very important for the shipowners participating in the alliance to maintain the decision-making independence of the company. In the operation alliance, the advantages and disadvantages of each form are different.

2. Financial Alliance

Carriers participating in financial alliances have the same goal: to maintain market stability. Union members generally have a certain market share, its predecessor is the liner association (Qiu, 2014). Now the financial alliance also controls its own transport capacity to avoid excessive transport capacity, resulting in a situation of oversupply in the market. It can be said that maintaining the stability of freight rates is the core factor for the establishment of such alliances. Financial alliance in shipping alliance is a deeper alliance, and participants have a long-term basis for cooperation.

(1) Rate Agreement

Freight agreement is the most important means to restrict price competition and maintain freight stability. Although price fluctuations can sometimes benefit liner carriers, in the long run, price stability is more important than short-term profits. Carriers can benefit from the agreed price through the alliance to avoid the risk from market price fluctuation (Heaver, 2000). However, joining the financial alliance often results in the loss of the autonomy of independent carriers.

(2) Capital Alliance

Shipowners make alliances in capital, usually for the purchase of ships and wharf construction. For the shipping industry, which is capital-intensive, the construction of infrastructure through capital alliance can reduce investment and risk. Nowadays, such alliances are very common, such as Maersk, COSCO and Dalian Flyboats jointly participate in the construction of Haicang Wharf in Xiamen, and Sino-foreign Long Shipping Group and Yangming Sea Shipping Investment Changming Wharf. The advantage of ship owners' acquisition of new ships through capital alliance is that carriers can allocate larger tonnage vessels to improve competitiveness, while at the same time, due to the role of economies of scale, they can reduce marginal costs.

3. Logistics Alliance

Since containerization, the two most important requirements of shippers for carriers are the frequency of start-up and the convenience of harbor gathering. Today, the concept of door-to-door logistics is very popular. The carrier's responsibility has changed from the exporter's delivery to the importer's factory rather than the traditional shipping part. This has led to the carrier's need to invest a lot in the field of logistics, resulting in a logistics alliance.

(1) Container Sharing

Container is the core part of liner transportation, and the operation cost of container accounts for the main part of the operation cost (Cheng-Shou, 2017). It includes not only the cost of purchasing or renting containers, maintenance and repair, but also the cost of empty containers. The cost of empty container transportation is unavoidable for unbalanced outbound and return traffic. The high cost of empty container transfer is the motivation for liner owners to join the alliance and share containers.

Shipowners realize that the extra boxes they spend time and money shipping back are probably what other shipowners need. Container cooperation also takes many forms: empty container rental, empty container rental, sublease, empty container exchange. Carriers often give priority to subletting or swap.

(2)Information Sharing

Sharing logistics information system can improve operational efficiency and decision-making response speed. Information system sharing can be divided into internal office system sharing and external network sharing (Tang, 2016). Externally, it includes the shared supply chain upstream such as truck, railway transportation, wharf, and even the office access of shippers and customs declaration agencies, as well as the shipper's box tracking system.

Information sharing is a necessary guarantee to promote the efficient operation of shipping alliances, but it may also lead to loss of information resources, leakage of business secrets and increase operational risks. If we protect information for the sake of protecting our own interests, we will highlight the problem of information asymmetry, and then increase the operational risk of the alliance.

2.2 The Development of Shipping Alliance

2.2.1 The history

Since the early 1990s, in order to adapt to the environment of economic globalization and fierce competition in the shipping market, international shipping operators began to seek an organizational form different from liner associations in order to avoid their own operational risks, seek the economic effects of "1+1>2", integrate industry resources, and deal with the crisis of market elimination due to excessive competition (Li, 2015). Subsequently, shipping alliance has become a new choice for shipping operators, and with the passage of time, the establishment of shipping alliance has become a major form of cooperation among international shipping organizations.

On June 17, 2014, the fate of the P3 Alliance (Maersk, Mediterranean and CMA), which was once noticed, was settled. Deviated from the original European Union's martyrdom, P3 suffered from Waterloo in China after its successful approval by the United States and the European Union. The Ministry of Commerce of China rejected the plan on the grounds that the alliance “may have the effect of eliminating and restricting competition”. Although the results were quite surprising, the shipping company's response was rather calm, and even gave up the P3 program quickly. At that time, Drewry said that the refusal of the P3 Alliance may promote the stable development of the shipping industry, but the pace of development of the Super Shipping Alliance will not be stagnant. On July 10th, Maersk and the world's top two liner giants joined forces to launch the 2M alliance. In the same month, 2M submitted the filing to the Chinese Ministry of Communications and the US Federal Maritime Commission.

Shipping alliances are divided into traditional and modern ones (Agarwal, 2010). The primary driving force of traditional forms of joint ventures is to open up new markets with lower investment and risk. The primary driving force of joining modern global joint ventures is to improve service level and reduce costs. The international shipping alliance has experienced several processes, such as the establishment of five major alliances in 1996, the formation of four major alliances in 2001, the reorganization of four major alliances in 2007-2014, the four major alliances (2M, O3, OCEAN, THE Alliances) in 2015, while since January 2015, with the merger of 2M and O3 shipping alliances, which forms the three major alliances (2M Alliance, OCEAN Alliance and THE Alliance). They also confirm the Change from the traditional form to modern form. Since January 2015, with the 2M and O3 shipping alliances officially put into operation, the international shipping market has formed a market pattern of three shipping alliances, including OCEAN Alliance and THE Alliance, the three alliances competes with each other. The whole market gradually presents a centralized trend and gradually forms a monopolistic market structure.

According to Alphaliner’s global container capacity ranking up to March 25, 2019, the top 14 liner companies is members or partners of the three major alliances. The Comparisons of Transportation Capacity Scales of Three Shipping Alliances as table 1.

Table1 Comparisons of Transportation Capacity Scales of Three Shipping Alliances

Alliances	Members	RANK	Alliance transport capacity(TEU)	Market Quota (%)
2M	Maersk, Mediterranean	1	7307702	35.3

OCEAN Alliance	COSCON, CMA CGM, Evergreen Marine and OOCL	2	5378696	26.1
THE Alliance	Hapag-Lloyd, Yangming Shipping, Merchant Marine Mitsui, Nippon Yusen, Kawasaki Steamship, Hanjin Shipping	3	3481135	16.9

Data Sources: Alphaliner

According to Alphaliner's global container capacity ranking up to March 25, 2019, the top 14 liner companies are members or partners of the three major alliances. For convenience, when comparing the overall capacity of the three major alliances, this paper compares Hamburg's South American and modern merchant ships into 2M and Arab ships into The Alliance. From the data in Table 1, it can be seen that 2M is the largest alliance in terms of its total capacity of 73.077 million TEU and market share of 35.3% with the support of Maersk Shipping, which ranks first in terms of transport capacity, and Mediterranean Shipping, which ranks second in terms of transport capacity. Four members of OCEAN Alliance also rank well in terms of transport capacity; with the total capacity of the alliance reaching 5.3787 million TEU and market share reaching 26.1%, which is second only to 2M. The Alliance, led by Herbert, the fifth largest global transport company, encountered the bankruptcy of Hanjin Maritime Transport, with a total transport capacity of 3.4811 million TEU and a market share of 16.9%, the weakest of the three major alliances.

Although the three major global shipping alliances account for nearly 80% of the market share of the three major east-west shipping routes in the shipping market, which makes it impossible for small and medium-sized shipping companies to compete with them, shipping alliances also reduce the number of ports attached to them, increase the demand for inland feeder transportation, and the future development direction of small and medium-sized shipping enterprises should be regional carriers. And after the formation of shipping alliance, the service network coverage expands, shift density increases, operational efficiency improves, to the benefit of cargo owners. The survival of the fittest is the normal law of market competition, there is no so-called unfair competition.

