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WORLD MARITIME UNIVERSITY

Shanghai, China



**GLOBALIZATION: DRIVE TO THE DECLINE OF
LINER CONFERENCES**

By

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China

A research paper submitted to the World Maritime University in partial Fulfilment of
the requirements for the award of the degree of

MASTER OF SCIENCE

(INTERNATIONAL TRANSPORT AND LOGISTICS)

2007

DECLARATION

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

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

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ABSTRACT

Title of Research Paper: **Globalization: Drive to the Decline of Liner Conferences**

Degree: **MSc**

Liner conference is a cooperation form for liner shipping services and it is now at a critical point of whether to continue to exist or fade out from its historical stage. There have been lots of discussions regarding the future development of liner conferences. This paper will focus on the main drive that contributes to the decline of liner conferences. It is recognized that globalization has the most significant influence on the decline of liner conferences and the analysis will be made from microeconomic view points.

This paper is to examine the changes that globalization brings to the liner shipping services based on demand and supply analysis, so as to prove that globalization changes the liner services from several aspects, such as the increase of shippers' bargaining power, the decrease of service efficiency and the shift of competition from shipping itself to the whole supply chains, etc. The paper also analyzes the influence of globalization on liner conferences with use of cooperative game theory analysis to identify other cooperation forms which may be more suitable for the present globalized shipping environment and may replace the liner conferences and finally lead to the decline of liner conferences. Furthermore, the governments' anti-trust policy is recognized as another force driven to the come-down of liner conferences under globalization economy.

Generally speaking, the liner conferences are considered as a "passive" cooperation form which simply controls the shipping market through regulating the freight rate

and gives response to the market changes accordingly. However, this is far from enough in the globalized economy. Actually the globalization requires a more proactive form of cooperation that is flexible to market changes and can make coordination rapidly. Therefore, the decline of liner conferences is an inevitable trend.

Key words: liner shipping, liner conferences, cooperative game theory, shipping alliances

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LIST OF ABBREVIATIONS

B.I.: British India

EC: European Commission

EU: European Union

FMC: Federal Maritime Commission

JIT: Just-in-time

NITL: National Industrial Transportation League

OECD: Organization for Economic Co-operation and Development

OSRA: Ocean Shipping Reform Act

P&O: Peninsular and Oriental Steam Navigation Co.

SCEA: Shipping Conferences Exemption Act

UNCTAD: United Nations Conference on Trade and Development

U.S.: United States

WSC: World Shipping Council

WTO: World Trade Organization

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Chapter 1

Introduction

There have already been many research papers regarding the prospects of liner conferences and the influential factors to their future development, so this paper would not spend much time on this topic any more. Here I would like to put the liner conferences under the whole microeconomic condition to make an analysis. It is widely recognized that globalization has a significant influence on the maritime transport, especially on the liner shipping services. I think there must be some direct relations between globalization and development of liner conferences. The purpose of this integrative paper is to recognize the decline trend of liner conferences and to analyze the influence of globalization on this decline trend from the microeconomic view points.

Since this paper focuses on the microeconomic factors that influence the liner conferences, the research methodology applied will be demand and supply analysis, price elasticity analysis and cooperative game theory analysis etc.

Therefore, Section 2 of this survey will at first make a review on the relevant literatures. Section 3 will give a brief introduction of basic concepts on globalization and liner conferences. Section 4 and Section 5 will respectively survey the globalization and its relevance with liner shipping industry and liner conferences, during which some economic tools will be used to make analysis. Section 6 will make a comparison between liner conferences and new cooperation form of shipping alliances and recognized the inevitable decline

trend of liner conferences. Section 7 will give a conclusion on this paper.

Chapter 2

Literature Review

2.1 Literature Review on Liner Conferences

It is obvious that the liner conferences are now at the critical point of their life circles since it came into being about 130 years before. There are many discussions of the disadvantages of liner conferences, such as a barrier to trade, inflating shipping prices, and a threat to the sustainability of international shipping services, etc. There are also some academic papers regarding the prospects of liner conferences, which believe that the liner conferences are to decline while shipping alliances will take the place instead. These papers list many advantages of shipping alliances in comparison with liner conferences, such as vessel, terminal and equipment sharing, joint-scheduling, slot chartering, etc. Some articles analyze several factors that contribute to the disappearing of liner conferences.

Ryoo D. K. and Thanopoulou H. A. (1999) focus on the new shipping consortia ---- liner alliances. 'Alliances are posited as the response of the supply side of liner shipping to important changes on the demand side; alliances have, thus, become predominant in the most important routes for container cargoes. However, Asia is a large continent and the entrance of Asian carriers into liner shipping has not been simultaneous. So the position, strategies and co-operation strategies of Asian companies have more differences than they share common features. It suggests that alliances are a distinct form of co-operation in liner shipping and the empirical evidence based on a survey in the region supports this hypothesis. The similarity of

attitudes of the major Asian container carriers and alliances is in this way revealing in terms of the range of motivations for participating in the alliance system in a globalized transport environment.'

Doi M, Ohta H and Itoh H (2000) analyze the economic impacts of industrial organizational struggles on the international liner shipping market. It discusses how the liner conferences and shipping alliances deal with market fluctuation. For example, if the carriers face inelastic demand, the price continues rising until demand becomes elastic enough for the equilibrium to be relevant. The conference is expected to play a coordination role so that the market does not become unsustainable in the adjustment process to reach equilibrium.

Bank, Richard K; Craig, Ashley W and Sheppard, Edward J (2005) trace the regulatory changes by US and European countries, which include Shipping Act of 1916, Shipping Act of 1984, Ocean Shipping Reform Act of 1998 as well as the recent laissez-faire approach by European nations. The article discusses the influence of these changes on the trans-Atlantic trades.

Trim Power (2005) believes that liner conferences play an important role in liner services and can not be replaced by other forms of consortia. It also explains that the liner conferences will not hinder the effective competition.

Wang Yan (2001) analyzes the comedown of the liner conference and the development of the shipping combination due to the change of shipping technologies and competition modes.

Cariou, P (2002) focuses on the operational synergy of strategic alliances in liner shipping.

Carlton, P.A. (2006) explains the global repositioning of assets of liner companies to help improve the slot utilization and reduce overall transportation

costs.

2.2 Literature Review on Globalization

There are also articles about the globalization and liner shipping.

Slack B.; Comtois C. and McCalla R. (2002) examine the developments in container shipping in light of the formation of strategic alliances by many of the leading companies. It focuses on three features: the transformation of services, the evolution of the fleet, and the adjustments made to the ports of call.

Kumar, S. and Hoffman, J. (2002) studies the relationship between globalization and maritime transports.

Fusillo, M. (2003) studies the globalization caused excess capacity and proposes that firms in concentrated industries may keep excess capacity to forestall entry or expansion by rivals. According to the author, 'excess capacity can deter entry by forming expectations on the part of potential entrants that dominant firms are capable of responding aggressively to threats. But in order to make a convincing case for excess capacity as a strategic entry deterrent, all potential sources of excess capacity must be considered simultaneously. These may include industry-specific structural factors, such as the divisibility of demand relative to supply, economies of scale or wide swings in demand. Ocean liner shipping exhibits structural factors that have led excess capacity for much of its history.'

