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Chapter V

Freight Markets

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Chapter V

PORT DEVELOPMENT

This chapter covers recent developments in container port traffic for developing countries, institutional change in ports, measuring port performance, port terminal security and ship-to-shore crane orders.

A. Container port traffic

100. Table 38 gives the latest available figures on world container port traffic in developing countries and territories for 1995. The world rate of growth of container port throughput in 1995 dropped to 5.2 per cent from 13.3 per cent in 1994. This annual rate is considerably down from the average annual containerized trade growth of 10 per cent registered over the last decade. The throughput for 1995 was almost 135 million TEUs, which was an increase of some 6.7 million TEUs.

101. The rate of growth for developing countries and territories was 1.73 times that of the world average and reached 9.0 per cent in the period 1994-1995. This was a decrease in comparison with the 15.8 per cent reached in 1993-1994. The growth is unevenly spread and frequently erratic from year to year, owing in some cases to improved data or lack of it, and in other cases to strong fluctuations in the trade.

102. Initial figures for 1996 are available for the main ports, including those in developing countries and socialist countries of Asia. In the top 30 container ports in 1996, there were 12 ports from developing countries and socialist countries of Asia. Traffic for these ports is given in table 39, with the annual percentage increase shown as well as the increase from the previous year. The world leader was Hong Kong with some 13,280,000 TEUs, closely followed by Singapore with some 12,950,000 TEUs. Both ports are now handling over 1 million TEUs per month. The average annual growth for these 12 ports was 8.3 per cent. Although the rate of growth was still strong, growth rates have declined significantly from 1995 (12.7 per cent).

B. Institutional restructuring in ports

103. Institutional restructuring and reform have continued in many ports, in both developed and developing countries, with the private sector continuing to play an expanding role. The main reasons for the reform are to improve port efficiency and to diversify sources of capital inflows. Indeed, the forecast of substantial seaborne cargo growth has resulted in most maritime countries preparing plans to improve and enlarge their ports and terminals, with much of the investment needed coming from the private sector. Long-term leases, joint ventures and BOT (Build-Operate-Transfer) options have been agreed in the past year or will shortly be decided in Aden (Yemen); Cristobal and Balboa (Panama); Tanjung Priok (Indonesia); Yangon (Myanmar); Port Raysud (Oman); Kadok Island (Republic of Korea); Shantou, Tjanjin and Xiamen (China); Mumbai (India); Colombo (Sri Lanka); and Karachi and Port Qasim (Pakistan). Management skills and technical/operating know-how are also important inputs from private terminal operators involved in such developments.

104. The case of Buenos Aires can be cited as an example of port reform that has benefited traders and shipping lines. A number of private terminal operators were granted long-term leases and have made investments in container-handling equipment and management systems. This modernization has resulted in ship-to-gate terminal tariffs dropping in the space of three years from over US$ 600 to under US$ 200 for a 20-foot container. Argentina's neighbour Brazil, however, although in the process of reforming the sector, has made little progress and its terminal tariffs increased over the same period.

Table 38
Container port traffic of developing countries and territories, 1995 and 1994

