

STRATEGIC ALLIANCES IN THE LINER SHIPPING INDUSTRY

by

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Submitted to the Department of Ocean Engineering in Partial Fulfillment of the
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Masters of Science in Ocean Systems Management

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ABSTRACT

Shipping partnerships were one of the earliest forms of business alliances that emerged in modern history. Early liner alliances were mainly concerned with the management of freight rates, but increased customer expectations for service value encouraged carriers to explore other forms of alliances to share costs and to increase their service competitiveness.

This thesis first identified the different forms of operational, pricing and logistical alliances, and the various cost and space-sharing mechanisms for operational and logistical alliances. Liner carriers have to balance the benefits of alliances against additional coordination and complexity costs, and against the loss of operational independence arising from partnership integration.

Antitrust literature suggests that cooperation is a logical antithesis to competition, and may be detrimental to the consumers. This hypothesis is tested on the liner shipping industry through an economic analysis based, in particular, on the market implication of pricing alliances. Findings suggest the existence of a market failure in the liner shipping industry; a failure that can be averted through cooperation between liner carriers. The existence of antitrust immunity for liner carriers to cooperate freely is both relevant and essential for a continued stability in the industry.

I also explored key attributes that make successful alliances and concluded that a strategic match of structural and behavioral characteristics between the partners is a necessary pre-condition for success. Using game theory techniques, I developed a model to test the likelihood of carriers to "defect" from pricing alliances. The model showed that carriers are most likely to defect when it has a low market share and when a higher elasticity exists between the gains of defection and defection costs. The defector will also obtain higher total revenue gains from higher price reductions, beyond an equilibrium point where increased market share from price reductions create a net positive change in total revenues.

Lastly, this thesis reviewed the historical trend of strategic alliances in the liner shipping industry and offered an outlook for future alliances. Pricing alliances are expected to expand their scope and influence as they continually battle antitrust issues, while logistical cooperations will very likely gain greater importance and prominence. Operational alliances will continue to be the mainstay of strategic liner alliances through a different form—loose, global and networked—as liner carriers prepare for the next century.

Thesis Supervisor: Ernst G. Frankel

Title: Professor of Management and Ocean Engineering

*In loving memory of Grandmother,
who opened our eyes.*

"You'll always be with us."

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While I have benefited from the assistance of all these individuals, I alone take responsibility for the views put forth in this thesis and for any errors or omissions within.

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List of Abbreviations

ANL	Australian National Line
APL	American President Lines
ASCL	Australia Straits Container Line
CGM	Compagnie Generale Maritime
ChoYang	Cho Yang Shipping
CMB	Compagnie Maritime Belge Transport
COSCO	China Ocean Shipping Company
DAL	Deutsche Africa-Linien
EAC	East Asiatic Company Transport
EC	European Commission
EHCL	Ellerman Harrison Container Line
Evergreen	Evergreen Maritime Corporation
FMC	Federal Maritime Commission
Hanjin	Hanjin Shipping Co.
Hapag-Lloyd	Hapag-Lloyd AG
HMM	Hyundai Merchant Marine
K-Line	Kawasaki Kisen Kaisha
LT	Lloyd Triestino
Maersk	A.P.Moller-Maersk Line
Marad	Maritime Administration
MISC	Malaysian International Shipping Corporation
MOL	Mitsui OSK Lines
Nedlloyd	Nedlloyd Lines BV
NLS	Nippon Liner System
NOL	Neptune Orient Lines, Ltd
NYK	Nippon Yusen Kaisha
OOCL	Orient Overseas Container Line
P&O	P&O Container Line
Sea-Land	Sea-Land Service, Inc
Teu	Twenty-footer Equivalent Unit
US	United States
Yang Ming	Yang Ming Line

Glossary of Shipping Terms

- "Closed" conference:*** a liner conference that restricts membership based on the existing members' requirements of pre-entrance qualifications, for example the service frequency of the applicant's service.
- Deferred rebate:*** a portion of the freight rate that is returned to the shipper by the ocean carrier as a reward for the shipper's promise to give the ocean carrier all of or a major part of its shipments.
- Dual rates:*** a freight rate system which offers a lower rate is offered by the ocean carrier to shippers who sign exclusive shipment patronage agreement with it, and a higher rate to shippers who do not sign such agreement.
- Intermodalism:*** the use of more than one mode of transportation between the origin and destination points, which is offered or performed by one or more carriers.
- Liner conference:*** a group of ship-operating ocean carriers formed for a particular trade lane with its main objective to regulate shipping rates and terms for carriage of goods within its geographic scope.
- "Open" conference:*** a liner conference that accepts all applicants that desire membership. Pre-entrance qualifications are often very limited.
- Service contract:*** a contract between a shipper (or shipper association) and an ocean carrier (or conference) in which the shipper commits a minimum volume of cargo over a specified time period in exchange for a commitment by the ocean carrier on a provision of a certain rate and service level.
- Shippers' association:*** a group of shippers that consolidates or distributes freight on a non-profit basis for the purpose of negotiating time-volume or service contracts on behalf of the members of the group.
- Time-volume contract:*** a contract between a shipper (or shipper association) and an ocean carrier (or conference) in which a rate schedule is provided to the shipper whereby the rates within vary with the volume of cargo tendered by the shipper over a specified time period.

1. INTRODUCTION

1.1 Strategic Alliances in Perspective

The use of strategic alliances to enhance one's competitive position is not a new phenomenon. It was an important warfare strategy widely applied through the ages. The Chinese warlords of the Warring States (circa 350 B.C.) were known to form alliances with strategic partner-states to subdue other "unfriendly" or stronger states. The six teachings of T'ai K'ung aptly noted that:

"To attack the strong with the weak, you must obtain the support of a great state and the assistance of neighboring states."¹

European states grouped together to increase their power in the pre-Treaty of Westphalia days. Such strategic alliances were also one of the main factors that proliferated an otherwise local conflict into regional wars and eventually the world wars of the twentieth century.

Strategic alliances in businesses have a similar long history, though not as well documented until recently. Lynch (1989) suggested that the first business collaborations were established in ancient Egypt when merchants cooperate in their commercial activities. Lack of data and documentation, however, had inhibited a conclusive study on the historical trend in the types and number of strategic business alliances. Recent researchers like Collins and Doorley (1991), Herbert and Morris (1988) and Hladik (1985) suggested that the use of joint ventures have been on the rise, while others like Kobrin (1988) found

¹ Sawyer, R., and Mei-chün, *Wu ching ch'i shu (The Seven Military Classics of Ancient China)*, Westview Press Inc., 1993: *T'ai K'ung Liu-t'ao (T'ai K'ung's Six Secret Teachings)*

that there was little change in the trend since the 1970's. Meanwhile, Gomes-Casseres' research (1988) argued that there exist joint venture formation cycles which respond to the changing nature of global competition and changing organizational capabilities of firms.

While there exist difficulties in charting the historical trend of business collaborations, there is a general consensus that the number of business alliances, including international alliances, and their importance are on the rise (Hung, 1992; Contractor and Lorange, 1988; Harrigan, 1987; Perlmutter and Heenan, 1986; Ohmae, 1985; Killing, 1983). Global trading and cross-border investments have expanded the scope and size of both the resource and consumer markets. This has helped to enhance cost efficiencies and create a high flow of goods across borders; inevitably raising consumer expectations on product and service quality. Companies realized that independent programs are not able to guarantee success in meeting these demands and expectations. Strategic alliances offer a viable option to maintain and enhance their competitive advantage and market position.

1.2 What is a Strategic Alliance?

Differing terms were used to describe strategic alliances, and an even greater variant of definitions were given by the many academic papers written on it. Slocum, Jr. (1992) referred to it as a coalignment between two or more firms where the partners hope to learn and acquire from each other the technologies, products, skills and knowledge that are not available to their competitors. Herbert and Morris (1988) called it a linkage between companies to pursue common goals and share risks and rewards; and noted that it should cover only part of a corporation's activities. Hung (1992) defined strategic alliances as long-term cooperative business agreements between two or more companies

to pool, exchange and/or integrate specific company resources for achieving some agreed objectives.

I prefer the last definition and would use it as a basis to describe strategic alliances for this thesis. The term “strategic alliances”, as used in this thesis, refers to as cooperative agreements between two or more companies that seek to achieve long-term common or separate objectives through the coordinating of pricing, marketing, operational and/or logistical actions, or through the pooling, exchanging and/or integration of specific company resources. It must be noted that “long term” refers to the effects of the alliance agreement and not to the agreement itself. Although a long-term benefit would typically be preceded by a long-term agreement, this is not a necessary condition. A short-lived cooperation could provide equally far-reaching gains. I would hesitate to include that the partners must have and only have “some common objectives” (as defined by Herbert et al, 1988). While most alliances may include a statement of objectives in their charter, it must be noted that these are only the declared goals; most alliance partners would also have separate and sometimes concealed targets. One of the partners may be motivated to form the strategic alliance to defray fixed costs, while another may be encouraged by the prospects of breaking into a new market. It is thus clear that the partners need not agree to pursue common objectives to enter into a strategic alliance. I am also reluctant to include mergers and acquisitions as forms of strategic alliances. Strategic alliances as defined above refer to arms-length cooperations that may include equity-sharing joint ventures, but excludes merger and acquisition activities.

1.3 Literature Review

Increased academic research on the subject of partnerships emerged largely in the late-seventies and the eighties. The rise in interest on strategic alliances appeared to be

correlated to the increased joint venture and merger and acquisition (M&A) activities during this period. Mergers and acquisitions were sometimes included in previous studies on strategic alliances. Although partnerships cover more than just joint ventures, mergers and acquisitions, these were the most visible type of alliances and had attracted more than their fair share of attention.

Types. Strategic alliances include many types of cooperative business agreements that may range from information sharing alliances that do not involve equity sharing to joint ventures that involve equity sharing and to the furthest form of partnership, the merger. Harrigan (1985) used this distinction to segregate alliances into three groups involving (1) full equity ownership, (2) partial equity ownership and (3) no ownership control (see Figure 1-1). Harrigan's ownership structure was useful in understanding the extent of direct management control and influence on the partnership.

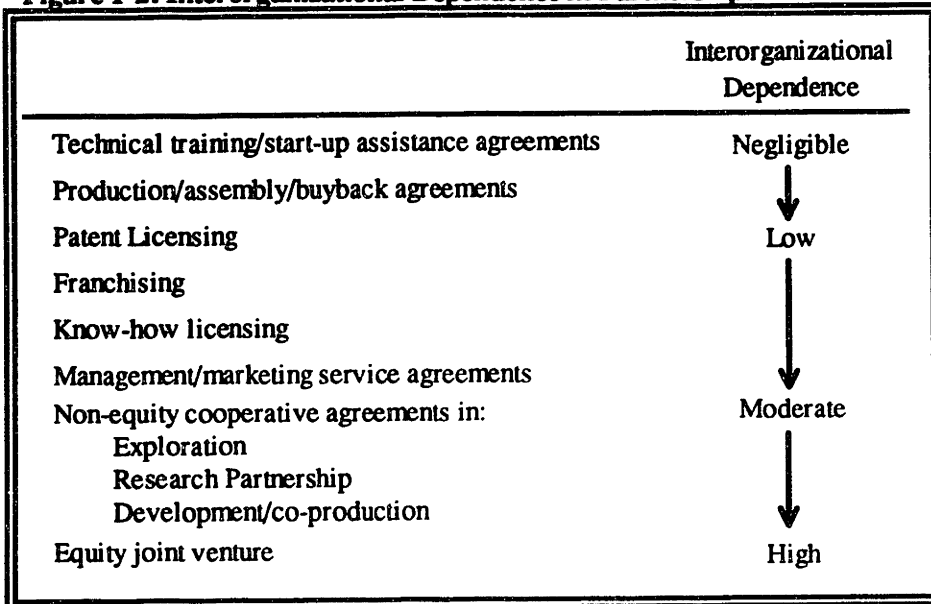
Figure 1-1: Ownership Structure

Full Equity Ownership	Partial Equity Ownership	No Ownership Control
Mergers and Acquisitions Internal Venturing	Joint Ventures Minority Investments	Cooperative Agreements Research and Development Partnerships Cross-Licensing and Cross-Distribution Agreements Joint Bidding Activities

(Source: Harrigan, 1985)

Contractor and Lorange (1988) went a step further in mapping out the extent of interorganizational dependence between the partners (see Figure 1-2). Contractor and Lorange's hypothesis showed that the partners' dependence increases as partnerships move from the non-ownership structure to full or partial ownership structures.

Figure 1-2: Interorganizational Dependence in Partnerships



(Source: Contractor and Lorange, 1988)

Alliance networks. Second tier alliances are formed when core strategic alliances form another level of cooperation. The dynamics of such networking were examined by several academics. Harrigan (1985) referred to them as spider-webs; and predicted that stronger firms will use spider-webs of alliances to hedge against risks of mismatch with a single or single group of partners, unstable or volatile industries, rapid technological change and customer diversity. However, while stronger firms will obviously have more bargaining power to negotiate multiple alliances, we must note that weaker firms will also have a similar strong incentive to forge more than one strategic linkage. One might argue that the weaker firm has a stronger need to be “webbed” to hedge against any sudden fall-out with its stronger partner as this will leave it more vulnerable.

Nohria and Garcia-Pont (1991) noted that strategic alliances are an important step to access strategic capabilities in other firms. Firms within the same capability group, i.e.

those possessing similar competitive advantages, form pooling blocks of alliances; and firm from different groups form complementary blocks. In analyzing the global automobile industry, Nohria et al argued that there exists few links between the various strategic blocks—firms that have aligned themselves to a particular strategic block find it difficult to establish ties with other blocks due to inertia and social embeddedness. Notwithstanding, Buckley and Casson (1988) highlighted that participation in more than one strategic alliance can be a strong factor to develop monopolistic powers at minimal capital cost. By forming a separate and interlocking partnership with two (or more) strategic blocks, a firm can establish a strong market position and create a strong bargaining position with both (or all) its partners. Thus, in this instance, conflict and deception seem to be the motivational force towards the establishment of strategic alliances, instead of cooperation and trust.

Motivations. It might be obvious that strategic alliances are formed to generate benefits that would otherwise not be easily attainable independently—after all, collaborations of any level will incur substantial management time and fixed costs. Strategic alliances have been identified as a useful basis to share risks and fixed costs, acquire and share information and access new markets (Berg, Duncan and Friedman, 1982). There exist, however, other forms of less obvious and negative motivations that are equally forceful in driving the formation and sustenance of strategic alliances. We have seen an example from Buckley et al on the use of multiple alliances to gain market powers and thus indirectly suppressing the competition. The management of rivalry through strategic alliances is another way to reduce competition by turning present or potential competitors into allies (Pfeffer and Nowak, 1976; Burgers, Hill and Kim, 1993).

Strategic alliances was also identified as a source of learning and information and resource sharing (Hamel, 1991); however, one must be careful against being de-skilled through this

process. A complacent partner may find its skills absorbed or find itself overly dependent on its partner and lose its core competence (Hamel, Doz and Prahalad, 1989; Reich and Mankin, 1986).

Pitfalls and Success Prescription. Perlmutter and Heenan (1986) identified six elements in operating a global strategic partnerships: mission, strategy, governance, culture, organization and management. The authors warned that if companies persist with traditional ways—centralized decision making, business ethnocentricity and proprietary technology—in handling these issues, the alliance is bound to fail. Perlmutter and Heenan concluded by aptly quoting biologist Lewis Thomas that the survival of the fittest is not a battle where the strongest, shrewdest and most dominating will prevail, but where those who cooperate best with others will.

Several other authors had emphasized on the importance of the human touch to insure a successful alliance. Berg and Friedman (1980) described the initial stage of joint ventures as a burst of activity and negotiation reflecting courtship. Harrigan (1986) likened business joint ventures to marriages when she noted that the success rate of joint ventures was about 45 percent and only slightly higher than that for American marriages. Since American divorce rates are much higher than that of other cultures, would this mean that alliances involving non-American entities will have a lower break-up rate? This might prove to be a relevant question as we will see later that the shipping industry is increasingly dominated by carriers from developing nations, particularly from Asia. The point on relating the human touch to alliances seems relevant. Slowinski (1992) noted that alliances are much easier to form than to manage and called on the management to rally the people. Partnering is a people-oriented process and the relationship between operating managers represents a psychological contract that has to be continually renegotiated.

1.4 Problems

Interest in business alliances grew since the early-eighties as evidenced by the large number of academic papers published on this subject. However, much less work was done on strategic alliances concerning the service industry, in particular the shipping industry, and concerning alliances involving organizations from the non-Triad regions of the US, Europe and Japan. First, due to a lack of standard definition of strategic alliances, most alliance data inevitably focused on merger-type or joint venture-type alliances which are easier to track. There was a weaker coverage of “loose” and collaborative-type alliances, like those prevalent in the liner shipping industry. Second, most studies were concentrated on alliances involving organizations from the manufacturing industry. While there are many overlaps in the mechanics of the manufacturing and service industries, there exist subtle characteristics unique to the dynamics of service-oriented alliances that differentiate them from the dynamics of manufacturing-based alliances. There was also a definite lack of academic work on strategic alliances in the liner shipping industry. Lastly, almost all studies inevitably focused on alliances as analyzed from the perspective of organizations from developed nations. Much less was covered on the dynamics involving or seen from the perspective of organizations from developing countries. This perspective will be increasingly important as these organizations make their mark in the global playing field; in particular, in the shipping industry where the fastest growing liner carriers in the last decade are those based in developing countries, particularly from the Far East.

1.5 Objectives and Methodology

This thesis will look into current issues on strategic liner alliances, and analyze the mechanics and dynamics of strategic alliances in the shipping industry. The thesis shall

focus on the containerized liner services. It will study the motivations that push liner operators to form strategic alliances, and determine the different archetypes of alliances and the mechanics of sharing available to liner carriers. The thesis will also examine how regulatory practices have helped or impeded the formation of such partnerships and also seek out factors that affect the success of the partnership. An analysis of the current strategies, and the historical and future trends of strategic alliances in the shipping industry will be offered. The basis for this analysis will be derived from a review of all forms of strategic alliances involving liner services operated by the world's top liner carriers.

1.6 Strategic Alliances in the Liner Shipping Industry

Probably one of the earliest strategic alliances in the shipping industry took shape in the form of cartel-like partnerships between shipping carriers in the nineteenth century. When the first steamships were introduced, their higher speeds created a shorter voyage turn-around time—thereby greatly increasing available shipping capacity that led to downward pressure on freight rates. The opening of the Suez Canal in 1869 reduced voyage times between Europe and Asia, and thereby further increased available capacity to the trade. Concerned shipowners quickly recognized that with some form of cooperation, they can prevent freight rates from spiraling down. The UK-Calcutta shipping conference, widely recognized as the first shipping conference, was formed in 1875 to regulate traffic, fix rates and suppress competition from non-conference members². Such cooperations are still very much prevalent today, and these modern-day shipping conferences retained much of the *raison d'être* of the first conference. Other forms of cooperation soon prevailed, ranging from “loose” cooperations to entity-forming joint ventures. Motivations for alliances were no longer limited to just price-setting functions, and nor were cooperations

² Deakin, B.M., *Shipping Conferences: A study of their origins, development and economic practices*, Cambridge University Press, 1973

limited to cartel-like groups. In Chapter 2, I will review the motivations to liner operators to enter into strategic alliances. Chapter 3 then discusses the archetypes and specific styles of strategic alliances in the shipping industry. I will also explore the various mechanics of costs and cargo space sharing between liner carriers.

Whichever form a strategic alliance may take though, the notion of cooperation itself runs contrary to the concept of perfect competition and economic efficiency pursued by purists among economists. Collusion of any form to restrict or lessen competition would be an antithesis to free enterprise. For this reason, most major maritime nations have enacted some form of restriction on collaborative and anti-competitive business practices. Perhaps one of the most strict forms of antitrust regulation would be found in the US Sherman and Clayton Acts. The shipping industry is, however, shielded from the scrutiny of these legislation by the US Shipping Act of 1916 which conferred anti-trust immunity to the industry; this was further strengthened by the US Shipping Act of 1984. In Europe, recent legislation in 1986 was enacted to exempt shipping carriers from competition laws. Controversies on the antitrust immunity, however, persist. Some shipper groups and regulators have argued that antitrust immunity conferred to the carriers are detrimental to trade. Chapter 4 reviews the regulatory framework in the US, Europe and some major maritime nations pertaining to alliances in the shipping industry. I will also discuss the issue of antitrust immunity in the liner shipping industry.

Strategic alliances offer many obvious and subtle benefits to the collaborators. However, as with any other forms of marriages, such fusion of differing corporate (and possibly national) cultures also generate the occasional conflict and disagreement. Such conflicts could lead to the dissolution of the alliance if left unchecked or if they are not managed properly. Alliances in the shipping industry are neither indifferent nor immune to such

pitfalls. In Chapter 5, I will look into the key factors that spell success for strategic shipping alliances, and into the dynamics of collective action in partnerships.

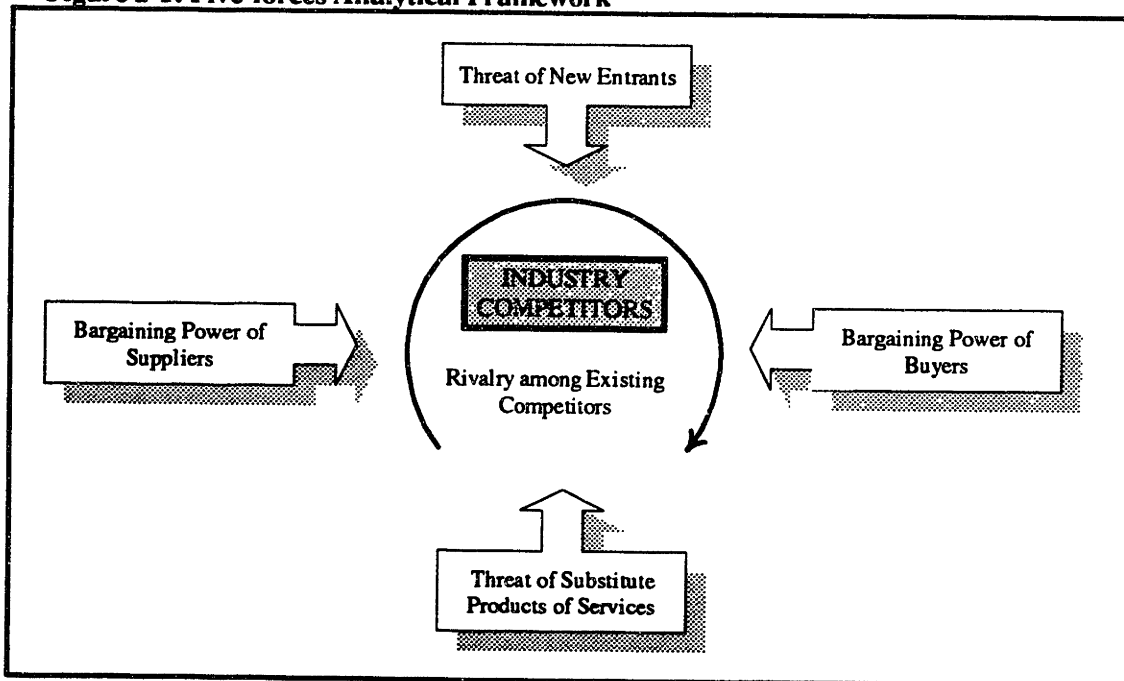
The advent of containerization revolutionized the liner shipping industry in the 1960's. Containerization improved handling and reduced damage to and the pilferage of cargoes. More importantly, containerization reduced cargo handling time at ports, improved the predictability of ship schedules and reduced voyage turn-around times. Containerization, however, proved to be costly to the carriers. New investments had to be made on ships, equipment (namely containers and container handling equipment) and new management techniques. When containerization eventually caught on in the early 1970's, carrier formed partnerships to defray the high initial costs of investing in this new mode of ocean transportation. Alliances that were formed then reflected this operational change in the industry. By the 1990's, containerization in the major liner routes is foregone conclusion. Liner carriers are instead more interested in both the enhancement of the service quality and reduction in costs. Greater customer expectations required that greater value be provided by carriers' liner services; in effect, raising the need for a better service quality at a lower price. Strategic alliances between liner carriers offer opportunities to fulfill such demanding customer needs. In Chapter 6, I will offer an analysis of the historical trend in strategic liner alliances. I will also discuss the future shape of liner partnerships by investigating new paradigms in cooperation that can be pursued by liner carriers.

2. MOTIVATIONAL FACTORS

2.1 Industry Analysis

In order to be able to appreciate the forces that push liner carriers towards strategic alliances, we will need to understand the structure of the industry itself. The level of competition and attractiveness of the industry as a whole often guide the strategy formulation of the carrier, and thus the corporate and competitive structure of the company³. For this purpose, Porter's (1980) five-forces model is used as the framework of analysis (see Figure 2-1).

Figure 2-1: Five-forces Analytical Framework



Source: Porter (1980)

³ The maxim that organizational structure follows strategy guides various strategy formation models, but for a contra-view, see Mintzberg, H., "The Design School: Reconsidering the Basic Premises of Strategic Management", *Strategic Management Journal*, Vol.11, John Wiley & Sons Ltd, 1990.

Threat of New Entrants. Unlike bulk shipping (and many other service industries) which rely relatively little on infrastructural set-up, the liner shipping industry depends heavily on a complex chain of logistical support. The modern liner carrier functions more like a “transportation” company rather than a “shipping” company. Liner capital investments include an array of hardware and software set-up. These includes deep-sea vessels, feeder vessels, containers, chassis and information systems. An independent self-operated bulk carrier that owns a handful of bulk ships or tankers can compete as effectively as another bulk carrier operated by an established concern that owns a much larger fleet of ships. But not the liner operator that wants to compete effectively in the liner trade. A much higher commitment to investments in equipment and systems is necessitated by the more demanding liner trade.

Suffice to say that such investment requirements are daunting enough to deter the few brave souls who may have considered liner shipping as a career (though this is not to say that there have not been successful brave souls who excelled in this area). This would ordinarily reduce the threat of new entrants to the industry. However, one must be aware of the two factors that mitigate this point.

First, the new entrant may choose to “lease” the hardware rather than own them, or “buy” support services rather than make them. Ships can be time-chartered and containers leased from the various container leasing companies. Alternatively, liner operators can sign long-term bareboat charters on purpose-built ships that are financed and owned by third parties.⁴ Many governments, like those in the US, Canada, France and Australia, also offer various ship construction and operating subsidy programs to liner operators—purportedly for the purpose of maintaining a national-flag merchant fleet.

⁴ Recent post-3,000 Teu newbuilding orders in 1993 from COSCO, CMA and OOCL reflected such arrangements.

While the economic efficiencies of such subsidies are questionable, they nevertheless lower the barriers to owning and operating container ships. Meanwhile, logistical support services may usually be “bought” at competitive rates from competing vendors, except perhaps in countries where such activities (such as trucking services) are protected and the supply of the services limited. (Even then, the carriers can resort to “economic bullying”, as have been applied by some developed countries, to open up these sectors of the industry). However, while the purchase of these services from vendors lowers entry barriers, they might put a new entrant at a competitive disadvantage compared to an incumbent carrier that operates an integrated and networked chain of support services.

Second, competition in the liner industry is often contained within the various trade routes, and a “new entrant” to a particular trade route may not be a “new industry entrant”. It is conceivable that the new entrant to the particular trade route is an existing player (possibly a major one) from another trade route. Such a new entrant will be spared from having to make high initial investments in logistical and systems support (to insure a competitive service). For example, MOL, which already has established liner services in the Far East-North America and North America-Europe trade routes, would have had all its logistical support and systems in place in North America and Europe to facilitate its entry into the North America-Europe trade. Such a carrier’s entry to the trade route will now only depend on its ability to furnish additional ships and containers, unlike the “new industry entrant”. This task is not insurmountable given that ships and containers are highly mobile assets that allow easy redeployment.

These are an important qualifications to high entry barrier to the liner shipping industry. In fact, entry barrier to a particular trade route is low for an existing competitor that is currently operating in another trade route. Entry barrier is, however, relatively higher to a

“new industry entrant” that wants to compete *effectively* by matching the scale economies and efficiency of an existing competitor which has integrated supplier activities.

The level of production in the liner shipping industry (i.e. the supply of cargo capacity) is dependent on the size of the ships deployed—this supply capacity is lumpy and does not allow the new entrant to gradually accumulate experience and benefit from a progressive upward move in the learning curve. The minimum efficient size of a deep-sea ship in the 9,002-nautical mile round-trip North Atlantic route was shown by Talley (1990) to be between 30,000 to 40,000 deadweight tons (or about 1,800 Teus to 2,800 Teus).⁵ A longer distance route will increase the minimum efficient size required. Liner carriers that act on their own, therefore, do not have the benefit of being able to incrementally increase their capacity from a small container ship of a few hundred Teus. A new entrant is forced to start off with a oversized pair of shoes and grow into it, and in the process, live with the discomforts, or costs, arising therein. Thus the threat of new competitors in the form of “new industry entrants” is relatively low (although they may be disruptive), while the threat from existing “new entrants” is high. The sections below will discuss how strategic alliances can alleviate these entry barriers.

Bargaining Power of Suppliers. Suppliers to the liner shipping industry include port authorities, marine terminal operators, rail/truck operators, depot and warehouse operators, container lessors and labor. With few exceptions, discussed below, there exists a reasonable level of competition between the suppliers and this moderated the bargaining power of the suppliers. There are, however, suppliers who are advantaged by external factors such as their unique geographic location or historically strong political position. Ports like Singapore and Colombo are superiorly located to act as hub points for South-

⁵ Based on Talley’s (1990) study and assuming that a typical competitive liner service would make between seven to nine 16-hour port calls in the North Atlantic route.

east Asia and the Indian sub-continent respectively. Other advantages include the monopoly of a country or regional port facilities by a single port authority; this includes ports like Vancouver in western Canada and Antwerp in Belgium. However, competition from neighboring ports often reduced the bargaining power of these port authorities: the port of Vancouver is constantly challenged by the ports of Seattle and Tacoma (in Washington, US), and the port of Antwerp by the ports of Rotterdam and Zeebrugge.

Some labor unions also hold exceptionally strong bargaining power arising from their historically strong political power. Waterfront labor union in Australia have been identified as the main factor that dragged down the Australian maritime transportation, and labor unions in the North-east US still imposes a high (and un-negotiable) charge on carriers to pay for their pension fund. Other skewed factors that enhanced a supplier's bargaining power include the high consumption power or high manufacturing base of a particular region that makes it uneconomical for carriers to serve the area other than making direct service calls. The New York metropolitan which supports an eleven million population is a formidable consumption area, and Taiwan which is the second most important source of liner cargoes to the US are examples of areas that have attracted direct port calls despite less than favorable conditions to the ship operator. The longshoreman union in New York continues to impose high union fees in comparison to their neighboring ports south of New York, and the port facilities in Kaohsiung and Keelung (Taiwan's deep-sea ports) have been plagued with congestion problems since the early-nineties.

Bargaining Power of Buyers. Carriers have traditionally moderated the bargaining power of their customers by forming pricing coalitions called liner conferences. Regulatory measures, however, have held back any possible abuse of these conferences to subvert the bargaining power of the buyers. In fact, if the freight rates are to be used as a

measure of success of these conferences, they would have indicated that these pricing coalitions have somewhat failed and that buyers continue to retain much of their bargaining power. Further issues on this will be discussed in the following sections and chapters.

Threat of Substitute Services. Although there have been studies to explore the feasibility of implementing an economical air transportation system to ship large volumes of cargoes, these have proved to be impractical so far. Maritime transportation, in the form of containerized liner shipping, continue to be the sole dominant mode of transportation for moving large cargo volumes.

Intensity of Rivalry among Existing Competitors. The intensity of rivalry among existing competitors is largely driven by the derived demand for maritime or shipping services and the level of over-capacity in a trade route. Periods of global economic downturn which suppressed cargo space demand and the persistent introduction of new ship capacities by the carriers have kept the level of rivalry between existing competitors high. Newly introduced shipping capacities often exceed the projected demand (due to its lumpy attributes, as discussed above). The level of rivalry has been particularly intense in the weaker direction of the major trade routes, for example the east-bound sector of the Far East-Europe route and the west-bound sector of the Far East-North America route. (Trade imbalances in the North America-Europe route have fluctuated in the past, although current trend indicates that loading in the east-bound sector could be depressed again). A Drewry Shipping Consultant study forecasted that these weaker sectors will continue to display only between a 55 percent to 65 percent utilization of employed capacity until 1997.⁶ These are the sectors that are most susceptible to price-cutting

⁶ Drewry Consultant Shipping report on "Container Market Profitability to 1997", 1992.

pressures, yet high quality services have been able to segregate their offerings, by capturing premium cargoes, which offer greater margins.

2.2 Motivating Factors for the Formation of Strategic Alliances

Strategic alliances have been used to enhance the competitive advantage of carriers and to stabilize conditions affecting the source of income. The competitiveness of liner carriers can be enhanced through resource sharing to reduce costs and to re-align the competitive position of the carriers through product differentiation and geographic diversification. Strategic alliances between liner carriers are also an influential factor to modify the industry structure. Liner carriers' earnings are sensitive to fluctuations in the freight rates, which are in turn dependent on the intensity of competition in the industry. These factors can be stabilized against wild fluctuations through alliances.

2.2.1 Reduction in Costs

Economies of scale. Economies of scale is an obvious benefit from partnerships. Carriers which share space on their vessels have the opportunity to operate larger vessels since its vessels must now cater to more volume. Consider two carriers that each operate four 2,000-Teu vessels on a 28-day round-trip once-weekly service; thereby providing each carrier a capacity of 2,000 Teus per week. If these two carriers were to operate a similar 28-day round-trip once-weekly joint service by pooling their vessel resources, each carrier need only to contribute two 4000-Teu vessels, and each will still be able to have access to a weekly capacity of 2,000 Teus. The unit operating cost of a larger vessel is lower than that for a smaller vessel (i.e. it is cheaper to own and operate two big ships rather than four smaller ships) for various reasons.