2.3 Literature Review on Game Theory for Shipping

There are literatures regarding the application of game theory in liner shipping industries.

Song, D-W. and P.M. Panayides (2002) apply cooperative game theory to analyze co-operation among members of liner shipping strategic alliances. The

analysis involves: (i) presenting a detailed and systematic analysis of liner shipping strategic alliances: (ii) a concise overview of the development of game theory with specific focus on cooperative game theory, and (iii) deducing a conceptual framework through the application of cooperative game theory to liner shipping strategic alliances.

William Sjostrom (2004) surveys the competing models of shipping conferences, including monopolizing cartels and destructive competition models, and reviews a variety of their practices to see how much light they can shed on the profitability and efficiency of conferences. In discussing the destructive competition models, the author divided them into two stages: early models and theory of core.

In view of above literatures, some of them make an intensive analysis of globalization as well as its influence on shipping market and some of them recognize the decline trend of liner conferences due to many factors. However, none of them directly connect the decline of liner conferences with globalization. Therefore, I would like to hereinafter lay emphasis on this topic which is neglected by other authors.

Chapter 3

Brief Introduction of Globalization and Liner Conferences

3.1 Globalization: Nature of Globalization and its Impact on World Trade

Globalization is a popular term, which, however, is so complicated and arguable that it hasn't a widely recognized definition up till now. Generally speaking, globalization is not only an economic phenomenon, but also a phenomenon covering cross-border social, cultural and technological exchange. Scholte (2000, pp.15-17) gives summary to five broad definitions of globalization, namely globalization as internationalization ("simply another adjective to describe cross-border relations between countries"), globalization as liberalization ("a process of removing government-imposed restrictions on movements between countries in order to create an 'open', 'borderless' world economy"), globalization as universalization ("the process of spreading various objects and experiences to people at all corners of the earth"), globalization as modernization ("whereby the social structures of modernity (capitalism, rationalism, industrialism, bureaucratism, etc.) are spread the world over, normally destroying pre-existent cultures and local self-determination in the process"), and globalization as deterritorialization ("reconfiguration of geography, so that social space is no longer wholly mapped in terms of territorial places, territorial distances and territorial borders").

As to the exact time for the commencement of globalization, there is no mutually agreed starting point. It is only clear for us that there were three great expansions in

world trade happened respectively in the 16th century, in the late 19th century and after World War II. Now we are still in the process of globalization.

If there is a question “What does globalization bring to the world economy”, the answer will be trade booming. With the deepening of globalization, the whole world is fragmented according to the different comparative advantages (Richardo, 1817) of each country. The countries rich in natural resources can be raw material providers, countries with cheap labors can be the production bases, and countries with advanced technologies can be research & development centers, etc. All countries take advantages of their specializations to achieve economies of scale in production. Factor endorsement of each country in combination with economies of scale helps to reduce cost of production. Therefore globalization largely eliminates the trade barriers between countries and plays a role as a stimulus for the expansion of world trade volume. Figure 1 (on page 9) shows the world merchandise trade by major product group between 1950 and 2005. The volume index of manufactures rises from 100 in 1950 to about 8000 in 2005, which presents a tremendous increase in volume attributed to globalization. Furthermore, the change of world merchandise trade value can also indicate a significant trade booming with globalization. According to WTO (2005) statistics, the world merchandise exports value has been changed from 58 billion dollars in 1948, to 579 billion dollars in 1973 and to 10,159 billion dollars in 2005 while the world merchandise imports value has been changed from 66 billion dollars in 1948, to 589 billion dollars in 1973 and 10,511 billion dollars in 2005.

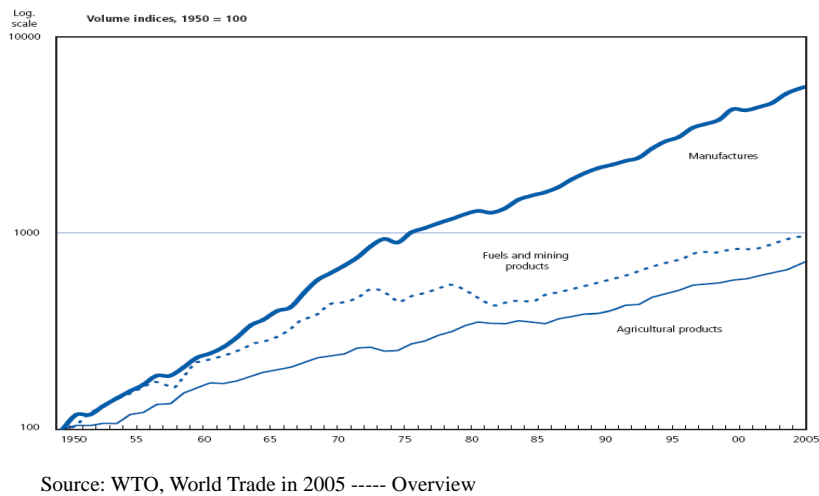


Figure 1 World Merchandise Trade by Major Product Group, 1950-2005

Globalization changes not only the trade volume, but also the trade structure worldwide. Before globalization, the trade structure was quite simple, because manufactured products were normally transported from industrialized countries to developing countries and raw materials went in an opposite direction. After globalization the international trade structure is complicated due to the specialization in production and elimination of trade barriers.

As world trade can only be fulfilled by transport, therefore transport is regarded as one of the cornerstones of globalization¹ (Kumar, 2002). There are five major transport modes, namely maritime, land, air, railway and pipeline transports, in which maritime transport accounts for almost two thirds of world trade (in metric tons). Therefore maritime transport plays an important role in the process of globalization. Economies of scale also appear in shipping industry. The typical example is that vessel size is enlarged and port handling facilities are increased in efficiency, which in consequence reduce the transport cost and further facilitate the world trade. Table 1 (on page 10) indicates the growth of international seaborne trade

¹ Four cornerstones of globalization: transport, telecommunication, trade liberalization and international standardization. (Kumar 2002)

volume through years. The total volume of shipping commodities rose from 2566 million tons in 1970 to 6758 million tons in 2004 (about 2.63 times of 1970), in which the dry cargoes increased from 1124 million tons to 4442 million tons (about 4 times of 1970). All these figures represent a tremendous increase in seaborne trade volume, especially in liner shipping.

