Shore-Based Shipping Costs, Non-Bulk Cargo

Occasional Paper

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Subject
Series
Date
A to Z
Search
Results
Print
Exit
GO BACK

Occasional Paper 80

Shore-based Shipping Costs, Non-bulk Cargo

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FOREWORD

At the direction of the Federal Minister for Transport, the Hon. Peter Morris MHR, the Federal Bureau of Transport Economics arranged a seminar in Sydney in July 1984 to discuss shore-based shipping costs. As a result of this seminar, an industry Task Force was established to investigate the shore-based transport and handling system and to recommend ways to improve the cost efficiency of moving Australia's international trade to and from the wharf. The Bureau supplied research support to the Task Force.

The information gathered during this research by the Bureau has been organised to present, through this Paper, a comprehensive description of the shore-based shipping chain and an analysis of its inherent characteristics and problems.

All staff of the Systems Application Section contributed to the study under the direction of Mr N. R. F. Perry. The other principal contributors to this work were Messrs G. P. Piko, D. C. Meek and B. C. O'Gallagher. Messrs N. J. Wuest and C. C. Steele provided additional assistance. Ms J. A. S. Anderssen supervised the final drafting of the Paper for publication.

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September 1986

CONTENTS

TABLES

FIGURES

SUMMARY

Australia's shore-based transport and handling system has a number of characteristics which could affect the ability of exporters to compete in world markets and influence the costs of imports. Among these characteristics are:

- weakness in the competitive forces associated with some shore-based shipping services;
- poor communications systems tending to exacerbate operational difficulties along the shore-based shipping chain; and
- an industrial environment which produces rigidities in the overall operation of the chain.

In July 1984, the Federal Bureau of Transport Economics organised a seminar to enable the problems of the shore-based shipping industry to be discussed by its senior representatives. The seminar delegates agreed that there was a need for a review of shore-based shipping operations and subsequently the Federal Minister for Transport, the Hon. Peter Morris MHR, established an Industry Task Force on Shore-based Shipping Costs which reported in June 1986. The Bureau provided research support to the Task Force, and this Paper is based on the results of that research and some further analysis.

The shore-based transport and handling chain is characterised by complex systems which encompass aspects of both the public and private sectors. The main links in the chain are:

- ports
- port-related services (pilotage, towage, line and launch services and gangway watch)
- terminals and other stevedoring activities
- depots
- land transport to and from the waterfront and depots
- regulatory and administrative agencies (customs, quarantine, customs agents).

Indicative charges for the various services are set out in the following table. These charges represent the costs to the users (importers and exporters) of the shore-based shipping chain within the urban region served by the port.

INDICATIVE SHORE-BASED COSTS FOR CONTAINERISED IMPORTS AND EXPORTS, 1984-85

(dollars per TEU[a])

	Imports		*Exports*	
Item	*FCL*[b]	*LCL*[c]	*FCL*[b]	*LCL*[c]
Port and related charges	180	180	120	120
Stevedoring	230	230	230	230
Clearance procedures	80	300	40	220
Transport to wharf	..	..	120	60
Transport from wharf	120	60	..	..
Packing of container	..	..	150	600
Unpacking of container	150	600	..	..
Transport to depot	..	..	..	390
Transport from depot	..	390	..	..
Total	760	1 760	660	1 620

a. Twenty-foot Equivalent Unit (TEU) container.
b. Full Container Load (a container carrying a single consignment).
c. Less than Container Load (a container carrying more than one consignment).

.. Not applicable

Based on this information and estimates of inland transport costs for major rural commodities, the shore-based shipping cost of moving Australia's non-bulk trade was found to be some $1 500 million in 1984-85. An examination of the sensitivity of the volume of trade to changes in shore-based shipping costs did not indicate that a reduction in this cost would directly generate a substantial increase in the volume of non-bulk cargoes, although the demand for exports would increase more than the demand for imports.

Many importers and exporters stated that delays and uncertainty were often of greater concern than direct financial costs. The maintenance and expansion of markets depended on service reliability as well as cost.

The following paragraphs summarise the major observations made in the Paper on each of the components of the shore-based shipping chain.

Ports

The ports of Sydney, Melbourne, Brisbane, Adelaide and Fremantle account for over 96 per cent of container tonnage, and over 86 per cent of total non-bulk movements. This centralisation reflects Australia's geographic and economic development and it has been accentuated by the advent of containerisation. There is insufficient economic activity to support a concentration of competing major ports such as occur in some other parts of the world.

Inter-port competition overseas has resulted in a greater involvement of the port administrations in the development of facilities for landside access to their ports, computerised information and communications systems for port users and other innovations to assist the efficient movement of cargo through the facilities. Similar market forces do not operate to the same extent in Australia, and alternative approaches may be required to assist port authorities in responding to the needs of their users.

Port related services

The port-related services are considered part of the shore-based shipping chain in this study as they also contribute to costs of shipping cargo through Australian ports. Concerns raised by users of these services included the different practices and procedures involved in securing port-related services rather than the services themselves.

Container terminals

The container terminal industry is characterised by a high degree of vertical integration with shipping interests. Their stevedoring charges have been constrained in recent years by a combination of three factors:

- an increase in the activity of non-conference shipping lines not 'tied' by ownership to any particular terminal;
- a degree of oversupply of terminal facilities; and
- downward pressure on shipping freight rates (which include the stevedoring charges) caused by an oversupply of world liner shipping.

These factors have engendered increased competition among container terminals. However, their permanency is open to question, and they could be masking institutional factors which have been shown in the past to be basically non-competitive.

The performance of stevedoring in general and container terminals in particular has been the focus of much adverse comment by users of the shore-based shipping chain. Rapid technological developments associated with containerisation have placed strains on the organisational and institutional structures operating at the waterfront.

One manifestation of these strains is in the field of industrial arrangements, which have been the subject of many enquiries over the years. The drastic reduction in the requirement for waterfront labour brought countervailing pressure to preserve jobs in the industry. Despite these problems, significant progress has been made in some areas to adapt the industrial arrangements on the waterfront to the changed technological environment, with, for example, numbers of waterside workers being reduced from over 20 000 to less than 6000 since the 1960s.

Land-terminal interface

A number of operational difficulties, resulting in delays to cargo movements and associated demurrage and other costs, have occurred at the interface between the terminals and road transport. With the advent of containerisation and its technological requirements, the container terminals assumed responsibility for the management of the land transport interface, a responsibility not part of conventional stevedoring. This was undertaken in the absence of any normal commercial market for the services involved (payment for which forms part of the ocean freight rates). The terminals can therefore add to the costs of trucking operators through delays and so on, but are not subject to any direct reaction through market forces. Resource allocation by terminals tends to be influenced by the fact that the terminals' clients are the shipping lines, not the land transport operators. Some differences in the working hours of terminals, road transport operators and the shippers and consignees have added to these difficulties.

The problems at the land transport and terminal interface were addressed at the Bureau seminar in July 1984 and considered in depth by the Task Force on Shore-Based Shipping Costs (1986). Revised terminal operating priorities and truck booking systems have been adopted at some terminals to improve container movement capacities through the gates, but the long-term effectiveness of such measures remains to be established. The creation of some form of market mechanism at the land transport and terminal interface may provide a sounder long-term solution, at least in theory. However, there are practical difficulties in this approach.

Depots

The advent of containerisation has also resulted in the establishment of depots at which containers holding several consignments are packed or unpacked. Depot activities encompass operations which, in part, are similar to those performed in land transport and warehousing operations in the road transport and distribution industries. As a result, a number of problems related to industrial demarcation have arisen over the years. The container depots are, in an industrial relations context, considered to be extensions of waterfront operations rather than of road transport operations (with the exception of the trans-Tasman trade). Depot charges therefore reflect the cost structure associated with waterfront activities rather than the lower cost structure associated with the road transport industry.

Road transport

Road transport serving ports is very competitive, with relatively unrestricted entry to and exit from the industry. It is the dominant mode for moving containers to and from terminals, although rail is also significant, predominantly for long haul movements. The problems that have occurred have been primarily at the interface between road transport and the terminals and depots, rather than within the road transport industry itself.

Service organisations

There are a number of different types of organisations which facilitate the movement of international cargo through the shore-based shipping chain. Customs agents, in particular, act on behalf of clients to clear goods through customs and quarantine. Customs agents appear to operate in a very competitive industry with relatively few restrictions on entry and exit.

Documentation and communications

A major difficulty faced by all participants in the shore-based shipping chain is the lack of standard forms of documentation related to cargo consignments, as well as timely, comprehensive information systems capable of displaying the status of consignments in the chain. The fragmentation of interests participating in the chain causes some practical difficulty in establishing such systems. Introduction of modern information and communications systems in support of the shore-based shipping chain as a whole could streamline its overall operation. Properly designed and implemented, such systems have the potential for eliminating some documentation and encouraging standardisation. They could also introduce a much higher level of planning flexibility to an industry which currently relies on telephone, telex and even the daily press for its operational information.

CHAPTER 1 INTRODUCTION

Australia's geographic circumstances and various economic and institutional characteristics have, over the years, combined to produce a number of basic problem areas in the shore-based shipping industry. Australia is an island nation with a trading economy and thus depends heavily on shipping services and associated land-based operations. Current world trading conditions make it particularly important that onshore costs are minimised. With a highly competitive world market for the supply of commodities, and long distances not only to major international markets but also from the point of production to the port of export, it is in the national interest to ensure efficiency in the shore-based shipping industry.

Australia's relatively small economy and the large distances between its major centres of population and production combine to reduce the level of competition between the shore-based shipping industries situated at different locations around the coastline. This factor, along with other characteristics of the organisations that operate in the shore-based transport and handling chain, has influenced its overall operation and economic performance.

Because of their importance to international trade, both sea transport and the land-based activities servicing it have been subject to considerable scrutiny over a number of years. This attention has been directed at achieving a cost-efficient transport and handling industry capable of servicing Australian imports and exports in a reliable way.

There has been relatively little consideration given to the shore-based shipping industry as a total transport and handling system. At the request of the Federal Minister for Transport the Hon. Peter Morris MHR, the Federal Bureau of Transport Economics (BTE) organised a seminar in July 1984 to canvass the issue. Key representatives from the shore-based shipping industry and government attended. The seminar provided an opportunity to focus on the shore-based shipping chain and observe its problems and possible solutions.