Country or territory	Container traffic 1995 a/ (TEUs)	Container traffic 1994 (TEUs)	Percentage change 1995/1994	Percentage change 1994/1993
Hong Kong	12 549 746	11 050 030	13.6	20.1
Singapore	10 800 300	10 399 400	3.9	15.0
Taiwan Province of China	7 848 695	7 310 404	7.4	7.6
China	4 678 875	4 063 805	15.1	45.9
Republic of Korea	4 502 596	3 825 565	17.7	24.6
United Arab Emirates	3 510 764	3 202 558	9.6	9.1
Indonesia	2 196 714	1 912 242	14.9	18.7
Malaysia	2 086 236	1 745 966	19.5	24.9
Thailand	1 961 917	1 771 500	10.8	18.7
Philippines	1 707 743	2 007 281	-14.9	20.7
Brazil	1 429 035	1 151 358	24.1	23.2
India	1 383 176	1 256 999	10.0	23.6
South Africa	1 365 981	1 094 051	24.9	12.0
Saudi Arabia	1 206 352	1 183 075	2.0	-2.9
Egypt	1 062 945	1 116 684	-4.8	12.8
Sri Lanka	1 049 044	972 642	7.9	13.3
Malta	553 896	428 305	29.3	34.3
Pakistan	550 650	513 001	7.3	0.6
Argentina	*540 000*	532 000	1.5	18.1
Mexico	508 378	483 287	5.2	4.9
Chile	432 929	500 430	-13.5	0.1
Jamaica	384 339	339 095	13.3	28.0
Costa Rica	382 179	361 770	5.6	-7.1
Cyprus	373 996	372 237	0.5	-11.5
Panama	323 332	353 195	-8.5	14.5
Kuwait	223 896	220 724	1.4	9.4
Venezuela	215 185	161 140	33.5	155.8
Côte d'Ivoire	213 105	247 544	-13.9	3.7
Kenya	201 350	160 293	25.6	11.2
Honduras	*200 000*	*200 000*	0.0	1.8
Bangladesh	*200 000*	*200 000*	0.0	4.7
Nigeria	180 190	148 130	21.6	-1.5
Ecuador	*180 000*	177 001	1.7	29.3
Peru	*160 000*	*160 000*	0.0	4.3
Guam	157 037	158 651	-1.0	6.9
Morocco	155 661	141 285	10.2	-8.5
Trinidad and Tobago	145 241	154 918	-6.3	6.0
Uruguay	137 644	105 784	30.1	18.9
Syrian Arab Republic	*135 000*	132 961	1.5	10.4
Lebanon	128 882	229 922	-44.0	12.9
Martinique	121 064	110 144	9.9	15.6
Papua New Guinea	114 920	119 500	-3.8	8.5
Dominican Republic	*110 000*	*110 000*	0.0	2.8
Colombia	*110 000*	105 143	4.6	-12.9
Jordan	108 819	111 299	-2.2	2.2
Iran, Islamic Republic of	103 080	110 895	-7.1	21.6
Ghana	100 102	88 534	13.1	-4.7
Bahrain	99 445	103 162	-3.6	1.1
Guadeloupe	95 820	100 499	-4.7	5.2
Oman	95 603	87 878	8.8	-1.9
Tanzania, United Republic of	94 100	90 763	3.7	-7.4
Mauritius	92 882	93 746	-0.9	6.1
Total	67 268 844	61 776 796	8.9	16.2
Other reported b/	1 037 927	902 337	15.0	-8.9
Total reported c/	68 306 771	62 679 133	9.0	15.8
World total reported	134 999 519	128 220 226	5.3	12.3

Source: Derived from information contained in *Containerisation International Yearbook, 1997*.

a/ Data in italics are estimates made by the UNCTAD secretariat.

b/ Comprising developing countries and territories where under 90,000 TEUs per year were reported or where substantial lack of data was found.

c/ Certain ports did not respond to the background survey. While they were not amongst the largest ports, total omissions may be estimated at 5 to 10 %.

Table 39

Traffic for selected ports in 1996 and 1995

Port	1996 TEUs	1995 TEUs	Percentage change 1996	Percentage change 1995
Hong Kong	13 280 000	12 529 000	6.0	13.4
Singapore	12 950 000	11 830 000	9.5	13.8
Kaohsiung	5 209 000	5 053 183	3.1	3.1
Busan	4 684 000	4 503 000	4.0	17.7
Dubai	2 247 024	2 070 000	8.6	10.0
Keelung	2 108 579	2 165 193	-2.6	5.8
Shanghai	1 930 000	1 526 500	26.4	27.3
Manila	1 913 210	1 690 601	13.2	12.6
Tanjung Priok	1 595 505	1 519 529	5.0	19.6
Bangkok	1 565 891	1 463 450	7.0	9.5
Klang	1 409 000	1 133 811	24.3	14.1
Colombo	1 352 966	1 048 018	29.1	7.8

Source: *Port Development International*, March 1997.