Although the shipping alliance is a joint operation agreement signed on the premise of maintaining its independence, some cooperation with other shipping companies outside the alliance cannot be carried out at will without the consent of its partners (Yang, 2011). As a result, the members of the alliance will lose some independence and flexibility in operation and also miss some business opportunities. On the other hand, the ultimate goal of every shipping enterprise is to maximize its

own profits, which will inevitably lead to the situation that equality and efficiency in the alliance cannot be balanced. Once the uneven distribution of interests is involved, it will create barriers within the alliance, reduce the enthusiasm of the members of the alliance, make the alliance lose vitality, and even go to collapse. Moreover, because of the differences in corporate culture and operation mode among the members of the alliance, the stability of the alliance will be destroyed to a certain extent. During the downturn of the market, the objective environment requires shipping companies to keep warm, but once the market goes out of winter, the pressure of cohesion without external force will weaken and disappear. Both subjective and objective factors reduce the possibility of monopoly of shipping alliance from a certain level.

On the whole, the current container shipping market is still in a low-speed growth state, and the capacity is far greater than the demand. Only by minimizing the cost, can we survive in the depressed market. Shipping alliance is the most preferable form of enterprise organization under the current market conditions, which can reduce operation cost, integrate service network and improve operation efficiency through large ship scale effect. Even though the possibility of monopoly formation is very small, there is still a need to strengthen ex post supervision. The anti-monopoly law should be constantly improved to deal with the new problems arising from the changes of the shipping alliance with the market. If the operation of the alliance touches on any anti-monopoly laws and regulations, it should implement effective legal norms to guide the development direction of the shipping alliance correctly; if it still has no effect, it should also have certain binding force to order the termination of the shipping alliance.

2.2.2 The current situation

On April 1, 2017, OCEAN ALLIANCE, which was formed by CMA Group (including US President's steamship), COSCO Shipping, Evergreen Shipping and Oriental Overseas Liner Company, and THE ALLIANCE, which was formed by Hebrot, Yangming Shipping, Merchant Shipping Mitsui, Japanese Postal Ship and Kawasaki Steamship, officially began operation. The 2M alliance formed by Maersk Shipping and Mediterranean Shipping, which represents formally entered the era of three major alliances.

In recent years, the three major alliance patterns have brought many new changes to the transport industry. The further improvement of market concentration or the mutual integration within the alliance has a profound impact on the development of the industry. At the same time, the industry also has many doubts about the internal and external trends of the future alliance. As of April 1, 2018, of the 11 member

enterprises in the three major alliances, except for the Mediterranean shipping and the three Japanese enterprises, the other seven enterprises all announced their performance in 2017, turning losses into profits (Jiang, 2018).

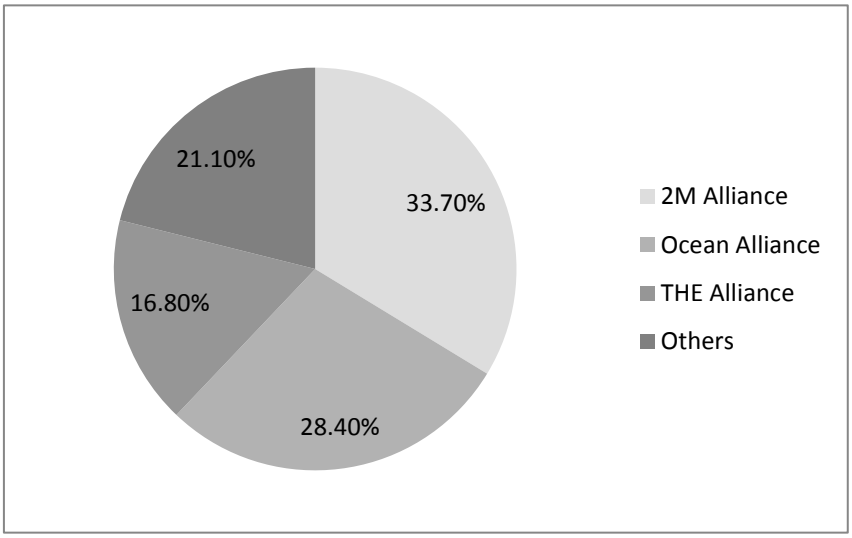
According to the annual report of Maersk Group, in 2017, the shipping business sector of Maersk Group realized operating income of 24.299 billion US dollars, accounting for 78.52% of the group's total annual revenue. Real profits (including Hamburg and South America) were $511 million and net profits were $541 million. In 2016, Maersk Shipping realized operating income of 20.715 billion US dollars, with real profit loss of 384 million US dollars and net profit loss of 376 million US dollars.

Four liner companies of Ocean Alliance also turned losses in 2017. CMA Group achieved business revenue of $21.116 billion in 2017, up 32.1% from $15.977 billion in 2016. Net profits were $701 million, while losses were $452 million in 2016. COSCO's performance shows that it realized operating income of 90.464 billion RMB in 2017 (about 14.388 billion US dollars), an increase of 27.13% over 2016. Net profit in 2017 was 2.662 billion yuan ($423 million), while loss in 2016 was $1.575 billion. Among them, the revenue of container shipping and related business in 2017 was 86.751 billion yuan ($13.797 billion). Evergreen Shipping (长荣海运) realized revenue of NT$150.582 billion (about US$5.165 billion) in 2017, up 21% from US$4.269 billion in 2016. The net profit of the owner of the parent company was 240 million US dollars, and the net loss was 227 million US dollars in the same period in 2016. OOCL earned $6.108 billion in 2017, up 15.3% from $5.298 billion in 2016. The operating profit was 232 million US dollars and the loss was 138 million US dollars in 2016. Shareholders should account for a profit of $138 million and a loss of $219 million in 2016.

In the THE Alliance, Hebrot and Yangming Shipping have released major operating data for 2017. Hebrot achieved revenue of about 12.288 billion US dollars in 2017, up nearly 30% from 9.529 billion US dollars last year. The net profit was about US$0.4 billion. In 2016, the figure was a loss of US$114 million, turning the loss into profit over the same period of last year. Yangming Shipping realized revenue of $4.499 billion in 2017, up about 14% from $3.961 billion in 2016. Net profit was $111 million in 2017 and a loss of about $512 million in 2016. In addition to the significant improvement in business income and net profit over 2016, the above-mentioned enterprises have also performed well in terms of freight volume, and some of them have set historical records. In the 2M alliance, Maersk Shipping achieved 10.731 million in 2017 and 10.415 million in 2016. Among the Marine Alliance, CMA Group achieved 18.95 million TEUs in 2017, an increase of 21.1% over 15.64 million TEUs in 2016, which is its best achievement in history. COSCO achieved 20.913.7 million TEU by sea transport, an increase of 4.011 million TEU over the same period last year, an increase of 23.73%. Eastern Overseas Freight

Volume 6.299 million TEU, compared with 6.081 million TEU in 2016. In the THE alliance, Hebrot achieved 9.803 million TEUs in freight volume, up 29% from 7.599 million TEUs in the same period in 2016. The freight volume of Yangming Shipping in 2017 increased by 9% compared with 2016, reaching 4.722 million TEU. As for the reasons for good performance, companies in the annual report said that the improvement of the global economic environment in 2017 has become the greatest positive, and the healthy development of the gross domestic product and trade volume of the major economies has brought a turning point for the shipping market. In addition, some companies believe that their alliances also bring benefits. CMA Group said in its annual report that since its launch on April 1, 2017, the Ocean Alliance has covered 40 routes of East-West trade, making CMA Group and APL excel in the trans-Pacific market. Oriental Overseas also said in its annual report that the operation of the alliance is one of the basic strategies that Oriental Overseas has pursued for many years. Maritime Alliance has brought more perfect transportation network and scale benefits to it, and has become an indispensable part of the company's growth strategy. It is not difficult to see that, in addition to the external environment for the better factors, members of the Marine Alliance have a stronger sense of identity with the alliance, alliance cooperation to improve the performance of enterprises, but also more obvious.

