

Change of Shipping Industry Circumstances and Shipping Policy Directions of Developing and Developed Countries*

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Abstract

Shipping industry development circumstances are different from one another according to the economic development phase of each country. These differences also extend to the objectives and issues of shipping industry policies of these countries. In this study, we tried to figure out the desirable policy directions for each country in the different phases of economic development. The countries in the early stage of economic development may need to establish their own fleet to meet the rapidly increasing shipping demands. The countries with their own fleet may be more interested in sustaining it. The type of shipping industry policies evolves from the ‘policy to induce’ to the ‘policy to resist’ accordingly. In the late 1990’s, shippers’ demand for integrated supply chain services increased as the supply chain management system was widely introduced among them. Competitive advantage of shipping companies is to be determined by their ability to provide such an integrated service since then. Major advanced countries seek to devise an ‘adaptive policy’ to allocate resources to the newly arising opportunity.

Key words : Stage of economic development, Policy to induce/resist/adapt, Integrated supply chain services

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I. Introduction

Most countries are eager to promote their domestic shipping industry development. However, the objectives and issues of national shipping industry policies should be differentiated according to the characteristics of the industry development conditions in the country.

For developing countries, which do not have developed domestic shipping industry, the establishment of their own national fleet may be the top priority to meet the ever increasing shipping demand. Shipping industry has two major functions in the national economy. It supports national economic activities by providing logistics services for domestic and international trade on one hand, and creates value added production and employment in the national economy on the other. For developing countries without national fleet, the former function of shipping industry is considered to be more important than the latter. In this stage, the establishment of national fleet can often be regarded as the symbol of national pride. Once the national fleet has been established, however, the latter function of the industry tends to receive more attention than the former. Historically, world shipping market has long been characterized by chronic excessive supply and depression, and accordingly, the rate of return on investment in the industry is relatively low.¹⁾ Especially starting from 1980's through early 2000's, shipping industry suffered from severe depression as a result of overinvestment, which had largely been initiated by developing countries. Both developing (in the latter stage of economic development) and developed countries, which have already established domestic fleet, adopted policy measures to keep their domestic shipping industry alive during the depression of the market.

Till early 1960's, shipping industry was regarded as capital and technology intensive one, and developing countries endowed with poor capital and technology resources could not secure comparative advantage in the industry. However, with the increased international mobility of capital and dispersion of knowhow and skills of shipping management and vessel operation, the market share of developing countries has been increasing since 1960's. Chronic oversupply and recession in the market is closely related with such a change of circumstances.

1) Stopford(2009).

In the late 1990's, an important change occurred in the shipping market, which was triggered by the wide dispersion of supply chain management among the shippers.²⁾ The shippers began to recognize that value creation can be possible not only by optimizing manufacturing activities but also by optimizing the whole process of supply chain. Shipping companies are required to provide integrated supply chain service and contribute to value creation of their customers. As a result, there arises new opportunities for shipping companies, especially in the developed countries, to secure comparative advantage. And efforts are underway among shipping companies and government authorities to change the paradigm of management and policy measures to take advantage of the newly emerging opportunities. However, government-led shipping industry policies can no more be of much help for shipping companies to secure the abilities to satisfy the requirements of shippers in the new environment. Instead, the establishment of footings to facilitate liberal competition and development of creativity is considered to be most important factors for shipping companies to secure the ability to provide the shippers with integrated supply chain service.

In this study, we examined the conditions of shipping industry development, and tried to derive appropriate shipping industry policy directions for developing and developed countries.

II. Change of Supply/Demand Conditions and Comparative Advantage Determinants of Shipping Industry

1. Change of Supply/Demand Conditions in the Shipping Market

1) Trends of Shipping Service Demand for Developing and Developed Countries

The international sea traffic volume has been increasing with the development of world economy and liberalization of international trade. Especially, after the World War II, the requirements for reconstruction in Western Europe and Japan resulted in an increased shipping demand.³⁾ Import demand for bulk cargoes such as iron ore, coal, oil, etc. increased due to

2) Supply chain management was first introduced in 1980's, but it began to be prevalent among shippers in late 1990's (Lummus and Vokurka, 1999).

3) Stopford(2009).

investment increase in heavy petrochemical industries in these countries. Since the early 1970's, the growth of heavy petrochemical industries in European countries slowed down as their national economies entered into a mature stage of development. As for Japan, growth and trade pattern followed similar trend of the Western Europe. However, the growth of heavy petrochemical industries like shipbuilding, automobile, steel manufacturing, etc., in Japan sustained much longer than the industries of Europe owing to its active government led industry policies. After mid-to-late 1970's, the growth rate of West Europe and Japan slowed down significantly undergoing two times of oil shock. On the other hand, import demand for raw materials in Asian developing countries such as Korea, Taiwan and China increased greatly as these countries emerged as new pivots of growth. North American countries also contributed to the growth of shipping demand as their heavy petrochemical industries such as military products, steel manufactures, etc. showed rapid growth resulting from investment and consumption increase. Besides, container cargo trade also increased greatly due to increase in trade of consumer goods among Western Europe, Japan, Asian developing countries and North America.