First, the additional construction cost for a larger container vessel is not directly proportionate to additional space added. The elasticity of cost to space capacity (i.e. indicating the increase in cost based on a unit increase in space capacity) is less than one. Newbuilding construction cost based on 1992 costs indicated that when ship size increases from 800 Teus to 2,500 Teus (or 212 percent), its construction cost increases by only 160 percent, suggesting size cost economies with an elasticity of about 0.75, i.e. doubling a ship's size will increase the construction cost by only 75 percent⁷. Second, crew costs typically remain virtually unchanged for third or fourth generation container vessels of between 2,000 to 4,000 Teus in size. Third, ship operating costs (including cost of stores, supplies, equipment, maintenance and repair, insurance and ship management fees), port charges (including pilotage, tuggage, dockage and line handling) and fuel costs also displayed a high economies of scale. Chadwin et al (1990) showed that the cost elasticity is only 0.17 to operating and fuel costs, and 0.279 to port charges⁸. Gilman (1983) had nevertheless noted (correctly) that the a bigger vessel display a cost diseconomies of scale with respect to time spent in the port if the number of containers moved⁹ per day is the same and ports are not equipped with large numbers of container cranes which permit a larger ship to handle more containers per unit time. This is to be expected as the total daily capital and operating cost is higher for the bigger vessel—the more containers it need to load or discharge, the longer time it takes in port and hence the higher its total costs. It must be noted though, that bigger vessels being longer in their overall length¹⁰, usually allow a higher crane density

⁷ Based on 1992 data from Table 6.2, Drewry Consultant Shipping report on "Container Market Profitability to 1997", 1992.

⁸ For a detailed discussion, see Chadwin, M.L., J.Pope, W.K.Talley, *Ocean Container Transportation: An Operational Perspective*, Taylor & Francis, 1990: Chap 5

⁹ including containers loaded and unloaded.

¹⁰ The conventional manner to increase a third generation Panamax vessel's loading capacity was to increase its length but to hold its width, which would usually be built to the maximum Panamax

(number of cranes per length vessel) and thus allow more container movements per day, and diffuse the impact of size diseconomies.

Reduced and Shared Capital Costs. The benefits of resource sharing are ever more prevalent in capital-intensive liner shipping industry where infra-structural set-up forms a necessary backbone for the business. A liner carrier that aspires to launch a weekly service in a 28-day round-voyage route will need to deploy four ships. Strategic alliances allow for a reduction of the number of vessels needed—this forms a strong motivation to carriers to consider alliances and reduce the carrier's exposure to heavy capital costs.

Alternatively, a carrier which has already invested heavily in land-based infra-structural setup, like marine terminals or container depots can improve the utilization of these facilities by signing on a vessel or space-sharing partner which does not own any of these facilities. Due to operational and marketing reasons, the vessel or space-sharing partner will, in all probability, also use the liner carrier's land-side facilities. It is operationally more efficient for vessel-sharing partners to use only one marine terminal in a geographic region, for example in the Los Angeles/Long Beach area, to avoid keeping equipment inventories in different parts of the region. From the customers' (or shippers') perspective, it would also be preferable that the liner carrier uses only one marine terminal in a particular port area. The use of different marine terminals will create confusion and inconvenience to a shipper, and may reduce the competitive edge of the liner carrier. Thus, when carriers share vessels or cargo space, the carrier which owns or operates a marine terminal will in

width of 32.25 metres, constant. A post-Panamax vessel, which need not limit its width to Panamax-width, will be able to increase its carrying capacity by increasing its length or width or both.

all likelihood be able to get its partner's cargo volume to assist in spreading the costs of investment in the marine terminal.

2.2.2 Enhanced Competitive Position

Strategic alliances are used to enhance a carrier's competitive positioning by enabling it to enhance the level of service provided and by facilitating any diversification plans. Service enhancement can be provided through an increased sailing frequency, expanded geographic scope or expanded range of services offered. An example of diversification is the ability of carriers to use strategic alliances to redistribute their ship capacity.

Increased Sailing Frequency. "Just-in-time" (JIT) inventory system management has been employed successfully to minimize shippers' inventory cost. Core to this inventory management concept is the availability of a timely and frequent transportation service. A recent development saw trans-Pacific east-bound shippers taking their inventory management techniques a step ahead by taking advantage of lower labor, warehouse and logistical costs in the Far East to consolidate "ready-to-use" (RTU) containers in the Far East. This inventory management technique is especially relevant to retail stores which import a variety of goods from a diverse source. These goods were previously shipped separately from their country of origin to North America, consolidated in North America and sent to the many retail outlets in North America from the consolidation hubs. Sometimes whole container loads are sent to the retail outlets without re-consolidation; this creates savings in re-consolidation costs but incurs additional storage costs at the final destination since the retail outlet may not have the capacity to absorb whole container load of the same product. However, by consolidating these goods in the Far East into RTU

containers, these products can be shipped directly, in smaller quantities, to the various retail outlets without any costly re-handling in North America. This method calls for smaller but more frequent loads to be fed to these retail outlets. Liner carriers can respond to this service demand by increasing their liner service frequency through strategic alliances. When MOL colluded with K-Line in the Far East-North America trade in 1992, both carriers were able to increase their service frequency from twice-weekly to four times-weekly. Both MOL and K-Line, which both used to offer about a 2,400-Teu per sailing capacity on two sailings a week, are now able to offer about a 1,200-Teu per sailing capacity on four sailing a week after the partnership was effective i.e. both carriers have less capacity to fill per sailing but have more sailings to fill. Liner carriers thus cloned their customers logistical needs by providing smaller capacities per sailing but on a more frequent basis. It is also easier to fill the cargo space capacities when there is less space capacity per sailing and more frequent sailings are available.

Expanded Geographic Scope. Liner carriers may, through a simple space exchange program, gain access to new markets. Strategic alliances allow liner carriers to tap into its partner's strength in a particular market or to gain access to the partner's service network. As the carriers' customers continually sourced the global market for cheaper materials and labor, and for new consumer markets, liner carriers tagged along. The ability to sell a global transportation service formed a source of differentiation for the carriers' product, and served to enhance their competitive advantage. Strategic alliances facilitate this objective. For example, APL, which does not operate from Europe, announced in 1994 that it will try to form a partnership with its Far East-North America service partner, OOCL, to jointly operate a liner service in the Far East-Europe trade by 1996. APL will, thus,

be able to tap into OOCL's long experience in operating in the Far East-Europe trade and gain entry into a new market area.

Redistribution of Excess Capacity. A liner carrier that is mired with excess capacity on a trade route as a result of an internal downsizing or a re-focus of corporate mission to de-emphasize a particular trade route or to diversify its exposure can redistribute these excess capacities through a strategic alliance with another similarly-situated carrier from another trade route. This can be achieved by the swapping of capacities between the carriers or by reconfiguring their liner services. This appears to be the motivation behind Hapag Lloyd's joint liner service with NOL and NYK launched in April 1993, and covered the Far East-North America and North America-Europe trade routes. Hapag Lloyd originally operated five ships in the trans-Atlantic route with access to a weekly capacity of about 2,500 Teus. Its alliance with NOL and NYK required that it deploy a total of six ships to the partnership. This increased Hapag Lloyd's ship commitment by one and compelled it to reduce its weekly capacity in the trans-Atlantic trade to accommodate its new partners' space requirement. However, when viewed in perspective, this appears to be a small price to pay. Hapag Lloyd is provided with an opportunity to de-emphasize its reliance on the more turbulent trans-Atlantic trade reduce its capacity in the trans-Atlantic route. The strategic alliance thus allowed Hapag Lloyd access the trans-Pacific trade and a chance to redistribute its trans-Atlantic capacity to the trans-Pacific.

2.2.3 Modified Industry Structure

Reduced Entry Barrier. We have seen above that containerized cargo capacities are lumpy and cannot be incrementally increased. A new entrant or an existing

carrier which wants to increase its existing capacity is forced to deploy cost efficient capacities that could be too big and beyond its present marketing ability to use effectively. Alliances that share resources or space capacities allow the carriers to start small and incrementally increase their capacities. For example, a carrier that needs to deploy four 2,000-Teu ships in a weekly trans-Atlantic service to gain cost efficiency when it can only currently use, say 1,000 Teus per week, can sell its excess space to another similarly-situated carrier. The high scale of economies that is a deterrent to start new services is thus eliminated. Alternatively, the said carriers may decide to share responsibility to deploy the ships, each providing two 2,000-Teu ships and thus is entitled an aggregate 1,000 Teus per week each. This reduces capital requirement required to purchase the ships, and thus diminish the barrier of entry. (If one of the carriers prefers to use chartered ships rather than owned tonnages, the reduced hardware requirement means that the probability of finding two compatible ships, instead of four, for charter is increased). Such collaborations reduces capital outlay in new investments and thus reduces the risk associated with such ventures.

Reduction of Competitive Volatility. Liner carrier can form partnerships, such as pricing coalitions, that directly surpress competitive volatility in the industry. Notwithstanding that these coalitions are continuously challenged by some shippers, they have been implemented in all major maritime trade routes with the support of governmental legislators in one form or another. Carriers can also reduce the intensity of competition indirectly through operational alliances. Carriers that share operational resources, for example cargo space, also form an unspoken pact not to initiate predatory rate actions to capture the existing customers of the partner. When these carriers provide the same level of service through alliances, there is

pressure on both carriers to reduce any price differentiation for the part of the service that is shared.

Lock-out of Best Partner from Competitor. A carrier may seek to ally itself with a dominant competitor to prevent other major competitors from forming a group of “super” carriers. By forming a strategic alliance with a chosen major partner, the carrier pre-empt any lock-out from a major grouping.

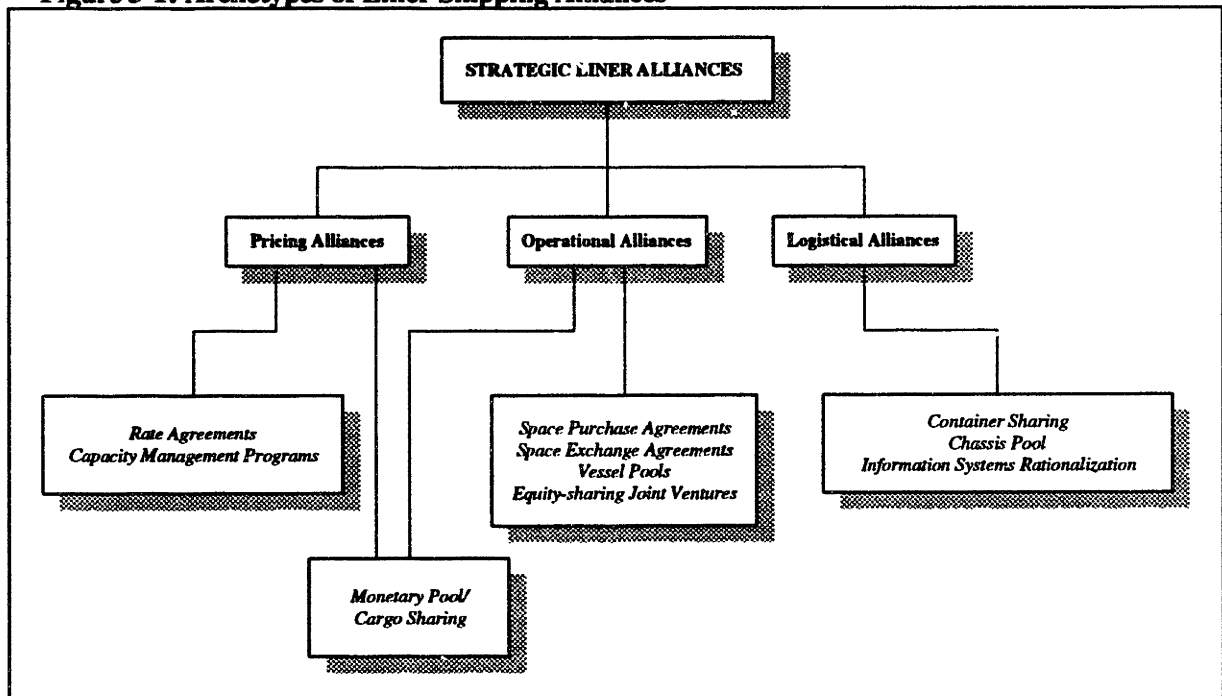
Easing of Political Tensions. Strategic alliances with a local carrier from a country that practises protectionism allow the carrier to be viewed as an “insider”. These can reduce political tensions and lower any non-tariff trade barrier against the foreign carrier.

3. A TAXONOMY OF LINER ALLIANCES

3.1 Archetypes of Strategic Alliances in Liner Shipping

Strategic alliances between liner carriers can be characterized into three archetypes—operational, pricing and logistical alliances (Figure 3-1 show the three archetypes of strategic alliances between liner carriers). Operational alliances involve two or more carriers which collaborate by sharing vessels or by chartering, exchanging or sharing vessel space. Such cooperation served to improve their service frequency and/or reduce capital expenditure, as discussed in Chapter 2. The ability to improve their level of service without additional commitment of hardware resources is a strong motivational factor that encourages the formation of operational alliances. Operational alliances

Figure 3-1: Archetypes of Liner Shipping Alliances



concern themselves primarily with the maintenance of operational efficiency of the services. Such alliances offer scope for various levels of resource integration, and may include cooperation in the fields of marketing, financial and vessel operations. Integration of marketing and financial resources is also motivated by the same objectives of pricing alliances, namely to manage intra-alliance competition. Carriers in an operational alliance need not necessarily agree to a common goal for the partnership; each may pursue its own long-term agenda.

Pricing alliances, in contrast, are formed by carriers with a common objective. The carriers are concerned with the maintenance of trade stability through the management of intra-alliance competition. Such alliances typically involve a group of carriers which has a substantial share of the trade capacity. The early form of such alliances was established to regulate freight rates and traffic flow. Alliance members cooperate with each other within these pricing alliances, known as liner conferences, to maintain high freight rates. A latter version of pricing alliances involve cooperation by alliance members to regulate available space capacity amongst themselves, with the objective of preventing an overcapacity situation. In smaller trades, a few major operational alliances tend to dominate the market share and would inevitable function as a pricing alliance. These groups are known as consortia-conferences, and some of their intra-competition management techniques include a call for member-carriers to pool their revenues or profits, or to be assigned fixed market shares.

A third archetype of strategic alliances in the liner shipping industry emerged recently in the form of logistical alliances. Competitive demands and increasing customer expectations forced liner carriers to expand their scope of services offered. While the early liner carriers were predominantly involved in only the port-to-port segment of the transportation chain, modern-day liner carriers are involved in almost all segments of the

transportation chain, modern-day liner carriers are involved in almost all segments of the transportation chain. Liner carriers were soon involved in more land-based activities and found a need to invest heavily in these sectors. A partnership with a competitor-liner carrier provides a good opportunity to share costs and risks in these new areas to the liner carrier.

3.2 Operational Alliances

This is by far the most prevalent type of strategic alliance between liner operators. Operational alliances can be viewed from four levels of cooperation: joint marketing, monetary pooling, vessel pooling and sailing schedule coordination. Each level of cooperation binds the partners in a different area of collaboration: marketing, profits, hardware and service design. Depending on the levels of collaboration that the partners participate in, operational alliances can be classified into five groups: the equity-sharing joint venture, revenue/cost pool consortium, vessel pool partnership, space exchange agreement and space purchase agreement (see Table 3-1).

Table 3-1: Types of Operational Alliances

	Joint Marketing	Monetary Pooling	Vessel sharing	Schedule Coordination
Space purchase agreement	No	No	No	No
Space exchange agreement	No	No	No	Yes
Vessel pool partnership	No	No	Yes	Yes
Revenue/cost pool consortium	No / Yes	Yes	Yes	Yes
Equity-sharing joint venture	Yes	Yes	Yes	Yes

Using Contractor et al's (1988) analysis of alliance types, the level of organizational independence is depicted in Figure 3-2. The equity-sharing joint venture provides the

partners with the least independence due to the various levels of operational cooperation. Conversely, the space purchase agreement allows the partners the greatest independence in designing its operations.

Figure 3-2: Operational Independence

Operational Independence	
Space Purchase Agreement	High
Space Exchange Agreement	↑
Vessel Pool Partnership	↑
Revenue/Cost Consortium	↑
Equity-sharing Joint Venture	Low

The operating style of a strategic alliance depends on the desired level of operational flexibility, market dynamics and the availability of hardware. A liner carrier which puts prime importance to the value of operational independence will tend to stay away from any form of financial or operational integration, and opt for a non-integrative space purchase alliance to improve its service. Other forms of operational alliances will involve some form of integration which may improve operational efficiency at the expense of autonomy. A more integrated operations will minimize overlapping sailing schedule, manage intra-alliance competition for customers and allow better deployment of vessels. These will be discussed below.

3.2.1 Space Charter Agreement

This represents the simplest form of operational alliance where the partners rely on minimal operational integration. Its use is prevalent in two groups of liner carriers:

- carriers which are not represented in a trade route and want to serve a liner route, but avoid any infrastructural involvement, and
- carriers which are already operating a liner service in a particular trade route and want to increase its service frequency and space capacity.

Such carriers will choose to enter into a space purchase agreement with another or a few other liner operators. The space seller continues to retain full marketing and operational independence while the slot purchaser retains its marketing independence but forfeits any influence on the design and operations of the liner service. While the partners could enter into a relatively long-term agreement, exit barriers are normally low. Since this form of partnership involves minimal integration between the partners, termination conditions for such agreements are usually more flexible compared to other forms of strategic operational alliances.

As the space purchaser is in effect a shipper to the space seller, albeit a committed shipper, such space purchase agreements offer the space seller an opportunity to secure a fixed income for part of its cargo space. Thus having secured a base source of income, it will have greater flexibility in its marketing and pricing strategy to pursue higher freighted cargoes elsewhere.

Another motive for the space seller to sell its container space would be to dampen the market expansion of the space purchaser. An aggressive competitor which has ambitions to deploy its own ship tonnage to launch a new service may be persuaded to defer or delay their plans if it is offered committed space on an existing liner

service. Since the minimum efficient scale of a deep-sea container ship can be as high as 2,000 Teus and at least a weekly-frequency service will be needed to run a “minimum level” service in the three major deep-sea trades¹¹, capacities deployed by newcomers will be substantial and will be damaging to the balance of supply and demand in the affected trade route. In 1994, the top ten liner operators offered at least a weekly service in the Europe-North America route, a twice weekly service in the Asia-Europe route and a four times-weekly service in the North America-Asia route. A weekly service will require the deployment of four, eight and five ships for the above routes respectively. This heavy infrastructural requirement forces potential newcomers to experience a quantum leap in its space capacity. Such high capacity increases may prove to be unsustainable to the newcomer and may force it to take drastic price reduction measures to insure that the space is filled up with rate-paying cargoes.

Similarly, a carrier which has an existing liner service or services in a particular route and wants to expand its space capacity may find the cost economies of incrementally increasing its capacity too high. Incremental capacities can be added by jumboising a container ship, but the cost economies are too high to allow small incremental capacities to be added. The carrier, thus, is faced with an option of deploying new and bigger ships to the trade route and face a big (and possibly unsustainable) increase in its carrying capacity, or of purchasing space from another carrier. From the viewpoint of the space seller (which is an incumbent carrier in the trade route), additional new capacities de-stabilizes the trade freight rate and profitability. Hence, it may be a smart move for the existing carriers to stop the newcomer from entering a trade with its own vessels by offering it committed (but limited) space on their

¹¹ The three major deep-sea trade lanes were the Asia-Europe, Europe-North America and North America-Asia routes.

services. The space seller must first weigh these benefits against the threat of helping a newcomer or an existing competitor to grow. If the newcomer or competitor does not have the management and financial resolve to sustain a big capacity, it will not be sensible for existing carriers to help it step up its capacity and marketing efforts. On the contrary, if it can be determined that the newcomer will in one way or another enter into the trade route, it may be prudent to dampen its entry by offering it limited space in exchange for agreement not to deploy additional ship tonnage into the trade. Such newcomer-carriers could include government-controlled and non-market liner operators whose sole aim to launch a liner service is for nationalistic reasons, e.g. to support an export economy or to gain access to foreign currencies. These carriers will enter the trade regardless of the economics involved, and the only way to delay or stop them would be to offer them some cargo space on existing services.

From the space purchaser's viewpoint, such agreements will help it tide over the initial years of uncertainty in obtaining a substantial volume to support an independent service. It must weigh this against a limited option for growth and the lack of autonomy in designing its own liner service.

A recent example of the use of the above strategic move could be seen in NYK's 1991 agreement with HMM to sell the latter 500 Teus per week on its joint service with NOL in the Korea/Japan-to-North America Pacific North-west service. NYK was apparently concerned with HMM's ability to launch its own service from Korea/Japan to the Pacific North-west and upset the demand/capacity balance in this trade route. HMM, backed by the Hyundai Group and its heavy industries arm (that is capable of building modern container ships), Hyundai Heavy Industry, appeared capable of launching a new independent service that would throw additional capacity

into this trade route. NYK, being the leading carrier from Japan to the US West Coast, had a high stake in this route and needed to prevent any deterioration of freight rates in its primary hunting ground. By locking HMM to a 500-Teu-per-week space purchase agreement, NYK was able to limit HMM's marketing and delay its expansion plans.

Other carriers are much reluctant to form any alliances that rely on chartering space to a horizontal competitor. EacBen's chief executive, Jorn Hinge, noted two "big" dangers when he commented on a reported HMM attempt to buy cargo space on EacBen's Far East-Europe ships, "[Y]ou gain a competitor and your [marketing] agents suffer, since their allocations are cut back."¹² (HMM did not have a liner service in this trade route then). Such dangers, however, have to be balanced against the risk of the potential space purchaser launching its own service and disrupting the trade capacity supply and demand. One and a half years after Hinge's comments were published, HMM had launched its own Far East-Europe service and unnerved shipping executives on the prospect of a price war in the Far East-Europe trade. In the same period EacBen had closed down all its operations after its parent company, the East Asiatic Company industrial conglomerate, sold its shipping interest to A.P.Moller-Maersk Line.

The space purchase agreement is also a prevalent form of agreement in alliances between trunk line operators and feeder operators. Feeder services, or shortsea shipping, are prevalent in the European and South-east Asian maritime trades. These shortsea services were propagated by the adoption of the "hub-and-spoke" relay concept by the liner industry. The relay concept, widely used in the airline

¹² *Containerisation International*, "Efficiency: EacBen", January 1992

industry, calls for deep-sea vessels to visit only one or a selected few ports (referred to as the “hubs”) in a particular geographic region. The other ports in the region will be served by transshipping cargoes at the hub ports onto smaller feeder vessels which relay them to their final destination (thus forming “spokes” from the hub port). The operations and economics of shortsea shipping require a different set of capabilities, and are often restricted by governmental intervention to protect local shortsea operators through cabotage laws. This forms a good motivation to deep-sea operators to phase off this operations by forming a space purchase agreement with a feeder operator.

3.2.2 Space Exchange Agreement

Service Structure. While space purchase agreements do not involve any resource sharing between the partners, space exchange agreements necessitates a relatively higher integration between the partners. Space exchange agreements involve the exchange of cargo space between liner services that are operated independently. In order to minimize duplication of port coverage or schedule timing, the partners would coordinate to plan their service schedules. Such coordination allows the partners to enhance the efficiency of their sailing schedules. Upon agreement on the schedules structure, each partner takes operational responsibility for each of the services. This arrangement may require one or some of the partners to change their original sailing schedules.

K-Line and MOL established a space exchange partnership in the trans-Pacific in 1992. The agreement obviously benefited both partners as both carriers now have a greater sailing frequency to offer their respective customers. However, the level of the benefits would have been compromised if the carriers had not made changes to

the ports of call and to the days of call of their original services. Many overlaps in their services would have occurred and negate any positive benefits from their cooperation.

Such benefits are clearly superior to that achievable from space purchase agreements where carriers buy cargo space from each other without any schedule coordination. However, these benefits come at a cost—changes to the original sailing schedules are both disruptive to the partner's customers and costly to implement. If the carriers' pre-partnership services overlap on the day of the week that each carrier's service calls at a port—for example, both carriers' service from Hong Kong to Los Angeles/Long Beach calls at Hong Kong on Sundays, there would have been a compromise to the value added to the partnership. One of the services would have to be moved to another day of the week by either delaying or speeding up the ships to create a gap. Both options are costly. The speeding up of ships incurs higher fuel costs and carries a risk of schedule disruption. Delaying of ships are equally costly; the average ship cost for, say a 2,000-Teu, ship was between US\$20,000 to US\$25,000 per day. A three-day idling of the ships will cost the K-Line-MOL partnership a hefty US\$300,000 to idle a five-ship service fleet.

The coordinated schedules will also take up more management time compared to the uncoordinated independent services operated under space purchase agreements. Although services under space exchange agreements are operated independently by the respective carriers, the other partners now have an interest and say in the operational quality of the services. The space swap accords each partner ownership of the timely performance of all the coordinated services. Each carrier would want to ensure that the partner's (or partners') services perform as well or better than their services. A carrier whose independent liner services have previously been able

to fetch a premium price due to their on-time and efficient schedules cannot afford to see any deterioration in the level of service provided by its partner's liner service which it will now be using to serve some of its customers. Thus, apart from the initial start-up costs, much more management and coordination time and cost will also be incurred in administering space exchange agreements.

The higher implementation and coordination cost thus made it common that space exchange agreements require a longer effective period and a higher commitment from all the partners compared to space purchase agreements. Space exchange agreements are typically signed for a period of at least three years. Carriers must be sufficiently confident that the additional costs in setting up a space exchange agreement can be recovered and surpassed within this period.

Space exchange agreements, nevertheless, provide the partners more autonomy compared to the other forms of integrated services, like the vessel pooling agreement. It only requires the carriers to coordinate their sailing schedules to obtain the benefit of improved frequency and port coverage, but it keeps the daily operating responsibility of a particular sub-service (within the integrated service) to the individual partners. The carriers continue to be responsible for the efficient and timely operations of their respective ships and liner services. This alliance option is also attractive when the partners already have compatible ships within their respective services and need not integrate their ships. We will see in the next section how incompatible ship sizes within a partner's fleet may prompt the formation of a vessel pool agreement instead of a space exchange agreement.

Space Exchange and Cost Sharing. When sub-services that are operated by the respective partners within the integrated service are comparable, the space exchange

is usually conducted on a one-for-one basis. Otherwise, if the sub-services are not comparable, i.e. a sub-service is deemed to be of higher value than another sub-service, the partners may equalize the values by applying equilibrium factors to the space or costs. The partners can either agree

- to swap space on a one-for-one basis, and the operator of the “inferior” sub-service to monetarily compensate the other operator by a pre-determined equilibrium factor based on an agreed base cost; e.g. if the base cost is determined to be US\$15 per Teu per day and the equilibrium factor is agreed as one and one-tenth (i.e. the inferior sub-service is worth one-tenth less than the other service), the compensation will be:

$$\text{US\$15} \times 0.1 = \text{US\$1.50 per Teu per day on every Teu swapped, or}$$

- to pre-define an exchange factor to effect the space swap; e.g. ten Teus on a partner’s sub-service may be deemed to be “worth” eleven Teus on another partner’s sub-service if the swap factor is agreed to as being one and one-tenth. This option would negate the need for monetary settlement between the partners.

The equilibrium factor for the sub-services will be determined by the value of the service and the costs in operating the sub-services. Similarly, the amount of monetary compensation or the space exchange factor will be dependent on the partners’ negotiation based on these factors.

Hence,

$$\text{Equilibrium factor} = \text{value factor} + \text{operating cost factor} \quad \dots \quad \text{Equation 3-1}$$

The value of the service is typically pegged to the sailing frequency and competitiveness of the transit times offered by the sub-service. Most liner services in

the major liner routes today are on weekly frequencies and hence this factor is not differentiated. That leaves the only latter factor (transit times) as the indicator of the service “value”; however, this is a difficult factor to put a value on. For example, the transit time from Tokyo and Hong Kong to Los Angeles is about nine days and twelve days respectively, based on an average steaming speed of 21 knots. While the Tokyo transit shows a lower number, that does not necessarily mean that it is superior to the Hong Kong service since both transit times are the fastest achievable times for the respective ports. The value of the respective transit times is also firm-dependent; a carrier which has a more important customer base in Hong Kong will rank the task of achieving the fastest possible transit from Hong Kong as more important or valuable than that from Tokyo.

A faster service will inevitable be achieved at the expense of a higher operating cost, lower port coverage or a higher risk of default on the timeliness of the service. For these reasons, and due to the ambiguity on the “value” of the services, this factor cannot be used alone when the agreement partners negotiate the equilibrium factor. Operating cost considerations complement the value factor in determining this factor.

Operating costs can be separated into three types:

- ship costs including the costs of financing, crewing, maintenance and repair, insurance, supplies, stores, lubrication, communications and ship management,
- bunker costs including marine fuel and marine diesel oil, and
- port and canal (where applicable) charges including harbor dues, dockage, tuggage and pilotage.

In space exchange agreements, ship costs for ships operated by the different partners are usually assumed as “sunk costs” and ignored as a factor in determining the equilibrium factor. Bunker costs depend on the efficiency of the ship’s consumption and on the deployed speed of the sub-service. Port and canal charges will obviously depend on the number and location of the ports served by the sub-service. An equal-weighted or Teu-weighted costs could be used to determine the average operating costs for the respective partners. The ratio of these costs equates the cost factor. There are serious principle conflicts in the use of this formulae for space exchange agreements. While such cooperation seek for high efficiency, a higher cost operator (e.g. arising from the use of inefficient high-fuel consuming vessels) will be ironically advantaged by having a high operating cost factor.

The somewhat burdensome task of obtaining and comparing these information further negates the advantage of space exchange agreements which benefit from an arms-length, low integration and low transaction cost type of cooperation. For this reason, carriers participating in a space exchange agreements are more keen to assume that the daily operating costs per Teu for all ships are similar and use only the round voyage times of the sub-services as a basis for determining the equilibrium factor, unless there exists an abnormal mitigating factor; e.g. one of the sub-services calls on an abnormally expensive port or uses the services of a canal.

Where,

Cost ratio of the sub-services (Cost ratio)
= Ratio of total operating costs per round voyage of the sub-services
= Ratio of (Daily-Teu operating cost x Round voyage time)

Hence, if the Daily-Teu operating costs are the same for the partners,
Cost ratio = Ratio of Round voyage times

Thus, if the “value” factor is considered inconsequential,
Equilibrium factor = Cost ratio = Ratio of Round voyage times

If both partners operate sub-services with the same round voyage times, the space exchange can be conducted on a one-for-one basis. Since there is essentially no sharing of operating costs, each partner will be motivated to keep its costs to as low as possible.

Cargo space that has been exchanged will be under the ownership of the partner (rather than the vessel owner) for the duration of the agreement. Therefore, unutilized cargo space on a vessel (i.e. cargo space that is expected to be unused after the vessel sails from the last port of loading) may not be used by the vessel owner or any other member of the agreement unless there is a prior agreement of free access to unutilized space. The carriers may agree on three forms of access to unused space:

- (1) free access to unused space where no prior consent from the space owner is needed,
- (2) partial free access to unused space subject to a pre-agreed limit on the number of slots to be accessed freely; thereafter consent from the space owner is required, and
- (3) no access to unused space unless consent of the space owner is obtained. The carriers will typically agree on a payment for the transfer of excess space.

Regardless of the style of space access chosen, the carriers are expected to closely coordinate their space requirement and transfer with each other.

3.2.3 Vessel Pool Agreement

Service Structure. Vessel pool agreements represent a more integrated form of operational alliance. This type of alliance calls for the partners to pool their vessels and operate a joint service. In the case where the joint service comprises a few sub-

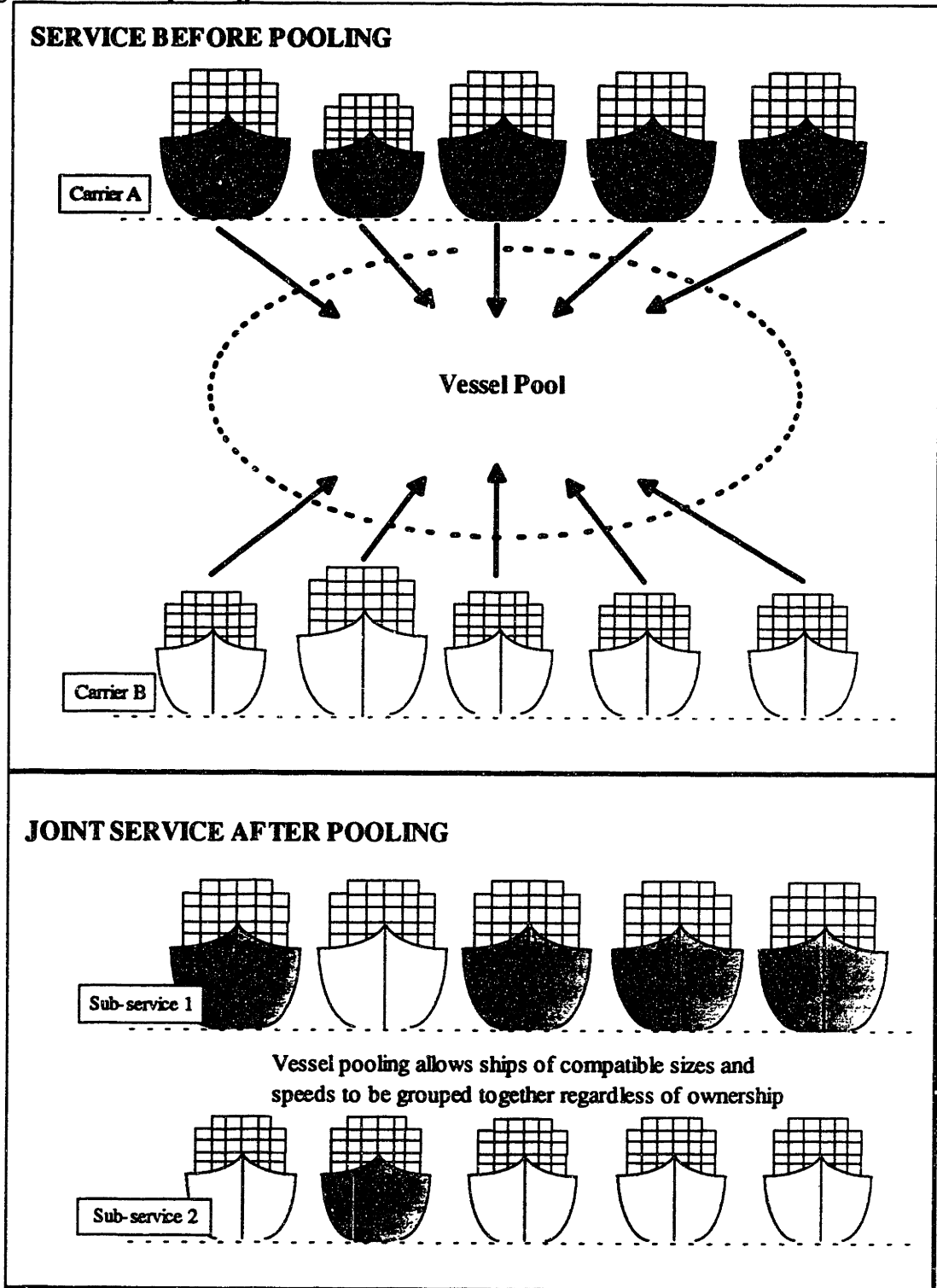
services (multiple sub-service alliance), vessels are deployed in the respective sub-services based on the characteristics, rather than the ownership, of the vessels. Thus, vessel pooling allows ships of compatible sizes and speed capabilities to be grouped together regardless of the vessel ownership (see Figure 3-3).