In addition to the performance, the market share, capacity changes and route adjustment of the three major alliances have also become the focus of attention in the industry in the past year.



Picture 1 Contrast of Transport Capacity Shares of Three Major Alliances in 2018

Data sources: Alphaliner

In April 2018, the three major leagues also ushered in the second year of confrontation. With the continuation of industry mergers and integration, and the influence of market orientation, the adjustment within the three alliances and the trend of alliance as a form of cooperation are more concerned by the industry.

In July 2017, COSCO Maritime Control, a listed platform of COSCO Shipping Group, announced that the joint Shanghai Group would issue a pre-requisite voluntary comprehensive cash acquisition offer to all shareholders of OOCL at HK$78.67 per share. Assuming that the offer is fully accepted and the transaction is completed, COSCO will hold 90.1% of OOCL and 9.9% of Shanghai Group. At present, the acquisition has passed the review of the anti-monopoly agencies of the United States and the European Union, and is awaiting the approval of relevant Chinese agencies.

Almost at the same time, the THE Alliance has also undergone internal integration. In July 2017, Ocean Network Express (ONE Company) was formally established. The company integrates the container transport business of three Japanese enterprises, namely, Japan Postal Ship, Merchant Ship Mitsui and Kawasaki Steam Ship. It will be officially operated on April 1, 2018, and the members of THE Alliance will be changed from five to three. It can be seen that both the Ocean Alliance and the THE Alliance have made internal adjustments under the background of the overall downturn of the industry, which to a certain extent strengthens the collaborative relationship within the alliance and improves the communication efficiency within the alliance. This phenomenon may also herald a new trend in alliance cooperation.

2.2.3 The future

Shipping industry is a high-risk, high-input and low-return industry. Its main attraction lies in that, according to the current forecast of the development of science and technology, there is no other mode of transportation to replace the shipping industry in the foreseeable future (Xu, 2017). According to the analysis of the international container liner shipping market cycle in the past 20 years, the peak time of the market is much shorter than the trough time. Overseas container liner operators with high efficiency tend to make some profits in the peak year of the market, while in the valley year of the market, they are basically flat or suffer some losses.

The alliance among container liner shipping enterprises is the inevitable result of getting rid of the predicament and achieving economies of scale. The development of liner shipping industry in the past ten years shows that the liner companies basically follow the road from competition to monopoly when they explore the way of survival and development. Long-term overcapacity and low freight rates make liner companies realize that in today’s container liner shipping industry, almost no operator can

completely rely on their own work to meet the shipper's requirements in terms of schedule, coverage and so on. Shipping alliance is a very important and effective means to improve the competitiveness and ultimately improve the operation effect under the condition of maintaining the fixed investment basically unchanged. The alliance members can make regional shipping enterprises such as Malaysia International Shipping and United Arab Emirates Shipping become global carriers in a sense by means of cooperative forms such as space rental, joint ship dispatch and wharf sharing. Practice also proves that shipping alliance has achieved certain economic advantages in route setting, resource optimization and cost saving.

The characteristics of high risk, high investment and low return in shipping industry determine that shipping enterprises should avoid making excessive fixed investment as far as possible after reaching a certain scale of operation, that is, operating leverage should not be too large. The vast majority of international container liner operators do not have the ability to play an extraordinary role in economies of scale by acquiring land and sea and greatly expanding fixed investment. Moreover, whether Maersk's practice is really effective remains to be tested. Therefore, generally speaking, in order to ensure the effective operation of international container liner transport operators in the present and future, it is necessary to avoid excessive operating leverage and control the fixed investment in ships, container equipment and other aspects (Wang, 2007). Alliance is the most important means to reflect the operation law of container liner transport. After nearly ten years of practice, now, in the international container liner transport industry has basically formed a consensus that the alliance is the only way to survive and develop in the international container liner transport business environment, whether now or in the future.

Therefore, based on the previous analysis and research, this paper argues that with the continuous development of international container liner transport, the scale of shipping alliance will be further expanded, the cooperation among liner companies within the alliance will be closer, and the members of the alliance will tend to be stable; at the same time, the alliance among container liner transport enterprises has promoted the market share of international container liner transport to gradually concentrate on several major liners. In the hands of shipping enterprises, the whole international container liner shipping industry is in a relatively stable state.

2.3 Advantages of Shipping Alliance

2.3.1 Dynamization.

The development of network makes it more convenient for shipping enterprises to organize alliances. In order to respond to a certain demand, leading shipping enterprises can quickly find partners through the network and effectively organize to meet this need. Once this goal is achieved, the next round of cooperation will be disbanded or initiated.

2.3.2 Stabilization.

In the future, shipping enterprises may establish alliances based on information resources. Because the information resource is non-expendable and has the nature of public goods in some cases, it is convenient for shipping enterprises to distribute and manage fairly and reasonably, reduce the conflicts between organizations caused by resource sharing and benefit distribution, and help to maintain long-term and stable relations between partners.

2.3.3 Reduction of transaction costs.

In the traditional economic form, shipping enterprises either spend a lot of time and energy to cultivate trust through various ways, or both sides invest in specific assets to limit the opportunistic behavior of partners. Under the condition of network economy, through network information technology, shipping enterprises can not only conduct extensive and in-depth contacts and exchanges through the network, thus increasing their understanding of each other, but also realize real-time monitoring of their strategic behavior through sharing part of the partner's database, which greatly reduces the transaction costs of both sides.

2.3.4 The marketization of reputation.

In the network economy environment, the credit status and cooperation experience of shipping enterprises can be easily found through the Internet, which makes the reputation of shipping enterprises become open market information. The reputation will be the new intangible key assets of shipping enterprises. Therefore, the opportunistic behavior of shipping enterprises will be strongly restrained, which will be beneficial to the management and development of the strategic alliance.

2.3.5 Networking.

Because of the great convenience of information exchange and communication brought about by the development of network, the cooperation between shipping enterprises becomes more realistic and feasible. Based on the network, all parties in the alliance can share information through the alliance network according to their respective capabilities and the location of the network, achieve complementary capabilities, provide strategic support and promote common development.

2.3.6 Virtualization.

In the past, substantive alliances were mainly constrained by legal contracts such as equity and cooperation agreements. The development of network promotes the development of entity alliance toward virtual alliance, and all parties form

interdependent alliance relationship which does not involve ownership and has no legal constraints. All parties can coordinate the alliance by shaping industry regulations, controlling service standards and mastering service results inspection standards.

3. The Effect of Latest Shipping Alliance on Shipping Industry

In the chapter, the author will make an analysis on the effect of Latest Shipping Alliance on Shipping Industry, including the positive effect and negative effects.

3.1 Positive Effect

3.1.1 Reducing business risks and enhancing competitiveness

Shipping industry is a high-investment, high-risk industry, and has significant internationalization characteristics (Liu, 2010). Under the background of large-scale ships and the downturn of shipping market, as an individual, shipping companies are facing greater operational risks, and it is difficult for them to gain competitive advantage in all routes of the market. Through the establishment of shipping alliance, shipping companies can timely understand the market changes, grasp the dynamics of competitors, seize market opportunities, clear their own positioning, and reduce cost input and improve the utilization rate of space by means of joint dispatch or mutual rental of space, so as to reduce operational risks and enhance competitiveness.