As mentioned above, sea trade pattern of a country differs from one another according to its phase of economic development. In general, economic structure changes from agricultural-based to industrialization, and then to de-industrialization or service-based one.⁴⁾ As a result, sea trade trends show different patterns according to the phase of economic development. Countries in the early stage of development import a large amount of raw materials and export processed/manufactured products as these countries tend to concentrate on heavy petrochemical industries.⁵⁾ Reliable supply of shipping service is inevitable for these countries to meet increasing demand for bulk (import) and container cargo (export) shipment.

The national economic structure of mature developed economies is characterized by service-based one. Besides, within the manufacturing industry, the weight of production changes from the traditional one which requires a large amount of raw materials to high technology and high value added one which requires relatively less amount of raw materials. The growth of shipping demand slows down or even decreases as a result of such a change of economic structure. Moreover, such high technology and high value added

4) Memedovic and Iapadre(2010).

5) Heavy petrochemical industries are key industries in such countries as China(2nd largest in GDP world ranking in 2011), India(10th), Korea(15th). IMF(2012) ; Memedovic and Iapadre(2010).

products tend to be carried by air, instead of sea transport. The importance of shipping industry to support national economic activities diminishes with economic growth in developed countries.

<Table 1 > Sea trade trend of developing and developed countries

Unit: Million Ton

Year	Developing countries			Developed countries			Total		
	Load	Unload	S. Total	Load	Unload	S. Total	Load	Unload	G. Total
1990	2,254	1,350	3,604	1,753	2,776	4,529	4,007	4,126	8,133
1995	2,629	1,528	4,157	2,022	3,220	5,242	4,651	4,748	9,399
2000	3,471	2,395	5,866	2,513	3,878	6,391	5,984	6,273	12,257
2005	4,361	2,980	7,341	2,748	4,142	6,890	7,109	7,122	14,231
2010	5,576	4,786	10,362	2,833	3,592	6,425	8,409	8,378	16,787

Remark: Division of country groups is in accordance with UNCTAD classification as follow :

- Developed countries: Andorra, Australia, Austria, Belgium, Bulgaria, Canada, Czech Republic, Denmark, Estonia, Faeroe Islands, Finland, France, Germany, Gibraltar, Greece, Greenland, Holy Sea, Hungary, Iceland, Israel, Italy, Japan, Latvia, Lithuania, Luxemburg, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Saint Pierre and Miquelon, San Marino, Slovakia, Slovenia, Spain, Sweden, Switzerland, U. K. and Northern Ireland(excluding Isle of Mann), U. S(40).

- Developing countries: All countries excluding developed ones.

Source : UNCTAD(yearly editions).

Sea trade volume increased from 364 million to 10,362 million tons during 1990~2010 in developing countries showing 5.4% annual growth rate. The quantity of cargo carried by sea increased from 4,529 million to 6,425 million tons during the same period in developed countries showing 1.8% annual growth rate. The importance of shipping in developing countries is augmenting and the contrary holds in developed countries. The annual growth rate of export and import sea cargo during the same period was 4.6% and 6.5% respectively in developing countries. In these countries, import demand of raw materials exceeds export demand of finished products. The growth rates were 2.4% and 1.3% respectively in developed countries. The growth of import demand for raw materials slowed down more significantly than export of finished goods in these countries.

The annual GDP growth rate was 4.4% during 1990~2010 in developing countries. The growth rate of sea trade (export 4.6%, import 6.5% and total 5.2%) exceeded that of GDP for these countries. Whereas, the GDP in developed countries increased by 1.9% annually. Especially, the export cargo growth rate (1.3% annually) of these countries was considerably lower than that of GDP.

<Table 2 > Trends of GDP of Developing and Developed Countries

Unit : Billion Dollars

Year	Developing Countries	Developed Countries	G7	Total
1990	6,501	23,670	19,381	30,171
1995	7,440	26,077	21,350	33,517
2000	9,183	30,534	24,849	39,718
2005	11,944	33,801	27,302	45,745
2010	15,907	35,133	28,071	51,040

Remark : Division of country groups is the same as <Table 1>.

Source : UNCTAD Database(<http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx>, April 27, 2012)

As was discussed above, the growth rate of sea trade volume slows down with economic development of the country. So, GDP elasticity of sea trade in developing countries is expected to be higher than that in developed countries. In this study, the following model is used for estimation of GDP elasticity of sea trade in both developing and developed countries.

$$\ln SB_t = \beta_0 + \beta_1 \ln GDP_t + \mu_t \quad (1)$$

In the equation (1), SB stands for sea trade volume in million tons and GDP means gross domestic production (billion Dollars in 2005 constant price) in each country respectively. In this study, loading, unloading and total cargo of both developing and developed country groups were estimated. In the equation (1), β_1 represents GDP elasticity of sea trade as both variables are transformed into natural logarithm. The data used for the estimation is available from UNCTAD (refer to <Table 1> and <Table 2>). Time span of the data used was limited to 1990~2010 considering the division of developing and developed country groups.

