

# Globalization and Consolidation in Maritime Transport and Its Implications for Container Port Business

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**Abstract :** *The world of container shipping and container terminal business is changing and container ports need to know what the changes are in order to plan how to respond. In particular, the container transport industry has noticed two major developments such as globalization and consolidation. The purpose of this paper is to review the current trend towards globalization and consolidation of container liner shipping and container terminal business. It also investigates the impact of these market developments on container ports and presents its implications for port development, management and operation, and port competition policy. According to the discussion of this paper a greater exercise of market power of container terminal operators will have negative impacts on international trade and national economy, especially port users, including container lines, exporters and importers. An empirical evidence on the exercise of market power is required to develop competition rules on market dominance at a national and international level. This paper suggests "port cooperation" as a solution for smaller and regional container terminal operators to survive in a competitive business environment.*

**Key words :** *Globalization, Consolidation, Concentration, Container shipping, Container port*

## 1. Introduction

World container volumes have expanded rapidly in recent decades, and continued to grow. The growth has been driven by the expansion of international trade and the development of containerization.

In the meantime, as many multinational manufacturing companies have globalized their businesses, container shipping carriers have been increasingly providing their shipping services on a world-wide basis. Mega-shippers are generally seeking single supplier contracts, whereby one carrier can provide services on all main trades. This has enabled the shippers to gain the benefit of better prices by spreading their production over widely dispersed facilities.

To meet the shippers' demand the larger container liner companies now provide global or near global networks, comprising not just the principal axial trades but also North-South and intra-regional services. The formation of global alliances or some kinds of cooperative arrangements between liner carriers has been proliferated to expand their geographical coverage(O'Mahony, 1998).

The world of container shipping and container terminal business is changing and container ports need to know what the changes are in order to plan how to respond. In particular, the container transport industry has noticed two major developments such as globalization and consolidation. It is very important to understand such structural changes

in container shipping and port business, and the impact the changes are having on container ports.

The purpose of this paper is to review the current trend towards globalization and consolidation of container liner shipping and container terminal business. It also investigates the impact of these market developments on container ports and presents its implications for port development, port management and operation, and port competition policy.

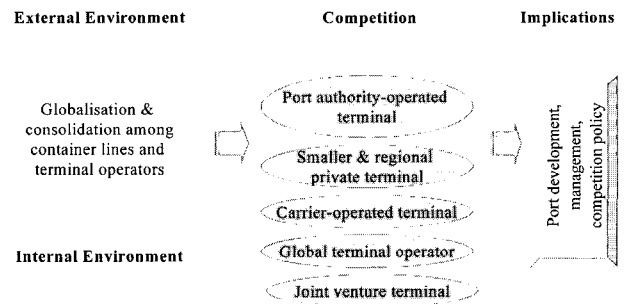


Fig. 1 Competitive Environment in the Container Transport Industry

## 2. Market Concentration in Container Shipping

### 2.1 Global Alliances: Motives & Advantages

Eight years since forming global alliances, ocean carriers are preparing to further integrate their activities, aiming for

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more cost savings. From an operational standpoint, the benefits of alliances have proven to be significant.

The combined efficiency of operating larger ships and calling fewer shared terminals has resulted in cost savings of roughly 20 to 30 percent (Paul, 2000). There are, however, still untapped savings opportunities yet to be gained before alliances fully mature. Global alliances will seek additional savings in the areas of carriers' activities such as equipment (containers and chassis) procurement, vessel design and construction, information technology, rail and other inland transportation services, joint ship management, cargo planning activities, and administrative functions.

In the context of liner shipping global alliances offer a carrier the opportunity to reap the benefits of economies of scope and scale at a cost far lower than they would otherwise achieve themselves. Global alliances have substantially enhanced ocean carriers' global liner networks and boosted the frequency of port-to-port services. Customers also have benefits greatly from alliances such as the benefits of greater service frequency, faster transit times in any one trade lane, and the ability to obtain expanded global coverage (Paul, 2000).