It main represents the following aspects:

(1) Increasing voyage, improving the quality of transport scope, shortening transportation time and reducing costs; expanding route coverage and establishing a global service network can provide customers with “one-stop service” to improve service quality, reduce costs and improve operational efficiency; improving the utilization of ships and equipment, reducing fixed costs and variable costs. Make full use of idle ship facilities, increase stowage rate, improve cargo handling capacity; increase market share, increase the transport of high-priced goods; reduce inland container stations, save port yard usage fees. Member companies share port yards, inland container terminals and transport equipment, and improve coordination with feeder transport departments and port authorities. Through alliance transportation, member companies can avoid duplication of port connections, and through the allocation of routes, reduce transport time, increase transport flights, expand service scope, and develop global transportation; coordinate and unify MIS and EDI systems; increase market share, increase the possibility of opening up new markets; improve logistics management level, and use equipment, warehouses, container terminals and liaison jointly, alliance transportation to achieve economies of scale.

(2) Increase the frequency of sailing. By Coalition on a certain route, shipowners can double the frequency of shipment by providing only the first half of the coalition's capacity. This greatly improves the competitiveness of carriers. At the same time, for the majority of cargo owners, there can be more shipping time to meet their needs. Expand the scope of service. Liner companies can expand their service scope and develop new markets through shipping alliances. Alliance members make use of each other's long-established market network, cheap labor and various resources to gain advantages on new routes. Reallocation of excess resources, there are many reasons for the carrier facing the problem of excess capacity. For example, off-season shipping, carrier's strategic transfer. Or in a downturn, carriers want to reduce capacity and risk. Shipping alliances allow members to exchange capacity and redistribute excess resources on different target routes. Reduce trade barriers. Avoidance of shipping barriers is particularly prominent before the establishment of shipping alliance, because each liner company is in the difference of its own interests protection and market needs. After the establishment of the alliance, it can help carriers share resources and capacity and reduce their willingness to buy new ships. Reduce freight fluctuations. Shipping alliances are more flexible in realizing their freight rates, so as to reduce competition and maintain a relatively flat freight rate. "Cooperative development" between alliances ensures "peace in the world". Compared with the strict setting of common freight rates by liner associations, shipping alliances are more flexible in price policy, and they reduce competition through various forms of alliances. When members of an alliance provide undifferentiated services, the difference in freight rates is usually reduced.

3.1.2 Realizing economies of scale and reducing operating costs

Scale economy refers to an economic model in which unit cost (i.e. long-term average cost) shows a downward trend with the expansion of production capacity (Lian, 2017). Only when the production capacity of shipping companies reaches the level of economies of scale can it be possible to obtain the highest profit at the lowest cost. Shipping alliance is not only conducive to the realization of economies of scale in technology, but also conducive to the realization of economies of scale in the market. Technologically, economies of scale refer to the way that shipping alliances can fully enjoy the low unit rent and fixed cost of ships brought about by the large-scale ship by means of joint dispatch of ships and mutual rent of space, so as to reduce operating costs. Scale economy in the market means that shipping alliances enable Member shipping companies to have stronger market power in the target market. On the one hand, shipping alliances use their joint advantages to negotiate

with service providers such as terminal loading and unloading companies, marine fuel companies, etc., to obtain more favorable conditions than member shipping companies to negotiate separately, thereby reducing cost expenditure; on the other hand, shipping alliances can help member ship companies to expand market space and route coverage, so that the existing resources of member ship companies can play a more efficient role in a larger market.

In liner transportation, shipowners are prone to generate economies of scale from mutual cooperation, thus gaining benefits. Shipowners can increase the marginal cost utilization rate of ships with larger tonnage through mutual rental of space, and can also unite capital to purchase container ships with larger tonnage, so as to reduce the unit purchase cost of ships (Xu, 2016). Reduce capital costs. Liner shipping is a capital-intensive industry, and the benefits of resource sharing are self-evident. On the one hand, through alliance, carriers can reduce the number of ships and reduce the capital risk caused by the purchase of ships; on the other hand, they can sign dock yard sharing agreements with other carriers to effectively recover part of the cost and avoid the loss of idle resources in the off-season of shipping.

3.1.3 Realizing resource sharing and the expansion of business scope

Shipping alliance is beneficial for member shipping companies to realize resource sharing and complementary advantages in such fields as ship agency, ship repair, dock handling, logistics services, etc., thus creating a “composite effect” and expanding their business scope by jointly developing customers and coordinating resource allocation (Ou, 2018). For example, the member shipping companies of shipping alliance can invest in the construction and operation of wharfs together, which not only facilitates the vessel registration of member shipping companies, shortens the vessel’s time in port, but also increases the operating income, disperses and reduces the market, investment and technological risks faced by the shipping companies operating the wharfs separately.

3.1.4 Improving the utilization rate of space and avoiding excessive capacity

With the continuous upgrading of container ships, large container ships are becoming the mainstream of the market. While reducing the cost of single container operation and improving the fleet structure, they also bring a series of problems, such as low utilization of space, which to some extent offset the economies of scale brought by large-scale ships. Through the establishment of shipping alliance, shipping

companies can share multiple sources of cargo, thus effectively improving the utilization rate of space. In addition, in recent years, the supply-demand relationship in the international container shipping market is extremely unbalanced, and the situation of excess capacity is difficult to ease in the short term, and will become more prominent with the successive delivery of large container ships. The shipping alliance makes its member shipping companies enter new routes and markets by using other member shipping companies in the alliance without additional capacity, thus restraining the expansion of shipping companies' capacity.

In addition to shipping alliances, there are also some organizations among carriers such as liner associations and freight stabilization organizations in the international container liner shipping industry. The liner association has a long history than the alliance. It was born in the early 20th century. At that time, in order to avoid fierce competition, some operators engaged in liner transportation on the same route reached agreements on freight rates and capacity investment, hoping to achieve the purpose of monopolizing liner transportation operation on one route and obtaining excessive monopoly profits. The most stringent liner associations may regulate the distribution of income among members of the association; in order to prevent non-members from entering the routes covered by the association, the association may use "battle boats" to compete with non-union operators by means of ultra-low freight rates until the non-union operators withdraw, and the costs of "battle boats" shall be shared among the members of the association; the union may also put in charges for violation of the union's freight rates and capacity. Members of the relevant regulations and decisions shall take compulsory penalties until they are expelled from the association (Huang, 2015). In modern times, due to the implementation of anti-monopoly policy orientation in almost all countries, the traditional liner associations with compulsory binding force have been banned. The various liner associations, freight stabilization organizations and other similar carriers existing in the international liner transport industry are all organizations of discussion nature. Their decisions are not compulsory binding on members, and the members of the organization can act according to themselves. The actual situation determines whether or not it is actually implemented; non-organizational members often refer to the implementation according to their own needs.

During the more than 100 years since the advent of the liner association, the cartel monopoly policy adopted by the liner association has been the focus of debate between the international shipping industry and the legal community. The voice of restricting and abolishing the anti-monopoly immunity of the shipping cartel organization has been growing. Especially in December 2012, after several liner associations and freight stabilization organizations jointly demanded the so-called terminal operation fee from shippers, the voice was even louder. So far in April 2013,

the Transport Group of the United Nations Economic Cooperation Organization (OECO), in a draft report, recommended that governments cancel the antitrust exemptions enjoyed by shipping unions and discussion agreement organizations. At present, countries and regions generally adopt an anti-monopoly policy on the coordination of marine freight rates among liner carriers, forbidding liner associations or freight stabilization organizations to force their members to implement their freight policies, forbidding members of liner associations or freight organizations to discuss freight rates with carriers of non-liner associations or freight organizations, and forbidding non-liner associations or freight organizations to discuss freight rates. Members' carriers discuss freight rates with each other.