The results of OLS estimation of the equation (1) have serial correlation problem except in the case of loading cargo of developed country group. In the case of serial correlation problem, OLS estimation results cannot be efficient though they are unbiased. To solve this problem, we re-estimated equation (1) by Cochrane-Orcutt 2 stage process. Firstly, we made Cochrane-Orcutt transformation of equation (1) as follows.

$$\ln SB^*_t = \beta^*_0 + \beta^*_1 \ln GDP^*_t + \varepsilon_t \quad (2)$$

In this equation, $\ln SB^*_t = \ln SB_t - \rho \ln SB_{t-1}$, $\beta^*_0 = \beta_0 (1-\rho)$ and $\ln GDP^*_t = \ln GDP_t - \rho \ln GDP_{t-1}$ respectively. For application of Cochrane-Orcutt stage 2 process, the value of \hat{u}_t needs to be derived by OLS estimation of equation (1). Then, we can obtain $\hat{\rho}$ by OLS estimation of $\hat{u}_t = \rho \hat{u}_{t-1} + e_t$. Both $\ln SB^*_t$ and $\ln GDP^*_t$ can be obtained with the value of $\hat{\rho}$. Finally, equation (2) can be estimated with the values of $\ln SB^*_t$ and $\ln GDP^*_t$.

<Table 3 > Estimation Results of Equation (2)

	Developing countries			Developed countries		
	Load	Unload	Total	Load	Unload	Total
β^*_0 (t-statistics)	-8.567 (-10.703)***	-15.913 (-12.911)***	-10.890 (-13.567)***	-10.126 (-8.903)***	-5.048 (-0.912)	-5.526 (-1.871)*
β^*_1 (t-statistics)	1.041 (20.996)***	1.472 (19.277)***	1.217 (24.455)***	1.038 (15.705)***	0.768 (2.398)**	0.825 (4.82)***
R^2	0.961	0.954	0.971	0.928	0.242	0.564
F	439.150	371.619	598.049	246.632	5.748	23.249
D-W statistics	1.732	1.596	1.688	1.609	2.121	2.225

Remarks: 1) Division of country groups is the same as <Table 1>.

2) *, ** and *** means null hypothesis can be rejected by 10%, 5% and 1% significant levels respectively.

<Table 3> reveals the results of estimation of equation (2). Our major concern is the value of β^*_1 . Though the determination coefficients (R^2) of two estimation results (unloading and total cargo of developed country group) in, <Table 3> are relatively small the null hypothesis of β^*_1 can be rejected by t-statistics test in all the estimation results. So, there will be no serious problems in understanding GDP elasticity of sea trade cargo.

In the case the value of β^*_1 is larger than 1, growth rate of sea trade exceeds that of GDP, and vice versa. According to the estimation results in <Table 3>, GDP elasticity of export sea trade is about 1.04 for both developing and developed country groups. Such a result means the growth rate of export sea trade volume is slightly higher than that of GDP in both developing and developed country groups.

The GDP elasticity of import sea trade of developing countries was estimated at about 1.5 and the value of developed countries was about 0.8. The former was much higher than the latter. The growth rate of import sea

trade demand is much higher than GDP in developing countries, and the contrary holds in developed countries.

2) Trends of Shipping Service Supply in Developing and Developed Countries

Traditionally, shipping industry has been regarded as capital and technology intensive one. As a result, developed countries (especially West European countries) endowed with abundant capital and technology dominated shipping market till mid 20th century. In 1950, world fleet share of developed country group was 89.0% (<Table 4>).⁶⁾ Especially, a limited number of G7 countries owned most of the fleet. However, the share of developed countries decreased to 22.3% by 2000, and it dropped further to 16.1% in 2010. The share of fleet registered in G7 decreased more drastically from 66.4% in 1950 to 9.0% in 2000, and then to 8.5% in 2010. As for ownership (rather than registration), the share of developed countries dropped from 89.0% in 1950 to 58.6% in 2010.

There are several factors that brought about such a change in the market share of developing and developed countries. In view of shipping industry policies, developing countries took it for granted that shipping market was dominated by developed countries till early 1960's. The developing countries concentrated their efforts on such questions as the level of freight rates and on terms of trade and balance of payments.⁷⁾ However, since mid 1960's through 1970's their attention was focused on the issue of securing their own fleet. They began to implement national shipping industry development policies. For example, major developing countries including Korea, Singapore, India and Hong Kong promoted domestic shipping as a key industry to secure stable transport means for international trade. As for China, such policy measures to develop domestic shipping industry lasted through 1980's.⁸⁾ The developing countries also began to focus their attention on means of creating an international environment conducive to expansion of their share of shipping market. The first result of their efforts was the elaboration of the United Nations Convention on a Code of Conduct for Liner Conferences (UN Liner Code).⁹⁾ One of their follow-up efforts was aimed at phasing out open registries. In addition, there were quite a lot of negotiations, resolutions and

6) Most owners of flag of convenience ships were owned by citizens of developed countries at the time. So, flag of convenience tonnage (4.0% of world fleet) is to be added to the registered tonnage (85.0%) to make the total share of developed countries.

7) Benham(1994).

8) As a result, tonnage registered in China increased from 9.5 million DWT to 20.2 million DWT during 1980-1990. Whereas, world tonnage decreased from 672.1 to 630.0 million DWT during the same period.