This concept is markedly different from that of space exchange alliances where the carriers coordinate their sailing schedules but run separate (and independent) sub-services and swap space between their services. Vessel pools are also popularly used in single sub-service alliances where carriers contribute vessels to a common pool and use them to operate a single joint service.

This integration of resources calls for a higher degree of coordination between the partners, increases the level of complexity in managing the schedules and increases the risk of deteriorating the schedule integrity. Since vessels are now integrated within a sub-service, all vessels within the sub-service must perform well in order that the sub-service can be rated highly for its efficiency. We will recall that one of the main missions of liner carriers is to provide their customers with a reliable, timely and fast transportation service. With increased coordination, complexity and risk of default, the vessel pool agreement could prove to be an antithesis to this mission objective; so, wherein the attractiveness of vessel pooling?

Single sub-service alliance. The benefits of the vessel pool to a single sub-service alliance are rather evident and need little discussion. Carriers who own, or have available, only a few vessels that would not have been sufficient to launch an independent service will obviously benefit from being able to pool their resources with other similarly situated carriers and operate a joint service. The Vessel Sharing Agreement (VSA) group comprising Nedlloyd Lines, CGM and MISC operates a

Figure 3-3: Vessel pool Agreement



total of seventeen vessels between the Far East and Europe. The round voyage time for this route is typically between 56 to 63 days, i.e. eight to nine vessels are required to generate a weekly frequency service. Consider the partners' vessel provision (see Table 3-2).

Table 3-2: Ship Deployment in a Vessel Pool Alliance

Ships deployed (number & size in Teus)	
Nedlloyd	Total 9 ships: 5 x 3600, 2 x 2950, 2 x 2700
CGM	Total 5 ships: 1 x 4400, 1x 3000, 2 x 2700, 1 x 2500
MISC	Total 3 ships: 1 x 4400, 2 x 2800

Neither CGM nor MISC would have been able to launch a Far East-to-Europe service if they were to launch such as service independently. On the other hand, Nedlloyd would have been forced to deploy seventeen to eighteen ships if it wants to offer two independently-operated weekly sailings to its customers. This could be too high an asset commitment for Nedlloyd. A vessel pool thus allows the partners to flexibly determine the number of ships to be deployed by each carrier without being constraint by the total number of ships required for weekly services¹³.

Multiple sub-service alliances. Vessel pool agreements differ from space exchange agreements in that the sub-services within the agreement may comprise of vessels from the different partners, unlike in a space exchange agreement where the sub-services display vessels of ownership homogeneity (see Table 3-3).

The pooling of vessels is usually motivated by an opportunity to increase flexibility in the number of vessels to be deployed (as discussed earlier) and the ability to deploy compatible vessels in the same sub-service regardless of the vessel

¹³ Weekly services require that the number of ships deployed be, of course, a multiple of seven.

ownership. Each partner will still be responsible for the efficient operations of its own vessels, but all members of the agreement will be responsible for the overall performance of the integrated service. There is a greater level of ownership in the efficient performance of the overall joint service compared to that of space exchange agreement services where each partner is only responsible for the sub-service that it operates. Alternatively, the members of the agreement can set up a “central operations center” or a “tonnage center” to oversee the daily operations of all ships. This central operations center can be manned by a team of personnel seconded from the members of the agreement.

Table 3-3: Comparison between Space Exchange and Vessel Pool Agreements

	Sub-service # (Service Codes)	Vessel Operator (Number of ships provided)
APL/OOCL Space Exchange Agreement	#1 (PNX) #2 (SIX) #3 (SJX) #4 (PSX) #5 (PIX)	OOCL (5 ships) OOCL (6 ships) APL (5 ships) APL (5 ships) APL (5 ships)
NOL/NYK Vessel Pool Agreement	#1 (FEX) #2 (JCX) #3 (NWX) #4 (SCX) #5 (AEX) #6 (PAX)	NYK (5 ships) NOL (1 ship) + NYK (4 ships) NOL (3 ships) + NYK (2 ships) NOL (1 ship) + NYK (5 ships) NOL (7 ships) + NYK (2 ships) NOL (1 ship) + NYK (5 ships) + HL (6 ships)

While space exchange agreements demand that the partners be able to operate a stand-alone service, vessel pool agreements only require that the sum of vessels pooled are adequate to run the service. The agreement partners are, hence, not restricted to deploy a “complete set” of vessels. Consider this: in 1991, Maersk and Sea-Land established a partnership to deploy five weekly services in the Asia-West Coast North America trade. If the carriers had intended to form a space exchange

agreement, one carrier would have to provide enough vessels to operate three sub-services and the other, two sub-services. Alternatively, one of the carriers must operate four sub-services, and the other, one sub-service. The indivisibility of the vessels in each sub-service may lead a situation where one of the partners could be stretched out in supplying more vessels or capacity than it can manage comfortably. A vessel pool agreement eliminates the necessity for such inflexible allocation of vessel deployment responsibility. The partners in the above case eventually decided that both Maersk and Sea-Land operate two of the sub-services each, and each partner contribute a further three vessels to form a vessel pool to run the fifth sub-service.

Space Allocation and Cost Sharing. In a single sub-service alliance, the carriers may agree either;

- to share all joint operational costs on a weighted basis, or
- to have each carrier pay for all operational costs related to its own vessels.

The latter option can be implemented with much less transaction and administrative costs. Since all ships in the single sub-service alliance will call at the same ports¹⁴, the same unit port charge will be incurred for every ship, thus allowing this cost item to be ignored in any cost settlement. And as discussed in the section above, it is often much more productive to leave the responsibility for the ship operating costs and bunker costs to the ship owner.

¹⁴ In some vessel pool liner services, some of the partners may make their vessels call at additional ports beyond the standard range of ports to support their marketing presence in the port or region. Arrangements like this will typically call for the partners to separately negotiate on the implications of such additional calls on the quality of the service and costs involved.

While operating costs incurred in a space exchange alliance or a single sub-service vessel pool alliance can be easily and equitably appropriated without necessitating an administratively cumbersome cost sharing process, this is more complicated for multiple sub-service vessel pool alliances. Since vessels are now thrown into a common pool and reassigned to the various sub-services regardless of the vessel ownership, joint operating costs will be incurred. Such costs (with the exception of ship ownership or charter costs, which are deemed as “sunk costs”) are typically shared between the partners proportionately since individual cost accountability cannot work equitably under such an operating scenario. If the operating costs, comprising bunker costs and port charges, are not shared, all carriers will prefer to deploy their ships in less costly sub-services which are operated with lower speeds and/or with less port calls.

Bunker costs and port charges for multiple sub-service alliances may be shared based on

- a pre-determined standard unit cost, which is based on the Teu-weighted average of all ships’ operating and cost parameters, or
- actual basis, where actual costs will be computed periodically (e.g. on a monthly basis), or
- a flexible basis where consumption units are based on pre-agreed standard figures while price units are based on actual costs, or where consumption is based on actuals and price units based on standard costs that may be provided by, say, the Platts Oilgram information service.

Sharing of costs based on a pre-determined standard unit cost will be administratively less arduous than computing actual costs on a periodical basis. Standard unit costs will, naturally, be unable to capture and share out the actual

costs, and may be viewed as a less equitable manner to share costs. However, barring any abnormal factors that may change the costs, the law of averages should bring the actual costs to an acceptable range from the standard cost if the service is operated for an extended period (of say three years)—the range of acceptability will depend on the carriers' level of tolerance for inaccuracies. The carriers should then allow flexibility to change some of the standard costs if the original parameters were no longer within an agreed range of fluctuations; this may include abnormal increases in fuel prices as a result of a *force majeure* event like war. Once all the costs are computed, it should be shared amongst the partners on a Teu-weighted basis.

A basic space distribution is allocated to the partners based on their respective space contribution to the joint fleet. Upon the allocation of the basic space, partners may swap space within the sub-services based on the same principle applicable in space exchange agreements.

As with space on space exchange agreements, space allocated to the respective partners will fall under their ownership and control (rather than that of the vessel owner). The use of excess space will be similarly guided by the same principles as that for space exchange agreements as discussed in the section above.

3.2.4 Monetary Pool Agreement

Service Structure. The structure of vessel pool agreements is very much similar to that of vessel pool agreements. Vessels are pooled and redeployed to the various sub-services based on their characteristics and compatibility. However, apart from sharing their operational costs, pool partners also share their freight revenues. Two

kinds of pool could be formed; a revenue-sharing pool or an operating profit-sharing pool. In the former, only freight revenues are shared. The latter form of pool shares operating profits, which can be defined as the freight revenues less vessel operating costs and other operating costs like container operating costs.

Both forms would incorporate a fixed formulae for distributing the revenues or operating profits (depending on the type of agreement). The pre-agreed sharing formulae guarantees the partners a fixed share of the partnership gains regardless of their contribution to the pool. This share would be based on the share of space capacity contributed by the partner.

Space allocation to the partners is based on a similar principle as that for vessel pool agreements. However, since the partners share financial gains (or losses) from the integrated service, all members of the partnership are interested to ensure that the overall vessel space is used efficiently. Hence, while the allocated space remains the responsibility of the space owner to fill up, unused space is freely distributed to other partners who can use them. Unlike space exchange or vessel pool agreements, no financial transaction is involved for the use of unused space belonging to another partner (since the partners ultimately share monetary benefits arising). While the thrust of the agreement types discussed above is to maximize the individual gains of the respective partners, revenue pools seek to maximize the overall size of the partnership's financial pie.

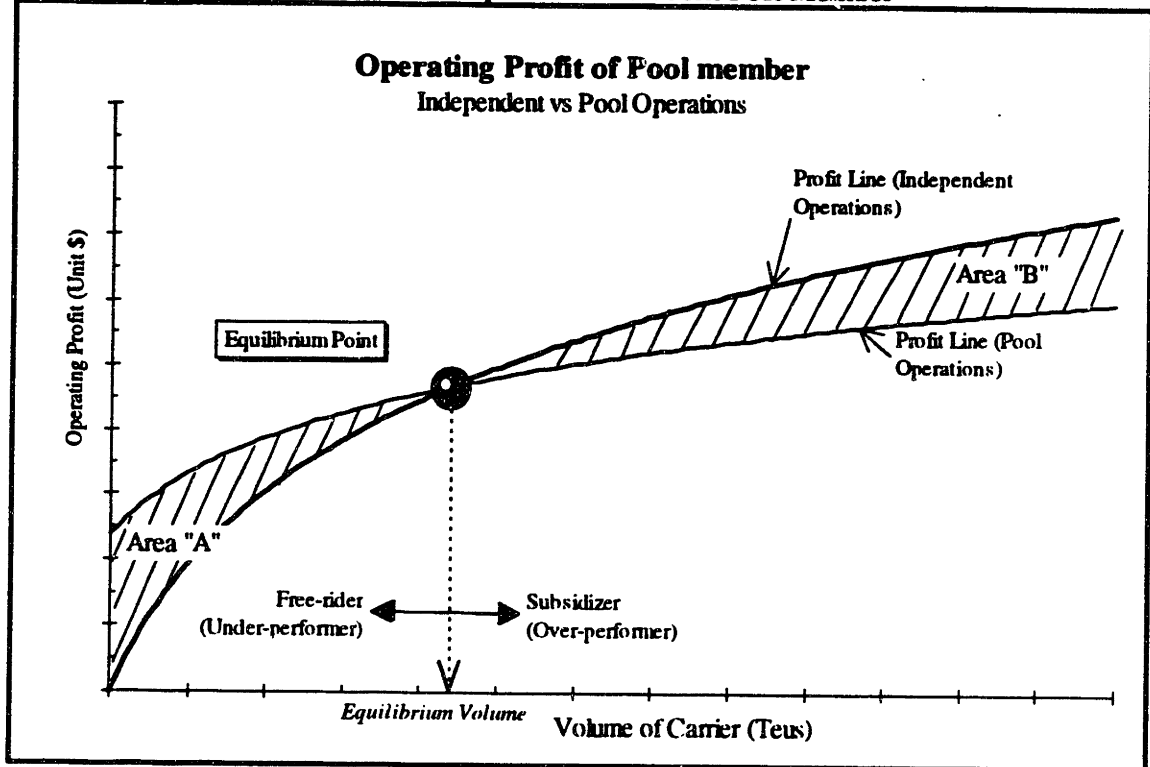
This form of partnership agreement was popular in the 1970's where it was employed to limit competition within a liner trade. Partners of a revenue/profit pool agreement would typically be current operators in the trade who collectively command a high majority share of the market. By forming a revenue/profit pool

partnership, the carriers seek to monopolize the market and restrain price competition among themselves. This form of partnership is obviously not prominent in countries where anti-trust regulations are strict. Major pools agreements seemed to be concentrated in the trades involving United Kingdom and Australia. Some of major revenue pools include the recently disbanded Anzecs consortium (previously comprising P&O, ACTA, ANL, SCNZ, CGM, Hapag Lloyd and Lloyd Triestino) which operated between Europe and Australia, the Anro consortium (comprising ANL, NOL, ASCL and Djakarta Lloyd) which operates between South-east Asia and Australia, and Saecs (comprising P&O, EHCL, Safmarine, CMB, DAL, Nedlloyd, CGM, Chargeurs Delmas and Lloyd Triestino) which operates between Europe and South Africa.

Some monetary pools conduct their own marketing, like ANRO, while other like Saecs conduct a joint marketing. Saecs uses “marketing organizations” to conduct its sales and marketing activities, where each carrier is assigned a geographic area for which it is responsible for the group’s marketing.

Do revenue/profit pools demotivate performance? This form of partnership tends to attract a risk of carrying “free-riders”—partners who do not perform consistently or deliberately perform below their fair share of contribution to the common revenue/profit pool. Since revenue/profit distribution shares are predetermined and fixed, it might be argued that there do not exist any motivation for the respective partners to perform (other than a strategic motivation to ensure that the carrier’s name continues to sell well in the market). Partners of a revenue/profit might be turned off by the prospect of contributing more than their profit-share of the pool—a partner with, say a 40 percent fixed share will feel unmotivated to commit time and

Figure 3-4: Operating Profit of an Independent vs. a Profit Pool Member



resources to obtain more cargo and revenue for the pool. The following discussions seek to disprove these notions.

Figure 3-4 compares the operating profit of an alliance member based on an independent operations against a profit pool operations. The two profit lines show the operating profit of a particular carrier in relation to its individual volume. As can be expected, the profit line of an independent operations intersects the Y-axis (Operating Profit), where no volume is moved, at zero-profit value; and thereafter increases with a diminishing return when volume increases. The Y-Axis (operating profit) intersect for pool operations reflects the carrier's share of its partners'

earnings; i.e. even if the carrier does not load any cargo, it is still entitled to a share of its partners' efforts. As the carrier begins to increase its own volume, its profit increases (with diminishing returns). The two lines intersect at the equilibrium point, where the operating profit for the carrier is the same whether it is operated independently or within a monetary pool. Cargo volume at the equilibrium point (the equilibrium volume) indicates the level of performance where a partner's profit contribution to the pool is exactly equal to its share of the total profit pool, i.e. the carrier takes back exactly the same amount that it contributes to the pool. When the operating profit margins for all the pool members are the same, the equilibrium volume is simply equal to the carrier's share of the alliance's total volume (see Box 1 for further elaboration).

From Figure 3-4, it can be seen that a partner stands to benefit as a "free-rider" if it contributes less than its fair share of the pool (shown in the Figure 3-4 as the region to the left of the Equilibrium Point). The profit that it will gain from the operations of its other partners can be determined from the difference in the Y-axis values between the profit lines for independent and pool operations at Area "A".

Conversely, when the carrier contributes more than its fair share of the pool (shown in the Figure 3-4 as the region to the right of the Equilibrium Point), it will end up contributing more to the pool than it takes from it. The difference is often viewed as a form of penalty for over-performing—the amount being the Y-axis value difference in the profit lines in Area "B" of Figure 3-4. This "penalty" tends to deter partners from over-performing and creates a perception that it is better to under-perform and receive payment (arising from the other partners' over-performance) than to over-perform and to pay the over-performance penalty. This has led some

Box 1: Equilibrium point in a pool operations

Consider a profit pool agreement comprising where a certain Carrier A is entitled to a k -percent share of the pool profits. A quick computation will show that every unit profit that Carrier A earns, it will get to keep only k -percent of it, and $(100-k)$ percent of its earning are to be distributed to its partners. Conversely, it is entitled to a k -percent share from each of its other partners' earnings. Carrier A's profits as a pool member can be represented as follows:

where;

- k -percent = Pool share for Carrier A
- a -percent = actual share of Carrier A's volume
- P_A = Total Operating Profit of Carrier A
- P_P = Total Operating Profit of other Partners
- P_{Total} = Total Operating Profit of the Pool ($= P_A + P_P$)
- V_A = Volume of Carrier A ($= a \cdot V_{Total}$)
- V_P = Total Volume of other Partners ($= (100 - a) \cdot V_{Total}$)
- V_{Total} = Total Volume of the pool ($= V_A + V_P$)
- M_A = Average Operating Margin of Carrier A
- M_P = Average Operating Margin of other Partners
- P_{A-Pool} = Total Operating profit of Carrier A, operating within a pool
- $P_{A-Independent}$ = Total Operating profit of Carrier A, operating independently

$$\begin{aligned}
 P_{A-Pool} &= k \times P_{Total} \\
 &= k \times [P_A + P_P] \\
 &= k \times [(V_A \times M_A) + (V_P \times M_P)] \\
 &= k \cdot (V_P \cdot M_P) + k \cdot (V_A \cdot M_A) \qquad \dots \text{Equation 3-2}
 \end{aligned}$$

$$P_{A-Independent} = V_A \cdot M_A \qquad \dots \text{Equation 3-3}$$

Equating equations (3-2) and (3-3) to find the Equilibrium Point,

$$V_{Equilibrium} = V_{A-Equi} = \frac{k}{100 - k} \cdot \frac{M_P}{M_A} \cdot V_P$$

$$\text{Since } V_P = (100 - a) \cdot V_{Total}$$

$$V_{A-Equi} = \frac{k}{100 - k} \cdot \frac{M_P}{M_A} \cdot (100 - a) \cdot V_{Total}$$

Thus, at the Equilibrium Point;

$$\text{When } M_A = M_P, V_{A-Equi} = \frac{k}{100 - k} \cdot (100 - a) \cdot V_{Total} \quad \text{i.e. } a = k$$

$$\text{When } M_A > M_P, V_{A-Equi} < \frac{k}{100 - k} \cdot (100 - a) \cdot V_{Total} \quad \text{i.e. } a < k$$

$$\text{When } M_A < M_P, V_{A-Equi} > \frac{k}{100 - k} \cdot (100 - a) \cdot V_{Total} \quad \text{i.e. } a > k$$

pool member-carriers to reject cargoes if it is anticipated that the acceptance of the cargoes will lead to an over-performance¹⁵.

However, this perception is wrong if we assume that there is no necessity to commit additional resources in order to be able to obtain more cargo volume. As long as revenues are greater than marginal costs, the over-performing carrier will still see a better profitability compared to that if it had stopped performing as soon as it has contributed its fair share of the pool profits. We must be aware that the over-performing carrier still gets to keep its share of profits that are beyond its normal share of the pool (see Box 2). Hence, despite having to pay a “penalty” for over-performing, the over-performing carrier still has incentive to out-achieve its fixed share of the pool. This is seen in Figure 3-4: the profit line to the right of the Equilibrium Point will continue to increase with volume so long as the incremental volume added continue to provide a positive operating profit.

In discussing over-performance, it is important to distinguish between the two sources of cargoes that forms a carrier’s over-performance within the pool:

- cargoes that are presently not carried by any of the pool members and likely to remain beyond the partners’ reach for marketing or other reasons, and
- cargoes that are presently carried by an alliance partner or can be carried by another partner at a lower cost.

¹⁵ Obviously, a member of a monetary pool will not be able to know the extent of their performance relative to its partners until it is too late, since the alliance performances are compiled on a periodical basis. However, past performances provide a good indication of the relative position of a member-carrier.

Box 2: What happens when actual performance exceeds pool share?

Let Actual Volume Performance of Carrier A = q -percent units more than the equilibrium volume of k -percent of V_{Total} .

Thus, from equation (3-2)

$$\begin{aligned} P_{A-Independent} &= M_A \cdot (k+q) V_{Total} \\ &= k \cdot M_A \cdot V_{Total} + q \cdot M_A \cdot V_{Total} \end{aligned} \quad \dots \text{Equation 3-4}$$

And, from equation (3-1)

$$P_{A-Pool} = k \cdot M_A \cdot (k+q) \cdot V_{Total} + k \cdot M_p \cdot (1-k) \cdot V_{Total}$$

If $M_A = M_p$,

$$\begin{aligned} P_{A-Pool} &= k \cdot M_A \cdot (1+q) V_{Total} \\ &= k \cdot M_A \cdot V_{Total} + k \cdot q \cdot M_A \cdot V_{Total} \end{aligned} \quad \dots \text{Equation 3-5}$$

Compare equations (3-4) and (3-5),

since $k < 1$, it is concluded that P_{A-Pool} from pool operations is less attractive than $P_{A-Independent}$ of independent operations when Carrier A overperforms.

From equation (3-5), it can be also concluded that the second term will always yield a positive term as long as the operating margin, M_A , is still positive. Thus it is concluded that there exists a profit motivation to overperform in a pool operations, when M_A is positive.

In the first case, our earlier discussion have shown that pool carriers should continue to expand their volume base even it is means that they are over-performing with respect to the pool share. The second case is less direct. If the cargo is already being carried by a pool member at the same revenue and costs, the overall profitability of the pool (and hence of its respective members) will not be affected. However, if a pool member undercuts rates to shift cargoes to itself at the expense of its partner, it will reduce the overall pool and individual profitability.

While this fact appears obvious, it is often obscured by competition within the pool. In monetary pool agreements where pool members retain their marketing identity, internal competition can sometimes be as fierce as external competition. This leads

to irrational action by the pool members—cases of pool members undercutting its partners to convince a customer to switch carriers is not as uncommon as it should be.

3.2.5 Equity-sharing Joint Ventures

The above section describes how monetary pool consortia may still attract intense internal competition among the partners despite the agreement mandate to share their revenues or profits. This could be due to the separate marketing identities maintained by the respective partners. The equity-sharing joint venture obviates such internal competition.

Equity-sharing joint ventures are formed by liner carriers to manage both the operational and marketing aspects of the cooperation from a common point of view. While the management hired to run the joint venture could comprise of former executives from the partners, it does not answer to any single partner separately. The management team would be answerable to a board that would comprise executives from the partners. Internal competition is thus non-existent. The single management will eliminate any heterogeneity in day-to-day decision making on marketing, pricing and operational issues.

Such alliance set-up will obviously increase the transaction and integration costs since a separate entity has to be established to manage the joint venture. The period of the joint venture agreement would typically be much longer than that for the other types of operational agreements discussed above. While such close integration has its obvious benefits, a real loss in its efficiency could appear in the form of slower decision-making process in policy and investment issues. These are typically issues

that require the board's approval (which we will recall, is represented by the different partners). While the other forms of alliances will also have to face difficult and possibly differing opinions on policy issues, these forms of alliances are much easier to terminate if it is determined that there exists a serious misalignment of interests in the partners. Joint ventures do not have this flexibility, and any fundamental gap in policy differences will have to patch up in a painstakingly slow negotiating process. The result of these hard negotiations could well produce a better policy focus and stronger joint venture, but this does not hide the fact that joint ventures are less agile and more susceptible to a higher risk in losing out on opportunities due to a serious policy difference between the partners. A looser alliance arrangement would have allowed the partners to part their ways in the event of a serious conflict, and thus allow the partners to continue on their chosen path without losing time arguing over the fundamentals.

This lack of policy-making flexibility, albeit in exchange for greater versatility to decide on day-to-day operational and marketing decisions, seemed to hold back the popularity of this form of alliance. As liner carriers expanded their operations globally, the ability to put forth their name in the services they operate carried more weight. The joint venture puts the partners in the back-stage as far as publicity and visibility are concerned.

One of the major liner joint ventures formed was the ScanDutch group comprising of Nedlloyd Lines, EAC Lines, CGM Lines, Wilhelm Wilhelmsen and Swedish Transocean Lines which was recently disbanded after 21 years of operations in the Far East-Europe trade. The partners that continued to operate in this trade route abandoned the joint venture format in favor of looser vessel pool alliances. Nedlloyd Lines and CGM Lines teamed up with MISC in a vessel pool arrangement. EAC

Lines and Ben Lines initially pooled their vessels in operating a joint service, until Ben Lines sold off its interest to EAC Lines that formed EacBen Lines (and which was bought over by A.P.Moller-Maersk Lines in 1993).

3.2.6 Advantages/Disadvantages of the Different Operational Alliances

As carriers move from space-purchase partnerships to equity-sharing joint ventures, the level of integration and complexity increases. An integrated alliance allows the partners to better-coordinate joint functions. Integration could also lead to shared volumes to gain economies of scale. However, higher coordination is needed between the partners to implement an integrated partnership. Greater coordination leads to greater transaction and complexity costs. On the other hand, loose alliances like the space-purchase and space-exchange agreements accord the partners greater flexibility. The partners gain a higher level of independence, reduces costly transactions between partners and since minimal joint decisions are required, the partnership is able to better respond to competitive challenges and changes. In return for these benefits, loose collaborations sacrifice the opportunity to blend the partners and enjoy advantages that are normally available to a single large entities. The advantages and disadvantages of the various forms of operational partnerships are tabulated in Figure 3-5.

3.3 Pricing Alliances

Pricing alliances are formed by a group of carriers within a trade lane to pursue a common objective of stabilizing freight rates. Such alliances are also commonly referred to as liner conferences. Carriers within the conferences may comprise of independent carriers or carriers within an operational alliance. Some large operational alliances, like the Southern

Figure 3-5: Advantages and Disadvantages of the different Operational Alliances

Type of Operational Alliances	Advantages	Disadvantages
Space purchase agreement	Simple and loose form of coordination. Minimal transaction costs involved. Prompt reaction to competitive challenges.	Does not allow benefits from greater integration (e.g. improved service frequency and transit times). Does not allow coordination of schedules.
Space exchange agreement	High operational and marketing independence for partners.	Sufficient assets needed to launch independent service.
Vessel pool partnership	Ships can be shared to optimize benefits of size and speed homogeneity.	High coordination costs. Slow to react to competitive changes.
Revenue/cost pool consortium	Minimizes destructive pricing practices.	High coordination costs. Slow to react to competitive changes. Potential "free-rider" dilemma.
Equity sharing partnership	Centralized and prompt decision-making for day-to-day marketing operational issues.	High coordination costs. Slow to implement policy changes. Loss of carrier identity. Long term commitment required.

Africa Europe Container Service (Saecs) which comprises of nine carriers, function as a consortium-conference.

Liner conferences are a form of strategic alliance between liner carriers which coordinate their pricing and capacity supply tactics with a common aim to stabilize freight rates. This is conducted mainly in two ways—through rate agreements and capacity management

programs. In the language of economics, the capitulation of independent policies in pricing and production to a common (group) policy would put liner conferences under the same definition as that for cartels. However, liner conferences do not enjoy much monopoly power than would a typical commodity cartel due to various regulatory restrictions imposed on their market power. Nonetheless, the existence of liner conferences and their apparently anti-competitive practices have been scrutinized and heatedly debated since their first implementation. Further discussions on these issues will be handled in Chapter 4.

Liner conferences may be deemed a “closed” or “open” liner conference depending on its membership policy. The former type, which is the predominant form of liner conferences, is operated more like an exclusive club and imposes restrictions on membership. Typical membership restrictions include criteria that measure the “commitment” of the carrier to the trade (which is often measured by the time length of liner service provided), level of service provided and ability to enhance the market share of the liner conference. In trades to the US, however, the US Shipping Act of 1984 mandates that membership of liner conferences shall not be restricted, hence “open” liner conferences. The US is still the only major maritime nation to impose a requirement of free membership on liner conferences.

The role of liner conferences had evolved much since its first establishment, and most modern-day liner conferences are often mandated to conduct a variety of functions, which include the:

- maintenance of a common freight tariff (including arbitraries and surcharges) and joint negotiations on carriage contracts with shippers,
- management of capacity (including an allocation of sailing frequency and voluntary capping of capacity), and
- sharing of cargoes and/or revenue.

Through such collusion, liner conferences are able to influence the pricing of freight shipments and the rate stability in their respective trade lanes.

3.3.1 Rate Agreements

The maintenance of a common freight tariff has been one of the core functions of a liner conference since it was first established. Carriers form liner conferences to establish a common freight rate for the same commodity and destination. Loyalty and volume discounts for the freight are normally available. These discounts are often administered through various mechanisms such as “service contracts”, “time-volume contracts” and “deferred rebates”.

In recent years, another important function of conferences was to establish common arbitrary charges and surcharges. These charges were imposed to assist conference carriers recover additional costs arising from factors that are beyond the control of the conference or the carriers. These surcharges include items such as the “currency adjustment factor”, “bunker/fuel adjustment factor”, “terminal handling charges”, “direct delivery charges” and “outport feeder arbitrary”; each surcharge was based on the various cost items as the names suggest. Such surcharges are based on an index which is pegged to a basket of cost items in the relevant field, and are reviewed periodically. Depending on the fluctuations in the index, the surcharges may be a debit or a credit item on the freight rate. Despite such indexing, shippers have nevertheless charged that the liner conferences are profiteering from the surcharges. While these allegations are to be verified, the approach of the liner conferences in attaching a “non-controllable” surcharge to the freight rate can be explained easily. Increasing overcapacity in the major liner trade lanes had

weakened the negotiating power of liner conferences and reduced the elasticity of freight rates to costs. By including a surcharge item to the freight rate, the carriers are transferring the risks of cost increases to the shippers. Information on currency exchange rates, bunker prices, terminal handling charges and inland costs are easily available and shippers are expected to obtain these and hedge for fluctuations in these cost items themselves. This leaves the carriers free from the task of trying to recover any cost increase (arising from these items) from a normally unpopular general increase in the freight rates. General freight rate increases are often disputed by shippers who are normally never fully satisfied with the justifications provided by the conferences. The surcharges relieve the carriers from this burden. Shippers are also more receptive to increases in total freight rates arising from an increase in “non-controllable” surcharges rather than a general increase in rates.

Pricing alliances such as rate agreements are important to limit price competition among member carriers and thus ensure freight rate stability. Shippers benefit from such alliances (at the expense of a loss in price elasticity to competition) since wild fluctuations in freight rates are eliminated through such collaborations. In the US, however, such stability is compromised by a provision of the US Shipping Act of 1984 to permit unilateral pricing, known as “independent actions”, within the conference. This will be discussed further in Chapter 4. As with operational alliances, potential benefits to be gained from joining or forming a pricing alliance must be off-set against additional transaction costs and a loss of autonomy to the liner carrier.

3.3.2 Capacity Management Programs

Capacity management programs were employed by pricing alliances with an objective of stabilizing the balance between capacity supply and demand, with an ultimate aim to stabilize freight rates. One of the mandates of the first liner conference, the UK-Calcutta conference, was the management of sailing frequencies of conference members¹⁶. Sailing schedules were assigned to conference members in an attempt to regulate the arrival of ships at ports and hence distribute flow of capacity to the trade.

This early form of capacity management benefited both the carriers and shippers. Cargo capacities in the shipping industry are perishable products—cargo capacities are economically unusable once the ships depart their last port of loading of a sector voyage. A reasonable spread in the arrival of ships prevented a direct clash in the sailing schedules and hence intense price competition to fill the “perishable” cargo capacities. This, naturally, leads to a more stable freight rate environment. Shippers also benefit from such coordination of supply capacities. Exporters were able to send their products to their buyers at more regular intervals, and likewise, these buyers were able to rely on a more consistent schedule of delivery.

Modern-day conferences rarely employ such forms of capacity regulation. Instead, a more direct form of capacity management, pioneered by the Transpacific Stabilization Agreement (TSA) in 1989, was used. The TSA comprised of thirteen carriers when it was established, including all members of the Far East-to-North America conference known as the Asia-North America Eastbound Rate Agreement

¹⁶ Deakin, B.M., *Shipping Conferences: A study of their origins, development and economic practices*, Cambridge University Press, 1973

(ANERA) and all major non-conference carriers. The TSA's jurisdiction on its members' capacities extended from the Far East to North America¹⁷. The TSA applies capacity caps to its members' cargo capacities in an effort to reduce overcapacity. The capacity cap refers to a portion of ship capacity that is frozen against use by the cargo space owner; use of this frozen space will attract a predetermined penalty. The cap is reviewed every quarter and is varied depending on the cyclicity of cargo space demand and the overall balance between capacity and demand. The agreement members will typically agree on an average capacity cap stated as a percentage of the total capacity. The actual capacity cap for each carrier is then determined based on the actual total capacity deployed by a particular member-carrier.

This form of regulation is effective in controlling the output production of cargo capacity that is otherwise lumpy and inflexible to sudden changes. Such voluntary regulation of capacity reduces price-cutting pressures and correspondingly improve freight rate stability. Since TSA's initiative in the trans-Pacific trade route, other similar alliances between liner carriers have emerged in the other major trade routes, namely the Europe Asia Trade Agreement (EATA) in the Far East-Europe route, Trans-Atlantic Agreement (TAA) in the trans-Atlantic route and the Intra-Asia Stabilization Agreement in the intra-Asia marketplace.

3.3.3 Cargo and Monetary Sharing

The mechanisms for cargo sharing and revenue/profit pooling are as described in section 2.2, the only difference being that such sharing is activated within a liner

¹⁷ The original TSA authority extended to the US and Canada, but was revised in 1992 to cover only the Far East to US (only) trade. A separate Canadian Transpacific Stabilization Agreement was established by the same members to cover trade from the Far East to Canada.

conference rather than an operational alliance. The objectives of such sharing are the same, namely to manage competition between agreement members and to stabilize freight rates and enhance profitability.