APPOINTMENT OF TASK FORCE

The seminar concluded that there were substantial issues warranting a fresh approach to their further investigation and action. As a result, the Federal Minister for Transport, the Hon. Peter Morris MHR, established an industry-based Task Force for which the Bureau was asked to provide research support. It reported to the Minister in June 1986 (Task Force on Shore-based Shipping Costs 1986). Its major objectives were:

- to examine the overall efficiency of the movement of cargo between point of dispatch or receipt and ship loading and unloading;
- to identify in consultation with the industry those factors which inhibit maximum operational efficiency of the total system; and
- to determine practical measures which would increase operational efficiency and lower the costs of land-based elements of the movements of cargo by sea.

To assist it in its deliberations, the Task Force established three working parties to investigate various aspects of shore-based shipping costs. Two of these working parties examined relationships between land transport and terminal or depot operators, and problems which have arisen in these areas. The third working party looked at the more strategic aspects of the industry. It considered organisation, control and market characteristics in the following areas:

- the stevedoring industry
- port pricing and investment
- depot operations and cargo consolidation
- government regulatory procedures
- road and rail interface with terminals.

The Task Force also established a users' panel to consider recommendations emanating from the working parties and provide assessments on their likely effectiveness and practicability.

BUREAU SUPPORT

One of the roles of the Bureau was to provide the Task Force and these associated groups with information on the shore-based shipping industry and to analyse the implications of some of its characteristics. In responding to this function, the Bureau sought information from, and had discussions with, representatives of all sections of the shore-based shipping industry. These included shipping agents, terminal operators, depot operators, transport

companies, freight forwarders, customs agents, the Australian Customs Service, bond stores and both large and small importers and exporters. Organisations in all States were approached, providing the Bureau with the opportunity to make regional comparisons in many cases.

This Paper draws on the information collected from various sources to present a comprehensive description of the shore-based transport and handling system used for Australia's non-bulk trades. The characteristics of its various components are used to place some of the problems into an economic context. Much of the information is qualitative in nature and applies to a greater or lesser extent to the various ports and to particular operations within each port. The material in this Paper also draws on material produced for the working parties to the Task Force, and on work performed by a consultant to the Bureau.

SCOPE OF STUDY

By their nature the various links in the shore-based shipping chain tend to interact substantially through physical, financial and documentary transactions. The links are characterised by the various land-based processes and charges involved in transporting imports from ship to importer and exports from exporter to ship. The processes and charges for services provided to the ship in berthing or departing the port are also included. Thus, the principal areas of activity or 'links' in the transaction chain as defined in this Paper are Australian port and port-related services, terminals and stevedoring, depot operations and land transport together with the regulatory and documentation systems. The detailed examination of these components provides an insight into the general structure of the shore-based shipping chain and its market characteristics.

Within the framework of this study, no investigation into the cost structures of the various components of the chain has been attempted. Much information that would be required for such analysis is commercially sensitive and not readily available. The study has been directed towards achieving some understanding of the costs faced by users of the shore-based shipping chain, rather than the costs of providing the various services. These user costs reflect the charges set by the providers of the services comprising the chain. The term 'costs' in this Paper refers to the users costs.

STRUCTURE OF THE PAPER

Chapters 2 and 3 provide general overviews of the Australian shore-based transport and handling chain and associated user costs. Chapter

2 looks at the nature of Australian overseas trade and movements of the break-bulk and containerised cargoes as well as the significance of their associated shore-based costs. It also discusses the implications of reduced shore-based shipping costs and improved quality of service. 'Quality of service' is defined here as encompassing the more abstract characteristics of the shore-based transport and handling chain such as speed, reliability, convenience and loss or damage to cargo. Chapter 3 focuses on the transaction chain involved in the import and export container trade and the user costs associated with each stage of the system.

The operational characteristics and some of the inherent problems of the principal links in the transaction chain are discussed in Chapters 4 to 10. Chapter 4 describes the administrative, structural and financial characteristics of Australian ports, while Chapter 5 is concerned with pilotage, towage and line services which are regarded as part of the shore-based shipping system in this study. In Chapter 6, both conventional stevedoring and container terminal operations are discussed in detail. Chapter 7 gives a comprehensive account of the operations carried out by container depots. The involvement of road and rail transport and a modal comparison of the two forms of transport are presented in Chapter 8. One of the physical manifestations of the problems associated with the shore-based shipping chain is the delays to trucks picking up cargo from the waterfront. The queues of trucks which develop outside terminal (and depot) gates, and the resulting costs, have been the source of considerable attention within the industry and by the Task Force. Chapter 9 discusses the phenomenon of truck queuing and outlines methods being used to reduce delays in loading and unloading trucks. User organisations and their involvement in the transaction chain are discussed in Chapter 10.

Dissemination of information and industrial relations on the waterfront are two major factors having pervasive influence throughout the transaction chain. Chapter 11 is concerned with cargo clearance and information systems and possible improvements in this area, and Chapter 12 discusses the industrial arrangements which apply to the chain.

Finally, Chapter 13 reviews the whole of the shore-based shipping chain and the user costs and problems associated with it.

CHAPTER 2 SIGNIFICANCE OF SHORE-BASED SHIPPING COSTS TO AUSTRALIAN INDUSTRY

This chapter provides a brief overview of Australia's international trade and assesses the significance of shore-based shipping costs in that trade. Consideration is given to the effects of shore-based costs on the level of Australia's imports and exports and on the profitability of Australian industry. Clearly, shore-based shipping costs affect various sectors of Australia's import and export trades to different degrees. Apart from presenting some illustrative examples it is not intended, in this study, to analyse the costs of particular sectors in great detail. Instead, the discussion is confined to the presentation of aggregate results and the implications that flow from them.

THE NATURE OF AUSTRALIA'S OVERSEAS TRADE

The broad characteristics of Australia's overseas trade are described in this section. Table 2.1 shows the total value of Australian imports and exports for the period from 1979-80 to 1984-85 in both current and constant (1984-85) prices.[1] These figures show that the value of Australia's imports has grown by 85 per cent in current prices and 35 per cent in constant prices and the value of exports by 63 per cent in current prices and 22 per cent in constant prices over that period. The figures include both air and sea cargo. In 1984-85, air cargo represented approximately 19 per cent of the value of imports, and less than 10 per cent of exports. By weight, air cargo is less than 1 per cent of total trade.

Details of Australia's sea trade are shown in Table 2.2 which identifies the amounts of cargo carried in different vessel types. Bulk cargoes comprise a large proportion by weight of the total trade. However, comparison by value illustrates the significance of non-bulk cargoes. In 1984-85, 75 per cent by value of all imports and over 40 per cent of all exports were non-bulk cargo.

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1. The constant price series were derived from the current price series using the implicit import and export price deflators from the *Australian National Accounts* (ABS 1986a).

TABLE 2.1 TOTAL AUSTRALIAN TRADE[a] 1979-80 TO 1984-85
($ million)

Item	*1979-80*	*1980-81*	*1981-82*	*1982-83*	*1983-84*	*1984-85*
Current prices						
Imports	16 218	18 964	23 013	21 806	24 061	30 022
Exports	18 870	19 169	19 581	22 062	24 767	30 743
Total	35 088	38 133	42 594	43 868	48 828	60 765
Constant (1984-85) prices						
Imports	22 300	23 966	28 052	24 456	26 446	30 022
Exports	25 116	23 580	23 693	25 012	26 499	30 743
Total	47 416	47 546	51 745	49 468	52 945	60 765

a. Includes both air and sea cargo.

Note All data are expressed as FOB value.

Source ABS (1986b).

TABLE 2.2 AUSTRALIAN SEA TRADE BY VESSEL TYPE, 1984-85

	Bulk vessels[a]		*Non-bulk vessels*[b]		*Total*[c]	
Item	*Value ($m)*	*Gross weight (m tonnes)*	*Value ($m)*	*Gross weight (m tonnes)*	*Value ($m)*	*Gross weight (m tonnes)*
Imports	6 024	15.6	18 110	7.8	24 134	23.4
Exports	16 318	230.1	11 181	16.0	27 499	246.1
Total	22 342	245.7	29 291	23.8	51 633	269.5

a. Bulk carriers and tankers.
b. General cargo, container and ro-ro ships.
c. Includes some ships not classified as either bulk or non-bulk, eg multi-purpose ships, passenger ships.

Note All data are expressed as FOB value.

Source ABS (1986c).

By weight, Australia's major bulk import commodities are crude oil and refined petroleum products, phosphate and sulphur. The major bulk export commodities by weight are iron ore, coal, wheat, alumina, bauxite and woodchips. Specialised shore-based transport and handling systems are employed for these bulk commodities which are substantially independent of those used for non-bulk cargo. The transport and handling processes involved for bulk commodities are the subject of a forthcoming Bureau Occasional Paper (BTE 1986e). These processes are not discussed further in this Paper which is largely concerned with non-bulk cargo in general, and containerised cargo in particular.

Table 2.3 lists the major non-bulk imports to Australia during 1984-85. The commodities shown in Table 2.3 account for some 87 per cent of value of Australia's non-bulk imports. It can be seen that manufactured goods account for the highest proportion of the total value of Australia's non-bulk imports. Road vehicles (the largest single item), together with the various categories of machinery, account for a large percentage of total non-bulk imports. Other major imports by value are textiles and telecommunications and sound equipment. Some imports are carried by air. These would include lighter, more delicate and higher value items such as office machines and automatic data processing equipment, technical and scientific apparatus and electrical parts. Commodities for which speed of delivery is important are also transported by air, including some printed matter, fashion clothes and perishable goods.

Containerisation of non-bulk imports varies widely, dependent on the commodity. Items such as office and electrical machinery, telecommunications and photographic equipment, pharmeceuticals, clothing and textiles are exclusively containerised, while other commodities such as iron and steel and chemicals are transported primarily as break-bulk cargo. Some commodities are not suitable for containerisation due to weight and/or dimensional restrictions imposed by the container.