9) UN Liner Code was adopted in 1974 and went into effect in 1983. According to it the recommended market share among shipper countries, owner countries and the third countries should be 40:40:20.

decisions covering the bulk cargo sector.¹⁰⁾

The determinants of comparative advantage of shipping industry have been changed. The developing countries began to mobilize capital required to develop their own fleet with increased movement of capital across borders. They also began to secure the technology and knowhow required for ship operation and shipping business management by the establishment of domestic marine education and training institutions.

<Table 4 > Trends of Fleet Registered by Country groups

Unit: Million GT, %

Year	Developing countries	Developed countries	Flag of convenience		Total
			G7		
1950	9.3(11.0)	71.9(85.0)	55.8(66.0)	3.4(4.0)	84.6(100.0)
1960	11.2(8.6)	103.1(79.4)	68.9(53.1)	15.5(11.9)	129.8(100.0)
1970	40.8(17.9)	147.8(65.0)	95.5(42.0)	38.9(17.1)	227.5(100.0)
1980	91.6(25.4)	221.5(52.8)	121.1(28.8)	106.8(25.4)	419.9(100.0)
1990	134.2(31.7)	152.4(36.0)	74.0(17.5)	137.0(32.3)	423.6(100.0)
2000	157.8(28.3)	124.5(22.3)	50.2(9.0)	275.8(49.4)	558.1(100.0)
2010	308.6(32.2)	154.1(16.1)	81.9(8.5)	495.3(51.7)	958.0(100.0)

Remarks : 1) Division of developing and developed country groups is the same as <Table 1>.

2) G7: Germany, U. S., U. K. and Northern Ireland(excluding Isle of Mann), Italy, Japan, Canada, France(7countries)

3) Flag of convenience countries : Antigua and Barbuda, Bahamas, Bermuda, Cyprus, Liberia, Malta, Marshall Islands, Panama, Saint Vincent and the Grenadines, Isle of Man(10countries).

4) As of end of each year.

Source : Lloyd's(yearly editions).

<Table 5 > Fleet Owned by Country groups (end of 2010)

Unit : Million GT

Country group	Developing countries	Developed countries	Flag of convenience		Total
			G7		
Fleet	396.4(41.4%)	561.6(58.6%)	340.9(35.6%)		958.0(100.0%)

Remarks: Division of country groups is the same as <Table 4>.

Source : Lloyd's(2011).

10) Benham(1994).

2. Change of Comparative Advantage Determinants of Shipping Industry

1) Types of Shipping Companies

Shipping companies can be divided into 3 categories. i) efficient/focused operators (Type 1) whose service range is limited to port to port, ii) full-service container shipping lines (Type 2) which provide door to door service and iii) integrated supply chain service providers (Type 3) which cover the whole range of supply chain (from product design to final delivery).

<Table 6 > Types of Shipping Corporations

Type	Efficient/focused operator(Type 1)	Full-service container shipping line(Type 2)	Integrated supply chain service provider(Type 3)
Service range	Port to port	Door to door	Product design to final delivery
Overall focus	Cost	Service	Value
Culture	Focused on service adherence balanced with optimizing asset utilization	Balances broader set of customer needs with optimizing asset utilization	Focused on delivering what the customer wants
Systems	Standardized, but high integration is local	Real-time updating of product and services catalog, capacity availability and daily update of single view of customer	Real-time. end-to-end integration, deeply integrated into the customer's business
Process	High standardization – relatively limited customization options	Culture of high process standardization and componentized activities; customized products are turned into replicable ones for other customers	Culture of high process standardization with activities componentized by customer supply chain; customization limited to maintain scale economies
Business complexity	Low	Middle	High

Source : Hingorani(2005).

Firstly, the service range of shipping companies was limited to sea transport area till 1960's. They focused their efforts on reduction of costs. At the time, the major business type of shipping companies was efficient/focused operator (Type 1). Secondly, since 1970's major container shipping companies began to provide door to door service (Type 2). Such an extension of service range

was realized by the establishment of the combined transport system, which was facilitated by containerization.¹¹⁾ Thirdly, integrated supply chain service provider (Type 3) appeared since the late 1990's as shippers widely adopted the supply chain management (SCM) system. The service range of such shipping companies covers the whole range of supply chain from product design to final delivery. They focus their efforts on creation of customer value as SCM aims at maximization of value creation and customer satisfaction.¹²⁾

2) Traditional Viewpoint: Price Competitiveness

One of the most prominent advantages of shipping transport is low cost as can be seen in <Table 7>. The freight of sea transport is about US\$0.01 per ton-mile, which is far less than truck or air.