To achieve a larger scale and to push costs down, there are many selective strategic approaches to gain economies of scale and to seek a competitive advantage.

Cooperation among shipping lines will most likely grow closer. Competition-cooperation (coopetition) model will become an even more dominant concept in the liner shipping industry and is one of the critical approaches for shipping companies to have a sustained return.

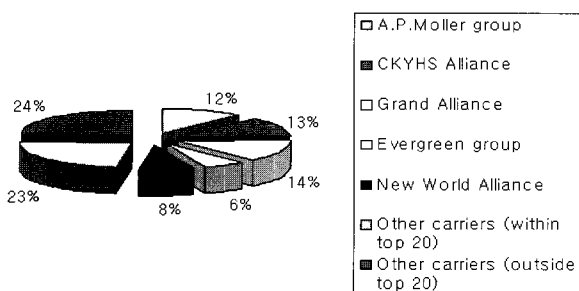


Fig. 2 Major Carrier Groups' Share of World Fleet Capacity as of July 2003  
Source : American Shipper, 2003.

Besides the program of joint operations in fleet and slot sharing, carriers cooperate more tightly in utilizing related operational facilities to achieve a more cost-down benefit. For example, shipping lines jointly utilize dedicated terminals, container pooling, chassis pooling, joint intermodal arrangements and dedicated trains more efficiently and economically.

There is a logical development in the evolution of shipping

lines into global carriers, reflecting shippers' needs for global transportation.

## 2.2 Concentration in Container Shipping

Market concentration is a function of the number of firms in a market and their respective market shares.

The proportion of the total world fleet operated by top 20 carriers highlights the concentration of market power that the largest carriers have in container shipping. As of July in 2003, there were 4,890 ships with 7.26 million TEUs capacity active on liner trades.

Fig. 1 shows that the top 20 carriers now operate about 75 percent of the total worldwide capacity. Takeovers have been one of the major drivers behind the domination of the top 20 carriers over the last few years.

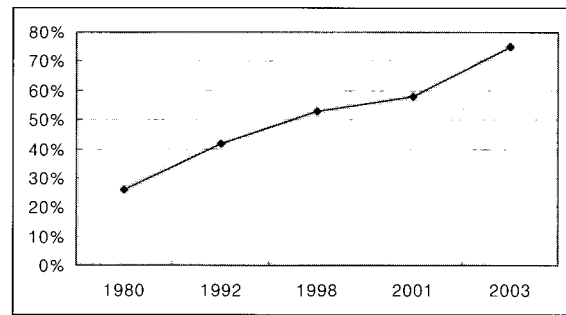


Fig. 3 Share of Slot Capacity of Top 20 Container Lines  
Source : Containerisation International, various issues.

## 3. Globalization & Concentration in Container Terminal Business

### 3.1 Different Types of Port Operators

There are many different types of port operators in the world such as port authority landlords, state port authorities acting as operators, independent operators, carrier-affiliated operators, joint venture operators, general stevedoring contractors, and private companies owning the port superstructures or even the infrastructures.

Ownership of container terminals is a way for container shipping lines to substantially reduce their port costs. Many shipping lines operate dedicated container terminals to serve their own ships, particularly in North America and Asia. But several carriers are moving into the common user container terminal business, aiming to work for other carriers.

Recent examples include Evergreen with its new Italian terminal in Taranto; Hapag-Lloyd with a planned terminal in Hamburg; P&O Nedlloyd with a new facility in Rotterdam; and Maersk Sealand-Maersk Ports with a stake in the giant

Southeast Asian terminal in Tanjung Pelepas, Malaysia.

While independent terminal operators generally compete against carrier-affiliated terminals for shipping line business, they sometimes work together in joint venture. For instance, SSA (Stevedoring Services of America) Terminals has a range of agreements with a number of carriers and associated operations, including Matson Navigation on the West Coast and COSCO in Long Beach.