Table 1 Development of International Seaborne Trade, Selected years ^a(goods loaded)

Year	Tanker cargo		Dry cargo				Total (all goods)	
	million tons	% change	Total		<i>of which main bulk commodities^b</i>		million tons	% change
			million tons	% change	million tons	% change		
1970	1 442		1 124		448		2 566	
1980	1 871		1 833		796		3 704	
1990	1 755		2 253		968		4 008	
2000	2 163		3 821		1 288		5 983	
2001	2 177	0.7	3 844	0.6	1 331	3.3	6 020	0.6
2002	2 146	-1.4	3 981	3.6	1 352	1.6	6 127	1.8
2003	2 223	3.6	4 257	6.9	1 475	9.1	6 480	5.8
2004 ^c	2 316	4.2	4 442	4.4	1 587	7.6	6 758	4.3

Source: Estimated by the UNCTAD secretariat on the basis of annex II and data supplied by specialized sources.

^a Includes international cargoes loaded at ports of the Great Lakes and St. Lawrence system for unloading at ports of the same system.

^b Iron ore, grain, coal, bauxite/alumina and phosphate.

^c Estimates.

3.2 Liner Conferences: Development and Nature

Liner conferences are associations that serve the shipping lines operating on the same route, which are characterized by setting freight rate and regulating capacity. So liner conferences are normally recognized as a kind of cooperation among different shipping lines and the competition among conference members is open and accepted.

Liner conferences can trace its history to 1870s, which were originally set up to protect the conferences members from new steam ships making trades to India and the Far East so as to control the important trades with Europe. The first modern conference, U.K.-Calcutta conference, was established in 1875 with five member carriers: the P&O, the B.I., and the City, Clan, and Anchor Lines (Aldcroft, 1968, p.343). Following the formation of Calcutta conference, the Far East Conference was founded in 1879 by John Swire, which was widely regarded as the driving force for the spread of conferences (Marriner & Hyde, 1967). Then there were the Australia conference in 1884, the South African conference in 1886, the West African and northern Brazil conferences in 1895, the River Plate conference in 1896, and the west coast of South America conference in 1904 (Kirkaldy, 1914, p.188; Dyos and Aldcroft, 1969, p.269).

Liner conferences can be either open or closed. Open conferences are primarily operated in the trade to and from North America while the close conferences are operated elsewhere. In an open conference, the shipowner has freedom to enter provided that he can meet certain conditions. There is no allocation of cargo loading rights, so the open conferences may encounter problems, such as over-tonnage and dropping of loading factor. However, the closed conferences have a system of allocating loading rights. When the new entrant applies to existing members for entry to the closed conference and entry is permitted after assessment, the conference will set the restriction for the number of sailings per year and maximum tonnage of vessels to be used among defined the ports of call.

According to OECD (2002, p19), there are around 150 liner shipping conferences covering all the trade routes worldwide, with membership ranging from 2 to 40. The liner conferences are most prevalent on trading routes between Europe, North American and Far East. However, it is noted by the U.S. Federal Maritime

Commission that the conferences number (restricted within U.S. trade) is now facing a significant decline, which is falling from 35 in 1998 to 19 in 2001 (Sjostrom, 2004). Furthermore, in March 2003, European Commission (EC) launched a review of the block exemption from EC Treaty competition rules for liner shipping conferences and proposed for a new Council Regulation repealing Council Regulation 4056/86 (EC, 2005), which represents a decision of European Union (EU) to eliminate the liner conferences for international trades to and from Europe. Therefore, it seems that there is a potential drive for the decline of liner conferences worldwide.

Since liner conferences serve shipping lines, so they are subject to the situation of liner shipping market. In other words, any market changes in liner services may have impact on the fate of liner conferences. The rest of the paper will focus on the liner conferences in the microeconomic environment.

Chapter 4

Globalization and its Relevance with Liner Shipping

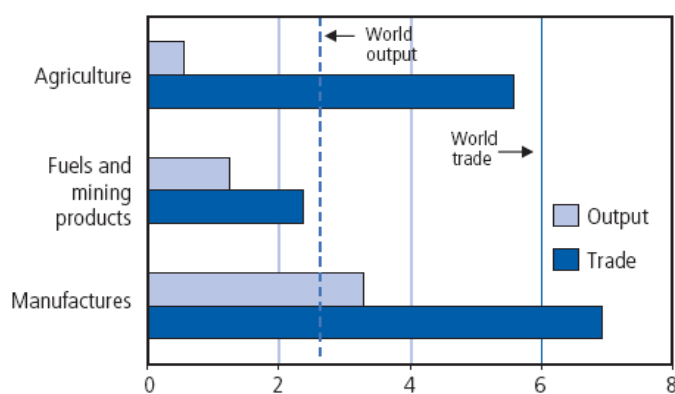
As one of two major shipping practices, liner shipping is distinct from tramp shipping, which is characterized by regular services on scheduled routes. The commodities suitable for liner shipping services are normally high value and time sensitive, which are known as general cargoes. Liner shipping is vital to the trade because general cargoes accounts for approximately 25% of the world total seaborne trade volume, however, with 70% of trade value. Since liner shipping is now prevailing in world trade, we will hereinafter study how globalization will influence the liner shipping industry.

4.1 Liner Shipping Volumes vs Liner Service Structures

Liner Shipping Volumes

With fulfillment of specialization under globalization, the frequency of semi-products transport is increased. For example, the spare parts of computers may be manufactured in different regions around world, which will be finally transported to the destination for assembly. This can be explained by “Factor Proportions Model” developed by Eli Heckscher and Bertil Ohlin in the 1920s (Ohlin 1933). Since the semi-products are always large in quantity, delicate for transportation and sensitive for time, so liner shipping is the right service mode, which consequently becomes much more popular under such situation. According to UNCTAD (2004), 1.94 billion tons of dry cargoes are carried in containers by liner trade. Figure 2 (on page 14)

gives a comparison of volume growth rates between world merchandise trade and output in 2005, in which the volume change of world manufactures trade can best illustrate the liner shipping development. The world statistics show that annual growth rate of container trade is normally two to five times of the annual growth rate of world gross domestic product (GDP).



Source: World Trade Development in 2005

Figure 2 Volume Growth of World Merchandise Trade and Output by Sector in 2005 (percentage change)

Moreover, the change in liner service volumes can also be presented by the tonnage increase of world container fleet. Table 2 (on page 15) shows the percentage changes of different types of vessels in world tonnage between year 1970 and 2004. It is clear that oil tankers, bulk carriers and general cargo vessels are more or less reducing in their percentage shares since 1970. However, container vessels witness a great surge in its share during this period, which is from the original 0.9 percent in 1970 to 10.9 percent in 2004. As we know, most of container vessels are normally engaged in liner services, so the increase of container vessels may indicate the prosperity of liner shipping.

Table 2 Percentage Share of World Tonnage, by types of vessels, in 1970, 1980, 1990, 2000, 2003 and 2004

Year	Oil tankers	Bulk carriers ^c	General cargo	Container ships	Other ships
	Percentage share by vessel type ^d				
1970	39.4	20.2	30.2	0.9	9.3
1980	49.7	27.2	17.0	1.6	4.5
1990	37.4	35.6	15.6	3.9	7.5
2000	35.3	34.8	12.7	8.6	8.6
2003	37.0	35.9	11.1	10.6	5.5
2004	37.5	35.8	10.3	10.9	5.5

Source: UNCTAD 2004

Liner Service Structures

As mentioned above, globalization leads to the expansion of trade, especially the trade of manufactured product. So the traffic levels of liner service are growing accordingly. First of all, the vessels engaged in liner shipping industry are not only increased in quantity, but also enlarged in their sizes so as to realize the economies of scale and to accommodate the increasing trade volume. Consequently, the liner companies have to re-allocate the vessels for different trade routes, namely east-west (trans-Pacific, Europe-Far East and Transatlantic), north-south and regional routes, to make best use of their capacity.