<Table 7 > Average Freight by Transport Mode(2006)

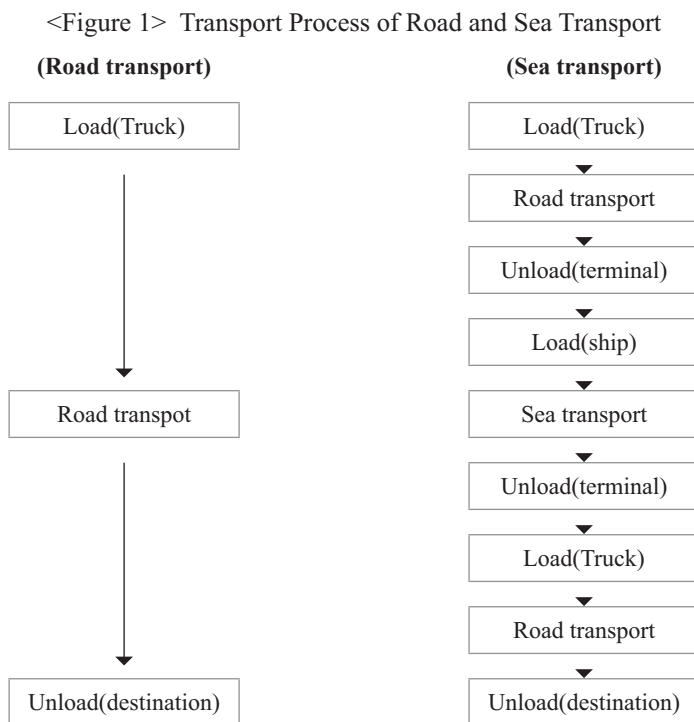
Mode	Freight (US\$/ton-mile)
Sea	0.01
Pipeline	0.01
Rail	0.02
Truck	0.27
Air	0.80

Source: U.S. Department of Transportation(2009).

However, the cost advantage does not guarantee that shipping is the most competitive mode of transport. There are several disadvantages for shipping. Firstly, sea transport itself cannot provide door to door service. It is imperative for shipping to be connected by trucking to cover the whole range of transport. There involves additional costs as the procedure is much more complex for shipping than for trucking. Shipping cannot secure cost advantage in short haul transport because of additional trucking for inland connection at both ends.

11) Steele et al.(2001).

12) Baig and Akhtar(2011).



Secondly, shipping takes longer transport time than other transport mode such as trucking and air. The speed of ship is slower than most other transport modes.¹³⁾ In addition, time losses at terminals are inevitable for shipping.

Thirdly, minimum efficient scale of shipping business is relatively large because of the more extensive range of economies of scale.¹⁴⁾ As a result, shipping cannot secure competitive advantage in transportation of relatively small quantity of cargo.

3) New Viewpoint: Value Creation

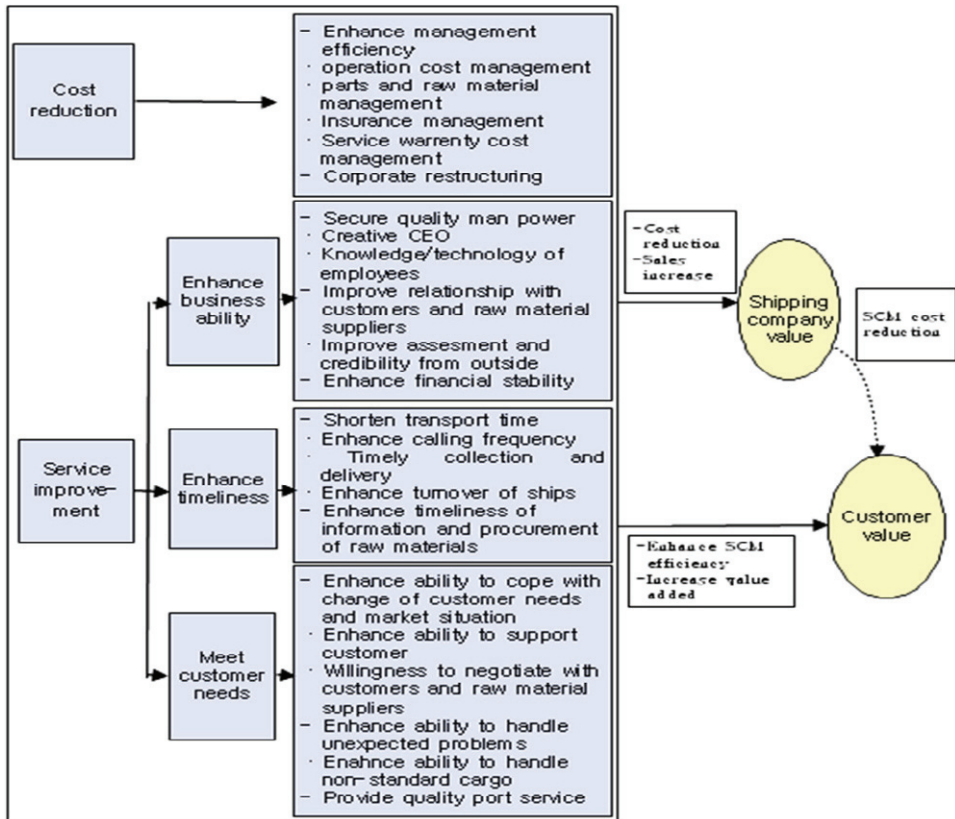
The ultimate factor to determine competitive power of a shipping company is its ability to create value of customers as value creation is the very source of profit. Value creation for a company can be achieved by optimizing the whole business processes in addition to manufacturing activities.¹⁵⁾ Accordingly, shipping companies can contribute to the shippers' value creation by providing optimized service throughout the whole process of supply chain. The value creation can be achieved by cost reduction and service improvement (refer to <Figure 2>).