3.1.5 Improving customer service quality and developing modern logistics

The trend of globalization in international container shipping market has changed its competitive connotation from traditional price competition to service competition. Shipping alliance helps member shipping companies to increase shipment density in order to expand port coverage; cooperate in the development of network systems to provide value-added services and personalized services; improve the multimodal transport network to improve the efficiency of multimodal transport, so as to better meet customer requirements for transport quality, transport time and transport convenience.

Competition also exists among alliance partners. Firstly, because all the parties in the alliance can only cooperate in the allocation of resources, i.e. input costs, but not in the collusion of freight rates and revenue, there are many competitions besides cooperation among the parties in the same alliance. The most common and fierce one is the competition in freight rates. In addition, alliances often take routes as units, and several parties are alliance partners on one route, but on other routes they may belong to different alliances or non-alliance independent operators, so they will inevitably compete more widely on other routes. In order to occupy a place in the market competition, the major shipping alliances must improve customer service quality and develop modern logistics, so as to attract more customers and improve business performance.

It can be concluded that the formation of shipping alliance is based on the movement of factors of production of shipping market capacity. On the surface, it is the business cooperation of liner companies. In fact, the redistribution and allocation of resource elements are essentially the game and competition of economic interests. Its motive force is the re-integration of factors such as production capacity of shipping market, which has a great impact on shipping market, including ports.

3.2 Negative Effect

3.2.1 Increasing Operating Risk of Small and Medium Shipping Companies

As the prospects for global economic recovery remain uncertain, container shipping operators will face difficulties in operating smoothly in the coming quarters. China Credit Rating Corporation (2012) said that the container shipping industry's long-standing excess capacity supply situation, coupled with the major maritime unions did not improve market discipline, may lengthen the recession period of the container shipping industry.

It was expected that the rapid delivery of large vessels ordered under the active expansion plan by container shipping operators would lead to a continuing imbalance between supply and demand in the market nowadays. This imbalance in supply and demand may put further pressure on freight prices and the profitability of container shipping operators in the next 1 to 2 years, as the current economic growth of the mainland of China is slowing down and global trade as a whole is stagnant.

In the long run, disciplines in pricing and operation among major shipping unions are core to the recovery and maintenance of the profitability of shipping operators. However, although the global container shipping industry has previously established three major maritime alliances, including 2M, Ocean Three and THE alliance, there is little disciplined performance in maintaining pricing or capacity.

The current major shuffle of the Maritime Alliance can significantly improve the ecology of the container shipping market in the next 1 to 2 years. After the reorganization of the cards, it may be possible to slightly improve the pricing discipline of the shipping industry, but China Credit Review does not rule out the possibility that once the operating prospects improve, the shipping industry will further actively expand its capacity (Shu, 1995). The result of the reorganization of the shipping alliance may be a stronger alliance composed of some large operators and a weaker alliance composed of some medium-sized operators. It is anticipated that the members of the weaker alliance may face greater competition pressure because of their small scale of operation and the low coverage of the route network. In addition, major container carriers may refuse to join their alliances with more vulnerable operators. In view of the dominant position of shipping alliances in the market of major East-West trade routes, such long-term operators excluded from the alliance will be greatly reduced in competitiveness and face higher operational risks. Even some operators who have been losing money and whose liquidity tends to deteriorate may be forced to withdraw completely from the market in this downturn.

3.2.2 The emergence of monopoly in shipping market

In addition to the high capital costs arising from purchasing ships or signing long-term lease contracts, shipping companies also face daily operating costs (such as crew fees, insurance fees, management fees, profit fees, materials fees, maintenance fees) and voyage costs (such as fuel, handling fees, port and river freight), among which fixed costs account for more than 80% of the total cost. Therefore, the marginal cost per unit volume (i.e. output) of shipping companies is far less than the average cost, and even in the case of large volume, the average cost can be reduced. For this reason, shipping companies seek to maximize the ship loading rate within a reasonable range, so as to gradually reduce the average cost and achieve economies of scale. In this context, more and more shipping companies are merging with each other in pursuit of economies of scale, ordering larger ships, which leads to an increase in the concentration of container transport market.

Herfindahl-Hirschman Index (HHI) is one of the methods used to calculate market concentration. It mainly measures the market share of the whole industry by the sum of the market share of all companies in the industry market. Large and small companies coexist in the container transport market, and the market share of the world's top 20 shipping companies is 86.8% in 2018. Therefore, this paper does not discuss the market share of other shipping companies (Jones, 2014). The HHI is 661.72 by substituting the capacity of the 20 largest shipping companies in the world calculated by Alphaliner Shipping Consulting Company into the above formula, so the market concentration calculated by this formula is not high. In fact, shipping alliances are prevalent in the industry. Although members of the alliance still maintain financial independence, they participate in market competition with the total capacity invested by the members of the alliance. Therefore, in the analysis of container transport market, the companies that have reached shipping alliances must be considered as a whole.

From the perspective of shipping alliance, HHI is 661.72 according to the market share of the four major shipping alliances in the current market. Shipping alliances have sharply increased market concentration and deepened market monopoly. The HHI of the rejected P3 network alliance reached 61.54, with a market share of 38.8% and a regulatory alert line of more than 30.0% (Chen, 2009). It can be seen that the development of shipping alliance will inevitably increase the concentration of container transport market, but under the restriction of relevant policies, the monopoly degree of the market will remain within acceptable range.

The influence of shipping alliance development on container transport market is discussed from the perspective of three main routes, namely, Asia-Europe routes,

trans-Pacific routes and trans-Atlantic routes. Shipping alliance enables many independent shipping companies to strengthen cooperation by sharing ships, sharing cabins, mutual rental cabins, and so on, so as to jointly configure the shipping capacity, so as to expand the coverage of the alliance members and establish a global service network. In this context, the distribution of shipping capacity of main routes has become the main competition point between shipping companies and alliances, and the market share of each shipping alliance in the three main routes is the main embodiment of the above competition.

In the stage of preparing for the P3 network alliance, the market share of its three member shipping companies in Asia-Europe routes reached 53%, which shows that the P3 network alliance occupies an absolute advantage in this route. Under the situation of forming four major shipping alliances after the rejection of the P3 network alliance, each alliance has equal power in the Asia-Europe route, which makes the Asia-Europe route become the main battlefield of competition: 2M alliance will put the ordered 3E container ships into the Asia-Europe route; O3 alliance will gradually replace the ships it put on the Asia-Europe route with the ship type. In 2015, the market share of the four major shipping alliances in Asia-Europe routes reached 97.56%, leaving very little room for shipping companies outside the alliance. From the perspective of route, shipping alliance also presents oligopoly market structure.

Based on the impact of the above shipping alliances on the shipping industry, Chinese enterprises can evade the positive impact of shipping alliances on Chinese enterprises from the above aspects.

According to Asia Shipping alliance reports, the four prerequisites for the formation of a global shipping alliance includes: an efficient hub port network; the government's "open sky" policy; access to antitrust immunity; and joint ventures between airlines. At present, the countries that actively promote and advocate the opening of the sky are powerful shipping powers, countries with comparable shipping strength and close political and economic proximity, or countries with small domestic shipping market but certain strength of their air transport enterprises and tourism as economic pillars (Agarwal, 2010). China is a big shipping country, but at present, China's air transport enterprises are generally small in scale and weak in strength. They are at a disadvantage in international competition. For a long time, they have adopted protectionism. Only large companies have signed code-sharing agreements with foreign airlines, such as China Southern Airlines and China Eastern Airlines, and the conditions for forming alliances with foreign airlines are still immature. Therefore China's air transport industry must obtain market access tickets to participate in the international competition in order to enter the world.