TABLE 2.3 MAJOR AUSTRALIAN NON-BULK IMPORTS, 1984-85

Commodity	*Value*[a] *($m)*	*Per cent*[b] *containerised*
Road vehicles (including spares and components for vehicle assembly)	3 088	39
Office machines and automatic data processing equipment	1 667	100

TABLE 2.3 (Cont.) MAJOR AUSTRALIAN NON-BULK IMPORTS, 1984-85

Commodity	*Value*[a] *($m)*	*Per cent*[b] *containerised*
Machinery specialised for particular industries	1 652	39
Electrical machinery, apparatus and appliances, nes and electrical parts thereof	1 472	100
Textile yarn, fabrics, made-up articles, nes and related products	1 444	99
General industrial machinery and equipment, nes and machinery parts, nes	1 382	60
Telecommunications and sound recording and reproducing apparatus and equipment	1 167	100
Organic and inorganic chemicals	862	15
Paper, paperboard and articles of paper pulp, of paper or of paperboard	838	48
Manufactures of metal, nes	782	92
Articles of apparel and clothing accessories plus footwear	718	100
Power generating machinery and equipment	682	66
Professional, scientific and controlling instruments and apparatus, nes	642	100
Artificial resins and plastic materials, and cellulose esters and ethers	568	93
Other transport equipment	567	68
Iron and steel	547	6
Non-metallic mineral manufactures, nes	539	72
Photographic apparatus, equipment and supplies and optical goods, nes; watches and clocks	511	100
Rubber manufactures, nes plus crude rubber	457	99
Coffee, tea, cocoa, spices and manufactures thereof	344	97
Fish, crustaceans and molluscs, and preparations thereof	304	69
Medicinal and pharmaceutical products	294	100
Vegetables and fruit	282	98

a. These figures include air cargo, which accounts for approximately 19 per cent of the value of all imports (including bulk). All data are expressed as FOB value.
b. Percentages are based on port import tonnages.

nes Not elsewhere stated.

Note ABS commodity classifications are used in this table.

Source ABS (1986b). DoT, unpublished data from Sea Transport Statistics collection.

TABLE 2.4 MAJOR AUSTRALIAN NON-BULK EXPORTS, 1984-85

Commodity	*Value*[a] *($m)*	*Per cent containerised*[b]
Wool (including other animal hair)	2 338	89
Non-ferrous metals	1 869	65
Meat and meat preparations	1 374	99
Iron and steel	486	9
Dairy products and birds' eggs	418	95
Fish, crustaceans and molluscs, and preparations thereof	403	100
Hides, skins and fur skins, raw	322	100
Road vehicles (including spare parts and components)	299	82
Cotton	263	100
Vegetables and fruit	260	94
Other transport equipment	240	91
Power generating machinery and equipment	193	100
Miscellaneous manufactured articles	191	96
Photographic apparatus, equipment and supplies and optical goods nes watches and clocks	177	100
Machinery specialised for particular industries	176	89
Manufactures of metal	176	91

a. These figures include air cargo, which accounts for approximately 9 per cent of the value of all exports (including bulk). All values are expressed in FOB terms.
b. Percentages are based on port export tonnages which are sourced from DoT data.

nes Not elsewhere stated.

Note ABS commodity classifications are used in this table.

Source ABS (1986b). DoT, unpublished data from the Sea Transport Statistics collection.

Table 2.4 lists some of Australia's major non-bulk exports which, as can be seen, comprise mainly primary products. Commodities listed account for approximately 64 per cent by value of Australia's non-bulk exports, while the 3 major exports alone comprise 39 per cent of value.

Of those commodities listed, only iron and steel are predominantly transported as break-bulk cargo, while a large proportion of non-ferrous metals are also break-bulk. All other commodities are either predominantly or exclusively containerised.

Table 2.5 shows 1983-84 overseas trade in non-bulk cargoes by cargo type for the nine largest Australian ports. These ports account for over 95 per cent of total non-bulk trade of which 37 per cent is break-bulk cargo. The major ports of Sydney and Melbourne handle almost 40 per cent of the total Australian break-bulk trade.

Table 2.6 shows the container and break-bulk movements of imports and exports separately for the five major Australian ports. In both Tables 2.5 and 2.6 it can be seen that break-bulk cargo represents over 70 per cent of non-bulk trade for Adelaide and 45 per cent for Fremantle. For the other major ports break-bulk cargo accounts for one-third or less of their non-bulk trade.

With break-bulk cargo, commodities may be handled differently. For example, motor vehicles may be driven off a ship, bundles of timber may be carried off by a forklift, or large industrial machinery may be lifted off by cranes. The method used will depend on the type of ship involved, the nature of the cargo and the equipment available to service the ship.

CONTAINERISATION IN AUSTRALIA

The adoption of practical reusable containers for carrying cargo dates from the late 1950s. This concept was largely ignored by shipping lines until the International Standards Organisation (ISO) reached agreement in 1966 on standard shipping container sizes, based on an 8 feet square external end area with lengths varying in multiples of 10 feet from 10 to 40 feet and incorporating standard fastening and lifting points.[2] These containers, or ISO boxes as they became known, were quickly adopted by all operators, with the 20 foot length

2. Container sizes are defined in imperial units. For conversion 1 foot = 0.3048 metres. Metric dimensions for the standard 20 foot ISO container are 6.07 metres long with 2.44 metre square external end areas. The internal volume is approximately 30.4 cubic metres.

TABLE 2.5 OVERSEAS TRADE IN NON-BULK CARGOES THROUGH NINE MAJOR AUSTRALIAN PORTS, 1983-84

('000 tonnes)

Port	*Containerised cargo*	*Break-bulk*	*Total*
Sydney	3 734.8	1 185.2	4 920.0
Melbourne	4 844.0	1 261.0	6 105.0
Brisbane	854.0	402.0	1 256.0
Adelaide	302.7	736.4	1 039.1
Fremantle	854.0	690.0	1 544.0
Burnie	124.8	75.4	200.2
Newcastle	18.3	250.6	268.9
Port Kembla	5.1	1 380.9	1 386.0
Townsville	150.3	293.3	443.6

Source Port Authorities, personal communication.

TABLE 2.6 GENERAL CARGO MOVEMENTS THROUGH MAJOR CONTAINER PORTS, 1983-84

	Movements ('000 tonnes)				
	Imports		*Exports*		*Container component (per cent)*[a]
Port	*Container*	*Break-bulk*	*Container*	*Break-bulk*	
Sydney	2 141.7	937.1	1 593.1	248.1	75.9
Melbourne	2 286.0	1 026.0	2 558.0	235.0	79.3
Brisbane	258.0	323.0	596.0	79.0	68.0
Adelaide	110.7	259.1	192.0	477.3	29.1
Fremantle	348.0	353.0	506.0	337.0	55.3

a. This is the proportion of total general cargo tonnage through each port which is containerised.

Source Port Authorities, personal communication.

(representing one 'twenty foot equivalent' or TEU) being the most common. A more recent development has been the introduction of the 8 feet 6 inch high ISO container, which is used extensively in the Australian trade. Forty foot containers are also fairly common, particularly in trade with North America.

There are various types of containers based on these dimensions such as open top, open sides, ventilated and refrigerated. The weight of empty, dry 20 foot containers varies between 2100 kilograms and 2800 kilograms, while a 40 foot container weights 3080 kilograms. Refrigerated containers are used in the shipment of perishable goods such as meat and are often termed 'reefers', and weigh between 2700 kilograms and 3300 kilograms for a 20 foot container.

Other terms used when describing the movement of cargo in containers are Full Container Load (FCL), which is a container holding cargo for only a single consignee, and Less than Container Load (LCL) which is a container holding cargo for several consignees or from several consignors. Non-bulk cargo which is not containerised is referred to as break-bulk.

Containerised cargo

Containerised cargo accounts for approximately 60 per cent of total Australian non-bulk cargo tonnage. The major ports of Sydney and Melbourne handle approximately 80 per cent of the total Australian container trade while the five major Australian ports (shown in Table 2.6) account for approximately 96 per cent. This shows the very centralised nature of the container trade in Australia.

Tables 2.5 and 2.6 show that nearly 80 per cent of Melbourne's non-bulk trade comprises containerised cargoes while for Sydney over 75 per cent is containerised. Containerised cargo movements through Brisbane and Fremantle account for approximately 70 per cent and 55 per cent of each port's respective non-bulk trade.

It can be seen in Table 2.6 that for Sydney, Melbourne and Brisbane, containerised cargo accounts for a greater proportion of non-bulk export trade than it does of the non-bulk import trade through these ports. This is especially so for Brisbane where containerised cargo accounts for almost 90 per cent of non-bulk exports and only 44 per cent of non-bulk imports. For the smaller ports of Fremantle and Adelaide, containerised cargo represents approximately the same proportion of non-bulk imports and exports respectively.

SHORE-BASED SHIPPING COSTS AND OCEAN FREIGHT RATES

There are various shore-based charges involved in importing and exporting containerised goods by sea. These represent costs to the users of the chain. In general, the magnitudes of the shore-based user costs presented here are based on charges associated with the

various activities in the shore-based shipping chain as discussed in Chapter 1. These activities include:

- packing and unpacking containers;
- land transport of containers;
- stevedoring;
- cost of preparing Customs entry and other documentation; and
- port and related charges, including tugs and pilotage.[3]

These and other charges vary considerably depending on the commodities involved, ports of loading and discharge, and other factors. Certain shore-based charges are included in the ocean freight rate, depending on the arrangements made between the importer or exporter and the shipping line.

The relative sizes of the various charges are illustrated in Figures 2.1 and 2.2 for the two major containerised commodities, greasy wool and boneless beef, on specific routes.

Figure 2.1 shows total cost of shipping greasy wool (in containers) from Newcastle via Sydney and Genoa to Trieste in September 1986. This includes the freight rates for land transport by rail at both ends of the voyage. The total user cost of dumping, marking and packing is a major factor in exporting wool. As Figure 2.1 illustrates, the ocean freight rate of $1 900 per TEU includes all port and stevedoring charges as well as transport charges from wool dump to wharf, incurred in Australia. It also includes stevedoring and wharfage charges overseas. Land transport to the wool dump and dumping, marking and packing charges are not included in the ocean freight rate.

Most of the wool is transported as FCL cargo and hence is unpacked at the factory rather than at a depot, though a small amount sent as LCL cargo is unpacked at depots. Unpacking charges at Italian depots were approximately $1135 per TEU in September 1986. These charges have risen markedly since 1985, largely due to the devaluation of the Australian dollar.