3.4 Logistical Alliances

Liner carriers were pushed to explore strange new areas beyond their traditional port-to-port domain as shippers' demand for a prompt, timely and cost-efficient service escalated. The level of shipping service provided and shippers' expectations have increased by multiple folds since the advent of containerization. Two of the main features that distinguish containerized liner shipping from other forms of shipping are its ability to maintain a fixed-frequency sailing schedule and to move containerized cargoes inland beyond the port area in an efficient manner. Fixed-day weekly sailings are a norm in the major liner trades today; so too are door-to-door services, where carriers assume transportation responsibility from the exporter's premises until the cargo is delivered to the importer's warehouse.

To achieve the above, liner carriers ventured beyond their traditional responsibility of providing for and controlling only the sea-sector part of the transportation service. This led to an increased investment in logistical support services—more containers and chassis were owned rather than leased and marine terminal, truck and rail services were increasingly “made” or leased on a long-term basis rather than bought. A major milestone in the liner shipping industry was reached when liner carriers extensively incorporated information technology to their support systems to support their services. Information systems provided the carriers and their shippers the ability to perform a variety of shipping functions—shipments can be tracked continually, container inventory managed effectively,

cargo bookings made “on-line”, freight rate information dispensed instantly and customs formality cleared promptly.

These new ventures and the vertical integration of services demanded high financial and management resources and presented an avenue for liner carriers to collaborate. At the time of this writing, cooperative activities in this area were, however, not as significant as those in operational and pricing alliances. Nonetheless, I would expect logistical alliances to gain prominence in future as liner carriers globalize their services and continue to seek more efficient ways to diversify their risks and costs (see Chapter 6 for further discussions). Some of the prevalent types of logistical alliances are discussed below.

3.4.1 Container Sharing

Containers are an integral part of liner shipping and the cost of operating containers forms a large part of a liner carrier’s operating expenses. The liner carrier not only pays for the cost of owning or leasing, maintenance and repair of the containers, but also incurs a high cost of repositioning empty containers.

Repositioning of containers is necessitated when the inbound and outbound cargo volume in a trade which the liner carrier operates are imbalanced, thus creating an inventory surplus and demand situation at different ends of the trade. Similarly, competitive reasons may create a poor balance of a liner carrier’s inbound and outbound cargo movements within a region or a particular point. The liner carrier would be forced to reposition surplus containers from a region, port or inland point to another area where they are needed. Such repositioning does not, naturally, yield any revenue to the carrier. Additionally, empty containers take up cargo space on the ship and incur an opportunity cost by substituting for rate-paying laden

containers. A Drewry Shipping Consultant report estimated that 18 percent of all container moves worldwide consist of repositioning container moves, costing carriers more than US\$3.5 billion per annum.¹⁸ Using Drewry's forecast of average 1991 freight rates and estimate of US\$395 per Teu as the direct container repositioning cost, the proportion of container repositioning cost as a percentage of average freight rates is shown in Table 3-4 for the major trade lanes.

Table 3-4: Percent of Container Positioning Cost to Average 1991 Freight Rates

	Eastbound	Westbound
Far East-North America	3.7%	4.2%
North America-North Europe	8.9%	9.5%
North Europe-Far East	10.5%	4.1%

Such high (and wasteful) costs of repositioning containers was the motivation that pushed liner carriers towards strategic alliances to share the use of containers. These carriers rationalized that a carrier's surplus containers at a particular area could be needed by another carrier which is experiencing an inventory demand in the same place. As in vessel and space sharing arrangements of operational alliances, carriers may form joint ownership ventures, container pools, cross-lease or direct lease agreements. Depending on whether the concerned containers are owned or leased and the type of sharing agreement, a leasing credit/debit, sub-lease or "direct interchange" (where leased containers are contractually passed on to the carrier in need) agreements may be arranged.

In a pool system, a leasing credit is given to the "surplus" carrier which gives up its containers for use by a "deficit" carrier. The leasing credits and debits are usually

¹⁸ *Container Market Profitability to 1997: Will stabilisation agreements save carriers from checkmate?*, Drewry Shipping Consultant, 1992: 107

measured in terms of days that the container is used by the “deficit” carrier. Cost settlement is based on a predetermined per diem and is normally computed on a periodical basis. A sub-lease and “direct interchange” arrangement entail less integration and monitoring. Carriers will priority agree to sub-lease or direct interchange containers to one another with minimal fuss when the need arises. Such agreements will specify the cost sharing formula for on-hire and off-hire surveys and the per diem rate which the “demand” carrier will be billed for use of the other carrier’s surplus containers. Depending on the extent of the a carrier’s inventory surplus, it would not be surprising that such per diem may sometimes be waived or set at a nominal rate.

Joint ventures, like the Global Equipment Management (GEM), allow member-carriers to access a larger pool of containers and work on a similar concept that the members’ container inventory surpluses and deficits can be canceled by a diversity of users. GEM’s members lease their containers to GEM (which was set up as an independent entity), which in turn leases them back to the members. GEM also acts on behalf of the member carriers to survey, off-hire and on-hire containers between GEM’s members when a container is interchanged. Administration costs are shared. Equipment wear and tear costs are borne by the equipment owner, while damages are paid for by the carrier who used the container when it was damaged (i.e. similar to a typical container leasing arrangement that a liner carrier contracts with a third-party container leasing company).¹⁹

In 1992, Sea-Land announced that its new container orders will not be marked with its corporate logo. This decision was encouraged by the ability to facilitate container

¹⁹ Based on author’s interview with Ms Anette Peterson, Equipment Coordinator of Global Equipment Management, New Jersey.

sharing or interchange with other carriers²⁰. It is fair to assume that carriers can be discouraged from sharing or using a competitor-partner's containers when the competitor-partner's corporate logo is prominently splashed across the containers—no company would want to advertise its competitor's name freely to its customers! Thus, Sea-Land's strategy sought to prevent any discomfort to its potential competitor-partner that might arise from sharing containers with it (and in the process, save on painting costs too).

The success of container sharing or "gray" and unmarked containers is difficult to determine. While sharing should ideally reduce the incidences of inventory surplus and deficit, it will work only if the alliance membership is diversified enough. Most equipment-sharing alliances tend to be a by-product of a larger operational alliance framework. This inevitably means that the alliance members operate in the same trade region and are subjected to the same inherent trade imbalances. For example, cargo movements in the Far East-North America trade have been known to be much more heavy on the east-bound sector than the west-bound sector creating a perpetual inventory surplus situation in the North America, as far as the records show. (A forecast predicted that the east-bound trade will outstrip west-bound movements by more than one million Teus by the year 2000).²¹ Trade imbalances are the primary reason that causes container repositioning.

On a microscopic scale, container imbalances may also be created by a carrier's marketing strength in a particular port or inland point. For example, Penang, in Malaysia, is known for its high exports relative to its imports, and carriers' container inventory are normally known to be in deficit. A particular carrier which is

²⁰ *American Shipper*, "Cut Costs: Logo no longer a sacred cow", September 1992

²¹ *Lloyd's Shipping Economist* (London), November 1992: 10

contrarily strong in its imports into Penang and can ideally depend on its alliance partners to supply it with their surplus containers. However, carriers tend to view the ready supply of containers as a marketing tool and hence may be reluctant to make available their surplus containers to the “demand” carrier. These “surplus” carriers may instead use the ready availability of their containers to capture the “demand” carrier’s customer. Hence, the failure of a container-sharing alliance. Unless carriers learn the value of sharing and view alliances from a broader perspective, container-sharing arrangements are doomed to failure.

3.4.2 Chassis Pool

In the US where inland transportation form a major proportion of cargoes shipped, the inter-connection of containers with the rail system is an important logistical operation. The timely connection of the more time-sensitive inbound cargoes into the US calls for a prompt relay of containers from the marine terminal to an off-dock rail ramp.²² Chassis are normally provided by the carriers to the marine terminal operator for use to transfer the containers to the rail ramp. Alternatively, some marine terminal operators may operate a pool of chassis for lease to the carriers. The marine terminal may employ two modes of operations to handle the chassis:

- (1) a “grounded” operations, where import containers are discharged from a ship onto hustlers (or forklifts) and discharged to a container stacking yard (hence “grounded”). From these stacking yards, the containers are reloaded onto chassis to be transported out of the marine terminal facilities. Conversely, export-containers are discharged from chassis onto stacking yards before being sent to the pier for loading onto ships; and

²² The urgency is obviously reduced if there exists an on-dock rail ramp.

(2) a “wheeled” operations, where import containers are discharged directly onto chassis and sent out directly (or “wheeled”) to an awaiting local importer or to a rail ramp for transport to inland points. Similarly, export containers are loaded directly from chassis for loading onto ships.

The marine terminal may be “fully wheeled” or “semi-wheeled” where either only import or export (usually import) containers are “wheeled” while the other is “grounded”. “Wheeled” operations require that a fleet of chassis be on stand-by to receive import containers that are being discharged from the ship. This takes up a lot of land space on the terminal. It is however time-efficient as there is less rehandling of the containers, and time is a crucial factor in the shipment of time-sensitive liner cargoes.

When two or more carriers share space on a ship, “wheeled” operation become cumbersome as there has to be a high degree of coordination between the gantry crane operator and the dispatcher of chassis. The correct chassis must be sent to the pier to meet the container of the same carrier. Automated ship planning systems will alleviate this problem somewhat, but will not eliminate it. Carriers circumvent this problem by forming chassis pools in the marine terminal.

The need for chassis pool thus arose as a result of vessel and space sharing alliance between carriers. A typical chassis pool like the one operated by NOL and NYK in the carriers’ Los Angeles marine terminal required that both carriers contribute chassis to the pool. A pool manager is appointed to monitor the chassis usage. Since chassis are now “gray”, the marine terminal operator will be able to complete its discharging or loading operation promptly without being bogged down by the need to identify the right chassis to use for the right container. The pool manager

will monitor the carriers' use of the chassis (in chassis-day terms). At the end of an accounting period, the pool manager simply has to off-set the carriers' supply chassis-days against their usage chassis-days. The balance chassis-days is then credited or debited depending on if the carrier over-used or over-supplied chassis to the chassis pool, and converted to costs based on a predetermined per diem.

The carriers will have to decide on other administrative and cost-sharing formula which may include the sharing of wear and tear, repair, survey and chassis idling costs. The benefits of such a pool will obviously have to be off-set against these additional transaction and management costs.

3.4.3 Information Systems

Using Hax and Majluf's (1991) definition, information system refers to process of gathering, digesting, filtering and distributing of information. In liner shipping, the use of information systems can be classified into two categories: internal and external systems. Internal systems are those that are employed solely within the liner carriers' premises and do not make contact with the outside world. Internal information systems are used in a variety of ways to assist liner carriers and their management to track sailings, shipments and equipment inventory, and monitor financial, operational and market share performances. On the other hand, external systems are integrated with or are linked to upstream and downstream contact points. These contacts include upstream suppliers like truckers, rail operators, marine terminals and depots, and customers like shippers, custom agencies and other governmental bodies. External systems also allow the electronic interchange of data between the liner carrier and its various customers.

During the 1980s, a number of major liner carriers began investing in proprietary information systems that were initially intended for internal use but were quickly extended as external systems. The key characteristics of these systems were that they were developed independently and were used as a marketing tool to enhance the competitiveness of the carriers. The diversity of code names used for these external information systems, like EagleLink, FACTS and WINS, best describes these characteristics.

Such information systems enabled an electronic data interchange (EDI) between liner carriers and shippers, and allowed the carriers to reduce incidences of documentation keying error and provide a value-added cargo tracking and shipment planning services to shippers. Such value creation to the customers leads to an increased company value. However, the different standards and formats used by the liner carriers created confusion and necessitate that shippers learn differing software provided by each carrier they use. The situation was probably reminiscent of a larger problem of differing EDI message standards: the US standard being based on ANSI X12 of the American National Standards Institute, and the European standard based on standards established by the UN Economic Commission for Europe (UN/ECE). A UN initiative eventually merged these two standards and created the UN/EDIFACT (UN rules for Electronic Data Interchange for Administration, Commerce and Transport) standard which was ISO-credited (ISO 9735) in 1987. This approach offers clues to the liner shipping industry. If a universal EDI standard can be adopted by liner carriers, shippers will be spared the confusion and the pain of going through the learning curve to master different carrier-based softwares. Such a step greatly enhances the user-friendliness of the systems and reduces any barrier that may prevent shippers from communicating with the carriers through EDI. And,

as any software designer will swear by, increased user-friendliness of a system will increase the usage level of the software.

The sharing of standards opened avenues for the sharing of high investment costs and risks related to the development, testing, implementation and marketing of such information systems. The high cost of developing independent systems can be eliminated, and the number of EDI applications rationalized and reduced. Opportunities are abound to realize economies of scale and scope in the development, maintenance and operations of network systems. Thus, the basis for the creation of the Information Sharing Agreement (ISA), which was formed in 1991 to pave the way for a joint “development, rationalization, purchase, lease, sale, pooling, interchange, utilization and marketing of a standard, common or compatible information systems ... and the acquisition, utilization, sale, marketing, and providing of agency, maintenance, repair, and training services for their information system or systems”.²³ The ISA presently comprises seven members²⁴ and recently announced the launch of a unified cargo booking software to be operational by the fall of 1994.²⁵ The advances of ISA threatens that of another similar grouping, the Pacific Information Sharing Agreement (PISA) which comprises of eight members including some from the ISA, although the present objectives of PISA are concentrated on carrier automation rather than on EDI.

The ISA and PISA were not the first such alliances formed between liner carriers. In 1990, ten carriers formed the EDISHIP in the UK to promote an awareness on the benefits of EDI and to offer a test group of UK shippers electronic booking, tracking

²³ Articles 5(a) and 5(b) of FMC Agreement No.203-011330

²⁴ APL, Crowley American Transport, Hapag Lloyd, Maersk, OOCL, P&O, Sea-Land.

²⁵ *Journal of Commerce*, March 18, 1994

and documentation with the member carriers. The progress of EDISHIP, however, appeared to lag behind that of the ISA.

The move by the carriers in forming a carrier-based alliance to promote a standardized information systems to shippers also appeared to be partly motivated by a desire to prevent a third-party control of the product. The threat seemed imminent when AMR (parent company of American Airlines) and CSX Corp formed the then named Global Logistics Venture (GLV) in 1990 to develop a logistics-oriented software for air and ocean transportation. A successful GLV (now renamed Encompass) effort to capture the commitment of shippers, forwarders and truckers in adopting their system as the "standard" would have forced the liner carriers to sign on as well, and thus be captive of a probably more costly third-party system.

The success of a carrier-initiated standard system remains, however, to be seen. It should be noted that eight years after the establishment of the UN/EDIFACT as a universal standard, the ANSI X12 standard continues to issue new message standards and is still widely used. ANSI X12 will stop issuing new message standards in 1997, but some observers feel that the ANSI X12 standard will really cease to operate only after the year 2010.²⁶ The liner shipping industry is posed with a different enigma; a standard system will survive only if carriers stop pursuing and promoting their own proprietary systems and, like in the case of container sharing, stop treating information systems as a tool to enhance their competitive advantage. While the alliance member may whole-heartedly support the promotion of the standard system, it is technically feasible (and probably tempting to some carriers) to develop separate but compatible "add-on" programs to offer to its customers as an

²⁶ "Kicking the hard-copy habit", *Containerisation International*, June 1993

added customer service. Such a move may undermine the commitment of the other members and jeopardize the alliance.

4. ANTITRUST POLICIES

Competition and cooperation have been traditionally viewed as different poles, such that forms of the latter are often legislatively suppressed to promote competition in the interest of “economic efficiency”. This systematic view was adopted in its pure form by US legislators in the Sherman Act of 1890:

“Every contract, combination in the form of trust or otherwise, or conspiracy in restraint of trade or commerce among the several States, or with foreign nations, is hereby declared to be illegal.”²⁷

The US Congress regarded collusive behavior as being of criminal nature and sought to restrain such actions.²⁸ The European Community shared the same sentiments by including a law on restrictive trade practices in the Treaty of Rome (1957) (hereby “Treaty”). Article 85 of the Treaty specifies, *inter alia*, prohibitions against the fixing of prices, control or limit of production and sharing of markets by “all agreements between undertakings, decisions by associations of undertakings and concerted parties which may affect trade between Member States”. However, unlike the US Sherman Act, Article 85(3) provides for a “public interest” test that exempts the application of these prohibitions to certain actions.

Competition law is, thus, an important factor that influences the formation and shape of partnerships, including strategic liner alliances; in particular, pricing alliances in the form of liner conferences. The national antitrust policies of the US, the EC and some major

²⁷ Section 1, US Sherman Act of 1890, 15 USC § 1

²⁸ In *Standard Oil Co. Of New Jersey vs US (221 US 1, 1911)*, the Supreme Court, however, used the “rule of reason” to interpret that Sherman Act did not seek to condemn all contracts in the restraint of trade, but only those which unreasonably restraints trade. This led to Congress enacting the Clayton Act of 1914 to strengthen the anti-trust laws.

maritime nations, and their impact on strategic liner alliances are reviewed below in the first three sections of this chapter. The fourth section evaluates the economic forces that shape the liner shipping industry and probes the issue of antitrust immunity for the industry.

4.1 US Antitrust Regulation

4.1.1 Early History of US Ocean Policy

Shipping Act of 1916. While the cartelization of shipping spread in the maritime world in the early twentieth century, this development did not immediately catch on in the US maritime trades. This is largely due to the fact that such conferences were illegal under the Sherman Act of 1890; and although the courts did rule in 1907 that a conference which used deferred rebates and fighting ships was held to be not unreasonably restraining trade, problems on the interpretations of the Sherman Act with regards to international shipping persisted.

Such conflicts led to the formation, in 1914, of the Alexander Committee²⁹, a House Committee on Merchant Marine and Fisheries, to review conferences and US ocean shipping, and to recommend to Congress legislation to provide stability in the US shipping trade.

The Alexander Report, issued in 1914, provided the basis for the formation of the Shipping Act (hereby “Act”) of 1916. The 1916 Act was significant in that it provided a legal umbrella for the formation of “open” conferences. The 1916 Act, however, specifically forbade the use of fighting ships and deferred rebates. The

²⁹ Named after the committee Chairman, US Representative Joshua Alexander

1916 Act also disallowed ocean carriers from making “unfair or unjustly discriminatory contract with any shipper based on the volume of freight offered”.³⁰ These prohibitions required that all ocean carriers offer their services on equal commercial terms to all equally situated shippers. The establishment of “closed” conferences was outlawed³¹ and regulatory authority was vested in the United States Shipping Board^{32 33}.

With the enactment of the 1916 Act, the US ocean policy in the years that followed imposed strict new requirements on the competitive practices of all ocean common carriers in both domestic and foreign commerce, while granting them antitrust immunity.

Problems and Amendments to the Shipping Act of 1916. Although dual rates were not specifically mentioned in the 1916 Act, it was nevertheless a common practice in ocean shipping. They were challenged by the Isbrandtsen Company, and in 1958, in *Federal Maritime Board v. Isbrandtsen Company* 356 USC 481 (1958), a judicial interpretation of the third part of Section 14 of the 1916 Act ruled that dual rates were retaliation by discriminatory acts and are thus illegal:

“In the context of Section 14 this clause must be construed as constituting a catchall clause by which Congress meant to prohibit other devices not

³⁰ Section 14, Shipping Act of 1916, 46 USC 812

³¹ Section 15, Shipping of 1916, 46 USC 814

³² Section 3(a), Shipping Act of 1916, 46 USC 804

³³ This authority was to be transferred to various governmental agencies later; from the US Shipping Board (an independent agency from 1917 to 1933 and a component of the Department of Commerce from 1933-1936) to the US Maritime Commission (an independent body from 1936-1950) to the Federal Maritime Board/Maritime Administration (both Department of Commerce units from 1950-1961). These agencies were vested with both regulatory authority and authority to promote programs relating to the US merchant marine fleet. Since 1961, regulatory authority was vested solely with the Federal Maritime Commission (an independent body), while promotional and subsidy activities were assigned to the Maritime Administration.

specifically enumerated but similar in purpose and effect to those barred by Section 14 First, Second, and the 'retaliate' clause of Section 14 Third."³⁴

This prompted a hurried amendment by Congress to permit dual contracts on August 12, 1958³⁵ and a review of the conference with respect to the dual rate system by the House Committee on Merchant Marine and Fisheries. In 1961, specific terms and conditions required for dual rate contracts (limiting the spread of dual rates to a maximum 15 percent) were added to the 1916 Act.³⁶ Congress also amended Section 15 of the 1916 Act to add a "public interest" criterion to the standards to be considered by the commission in approving or disapproving an agreement filed with it.

The 1961 amendments also included the addition of Section 18(b), which required independent ocean carriers (who are not members of any conference) to file their rate schedules. It also mandated that conference tariffs be made available to shippers at a subscription fee.

The 1961 amendments passed as Public Law 87-346 proved to be the most significant amendments to the Shipping Act of 1916. However, despite the 1961 changes to Shipping Act of 1916, the *Isbrandtsen* case triggered continued attacks on the antitrust immunity provided to ocean carriers under the 1916 Act. This began with the first important breach of the Federal Maritime Commission's (FMC) jurisdiction, then charged with regulatory authority on the 1916 Act. In *Carnation Company vs. the Pacific Westbound Conference* 383 US 213 (1966), a district court had initially dismissed Carnation's suit against Pacific Westbound Conference

³⁴ *The Federal Maritime Board v. Isbrandtsen Company* 356 USC 481, 491-493 (1958)

³⁵ Public Law 85-626

³⁶ Section 14, Shipping Act of 1916, 46 USC 812

for discriminatory acts on grounds that the issue was within the jurisdiction of FMC. However, this decision was reversed by the Supreme Court which ruled that the courts had an obligation to hear the suit:

“Although the Commission can approve prospective operations under agreements which have been implemented without approval, respondents concede that the Commission has no power to validate preapproval implementation of such agreements.”³⁷

Thus, the 1916 Act was opened to the scrutiny of antitrust laws that would subject the regulated shipping industry to increased antitrust exposure and potential treble damage liability under the US antitrust laws.

The *Carnation* judgment was reaffirmed in *FMC v. Aktiebolaget Svenska Amerika Linien* 390 US 238 (1968) where the Supreme Court confirmed the use of antitrust standard as a method for weighing the public interest, as follows:

“... conference restraints which interfere with the antitrust laws will be approved only if the conferences can bring forth such facts as would demonstrate that the ... rule was necessary to secure important public benefits ... The Commission [FMC] must of course adduce substantial evidence to support a finding under one of those four standards of Section 15 [of the 1916 Act], but once an antitrust violation is established, this alone normally constitute substantial evidence that the agreement is contrary to the public interest, unless other evidence in the record fairly detract from the weight of this factor.”³⁸

Thus this judgment placed the burden of proof on the FMC that a filed agreement is not contrary to public interest. The FMC would also need to show that the approved agreement will be more beneficial to the public than it would if it is not approved and competitive laws are allowed to take its natural course.

³⁷ *Carnation v. the Pacific Westbound Conference* 383 US 213, 222 (1966)

³⁸ *FMC v. Aktiebolaget Svenska Amerika Linien* 390 US 238, 241, 245-246 (1968)

In *Sabre Shipping Corporation v. American President Lines Ltd.*, 285 F Supp.949 (S.D.N.Y) (1968), Sabre Shipping Corporation took the conference to court, claiming that the rates in the Pacific were too low and predatory in nature. The court held that, even where rates were approved and filed, if it could be shown that they were too high or too low to the detriment of US commerce, the filed rates would be in contravention of Section 18 of the 1916 Act. Hence, by judicial fiat, antitrust immunity would be granted only for activity “within the scope of the agreement”. The *Sabre* case breached the 1916 Act’s protective shield by stating that a formal approval by the FMC does not necessarily fully protect the parties from liability under the US antitrust laws.

The above lawsuits were, but a few cases that gradually eroded the antitrust immunity granted under the 1916 Act. The *Svenska* and *Sabre* cases brought the US Department of Justice on the heels of the shipping carriers with a threat of prosecution for violations of the antitrust laws.

The *Svenska* judgment, requiring that the FMC prove that a filed agreement “is required by serious transportation need” and that public interest is not compromised, also added lengthy delays to the agreement approval process. The approval process had already been often hindered by objections or actions taken by other government agencies³⁹, namely the Department of Justice. This practice solicited complaints from ocean carriers who asserted that such delays in the approval process can only disrupt an otherwise orderly and expeditious operation to meet their customers’ demands.

³⁹ Heine, I.M., *The US Maritime Industry: In the National Interest*, National Maritime Council, 1980

The 1916 Act appeared to lack a clear definition of its terms. Standards for determining the appropriateness for approval for an agreement laid on vague terms such as “detrimental to the commerce of the US”, “contrary to the public interest” and “unjustly discriminatory or unfair”.⁴⁰ Terms describing prohibited acts defined in Section 14(a) and agreement standards defined in Section 15 were equally vague. In Section 18, reference was made to the authority of the FMC to disapprove rates that are “so unreasonably high or low”. Such idealistic terms proved to be a difficult source of guidance to set consistent interpretations of the 1916 Act (as amended).

In June 1979, another important amendment, the Anti-Rebating Bill⁴¹, was signed into law as the Shipping Act Amendments 1979. Thus amended, the 1916 Act formed a basis for the formation of a renewed Shipping Act of 1984.

4.1.2 US Shipping Act of 1984

Legislative Background. The US Shipping Act of 1984 was signed as Public Law No. 98-237 on March 20, 1984. The Act became effective on June 18, 1984 and superseded the Shipping Act of 1916.

The wheels of change were set in motion during the Second Session of the 95th Congress in 1978, in the form of HR11422. This was succeeded by several House and Senate bills⁴² before settling down in the form of S47 in the Senate and HR1878 in the House. The Senate passed S47 on March 1, 1983, while the House passed HR1878 on October 17, 1983. The House also adopted S47 after substituting the

⁴⁰ Section 14(b), Shipping Act of 1916, 46 USC 813

⁴¹ Public Law 96-25

⁴² These were namely the HR4769, HR6899, S2585 in the 96th Congress, and HR4374 and S1593 in the 97th Congress.

text of HR1878 for the Senate-passed text. A joint Senate-House conference of committee was thus convened to reconcile the different versions and was obliged to use the House-passed text of S47 as the basis for further deliberation.

The Conference Committee's recommendation was submitted to the Second Session of the 98th Congress on February 23, 1984 and was adopted by the Senate on the same day and by the House on March 6, 1984.⁴³ The subsequent enactment of the Act by the President thus concluded a long seven-year journey of a statute that was to change liner shipping practices in the US international ocean trades.

Salient changes adopted by the Shipping Act of 1984. The first clear change in the 1984 Act was an inclusion of policy objectives⁴⁴ and an extension of its "Definitions" section.⁴⁵ These two forefront changes were constructive improvements that helped define the 1984 Act in clearer terms.

Second, the erosion of antitrust immunity had caught both the Senate's and the House's attention in their respective reports in the 98th Congress; and a drastic re-definition of the immunity would be expected.

The Senate Report 98-3 noted that:

"Exposure to the antitrust laws and the heavy burden of justification before the Commission have deprived US-flag carriers in particular, from potential pricing and cost benefits.....By clearly authorizing rationalizing agreements with complete antitrust immunity and by restricting dual enforcement by the

⁴³ McConnel, J.W.Jr., *The US Shipping Act of 1984*, Lloyd's of London Press Ltd., 1985

⁴⁴ Section 2, Shipping Act of 1984, 46 USC app 1702

⁴⁵ There were 27 definitions of terms in the 1984 Act as compared to only nine definitions in the 1916 Act.

justice department as well as the Commission, this Bill would eliminate much of the unequal effect of our regulation on US-flag carriers.”⁴⁶

The House, in no uncertain terms, outlined its supportive views on the antitrust immunity of the shipping industry in its House Report No.53:

“[The Sabre case] outcome has created precisely the kind of regulatory uncertainty which this Committee now and in the past has sought to prevent. This Committee feels so strongly about this issue that it not only outlined specific conduct to which antitrust immunity (sic) applies prospectively, but also included within the exemption from the antitrust laws any duly filed and published tariff that implements an agreement that was approved by the Commission prior to the effective date of this Act.”⁴⁷

Thus it was hardly surprising that the 1984 Act incorporated a broader and clearer scope of definitions on the antitrust immunity. It explicitly extends immunity to all agreements filed in accordance with or agreements exempted by the 1984 Act⁴⁸, and to any activity or agreement undertaken or entered into with a “reasonable basis to conclude” that it is pursuant to such an agreement. Protection from antitrust liability was much enhanced and uncertainty on antitrust immunity, as was generated by the *Sabre* case, was removed. Section 4 of the 1984 Act spelled the scope of agreements covered by the Act, which includes activities such as the:

- fixing of rates,
- pooling or apportionment of traffic, revenues and earnings, and
- control and prevention of competition.

The third important change to the Act eliminated the need for a pre-implementation approval a partnership or conference agreement. While agreements must still be filed with and reviewed by the FMC, they will become automatically effective 45

⁴⁶ Senate Report No.98-3, 1983

⁴⁷ House Report No.98-53 Part 1, 1983

⁴⁸ Section 7(a), shipping Act of 1984, 46 USC app 1706

days after the filing unless the FMC obtains a court-ordered injunction based on its determination that the agreement “is likely, by a reduction in competition, to produce an unreasonable reduction in transportation service or an unreasonable increase in transportation cost”.^{49 50} It is relevant to note that the burden of proof in the litigation is on the FMC and that the court may not allow a third party to intervene with any claim with respect to any injunctive relief.

Again, the importance of such absence of interference of the approval process by other governmental agencies and a prompt approval of agreements filed to the FMC was recognized by both the Senate and the House in their respective reports No. 98-3 and No.98-53.⁵¹ The Senate report commented that:

“ regulatory delay in the administrative process has caused hardship to parties seeking approval of Section 15 agreements In the Committee’s view, justice delayed is justice denied.”⁵²

Fourth, the 1984 Act calls for a right of members of a conference agreement to act independently on any rate or service item^{53 54}. This provision of independent action rights would turn out to be a significant feature of the US “open” conference system that distinguishes it from other conferences in the world. Such provision of independent rights allows greater flexibility for conference members in their respective rate setting agenda, and thereby greater competition. It effectively

⁴⁹ Section 6, Shipping Act of 1984, 46 USC app 1705

⁵⁰ The FMC may also request for a delay in the approval to obtain additional information on the agreement to be filed; see Section 6(d), Shipping Act of 1984, 46 USC 1705.

⁵¹ The Senate had proposed a 45-day approval deadline, whilst the House initially extended on this by capping the review period to be not more than 180 days.

⁵² Senate Report No.98-3, 1983: 9-10

⁵³ Section 5(b)(8), Shipping Act of 1984, 46 USC app. 1704

⁵⁴ The right to independent action was not as explicitly or broadly covered in the Shipping Act of 1916; Section 15 of the 1916 Act merely called for the retention of this right as a prerequisite for the approval of agreements between conferences or between members of a conference.

enhanced the negotiating power of shippers. The Senate had pronounced concern on the need to balance the interests of shippers and carriers.⁵⁵ The House report 98-53 expressly called for a mandatory right of independent action to force conferences to be more responsive to shippers' needs and to allow efficient carriers within the conference to react to malpractice situations and non-conference competition⁵⁶. Thus the independent action provision was enacted to balance the advantages of antitrust immunity granted to the carriers, and the possibility of pricing abuse.

Another major new provision that would strengthen the shippers' negotiation power was the introduction of time-volume and service contracts which allowed conferences or ocean carriers to vary rates based on the volume of cargo tendered over a specified period of time or based on service and volume commitments.⁵⁷ The explicit sanctioning of these contracts was a departure from the 1916 Act which was silent on this aspect. Section 8(b) of the 1984 Act called for the filing of "essential terms" of service contracts and that they be made available to the general public and to "all shippers similarly situated".⁵⁸ These sections would allow some form of rate discrimination for large-volume shippers or shippers who are willing to make volume commitments, and the filing of essential terms would ensure that all deals are "above board" and that the ocean carriers are not able to grossly under- or over-charge shippers based on non-competitive considerations.

The establishment of the right of ocean carriers to independent actions and to enter into time-volume and service contracts, and the explicit recognition of the right of shippers to form shippers' association to negotiate terms with the conferences or

⁵⁵ Senate Report No.98-3, 1983: 11-13

⁵⁶ House Report No.98-53 Part 1, 1983: 15-16

⁵⁷ Sections 8(b) and 8(c), Shipping Act of 1984, 46 USC app. 1707

⁵⁸ The term "all shippers similarly situated", however, appears to be ambiguous.

ocean carriers⁵⁹ add a strong counter-weight (in the shippers' favor) to the antitrust immunity received by the ocean carriers to discuss, fix and regulate transportation rates.

The advent of intermodalism in the early-eighties, caused by shippers' increased interest in through intermodal transportation service, also pushed a new legislative device to the 1984 Act. Ocean carriers often incorporated feeder, rail and/or truck services in their transportation service to facilitate shippers' demands for the management of these services to be under one management or control. The US Congress recognized this change in the transportation trend and the potential cost saving benefits to carriers and shippers if the land and sea transportation can be rationalized. The Department of Justice, however, took an opposing view that the FMC has no authority to approve conference agreements providing for the fixing of through intermodal rates and that any such agreement would violate the US antitrust laws.⁶⁰

Thus, in order to eradicate this uncertainty on the antitrust immunity of ocean carriers with respect to the land transportation part of their through services, the 1984 Act included immunity for transportation activity concerning the inland segment, including the inland segment of a foreign origin or destination point.⁶¹

The effect of the ocean carriers' ability to enter into intermodal ratemaking would allow for a better rationalization of use of transport resources in door-to-door container and trailer transportation, more effective routing of cargoes, improved

⁵⁹ Section 10(b)(13) of the Shipping Act of 1984 prohibits carriers from refusing to negotiate with shippers' associations.