4. Effects of Shipping Alliance on Ports and the Solutions

The chapter will make an analysis on the effect of Shipping Alliance on Ports, including the positive effect and negative effect, according to the negative effect, the author proposed some solutions to avoid the risks of Shipping Alliance on ports.

4.1 Effects of Shipping Alliance on Ports

Shipping competition pattern changes from company competition to alliance competition, which will also bring a series of chain reactions. Oligopoly competition among the three major alliances in the world shipping market will have a profound impact on ports. The most intuitive response is that port and terminal operators will face a new round of shuffling. Especially for non-core hub ports or regional hub ports will have a strong impact.

4.1.1 Positive Effect

In the container shipping market, due to the excellent economic performance of super-large container ships and the restructuring of global container shipping structure, and the growing trend of global international container transport, a large number of super-large container ships have been put into operation, which has a certain impact on the operation and development of Shanghai Port, but at the same time, it also brings opportunities to the development of Shanghai Port. In order to cope with this change in the international shipping market, Shanghai Port must adopt corresponding strategies. With the development of the Yangtze River Delta economic circle and the completion of the first and second phases of Yangshan Deepwater Port, the status of Shanghai Port as an international container hub has been further consolidated. Shanghai Port should seize new opportunities for development and lay a more solid foundation for the early construction of Shanghai El as an international shipping center.

(1) Strengthening the status of container hub port

The shipping alliance can improve the quality of transport scope, shortening transportation time and reducing costs; expanding route coverage and establishing a global service network, which is beneficial for the strengthen of the status of container hub port (Xu, 2017). With the development of the Yangtze River Delta economic circle and the completion of the first and second phases of the Dayangshan and Dayangshan projects, the volume of foreign trade containers in Shanghai Port has

increased dramatically, consolidating the status of the international container hub port, and jointly forming the main container hub port group in eastern China with Ningbo Port and Jiangsu Ports, giving full play to the advantages of the vast hinterland of Shanghai Port economy and sufficient container sources. At the same time, Yangshan Deepwater Port Area will generate radiation force around the Yangtze River Delta and its adjacent ports. It will form a water transportation system that promotes each other, has a reasonable structure and develops jointly, thus forming a reasonable division of labor pattern for the ports in the Yangtze River Delta. The construction of Yangshan Deepwater Port Area can promote a new leap in the economy of the Yangtze River Delta and the Yangtze River Basin. Experts believe that the stronger the function of the hub port, the greater the demand for feeding. The strong agglomeration function of Yangshan Deepwater Port Area will effectively optimize the port structure of the Yangtze River Delta, help to form a reasonable layout of trunk port, branch port and feeding port, effectively promote the common prosperity of container ports in the Yangtze River Delta, and promote a new round of industrial gradient transfer in the Yangtze River Basin. To optimize the economic structure and industrial layout of the Yangtze River Basin, it can be predicted that the construction of Yangshan Deepwater Port Area will lead to the corresponding development of port management, freight forwarding, commercial trade, financial insurance and service trade, and the multiplier effect of its investment will continue to emerge. The completion and commissioning of the first and second phases of Yangshan Deepwater Port Area marks a new stage in the construction of Shanghai International Shipping Center, which will have a positive impact on the construction of Shanghai as an international economic, financial, trade and shipping center, and will promote a new leap in the economy of the Yangtze River Delta and even the whole Yangtze River Basin, and will further promote the rise of the central economy.

(3) Promoting the combination of port and shipping companies

The Shipping alliance is beneficial for the member shipping companies to realize resource sharing and complementary advantages in such fields as ship agency, ship repair, dock handling, logistics services, etc., thus creating a “composite effect” and expanding their business scope by jointly developing customers and coordinating resource allocation, so it can promote the combination of port and shipping companies

In order to adapt to the trend of ship enlargement, port and shipping have to invest heavily, which leads to a new phenomenon of port and shipping investment. More and more ports begin to choose shipping companies as joint venture partners of container terminals. Experts believe that the shipowner has more than 80,000 TEU containers, so it is profitable to participate in the investment of the wharf, so many major ports have special wharfs for shipping companies. For example, Hong Kong’s Oriental Overseas has four self-operated terminals, including two New York Ports,

one Vancouver Port and one Long Beach Port (Lv, 2015). China Sea Containers shipping company have successively established their own terminal companies in Dalian, Lianyungang, Shanghai, Zhanjiang and other ports.

4.1.2 Negative Effect

(1) Intense Competition between Shipping Union and Liner Company

The survival and development of the port must depend on the support of liner companies. The competition among the original ports is very fierce. Preferential measures have been introduced to attract liner companies.

Higher standards for port infrastructure construction: According to information provided by world port engineering experts, large container ships have certain requirements for clearance height of bridges and overhead wires, and special requirements for safe operation technology of import and export waterway facilities.

Higher requirements for the efficiency of wharf equipment: shipping enterprises using large IQ container ships, in order to give full play to the advantages of operating costs, shorten the time in port, and speed up ship turnover, require docking ports to carry out efficient ship handling operations. The efficiency of loading and unloading operation depends largely on the efficiency of the yard operation system and the operation efficiency of the quayside crane. Therefore, the port is required to strengthen the scientific traffic planning in the wharf, and the quayside container crane is required to improve its performance. New requirements are put forward for collecting and distributing: if a port becomes a port for large vessels, the number of containers it operates is large. Once collecting and distributing relies too much on road traffic, collecting and distributing vehicles will easily cause traffic congestion near the port area and affect the social traffic environment.

After the formation of the three major alliances, the strategy of large vessels will be implemented in all major international routes, such as Asia, America, Europe, Asia and Europe. Large vessels above 10,000 TEU will become the mainstream. At the same time, the layout of global routes will be readjusted to form a multi-level network of nodes and backbone networks of division of labor and cooperation (Qiu, 2014). A number of key nodes, namely hub ports, will be established globally. Other ports will be allocated through feeder transportation. Shipping, the whole port system will tend to centralize with the changes of the gathering market. Only one or two ports will become hub ports in each block, and the competition between adjacent ports will further intensify. Generally speaking, one or two hub ports will be designated in China, and Shanghai Port will be the first choice. Once Qingdao Port is not linked to

the main line, Qingdao Port may lose its status as a northern hub port and become a feeding port along with Tianjin Port and Dalian Port.

The status of Qingdao Port as the largest container hub port in North China is facing challenges. In the past, the main competitors of Qingdao Port were Tianjin Port and Dalian Port in the north. Because of its remote geographical location, the competition situation between Qingdao Port and Shanghai Port was not obvious. The major shipping companies generally regarded Qingdao Port as the hub port in the north of China, because Qingdao Port has a developed economy close to the main international waterway and outward from the hinterland compared with the other two ports in the north. At the same time, Qingdao Port enjoys world-renowned high efficiency and excellent management at the international level, which makes Qingdao Port win the first chance in the competition with the two northern ports. In 2013, Qingdao Port's container throughput reached 15.5 million TEU and ocean-going routes reached 126, while Dalian Port's container throughput just exceeded 10 million TEU, Tianjin Port's ocean-going trunk routes only had a small number.

(2)Constrains future development of Shipping Union and Liner Company

The development of container ports is like a siphon effect. A strong port will restrict the development of other adjacent ports. A large liner company can bring millions or even millions of boxes to a port. After the formation of the three major alliances, whether the alliance ships dock or not will directly affect the survival of a port. Once an alliance decides to withdraw from a port, it will be a fatal blow to the port. The major ports are forced to compromise to the alliance, sacrificing the interests of the port in exchange for the affiliation of liner companies, which greatly reduces the bargaining space of port operation rates, thus harming the long-term development potential and profitability of the port and restricting the development of the port.