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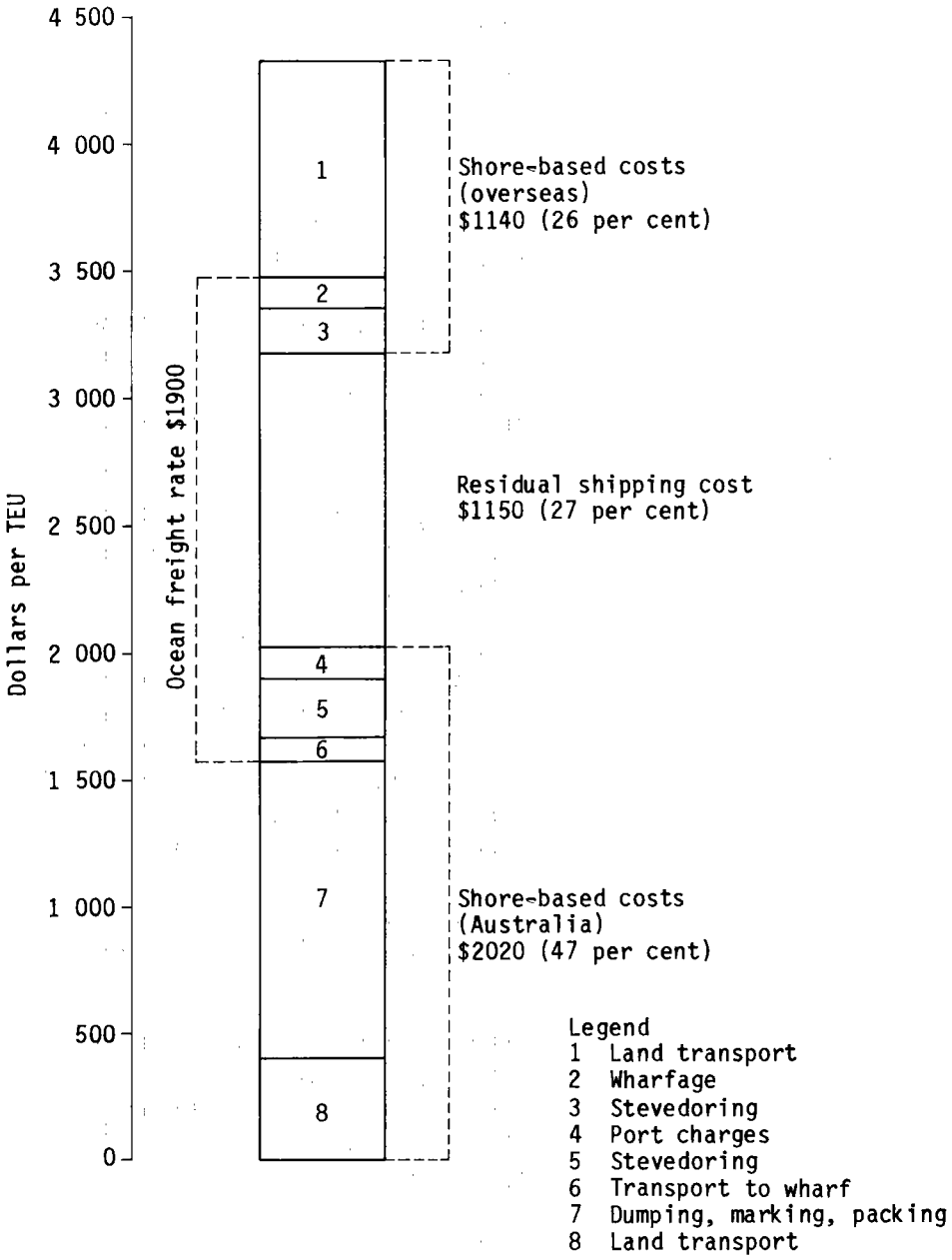
3. These activities, although not 'shore-based', are associated with moving the ship and hence the cargo to and from the wharf and result in costs imposed 'at the Australian end' of a voyage. Hence costs resulting from the use of Australian facilities and services in bringing a ship to port (or moving it away from port) have been included in this study.



Sources Australian Wool Corporation, personal communication.
DoT, personal communication.

Figure 2.1 Total cost of shipping greasy wool from Newcastle via Sydney and Genoa to Trieste, September 1986

Shore-based shipping costs in this example total $2 020 per TEU in Australia and $1 140 per TEU overseas. As can be seen from the diagram, these represent 47 per cent and 26 per cent respectively of the total transport and handling costs of some $4 300 per TEU. Not too much should be made of the difference between the shore-based costs at both ends of the voyage since these costs cover different procedures. Nevertheless, the proportion the shore-based costs represent of the total transport cost is substantial.

Figure 2.2 shows total costs of railing boneless beef (in refrigerated containers) to Brisbane and shipping it to Philadelphia in September 1986. The Australian Meat and Livestock Corporation (AMLC) 'House to Pier'[4] maximum consolidated rate is shown. This rate is based on 16.3 tonnes per TEU. Actual rates may be lower.

Shore-based costs amount to $1 350 per TEU in Australia and $1 685 per TEU overseas. These represent 22 per cent and 27 per cent respectively of the total transport and handling cost of some $6 250 per TEU. A 'House to Pier' rate of approximately $6 000 is charged by the shipping line. Of this, the total Australian and overseas shore-based cost component totals $2 785.

The two examples given involve relatively large shore-based costs. Dumping, marking and packing of wool is an expensive operation, and the shipping of beef involves a large land transport cost. The shore-based costs for a non-refrigerated FCL export container which originates in the urban area adjacent to a port of export may be as low as $660 per TEU (see Appendix I). This is less than half the cost associated with wool and beef cargoes described above. However, the shore-based costs for an LCL export container are some $1 620 per TEU which is comparable to wool and beef FCLs. These costs are discussed in more detail in subsequent chapters.

THE SIGNIFICANCE OF SHORE-BASED SHIPPING COSTS

The shore-based shipping costs associated with Australia's total non-bulk exports (that is, containerised and break-bulk cargo) are

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4. 'House to Pier' is a rate set by the shipping lines to cover all costs involved in shipping the meat from the Australian abattoir to the pier at the port of destination. The rate excludes packing and wharfage in Australia and transport from the wharf overseas. A 'House to House' rate is also available to meat exporters. This rate covers the additional cost of moving meat to an inland importer's cold-store but avoids the higher charges incurred in unpacking on the wharf which are included in the 'House to Pier' rate.

estimated to be approximately $730 million in 1984-85.[5] The total value of non-bulk exports from Australia in 1984-85 was approximately $11 200 million, thus shore-based costs represent some 6.5 per cent of the value of non-bulk exports. The shore-based costs associated with Australia's non-bulk imports were approximately $720 million in 1984-85[6] and the value of non-bulk imports was some $18 110 million in 1984-85. Hence, shore-based costs represent approximately 4 per cent of the value of non-bulk imports. In total, shore-based costs associated with Australia's non-bulk trade amounted to some $1 500 million in 1984-85. These estimates are based on the total direct shore-based costs involved in shipping Australia's non-bulk trade. Indirect costs such as excessive demurrage and costs associated with disruptions to the transport and handling system have not been included. These costs are often of more concern to non-bulk shippers and consignees than the direct (financial) costs.

General cost considerations

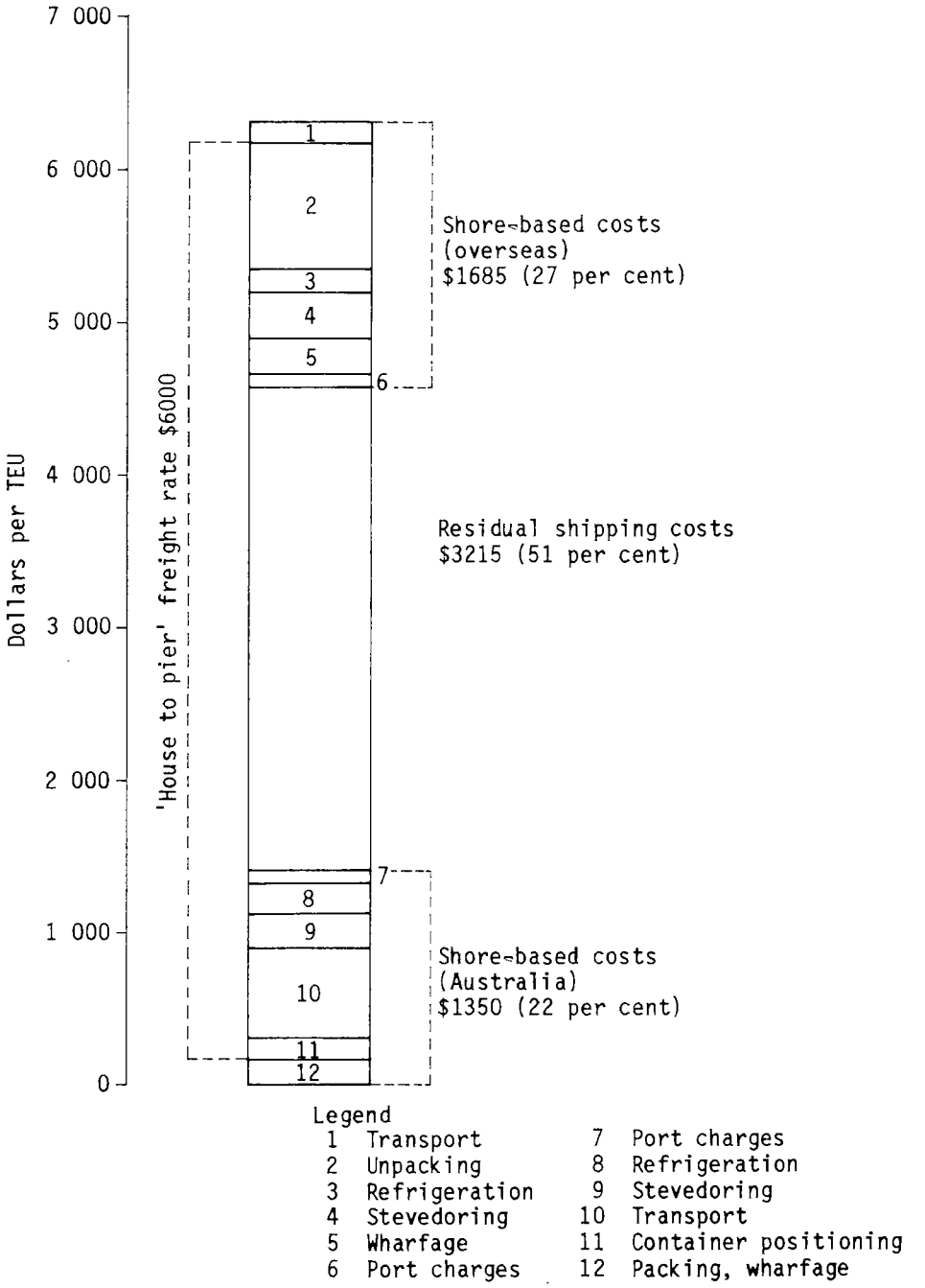
In a perfectly competitive situation, the charges associated with the provision of shore-based shipping services would properly reflect the costs of the resources employed. This should produce an economically efficient outcome. Where there are distortions in the market system for the provision of shore-based shipping services, an appreciation of the additional costs associated with those distortions can be obtained by comparing user charges and service levels with those which would occur in the absence of distortions (that is, when the services are being provided in the most economically efficient manner).