⁶⁰ Senate Report 98-3, 1983: 10

⁶¹ Section 7(a)(4), Shipping Act of 1984, 46 USC 1706

consolidation services, effective competition with alternative transportation services and greater stability of total door-to-door transport costs.⁶²

4.2 European Community Antitrust and Consortia Regulations

4.2.1 Early History of EC Ocean Policy

Shipping legislature was originally mentioned in the original Treaty of Rome (“Treaty”) under Article 84, where it allowed for a shipping policy to be developed if the EC member states deem it was necessary. For many years after its formation, the EC did not have a formal shipping policy. The enactment of the 1961 Amendments to the US Shipping Act of 1916, however, attracted the EC’s attention. A government-represented body, the Consultative Shipping Group (CSG), adopted a Ministers’ Resolution in 1963 that recognized the liner conference system as being indispensable to provide shippers with efficient services at stable rates. The resolution also recognized the concerns of shippers over a possible abuse of conference powers, and called for conferences (rather than governments) to provide a means for ensuring fair practices and an avenue for shippers to discuss any grievances against conferences. Thus this resolution set a tone for a self-regulatory shipping regime in the EC and for a non-direct involvement of EC governments in commercial shipping affairs.

The CSG resolution reflected many of the points expounded by the first inquiry into the liner conference system, the British Royal Commission on Shipping Rings, in 1909. The Royal Commission wrote that conferences, including their use of a rebate system to foster a commercial bond with shippers, were warranted. It also

⁶² Frankel, E.G., *The World Shipping Industry*, Croom Helm, 1987: 220-221

recommended that shippers form associations to counter the conferences' position, and noted that it is undesirable for governmental intervention in this relationship.

Another British-initiated inquiry, the Rochdale Committee of Inquiry⁶³ of 1967-1970, shared the view that liner conferences should be allowed to continue in the interest of the public. The inquiry also encouraged greater consultation between the conferences and shippers, and the publication of a code of conference practice that is to cover issues regarding conference membership, publication of conference tariffs, disclosure of conference revenues and costs, and consultation with governments.

The Rochdale inquiry set the impetus towards the request for a code of liner conference by the CSG, and by the subsequent establishment of the Code of Practice for Conferences in 1971. The EC continued to stay away from setting any specific maritime policies until 1979, when it established the "Brussels package". The Brussels package required member nations to ratify the UN Conference on Trade and Development (UNCTAD) Code of Conduct, but to apply the 40/40/20 agreement on cargo sharing only to the member nations' trade with developing countries only, and not with fellow EC member countries.⁶⁴

In 1981, a draft set of regulations concerning the application of EC competition rules to liner conferences was circulated to EC members for comments. The motivation for the draft regulation draws from a judgment in the *Commission vs French Republic, 1974* where the European Court of Justice upheld the EC's views that sea and air transportation are subjected to the same general provisions of the Treaty despite the fact that these modes of transportation were not covered by the

⁶³ Named after its chairman, Lord Rochdale

⁶⁴ Annex 1 of EC Regulation (EEC) No.954/79

treaty's provisions relating to a common transport policy. Further, in *Commission vs Belgium, 1978*, it was confirmed that these general provisions should in particular include the competition rules of Articles 85 and 86 of the Treaty. This judgment was in conflict with Regulation (EEC) No.141/62 which stated that Regulation (EEC) No.17/62, which first implemented Articles 85 and 86, did not apply to transportation.⁶⁵

The draft regulations led to the adoption of four regulations⁶⁶ by the EC in 1986, including Council Regulation (EEC) No.4056/86 which laid down rules for the application of Articles 85 and 86 of the Treaty to maritime transport. Regulation No.4056/86 set the ground-rules that provided antitrust immunity for conferences. Another legislature, Regulation No. 479/92 concerned itself with operating alliances. A recent development saw the publication of a draft regulation on liner partnerships in the March 1, 1994 edition of the Official Journal of the European Union, to measure the level of competition between carriers and set conditions for the granting of antitrust immunity to operating alliances.

4.2.2 Council Regulation (EEC) No. 4056/86

Regulation No.4056/86 was established in 1986 to apply Articles 85 and 86 of the Treaty to maritime transportation in view that Regulation No.141/62 specifically excluded marine transportation from the influence of Articles 85 and 86 under regulation No.17/62, and Regulation No.1017/68 which also draws on Articles 85 and 86 applies only to inland transport.

⁶⁵ Gilman, S., *The Competitive Dynamics of Container Shipping*, Gower Publishing, 1983: Chap 11
⁶⁶ Council Regulation (EEC) No. 4055/86, 4056/86, 4057/86 and 4058/86

Regulation No.4056/86 explicitly recognized the stabilizing role of conferences “to ensure the availability of adequate efficient schedule maritime transport services”. It added that certain kinds of technical, decisions and concerted parties may be excluded from prohibitions of restrictive practices as they do not restrict competition. Article 3 of the regulation provides antitrust immunity to conferences. This immunity from the Treaty’s anti competitive law, embodied in Article 85 (this article is short, and is reproduced in Box 3), however, was attached with conditions that obligated carriers to:

- consult with shippers on rates and on maintaining quality schedules,
- institute loyalty agreements with shippers,
- allow shippers to choose their own inland transportation where this is not provided by the carriers,
- make tariffs available to shippers, and
- notify the EC on any settlement that is agreed or accepted.

Liner conferences are generally block-exempted from the force of Article 85 of the Treaty, but if any conference agreement is deemed to be able to potentially anti-competitive effects that are contrary to the spirit of Article 85(3), the EC may withdraw the benefit of the block exemption and instead rule on individual exemptions. Likewise, the actions of a conference that abuse its dominant position and are incompatible with the anti-monopolistic intentions of Article 86 of the Treaty will attract a withdrawal of the immunity.

The antitrust immunity is extended to liner conferences that regulate the carrying capacity offered by each conference member, and allocate cargo or revenue among members. However, this immunity is not extended to non-conference carriers or agreements between the conferences and non-conference carriers.

Box 3: Treaty of Rome, Article 85

1. The following shall be prohibited as incompatible with the common market: all agreements between undertakings, decisions by associations of undertakings and concerted practices which may affect trade between Member States and which have as their object or effect the prevention, restriction or distortion of competition within the common market, and in particular those which:
 - (a) directly or indirectly fix purchase or selling prices or any other trading conditions;
 - (b) limit or control production, markets, technical development, or investment;
 - (c) share markets or sources of supply;
 - (d) apply dissimilar conditions to equivalent transactions with other trading parties, thereby placing them at a competitive disadvantage;
 - (e) make the conclusion of contracts subject to acceptance by the other parties of supplementary obligations which, by their nature or according to commercial usage, have no connection with the subject of such contracts.

2. Any agreements or decisions prohibited pursuant to this Article shall be automatically void.

3. The provisions of paragraph 1 may, however, be declared inapplicable in the case of:
 - any agreement or category of agreements between undertakings;
 - any decision or category of decisions by associations of undertakings;
 - any concerted practice or category of concerted practices;

which contributes to improving the production or distribution of goods or to promoting technical or economic progress, while allowing consumers a fair share of the resulting benefit, and which does not:

- (a) impose on the undertakings concerned restrictions which are not indispensable to the attainment of these objectives;
- (b) afford such undertakings the possibility of eliminating competition in respect of a substantial part of the products in questions.

4.2.3 Council Regulation (EEC) No. 479/92

The basis of the EC publication of Regulation No.479/92, in 1992, rests on the simultaneous recognition that:

- liner shipping is a capital intensive industry that need to attain necessary economies of scale, improve productivity and promote technical and economic progress through cooperation and rationalization of shipping services, and
- shippers using these rationalized services may benefit from improvements in productivity and service through an improved regularity of shipping service, cost

reductions arising from higher levels of capacity utilization and better service quality derived from improved vessels and equipment.

Regulation 479/92 paved the way for an antitrust exemption of shipping alliances, which were defined as “joint-service agreements between liner shipping companies with the aim of rationalizing their operations by means of technical, operational and/or commercial arrangements [that] can help to provide the necessary means for improving the productivity of shipping services and promoting technical and economic progress”. Price fixing partnerships were specifically excluded from the antitrust exemption.

Regulation No. 479/92 was needed to support these partnerships as Regulation No.4056/86 explicitly excludes operational alliances, or otherwise known as “technical agreements between carriers”. These technical agreements are commonly known as “consortia” in the EC, and are differentiated from “conferences”. The EC wrote that:

“Conferences are arrangements which exist essentially to ensure that their members charge the same rates of freight. Some conferences also agree [on] members’ participation in a particular trade (which is defined either as sailing rights, i.e. the right to berth x number of sailings per annum from one area to another or as percentage shares in the trade), or even ‘pool’ either earnings or liftings (freight tons) or both: the intention generally to equate ‘share’ with earnings and liftings.”⁶⁷

⁶⁷ Commission of the European Communities, “Report on the Possibility of Group Exemption for Consortia Agreements in Liner Shipping”, June 18, 1990

On the other hand, the EC noted that consortia pursue different objectives by rationalizing schedules to provide a frequent service to its customers, in which each line is allocated slots for each sailing.⁶⁸

Carriers must, however, continue to observe Article 85(3) of the Treaty as a precondition for exemption from Article 85(1).

4.2.4 Draft Commission Regulation No. 94/C63 on Shipping Consortia

Concerns on the possible growing market power of shipping alliances motivated the EC to published a draft regulation for public review on March 1, 1994 that attempts to curb these powers. The draft regulation is still being discussed at the time of this writing. The main details of the bill are listed below.

The statute was initiated to ensure a competitive marketplace as “users [of shipping services] can benefit effectively from consortia only if there is sufficient competition in the trades in which the consortia operates”.⁶⁹ Draft Regulation C63 incorporates two main items to pursue this objective:

- the control of the market power of conferences and consortia through the use of market share as a measurement of market concentration, and
- the establishment of a right to “independent rate action” and independent “service arrangements” by a consortia member which is conference member.

The draft regulation specified that automatic antitrust immunity only applies if a consortia membership is limited to six when the market share of the partnership, in respect of the ranges of ports it covers, exceeds 50 percent. Independent rate action

⁶⁸ Ibid.

⁶⁹ Draft Commission (EC) Regulation No. C63: C63/9

and service arrangement referred to the ability of a consortia carrier, which is also a member of a conference, to apply freight rate and service levels free from conference guidelines.

Although the EC had set noble objectives in trying to protect the interest of shippers, the draft regulation was flawed in several obvious places. First, market share limitations measured by port volume could distort cargo movements through ports. Cargoes are no longer handled by carriers from port to port; much of the cargoes shipped are destined for or originate from inland points. A consortia that is on the verge of meeting this regulated maximum “port market share indicator” can simply divert their inland cargoes to another, perhaps less efficient, port. Cargo diversion dilutes any benefits from scale economies that a carrier may achieve by concentrating its hinterland cargoes at a single hub port. This threatens to disrupt the “hub-and-spoke” system used by carriers to minimize the number of port calls in a region. The end result is a likely to be an increase in the cost of operations to carriers and thereby the cost of transportation to shippers. Second, if market share was to be used as an indicator of a consortia’s market power, it has to be applied consistently with respect to the geographic scope of the consortia. If a consortia agreement covers cooperation on a regional basis, it is only proper to measure its possible abuse of cooperative powers on a regional basis, i.e. market share should be measured based on a regional, not port, basis. This, then, creates a problem as various partnerships entail different geographic scopes; thus, it is difficult to set a “fair and acceptable” standard market share for all carriers or groups.

Third, the mandate for an independent right to rate actions and service arrangements runs contrary to the concept of liner conferences which tried to maintain stability through concerted actions in this area. It also runs contrary to the consultative

obligation of the draft regulation which required that shippers consult with the consortia on “all important matters ... concerning the quality of scheduled maritime transport services offered by the consortium or its members.”⁷⁰ The draft regulation expects group consultations on “important matters” on the one hand, but yet individual rate and service negotiations on the other.

Finally, the lack of antitrust immunity to land-side cooperations (other than marine terminal and marketing activities) in the draft regulation, also meant that the EC had apparently failed to recognize the importance of intermodalism in the transportation chain. As shipping carriers evolve into total transportation carriers, cooperation on logistical operations will be important to enable productivity and efficiency to improve.

4.3 Other National Antitrust Policies

The maritime legislation of most Asian countries were difficult to obtain and little information on their maritime policies are known, other than those of Singapore and Hong Kong. Both Singapore and Hong Kong practice a “free shipping policy” with no regulatory control of carrier partnerships. In Taiwan, operational alliance agreements have to be filed to the Keelung Harbor Bureau for “file” purposes. No regulatory approval is required for such partnerships, and the exact purpose for this filing is unclear. The maritime policies of Australia, Japan, and Canada are discussed below.

Australia. Australian legislation grants complete antitrust immunity to shipping conferences under Part X of the Trade Practices Act (1974) (hereby “TPA”). The TPA was tightened in 1989 following the passing of the Trade Practices (International Liner

⁷⁰ Article 9(1), Ibid.

Cargo Shipping) Amendment Act in 1989. The amended TPA continued to grant conferences antitrust immunity from Australia's competition law (part IV of the TPA); but imposed greater restriction on the outbound sailings of conferences. These include mandating (1) the conferences to negotiate minimum service levels with a designated shipper body, (2) disputes to be resolved in accordance with Australian laws, (3) withdrawal of a conference member upon reasonable notice without penalties and (4) the public registration of outward conference in order to gain immunity. The exemption does not provide a blanket antitrust immunity for all conference activities, but rather for a limited scope of activities only. These include rate-fixing, pooling or apportionment of business, cargo decisions, decision on conference membership, loyalty agreements and practices essential to the conference service and of overall benefit to exporters. Non-conference carriers are not covered by this antitrust immunity and are subject to Australian competition laws. A recent review of the antitrust immunity was completed in December 1993 with the publication of the "Liner Shipping Cargoes and Conferences: Report of the Part X [of the TPA] Review Panel". The report recommended that antitrust exemption be continued for liner conferences, but also suggested a closer scrutiny of agreements between conferences and non-conference carriers and the establishment of a commercially-based authority to resolve the industry's problem and disputes.⁷¹

Japan. Japan's maritime policies are regulated under the Japan Maritime Transportation Law No.187 of 1949. The Japanese maritime policy favors the existence of conferences to ensure the availability of stable and reliable ocean transportation services at reasonable rates. Thus, the Japan Maritime Transportation Law accords antitrust immunity from Japanese competition laws to agreements between ocean carriers concerning "matters on freight rates, fares and fees, and other terms and conditions of transport, routes, sailing

⁷¹ "Liner Shipping: Cargoes and Conferences", *Report of the Part X Review Panel*, Australian Government Publishing Service, December 1993.

and loading". However, these agreements must not substantially limit competition and unfair methods to substantially restrict competition and cause unjust increase in freight rates, fares and fees are prohibited.⁷² regulatory approval for partnerships is not required.

Canada. Canada's maritime policies are regulated under The Shipping Conference Exemption Act (SCEA) of 1987, where, as the name suggests, provides for an exemption of conferences from the Canadian Competition Act. The exemption, however, applies only to carriers under conference agreements or agreements between conferences. Non-conference carriers and agreements between conferences and non-conferences are subject to Canadian competition laws. The antitrust immunity is subject to a number of restrictions that act as a check on the market power of the conferences. These include a requirement that conference agreements be filed and approved, and a prohibition on predatory pricing and collective negotiations between conference members and inland carriers.⁷³

4.4 Analysis of Antitrust Policies and Shipping Alliances

"[The US Shipping Act of 1984 is] one of evenhanded nondiscriminatory regulation designed to provide our importers and exporters with an ocean system sufficient to [meet] their commercial needs."⁷⁴

Thus the proclamation of US Representative Walter Jones in 1984 when the 1984 Act was successfully enacted ten years ago. However, the success of the 1984 Act itself is far from apparent, for it has attracted much controversy (and with it, both friends and foes) since its enactment. Ocean carriers are pleased with the expanded and specific verbiage on antitrust immunity as granted by the Act, but generally detest and blame the Act's mandatory independent action and service contract provisions for depressed freight rates

⁷² Report of the Advisory Commission on Conferences in Ocean Shipping, April 1992

⁷³ Ibid.

⁷⁴ *Washington Letter*, Vol.7, No.43, October 22, 1984, Joint Maritime Congress

(especially in the trans-Pacific trades in 1985-1987). On the other hand, shippers cry foul over the antitrust immunity granted to ocean carriers, but had in general welcomed the new provisions on mandatory independent actions and service contracts which made the shipping industry more competitive.

Pricing alliances in the shipping industry, especially liner conferences, and regulatory approval for these alliances, like the US Shipping Act of 1984, have been continuously challenged since the first liner conference was established. Some of the inquiries into the liner conference system included:

- The Royal Commission on Shipping Rings, 1909 (UK)
- The Alexander Committee Report, 1914 (US)
- Imperial Shipping Committee, 1921 (Commonwealth governments)
- The Bonner and Celler Reports, 1959-1961 (US)
- CSG Ministers Resolutions, 1963 onwards (Europe and Japan)
- Rochdale Committee of Inquiry, 1968-1970 (UK)
- CSG Ministers Meeting, Tokyo, 1971 (Europe and Japan)
- EC Common Shipping Policy, 1986⁷⁵
- US Shipping Act of 1984
- UN Liner Code of Conduct: Review Conference, 1988-1991
- Section 18 Report on the Shipping Act of 1984, 1989 (US)
- Advisory Commission on Conferences in Ocean Shipping, 1992 (US)
- Part X, of the Trade Practices Act, Review Panel, 1993 (Australia)

Similarly, the latest EC draft regulation (filed March 1, 1994) on shipping alliances reflected the continued concerns of opponents of shipping operational alliances (or “consortia”, as defined by the EC) on the possible abuse of their market power. Some of the main controversies on the impact of antitrust immunity on pricing and operational alliances are discussed below.

⁷⁵ Farthing, B., *International Shipping: An Introduction to the Policies, Politics and Institutions of the Maritime World*, Lloyd's of London Press Ltd., 1993

Before even considering the antitrust issue, however, one must consider the antecedent question: why the need for liner conferences or consortia? Can competitive forces be allowed to take their course unbridled and allow shipping alliances to generate long-term benefits to both the users and providers of ocean liner transportation? No. Market failure is a key reason why the existence of conferences and/or consortia are necessary to prevent a market collapse and create an unstable ocean transportation environment that will be both disruptive and costly to shippers. The evaluation of conferences and consortia is relevant to gain an understanding on the necessity of antitrust exemption for the carriers.

The importance of shipping conferences was recognized as far back as 1909 when the British Royal Commission of Shipping Rings released an extensive report on shipping conference practices. The Royal Commission accepted conferences as a necessary form of organization for providing regular services at stable rates.⁷⁶ The US Alexander Report of 1914 also concluded that the conference system was a necessity, but acknowledged that it would be imperfect and that it should be regulated to protect shippers and carriers from abuses.

The Alexander Report captured the essence of antitrust discussions of the shipping industry in the following paragraph:

“To terminate existing [conference] agreements would necessarily bring about one of two results: the lines would engage in rate wars which would mean the elimination of the weak and the survival of the strong, or, to avoid a costly struggle, they would consolidate through common ownership. Neither result can be prevented by legislation, and either would mean a monopoly fully as effective, and it is believed more so, than can exist by virtue of an agreement.”⁷⁷

⁷⁶ Jansson, J.O. and D.Shneerson, *Liner Shipping Economics*, Chapman & Hall Ltd., 1987

⁷⁷ *Report on Steamship Agreements and Affiliations in the American Foreign and Domestic Trade*, HR Doc No.805, 63rd Congress, 2nd Session 416 (1914)

Proponents of antitrust immunity for carriers have warned of the above economic tragedy to the shipping community and argued that the nature of the liner shipping industry warrants for an exemption from orthodox competition laws. On the other hand, opponents of antitrust immunity have argued that the destructive nature of an open competition in the shipping industry is exaggerated. Bower and Rhenman (1985) have, however, shown that collusions are beneficial when there exist an inherent market failure in an industry. Several market failure factors show that the admonition of immunity proponents is not overstated, and that cooperation between liner carriers are beneficial and should be allowed.

4.4.1 Destructive pricing

Four factors, namely a chronic overcapacity, perishable cargo space, low marginal-to-average cost ratio and low product differentiation, contributed to an operating environment in liner shipping that encourages destructive and cut-throat pricing activities. These four factors were caused by characteristics that are uniquely and collectively found in the liner shipping industry. In addition, the existence of subsidized carriers and government-supported non-market carriers in the shipping industry further added pressure on price-cutting. These are discussed below.

Chronic Overcapacity. In Chapter 2 we saw that the supply of cargo capacity in the liner industry is lumpy, and not incremental, in nature. This factor is worth revisiting to gain an understanding of the competitive nature of containerized liner shipping. This “block” supply of containerized cargo space contributes to a chronic oversupply of capacity to the liner industry. Any expansion in the capacity of existing carriers in the trade or any new entrant inevitably produces an excess

capacity in the marketplace as new capacities cannot be efficiently introduced to avoid an oversupply. At the same time, existing ship capacities cannot be readily reduced, as would manufacturing capacities, to kill off excess capacity.

Excess capacity produced by new ship orders is reflected in the recent spate of “fleet renewal” programs announced by the various top liner carriers in the past year. The total Teu-capacity of the world’s top nineteen carriers in 1999 is expected to increase to 1.86 million Teus from 1.49 million Teus in 1993 (see Tables 1 and 2 of Figure 4-1). This represents an increase of about 370,000 Teus, or about 24 percent in a span of just six years. Most of the carriers have announced that the newbuildings are to replace older ships which are to be “phased out”.⁷⁸ If ships of above 25 years of age are excluded from the fleet data in 1999—assuming that they are economically inefficient and are due to be phased out—there is still a considerable 14 percent increase in capacity compared to 1993 (see Table 3 of Figure 4-1). Table 3 of Figure 4-1 also showed that there is only a net increase of one ship in 1999, i.e. implying that the average size of newbuildings are much larger than the ships to be “replaced”. It is unclear from the press announcements if the ships to be phased out are meant for scrapping. While many of the second generation 1,500-Teu to 2,500-Teu ships will be about 25 years of age then, these ships are still good for less demanding shortsea services.

⁷⁸ See, for example, *Containerisation International*, “APC orders afresh”, June 1993; and *Containerisation International*, “NOL, P&O order Panamax”, August 1993.

Figure 4-1: World Top-19 Carrier's Fleet Profile

WORLD TOP-19 FLEET SIZE-AGE PROFILE

	Table 1		
	Year = 1993, All ages		
	Rank	Fleet Tens	Wtd. Ave Age 1994 No. of Ships
APL	10	66,393	11.0 35
COSCO SHANGHAI	15	60,237	8.9 52
DSR SENATOR	11	65,977	4.5 41
EVERGREEN	3	120,409	8.6 45
HANJIN	7	76,784	5.6 31
HAPAG-LLOYD	16	60,165	9.0 21
HYUNDAI	19	41,230	4.9 15
K-LINE	9	73,366	6.2 46
MAERSK	1	165,664	9.7 85
MOL	5	85,132	9.1 62
NEDLLOYD	6	78,978	11.0 52
NOL	13	62,856	11.0 31
NYK	4	107,883	8.7 60
OOCL	17	53,734	13.2 24
P&OCL	8	73,983	13.3 33
SEA-LAND	2	129,214	12.5 76
UASC	18	41,535	12.9 37
YANGMING	14	61,511	8.7 26
ZIM	12	65,909	11.9 52
TOTAL		1,491,000	9.6 824

	Table 2		
	Year = 1999, All ages		
	Rank	Fleet Tens	Wtd. Ave Age 1999 No. of Ships
	6	104,193	11.4 44
	7	101,367	10.1 63
	14	75,052	8.9 44
	3	141,554	12.3 50
	9	88,856	9.8 34
	17	69,009	12.8 23
	13	79,588	6.9 23
	15	73,366	11.2 46
	1	206,290	12.5 96
	5	109,132	12.0 67
	10	87,778	14.9 54
	8	89,162	12.4 37
	4	122,319	12.6 63
	11	83,434	13.0 30
	12	82,059	17.0 35
	2	145,214	16.0 80
	16	70,335	11.2 45
	19	61,511	13.7 26
	18	65,909	16.9 52
		1,856,128	12.5 912
		+ 365,128	+ 2.9 + 88

Difference: + vs 1993 + 24%

	Table 3		
	Year = 1999, Age < 25 years		
	Rank	Fleet Tens	Wtd. Ave Age 1999 No. of Ships
	10	80,379	8.9 32
	6	98,189	9.5 58
	14	73,616	8.5 41
	2	141,114	12.2 49
	7	88,856	9.8 34
	17	61,096	11.0 19
	11	79,588	6.9 23
	15	72,495	11.0 45
	1	190,512	11.4 89
	5	102,524	11.0 63
	8	81,874	14.1 52
	9	80,724	10.7 31
	4	115,739	11.8 59
	12	75,252	11.5 26
	18	57,351	12.4 23
	3	125,099	13.8 65
	13	74,207	9.3 44
	16	61,511	13.7 26
	19	34,404	20.4 46
		1,694,530	11.3 875
		+ 263,550	+ 1.7 + 1

Notes:

- (1) Carriers are ranked by their Fleet Size (in Tens)
- (2) Ships under the subsidiaries or associated companies of the respective carriers are not included; e.g. Uniglor of Evergreen, TSK of NYK, Ellerman of P&OCL and P&OCL.
- (3) Cosco Shanghai's fleet does not include ships from Cosco Guangzhou and Cosco Tianjin
- (4) Mediterranean Shipping Corporation is ranked No.19 in 1993, but is not included in the above study as it drops out of the Top-19 range in 1999.

Source: MDS/Transmodal Containership Databank Feb '94 (courtesy of MARAD) and Various Newbuilding Press Announcements

The hardware used in the liner shipping industry are long-lived assets that are usually still economically productive even after its owners have folded up. Therefore the demise of any ocean carrier will not necessarily reduce the quantity of supply to the industry. In the case of US Lines, its 4,000-Teu Econ-class ships were eventually purchased by Sea-Land which deployed them back to the same route they were previously trading in: the trans-Atlantic trade.⁷⁹ Similarly, when Navix Lines (the parent company of Nippon Liner System) and EAC decided to pull out from the liner shipping industry, the cargo capacities were not taken out from the trade—they merely changed ownership, to NYK in 1991 and A.P.Moller/Maersk in 1993 respectively. Other long-lived hardware, like containers, also avoided being scrapped; most merely changed hands when carriers fold up. If we were to look at, for example, NYK's container fleet today, we will be able to find the corporate logos of Showa Lines, Japan Lines, Yamashita-Shinninon Lines and Nippon Liner System among its containers—evidence of long-lived assets that once belong to carriers that no longer exist.

Opponents of this view contended that such attributes were also inherited by the real estate and airline industries, and are thus not unique. This assessment is flawed for it missed the point that container ships are specialized assets that cannot be easily converted for other uses, unlike assets in the other two industries. Such conversions of use are effective to clear overcapacities in a particular sector of the industry. In the real estate industry, the use of building space can be changed easily to accommodate the current needs of real estate consumers, subject only to a city's urban planning guidelines. Building space has been used interchangeably for commercial, residential and entertainment purposes. Similarly, aircraft owners enjoy

⁷⁹ The ships were redeployed as 3,400-teu ships after some structural and mechanical conversions.

the ability to use their assets as cargo or passenger planes with little structural modifications. The full or partial conversion of aircrafts into passenger-cargo combos is not an uncommon activity among airlines.⁸⁰ The development by the Boeing Company of the agile Boeing-767 aircraft further ensured that such conversions can be done in both a timely and cost-efficient manner. Container ship owners do not enjoy these flexibilities. I was unable to obtain information on any current technology that is able to efficiently convert a container ship into a cruise ship.⁸¹

The regular availability of cargo capacity also contributed to a high level of service provided by the carriers. Liner carriers are very hesitant to lay-up excess capacity to avoid random incidences of capacity shortage arising from sporadic and seasonal fluctuations in shipping demand. Such failures to serve the customer (especially a “core customer”) have long-term implications on the shipper’s perception of the carrier’s quality of service.

Butz (1992) highlighted that ocean transportation cargo movements are highly imbalanced whereby it contributed to a high incidence of overcapacity on the “lighter” direction of a particular trade route. Carriers often deploy capacity based on the demand of the “heavier” sector of the trade route. This phenomenon is rarely observed in the passenger airline industry whereby trips are often made on a round-trip basis. Ocean carriers have tried to alleviate this problem by calling on additional

⁸⁰ See, for example, a commentary article on airlines trying to convert more aircrafts to carry cargo in light of a recent upturn in air cargo traffic relative to passenger traffic, in *America Shipper*, “Can cargo get equal treatment?”, March 1994.

⁸¹ One might innovatively suggest using excess container ships as floating museums, although a high demand for such use is suspect. It will take a little more imagination to convert container ship into entertainment centers—the cruise liner, *Queen Mary*, have been used as an entertainment center in Los Angeles, but was sadly a failed project.

regions or ports on the “lighter” sector, but this has hardly solved the problem fully. Additional port stops increases the transit times between the original focus-markets, and may cause a loss of transit time-sensitive cargoes to these markets. It also creates container inventory problems for the “way-port” that is only visited in one direction by the carriers’ ships (unless the carrier has other services that call the port in the opposite direction). Thus, Butz’s observation is largely accurate.

The lumpy and durable nature of container ship capacities, the non-convertibility of usage and cargo trade imbalances caused a unique and persistent case of overcapacity in the container liner industry. Overcapacity inevitably causes additional costs, and instill a high pressure on the carriers to resort to aggressive price-cutting to fill these additional capacities.

Perishable Cargo Space. Cargo space on each sailing can be likened to perishable products that have a limited shelf life. Cargo space is economically worthless as soon as the ship leaves the last port of a loading region, that is, cargo capacity cannot be stored for future use. This leads to an intense competition to fill any unused cargo space before the expiry of the product, not unlike the earnest efforts of a produce store to clear soon-to-expire goods just before their expiry. Such intense competition would definitely be alleviated if the “product” (or cargo space) can be stored, as would a manufactured product, during a market decline (in demand or price), and reused when market conditions improve.

There have been comparisons made between the passenger airline and liner shipping industries, where both face the problem of a short-lived product (passenger and cargo space). This is an accurate comparison, except that the predicament in shipping industry is even more intense. Most shipping companies establish contracts

with a core group of shippers who will form the carrier's base customers. Most of these customers are loyal, do not switch vendors easily and are quite inaccessible to carriers who need their business on a *short-term basis, ceteris paribus*. This meant that the ocean carriers have a lower "non-core" customer base to rely upon for short-term business and, i.e. there is a smaller pool of customers available to the shipping carrier intent on selling its perishable product an ad-hoc and "last minute" basis. This leads to intensified price-based competition for the customers. The airline carrier is more fortunate in that it is able to reach the same wide pool of customers when it need to clear its capacity.⁸²

Low Marginal-to-Average Cost Ratio. In the capital-intensive shipping industry, much of the ship's costs are sunk just before the ship departs the last port of loading. This includes the high ship investment (or chartering) and operating costs, leaving only a relatively low loading, unloading and container wear-and-tear costs. Marginal costs are much lower than average costs, leading to a competitive environment where price-cutting pressures are high when carriers try to use up their perishable capacities.

Low Product Differentiation. Some of the main competitive factors in the shipping industry include the ease of packaging/unpackaging cargoes, availability of fast transit times and frequent services, and the regularity and timeliness of a carrier's sailing schedule. The advent of containerization and its imitability made the first factor basically irrelevant as a differentiating competitive factor. Relatively new innovations in container technology, like the 45-foot long and the "hi-cube"⁸³

⁸² Frequent-flyer programs attempts to instill customer loyalty, but is only a soft barrier to accessibility compared to carriage contracts signed by the carriers' core customers.

⁸³ These are nine-and-a-half foot-high containers.

general purpose containers, and the ventilating containers were quickly copied. Transit times for a particular route are a simple function of the ship speed and engine technology, and are not differentiable factors. The regularity and timeliness of a sailing schedule depends very much on the “buffer” (or slack) time and sailing speed allowed in the design of the sailing schedule to guard against generic risks of delays. Specialized risks, like an unforeseen labor strike or an unpredicted storm, tend to affect all competitors with equal probability in the long run.

Such low product differentiation leaves only two areas for a carrier to differentiate itself based on intangibles like service peripheries—and price. Service peripheries include the level of “customer service” and is a difficult factor to measure. Carriers are often unable to accurately gauge their standing in this area, and are lured by a high temptation to use price as a differentiating factor.

Threat from subsidized and government-controlled non-market carriers. Ocean transportation is an important pipeline to a trading nation’s economic output and the shipping industry often attracts governmental support as part of a social overhead costs. Many countries support a merchant maritime fleet for national security and trading accessibility purposes. Non-market economies often sponsor ocean carriers for the purpose of gaining “hard currencies” and providing jobs.⁸⁴ These carriers have scant regard for the operating profitability of the business and often quote below average costs. The presence of such carriers add additional downward pressure to the rate structure.

⁸⁴ Incidentally, some market economies like the US also promote a subsidized merchant fleet for the purpose of, *inter alia*, providing jobs.

Efforts by some maritime nations to limit the market influence of these carriers did not seem to work. For example, the US enacted the Ocean Shipping Act of 1978 (or “Controlled Carrier Act” of 1978)⁸⁵ which attempted to curb the activities of these carriers. However, the Controlled Carrier Act only applies restrictions to carriers that are “controlled” by governments *and* whose ships are registered in the same country’s registry.⁸⁶ This allowed major carriers like the 100 percent Taiwan government-owned Yang Ming Line⁸⁷ (which registers its ships elsewhere) to escape the net but (with the exception of COSCO for cross trades) captured a string of minor inconsequential carriers that do not impact the market anyway.⁸⁸ Other exemptions allow non-market carriers to operate freely in the US, especially when these foreign governments implicitly or explicitly threaten to block American-flag carriers from operating at their shores. COSCO, for example, is not considered a controlled carrier in the China-US trade route. This appears to be a pathetic failure on part of the intended control—much like setting a mouse-trap to snare a bear, and in the process catch many small and insignificant rodents but allow the “biggies” to escape.

4.4.2 Economies of Scale

Chapter 2 had discussed that economies of scale exist in the liner shipping industry. I will not elaborate further on this other than to look into the possible reasons why some academics contend that these economies do not exist.

⁸⁵ The Ocean Shipping Act of 1978 was later codified in Section 9 of the US Shipping Act of 1984.

⁸⁶ See Section 3(8) of the US Shipping Act of 1984.

⁸⁷ The government of Taiwan recently launched an initial public offer (IPO) to spin off a small part of Yang Ming Line in 1993.

⁸⁸ See, for example, FMC’s Section 18 Report, 1989 which lists 37 such carriers.