If a port constructs a special wharf for a super-large container ship, it will invest at least 300 million US dollars per berth, some as much as billions of US dollars, plus a series of supporting projects such as special sites and corridors, the financing pressure will not be less than hundreds of millions of US dollars.

The development of ports can enable local authorities to obtain tax revenue, create employment opportunities and prosper the local economy. For this reason, in recent years, the countries have invested huge sums of money in port construction to meet the needs of shipping alliances from all over the world. Like ship construction, port and waterway infrastructure construction is a typical capital-intensive industry. It is an industry with a relatively long period of construction and investment return. If ports do not have transit advantages, hinterland advantages or geographical advantages, a little carelessness will result in huge investment.

(3) Reversal of dominance in Shipping Union and Liner Company

In the past, with the advantages of geographical and natural monopoly, the major domestic hub ports were generally in an advantageous position in the negotiations with liner companies and had a strong voice. However, the formation of the three major alliances led to the shift of status between the port and the shipping companies, the change of port from strong to weak, and the change of liner companies from weak to strong, which made the port face in the commercial negotiations of liner companies. As a whole, rather than as a single liner company, the port lost its voice in negotiations. For example, the P3 alliance will occupy more than 45% of the market share of Asia-Europe routes, which will put liner companies in a very strong position in contract negotiations with the wharf.

As a port with geographical advantages and hinterland or transit advantages, it strives to become a central port or major hub port, and strives to occupy a place in the trend of large-scale ships. As a result, many ports in smaller regions will compete for the same type of main port location, such as Hong Kong and Singapore for the world's leading container position and fierce competition; Busan, Kaohsiung and Shanghai ports are fighting for the Northeast Asian shipping center, which rank third, fourth and fifth among the top ten container ports in the world. Container ports rank first, but Shenzhen Port has been on the rise, ranking eighth. Obviously, Hong Kong is competing for cargo diversion from Shenzhen Port. Singapore is competing for Malaysia's Masheng Port. More interestingly, after shipping giant Maersk transferred its original transit port in Singapore to Malaysia's Danjong Palerpas Port (PTP), the latter ranked 108 left from 2000 (Jiang, 2018). Up to 26 in 2001.European ports such as Antwerp and Hamburg in Rotterdam are competing fiercely for the European Container Center Hub Port, as are Los Angeles and Long Beach on the West Coast of the United States.

4.2 Solutions of Shipping Alliance on Ports' Negative Effect

4.2.1 Improving the Port's Competitiveness

Building hard power, deepwater harbors will have prominent advantages in competition. Shipping alliances, especially the launching of 18,000 TEU ships, require that the berthing ports must be close to the main international waterway, and only a few ports can be berthed. Deeper and wider waterways, berths, more supporting collection and distribution conditions, more efficient handling and better port infrastructure will be the decisive factors.

Qingdao Port, as a natural deep-water harbor in northern China, has unique harbor-building conditions. The hardware of Qingdao Port can fully meet the above requirements. The water depth of Qingdao Port's quayside wharf reaches 18 meters, and the area of the Wharf under construction is even 20 meters. At present, it is equipped with 70 tons and 70 meters of container quayside cranes and other advanced handling equipment, SPARC wharf. Operating system, also has a smooth collection and distribution system, including fast rail and sea transport, developed highway transport, dense offshore feeder lines. Only in this way can we satisfy the requirement of loading and unloading tens of thousands of containers on a single voyage on the premise of ensuring the loading and unloading efficiency. To keep abreast of the trend of large-scale ships, we should dig deep waterways, vigorously transform, expand and build a number of new deepwater berths. There are as many ships as there are in the world and as many wharfs as there are in Qingdao Port. At present, we are speeding up the transformation from production operation management to capital operation management, promoting the deep integration of port and city, accelerating the development of Dong Jiakou's national strategic comprehensive port and bonded port area, promoting the development and construction of international cruise ships, deeply integrating the world economy and the world shipping market, and responding to the impact of the three major shipping alliances, striving to find a bright road (Hirata, 2017).

Enhancing soft power: Large-scale ships also mean huge cost per day. Economic speed navigation is an effective way to reduce the cost of ship operation. In order to achieve this, it is necessary to ensure the efficiency of ship handling in port and shorten the berthing time in port. Therefore, the port should actively coordinate the customs, frontier inspection, national inspection and other port management departments, create a good port service environment, use the policy of bonded port area to provide high-quality services for ships, such as bonded oil supply, water filling and maintenance, at the same time, the port should strengthen the internal management, improve the technical skills of dock workers, and constantly improve the efficiency of loading and unloading operations. For example, Qingdao Port has maintained the world's first ship operation efficiency for many years, enabling liner companies to reduce operating costs, improve the quasi-shift rate, and attract more cargo owners. As a result, the port has enhanced its attraction to liner companies and realized a virtuous circle, benefiting cargo owners, ports and liner companies.

4.2.2 Cultivating New Container Quantity Point

The port should change the idea of "port boss", change passive service to active door-to-door service, strengthen marketing awareness, set up marketing team, and vigorously strengthen marketing promotion. On the basis of continuing to promote customers of liner companies, it should especially strengthen direct marketing promotion to cargo owners, and form strategic alliances with major international traders, import and export manufacturers and freight forwarders. In order to design a logistics chain channel with convenient customs clearance, low cost and shortest time limit, Qingdao Port should be used as a designated trading port (such as the designated delivery place under the conditions of CIF and FOB international trade), a "waterless port" should be set up in the mainland, a transit feeder line should be opened at sea to attract goods from all parts of the country and vigorously promote the development of "decentralization and reorganization" business, especially to promote the entry of grain and iron ore. With the policy of bonded port area, we should vigorously develop export Landing Craft Logistic trade (LCL), especially to promote the development of international transit LCL trade and form a new growth point of container volume. Under the condition of unsaturated utilization of shipping space, container volume will become the biggest chip to attract liner companies to join in the development of shipping routes. Qingdao Port relies on the location and policy advantages of Qianwan Bonded Port Area to actively develop bonded business, implementing the strategy of customs clearance, developing and constructing inland waterless ports in Xi'an, Zhengzhou, Linyi and other areas. Activating and expanding the hinterland of the port, opening up the market, injecting new vitality into the port, changing the mode of operation and management, and forming a new mode of operation and management.

Ports should strive to optimize service networks and improve cargo handling capacity. The Chinese market is the main source of goods on the main east-west routes of container shipping in the world. Although COSCO Shipping are only the forth largest shipping companies in the world in terms of capacity, as local shipping companies close to the source of goods, they should make full use of their geographical advantages and vigorously develop domestic trade transportation to make up for the gap with foreign liner shipping giants in marketing and network operation. Under the current downturn of the shipping market as a whole, we should deepen cooperation with all relevant parties to ensure the supply of goods by optimizing route allocation, listening to the real needs of customers and expanding sales network; reduce operating costs and increase profits by rationalizing ship allocation and improving management system; and improve market competition

advantages by technological innovation and sharing information and resources on the network.

4.2.3 Deepening Port's Alliance Cooperation

Under the situation that the three major alliances basically monopolize the shipping market, the port cannot cope with its challenges alone, which can only make the development more difficult. Ports should work together to form a port alliance. The Port Alliance should deal with shipping alliances, unify business policies, enhance voice and maintain and develop market share.

Facing the situation that large transnational liner companies have set up shipping alliances in succession, not only domestic liner shipping enterprises should realize certain alliances and form a liner transport consortium, but also cooperate with liner enterprises in other countries and regions to form a "shipping alliance", especially those with Chinese background, such as Evergreen Shipping and Yangming Shipping in Taiwan.