In the context of the shore-based shipping activities, it is extremely difficult to quantify actual costs incurred over and above those that would be associated with the most economically efficient provision of the services. For these activities the major contributing factors to the costs of market distortions are as follows.

Direct costs of market distortions

Reliable estimates of the direct component of the costs of excess resources are difficult to obtain. However, there are some general indications which can be obtained from the respective charges set for somewhat comparable activities by international and trans-Tasman container depots for packing and unpacking containers, from the respective lift-on and lift-off charges set for containers at

5. This figure was derived from the estimates of shore-based shipping costs shown in Appendix I and Australia's total non-bulk exports.
6. This figure was derived from the estimates of shore-based shipping costs shown in Appendix I and Australia's total non-bulk imports.



Sources DoT, personal communication. Australian Meat and Livestock Corporation, personal communication.

Figure 2.2 Total cost of shipping boneless beef from Townsville via Brisbane to Philadelphia, September 1986

terminals and at rail yards operated by domestic freight forwarders, and from some comparisons of labour rates. Based on these very broad comparisons, the direct costs of excess resources associated with Australia's non-bulk shore-based shipping chain could be in excess of $250 million (or some 17 per cent of the estimated total shore-based shipping costs presented above).

Indirect costs of market distortions

The indirect costs of market distortions associated with the shore-based shipping chain include these components:

- delays to cargo, resulting in higher inventory costs or costs associated with production disruptions;
- loss of potential markets due to a poor or unreliable level of service in the transport chain;
- demurrage and penalty storage charges;
- delays in the turn-around of ships; and
- loss of productivity in other areas such as cargo stowage.

A number of these costs are discussed in more detail in this and subsequent chapters. Many of these components are not included in the estimate of $1 500 million for Australia's shore-based costs presented previously. Probably the cost component which is of most concern, particularly to exporters, and yet is also the most difficult to quantify relates to the potential loss of overseas markets due to poor service quality in the transport chain. This area is beyond the scope of the present study.

Indicative shore-based costs

Increasing shore-based shipping costs have the potential to force Australian exporters to raise the prices at which they sell their products, which could result in reduced demand for Australian exports. Similarly, higher shore-based shipping costs have the potential to increase the prices at which imported goods can be offered in domestic Australian markets and thereby reduce the demand for imported goods, as well as domestically manufactured goods using imported components. Thus, in principle, increases in shore-based costs have the potential (through the price mechanism) to restrict the levels of both Australian imports and exports.

Tables 2.7 and 2.8 show indicative shore-based shipping costs (as defined previously) incurred in Australia as a proportion of the value of various non-bulk import and export commodities. For most commodities shown in the tables it is assumed that the goods are

TABLE 2.7 INDICATIVE SHORE-BASED SHIPPING COSTS[a] AS A PROPORTION OF THE VALUE OF NON-BULK IMPORTS, 1984-85

Commodity	Value per tonne ($)	Value per TEU ($)	SBSC[b] (per cent of value) FCL	LCL
Newsprint	520	6 800	10.9	..
Printing/writing paper	730	13 200	5.6	13.2
Other paper	1 200	21 700	3.4	8.0
Cork/wood manufactures	1 300	11 400	6.5	15.3
Textile yarns & fabrics	3 800	31 900	2.3	5.5
Knitted & crocheted fabric	6 000	43 500	1.7	4.0
Made-up textile articles	2 100	32 300	2.3	5.4
Knitted apparel	9 500	64 300	1.2	2.7
Footwear	6 300	42 500	1.7	4.1
Rubber tyres and tubes	2 500	16 900	4.4	10.3
Bricks, tiles, pipes	550	9 900	7.5	17.6
Furniture & parts	1 700	19 000	3.9	9.2
Printed matter	4 000	61 800	1.2	2.8
Plastic ware	2 600	31 400	2.4	5.5
Toys, sporting goods	4 800	36 900	2.0	4.7
Passenger motor vehicles, in crates	7 000	..	1.9	
Passenger motor vehicles, assembled	9 500	..	1.1	
Household appliances	5 600	37 700	2.0	4.6
Agricultural machinery	4 600	76 900	1.0	2.3
Construction machinery	4 400	55 200	1.3	3.2
Industrial machinery	7 600	86 200	0.9	2.0
Electrical machinery	7 600	74 400	1.0	2.3

a. Shore-based shipping costs (SBSC) incurred in Australia.
b. From Table I.1 for all containerised commodities, SBSC per TEU are $760 for FCLs and $1 760 for LCLs. SBSC are $130 per tonne for passenger motor vehicles in crates and $105 per tonne for assembled passenger motor vehicles.

.. Not applicable.

Note Value refers to FOB value at overseas port.

Source ABS (1986d). DoT, personal communication.

TABLE 2.8 INDICATIVE SHORE-BASED SHIPPING COSTS[a] AS A PROPORTION OF THE VALUE OF NON-BULK EXPORTS, 1984-85

Commodity	*Value per tonne ($)*	*Value per TEU ($)*	*SBSC[b] (per cent of value)*	
			FCL	*LCL*
Wool, greasy	5 300	63 300	2.8	..
Boneless beef	2 300	35 800	3.4	..
Iron/steel	600	..	5.8	..
Fruit, bottled or canned	700	12 700	5.0	12.6
Dried milk	1 300	17 500	3.7	9.1
Animal foods	460	7 100	9.0	22.5
Industrial machinery	7 400	84 000	0.8	1.9
Electrical machinery	6 100	59 500	1.1	2.7
Household appliances	5 800	38 800	1.6	4.1
Passenger motor vehicles unassembled	5 600	50 400	1.3	3.2
Motor vehicle parts	4 100	73 800	0.9	2.2
Furniture & parts	3 300	36 900	1.7	4.3
Photographic/scientific apparatus	9 400	127 400	0.5	1.3
Printed matter	4 900	75 700	0.8	2.1
Plastic ware	4 000	47 300	1.4	3.4
Toys, sporting goods	6 200	47 600	1.3	3.4
Plumbing, heating, lighting fixtures	4 400	25 600	2.5	6.3

a. Shore-based shipping costs (SBSC) incurred in Australia.
b. From Figures 2.1 and 2.2 SBSC per TEU for FCLs for greasy wool are $2 020 and for boneless beef are $1 350. For all other containerised commodities, SBSC per TEU for FCLs are $660 and for LCLs are $1 620. Precise figures and description of iron and steel are not available for publication due to confidentiality. Shore-based costs are estimated to be $35 per tonne.

.. Not applicable.

Note Value refers to FOB value.

Source ABS (1986d). DoT, personal communication.

containerised, the exceptions being imports of passenger motor vehicles, both assembled and completely knocked down (CKD), and exports of iron and steel. Appendix I outlines the assumptions behind the estimates of shore-based shipping costs for each commodity.

FCL cargo

Based on the information contained in Table 2.7, Figure 2.3 illustrates Australian shore-based shipping costs as a proportion of the value of selected FCL imports. As noted previously, most non-bulk imports tend to be manufactured goods which have a comparatively high unit value, generally in excess of $1 000 per tonne. As Figure 2.3 indicates, shore-based shipping costs often represent less than 5 per cent of the value of these goods. Furthermore, the value of the goods has been estimated using the FOB value at the overseas port. Shore-based shipping costs would represent a slightly lower proportion of the value of the goods if ocean freight rates, shore-based costs incurred in Australia and import duties were included.

Based on Table 2.8, shore-based shipping costs are shown as a proportion of the value of selected FCL exports in Figure 2.4. As was the case for FCL imports, most FCL export commodities tend to be valued in excess of $1 000 per tonne and shore-based costs often represent less than 5 per cent of the value of the goods.

One way to estimate the sensitivity of Australia's containerised trade to shore-based shipping costs is to investigate the possible effects of a reduction in these costs on the prices of the goods traded and hence on the levels of demand for them. For illustrative purposes the effects of a reduction of 20 per cent in shore-based shipping costs are described.[7]

Taking the illustrative situation of an FCL for which the shore-based shipping costs in Australia amount to 5 per cent of cargo value, a 20 per cent reduction in these costs represents 1 per cent of the value of the FCL cargo. Thus, at a very broad level, the price to the consignee could be reduced by 1 per cent to maintain the price received by the shipper, or the price received by the shipper could be increased, maintaining the price to the consignee. Selected import and export commodities with unit values less than $1 000 per tonne are listed in Tables 2.9 and 2.10. Shore-based shipping costs for these commodities might represent some 10 to 15 per cent or more of the