13) Ship's speed of average container liners and tramps is about 18~25knots and 12~15knots respectively.

14) Tolofari et al.(1987); Hsu and Hsieh(2005); Cullinane and Khanna(2000).

15) Towill(1996).

<Figure 2 > Value Creation System of Shipping Companies



Remark: Based on Lagoudis and Theotokas(2007) and Port(1985)

At the early stage of establishment, most shipping companies have the characteristics of business type 1 in <Table 6>. However, they need to transform into business type 3 in the end because their ultimate goal is to maximize value creation for customers and themselves. Shipping companies are required to change business culture, systems and process paradigm to evolve into business type 3. And such a change of paradigm is not easy for the companies at its early stage of establishment.

III. Shipping Industry Policy Directions for Developing and Developed Countries

1. Major Objectives and Issues of Shipping Industry Policy for Developing and Developed Countries

In general, industry policies can be classified into three categories; policies of inducement, resistance and adaptation.¹⁶⁾ Among them, the purpose of inducement policies is to establish industries which are non-existent so far in the country. The policies of resistance are to be implemented for maintenance of industries which have lost their comparative advantage. Lastly, policies of adaptation are to be adopted when reallocation of resources is required to the areas of comparative advantage. Especially, change of business circumstances results in the emergence of new sectors of comparative advantage, and available resources should be reallocated to the newly emerging sectors.

The circumstances of shipping industry development are different among countries of different stages of economic development. Accordingly, the purposes and types of shipping industry policies are to be differentiated. First of all, the policy priority of most developing countries at their early stage of economic development is to secure stable and reliable means of transportation for their international trade. Many developing countries tend to adopt export-led development policies,¹⁷⁾ and as a result, massive shipping demand is generated. They are in an urgent need to develop domestic shipping industry. They suppose they may face the difficulties to secure timely, reliable and reasonable means of sea transport if they fail to establish their own fleet. The support function of shipping industry to their national economy is more important than the creation of value added production and employment opportunities function of the industry for developing countries. As a result, the typical type of shipping industry policy in developing countries at their early stage of economic development is the policy of inducement.

At this stage, domestic shipping companies can hardly secure comparative advantage as their business experiences and operational techniques are limited. In many cases, infant industry protection policy is required for the shipping industry at this stage of development.¹⁸⁾ It can be justified for the governments of developing countries to render opportunities to their domestic shipping companies to acquire business experiences and operational/management techniques. Major policy measures for inducement policy of shipping industry are cargo reservation, tax and financial benefits, direct supports and etc. Among these policy measures, cargo reservation scheme

16) Diebold(1985).

17) Nagano(2005) ; Yang(2008).

18) Redding (1999) ; Succar(1987).

used to be widely implemented in developing countries. However, the scheme was abolished in 1980's and 1990's in most countries,¹⁹⁾ except for such countries as India, Brazil and Mexico in which the scheme is still valid.²⁰⁾ In addition, various tax/financial benefits and direct subsidies are also granted to domestic shipping companies for ship investment, corporate income and operational losses.²¹⁾

In this stage, shipping companies have not accumulated enough experiences and knowhow in ship operation and business management. Accordingly, the typical business type is efficient/focused operator (type 1 in <Table 6>), whose service range is port to port and overall efforts are focused on the reduction of costs. Major types of cargo they transport are bulk, oil and general dry one, which is not containerized.

Secondly, developing and developed countries, which have already established domestic fleet, implement policy of resistance to keep domestic shipping companies which are confronted with depression of market and/or diminishing comparative advantage alive. The efforts of developing countries to establish domestic fleet during the 1960's and 1970's resulted in excessive supply of tonnage and severe recession starting from 1980's through early 2000's in the world shipping market. Most developing and developed countries endeavored to maintain domestic fleet during the period of depression (policy of resistance).²²⁾

Most developing and developed countries began to turn their attention to the value added production and job creation function of shipping industry from its support function of national economic activities. Shipping industry contributes to the achievements of national economy not only by direct effects such as value added production, employment creation, etc. but also indirect linkage effects on them. Major purposes of shipping industry policies of these countries are to maximize such direct and indirect effects on their national economy.

Such policy measures as flag of convenience, international ship register, tonnage tax scheme among others, are implemented as means of resistance policy. The flag of convenience method began to be utilized widely among the

19) For example, China and Korea repealed the cargo reservation scheme in 1988 and 1994 respectively.

20) Bertho(2010).

21) For instance, interest and tax reduction scheme is available for Chinese shipping companies which suffer from losses. In India, direct subsidy of 30% of ship price is granted to companies for new building.