China's large-scale shipping enterprises, COSCO began to explore cooperation in early 2012, mainly on the implementation of the European and American route price increase plan; then, in October 2012, COSCO signed the Agreement on Cooperation of Domestic Trade Routes and jointly launched ships to operate the Northeast/North China-Fujian/Shantou domestic feeder lines; in early 2014, COSCO signed the Agreement on Cooperation of Domestic Trade Routes. China Sea Group (中海集团) signed a strategic cooperation framework agreement once again to jointly respond to the pressure of the International Shipping Alliance. Other small and medium-sized shipping enterprises should actively embark on the road of win-win cooperation, so as to promote the long-term development of their own shipping industry.

In addition, our liner enterprises should fully explore the opportunities of the current "one belt and one road" construction, and deepen their existing cooperation with the countries along the line, give full play to their advantages on a number of routes, and give full play to the advantages of the specific ship types through the form of inter office rents, so as to achieve the goal of increasing full load rate and reducing operating costs. On this basis, the remaining capacity will be used to open up new routes and improve the scale of certain specific routes, thus optimizing the operation network to the greatest extent. At the same time, domestic liner enterprises should strengthen communication and cooperation with cargo owners, sign long-term transport agreements through price concessions and other forms, and form a "alliance of shipping enterprises": while Chinese cargo owners should also attach importance to

their transport rights and interests, export enterprises should sign in CIF terms as far as possible, and enterprises should sign in FOB terms as possible, through this form to the maximum extent for me. National liner enterprises provide opportunities for external transportation (Zeng, 2015).

Qingdao Port has business cooperation with 450 ports in more than 130 countries in the world. In the process of building the fourth generation of world strong ports, more attention should be paid to strengthening strategic cooperation with each port to infiltrate and strengthen the effect of capitalization operation through business cooperation. As far as Shandong Peninsula is concerned, Qingdao Port "one port and four districts" (a Qingdao Port, including Qingdao Old Port Area, Huangdao Oil Port Area, Qianwan Container Port Area and Dong Jiakou National Strategic Port Area) is the basic and axis to upgrade and develop in an all-round way, with Rizhao and Weihai as the wings and expand outward. The Port Alliance effect not only meets the needs of port development, but also strengthens the port city effect of each port location, which highlights the market effect of the alliance.

4.2.4 Joint venture with Shipping Lines

Each liner company has its own terminal investment in ports all over the world. Under the same conditions, the terminal affiliation often gives priority to its own terminal. In order to deepen strategic cooperation with liner companies, major ports can introduce large liner companies as strategic partners and shareholders in the reform of joint-stock system. They can also joint venture with liner companies in container yard loss, yard and agency, bundle interests, share risks and form a community of interests so as to attract liner companies to join in.

Qingdao Port currently has 153 container routes, including 124 international routes, more than 700 shipping to and from all over the world every month. The top 20 shipping companies in the world have opened routes here.

At present, China Merchants Bureau and other shipping enterprises have been introduced as shareholders after the joint stock system reform, and long-term strategic cooperation agreements have been reached (Lv, 2015). At the same time, China Cosco, Maersk, Evergreen, Haifeng and other shipping companies have been introduced in the joint venture cooperation of container terminals. Each shareholder's shipping company has brought a large number of container sources to Qingdao Port, stabilizing and expanding the shipping market share. Well, it has promoted the development of Qingdao Port.

According to the theory of industrial organization, it is impossible to achieve Pareto optimum state of resource allocation in a fully competitive market structure,

but at least it is a sub-optimal state. Both theory and practice have proved that excessive decentralization and concentration will lead to excessive competition and monopoly, which is not conducive to the best economic benefits. It needs to be emphasized that proper centralization is neither a return to the traditional centralization mode nor the larger the better. Moreover, it is necessary to realize the scale operation of transport enterprises by means of market forces, so that enterprises can operate in the state of optimal scale and output rate.

COSCO's current assets restructuring, scale operation, the implementation of regional companies and specialized companies unified, integrated operation and management of the development group shipping economy model, after a period of operation, has achieved certain results. However, because our state-owned assets are strictly subordinate to a specific subject, that is, to a specific region or department, it is impossible to flow among regions or departments. Such objective institutional constraints limit that this economic model in the long run can only be the product of asset flow and restructuring within the Ministry of Communications. Limited to the flow and reorganization of assets within departments and regions, it only combines one part of the advantages, that is, it takes advantage of the comparative advantages of regions or departments, and cannot produce cross-sectoral and cross-regional national advantage reorganization effect. This restructuring cannot solve the common problems of rising opportunity cost, rising labor cost and increasing enterprise burden. One of Maersk's business experiences is that "competitive advantage comes from serving inland distribution points quickly and effectively." (Zou, 2014) Shipping enterprise groups limited to departments cannot make full use of the advantages of the railway sector in the inland distribution points; shipping enterprise groups limited to industries can also not take advantage of the advantages of the highway network.

5. Conclusion and Prospect

5.1 Conclusion

This thesis mainly explores the impact of the latest shipping alliance on the shipping industry and ports, mainly from both positive and negative aspects, and puts forward its development countermeasures in view of its negative impact. Seeking the mode of alliance development is an important way for container shipping market to seek survival space. However, the alliance among shipping enterprises also promotes the shipping market to present a more obvious centralized monopoly situation, which makes the adjustment and shuffling of the container shipping market more intense. At present, facing the situation of low container shipping index and weak rebound, the major container shipping enterprises are in a difficult situation, which contains the hidden danger of bankruptcy. But they are only busy seeking alliance development response, but they cannot completely solve the current dilemma, and need to find other ways. Moreover, the market which is too centralized is more likely to be controlled by the government and opposed by other small and medium-sized shipping enterprises.

Although the establishment of shipping alliance is of great positive significance for shipping companies to cope with the current market dilemma, there are risks and instability in the operation of shipping alliance. For example, when choosing alliance partners, shipping companies should not only evaluate the matching degree of resources and market position of both sides, but also evaluate the compatibility of enterprises' strategies and cultures, so as to avoid the disintegration of alliance caused by the incompatibility of enterprises' strategies and cultures. At the stage of alliance establishment, they should accurately locate their strategic objectives, and promote the alliance member shipping companies to form complementary synergies to achieve resource integration. In the implementation stage of the alliance, we should establish an effective coordination mechanism to resolve the conflicts between member ship companies, and clarify the way of information sharing and income distribution, so as to achieve multi-win.

In order to cope with the development of the International Container Liner Transport Alliance, China's shipping enterprises should actively participate in the International Shipping Alliance from different levels to improve the competitiveness of China's shipping enterprises in the container liner transport industry. At the same time, China's container liner shipping enterprises should not only attach importance to

the alliance with foreign container shipping enterprises, but also pay attention to the alliance with other domestic shipping enterprises. In particular, small and medium-sized container shipping enterprises should speed up the alliance.

At present, the shipping alliance has undergone many changes, and some of the original policies and regulations have been relatively backward. Our government transportation authorities should pay more attention to the current situation and trend of the global shipping alliance, study the attitudes and relevant laws adopted by countries towards the alliance and other acts, and create a good environment for the behavior of container liner shipping enterprises alliance in China. At the same time, we should improve our relevant laws and regulations, strengthen the monitoring of the alliance behavior of container liner shipping enterprises in China, and eventually create a fair, orderly and healthy international shipping market environment.

5.2 Prospect

This paper mainly studies the impact of shipping alliance on shipping industry and port, and there are still some deficiencies in the depth of research. For example, due to the limitation of time and energy, this paper has certain one-sidedness in understanding the latest development of shipping alliance, which is not deep enough in analyzing the impact of shipping alliance on shipping industry. Therefore, the analysis of shipping alliance should be strengthened in the later research, and the risk and stability of shipping alliance need to be further studied. This paper mainly focuses on quantitative research. In the future, qualitative research methods can also be used to explore the impact of shipping alliances on the shipping industry.

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