Two of such studies were mentioned in the 1992 Report to the Advisory Commission on Conferences in Ocean Shipping (ACCOS).⁸⁹ These were studies conducted in the early-eighties based on data from the seventies. The conclusions reached applied to the then operating environment; but not to the current operating environment where ocean shipping has become more integrated with land-side transportation and upstream supplier activities. Liner shipping has evolved into a sophisticated mode of transportation that is able to ensure cargo deliveries within the hour. When containerized liner shipping first replaced irregularly scheduled break-bulk shipping, handling productivity at ports increased. This led to a shorter and a more predictable port stay, which translated to higher predictability of the sailing schedule in general. Shippers soon learnt the value of regularity and timeliness of scheduled sailings. Inventory and storage costs were reduced, and uncertainties over sailing schedules were eliminated. Shippers began to tolerate less deviations from the advertised sailing schedule and expect cargo deliveries within a narrower time frame. In some cases, the tolerance has been reduced to as low as two hours within the advertised time schedule—this is a far cry from the days of unscheduled sailings where shippers were often informed that their cargoes will arrive “within two to three days” from an estimated time of arrival. Such sophistication in containerized shipping was one of the main reasons (other than cost factors) that prompted carriers to vertically integrate with their upstream suppliers. This enabled the carriers to have a close control of all parts of the transportation chain in order to ensure an orderly and timely delivery. The top carriers today operate their own marine terminals wherever the local port authorities and labor unions permit. Likewise, when the hub-and-spoke style of operations was adopted by carriers in the

⁸⁹ Namely by G.Olin, “The Structure of Production in the United States Liner Shipping Industry”, *Unpublished Ph.D. dissertation*, The Catholic University of America; and E.G.Frankel, Inc., *Economic Impacts of Cargo Sharing*, Vol III, “Impact of Cargo Sharing on US Liner Trade with Countries in the Far East and Southeast Asia”, presented for the Federal Maritime Commission.

late-seventies, carriers began operating their own feeder ships to relay cargoes to ports that are not served by the “mother ship”. The advent of intermodal containerization in the US saw carriers buying long-term leases on rail cargo space to deliver containers inland.

This integration of operations and the networking of the services increased the minimum efficient scale of liner operations. Scale economies were high for a carrier that intends to “make” these services rather than “buy” them.⁹⁰

Scale economies were also made possible by a graduation up the learning curve through the accumulated knowledge gained. Larger scale business are able to reap maximum benefits from earlier experiences. Likewise, scale economies allow larger carriers to easily absorb newly introduced cost-saving technologies. Frankel (1991) noted that the experience curve of shipping technology usually indicate rapid improvement in productivity after new technology is introduced into an operation, and will continue to improve productivity until the technology is worn out or converges on obsolescence. Upon the exit of carriers from the industry (as caused by destructive pricing), such advantage derived from scale economies strengthens the oligopolist-carriers’ position and allow them to derive large cost efficiencies.

4.4.3 High Entry Barrier to a New Carrier in a Concentrated Industry

Upon the exit of carriers from the liner shipping industry, as may be caused by rate wars, entry barriers to a new carrier rise considerably. Before such exit of carriers, low-scale low-cost operations can be an effective technique for a new carrier to

⁹⁰ For further technical analyses of economies of scale in the liner shipping industry, see Veldman (1993), Talley (1990) and Gilman (1983).

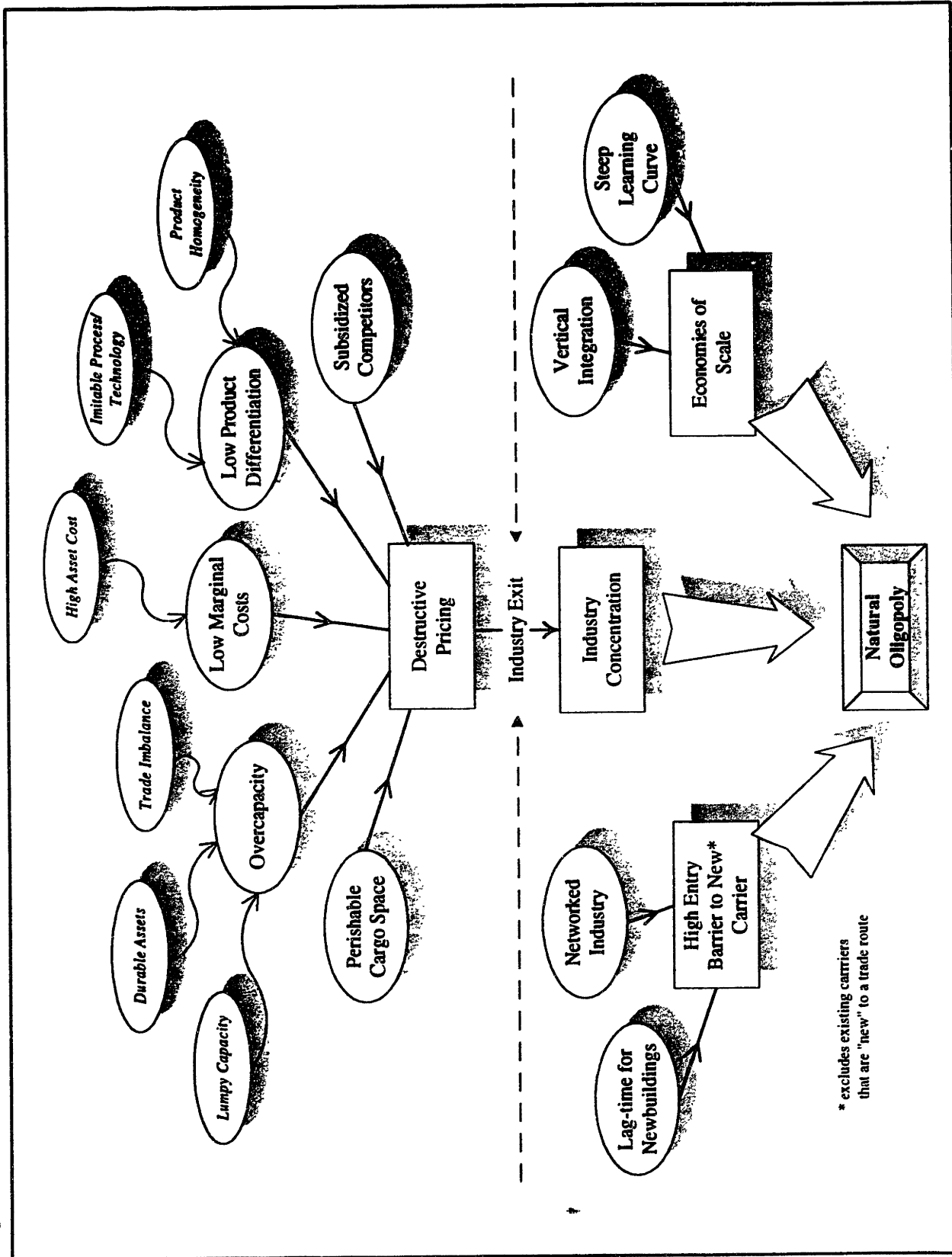
break into a market (attesting to the contestability of liner markets *before* destructive pricing causes an exodus of carriers from the industry). However, if the liner industry is allowed to fail (leading to a concentrated industry), small incursions, using low-scale low-cost techniques, into the liner markets then will not be able to dislodge the few remaining oligopolist-carriers. Different ground-rules apply now: the new entrant must match the incumbents' cost efficiency resulting from large-scale operations, and dilute any customer goodwill that might have developed with the incumbents by then. The new entrant is faced with a task of breaking into a networked industry dominated by a few carriers. The inherent nature of the ship building practice that necessitates a time lag between a new ship order and delivery, adds to the obstacles that may soften the new entrant's challenge to the oligopolist. Entry barrier is thus a significant factor in a concentrated liner industry.

4.4.4 Threat of Natural Oligopoly

The inherent nature of liner shipping that abetted high pressure on a destructive pricing leads to an industry that is a natural oligopoly. Once industry concentration is established, economies of scale and the existence of a high barrier entry to new (not existing) competitors will help ensure that this newly created oligopoly is hard to challenge (see Figure 4-2). Entry barriers will still be low to existing carriers, but by then, there will be few existing carriers.

The result to shippers will be devastating. First, cut-throat pricing does not benefit the industry in the long run. It creates a highly unstable operating environment for shippers who will constantly be uncertain of their mid to long-term cost of transportation. Thus, any apparent benefit of a totally unrestrained competition in

Figure 4-2: Factors leading to Natural Oligopoly in the Liner Shipping Industry



the liner shipping industry will be short-term in nature. The longer term impact would be the creation of an oligopolistic industry where high prices will reign.

4.4.5 Counter-balances of Antitrust Immunity

The granting of antitrust immunity to the liner industry will inevitably encourage greater cooperation (some say collusion) among the carriers. Such cooperation necessarily creates two possible scenarios: cooperations that generate overall benefits or collusions that abuse their market power. Benefits from any cooperation will have to be balanced with the risk of abuse of such market power.

Abuse of Market Power and Contestability of the Industry. The specter of abusive groups of liner carriers was raised by opponents of antitrust exemption for the liner shipping industry. These opponents were legitimately concerned that competition will be reduced, innovation suppressed and consumers taken advantaged of. Such fears were, however, more than balanced by the contestability of the liner shipping industry. The contestability hypothesis states that a market is contestable if a competitor can move into a market freely when prices are above costs and be able to recover its costs if it exits the market. Thus, in a contestable market the threat of entry, not an actual entry, will influence prices. Perfect contestability, as with other perfect scenarios, may be difficult to find; however, highly mobile assets, like ships and containers, create a reasonable contestable market in the liner shipping industry. In contestable markets, any over-pricing by the incumbents will attract new entry. This ensures that the incumbents price their service or products competitively, regardless if there are presently few competitors or if the current competitors are exempted from antitrust laws.

Davies (1986) showed that the liner industry satisfies the two conditions that represent potential competition and that are able to prevent firms from exploiting the lack of actual competition in the industry—the availability of freedom of entry and exit, and the existence of a possibility of “hit-and-run” entry⁹¹.

In Chapter 2, we saw that the entry barrier to a “new” entrant is high, especially now that the liner industry has evolved into a more integrated and networked industry. However, these barriers are relatively much easier to cross for an existing competitor that is already operating in another trade route. These carriers would have already established land-based infrastructural support and relationship with distributors (like rail companies and truckers) and shippers in the areas that it presently operates in. For example, P&O operates competitive Far East-Europe and North America-Europe liner services, but does not have a presence in the Far East-North America trade route in 1993. Thus, when P&O announced in 1993 that it intends to start a service in the trans-Pacific trade in the near future, its threat was taken earnestly by the existing competitors in the trade route. P&O already has established contacts with customers and suppliers in both the Far East and North America through its existing liner services. The relative mobility of assets in the shipping industry, namely ships and containers, facilitates such entry by an existing competitor. So does, the relative standardization of equipment. Baumol (1982), in his pioneer paper on the use of contestability to gauge markets, noted that the role of cross entry is important to ensure that a market is contestable. We have seen that cross entry by existing horizontal competitors in liner shipping is quite effortless given the mobility of ships and standardization of equipment.

⁹¹ For an opposing view and a rejoinder, see Jankowski, W.B. & J.E.Davies, “Notes and Comments: Competition, Contestability and the Liner Shipping Industry”, *Journal of Transport Economics and Policy*, Vol XXIII, No.3, Sep 1989

The ease of entry to a port also determines the level of contestability in the transportation industry. The unimpeded entry into ports is a key factor that determines if a transportation service may be set up between two, or more, points. If these entry points are closed, or open to only a selected few, the contestability of the trade route will be severely undermined as there will be limited competitors in the field. The airline industry reminisces of this scenario; airports are considered closed to all, except airlines that have prior permission to land. This permission, or landing rights, are obtained through government-to-government bilateral negotiations, usually based on the principle of reciprocity. Suffice to say that any governmental involvement in such negotiations attracts political undertones that lead to bureaucratic delays and inefficiencies. Even after such landing rights are gained, they are not unrestrictive nor permanent in nature. An airline may only be allowed to pick up or set down passengers in particular points, or both; these rights are also known as the third and fourth freedoms of the air. A fifth degree of freedom allows the airline to pick up or set down passengers in an in-transit airport.⁹² The impermanence of such landing rights was highlighted recently in a much publicized incident, in 1993, where Australian authorities threatened to reduce Northwest Airlines' landing frequency in Australia. The reduction was imposed in response to Northwest Airlines' alleged breach of an agreement to limit its passenger intake between Australia and Tokyo, where the airline's planes stop en route to or from the US. It took heavy intervention from the US authorities, in counter threats to reduce the US landing rights of Australian-flag Qantas, to eventually bring the parties to a settlement.

⁹² The first and second freedom entails the right to fly over a country's airspace and to land for operational purposes without picking up or setting down passengers.

Such an operating environment severely limits the contestability of the airline industry. In contrast, very few countries are known to close or limit access to their sea ports; certainly none of the major maritime nations. Such liberal policy of entry to sea ports was probably an extension of the “freedom of the seas” principle that was first raised in 1604 by Dutchman Hugo de Groot (also known by his pen-name Hugo Grotius), and historically practiced by the maritime community. This principle was enshrined as a formal and universally-accepted principle in the Third UN Conference on the Law of the Sea (UNCLOS III) in 1982⁹³ ⁹⁴. On the other hand, the airline industry still holds on to the concept of sovereignty of airspace, first ratified in the International Convention for the Regulation of Aerial Navigation at Paris in 1919 (this principle was later upheld in a wider convention, the Chicago Conference of 1944). The lack of contestability in the airline industry explains an important difference with the shipping industry. It also clearly dispels the attempts of some to link any success of deregulation in the airline industry (e.g. the US Airline Deregulation Act of 1978) to a successful withdrawal of antitrust immunity to shipping carriers⁹⁵.

Liner shipping trade routes are also beset with “hit-and-run” opportunities such that they encouraged the presence of (and gave rise to the term) “fly-by-night carriers”. The Southeast Asia-to-Australia trade saw two examples of such carriers recently. In 1989 and 1990, two new carriers, Sabre Line and Nusantara Express Line, started bi-weekly liner services between Southeast Asia and Australia East Coast. These

⁹³ UNCLOS III was ratified in 1993.

⁹⁴ There were some major maritime nations, notably the US and its sympathizers, that did not subscribe to UNCLOS III but this was motivated by their specific disagreement over the sea-bed regime being declared as a “common heritage of mankind”. These dissenters have, nonetheless, endorsed all other items of the treaty (save the seabed terms).

⁹⁵ See, for example, the Statement of James F. Rill, Assistant Attorney General of the US Antitrust Division of the US Department of Justice, before the Advisory Commission in Conferences in Ocean Shipping, September 13, 1991

entries were apparently initiated to take advantage of a relatively high freight rate structure in the trade route. By 1992, both carriers have pulled out from the trade after their entries affected and deteriorated the freight rates, and thus affirming the existence of “hit-and-run” incidences and the freedom exit. Other carriers like NYK, Hanjin, MOL and COSCO entered the trade in 1991 and are still operative in the trade route today (again showing the ease of cross-entry).

Cooperative Benefits. On the one hand, antitrust immunity will reduce competition and ostensibly give carriers a higher market power. These market power may be abused to suppress innovation in the industry through collaborations to avoid costly research and development. Carrier groups can seemingly be complacent as a result of a high market power and lose any motivation to invest in innovations that can reduce costs. Such market powers can also be abused to raise prices to realize abnormal profits. The risk of such abuses is counter-balanced by the contestability of the existing liner industry, where there exist a free entry and exit, and opportunities for “hit and run” incursions into the liner markets (see Figure 4-3). Such contestability, though, will be seriously impaired if the liner market is allowed to converge into one with few competitors (as may happen if an unbridled competition occurs and cut-throat pricing forces carriers from the industry). Then, the oligopolistic powers and scale of the few remaining carriers will render the market incontestable.

On the brighter side of antitrust immunity, potential benefits from carrier cooperation are numerous. Some operating benefits from liner alliances include the ability of carriers to offer a more frequent service, provide a wider geographic scope of service and improve on transit times. See Figure 4-4 for an example (Options I, II and III may be achieved through any form of operating alliances discussed in Chapter

3). Thus, as shown, a higher quality of service can be offered by the carriers in a partnership while still deploying the same number of ships. Frequent, inter-spaced and fast liner services that may be a result of such cooperations provide shippers with immense inventory and storage savings, and reduce management time and the burden of tracking shipments. Shippers will also gain access to new markets when their favorite carriers cooperate with other carriers and gain access to a wider geographic scope.

Figure 4-3: Cooperative Benefits Outweighs Antitrust Fears

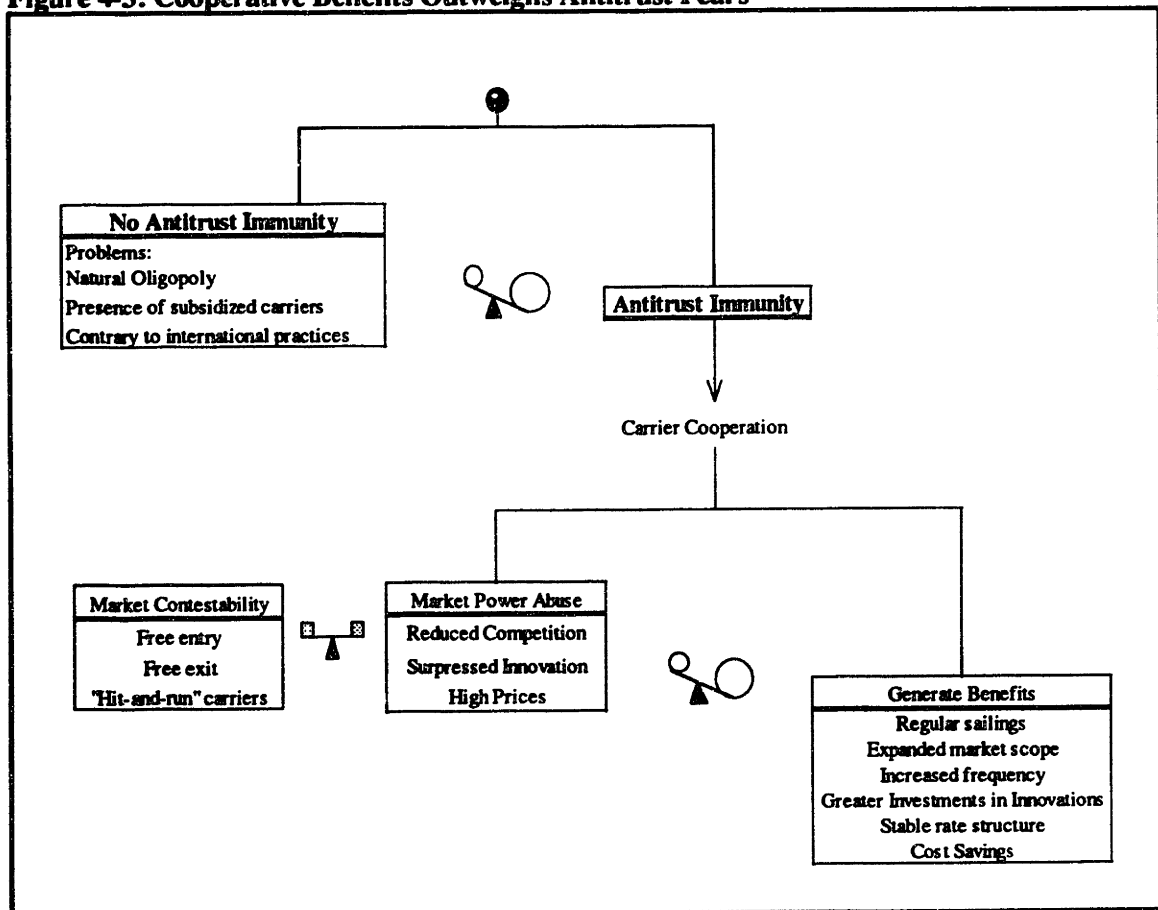


Figure 4-4: Operational Benefits of Liner Alliances

		Ports of call	Remarks
Before Partnership	Carrier X's original service	Asia-Los Angeles-Oakland	Uncoordinated and independent services
	Carrier Y's original service	Asia-Los Angeles-Oakland	
Partnership service: Option I	Combined X-Y service: Sub-service 1 Sub-service 2	Asia-Los Angeles-Oakland Asia-Los Angeles-Oakland	Service frequency doubled. Geographic coverage & transit times are maintained.
Partnership service: Option II	Combined X-Y service: Sub-service 1 Sub-service 2	Asia-Los Angeles-Oakland Asia-Seattle-Vancouver	Additional geographic coverage to the Pacific North-west. Service frequency for Los Angeles & Oakland is maintained.
Partnership service: Option III	Combined X-Y service: Sub-service 1 Sub-service 2	Asia-Los Angeles-Asia Asia-Oakland-Asia	Improved transit times from Asia to Oakland and from Los Angeles to Asia. Service frequency for Los Angeles & Oakland, and geographic scope is maintained.

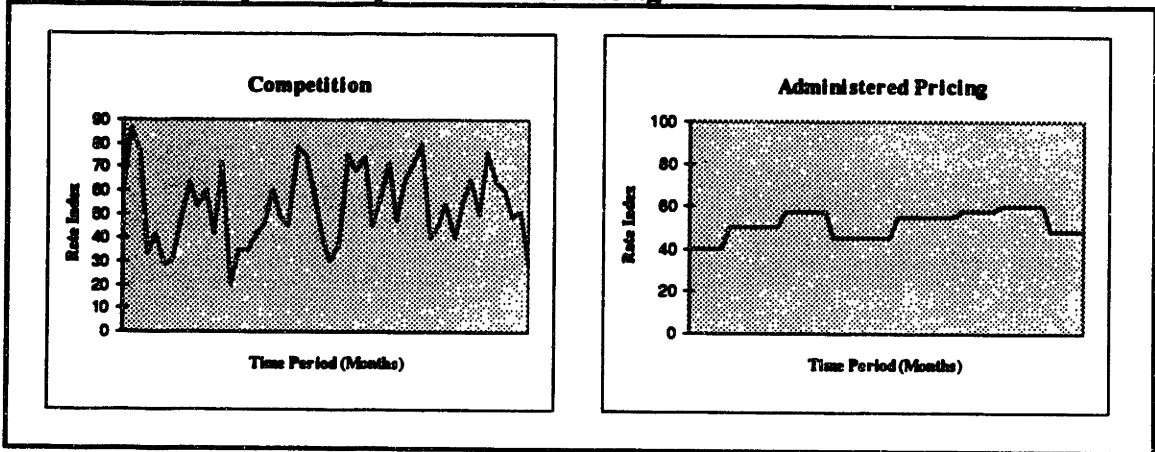
Source: Koay (1994)

Other economic benefits accrue to carriers through an increase in scale economies arising from the sharing of assets. For example, in a 56-day round voyage service, a carrier that originally supplied 800 Teus per week on a weekly service will need to deploy eight 800-Teu ships in the service. However, if a 50-50 partnership is formed between two carriers, each carrier need only to provide four 1600-Teu ships to the service and still be able to supply each carrier 800 Teus per week. Due to scale economies, four 1600-Teu ships are cheaper to own and operate than eight 800-Teu ships, as discussed in Chapter 2. The carriers can also reduce investment

costs in equipment like containers and chassis, and facilities like storage space through logistical partnerships. The use of these equipment and facilities normally go through peak and slack periods depending on the marketing activity and schedule of ship sailings. When these equipment or facilities are shared, the carriers can help each other reduce the idling of these assets during slack periods. Conversely, when one of the carriers faces a peak period, it can “borrow” its partner’s equipment or facilities; the alternative to this would necessitate the carrier to store excess equipment just to cater for abnormal peak periods, or to rely on outside vendors—both options are certainly more costly than a partnership option. Logistical partnerships, thus, reduce the total equipment or facilities requirement for the all the partner-carriers. Cooperations, like pricing alliances, also assure carriers of a stable operating environment and encourage investments in innovations and in assets that will reduce operating costs. Carriers operating in an volatile environment where cut-throat pricing prevails, would be reluctant to invest heavily in innovations that may not even have a chance to be implemented. Administered pricing resulting from such cooperations is not necessarily “bad”. Figure 4-5 shows that administered pricing provides a consistent and somewhat predictable prices as opposed to irregular price fluctuations in an unrestrained competitive market.

Potential benefits, both economic and operational, thus out-weighs any threat of power abuse by strategic liner alliances.

Figure 4-5: Stability offered by Administered Pricing



Source: Newman (1964)

Problems with Lack of Anti-trust Immunity. For a start, the existence of subsidized carriers, like the American-flagged merchant marine fleet and Chinese government-sponsored and subsidized fleet, distort the competitive challenge and does not allow a free and balanced competition to take place. Subsidies themselves are difficult to identify, and exists in many various forms where some are indistinguishable from normal investment tax incentive. Shipping conferences and partnerships act as a common bond to link international trading communities by offering a common operating principle. This is especially important considering that there exists no internationally embraced commercial shipping guideline—even the recently concluded Uruguay Rounds of GATT negotiations excluded the shipping industry due to its complicated, and thus consensus-avoiding, structure.

4.4.6 The Need for Antitrust Immunity for Strategic Liner Alliances

Liner conferences and operational alliances between liner carriers have existed almost as long as mass cargo shipping. It is thus difficult to accurately predict, based on past experience, an operating environment that is void of these alliances.

We do know, though, that the liner shipping industry is highly competitive even when stabilizing factors like pricing and operational alliances were present. The trade volatility and the high incidences of entry and exit activities of carriers from a trade route have been well recorded⁹⁶. These documentation do offer us a hint of the scenario if unbridled competition is allowed to reign. The then-FMC chairman, Christopher Koch offered the following prediction:

“[In 1986] fourteen carriers accounted for 72 percent of the capacity in [ocean] transportation trade [If the antitrust immunity is revoked], the resulting rate wars would result in five to seven carriers—none of them US—controlling 90 percent of the capacity.”⁹⁷

I put forth that the existence of strategic liner alliances, like conferences, had enabled a stable operating environment necessary for carriers to cultivate commitment, investments and innovations in the industry. Such commitment, investments and innovations have resulted in a more efficient ocean transportation system that had benefited users of ocean liner shipping. Rate wars resulting from an unbridled competition leads only to a short-term advantage of lower rates to shippers. Such rate wars also result in an attrition of carriers and hence a deterioration of service levels, or even a total stoppage of service. While such deterioration or total stoppage may be only temporary, it seriously disrupts the regularity of mass maritime transportation service that is so crucial to the stable flow and growth of trade.

⁹⁶ See, for example, the *Section 18 Report on the Shipping Act of 1984*, Federal Maritime Commission, 1989.

⁹⁷ *American Shipper*, “No Need to wait for Congress”, April 1992

5. KEY FACTORS OF SUCCESS

5.1 Measurement of Success

Based on this thesis's definition of strategic alliances in Chapter 1, successful alliances can be characterized by the positive accomplishment of the partners' respective long-term objectives through the coordinating of marketing, operational and/or logistical actions, or the pooling, exchanging or integration of specific company resources. The task of measuring "success" itself is, however, more daunting and made more complex by the many different types of alliances and their different *raison d'etres*.

Parameters for determining the success of alliances should measure the financial and strategic successes of the partners. Financial success is often the impetus that drives companies in search of a strategic alliance to strengthen their weak points. Some companies, however, insist that strategic goals are more important than financial achievement in strategic alliances. Notwithstanding, it is not difficult to see that the accomplishment of strategic goals (be it to facilitate market access, diminish competitor access, or to share costs) will eventually lead to an enhanced bottom line. Financial success can result from a greater income arising from an increased stability in long-term freight rates, greater market share and lower operating and fixed costs. This thesis posits that strategic success will always lead to financial success, eventually, and thus finds it sufficient to focus on the parameters that measure strategic successes.

The different types of alliances cannot be judged by the same yardstick, nor expected to meet the same targets, just as a long-distance runner cannot be expected to complete his first 400-metre lap as fast as a one-lap runner. The differing objectives of the alliances will require different parameters to measure its success rate. Thus, I believe it is difficult to

define a single parameter to measure the strategic success of all types of alliances. I will identify a few measurement parameters for the different types of strategic liner alliances.

The measurement of strategic success obviously relates to the motivation of the partnership. In cost-sharing partnerships, the longevity of the alliance would be an appropriate measure of the alliance's success. A lasting partnership will enable the partners to reap cost-sharing and market benefits for a longer period. The key factors of success, thus, require ways that ensure the endurance of the strategic alliance.

When the enhancement of competitive position is the main motivation for the partnership, increases in the market share of the partners will be a good indicator of success. The partners are expected to seek an increase in market share, except in a declining market where the maintenance of market share may be the objective instead. Competitive positioning through product or service differentiation requires that a close relationship be established between the partners in order to foster ideas and innovation.

In a pricing alliance that seeks to stabilize freight rates, partners try to minimize price volatility and prevent any deterioration of freight rates that could be caused by an overcapacity. Such targets require the collective action of all or a majority of the major players in the game. An important step towards success in this area is thus achieved when all major carriers can be convinced to join the pricing alliance. Total participation is crucial for the success of a pricing alliance as the omission of just one major carrier creates a heavy pressure for the others to capitulate.

5.2 Strategic Match

Success in alliances must be preceded by a strategic match of the potential partners. The chances of success in a strategic alliance will be increased if the partners are compatible. Compatibility should be determined in two dimensions: a structural fit and a behavioral fit of the partners. Structural fit measures the synergies of the partners' core competencies and market positions. Behavioral fit refers to the compatibility of the partners' business philosophy and corporate cultures. Strategic match of the partners is a first order condition that is necessary, but not sufficient, to ensure success in an alliance. While a strategic match does not necessarily guarantee success to the partnership, a total misfit in both the structural and behavioral configurations of the partners will almost certainly doom the alliance to failure.

5.2.1 Structural fit

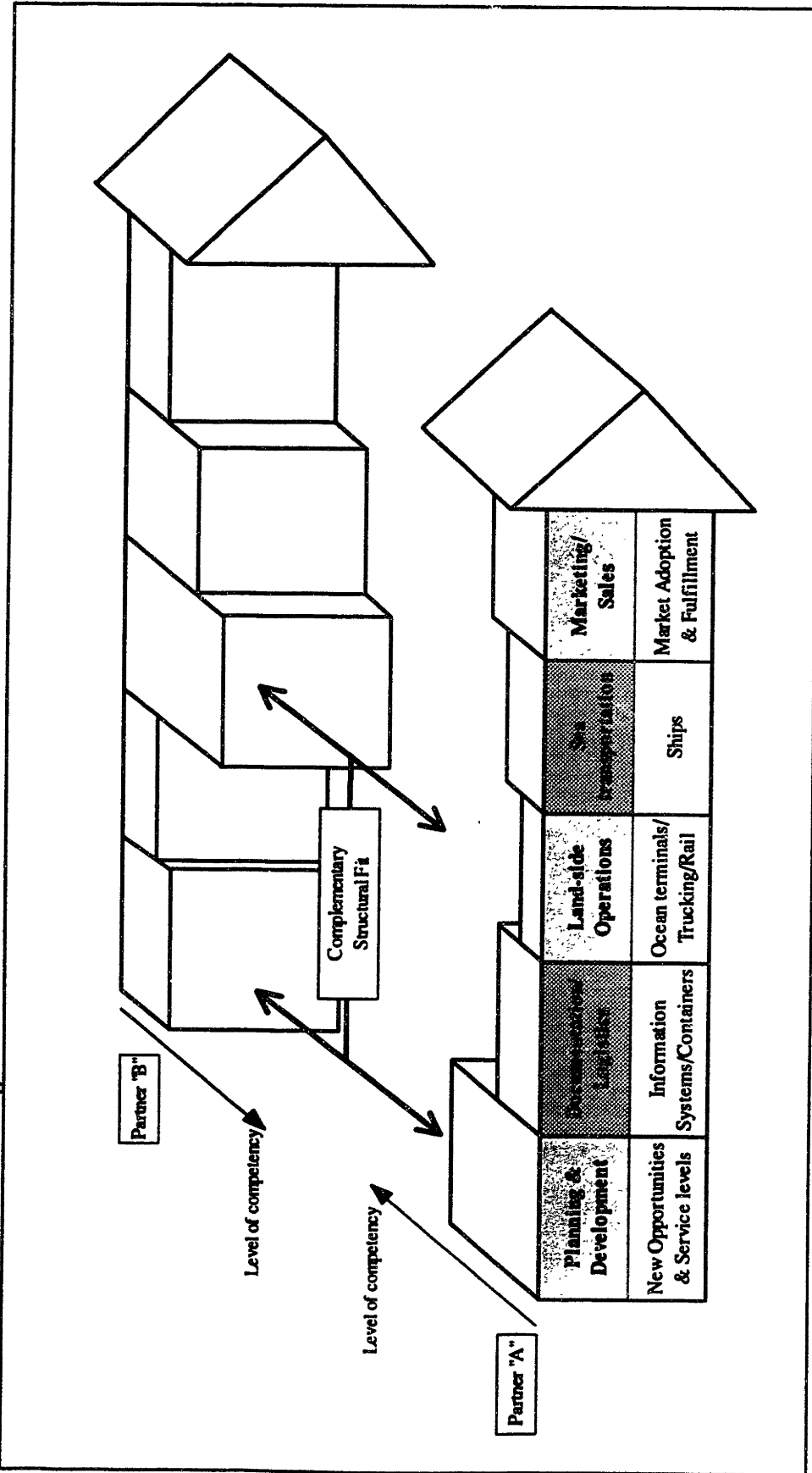
Two key factors that ensure the structural alignment of the partners are the complementarity of core competencies and market focus. Partnerships benefit when one of the partners possess a core competency that is needed but lacking in the other partners. Core competencies refer to a set of proficiencies that distinguish the carrier in a particular value-chain field or a geographic area. These competencies are often tacit in nature and are not easily imitable. In the liner shipping industry, such competencies are important factors that distinguish a carrier from an otherwise homogeneous product.

A relatively small carrier could develop entrepreneurial competencies in identifying and swiftly moving into new markets or opportunities. Such agility is normally atypical in a larger firm. On the other hand, the larger carrier will typically have larger customer and cargo bases that are able to generate economies of scale. Such

large scale enables the larger carrier to invest in upstream support facilities like marine terminals, and enhances its cost and operational efficiency. A smaller carrier working on its own is not able to enjoy such benefits. However, by forming a strategic alliance, both carriers can tap into the competencies of the other. The larger carrier will obtain an opportunity to acquire the entrepreneurial skills and competencies of the smaller carrier, while the latter can enjoy greater cost and operational efficiencies associated with a larger scale operations. A complementary structural fit is thus achieved.