Secondly, the increased globalization deteriorates the trade balances worldwide, because the specialization brings a new production mode which is different from traditional one and the manufacturing procedures are carried out at regions with low cost of raw materials and labor forces. Moreover, the product life cycle is also shortened due to globalization. Globalization always stimulates the products to reach their mature stage, because it provides an easy access to innovations through information exchange and helps to realize international standardization of production.

Normally, when the product enters the mature stage of its product life cycle, there will be a large-scale production, which will often be carried out in the countries with plenty of raw materials or countries with cheap labor forces (Vernon & Wells, 1986). Therefore the developed countries are faced with trade deficit while the developing countries enjoy trade surplus. This kind of trade imbalance forces liner companies to adjust their operational patterns among 'End-to-End', 'Hub-spoke', 'Pendulum', 'Double dipping', 'Triangle' and 'Round-the-World', so as to operate their lines in an effective and efficient way.

Thirdly, globalization stimulates a great innovation ----- containerization, which is also regarded as the application of international standardization in shipping. The containerized services not only improve the safety and security of cargoes during transport, but also upgrade the efficiency of cargo handling at ports. However, on the other hand, containerization changes the liner service structure fundamentally. These changes also happen to the port facilities operations in addition to the shipping process.

Furthermore, globalization is a dynamic process, which may bring quite a lot of small changes to the world market and, in turn, to the liner shipping market. In order to keep in pace with such uncertainties, the shipping line policies and strategies shall always be subject to changes.

4.2 Several Changes on Liner Services after Globalization

4.2.1 Bargaining Power of Shippers Increased

Stopford (1997, p114) identifies ten variables in the shipping market model. On demand side, they are namely the world economy, seaborne commodity trades, average haul, political events and transport costs while on supply side, they are world fleet, fleet productivity, shipbuilding production, scrapping and losses and freight

rates. These ten variables are self-regulated to realize the balance between supply and demand of shipping services.

At the beginning of globalization, the world economy witnessed a tremendous growth and the seaborne trade volumes underwent an unprecedented increase. Moreover, globalization removed the trade barriers (both natural and artificial barriers) in some extent, so the transport costs were largely reduced, which also boosted the expansion of trade volumes. However, the shipping lines could not give a rapid response to such great expansion because they need quite a long shipbuilding period to improve their transport capacity. Finally, there was an imbalance between supply and demand, and the transport capacity was not enough to meet the demands from shippers. In this situation the shipping lines (carriers) had strong bargaining power.

With the maturity of globalization, the shipbuilding industry improves its production level to fulfill the large demands from shipping lines. The innovations for shipbuilding are exchanged all over the world and the container vessel size is increased to upgrade the fleet productivity and to achieve economies of scale. As the liner companies placed quite a lot of orders on newbuildings, so the fleet capacity of each liner company is largely increased for years. Table 3 (on page 18) shows the shipping capacity of leading shipping lines between 2002 and 2004, from which we may find a big increase in both ship volume and capacity during years. There were total 956 ships with capacity of 2,776,160 TEUs in 2002. But the ship volume changed to 1,068 with capacity of 3,251,212 TEUs in 2004. The growth rates of ship volume and capacity are respectively 11.7% and 17.1%.

Gradually, when the growth rate of shipping capacity extensively exceeds the increase rate of trade volume, there will be a surplus in fleet capacity worldwide. As we know, ship is a special commodity, which has a big capital costs and operational

costs. Whether the ship is put in operation, these costs are inevitable. Therefore, it is impossible for shipping lines to lay down such excess capacity. In view of this, the only way to balance the supply and demand is to lower the freight rates. Therefore, the shippers are now in a favorable situation to enjoy strong bargaining power over carriers.

**Table 3 Total Shipboard Capacity (TEUs) of Leading Shipping Lines
(2002-2004)**

Owner-operators	End year 2002		End year 2003		End September 2004	
	No. of ships	TEUs	No. of ships	TEUs	No. of ships	TEUs
A. P. Moller Group	140	505 524	142	406	145	554 506
Evergreen Group	125	366 252	115	351 734	115	351 734
MSC	69	182 695	83	23 4 475	114	320 830
COSCO	131	244 739	132	244 805	129	241 493
P&O Nedlloyd	50	182 314	46	171 727	52	187 007
NOL/APL	46	153 479	48	160 058	48	160 058
NYK	52	148 432	50	150 706	49	149 093
OOCL	23	85 009	30	116 537	34	148 789
K Line	44	144 681	40	136 656	38	133 090
MOL	36	126 787	37	126 109	37	126 109
Hapag Lloyd	27	116 561	26	118 552	26	118 552
Yang Ming	31	100 977	32	101 315	35	117 815
CP Ships Group	33	87 287	38	105 627	38	105 627
CMA-CGM Group	21	67 435	27	81 917	31	104 997
Hanjin/DSR-Senator	24	90 515	26	90 803	26	90 803
China Shipping	15	7 556	24	49 734	32	82 274
Hyundai	0	0	0	0	19	71 803
PIL Group	50	52 656	55	61 352	58	64 354
Zim	17	52 265	19	58 277	20	61 282
UASC	22	60 996	22	60 996	22	60 996
TOTAL	956	2 776 160	992	2 963 786	1 068	3 251 212

Source: UNCTAD Review of Maritime Transport (2005)

4.2.2 Service Efficiency of Liner Companies Decreased

As mentioned above, globalization encourages not only world trade from demand side (demand of liner services), but also shipbuilding production level from supply side. The balance can be realized when the increase of world trade volume is in line with the increase of shipbuilding, which is actually difficult to come into true.

On demand side, globalization is an abstract concept with a lot of uncertainties in its progress, so the whole world trade community is subject to dynamic changes. Additionally, there are a large number of factors that may contribute to the

unexpected changes of world trade, such as modification of government policies, fluctuation of foreign exchange rates, explosion of wars, etc.

On supply side, there are many liner companies scattering around world and the individual company has its own strategies of development. All of them want to obtain as much market share as possible. When there is an indication that the present shipping capacity is not enough to meet the demand, most of shipping lines will dedicate to place orders on the shipyard for new tonnages. Since there is lack of macro-control of tonnages, there always comes up with over-tonnage. Furthermore, in order to achieve economies of scale of each vessel, the shipping lines are now in pursuit of enlarging vessel size as much as possible. Taking the container vessels for example, the container vessels are now developed to almost 6th generation (more than 10,000TEU) and this trend is predicted to be enhanced. However, whether the larger vessels can be operated more economically is still to be studied. From the economics view point, the economies of scale are subject to the law of diminishing returns which may lead to the diseconomies of scale as the vessel size is expanded unlimitedly. Figure 3 (on page 20) may give an illustration on this.