P&O Port and CMA CGM, in a 50-50 joint venture company, acquired an 80 percent stake in Egis Ports SA, a major container terminal operator in France. Hutchison's container terminal in Yantian is a joint venture with A.P.Moller/Maersk group. Hapag-Lloyd has a stake in Hamburg's Container Terminal Altenwerder controlled by the German port operator HHLA. German port group Eurogate and APM Terminals have a joint venture terminal in Bremerhaven, called North Sea Terminal Bremerhaven. Cosco has a dedicated container terminal in Hong Kong under a joint venture with the Hutchison port group (American Shipper, 2002 & 2003).

### 3.2 Emergence of Global Terminal Operators

Private-sector companies have become more involved in the operation and development of container terminals in both developed and developing countries than in the past, partly thanks to a wave of privatization initiatives in the last decade. Thus, the container terminal business has gone global.

Port authorities and government authorities responsible for ports all over the world are increasingly turning to a handful of global terminal operating groups, who are winning most of the bids for the operation of new container terminals or the renewal of terminal concessions and leases as shown in Table 1.

Table 1 Main Global Terminal Operators

Name	Remarks
Hutchison Port Holdings	Hong Kong-based subsidiary of Hutchison Whampoa Ltd
PSA Corp	State-controlled operator of the port of Singapore
APM Terminals	Ports arm of Denmark's A. P. Moller group and a sister company of Maersk Sealand
P&O Ports	Ports arm of the United Kingdom's P&O group and a group affiliated of P&O Nedlloyd Container Line
Eurogate	German port group
Stevedoring Services of America	Seattle-based company
CSX World Terminals	Ports arm of the CSX transport conglomerate

Source : Paul, 2000.

These major players are specialized port groups with

considerable specialization and international expertise in container terminal management and development. And their success is coming at the expense of smaller, local stevedores.

As shown in Table 2 the international scope and scale of these international container terminal groups vary but they collectively control 37 percent of the global container port handling volume.

Table 2 Performance of Global Terminal Operators

Port groups	Global port volume handled (in million TEUs)	World # of ports/terminals
Hutchison (Hong Kong)	25.3	29
PSA (Singapore)	19.8	11
APM Terminals (Denmark)	13	28
P&O Ports (U.K.)	8.3	27
Eurogate (Germany)	7.7	9
SSA (U.S.)	6	14
CSXWT (U.S.)	3.5	9
Total of 7 major groups	84 37% of world volume	127
World TEU port volume	230	

Source: American Shipper, 2002.

### 3.3 Concentration in Container Terminal Operation

There is an unmistakable move towards market concentration in port business, as global operators win new terminal contracts, acquire smaller competitors and replace local operators (Notteboom, 2002).

Increasing concentration among the major container lines, in the form of alliances and mergers is one of the current trends in the liner shipping industry. This can be also found in the port industry, as major world ports are increasingly operated by global terminal operating groups.

While port deregulation has resulted in the globalization of container terminal operations, O'Mahony(1998) also identified other factors as follows:

- Increasing competition in core markets in part brought about by transshipment and port call rationalization
- Desire to find additional sources of revenue and to spread risk
- Need to develop networks of facilities which can generate increasing cargo volumes for given ports
- Need to attract further customers by offering standardized as well as harmonized services on a network of ports
- Potential to gain greater leverage in negotiations with carriers and terminal equipment manufacturers;
- Demand by customers for greater flexibility in operations

and labour practices

- Ability to offer customers total logistics package

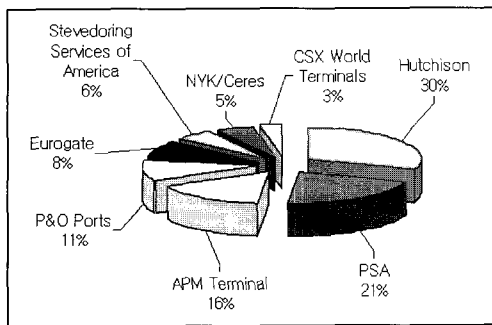


Fig. 4 Market Shares of Top International Port Groups  
Source: American Shipper, 2003.