Figure 5-1 shows a typical value-chain of a liner carrier and the structural fit between two carriers. The carriers need not, and conceivably cannot, find a structural fit in all the value-added activities. It is sufficient, however, that there exist a fit in some parts of the value chain that will enable the partners to trade benefits. In this example, Partner "A" possessed a high level of competency in the planning and development value-chain, but a low competency in the land-side operations. The reverse is true for Partner "B"; thus creating a structural fit between the two carriers for the two value-chain activities. Structural fit, naturally, need not prevail only in strategic alliances between a large and small carrier. Equal-sized carriers that hold different competencies also facilitate such a fit. For example, a carrier that excels in the field of shipping information technology will have many system competencies that potential partners can gain from regardless of their size. However, it is more likely than not, that equal-sized firms possess similar type and level of competencies. Large carriers operating in the US will most probably have their own marine terminal operations; hence, cooperation between two such carriers will not be able to generate a sharing of these assets. The effects of synergies in the respective carriers are lost in this instance, unless they can complement their competence by having terminals at different locations.

Figure 5-1: Structural Fit of Strategic Alliances



Another important area that calls for a structural fit in a strategic alliance is the market focus of the partners. If both (or all) partners in a coalition share the same market focus, an untenable competitive position between the partners is created. A carrier may have targeted certain customer groups or a certain geographic area to build on as its core or niche business. Partners that share the same market focus, therefore, create a structural misfit and an unsound alliance. Such market niche collisions must be avoided.

Management gurus have long exhorted that firms expand their geographic scope and place equal importance to off-shore markets.⁹⁸ However, one would suspect that these pointers are not fully practiced by liner carriers. A quick glance at trade statistics would reveal that the Korean market is dominated by Korean carriers, Japan by Japanese carriers, Taiwan by Taiwanese carriers, German by German carriers and UK by UK carriers.⁹⁹ Home markets are still attractive to liner carriers. By picking their home markets as the main hunting ground, carriers will have to exclude fellow-national carriers that have a same home-market focus from their partnership plans. It would be difficult to conceive a strategic alliance where the partners fight tooth and nail for the same targeted customers in the same targeted geographic markets. Carriers that share the same market focus will also not be able to tap into each other's geographic strengths. It is for these reason that few carriers that share the same market focus (typically carriers from the same nation) join forces; the few that did had parted ways e.g. British carriers P&O and Ben Lines as part of the former TRIO consortium in the Far East-Europe trade; and Japanese carriers NYK and MOL in their former Far East-US East Coast joint service and in

⁹⁸ See, for example, Hout, Porter & Rudden (1982) and Bartlett & Ghoshal (1992)

⁹⁹ JOC 1993 Far East-North America data and *Containerisation International*, "Asia-Europe [1993] figures feast", March 1994

their Far East-Mediterranean service (as part of the OASIS consortium). The only such major East-West coalition remaining is the MOL and K-Line partnership in the Far East-North America trade route.¹⁰⁰

5.2.2 Behavioral fit

Corporate Culture. The human touch has been identified as a crucial factor in determining the success of mergers and acquisitions (Chatterjee et al, 1992; Slowinski, 1992; Walter, G.A. et al, 1985). It was felt that employee-support is crucial towards a successful merger or acquisition. In the same manner, a behavioral fit between partners in a strategic alliance is important to enable maximum benefits to be drawn from the partnership. Behavioral fit requires the alignment of corporate cultures. Culture refers to the formal and informal assumptions that shape the behavior of members within a group. Different firms tend to have differing cultures due to the varied history and experiences of the firm and its community.

Incompatible cultures tend to create uneasiness and misunderstandings, and can eventually negatively affect the alliance relationship. In such a case, the level of trust between the partners may be lowered. Trust is crucial to corporate relationships since the human touch acts as a critical bond between successful partnerships. We have seen above that unequal-sized carriers have a higher probability of attaining a structural fit. However, different sized carriers usually give rise to cultural gaps while carriers of the same size tend to share similar experiences and hence similar cultures. A smaller carrier that is used to snappy decision-making and prompt follow-ups may be frustrated by a more hierarchical larger carrier. Conversely, the

¹⁰⁰ MOL and NYK (and Hapag Lloyd) presently operate joint services in the Far East-Europe trade, but have announced that their cooperation will end in March 1995 when the present agreement expires.

larger carrier may not understand the apparent lack of thoroughness of the smaller carrier in making fast decisions.

Such a misfit can dampen the commitment of managers in charge of the alliance. The more bureaucratic carrier will be viewed as “foot dragger” and a liability as far as prompt decision-making is concerned. Conversely, the smaller carrier will be seen as a non-value added partner due to its “rash” decision-making process. These perceptions will greatly undermine the partnership and will block any benefits from flowing through.

Business Philosophy. The above illustration refers to a potential conflict in cultures between different-sized carriers, but the same conflict can arise between carriers of different business philosophy regardless of size. Conflicts can ensue when one partner is a “follower” and the other, a “leader”. The follower-carrier’s business philosophy calls for it to depend on others to pioneer, test and prove the workability of a new product or service before it imitates the new concept. “Follower” carriers usually end up buying the product or service rather than “making” them. Such a business philosophy obviously assumes that the additional costs of pioneering a new concept is not worth the potential gains as a “first mover”. Indeed, the imitability of liner products, as we have seen in Chapter 4, served to dampen any “first mover” advantage. Such a “follower” operating principle will certainly frustrate the “leader” carrier which may want the strategic alliance to make pioneering investments on certain service concepts.

Another crucial business philosophy that should be aligned is that of the pricing policies of the partners. This is especially important in operational alliances where the partners share space on the same ships and essentially offer the same level of sea

transportation service. Only land-support, logistical and marketing services differentiate the overall level of service of these partner-carriers—these factors do not allow much room for the carriers to price very differently from each other. Thus, a carrier that relies heavily on low pricing as its main business strategy would not be considered a good fit to a carrier that employs premium pricing (and premium service) as its pricing policy. It is for this reason that conference-minded carriers very rarely form operational or logistical alliances with non-conference-minded carriers since non-conference carriers normally set their prices below the conference rates.

National Differences. Our earlier discussion highlighted that liner carriers are more likely to form cross-border alliances than national alliances. This raises another dimension of possible conflicts—that of national cultures. For example, the clash between Western and Asian management styles will be unavoidable unless managers take pains to understand and appreciate the different idiosyncrasies of the other party. The Japanese management style, for example, relies greatly on consultations that inevitably slows down the decision-making process. Traditional Asian and European companies, particularly family-owned businesses, tend to maintain a strong central control and less empowerment to its front-line managers. Asian management is also more inclined to rely on trust than on actual contractual terms in its daily dealings. Such trust-based relationship facilitates and speeds business dealings, and compensates for any delays in a consultative or a hierarchical decision-making process. This “trust” attribute of Asian management have a tendency to motivate Asian companies to build long and lasting business relationships or alliances, and does not accept “divorces” or “separations”, and certainly not “re-marriages” as easily. Western management have to recognize that “kiss-and-make

up” solutions may not necessarily work on Asian management once the trust of the Asian manager is broken.

Notwithstanding the above observations, there exist more cultural exchanges today than a decade ago. As tolerance for cultural differences grow, behavioral fit improves. Stereotyping would be the most dangerous source of downfall in a close relationship between strategic alliance partners.

Behavioral misfits, however, need not deter the formation of a strategic alliance if one of the main objectives of the partnership is to learn management skills. In fact, culture is an important factor that gives rise to and supports the development of core competencies. Nonetheless, the management of the carriers must be aware and be appreciative of the existence of different cultures and management styles within its partners.

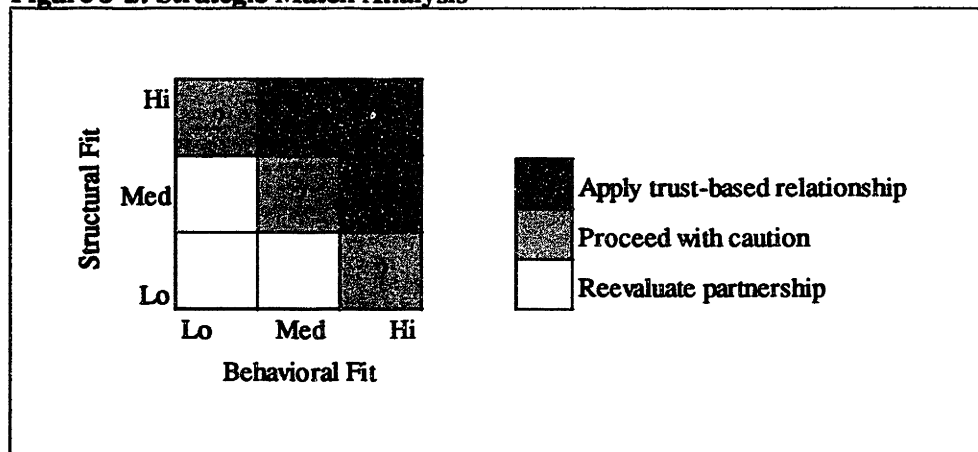
5.3 Prescription for success

Trust-based Relationship. A partnership that applies a trust-based relationship will normally be able to reduce much internal distrust and disagreements, and is able to collaborate better and respond faster to changes and external threats. Trust-based relationships are, however, only feasible when the partner-carriers are sufficiently comfortable with each other and put a low risk to the other partner and the partnership. A carrier may deem the risk level associated with its partner to be low or negligible if it has dealt with the partner before and understands its corporate thinking. New partners normally carry a higher risk factor, although such risks can be mitigated by having more information on the partner and its actions relating to its past alliances. Notwithstanding, it will be more conducive to apply a trust-based relationship when there exists a strategic

match between the carriers. Carriers that have a strong synergy in the structural fit and a high compatibility in the behavioral fit are best-placed to apply a trust-based relationship. (See Figure 5-2).

When both structural and behavioral fits are unmatching (see “white squares” in Figure 5-2), the partners should proceed re-evaluate the strategic alliance. The carriers should evaluated if the potential benefits of such alliances exceed additional misfit and complexity costs. Where the partners still feel that the alliance is viable, they should put in place a clear exit strategy.

Figure 5-2: Strategic Match Analysis



Alliances that are moderately matching, or that have a high fit in one of the strategic match attributes but a low fit in the other (see “gray squares” in Figure 5-2), are more difficult to evaluate. The success of the alliance will depend on the partners being able to close the gap in their differences. The partners can close their behavioral fit gap by nurturing a trust-based relationship through understanding each other’s behavioral traits and business philosophy. Similarly, an increased dialogue can allow the partners to explore synergies in non-obvious structural competencies. Such alliances should be monitored and their

feasibility evaluated continuously. The alliance agreement can be structured to deal with some forms of uncertainties associated with such partnerships. A carrier that is dealing with an uncertain and high risk project through moderately-fitting partnerships can formulate a “loose” partnership agreement that allows it an easy exit route if the project does not work out as planned. On the other hand, a carrier that is dealing with a low risk project, but with an uncertain partner-carrier (e.g. whose commitment is suspect), may want instead to structure a tightly-worded alliance agreement to insure the partner’s commitment to the alliance.

Transparent Mission. Most strategic alliances originate from and culminate with the signing of an alliance charter by the senior management. While the mission of the alliance and the respective corporate objectives may be clear to the senior management of the partners, it is essential that these objectives are relayed to and understood by the working level staff who will be acting on the alliance agreement. Such an understanding of the alliance and the respective corporate objectives can minimize any envy that might develop between the partners. For example, a larger carrier may set out to form an alliance with a smaller carrier in order to obtain the smaller carrier’s volume to spread out new capital investments in ships or marine terminals. While these are important alliance benefits to the larger carrier, they are nevertheless less visible to the front-line managers unless such are clearly clarified to them. An ignorant front-line manager of the larger carrier may develop an envy and distrust for the smaller partner that is perceived to be benefiting from the partnership without contributing to it.

Broad-base rapport and Empowerment. Management commitment and rapport between the partner-carriers are crucial to a healthy partnership. However, while such commitment and rapport are necessary, they alone are not sufficient to sustain a successful partnership. A close rapport should not only be established at the highest levels but at all

levels of the partnership, particularly at the working level. Such rapport can be enhanced through the empowerment of front-line managers that deal with the partnership. By authorizing the front-line managers to resolve initial conflicts and disputes, the partnership is more likely to nip a problem in the bud and hence less likely to involve the senior management in the settlement of disputes. A lower management that is not empowered will be less likely to trade concessions to resolve a dispute, and would prefer to leave any concessions to their superiors to offer. Such politics of negotiations tend to delay the settlement of disputes and may, in fact, aggravate it. Senior management, not being close at hand to a problem, are probably in the worst position to solve any alliance disputes. They will have to rely entirely on their front-line managers to provide a synopsis of the problem and recommend changes. The front-line managers would inevitably provide a skewed picture of any problem in protecting their self-interests. Such maneuvers can only disrupt any good relations between the senior managements and undermine the strategic alliance. Thus, front-line managers should be mandated to solve all but fundamental policy issues pertaining to the alliance. By forcing these managers to take responsibility for problem solving, conflicts between the senior managements of the alliance can be avoided.

Evolving Alliance. One of the major management traps is to tie up a strategic alliance to a rigid scope of authority, and limit the partnership to only the original statement of objectives. Such a rigid setting may doom the partnership, especially an operational or a logistical alliance, to failure in a fast-changing business environment. A strategic alliance must be allowed flexibility to evolve and conform to market dynamics, and not to be strictly confined to the original charter of agreement. Strategic alliances need to make evolutionary changes in market positioning to continuously maintain their competitive advantage.

5.4 A Note on the Dynamics of Collective Action

Group dynamics such as those inherent in strategic alliances, require a strong collective action to ensure the success of the group. Successful collective action requires that all partners contribute towards the ideals of the group. In an operational or logistical alliance where improved efficiency is the objective, the overall value of the alliance will increase when all partners “toe the line” and ensure that all operations within their control are acted upon according to the standards set. Such an operational alliance would be deemed to have failed if one of the partners do not ensure the timely performance of vessels under its control—shippers are less interested in the punctuality of a few ships in a joint service than a consistent timeliness exhibited by all ships in the service. A partner-carrier that had consistently been unable to perform to the standards set and that does not make efforts to correct the deficiency will be viewed as one that does not place emphasis on the quality of service. This could raise an issue of differing operating philosophies if its partner is quality-minded, and will violate the behavioral fit paradigm.

Operational and logistical alliances that exchange resources, like space exchange agreements, generally own characteristics of a stable equilibrium, in game theory language. These alliances pursue targets such as efficiency-improvement, that require common strategies. A typical game theory matrix involving two carriers with a stable equilibrium is shown in Figure 5-3. “Strategies 1 and 2” in Figure 5-3 are binary functions, and may represent, for example, the “timely operations of ship schedules” and “non-timely operations of ship schedules”. Collective action is not difficult to achieve in coalitions with such stable equilibrium as there exists a natural incentive for the carriers to perform. In this instance, the (2,2) quadrant will be achieved by the alliance.

Figure 5-3: Stable Equilibrium in Efficiency-seeking Alliances

		Carrier A	
		Strategy 1	Strategy 2
Carrier B	Strategy 1	2, 1	1, 1
	Strategy 2	1, 1	0, 0

Note: Figures show level of relative benefit to respective carriers

The scenario is less direct in cost-sharing or pricing alliances where the problem of “free-riders” emerges. Problems arise when a “defecting” carrier can default on its commitment and gain more than it would complying to group norms. In fixed-share revenue pooling coalitions, such carriers can conceivably avoid contributing their fair share of resources (and thus costs) to obtain more cargoes and revenue for the group, i.e. “defecting”. The net benefit to these defector-carriers would be higher than it would under a cooperative environment since they continue to gain from the other partner's efforts without contributing their appropriate share of efforts. Their supernormal gains must, however, be contingent on the other group members’ compliance to group norms. If all other carriers in the group reason in the same manner, all will contribute minimally in order to gain maximum net benefits from the alliance. This decreases the size of the group’s total benefits, resulting in a smaller share for each carrier.

Figure 5-4: Prisoner’s Dilemma

		Carrier A	
		Cooperate	Defect
Carrier B	Cooperate	1, 1	-2, 2
	Defect	2, -2	1, 1

In the smallest group possible, comprising two carriers, involving a short-term cooperation, this creates a Prisoner’s Dilemma situation with a typical game theory matrix as in Figure 5-4. The motivation to “defect” is high; meanwhile the motivation to cooperate is hindered by a risk that the collaborator might end up subsidizing the defector.

It is human tendency to detest being made use of to support a less “hard-working” individual, and the players also realize that any cooperative efforts are unlikely to be returned in kind. Thus, in a “one-time” game or a short-term alliance, such dynamics create a danger that the Defect-Defect scenario will prevail in equilibrium. This danger is mitigated in strategic liner alliances where the “game” is now iterative, i.e. it is on-going on a long-term basis. Researchers have found that a successful strategy to bring such partnership to the Cooperate-Cooperate quadrant is the “Tit-for-Tat” tactic.¹⁰¹ By following the partner’s actions, a carrier can signal to the carrier that the “Defect” strategy will be mutually harmful to both, and that a “Cooperate” strategy will be rewarded. Such mirroring-actions will move the carriers towards the “Cooperate-Cooperate” quadrant.

In a multi-player environment, however, the “Tit-for-Tat” tactic is less effective. The effects of the “punish” and “reward” tactics are diluted in a larger group. It is not always clear that a “punishment” is effected on and a “reward” received by the targeted party. A “defector” has, thus, a higher chance of abandoning cooperation and getting away with it. An possible example of this are the conference and non-conference pricing strategies. In order to understand the benefits and costs of defecting, a model based on game theory was developed for this thesis to analyze the motivations behind defections.

The model assumes that:

- a pricing alliance (e.g. a liner conference) in a trade route agrees to cooperate to quote a standard unit freight rate,
- the service level offered by all carriers in the trade route is the same,
- lower unit prices can attract a higher market share (since the services are homogeneous),
- the correlation between unit price reduction and increased market share is dependent on the elasticity of the unit price to market share (e.g. the unit price to market share

¹⁰¹ This theory was submitted by psychologist A.Rapoport. For further reading, see Axelrod, R., *The Evolution of Cooperation*, Basic Books, 1984

elasticity is said to be a factor of 0.1 when a ten percent drop in unit price creates a one percent point increase in market share),

- one (only) carrier is contemplating defection, and
- the carrier will not cooperate when the group defects.

Thus, by reducing rates, a defector-carrier can obtain more market share and hence more cargoes at the expense of less revenue receivable per unit cargo. The overall benefit to the defector-carrier is measured by the percent change in the total revenue (obtained by multiplying the unit freight rate to cargo volume). The model is applied in a two-by-two matrix involving the “Conference” and the “Carrier”, and “Cooperate” and “Defect” choices.

When the defector-carrier defects, the model will examine the impact of the size of the defector, the elasticity of the unit price-to-market share and the unit freight rate reduction taken by the carrier. *A priori* assumptions place a negative correlation between the size of the defector to the attractiveness to defect. It would appear that smaller carriers more likely to defect since the ratio of market share gains to their original market share is greater. A greater unit price-to-market share elasticity is certainly expected to motivate carriers to defect. The last *a priori* assumption notes that there exist an equilibrium point where decreases in the unit freight rate causes an increase in the volume but no change in the total revenues. Figure 5-5 shows the results of the model.

Quadrant (1) is the control scenario where all carriers cooperate by quoting the “standard” unit freight rate and hence do not create any change in the “standard” total revenues. In Quadrant (4), both the Conference and the Carrier defect by reducing their unit rates equally. Since both groups defected by the same percentage of unit price reduction, neither groups will gain any new cargo volume—this leads to both

Figure 5-5: Defect Incentives

Game Theory Matrix: Likelihood of Carriers defecting from Conference Pricing
Changes in Defecting Carrier's and Conference's Total Revenue

		Conference	
		Cooperate	Defect
Potential Defector	Cooperate	(1) 0% , 0%	(2) Not Applicable
	Defect	(3) see Tables below	(4) 0% , 0%

Note: x% = Freight rate reduction from "Cooperate-Cooperate" price

Changes in Defecting Carrier's and Conference's Total Revenues
 Based on "Defect-Cooperate" Scenario

Case 1: Based on Small-sized Defecting Carrier (Market Share = 3%)

		Rate Reduction-to-Market share Elasticity					
		0	0.2	0.4	0.6	0.8	1.0
Freight rate	5%	-5% , 0%	27% , -1%	58% , -2%	90% , -3%	27% , -4%	153% , -5%
Reduction	10%	-10% , 0%	50% , -2%	110% , -4%	170% , -6%	50% , -8%	290% , -10%
(x%) by	15%	-15% , 0%	70% , -3%	155% , -6%	240% , -9%	70% , -12%	410% , -15%
Defector	20%	-20% , 0%	87% , -4%	193% , -8%	300% , -12%	87% , -16%	513% , -21%

Note: Tables show (Change in Defecting Carrier's Total Revenues, Change in Conference's Total Revenues)

Case 2: Based on Medium-sized Defecting Carrier (Market Share = 7%)

		Rate Reduction-to-Market share Elasticity					
		0	0.2	0.4	0.6	0.8	1.0
Freight rate	5%	-5% , 0%	9% , -1%	22% , -2%	36% , -3%	49% , -4%	63% , -5%
Reduction	10%	-10% , 0%	16% , -2%	41% , -4%	67% , -6%	93% , -9%	119% , -11%
(x%) by	15%	-15% , 0%	21% , -3%	58% , -6%	94% , -10%	131% , -13%	167% , -16%
Defector	20%	-20% , 0%	26% , -4%	71% , -9%	117% , -13%	163% , -17%	209% , -22%

Note: Tables show (Change in Defecting Carrier's Total Revenues, Change in Conference's Total Revenues)

Case 3: Based on Large-sized Defecting Carrier (Market Share = 12%)

		Rate Reduction-to-Market share Elasticity					
		0	0.2	0.4	0.6	0.8	1.0
Freight rate	5%	-5% , 0%	3% , -1%	11% , -2%	19% , -3%	27% , -5%	35% , -6%
Reduction	10%	-10% , 0%	5% , -2%	20% , -5%	35% , -7%	50% , -9%	65% , -11%
(x%) by	15%	-15% , 0%	6% , -3%	28% , -7%	49% , -10%	70% , -14%	91% , -17%
Defector	20%	-20% , 0%	7% , -5%	33% , -9%	60% , -14%	87% , -18%	113% , -23%

Note: Tables show (Change in Defecting Carrier's Total Revenues, Change in Conference's Total Revenues)

the Conference and the Carrier suffering a drop in their respective total revenues as a result of the reduction in unit freight rate. The fall in the total revenue will correspond to the percentage unit freight rate reduction. Quadrant (2) is unstable, and deemed not applicable, since it is assumed that the Carrier will not cooperate when the Conference defects. The revenue impact generated by Quadrant (3) varies depending on:

- the size (or original market share) of the defecting carrier,
- the elasticity of the unit price to market share, and
- the unit freight rate reduction taken by the defector-carrier.

Results of Quadrant (3) are displayed in three Tables in Figure 5-5.

The model concluded that:

- as the unit price-to-market share elasticity increases, the Carrier is more motivated to defect,
- smaller-sized carriers (i.e. those with a lower market share) have a higher incentive to defect, as evidenced by the higher potential gains in increased total revenues obtainable from defection. and
- beyond the equilibrium elasticity point (where price reduction creates an positive change in the total revenues), freight rate reduction is positively correlated to increased total revenues, i.e. a higher freight rate reduction yields a higher positive change in the total revenues.

Thus, the *a priori* assumptions were proven. The model went further to predict that unit freight rate reductions can be very attractive after the equilibrium point is reached. Incremental volume arising from a lower price adequately covers for any loss resulting from a lower unit freight rate.

The model shows that if a conference is disciplined in following its freight rate guidelines, a carrier can potentially defect (by not joining the conference) and realize high gains. The loss to the conference is small per individual conference carrier since the negative impact created by the defector-carrier is shared out. This is a potential pitfall of collective action

when a group is inflexible to change and respond to new market dynamics. Such strategy is employed by many non-conference carriers; where the non-conference carriers depend on conferences to hold up an economically efficient freight rate structure and quote below this efficient rate structure to gain greater cargo volume for themselves—having their cake and eating them too.

The group (pricing alliance) can potentially respond by employing a mutually-destructive strategy in matching any price reduction of the defector and thus move the matrix to Quadrant (4). Such a strategy must, however, be employed within the boundaries of antitrust legislation and be swiftly applied in order to send the right message to the defector. Matching strategies can act as a form of signaling to the defector-carrier if it is applied properly.

In an “open” liner conference where conference members have more flexibility to act independently, some (instead of all) of the conference carriers may also defect. The resulting gains to the defectors and the collaborators will then be a result between Quadrants (3) and (4). Depending on the number of defectors, the gains of Quadrant (3) to the defectors can quickly be turned into losses of Quadrant (4), when all carriers in the conference defects.

Game theory analyses are based on an assumption that the players do not have or have only minimal communication. While one might argue that pricing alliances incorporate much more inter-partner communication, it is nevertheless suspect that partners in a coalition communicate as much or as intensively as they should. The diversity of carriers in a pricing alliance also preclude any broad-level information sharing.

6. TREND AND OUTLOOK

6.1 Operational Alliances

Size. The advent of containerization in the early-1960's called for heavy investments in new equipment and methods. Liner carriers resorted to alliances to share costs and learn from each other in the brave new world of containerization. The early operational alliances that proliferated in the seventies and early-eighties were largely marriages of convenience to share costs and gain economies of scale. Typical operating alliances included groups like the: Saecs¹⁰², Eurosal (nine member-carriers each); MedClub and Anzecs¹⁰³ (seven member-carriers); Ace, ScanDutch, Trio, Anro¹⁰⁴ (all with five member-carriers each); New York Line¹⁰⁵ (four member-carriers); and Omex, Tri-Partite Agreements (Far East to West Coast North America and Far East to East Coast North America) and US-Europe VSA (three member-carriers each). These operating alliances were large in size, but despite the high membership, the services offered were not frequent. Except for the Far East-to-West Coast North America Tri-Partite Agreement (which offered three weekly services), the other groups listed above offered only a twice weekly or a less frequent service. This led to a low ship commitment per member-carrier.

By the late-eighties and early-nineties, most of the groups in the east-west trade routes were restructured into smaller groups. The three major groups in the Far East-Europe trade route, ScanDutch, Trio and Ace, were restructured into four separate groups of two to three carriers each. The frequency of services offered by these smaller new groups

¹⁰² Including Ellerman Harrison Container Line, which was later 65%-owned by P&O; and CMB, which was later 49%-owned by Safmarine.

¹⁰³ Including SCNZ and ACTA which were later part of P&O

¹⁰⁴ Anro started with four members, but was quickly expanded into a five-member group.

¹⁰⁵ Before the withdrawal of K-Line in 1986.

increased to between two to four times weekly. The low membership per group and the higher service frequency offered meant an increased number of ship commitment per member-carrier. In the Far East-North America trade route, operating alliances were relatively scarce until the early-nineties. Most of the major carriers like APL, Sea-Land, and Maersk operated independently. This was changed in December 1990, when NOL and NYK announced a new alliance that would offer five liner services across the Far East-North America trade route, compared to the average two to three weekly services offered by each carrier or group then. Within months, six other carriers responded to the new competitive challenge by forming three alliances, each comprising two carriers, that offered between four to five weekly sailings per alliance. Again, the main characteristic of these alliances was their small membership size.

Elsewhere, in the North-South trade routes where the trade volume is much smaller, operating alliances remain basically large in size. Three major groups within their respective trading route, Saecs (Europe-South Africa), Anro (Southeast Asia-Australia) and Eurosal (Europe-South America) recently restructured into smaller, albeit still big, groups. In 1991, Saecs' membership was reduced from nine to eight due to attrition of one partner; but more importantly, it restructured its monetary pool into two groups -- a North Europe and a Mediterranean pool. The latter pool comprises of only four carriers, down from nine carriers. Similar end-of-agreement restructuring saw Anro's membership reduced from five to four carriers in 1993; and Eurosal's membership from nine to six carriers in 1994. Other major North-South regional groups remain large: the Australian-Japan Container Line, Europe-Caribbean service (Carol) and Far East-South America service each comprised of six carriers. One of the major exception appears to be the ANL-P&O alliance that took over the stewardship of the Europe-Australia trade route after the

25-year Anzecs (Europe-Australia) consortium was disbanded in January 1994¹⁰⁶. Another contrary trend is observed in the US-South America trade route, where all operating alliances comprise of only two to three vessel-operating carriers. This is a result of a previous ban on operating alliances imposed by the Inter-American Freight Conference on its members.¹⁰⁷ The ban forced carriers to build up their own fleet and operate independently; thus, when the ban was lifted in 1991, the ensuing alliances that were formed were small since the carriers do not need a big membership to help share out the burden of providing ships.

The clear difference between operating alliances in the East-West and North-South trade routes is the composition of the alliances. The structure of North-South alliances remain relatively unchanged as far as membership size is concerned. This is largely due to the fact that North-South operating alliances usually function as consortium-conferences which dominates the conferences that they participate in. In such a competitive environment, it serves the carriers well to form large operating groups. However, in the larger and more competitive East-West trade routes where carriers or operating alliances typically do not hold a dominating market share, consortium-conference groups do not exist. Operating alliances are strictly operational in nature and the members do not deal with pricing issues within the operating alliance. In such operational alliances, membership size is directly related to complexity and coordination costs.

Studies in collective action problems in the social context had concluded that larger groups are more likely to fail than smaller groups of the same interest when:

- (1) the total cost of the partnership increases, and/or

¹⁰⁶ ANL and P&O are the only two vessel-operating carriers in the new alliance that took over from Anzecs; but continued to charter slots to Hapag Lloyd, Lloyd Triestino and Hamburg-Sud.

¹⁰⁷ *Maritime Administration, US Department of Transportation*, "Review of US Liner Trades", September 1993

(2) the value of the partnership to each group member decreases

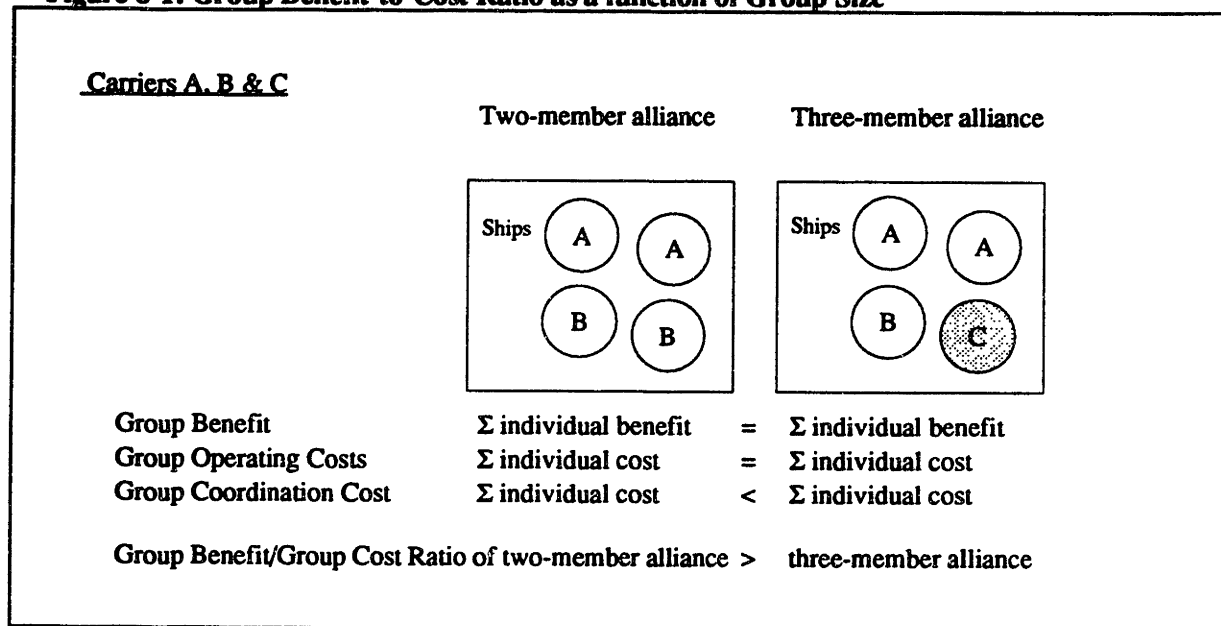
as the size of the group increases (Buchanan, 1968; and Harding, 1971). This conclusion is relevant and applicable to liner alliances. Since complexity and coordination costs for each member-carrier increases with the size of an operating alliance, the total cost to each carrier increases, causing an increase to the total cost of the partnership and a decrease to the net value of the partnership to the respective carriers.

Harding (1982), however, illustrated another study by Frolich and Oppenheimer (1970) that concluded that large groups are not more likely to fail provided that the ratio of the group benefit to the group costs is increased¹⁰⁸. We can conduct a simple thought experiment using this theory to test our liner partnership. Consider, for example, two carriers that supply two ships each to run a liner service. The total benefit to the present alliance would be the sum of the individual benefits of the two carriers; and, similarly for the group costs. Lets split the group costs into two separate components: a group operational costs (relating to the operations of the ships and service) and a group coordination costs. Now, the group coordination costs would simply be the sum of the individual coordination costs. If the carriers admit a third carrier into the group while maintaining the same fleet size (e.g. one of the existing carriers give up one ship), the total benefit to the group is not changed since the individual benefit is merely transferred from an existing carrier to the new carrier. Likewise for the operational costs, if we assume that all carriers are equally efficient (or equally inefficient), the same rule of conservation of system costs applies. The coordination costs per carrier, however, *increases* as the number of members increase; thus, the group coordination costs increases too (see Figure 6-1). The ratio of the group benefit to the group costs will thus decrease, implying again that larger groups are more likely to fail than smaller groups.

¹⁰⁸ For example when groups pursue pure public benefits.

Future operational alliances are more likely to be smaller than larger. Smaller alliances retain the benefits of agility and prompt decision making. There are also less complexity costs with smaller alliances and less risk from a strategic misfit between alliance members.