Therefore, since shipping lines normally focus on the supply side of transport capacity to increase the fleet number and size so as to satisfy the world trade demand under globalization, the service efficiency always goes opposite. There are problems that whether the increased capacity can be made full use of. If there were a slow-down of world economic development, how could shipping lines deal with these extra tonnages? Is it possible to find enough cargoes for the mega-sized vessels sailing on specific shipping routes? How about the port facilities to accommodate these mega vessels? All these issues should be carefully considered by liner companies, but globalization brings so many uncertainties to the market development and deteriorates service efficiency of shipping lines, such as low slot utilization for

large vessels and redundancy of fleet capacity, etc.

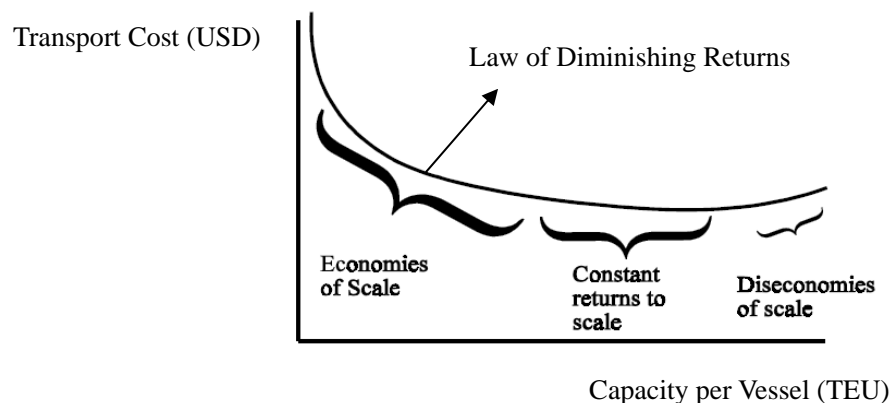


Figure 3 Economies of Scale & Diseconomies of Scale

4.2.3 Competition on Supply Chains Instead of on Shipping Itself

As one of the cornerstones of globalization, international standardization has a significant meaning for the liner shipping services. In 1956, Malcolm McLean introduced a great innovation in transportation ----- containerization. With years of development, there is international standard for the size of containers, which is a breakthrough for the whole transport industry. Containerization makes multi-modal transport more reliable and helps to develop the concept of supply chain management.

With introduction of containerization, the containers are widely used in liner services and container vessels become more popular for shipping lines. The competition among liner companies is never focused on shipping itself, because containerization standardizes the shipping process and there is little space for improvement on the shipping alone. Therefore, the shipping lines look for new chances to upgrade their competitive advantages. Since shipping is one stage in supply chains, the liner companies find there are margins to perfect the management of supply chains from shipping aspect. With the aim to make the supply chains

flexible and reliable, the shipping companies increase the service frequency, such as twice a week, three times a week or even four times a week, to meet the requirement for the JIT (Just-in-time) services. The large shipping lines like Maersk have their dedicated terminals in some ports to achieve priority for unloading and to make their services more reliable to optimize the whole supply chains. All these measures can help the liner companies win the reputations in supply chain management, which may enhance their competitiveness in the liner market.

There are even the attempts from shipping lines to be engaged in the whole process of supply chain, which is to cover other transportation modes in addition to shipping and to take the control of whole transport chains. In spite of the result of such attempts, this can illustrate from another aspect that the competitions among shipping lines are extended to a wide scope.

Chapter 5

Globalization and its Relevance with Liner Conferences

It is noted that globalization actually changes the structure of liner shipping industry to some extent. Liner conferences, as the organizations of liner operators, obviously can not escape from the impact of globalization.

Since the establishment of the first liner conference in 1875, liner shipping becomes the only industrial sector that can be exempted from anti-trust legislation. Of course, the liner conferences had specific value for existence in past years. As we know, liner shipping has its distinct feature that operates on a predetermined route on a regular basis. Therefore, all costs of liner vessels (even including voyage costs) are almost fixed before each voyage. Whether the vessel is fully loaded or not, the costs have been set down. In this case, how to cover the costs of each voyage and earn profit becomes a critical issue for shipping lines. At the early stage of liner services, there were a limited number of liner operators in the world with several shipping routes. And the shipping market was not as complicated as it is today because the world trade level was quite low and trade market structure was simple (normally the manufactured products were shipped from industrialized countries to under-developed countries while raw materials were shipped adversely). At that time, liner shipping companies' attention was normally put on the freight rates to ensure the profitable services. They were seeking for the cooperation with each other to strengthen their power over shippers as well as over competitors out of this cooperative group. Under

this situation, the liner conferences came into being, which set down the uniform freight rate for each direction of trade route. This kind of price cartel really played its role in its evolution, although there was a lot of contradiction from different aspects.

However, as time went by, the whole world trade market changed a lot under globalization. The trade volume has largely increased and the trade patterns have been altered from the original bilateral to the complex trilateral or even multi-lateral trade. The whole shipping market becomes much more complicated. Therefore, the freight rates control can no longer be an effective way to ensure the profit for liner companies, which may consequently lead to the decline of liner conferences.

5.1 Cooperation Game Theory

5.1.1 *Game Theory*

Game theory is in fact a multi-person decision theory, which represents a process with more than one decision makers to get payoffs depending on the performance of other players. In this case, the players will take actions based on their prediction of other players' behaviors. Therefore, the actions of players are interdependent.

Game theory has a wide application in economics, politics, law, biology and computer science, etc. and it can normally be divided into two types according to the coalition level, namely *non-cooperation game theory* and *cooperation game theory*. Non-cooperation game theory means that players make theoretic game analysis with aim to maximize their own interests while cooperation game theory investigates the coalitional games with respect to the relevant power held by different players. To make it simple, non-cooperation game theory focuses on individual player and cooperation game theory is to pursue the individual benefit on the basis of

maximizing the collective benefits. It is quite normal that sometimes the cooperation will arise in non-cooperative games when the players find it may provide them better interests.

Game theory also has its application in the liner shipping industry. There can be games on freight rate, service level, and variety of service, etc., with the purpose to increase the market share of shipping lines. However, what we are interested here is the implementation of cooperation game theory in liner shipping.

5.1.2 Competition on Basis of Cooperation

Since the liner market is so large that it almost covers all manufactured products traded in the world, it is certain that the competition within this market is also fierce which makes the shipping environment very complex. In order to survive the competition, most shipping lines would like to seek cooperation with others or make a merger or acquisition. However, merger or acquisition has a large demand for capital investment which is high risk, therefore, cooperation is always adopted by most of the lines. Of course, cooperation can be divided into long-run and short-run cooperation. Long-run cooperation is always featured by a long-term agreement among relevant shipping lines to realize sustainable development of the whole group, while short-run cooperation normally focuses on the temporary interests of related lines. Actually, liner conferences are the earliest application of long-run cooperation game theory in the liner market.