Large global terminal-operating organizations may benefit from economies of scale, but they do not gain a significant edge because of its size over regional and local terminal operators.

Scale economies can be achieved with centralized purchasing by the port group. It is particularly useful in terms of purchasing power when the port group purchases terminal equipment, such as cranes and centralizes the commissioning of civil work for its facilities.

In addition, there are some benefits from scale in information technology, even though each port tends to have individual requirements. Operating a global network of container terminals they can share know-how among its various operations and benefit of staff development and human resources. Global terminal operators are able to do better deals for their ports.

Meanwhile, private operations have more immediate competition from carrier-owned or operated terminals. When a private terminal is competing head-to-head with a carrier-owned terminal, very often the private operator can be at a disadvantage.

Those reasons range from the relationship between a carrier-oriented terminal and other ocean carriers in the marketplace to the fact that a carrier-operated terminal often looks at third-party business as a means of reducing expenses instead of making a fully allocated profit.

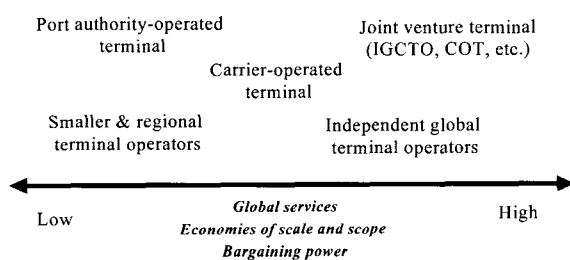


Fig. 5 Port Competition Model

## 4. Implications for Container Port Business

### 4.1 Implications for Port Development

Only a handful of global container terminal operators are willing and eligible to build new container terminals, meaning the world's container terminal capacity is increasingly controlled by fewer operators such as Hutchison Ports, the Port of Singapore Authority, APM Terminal and P&O Ports.

These companies are beginning to dominate container terminal businesses, courtesy of their access to the necessary capital and their requisite track record and expertise.

The global container terminal business is a high-growth industry with high returns, operating behind significant barriers to entry.

Unless investment in port development and operation is attractive and profitable, it would be very difficult for governments or port authorities to find suitable port investors. This means that extensive port development will not be completed as planned.

### 4.2 Implications for Port Management and Operation

Space constraints in ports, long lines of trucks at the terminal gates, and new security requirements all compete for the attention of port authorities and terminal operators, just when many also have to compete against an increasing number of carrier-operated terminals and big expansion-minded global operators.

More and more terminals, because of space constraints, are considering a move to grounded operations. There is not enough land. Ports have to address one common issue: finding extra capacity to handle ever-increasing volumes. Worldwide container traffic increases at an average compounded annual rate of 6 to 8 percent, which translates into volumes doubling every 10 years.

But many port cities no longer have the reserves of land available for port development, and most U.S. ports already suffer landside congestion and trucks gridlocked at terminal gates. The port of Busan has also similar problems to tackle.

For port operators, the question is how to squeeze more cargoes through existing facilities, where to find new reserves of capacity, and how to minimize congestion when it occurs.

Ports must implement technology and productivity measures to address these problems and find new reserves of capacity. Container terminals need to embrace new technology as it becomes necessary to use limited space

more efficiently. If they are going to operate more efficiently they are going to have to employ more sophisticated centralized control.

In the meantime, as discussed in the paper port call rationalization by the mega-carriers results in enhanced inter-port and intra-port competition. One of the ways for container terminal operators to avoid severe competition and survive in a competitive business environment is forming port alliances with the competitors.

As mentioned in section 2.1 major global container carriers have formed alliances with competitors. Such partnership arrangements have been an important business strategy in the port industry to gain competitive advantages(Heaver, et al., 2001). The advantages of port alliances are shown in Table 3.