22) BDI, which was indexed 1,000 in January 4, 1985, remained under 2,000 till April 7, 2003, when it recorded 2,011.

developing and developed countries since 1970's for the benefits of increased flexibility in crew employment, tax reduction (<Table 4>). Of course flag of convenience was not initiated by the governments of these countries, but they did not prevent domestic shipping companies for utilizing the expedient. International ship register scheme, which grants benefits similar to the flag of convenience such as increased flexibility in crew nationality, tax reduction and etc., was widely adopted during late 1980's and 1990's. For example, such countries as Norway (1987), Netherlands (1996), Japan (1996), Korea (1997) adopted such a ship register scheme.²³⁾ Tonnage tax scheme was adopted by such countries as Norway (1996), U. K. (2000), Demark (2007), Japan (2008). Korea also adopted the scheme in 2006. In addition, Marine Security Program,²⁴⁾ which is adopted by U. S. and Korea, can also be regarded as a form of resistance policy measures.

The typical business type of shipping companies in this stage is full-service container shipping line (Type 2) in <Table 6>. Shipping companies in these country groups have already changed into business Type 2, whose service range is door to door, with the introduction of multi-mode transport system facilitated by diffusion of containerization since 1970's. So, the goal of resistance policy is to preserve domestic shipping companies which are still in the Type 2 stage.

Thirdly, the government authorities and shipping companies in developed countries began to focus their efforts on securing new opportunities of comparative advantage in late 1990's. The goal of such an adaptation policy seems to be realized in development of integrated supply chain service providers (Type 3) as more and more shippers began to realize the importance of supply chain management. Since early 1960's developing countries began to develop their own domestic fleet (<Table 4> and <Table 5>). As a result, world shipping market turned into a red ocean. The goal of newly adopted policy of adaptation among the developed countries is to create a new blue ocean in the world shipping market.

However, it is not easy for shipping companies to secure the ability to provide integrated supply chain service with the government-led industry policies because the process and scope of business has become much more widened and complex than before. Accordingly, one of the important

23) U. K. does not have international ship register scheme. But this country grants increased flexibility in crew nationality, tax benefits and so on by revising Registration of Ships Regulations, 1993.

24) By Marine Security Program certain numbers of ships, which are designated for emergency mobilization, are restricted in crew nationality etc. and subsidized for the difference in crew nationality etc.

objectives of shipping industry policies is to maximize the function of market mechanism (or price mechanism). Many government authorities of developed countries (especially EU) began to refocus their attention on the central issue of open door policy in the world society.²⁵⁾ The illegalization of conference system in EU as of October, 2008 can also be understood in the same policy context. Major shipping companies in developed countries (especially in EU)²⁶⁾ are considered to have secured comparative advantage in the provision of integrated supply chain service (business type 3), and they seek to take advantage of the more open competitive market.

<Table 9 > Shipping Industry Policies of Developing and Developed Countries

Criteria	Policy of inducement	Policy of resistance	Policy of adaptation
Policy goal	Develop national fleet	Sustain national fleet	Develop comparative advantage sectors
Policy measures	<ul style="list-style-type: none"> - Cargo reservation - Tax and financial benefits - Direct support 	<ul style="list-style-type: none"> - Flag of convenience - International ship register system - Tonnage tax - Marine security program - Cargo reservation (U.S.A) - Other Tax and financial benefits 	<ul style="list-style-type: none"> - Maximize function of market mechanism · International efforts for open door policy · Prevention of freight collusion · Provision of footings to develop integrated logistics service providers · Certification system of integrated logistics provider · Approved 3rd Party Logistics Company Scheme
Major types of shipping company	Efficient/focused operator(Type 1)	Full-service container shipping line(Type 2)	Integrated supply chain service provider(Type 3)
Country group	Developing countries	Developing and developed countries	Developed countries

Remarks: 1) Division of industry policy is in accordance with Diebold (1985).

2) Types of shipping company is in accordance with <Table 6>.

There are also government-led policy measures of adaptation. The policy measures to promote business type 3 are designed to provide footings for shipping companies to secure comparative advantage in the new era of market situation. For example, Japan enacted the “Law to Enhance Integration and Efficiency of Logistics Business” in 2005. By that law, Japanese government seeks to integrate transport, storage, stevedore, and distribution processes. Such benefits as increased depreciation, reduction in property and city

25) Cho(2003).

26) There are three major container shipping companies such as Maersk (Denmark), MSC (Switzerland) and CMA CGM (France) in EU.

planning tax, expansion of credit insurance, guarantee of debt, land utilization convenience and etc. are granted to selected companies.²⁷⁾ Korea also implemented the “Certification Scheme of Integrated Logistics Company” in accordance with the “Basic Law of Logistics Policy” in 2006, which is a similar policy measure as the one in Japan.²⁸⁾ In addition, there are efforts to promote 3rd party logistics. Singapore adopted the “Approved Third Party Logistics Company Scheme” in 2004. According to the scheme, 3rd party logistics activities are supported by Zero Goods and Service Tax (Zero GST) benefits. Such a policy measures can be of help for shipping companies to acquire abilities to render integrated supply chain service as 3rd party logistics is outsourcing the whole process of logistics service requirements of shippers.

2. Adverse Effects of Shipping Industry Policies

All industrial policies have costs because of governmental intervention in the price (market) mechanism. First of all, they result in inefficiency in resource allocation, especially when the governments try to allocate national resources to infant or declining industries. Especially, there incur efficiency loss when the governments channel national resources into import-competing industries in small economies, be they declining or infant.²⁹⁾ So, developing countries, which used to be dependent on foreign fleet for shipment of international trade, can lose economic welfare if they invest in the development of their own domestic fleet.