Cooperating on the freight rate level, the shipping lines indeed got a lot of benefits from such a game concept. Through freight control and capacity allocation, all conference members will easily find their positions within the conferences and their profit margins are balanced. In fact, the conference systems are means to prevent fierce price competitions among shipping lines which may seriously hurt the interest

of the whole liner market if individual lines continuously lower down their freight rates. It should be noted that the cooperation game theory of liner conferences is a game played between liner conferences and shippers and such cooperation undoubtedly enhances the bargaining power of carriers against shippers.

In addition to the liner conferences, there are other applications of cooperation game theory in liner shipping. The typical ones are consortia/alliances.

With promotion of specialization worldwide, the demand for trade increases significantly. It seems that the only theoretic game of conferences is far from enough to accommodate such globalization trend. On the contrary, it sometimes may impede the trade due to this unification on freight rates. Therefore, the whole liner market calls for other cooperation forms to satisfy this world market trend and then the new cooperation of consortia/alliances comes into being. Consortia/alliances are agreements on technical, operational and/or commercial aspects, which normally focus on the resource sharing among member lines, so they can provide an effective way to economically satisfy the largely increased transport demand and dynamic market structure changes. The essence of consortia/alliances cooperation is cost-reduction by increasing the proportion of avoidable fixed costs through resource sharing, for example, vessel, terminal and equipment sharing to reduce the individual investments on such fixed assets. So this kind cooperation is on the common interest of all consortium/alliance members, and the games are not only played with shippers, but also with other comparative consortia/alliances.

Both liner conferences and consortia/alliances are the horizontal cooperation forms. Moreover, there can also be vertical cooperation for game theory. The typical one is supply chain cooperation, which is to bring together shippers, carriers, terminal operators and other shipping-related service providers. In this case, the game is played among different supply chains.

Globalization shifts the application of cooperation game theory from traditional conferences game, to consortia/alliances game, and finally to supply chains game. Therefore, the diversity of cooperation forms in playing game theory represents the response of liner shipping industry to globalization.

5.2 Emerge of New Cooperation Forms

Most people regard containerization as a turning point that shifts the liner shipping structure. Actually, containerization enhances the standardized services to effectively accommodate the effects of globalization. Nowadays most commodities intended for liner shipping are containerized and container vessels are widely used by shipping lines. In comparison with the traditional liner service vessels, such as general cargo vessels, the container vessels have advantages on sailing speed and operational efficiency. But in order to accommodate container vessels in ports, the new container terminals have to be built. Generally speaking, containerization brings quite a lot of changes to liner shipping. In view of these fundamental changes, the liner companies have to adjust their operations accordingly and try to find out other cooperation possibilities in addition to the price-setting one.

5.2.1 Globalization Leads to ‘Globalized’ Cooperation

With significant trade expansion after globalization, the shipping lines are managing to get economies of scale by providing low cost and high quality services so as to stay competitive within world shipping market. But this is the goal that can hardly be realized with effort of one single company. Because liner shipping is an integrative process, if the carriers want to achieve economies of scale, they should make a big investment, not only on vessel itself, but also on port facilities, which may be a financial risk due to the uncertainty of return on investment. Even though the large liner operators are able and willing to invest on such projects, the result may

be unfavorable because the repeated investments by different companies may lead to the diseconomies of scale for the whole industry. In view of the overall liner market, this is a waste of world resources and has negative effect on the development of world shipping. Furthermore, globalization complicates the liner services and the strategies made by single company may have limitations because they are made on the basis of the company instead of the whole market.

The most effective way to achieve economies of scale for liner companies under globalized economy is to make cooperation with each other. The sharing of investments among carriers has relatively low risk and may relieve the carriers of financial burdens.

5.2.2 Strategic Shipping Alliances

The first strategic shipping alliance appeared in 1994. In 1997, about 60-70% of the services on main East-West trade were provided by 4 major shipping alliances namely global alliance, grand alliance, Maersk/Sealand and Tricon (Cariou 2002). The strategic shipping alliance is featured by a group of independent shipping lines in pursuit of mutually agreed goals and sharing benefits. It is an attempt to seek for new cooperation mode other than the price-focused cooperation. The alliance is specially defined as long-term relational contracts among competitor lines. In fact, the strategies of the alliances are made on the basis of the overall technical arrangements, which are much more reliable and competitive than those of individual shipping line. Moreover, the alliance represents for a unity of common interests and the information collected by the alliance is more indicative than that of individual line, so the alliance can always predict some unexpected changes in the world shipping market and give quick response to them. This is extremely important under present globalized economy with quite a lot of uncertainties.

The nature of strategic shipping alliances is to make full use of the resources of its members and to realize the economies of scale on the basis of the alliance levels. Therefore, the resources are always shared within alliances, such as space sharing, slot chartering, terminal and facilities sharing, etc. In this case, large vessels can be adopted in certain trade route, without worrying about their space utilization. The shipping lines of the alliance can have exclusive user terminals and facilities for common use within alliance so as to reduce their capital investments as well as financial risks. In case that there was a temporary shortage of containers for a shipping line, the other alliance members can charter out their containers, so the containers of the alliance can be kept at a reasonable level and the traditional headache of repositioning of empty containers will be relieved. Finally, all these savings will be turned into profits of the whole alliance and economies of scale will come into true.

Additionally, the sailing schedules and ports of call are coordinated within the alliance and there will be a better allocation of vessels than the individual shipping lines, because it is clear that the more the vessels, the better the allocation can be. It is same as the principle of economies of scale that if there is no scale, there will never be economies.

The other result of shipping alliance is the increase in market share. It is evident that the market power of alliance is stronger than that of individual line. It is easier for the alliance to get business because shippers tend to choose reliable carriers with big market shares.

It should also be noted that since the shipping alliances are conceived for long term, so their strategies are normally aimed at sustainable development. It is different from the short-term partnership between shipping lines, which is always limited to the short-run returns.

Chapter 6

Liner Conferences and Shipping Alliances in Globalization

6.1 Comparison between Liner Conferences and Shipping Alliances

Liner conferences and shipping alliances are two different cooperation forms for liner services. Liner conferences are in fact price cartels, which are intended for setting common freight rates on each direction of trade route so as to ensure the interests of all conference members. However, the shipping alliances are technical agreements among shipping lines to make an overall arrangement of technical resources of all member lines, so as to achieve economies of scale in a broad extent. Therefore, these two forms are different in essence and their strategies and operational modes are distinct from each other.

The following two subsections will discuss their differences from micro-economic view points.

6.1.1 Liner Conferences: a Passive Cooperation

Liner conferences, which were originally established to fight against outside competitors by adopting uniform freight rates, really contribute to the development of liner shipping industry. However, as world trade structures changed in response to the trend of globalization, the structures of liner shipping services were also modified so as to survive such changes. The present liner market is quite complex that conference systems are considered to be less effective and efficient in operation.