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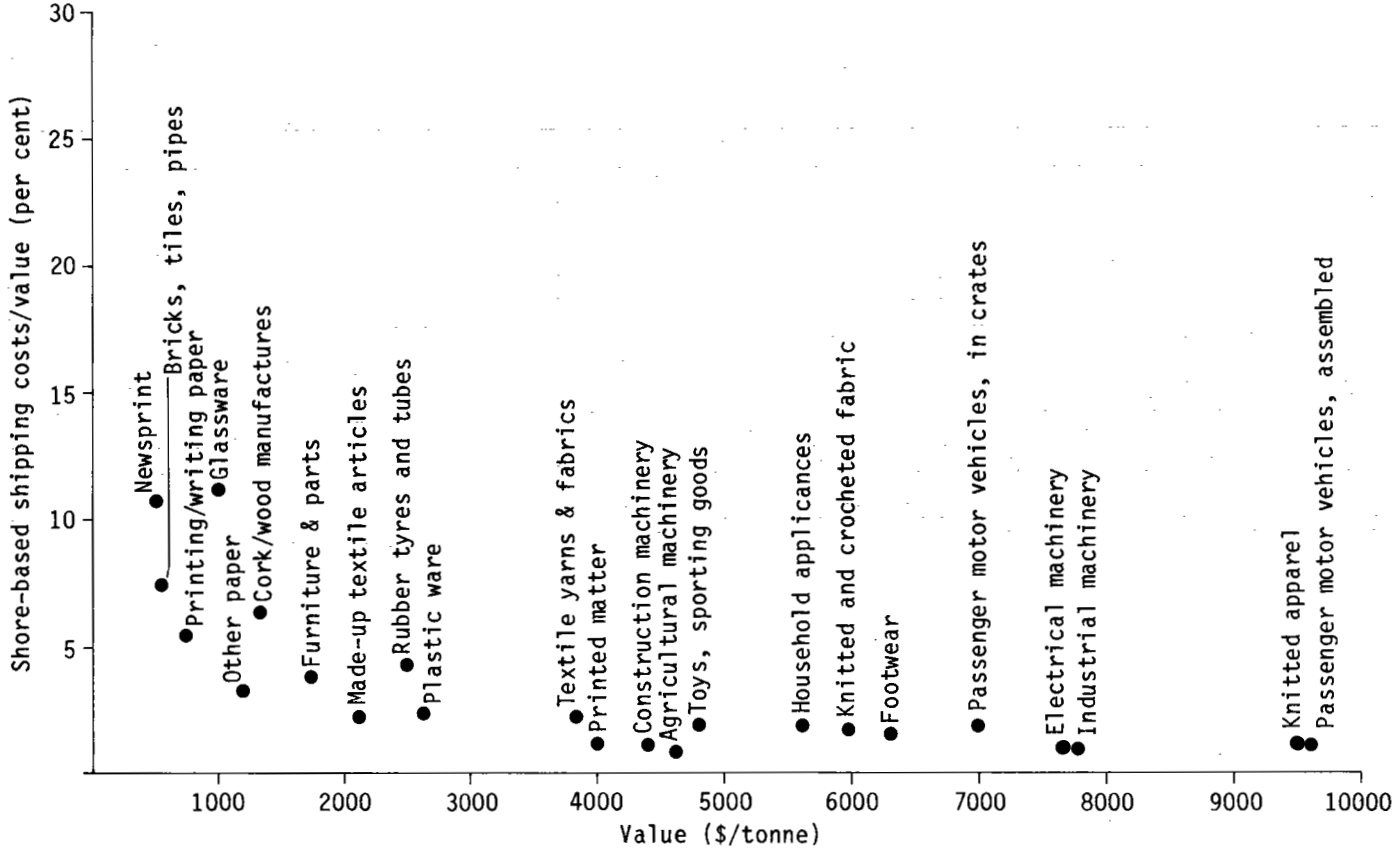
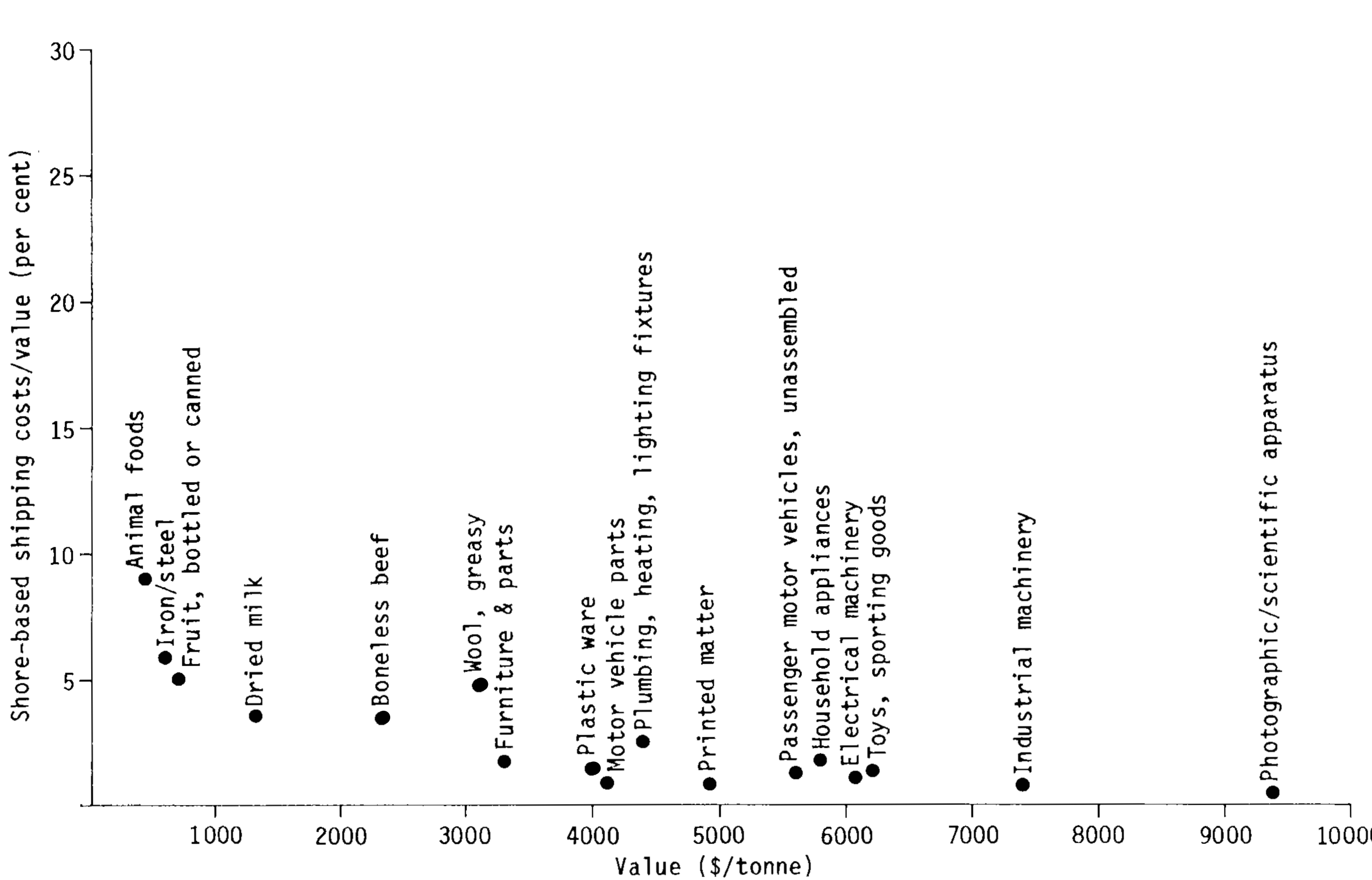
7. It will be shown later that this figure is in line with an estimate made of the direct costs of market resources associated with Australia's shore-based transport and handling activities.



Note Motor vehicles in crates and assembled motor vehicles are not containerised

Sources ABS (1986d). BTE estimates. DoT, personal communication.

Figure 2.3 Shore-based shipping costs as a proportion of the value of Australian FCL imports, 1984-85



Note Iron/steel not containerised

Sources ABS (1986d). BTE estimates. DoT, personal communication.

Figure 2.4 Shore-based shipping costs as a proportion of the value of Australian FCL exports, 1984-85

value of the goods, hence a 20 per cent reduction in shore-based costs would represent about 2 to 3 per cent of value. The relative strengths of demand and supply would determine how such savings might be distributed between producers and consumers.

LCL cargo

Using information from Tables 2.7 and 2.8, shore-based costs are expressed as a proportion of the value of LCL imports and LCL exports in Figures 2.5 and 2.6 respectively. The shore-based costs per tonne for the shipment of the same goods in an LCL container can be twice those for the shipment of goods in an FCL container. This is largely due to the increased cost of packing and unpacking an LCL container and to the increased land transport cost associated with moving a number of relatively small consignments between the packing and unpacking station (depot) and a variety of other locations.

As Figures 2.5 and 2.6 indicate, shore-based costs generally represent less than 10 per cent of the value of goods imported and exported in LCL containers. This implies that a 20 per cent reduction in shore-based costs might enable prices of the goods to be reduced by up to 2 per cent. However, for relatively low unit value commodities, shore-based costs of shipping them as LCL cargo can represent up to 30 per cent of the value of the goods. In these cases, it is likely that the high costs preclude shipment in LCL form. A 20 per cent reduction in the shore-based costs of shipping an LCL container might enable the price to the consignee of relatively low value goods to be reduced by some 6 per cent (or the price received by the shipper increased by 6 per cent).

IMPLICATIONS FOR AUSTRALIAN INDUSTRY

The level of Australia's overseas trade is influenced by both the cost and quality of service of the shore-based transport and handling system. This section addresses each of these factors in turn.

Reduction in shore-based costs

It has been demonstrated that the direct shore-based costs of Australia's international non-bulk trade represent approximately 5 per cent of the value of the goods comprising many FCL imports and exports (and perhaps twice this proportion for LCLs). The effect on the level of trade of a reduction in this shore-based shipping cost will vary depending on the characteristics of the market for each commodity.