In addition, there can be other problems arising from various government failures. Government failures fall into two categories: omission and commission.³⁰⁾ The former occurs when a government does not properly perform its role in the areas in which the public sector possesses a comparative advantage. For example, such activities as enforcing law and order, production of public goods, carrying out large scale and risky projects which requires a lot of expenses are to be taken care of by the government. On the other hand, the latter failure happens when the government enters into other fields which can best be served by the private sector. One of major causes of commission failure is rent-seeking behavior. The rent seekers

27) The Law to Enhance Integration and Efficiency of Distribution Business(流通業務の総合化及び効率化の促進に関する法律, 2005).

28) Basic law of logistics policy.

29) Caves, Frankel and Jones(2002).

30) Fjckle(2009).

take advantage of government offerings for less than their value and try to gain rights to the valuable items.³¹⁾ Such a rent-seeking behavior may cause corruption of bureaucrat, which, in many cases, brings about decreased investment.³²⁾ In addition, limited information, political pressures and interests, bureaucratic self-interest and so on are some examples to bring about failures of government intervention among others.

Any government action that affects activities related to shipping industry should be implemented with proper procedures for deciding action and administrative capability to enact them to avoid/minimize adverse effects of it. The government intervention should be limited to such areas as market failure, infant industry and the like. Especially, in the case of infant industry protection, the detailed measures and time span of support should be determined in view of the learning potential of domestic shipping companies because excessive protection may hinder their self efforts to secure required competitiveness.

IV. Concluding Remarks

The purposes and directions of shipping industry policies of different countries are to be determined by the industry development circumstances, which are characterized by their stage of economic development. Firstly, there arises a lot of shipping demand for developing countries in their early stage of economic development. As was shown in the empirical analysis in chapter II, GDP elasticity of shipping demand (especially import demand) for developing countries is larger than that of developed ones. The establishment of domestic fleet can be an urgent task for developing countries to meet the ever increasing shipping demand as many of them feel that foreign fleet cannot be a perfect substitute for the domestic one. They think they can more easily and reliably secure timely, reasonable and quality shipping service from domestic shipping companies rather than foreign ones. Consequently, many developing countries implemented policy measures to establish domestic fleet during 1960's and 1970's. Some important examples of such an inducement policy measures

31) Krueger(1974).

32) Ades and Tello(2006).

are cargo reservation, tax and financial benefits, direct subsidy, etc. Among them, cargo reservation scheme can be regarded as one of the most powerful means for infant industry protection in shipping field. Secondly, many developing and developed countries tend to implement policy measures of resistance to keep their declining shipping companies alive. Especially, most developing and developed countries, which had already secured domestic fleet, implemented resistance policy measures to maintain domestic shipping industry during the period of severe depression starting from early 1980's through early 2000's. Such measures as flag of convenience, international ship register, tonnage tax scheme, etc. are put into enforcement for the maintenance of national fleet in these countries. Thirdly, the business models of shipping companies are to be honed and streamlined to deliver their chosen customer value proposition. They are required to render integrated supply chain services from product design to final delivery since late 1990's, when supply chain management began to be widely adopted among the shippers. However, the ability of shipping companies to create value of their customers can hardly be obtained by government led industry policies. The governments, especially in developed countries, are trying to devise a new policy paradigm differentiated from previous policies of inducement and resistance.

In accordance with the change of circumstances of shipping industry development, dominant business type of shipping companies evolves from efficient/focused operator (type 1) to full-service container shipping line (type 2), and finally to integrated supply chain service provider (type 3). With the changes of business type, the overall focus of shipping companies also changes from 'cost' to 'service' and then to 'value'.

The ultimate competitive power of shipping companies will be determined by the ability to create value because generation of profit cannot be realized without value creation. Shipping companies can contribute to their customer value creation by optimizing the whole process of supply chain. Optimization of integrated supply chain service can be achieved by cost reduction and service level enhancement. However, such an ability of shipping companies to create value cannot easily be secured by government-led industry policies. As a result, many governments, especially in developed countries, seek a paradigm shift in shipping industry policies. They try to minimize public

intervention to the shipping market, and instead, adopt indirect and market friendly measures to create footings for domestic shipping companies to secure competitive power. The policy measures implemented by such countries as Japan, Korea, Singapore, etc. to promote integrated supply chain service are a few examples of public efforts to facilitate shipping companies to secure the ability to create customer value. On the other hand, a few developed countries redirected their attention to the function of market mechanism rather than governmental intervention. They exert market-opening pressure to other countries in the world.³³⁾ The illegalization of conference system in EU, which has 3 major shipping companies,³⁴⁾ may also be understood in such a policy context. The governments of such developed countries seek to provide domestic shipping companies with as many opportunities as possible by resorting to open and free market system.*

33) Such countries as Japan, EU, Norway, Singapore etc. are major countries which support open market policy in shipping and related fields . Choi(2007).

34) Three major shipping companies in the world are Maersk (1st, Denmark), MSC (2nd, Switzerland) and CMA CGM (3rd, France).

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