Figure 6-1: Group Benefit-to-Cost Ratio as a function of Group Size



Geographic Scope. The scope of cooperation of earlier operating alliances was mainly confined to a particular trade route only. Members of an operating alliance were not more likely to form another grouping in another trade route despite having shared a common partnership experience. Recent trends, however, point to a more integrated partnerships of carriers that gave rise to the term "global partnerships". NOL, NYK and Hapag Lloyd which currently cooperate in the trans-Pacific and trans-Atlantic trade routes through vessel pooling and space charters have indicated the formation a similar partnership in the

Far East-Europe trade, thus completing the global link¹⁰⁹. APL and OOCL which presently cooperate in the trans-Pacific have declared their intentions to extend the partnership to the Far East-Europe trade route, after the expiry of OOCL's present partnership with the Ace group¹¹⁰. Maersk has, since 1992, cooperated with P&O in the Europe-Far East trade route, with Sea-Land in the trans-Pacific route, and with both P&O and Sea-Land in the trans-Atlantic route.

The expansion of the alliances' geographic scope of operational alliances is expected to continue for several reasons. First, the carriers' customers are expected to continue their search for new markets for their goods, or for cheaper sources of components, materials and/or labor for their manufacturing. Manufacturers are no longer comfortable relying on traditional markets or sources of materials and labor. The successful (and belated) conclusion of the GATT Uruguay Rounds in December 1993 will inevitably further fuel the international expansion markets. Increasing competition also pushed manufacturers to rationalize their plants to gain economies of scale. Components, materials and labor will continue to be sourced where they provide the most value per unit cost, and hence leading to global operations. Such shippers would prefer to work with carriers that have global links to simplify their transportation and logistical requirements. This factor pushed carriers to be more global in their operations. Second, the search for a compatible long-term partner is never easy. Carriers that have found partners which meet their strategic match criteria in a particular trade route partnership will be encouraged to work with the same partner in another trade route rather than to search for a new partner. Even if an existing partner is a less-than-perfect match, existence of a cultural familiarity and fit may prompt the carriers to get together again in another trade route. This is often justified by a fear that allying with an unknown and untested partner will bring worse results. Third,

¹⁰⁹ *American Shipper*, "Europe-Asia reshuffle begins", April 1994

¹¹⁰ *Journal of Commerce*, "OOCL Orders 6 Jumbo Boxships from Japan, Korea", March 14, 1994

coordination and complexity costs are reduced considerably when the carriers work with only a limited number of partners worldwide rather than with a multitude of carriers with different corporate and national cultural background. Fourth, global partnerships make particular sense when the partners share mobile hardware like containers. The partnership will then be able to take advantage of an expanded geographic scope of operations to optimize their container inventory.

Looser alliances. Previous operational alliances also displayed characteristics of a more integrated partnership. Joint marketing, central operations and revenue or profit pooling were the signature of major alliances like the ScanDutch, Anzecs, Inter-Group Agreement, Saecs and Eurosal. The joint marketing and monetary pooling efforts emphasized on a strong group identity rather than individual identity. In equity-sharing partnerships like ScanDutch, the group issued joint bills of lading, while other non-equity sharing groups like the Saecs and Anro marketed the group name through joint marketing or advertising programs. Such level of integration typically meant a need for a higher level of commitment from the members, especially when the sharing of hardware is involved. Thus, a longer agreement duration and a longer period of notice prior to termination is norm to these operating alliances, since termination would be disruptive to the alliance partners.

Joint marketing, cargo sharing and monetary pooling alliances are effective to control competition between the partners, and are particularly potent tools when there exists minimal external competition to the group. As discussed in Chapter 3, these benefits diminish when the threat of external competition is high. A highly integrated alliance is prone to a slow decision-making process and would be unable to respond swiftly to external competitive threats. Thus as competition becomes more intense, operating alliances will move towards a looser form of partnership.

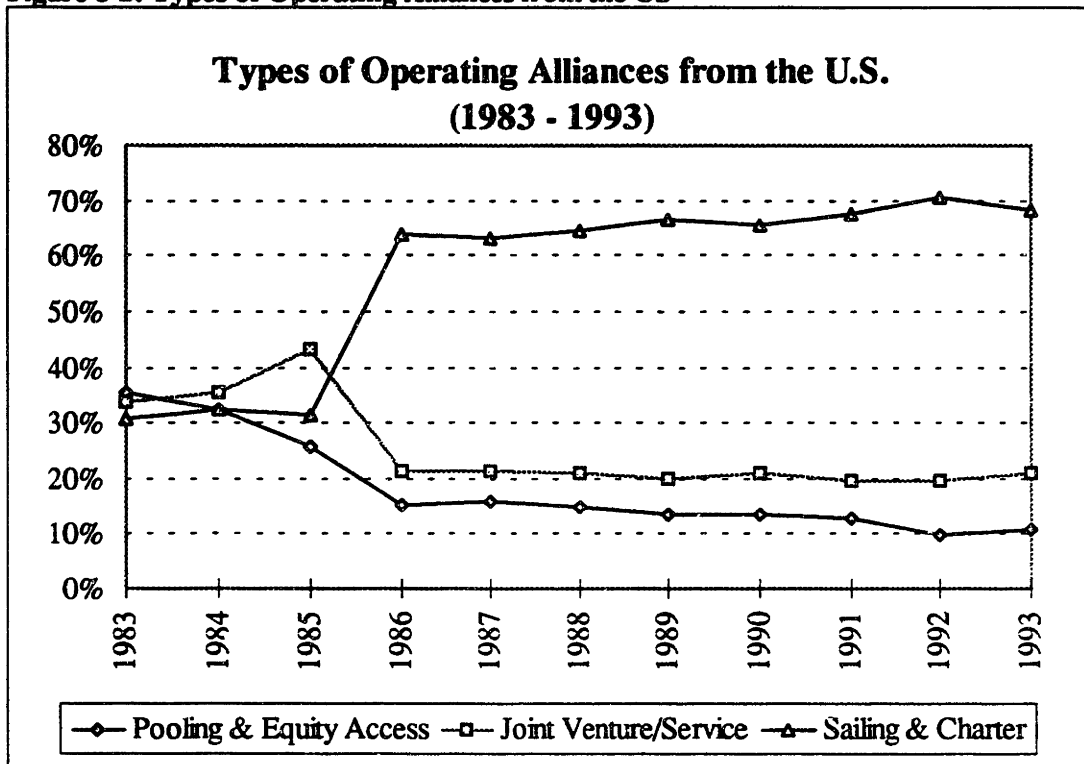
However, attempts to interpret past trends from partnership agreements filed with the FMC, for liner services operating to or from the US, failed to show any significant change in the type of partnerships after 1986 (see Figure 6-2). Partnership activity from 1984 to 1985 could be caused by regulatory-induced changes resulting from the then newly enacted 1984 Shipping Act. Interpretation of the FMC data was also hampered by the definition of "Sailing and Space Charter Agreements" which included alliances like vessel pool, space exchange and space charter agreements. Notwithstanding, operating alliances are expected to be looser in form to retain the competitiveness of the partnership, and for networking reasons described in the section below.

Networking. The quality of a liner service depends in part on a high service frequency provided; and the provision of a high-frequency service is all about the quantity of ships available. The trans-Pacific trade route, for instance, takes about 35 days, on 20 to 22 knots, to complete a round voyage¹¹¹. A weekly service in the trans-Pacific thus mandates the provision of at least five ships; and hence the total number of ships required for a four to five weekly trans-Pacific service that is prevalent today is simply the product of the service frequency and a factor of five.

The need for more ships runs contrary to another efficiency frontier pursued by carriers -- economies of scale through larger ships. The carrying capacity of a carrier is determined by the product of the average size of the fleet (in Teus/ship or Tons/ship) by the number of ships available. If a carrier is only capable of using up a limited total carrying capacity, the building of larger ship then necessitates that less ships be deployed by the carrier. Less ships, however, mean less frequent sailings.

¹¹¹ The round-voyage days vary slightly depending on the range and number of ports called.

Figure 6-2: Types of Operating Alliances from the US



(Source: FMC Annual Reports, 1983-1993)

As an option, carriers can try to minimize the number of ship commitment per carrier by increasing the partnership size. However, dealing in big groups increases complexity and thus efficiency costs, as discussed above.

These anomalies can be partly circumvented through group networking. Group networking refers to the loose cooperation between two or more small and integrated sub-groups of alliances. Two carriers, for example, may form a more integrated partnership or “core alliance” that can benefit from a tighter integration and agility associated with smaller groups. This core alliance can then link with another similar group to gain greater scope and scale efficiencies. The link between these sub-groups can be formed on a “loose” basis to retain the relative independence and flexibility of the sub-groups. A loose

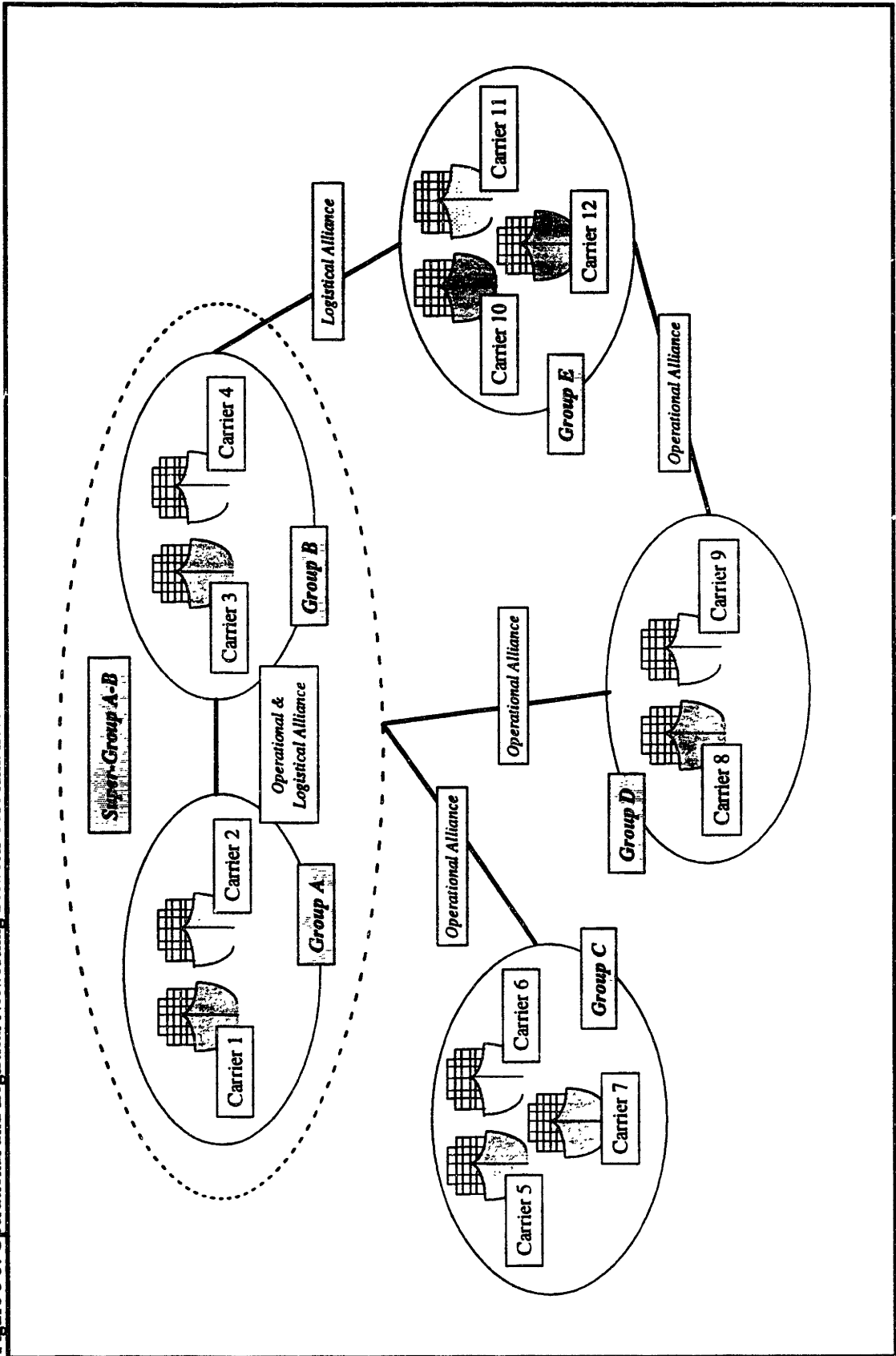
collaboration between groups allows the core alliance to form more than one such linkages. Such networking allows for larger and scale-efficient ships to be deployed since there will be more carriers to share or exchange space on these large ships. The level of inter-partner interaction is reduced since the carriers do not deal with each other across groups; instead, inter-groups interaction is conducted one-on-one on a group basis. Since the interaction between groups is minimal and the groups are linked on a loose basis, there is less importance on the behavioral fit of the groups. Conventional stand-alone alliances are not unlike a cluster of gears that are locked together; due to a high degree of interaction between the gears, the system is cumbersome. Conversely, networked alliances are like small sub-systems of gears linked loosely. See Figure 6-3 for an illustration of operational and logistical networking between core alliances.

Such arrangement offers a balance between individual liberty of the smaller sub-group of carriers and the collective efficiency of a larger networked group. Networking also allows the carriers to access services offered by other groups and can considerably expand scope benefits of the carriers. This cooperation will ultimately bring about benefits to both the carriers and their customers.

The inter-group networking concept is not yet rampantly employed by carriers. One major group networking is the Maersk-VSA alliance in the US-to-Europe trade route. The VSA comprises four carriers, Nedlloyd, OOCL, P&O and Sea-Land, and cooperates with Maersk on a group basis. Any future proliferation of such cooperation will have to contend with prohibitive antitrust laws like the draft EC Regulation that limits the number of partners in a partnership based on market share.

An example of a “core alliance” is the Nedlloyd, MOL, CGM and MISC group. Although these four carriers do not collectively network with another carrier group, the individual

Figure 6-3: Operational and Logistical Networking between Core Alliances



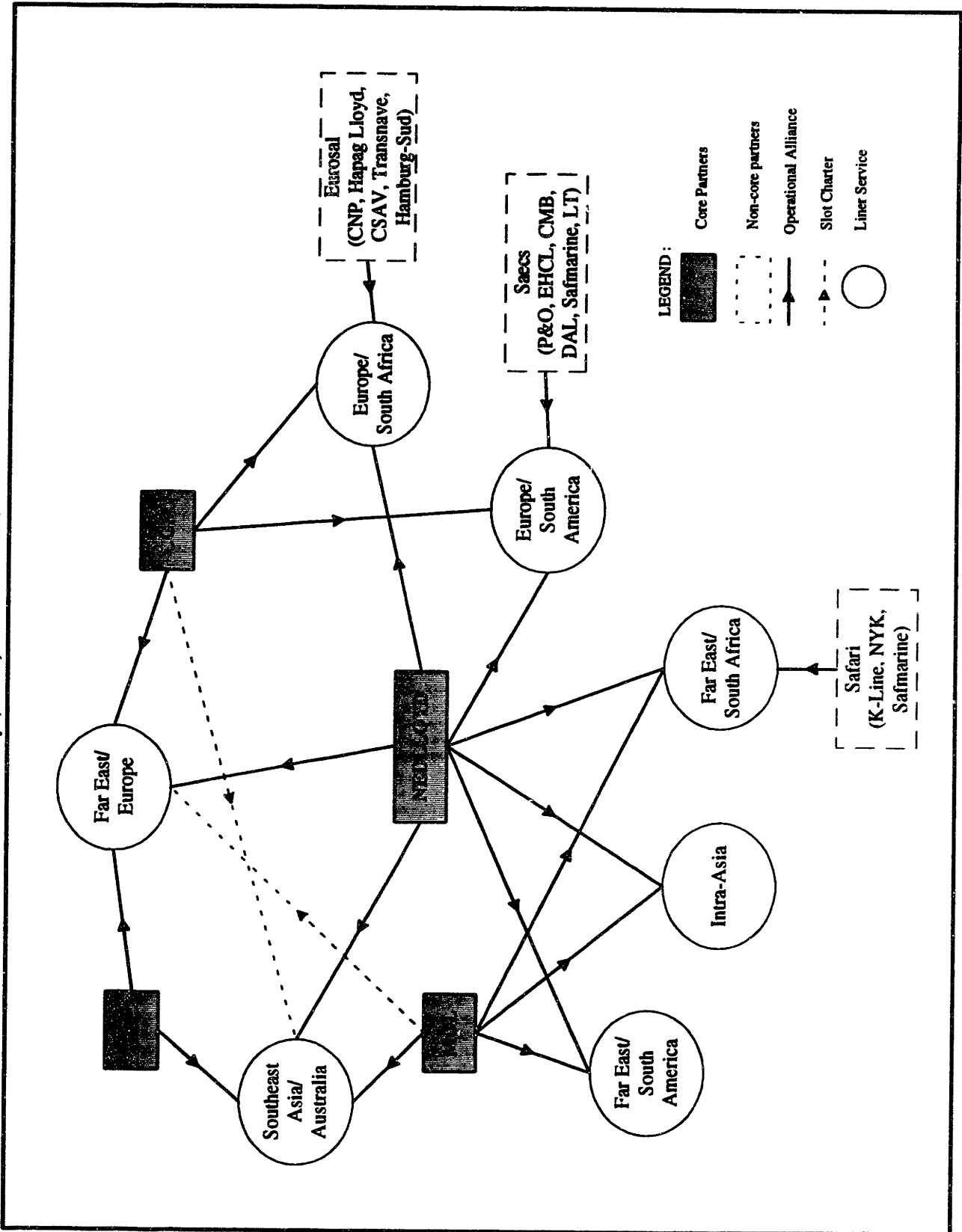
carriers networked each other in a few liner services (see Figure 6-4). Nedlloyd, in particular, appeared to be in the center of the partnerships that were formed. Three of the carriers, Nedlloyd, CGM and MISC operate jointly in the Far East-Europe service, and sell cargo space to MOL (on one of its two Far East-Europe services). The membership switched in their South-east Asia to Australia service, where Nedlloyd, MISC and MOL jointly operate a service and sell cargo space to CGM. Nedlloyd is involved with MOL in three other services (the Far East-South Africa “Safari” service, the Far East-South America services and the intra-Asian services), and with CGM in two other services (within the Saecs and the Eurosals consortia).

6.2 Logistical Alliances

Previous attempts at forming logistical alliances have been limited. However, as the liner shipping industry becomes more integrated, with carriers exercising backward integration with suppliers, there is bigger potential and scope for a greater cooperation between liner carriers in this field. The sharing or exchanging of ships and cargo space offer much opportunity for the carriers to also collaborate by sharing or exchanging support services. The most obvious step beyond the sharing of ships and cargo space is the sharing of feeder services. Feeder services are established to move cargoes from non-direct ports to the ports where the mother ships call. This form of cooperation is already seen in the four major alliances in the trans-Pacific. The K-Line-MOL, APL-OOCL, NOL-NYK and Maersk-SeaLand partnerships are examples of trunk route alliances that also cooperate in intra-Asia feeder services.

Another immediate logistical segment that is suitable for further cooperation between carriers is that of marine terminal operations. Carriers in an operating alliance can either jointly bid for a marine terminal lease (where available) and operate it jointly, or separately

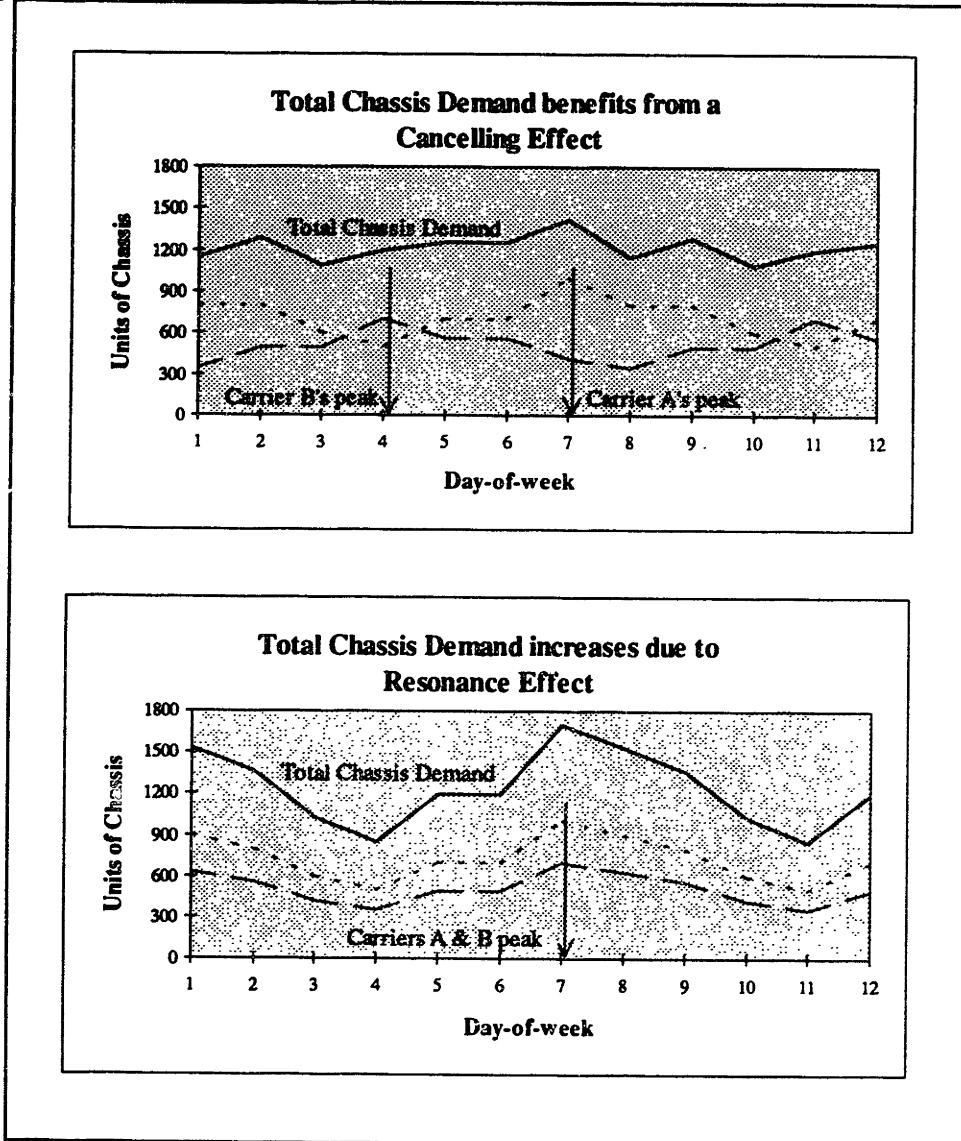
Figure 6-4: Networking within a Core Alliance of Nedlloyd, MOL, CGM and MISC



bid for adjoining marine terminal facilities. The former option represent a higher level integration between the partners through the lease or joint purchase of equipment and property; and forces the partners to commit the operational alliance on a longer term. The latter option of operating adjoining marine terminals offers the same operational efficiency of a joint marine terminal operations, provided that the marine terminals are not separated physically (e.g. by fences)—but allows the partners flexibility in setting the duration of the operational alliance. Such alliances can afford to be on a shorter term since any break-up between the partners will not adversely affect the stand-alone marine terminals. Such choices are obviously limited only to ports where new marine terminal leases are available. These choices are also less attractive to partners that are already operating or using different marine terminals, as termination and transfer costs will be incurred when their existing independent marine terminals are closed down to pave the way for a joint terminal operations.

Beyond the marine terminal, cooperation can be extended to a multitude of land-support activities, including warehousing, depot, trucking and rail services. Likewise, the sharing of equipment like containers and chassis can be further expanded, as described in Chapter 3. However, while the sharing of facilities like warehouses, services like trucking, and chassis will provide the carriers cost savings in shared idle capacity, and in shared maintenance and repair costs, other problems arise. The level of activity for these facilities, services and equipment are dependent on the ship schedules. The use of warehouse space, trucking service and chassis usually peaks just before and just after a ship arrives in port. If the carriers in a logistical alliance are also partners in an operational alliance, these land-support activities of the carriers will peak at the same time, creating a resonance effect on demand for facilities and equipment. Since the carriers' peaks and slacks for these activities are identical, there will be no synergies in sharing idle facilities or equipment. The partnership will not be able to realize savings from the sharing of idle

Figure 6-5: Synergies from Contrasts in Peaks and Slacks



equipment. Nor will there be investment savings in equipment or facilities since the same number of facilities or equipment will be needed as if the carriers acted independently. Synergies occur when a carrier's peak demand for these facilities, services or equipment correspond with its partner's slack periods. See Figure 6-5 for an example of chassis sharing. In the first chart, the partners' peak and slack cancels each other, i.e. the carriers'

idle capacity during slack periods can be used productively and less total equipment is needed. In the second chart, a shared peak and slack period necessitate a higher total equipment inventory for the partners.

Such irony that a shared ship operations is not suitable for a shared logistical operations is not uncommon since most logistical alliances are a spin-off from operational alliances. This illustrates that the sharing of certain logistical functions, whose activities depend primarily on the schedule of the liner services, is not ideal. Instead, a carrier is better off forming logistical alliances with a carrier that is not also a partner in an operating alliance and whose sailing schedules are of a different pattern. This means that there is a better chance for success if alliances form cross-functional network. For instance, an operational alliance may form a separate logistical alliance with another operational alliance to share or to exchange facilities, services or equipment.

Operational alliances need not, however, always impede the formation of logistical alliances between its member carriers. We have seen above how these alliances encourage the sharing of marine terminal facilities and feeder services between its partners. In other cases, the partners of operational alliances can jointly negotiate with vendors like rail operators for better rail space lease rates using their bigger combined volume. The sharing of containers, especially if conducted on a global scale, offers opportunities for success. "Gray" containers, or containers without the carrier's logo, can facilitate the sharing of containers. Alternatively, at an additional cost, the partners of a container-sharing alliance can display all their corporate logos on the group's containers. Such a step will, naturally, require higher costs and hence a longer-term commitment to the alliance by the partners involved. The field of information systems provide opportunities to carriers to jointly develop systems or share system standards as have been pursued by the ISA and PISA groups. The above are just some of the possible forms of logistical alliances that are

expected to proliferate in the future. The scope for cost-savings to the carriers is wide and the additional coordination costs are minimal.

6.3 Pricing Alliances

The defect-incentive model discussed in Chapter 5 showed that there exists a considerable encouragement for carriers, especially smaller carriers, not to join a pricing alliance. The same model also concluded that it is also tempting for members of pricing alliances to defect (if there is a chance to do so, for example, through “independent rate actions”), and to undercut the alliance pricing or to match a non-member’s prices. Small-scale defections have minimal impact on the alliance as a whole, but such defections can spread quickly and undermine the effectiveness of the alliance. Defections defeat the purpose of the alliances and may lead to market chaos, cut-throat pricing and a deterioration of the level of service provided. Defections can be minimized by ensuring that all alliance members comply to the tenets of the pricing alliance—this will be a key factor to ensure the success of the partnership.

Recent pricing alliances have gone beyond the roles traditionally played by liner conferences. In 1989, the Trans-Pacific Stabilization Agreement (TSA) was established to regulate prices and capacity in the trans-Pacific trade. The TSA capacity management program was the first such initiative then, set up to control the extent of over-capacity in the trade route. Another important innovation by the TSA was the subsequent authority accorded to the agreement members to cross-charter space on each other’s ships for up to a period of 90 days. This authority was accorded mainly to facilitate the charter of available or unused space by an agreement member to fellow member that may have a temporary shortage of space. By doing so, the TSA had crossed into the realm of operating alliances and thus breached the traditional functions of pricing alliances.

In the trans-Atlantic trade route, twelve carriers formed the Trans-Atlantic Agreement in 1992, and for the first time introduced a capacity management program in the trade route. The TAA also started a unique two-tier membership within the agreement. Article 13(3) of the TAA provides for the formation of a Standing Rate Committee to enable members to “collectively consider and act upon rate and service items”. This is a typical traditional role of liner conferences; however, in the TAA, membership to the Standing Rate Committee is not mandatory. TAA members can elect not to join the Standing Rate Committee, and thus not be bound by any rate or service decision taken by it. This leads to a pricing alliance with a two-tiered or multiple-tiered pricing. In the case of TAA, the Standing Rate Committee created two unofficial groups within the alliance, a “structured” and an “unstructured” group where the latter’s rate structure is lower than but pegged to the rate structure of the former. Such an arrangement is effective to induce the participation of traditional non-conference carriers or carriers which believe that their service level is inappropriate or inadequate to price at conference levels, or which simply do not want to price at the same level as the other “traditional conference” carriers. Such carriers can join these “new age” pricing alliances and still retain their pricing freedom. Their pricing policies are, however, stringed to the contemporary conference rate structure and are expected to be at least not more volatile than the pricing policy of the Standing Rate Committee. All members of the TAA, regardless of their membership in the Standing Rate Committee are still required to abide by the agreement’s capacity management program.

A two-tiered membership, like that prevalent in the TAA, can attract an expanded membership. Although they do not impose a standard pricing policy, these alliances still benefit from the expanded membership through other ways. For example, there will be more carriers which subscribe to the capacity management plan. There will also be more

carriers to enable greater flexibility in cargo space cross-charters during short-term space shortages. The TAA also provided scope for its members to participate in logistical exchanges which include the exchanging of containers and chassis; and the procurement and sharing of storage depots. Such logistical alliances must, however, be separately set up and approved by the relevant regulatory bodies.

Future pricing alliances are likely to offer greater flexibility to their members in traditional pricing and capacity management issues by bestowing “associate member” status to carriers that are hesitant to commit themselves fully to the ideals of the pricing alliance. “Associate members” could be allowed less stringent guidelines to follow in order to attract their membership. However, pricing alliances are not likely to allow “paper members” to register their membership for the sake of doing so. “Paper members” are more likely to be uncommitted carriers that do not add to the stability of the pricing alliance; an example of this was seen in the Far Eastern Freight Conference’s acceptance of Evergreen as a “tolerated outsider” within its folds in 1981.

The scope of pricing alliances is also likely to be expanded as carriers are faced with more complex transportation needs of their customers. Pricing alliances can act as a forum for the various operational alliances to interlink their services. The pricing alliance serves well for this purpose as it is a gathering of carriers that share the same pricing philosophy and are likely to share a similar level of service provided. Thus, at least a moderate level of structural and behavioral fit is expected of members of pricing alliances—this will facilitate the formation of an alliance network. The advent of these “new age” pricing alliances, however, may attract confusion by departing from their traditional role of regulating pricing and scheduling. In particular, regulators who have fallen behind the realities of modern and integrated transportation, will find the assumption of hybrid roles by pricing alliances as undesirable. This was a reason that regulatory approval for the TAA was

rejected by the EC (as of April 1994) -- on grounds that it is not a liner conference and thus cannot benefit from antitrust immunity accorded by EC Regulation No. 4056/86.¹¹² Regulators must come to terms that the liner shipping industry has far gone beyond the simplistic port-to-port business of the nineteenth century, and that shippers of today demand sophisticated transportation that can be better achieved through wider cooperation between the carriers.

¹¹² In contrast, the FMC approved the TAA on August 31, 1992.

7. Conclusion and Areas for Further Research

The next few years will be crucial for the liner shipping industry. Second generation container ships will be between 25 to 30 years of age then, and will no longer be economically efficient for deep-sea routes. They will be replaced by newer, and inevitably bigger, ships. Such replacement is expected to increase almost a quarter of the total current world (top nineteen carriers) Teu-capacity in five years. This thesis noted that the two main motivations for the formation of strategic liner alliances are to share and reduce costs, and to enhance their competitive position. These same motivations will continue to increase the attractiveness of strategic alliances as additional (and possibly surplus) capacity and new competition enter the industry.

The thesis also revealed various sharing mechanisms available to liner carriers. While a greater integration of assets will improve day-to-day operational and marketing decision-making, such collaboration also increases coordination and complexity costs. A higher-level integration also bogs down the decision-making process on policy issues. Depending on the carrier's motivation for the strategic alliance, it must choose a partnership structure that will tilt the balance of cooperative benefits and costs in the former's favor. The level of partnership integration will, however, continue to come under the scrutiny of antitrust enforcers. This is especially relevant to pricing alliances, although greater inquisitions are also being made into operational and logistical alliances now. While increasing customer demand is likely to force carriers to extend their cooperation beyond the sea-sector into the land-sector, such cooperation will have to contend with old-fashioned regulators that are still trapped in the pre-intermodalism age. These regulators will continue to view logistical alliances, especially those that involve pricing, as being detrimental to shippers. Liner carriers will also have to continually grapple with regulators that do not appreciate

the benefits of pricing alliances. Thus, while liner carriers are still shielded by antitrust immunity in all major maritime nations, self-regulation to avoid “politically incorrect” forms of pricing alliances is important to maintain the trust of the regulators and the shipping community. Such alliances include monetary and cargo pooling arrangements where the partners dampen internal competition by penalizing “over-performers”. However, these penalties are much less effective in trade routes with low concentration; there still exists motivation for the pool carriers to over-perform by capturing business from non-pool members. The competitive dampener that is used internally on pool-carriers is also not crucial in affecting the dynamics of a lowly concentrated market.

As carriers continue their search for the ideal partner or partners, they will need to evaluate two important parameters to find a strategic match. A structural fit between the partners is important to ensure that the potential partners are synergistic, while a behavioral fit is crucial to insure a healthy relationship between the partners. Carriers will also have to guard against defections within the group that will undermine the partnership. Carrier partnerships are expected to re-group into “core alliances” that network with other smaller groups to expand their scope and depth of service. Successful alliances are more likely to be those that sit on a solid foundation of high mutual trust and synergistic attributes. Thus, the structural and behavioral fits of the core partners are important to meet the challenges of other competitive core groups.

The networking of “core alliances” offers opportunity for research into the best form of networking within operational alliances and between cross-functional (operational and logistical) alliances. Such networking must be coordinated in a simple yet effective manner to avoid adding to the complexities of partnerships.

Many operational alliances produce incompatible logistical alliances within the same group due to the lack of activity synergies in logistical functions. Logistical activities are triggered by ship operational activities, thereby dis-enabling benefits from the sharing of land-side equipment or facilities to absorb the idle time of the respective carriers' equipment and facilities. This creates an awkward anomaly to operational alliances that want to expand the scope of their partnership. New techniques can be researched into to merge both the operational and logistical activities of potential partners.

Finally, a new structure has to be found for pricing alliances to curtail incentives for its members to defect. A successful pricing alliances require the conformance of all; defections can only weaken such alliances. New methods have to be found too for pricing alliances to keep their authority to conduct their traditional role as price and capacity managers, but still be able to defray the fears of regulators on market power abuses. The present technique used to control market power abuse in the US (which is presently proposed for implementation in the EC) involves "authorized defections" in the form of mandatory independent rate actions. These authorized defections fulfill their role, but destroy pricing alliances in the process.

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