105. In early 1996, the regulatory functions of the Port of Singapore Authority (PSA) were transferred to the newly established Maritime and Port Authority of Singapore. The PSA's role is now to concentrate on the introduction, development and expansion of the services and facilities needed. The purpose of this measure is for PSA to be transformed within the next two years from a public institution into a private corporate body. Also, this has allowed PSA to become involved in the development and management of terminals in other countries. For example, it is playing a key role in the development of the Dalian container terminal in China. The Dalian Container Terminal Co. Ltd. (DCT) is PSA's first overseas joint venture company. A seven-man management team assisted in centralizing all container handling to a single terminal with 3 berths, 5 quay cranes and 12 rubber-tyred gantries (RTGs). The projected throughput for 1996 was 450,000 TEUs. PSA is currently considering projects in India, Indonesia, the Republic of Korea and Sri Lanka.

106. The Indian Government has established new guidelines for investment in the port sector. Private and foreign companies are allowed to participate in the BOT option, but the sale of assets has been ruled out. The duration of the concession is normally 30 years but can exceptionally be extended to 50 years. An independent Tariff Regulatory Authority is being created which will fix and revise tariffs every three years. Massive investments are required as ports are currently congested and costing traders millions of dollars in demurrage payments each year. A recent report concluded that India's industrial and economic progress could be stifled by the failure of its port system. The Government is actively seeking funding from multiple sources to finance this development.

107. The Kenya Ports Authority (KPA) has taken various steps to improve its performance. In 1994, following extensive rehabilitation of cargo-handling equipment, it signed a maintenance contract that established performance guarantees and penalties (originally for ten years then reduced to five years). In 1996, the KPA signed a performance contract with the Government which included performance targets, and awarded a two-year management contract for the development and operation of its container terminal to a private foreign terminal operator. These steps were taken

to enhance the efficiency of the port and improve the flow of both domestic and transit cargo.

C. Port performance

108. The two main users of ports are the shipping lines and traders. The first are primarily concerned with the reliable turn-around of their vessels, while the second's concern is for the safe and timely delivery of their goods. Both are also concerned with port costs, which are a large portion of transport costs. Physical and institutional factors influence productivity to such an extent that it is extremely difficult if not impossible to strictly compare any two or more terminals. Further, it appears inadvisable to establish standards for terminal productivity on an international basis. Any comparisons of terminals must be made carefully and on a case-by-case basis. In many cases, it is more appropriate to monitor productivity on a time-series basis, comparing it at a single terminal over two or more time periods.

109. One of the measures is the productivity of ship-to-shore gantry cranes in terms of moves per gross working hour or net working hour. To make this indicator more meaningful, information on the scheduled working hours per crane should be given. For a time-series analysis and on the assumption that the mix of 20-foot and 40-foot containers does not change, crane productivities are sometimes given in terms of TEUs per crane hour. The difficulty with this indicator can be illustrated by considering the productivity figure of 20 TEUs per hour, a relatively good figure if handling only 20-foot containers, but a poor one if handling 40-foot containers (thus only 10 moves per hour). Another indicator of the terminal productivity is in terms of container moves per hour at berth or per hour worked at berth: major factors affecting this productivity are the number of cranes assigned per ship and the scheduled working hours per day.

110. The Bureau of Transport and Communications Economics in Australia maintains the following performance figures on a quarterly basis for the major Australian ports (Brisbane, Sydney, Melbourne, Adelaide and Fremantle): the **crane rate**, which is the number of containers moved per crane per net hour (net time is the elapsed time minus the time during which work is not possible because of shift breaks, a problem with the ship, bad weather, cargo awaited, industrial disputes, holidays or shifts not worked at the ship operator's request); the **net rate**, which is the number of containers moved per net hour per ship; and the **elapsed rate**, which is the number of containers moved per elapsed hour (elapsed time is the total time the ship is alongside the berth available for work whether work is done or not, measured from labour first ordered to last labour ashore).