Bilateral and multilateral trade agreements between nations and the increasing imposition of trade barriers such as subsidies, quotas and

TABLE 2.9 SELECTED LOWER VALUE IMPORT COMMODITIES, 1984-85
(dollars)

Commodity	*Value per tonne*	*Value per TEU*	*SBSC for FCLs*[a] *(per cent of value)*
Rice	490	8 900	8.3
Citrus fruit	430	4 800	15.4
Peanuts	880	7 900	9.4
Non-alcoholic beverages	450	7 400	10.0
Animal foods	640	9 900	7.5
Newsprint	520	6 800	10.9
Fibreboard	260	4 800	15.4
Cement	260	4 600	16.1
Bricks, tiles & pipes	550	9 900	7.5
Glassware	980	6 600	11.2

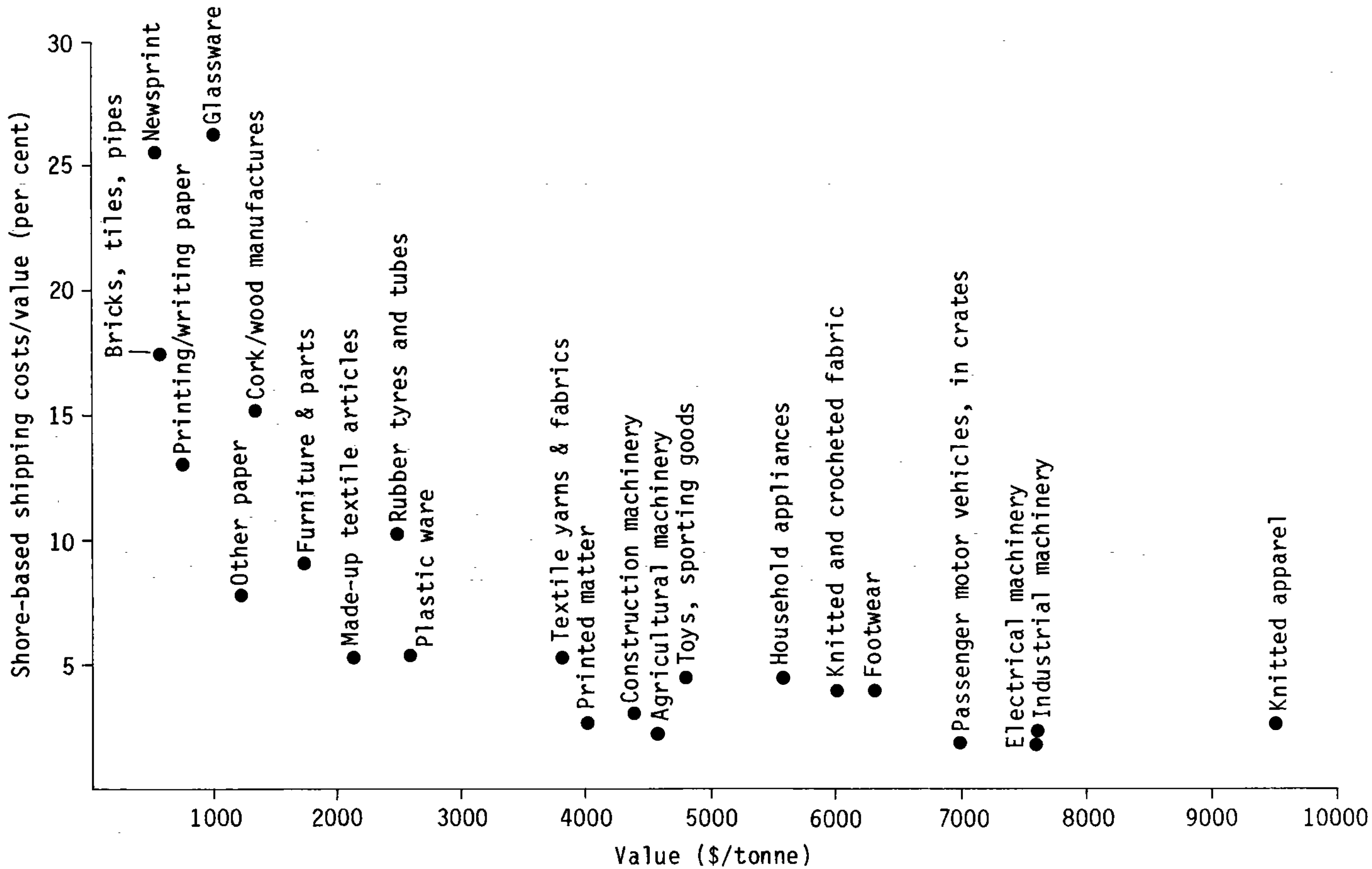
a. No LCL values are provided for these low value commodities as costs of transport in this form would generally be too prohibitive.

Note Value refers to FOB value at overseas port.

Source ABS (1986d). BTE estimates.

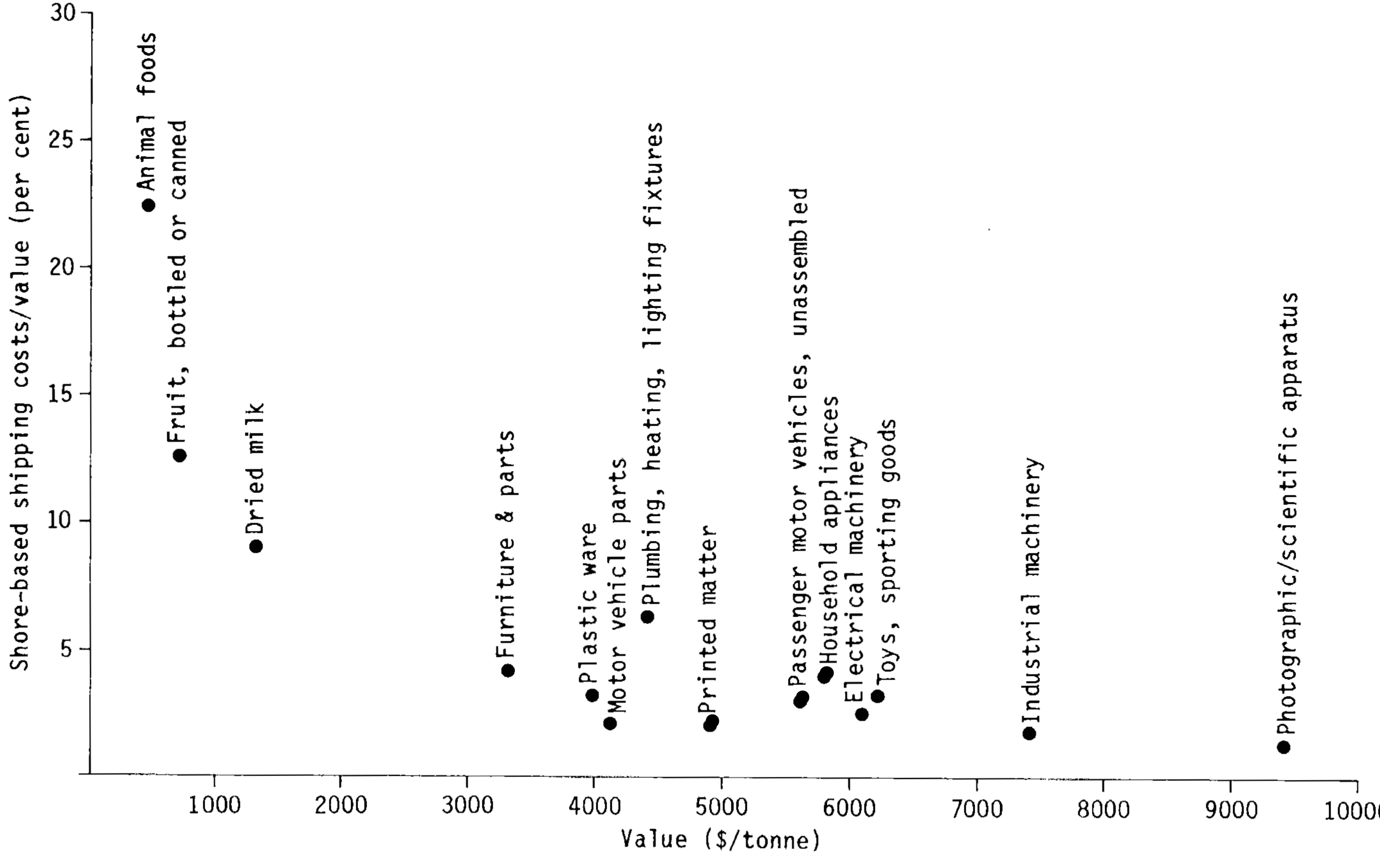
tariffs reduce Australia's ability to compete in some export markets. Australia also imposes tariffs and in some cases quotas on certain classes of imported goods. However, whereas foreign trade barriers can adversely affect the quantity of Australia's exports due to the nature of Australia's major non-bulk export commodities (for example, primary products where world competition is great), import trade barriers have less effect on the level of imports. This is due to the nature of Australian imports, comprising mainly manufactured goods which cannot be competitively produced in the domestic environment, resulting in low import substitutability.

Hence, imports are likely to be less price sensitive than exports in the short run due to the absence of domestic substitutes, and less likely to vary in the long run due to unfavourable conditions for competitive domestic production including insufficient scale economies. Exports are generally relatively price sensitive due to more intense international competition, price sensitivity rising over time as established contracts expire and are renegotiated.



Sources ABS (1986d). BTE estimates. DoT, personal communication.

Figure 2.5 Shore-based shipping costs as a proportion of the value of Australian LCL imports, 1984-85



Sources ABS (1986d). BTE estimates. DoT, personal communication.

Figure 2.6 Shore-based shipping costs as a proportion of the value of Australian LCL exports, 1984-85

TABLE 2.10 SELECTED LOWER VALUE EXPORT COMMODITIES, 1984-85
(dollars)

Commodity	*Value per tonne*	*Value per TEU*	*SBSC for FCLs*[a] *(per cent of value)*
Apples, pears and quinces	600	6 100	10.5
Citrus fruit	470	5 200	12.3
Vegetables	480	8 700	7.4
Animal foods	460	7 100	9.0
Waste paper	150	2 600	24.6
Paperboard etc	470	8 500	7.5
Cement	80	1 500	42.7
Bricks, tiles & pipes	430	7 700	8.3
Pig iron	330	5 900	10.8
Iron/steel blooms & billets	220	4 000	16.0
Lead, primary	540	9 800	6.5

a. No LCL values are provided for these low value commodities as cost of transport in this form would generally be too prohibitive.

Note Value refers to FOB value.

Source ABS (1986d). BTE estimates.

Generally, any reduction in shore-based shipping costs which is passed on to the consumer will result in an increase in demand for Australian exports as well as increasing domestic demand for imports. The implications of this are that Australian export industries should realise an increase in output, and import competing industries a fall in output. The net effect on output would be directly dependent on both the relative saving passed on to the domestic and overseas consumers, and the relative price sensitivities of exports and imports.

Assuming a greater price sensitivity for exports than for imports, a reduction in shore-based shipping costs, if passed on, should realise a net gain both in domestic output and foreign trade earnings. However, to place the situation in perspective, as shore-based shipping costs form only a small part of total consumer expenditure on non-bulk imports and exports, it is estimated that a reduction of 20 per cent in these costs would realise less than 1 per cent increase in both domestic output and net foreign trade earnings from these commodities.

Improved quality of service

The previous sections discussed the implications of a reduction in shore-based shipping costs. However, that discussion took no account of the operational characteristics of the shore-based transport and handling chain which, as noted previously, result in additional indirect costs, the levels of which are difficult to quantify. The operational characteristics referred to can loosely be encompassed by the term 'quality of service'. This section examines the concept further.