At the early development stage of conferences, the individual outside competitor was not financially strong enough to fight against conference systems, so he was not able to influence the freight rates set down by conferences. In view of this, it was feasible for liner conferences to issue uniform tariffs and benefit all conference

members.

However, the globalization destroys this balance due to the great expansion of productions in all industry cycles. On one hand, the outsiders may have strong power over conference systems. The definition of these outside competitors are not limited to the liner counterparts, instead they may also include some powerful shippers that are able to be engaged in industrial shipping themselves. On the other hand, with maturity of supply chain management, the combined transport can be a substitute to the direct port call services provided by certain trade route. If the conference on this route set down a relatively higher freight, the shippers may turn to other combined transport mode which is also efficient and reliable. Generally speaking, globalization gives various options to shippers and the bargaining power of shippers is enhanced.

In this situation, the freight rates issued by conferences are important. If the freight rates are set high, the conferences may lose customers. If the tariffs are lowered down, the profit margins of conference members will be decreased and some shipping lines may even suffer from financial losses because the prices are too low to cover the costs. Therefore, the conference systems will be pushed to a dilemma. Figure 4 (on page 31) gives an illustrative model on this issue, which indicates that globalization pushes the liner shipping demand curve D_0 moving leftwards to D_1 due to the increase of shippers' bargaining power. Then the freight rates P_0 should be lowered to P_1 to maintain the demand level in principle, but it should also be noted that whether the freight rates are enough to cover the average costs of shipping lines. Since the conference systems regulate the freight rates at relatively higher level to avoid losses of their member lines on certain trade route, some of potential shippers will seek for other transport ways, such as industrial shipping or combined transport, etc.

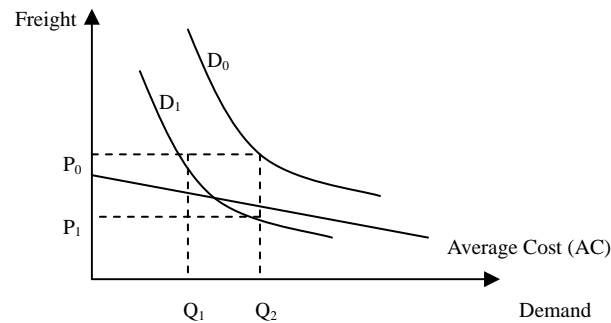


Figure 4 Relationship between Shipping Demand and Freight Rate

Based on above explanation, we may find that liner conferences can only respond to the liner shipping fluctuation on the aspect of freight rates, which will sometimes lead to the loss of customers, so they are regarded as a passive cooperation. Firstly, price-setting measure is normally the last step of control, which can not fundamentally help to adjust the liner operations and yield a desirable result. On the contrary, it is only a response to the demand changes. Secondly, the passiveness reflects on the scope and depth of cooperation by conferences. Although the liner conferences have a great number of members, it doesn't mean that the conferences have a wide scope of cooperation, because the scope here refers to the range of businesses, such as resources purchasing, routes arrangement, schedule setting, etc. As to the liner conferences, there is no such scope of cooperation and their members' attitude is not active, just as a routine business.

In some extent, this kind of passive cooperation will lead to the decline of liner conference systems.

6.1.2 Shipping Alliances: an Active Cooperation

Shipping alliances are technical agreements in essence, which represent the cooperation among alliance members on a technical level. They are managing to earn

profits through costs reduction and achieve economies of scale for the whole alliances.

As we know, there are two basic economic ways to ensure the profits: price regulating and cost reduction. If price-regulating measure taken by liner conferences is regarded as passive, then the cost reduction should be considered active because it is a fundamental control of profit margin from production or service level. Shipping alliances actually belong to the latter.

Since almost all costs of shipping lines have already been pre-fixed for each trade route, the cost reduction can hardly be implemented by individual line. The shipping alliances are set up with purpose to optimize the operations within alliances by means of resources sharing among alliance members to reduce capital investment as well as better allocation of resources within alliances to achieve economies of scale.

Different from the price-control measure, cost reduction by alliances is oriented to the production process that is under the control of alliances themselves. The alliances don't have to worry about the response from demand side. In other words, the cost reduction has little influence on demand and supply model. Figure 5 shows this cost reduction model.

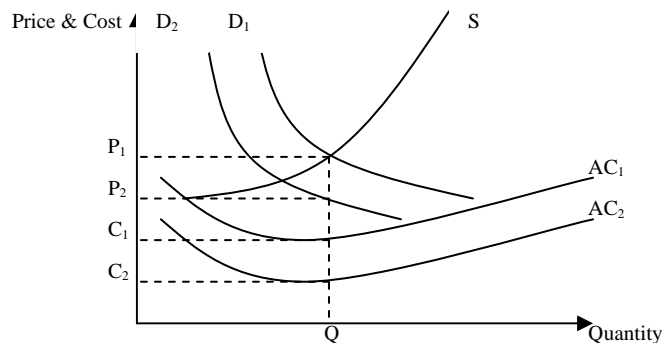


Figure 5 Relationship between Cost-reduction and Supply-Demand Model

When the demand line moved leftwards from D_1 to D_2 due to the increase of shippers' bargaining power, the price at equilibrium point of demand and supply will be lowered down from P_1 to P_2 to maintain the demand quantity. However, the alliances may reduce their average cost from AC_1 to AC_2 , so as to offset the loss in low price. As shipping alliances rely on their own cooperative efforts to make profits, so they are active in nature.

Moreover, the shipping alliances take a lot of constructive measures to achieve their goals, such as vessel, terminal and equipment sharing, slot chartering, joint-scheduling, etc., all of which are positive to improve the service quality of the alliances. In view of the objective of liner conferences, which is purely to protect the shipping lines with constant returns, the shipping alliances make profits by means of upgrading their services. So both shipping lines and shippers may benefit from these alliances. It is undoubted that shipping alliances are positive to the development of shipping market from some aspects.

It is worth noting that since shipping alliances are characterized by long-run cooperation, they normally have systematical arrangement of the development strategies. It represents that alliance members have a strong determination for sustainable development instead of short-term profits. Therefore, the shipping alliances are reliable and active cooperation forms from all respects.

6.2 Decline of Liner Conferences

Since liner conference is a kind of cooperation mode that covers most operators in liner industry, so it is regarded as a monopoly, which the governments will always fight against. On the other hand, the cooperation of liner conferences can no longer satisfy the needs of globalized development and liner operators are seeking for the new cooperation modes which can better serve the present situation. These are two main reasons contribute to the decline of liner conferences. However, whether

government interferences or substitute cooperation modes, they are essentially derived from the globalization in world market. This section will focus on these two aspects to make explanation.

6.2.1 Interference by the Government Policy of Anti-trust

From initial prosperity to present dilemma, the liner conferences have undergone a long controversial period, during which the government policies played an important role. If it is government policies that brought up the liner conferences in some respects, it is also policies that finally undermine the conference systems. Here we will take a close look of policy developments in major shipping nations of EU, U.S. and Canada that impact the liner conferences.