111. In Australia, the five-port average elapsed rate (the rate of most interest to shipowners) for the first three quarters of 1996 was around 19 moves per hour (19.3, 18.6 and 19.0) and the crane rate increased to 18.0 moves per net hour (16.9, 17.7 and 18.0). This corresponded to quarterly volumes of 373,870 TEUs, 395,586 TEUs and 423,768 TEUs for the five ports.

D. Port terminal security

112. Security of cargo is a major concern of port authorities. Thefts and smuggling of cargo, and stowaways, are occurrences that port authorities need to combat in order to ensure the quality of their services. The costs incurred by port users because of these activities are very high, as shown by various recent analyses. For instance, in the United States, it is estimated that the annual cost of cargo theft and pilferage varies from US$ 3 to 10 billion a year.

113. Ports are tackling this issue and have taken steps to improve their security. Secure perimeter fencing has been installed to make it extremely difficult, if not physically impossible, to remove containers through the fence. Improved gate access control involves the sealing or removal of all disused gates, and a system to secure main gates to prevent forcible entry. Access to the terminal should be strictly controlled, with formal procedures for the entry and exit of trucks and containers. Empty containers should be checked to ensure that they are empty. All areas of the terminal must be lit to at least the level of twilight so that security guards can see down the lines between containers. Poor lighting can be a major factor contributing to container theft and pilferage. A well-paid, trained and motivated team of security guards is essential

for enforcing security procedures and ensuring that all criminal acts are discovered and reported. Detailed inspections and recording of seals are essential for establishing the point of any loss. The operator needs to check each seal, and record its number, date, time and place of examination at entry and exit points of the terminal and at each movement within the terminal. Finally, care should be taken to avoid minor pilferage at the container freight station. Drivers should not be allowed into the storage area, vehicles collecting import cargo should have their loaded cargo checked against delivery notes and cabins should be checked.

114. Although, generally speaking, the number of thefts from port terminals has been drastically reduced, there is a high risk of theft once the container has left the relative security of the port. Container theft is defined as the stealing of a whole container, while pilferage is theft from the container itself. Improvements in high-security seals are making it difficult or impossible to break the seal with a pipe or bolt cutters. Investigation of crimes has found that there is generally some inside involvement, for example someone from the inland transport company, the terminal or the container line. The most common methods used are armed hijacking, fraudulent documents to obtain a container from a yard, and theft when the driver parks the vehicle for a rest. Insurance clubs can provide members with an audit to appraise the security of their terminal.

E. Ship-to-shore crane orders

115. A survey of container crane orders carried out in 1996 provided information on the characteristics of the cranes and who was ordering them. A total of 213 container cranes were on order as of mid-July 1995, whereas 193 were on order as of mid-July 1996. Of the cranes on order in 1996, 145 were for delivery in 1997. Some 45 per cent of them were for Asian ports, 25 per cent were for Europe and less than 16 per cent were for North America. Of those cranes on order, 62 per cent can be classified as post-Panamax, reflecting the introduction of new post-Panamax class vessels into service. The number of very large cranes with outreaches of 50 metres and above was 65. Thus, over one-third of the cranes on order are capable of handling the largest ships in service or to be delivered. There is also a trend for smaller and slower cranes to be used for dedicated feeder and short-sea traffic (see table 40).

Table 40

Ship-to-shore container cranes on order
(As at 15 July 1996)

	Outreach (metres)					Total
Geographical region	<36.0	36.0-39.9	40.0-44.9	45.0-49.9	50.0	
Developed						0
Europe	8	11	0	12	28	59
North America	1	0	0	16	17	34
Japan/Australia	2	11	3	4	0	20
Developing						
Asia	10	13	6	18	20	67
Africa	0	3	0	2	0	5
Middle East	0	2	0	2	0	4
Latin America	0	4	0	0	0	4
Total	**21**	**44**	**9**	**54**	**65**	**193**

Source: *Cargo Systems*, August 1996.