**Table 3** Advantages of Port Alliances

<ul style="list-style-type: none"> <li>• An achieving of synergy through mutual complementing of strengths</li> </ul>
<ul style="list-style-type: none"> <li>• Rationalization, and hence cost savings, through combining services, marketing, accounting and financial systems, labour and equipment pools, technology transfer</li> </ul>
<ul style="list-style-type: none"> <li>• Opportunities for shared investment, and hence a spread of risk, in research and development, terminal developments and capital equipment</li> </ul>
<ul style="list-style-type: none"> <li>• Increased and spare capacity</li> </ul>
<ul style="list-style-type: none"> <li>• Stronger negotiating positions with the mega-carriers and alliances resulting from decreased inter/intra port competition and hence port/terminal choice</li> </ul>
<ul style="list-style-type: none"> <li>• Enhanced customer service through expanded facilities</li> </ul>
<ul style="list-style-type: none"> <li>• Improved capacity utilization</li> </ul>

Source: O'Mahony, 1998.

For many ports and stevedores, current levels of intense competition are proving just short of ruinous. In regions where deep-sea ports proliferate there is a strong tendency for customers to play ports off against one another, which usually leads to severe under tendering, over-investment and under-utilization of assets.

#### 4.3 Implications for Port Competition Policy

The container terminal market is becoming dominated by a handful of oligopolies. This is a threat to the functioning of the market.

Market power is the ability to establish a price that exceeds marginal cost. In general competitive behavior can be defined as the absence of market power.

The classical Structure-Conduct-Performance (S-C-P) approach to industrial organization presents that increased

concentration leads to increased market power.

Rude & Fulton(2002) argue that under the logic of the S-C-P approach, there is a straight line relationship from structure (e.g., size of market, number of firms) to the conduct of the firms (e.g., level of price mark-ups, advertising) to the performance of the firms (e.g., profitability and economic efficiency).

The determination of structure is explained by barriers-to-entry that are exogenously determined. The implication of this theory is that the more concentrated an industry, the larger is the deviation from competitive pricing and the more market power that firms exercise.

However, as the S-C-P model has its own controversial aspect economists have developed a new model in which Jacquemin(1991) recognizes there is substantial feedback between structure, conduct and performance.

According to the new theory, increased concentration, when combined with cost efficiencies, does not necessarily lead to higher prices and may in fact result in lower prices. For instance, under the new theory, determinants of market structure are not exogenous, performance affects structure and profitability affects entry. Accordingly Rude & Fulton(2002) stress that increased concentration, when combined with cost efficiencies, does not necessarily lead to higher prices and may in fact result in lower prices. In general, the belief is that there is a trade-off between increased efficiencies and increased market power.

As container terminal business is going global and concentrated governments or regulatory bodies need to investigate whether global terminal operators exercise market power and its impact on market efficiency. Considering both the S-C-P model and the new theory an appropriate port competition policy should be adopted to enhance market efficiency.

## 5. Conclusion

This paper discussed structural changes in the container transport industry such as globalization, consolidation, and concentration. These market developments give rise to two important research questions. For instance, does increased concentration in container terminal business lead to increased market power? How do smaller, or regional terminal operators compete against global container terminal operators?

Under the logic of the S-C-P approach discussed in the paper a greater exercise of market power of container terminal operators will have negative impacts on international trade and national economy, especially port users, including container lines, exporters and importers.

So, it is necessary to conduct an empirical research into the issue of whether greater concentration in container terminal business results in a greater exercise of market power. In particular, empirical evidence on the exercise of market power is required to develop competition rules on market dominance at a national and international level.

To answer the second research question this paper suggests "port competition" as a solution for smaller and regional container terminal operators to survive in a competitive business environment. From the viewpoint of a strategic business sleeping with the enemy is necessary to create a stronger product or industry.

This paper made a major contribution to the current issues of structural changes in the port industry. However, further study is required to examine the validity of the conceptual framework suggested in this research.

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