In 1986, the European Council of Ministers adopted *Regulation 4056/86* to fulfill the competition law of European Community with only the liner shipping industry was exempted from the competition rules under its Article 81(3). However, in 2003, European Commission (EC) launched proposal to repeal this block exemption regulation for liner conferences and calls for a more competitive shipping market environment.

The United States (U.S.) has experienced even more modifications on liner shipping related policy, typically from *U.S. Shipping Act of 1916*, *U.S. Shipping Act of 1984*, to *Ocean Shipping Reform Act, 1998 (OSRA)*, which indicates that the U.S has gradually imposed limitations on the development of liner conferences. Although these policy modifications have not eliminated the anti-trust immunity, they contribute to the decrease of traditional conferences number within the U.S. According to the FMC report, the conferences number have dropped from 35 in 1998, to 22 in 2000 and 19 in 2001, after adoption of OSRA 1998. Instead, the more flexible discussion agreements among carriers took the place of traditional

conference agreements, which have no authority to limit service contracting activities of member lines or enforce freight rate actions (WSC, 2001).

Canada, as a close neighbor to the U.S., normally issues the shipping rules or policies to follow the U.S. After the U.S. passed OSRA 1998 as an amendment to the Shipping Act of 1984, Canada also enforced the amendments to its Shipping Conferences Exemption Act, 1987 (SCEA) in 2002. Before amending the SCEA, the Transport Canada issued information papers to the stakeholders. The feedback showed that shippers and ports were in favor of such amendments because they were believed to reduce trading costs for shipper and upgrade the competitiveness for ports. However, shipping lines or conferences were certainly against the amendments in fear of the withdrawing of anti-trust immunity. Anyway, these amendments were finally passed, which may reflect that the government is no longer at a position to favor the liner conferences.

Although these policies are implemented by different countries, which are not uniform for application, they are identical on functional basis. Moreover, they have the common purpose to progressively open the liner market on its price level.

These policy changes can also be explained from economic viewpoint. It is known to us that globalization has changed the world production modes through specialization and economies of scale in production are realized. However, the world trade market should have compatible structures to accommodate such changes in production, which leads to the free trade concept. Free trade means that all trade barriers among countries, such as regional protectionism, have to be eliminated so that the whole world will benefit from globalization. If free trade concept is essential for the successful fulfillment of globalization, then in the regime of transport which is closely related to the world trade market, the “free transport” is also important. Here “free” refers to the degree of how much the shipping market can escape from

the industrial protectionism rules or regulations. In fact, “free transport” should be in line with the degree of free trade, because if the transport industry is not as loose as trade market, such lag will obstruct the trade development in return, which may present a vicious cycle. With the deepening of globalization, there was a diminishing of artificial trade barriers, but liner shipping market, which is the shipping market most closely related to the world economic development, was still highly protected by the government policies of anti-trust immunity. In view of such contradiction, it is quite natural for the nations to publish some amendments to the former rules and open the liner market to some extent. Therefore, the government interference policies on liner shipping conferences are actually the response to the market demand, which represents an increasing awareness in world for market-driven economy.

Even though there are still no internationally recognized rules or regulations to eradicate the anti-trust immunity of liner shipping services, it is clear that the major shipping nations are gradually removing their protections on liner conferences. This trend will eventually spread to the rest of world shipping nations, which may lead to the decline of liner conferences worldwide.

6.2.2 New Cooperation Forms Replace the Liner Conferences

With the development of multi-trade, the liner shipping industry has been experiencing dynamic structural changes. Together with these changes, there also present a lot of opportunities for shipping lines to expand their business not only in volume but also in scope. However, since the market is so large with quite a lot of uncertainties, it is impossible for individual liner operators to achieve economies of scale and scope. The most effective and secure way is to develop the capacity and flexibility of shipping lines through cooperation.

Liner conferences, the earliest cooperation form in the history of liner shipping

services that focus on freight control, are not considered as efficient as before and there are even a lot of government policies interfere conferences development. Therefore, the shipping lines are now seeking for other cooperation forms that are more flexible and reliable. In addition to the shipping alliances mentioned in above chapters, there are other new cooperation forms that obtain an increasing popularity in liner shipping market, such as technical discussion agreements, freight stabilization agreements, etc.

The technical discussion agreements are a type of cooperation derived from liner conferences under OSRA 1998, but they have no binding commitments and are more flexible than conference systems.

The freight stabilization agreements are always regarded as attempts to regain the lost territory of conferences. Although the liner conferences are out-of-date to some extent, their essential idea is far from dying, because in any event, price is the focus of competition among shipping lines. In this way, the freight stabilization agreements can be a good substitute for conference systems.

The shipping alliances are the most advanced cooperation forms up till now. They represent a shift from traditional freight level cooperation to the resource level cooperation, which are cost-effective and sometimes easier to achieve economies of scale in liner operation.

These new cooperation forms may substitute the conferences in future liner market. If the liner conferences should be regarded as a product, they should now be at the end of mature stage, which might approach to final decline of their life cycle. Yet the substitute “products”, such as shipping alliances and discussion agreements, etc., should accelerate the decline of conferences.

In general, the decline trend of liner conferences is inevitable. As a cooperation

form appearing at the early stage of liner shipping development, conference systems have many limitations under present globalized economy, which may hinder the healthy development of shipping industry and world trade market as a whole. However, no matter if there are liner conferences, the essence of conference systems, freight rate control, will never die.

Chapter 7

Conclusion: Prospects of Liner Conferences

With over 130 years of history, liner conferences are now at a decline trend, which may indicate that a simply freight rate oriented cooperation can no longer satisfy the demands of liner shipping market development. The expansion of world trade and the dramatic changes of liner shipping structures under globalization are analyzed to be the main drive to such dropping trend of conference systems.

Although the decline trend of liner conferences is quite obvious, it is still not sure for us whether the liner conferences will come into an end and when they will completely disappear from liner history. There is only one thing can be sure that market monopoly is an obstruction for creating a more competitive shipping market environment. So the decline of line conferences may represent that there is a strong desire for liberalized market with eradication of all anti-trust measures in liner shipping industry. Just as Peter Gatti, the US National Industrial Transportation League (NITL) Executive VP, said that

A market driven environment that is not compromised through pricing agreements among the carriers that belong to conferences has long been the desire and goal of shippers in every region of the world.

In fact, with the expanding of globalization in world economy, such market-driven environment is not only the desire of shippers, but also of other related

parties in shipping.

Thus, the decline of liner conferences is simply driven by the market-oriented trend in liner shipping with purpose to match the globalized economies, while the emerging of other new forms of cooperation that are aimed to provide more flexible and cost-reduction services to really realize the economies of scale in liner shipping industry may stimulate the decline trend of conference systems. Therefore it is the globalization that essentially leads to the collapse of liner conferences.

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