The users of shipping services are affected by various aspects of quality of service. Frequency of sailing is of major importance, but this is dependent on the schedules of shipping lines and is not directly related to the shore-based transport system (although any disruptions alter the planned schedules). Aspects of quality of service that relate to the shore-based transport and handling system include:

- speed
- reliability
- convenience
- loss and damage.

A slow and unreliable service has the potential to impose additional costs on consignees by forcing them to hold larger inventories than they would otherwise. Consignees will need to hold larger stocks to minimise the possibility that they will run out of goods if a future shipment is delayed. There are several areas where delays can occur in the shore-based shipping operation, including:

- vessel delay in obtaining access to a berth;
- delay in loading and unloading a vessel;
- delay in clearance of documentation;
- delay in loading and unloading land transport (particularly trucks) at terminals and depots; and
- delay in packing and unpacking of goods at a container depot.

Various industries in Australia and overseas are trying to reduce inventory holdings through improved inventory management techniques which, of course, make those industries all the more dependent on the reliability of the total transport system. For example, an overseas motor vehicle manufacturer importing components from Australia can incur substantial costs if the supply of components is disrupted.

These costs may take the form of additional costs to expedite the delivery of particular consignments or involve loss of production due to temporary plant closure. Clearly, if such disruptions were frequent the importer would begin to consider alternative sources of supply. On the other hand it is also important to note that some disruptions should be forseen and taken into account. Planned disruptions to the transport and handling system include public holidays, as well as conditions which are part of formal industrial awards. Any disruptions (whether planned or unplanned) lead to increased costs, but costs associated with foreseen contingencies can be minimised with appropriate management policies.

The convenience of using a particular transport system can also affect the overall level of trade. It is desirable, for example, that a customer can readily obtain the type of container that is most appropriate for a particular shipment, can readily enquire about the status of a shipment in transit and can expedite the transport of a shipment in an emergency. The frequency and extent of any loss or damage to goods can also influence the level of trade.

Thus, an improved quality of service from shore-based operations has the potential to generate an increase in the overall level of trade. This increase in trade would be additional to any increase resulting from a reduction in the direct financial cost of shore-based shipping operations.

CONCLUDING COMMENTS

Non-bulk cargo accounts for some 55 per cent of the value of Australia's total foreign trade. Containerised goods are a major component of this non-bulk cargo, representing over 60 per cent of Australia's total non-bulk tonnage.

The total direct shore-based shipping costs associated with Australia's non-bulk trade are estimated to be some $1 500 million in 1984-85. An important concern about shore-based shipping costs is that this large amount of expenditure may be significantly restricting the overall level of Australia's non-bulk trade. However, it has been noted that even a significant reduction in shore-based shipping costs would have a limited effect on overall prices, and hence on aggregate demand. Nevertheless, it is possible that some firms which are currently only marginally viable could be assisted by such a reduction in their costs.

Several factors bear on an assessment of the relative impact of shore-based costs on the demand for non-bulk imports and exports. Exports

overall are of lower unit value than are imports, and since many are rural products they have high land transport costs compared with imports. Both of these characteristics result in shore-based shipping costs in Australia representing a larger component of the value of exports than of imports. Many exports sell into highly competitive world markets whereas many imports are specialised capital goods which are less sensitive to price. Shore-based shipping costs represent a higher proportion of the value of exports and furthermore, the demand for these goods is more sensitive to price. The demand for exports is therefore more affected by shore-based shipping costs than is the demand for imports.

The level of non-bulk trade is also affected by the quality of shore-based services as well as their direct cost. Aspects of quality of service include speed, reliability, convenience and loss and damage.

An improvement in the quality of shore-based shipping services has the potential to increase the level of trade in existing markets and to enable Australia to penetrate new markets in which Australian exporters were not previously competitive. The evidence suggests that overall level of non-bulk trade would be more responsive to an improvement in the quality of shore-based shipping services than to a reduction in their direct cost.

CHAPTER 3 THE TRANSACTION CHAIN

The task of importing and exporting goods in containers involves physical and administrative systems that interact and are interdependent. The first part of this chapter examines the shore-based transport and handling systems relating to the import container trade and includes a series of diagrams and tables to describe the physical, financial and documentary transactions involved. This sequence of activities is termed the 'transaction chain'. The export container trade is then examined in a similar fashion to the import container trade. By drawing on material presented in Chapter 2 and Appendix I, the latter part of this chapter presents a general overview of the costs associated with each stage of the physical system for both the import and export container trades.

IMPORT CONTAINER TRADE

To understand the transaction chain for the import container trade, it is necessary to realise that the importer, when deciding how to organise the importation process, may have a number of options to choose from. A discussion of these options, and the factors which may influence their selection, follows.

The first step in the process of importing goods in containers begins with the lodging of the initial purchase order. This is lodged by the Australian importer with an overseas supplier and prompts that supplier to make the goods available.

A considerable amount of administrative organisation and associated documentation is required to import goods, and it is common for importers to employ freight forwarders and/or customs agents to undertake this task.

Following an importer's decision to purchase goods from an overseas supplier, a number of options may be available as to which party (that is, shipper or importer) should be responsible for various aspects of the transport arrangements. These responsibilities can lie within a wide spectrum of possibilities ranging from the importer taking full

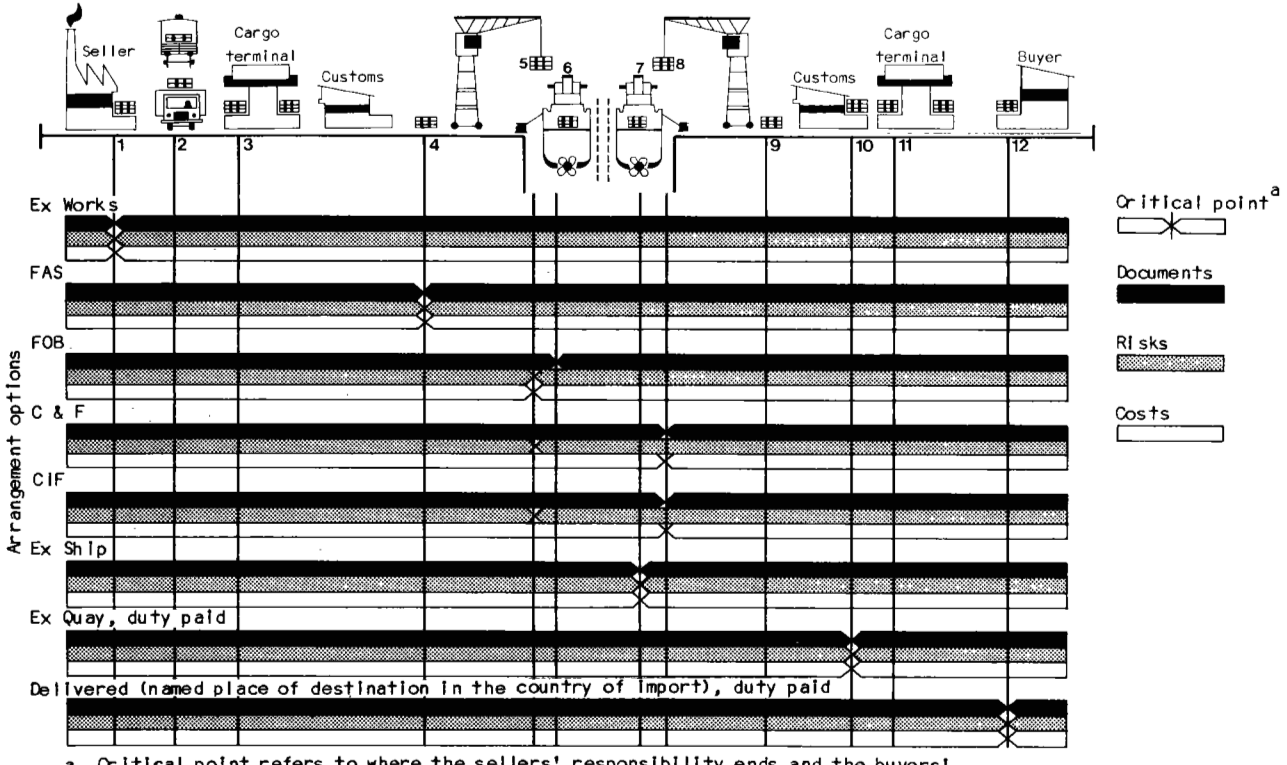
responsibility for the movement of the goods outside the supplier's premises, to the overseas supplier taking full responsibility.

There are commonly-used terms within the shipping industry that describe the division of responsibilities between the overseas supplier and the importer. The four most common arrangements are as follows:

- Free on board (FOB) - the overseas supplier is responsible for arranging and bearing the costs of transporting the goods to the port of origin and loading them onto the ship. The importer is responsible for arranging sea transport and bearing its costs, as well as arranging and bearing the costs of the movement of the goods from the destination port to his premises.
- Free along side (FAS) - the overseas supplier is responsible for arranging and bearing the costs of transporting the goods to the port of origin. The importer bears the responsibility for the shipping of the goods from the port of origin to his premises.
- Cost, insurance, freight (CIF) - the overseas supplier is responsible for arranging and bearing the cost of shipping the goods to the destination port. The importer is responsible for the collection and transport of the goods from the destination port to his premises.
- Cost and freight (C&F) - same as CIF except the importer is responsible for sea freight insurance costs.

The respective responsibilities for various aspects of the import and export processes relating to the above arrangements and other alternatives are illustrated in Figure 3.1. When the respective responsibilities for the transport of goods have been determined, the importer must decide how to undertake the responsibilities he has accepted as part of the transport and documentation task. Importing operations may be broken down into several separate components and considerable blending of activities can, and does, occur. A number of options are available for the importer and include:

- negotiating directly with the relevant parties on an individual basis, including the shipping company or agent, customs and quarantine and land transport operators (road or rail);
- negotiating with the shipping agent or company to provide an extended service which may include arranging land transport; and
- engaging a freight forwarder and/or customs agent to negotiate on the importer's behalf a freight rate which may or may not include land transport and handling, and to arrange some or all of the transporting process. Freight forwarders engaged in international



a Critical point refers to where the sellers' responsibility ends and the buyers' responsibility begins.

Source Adapted from a Mitchell Cotts Pty Ltd diagram.

Figure 3.1 Critical points in international transport: land-sea-land transport arrangements

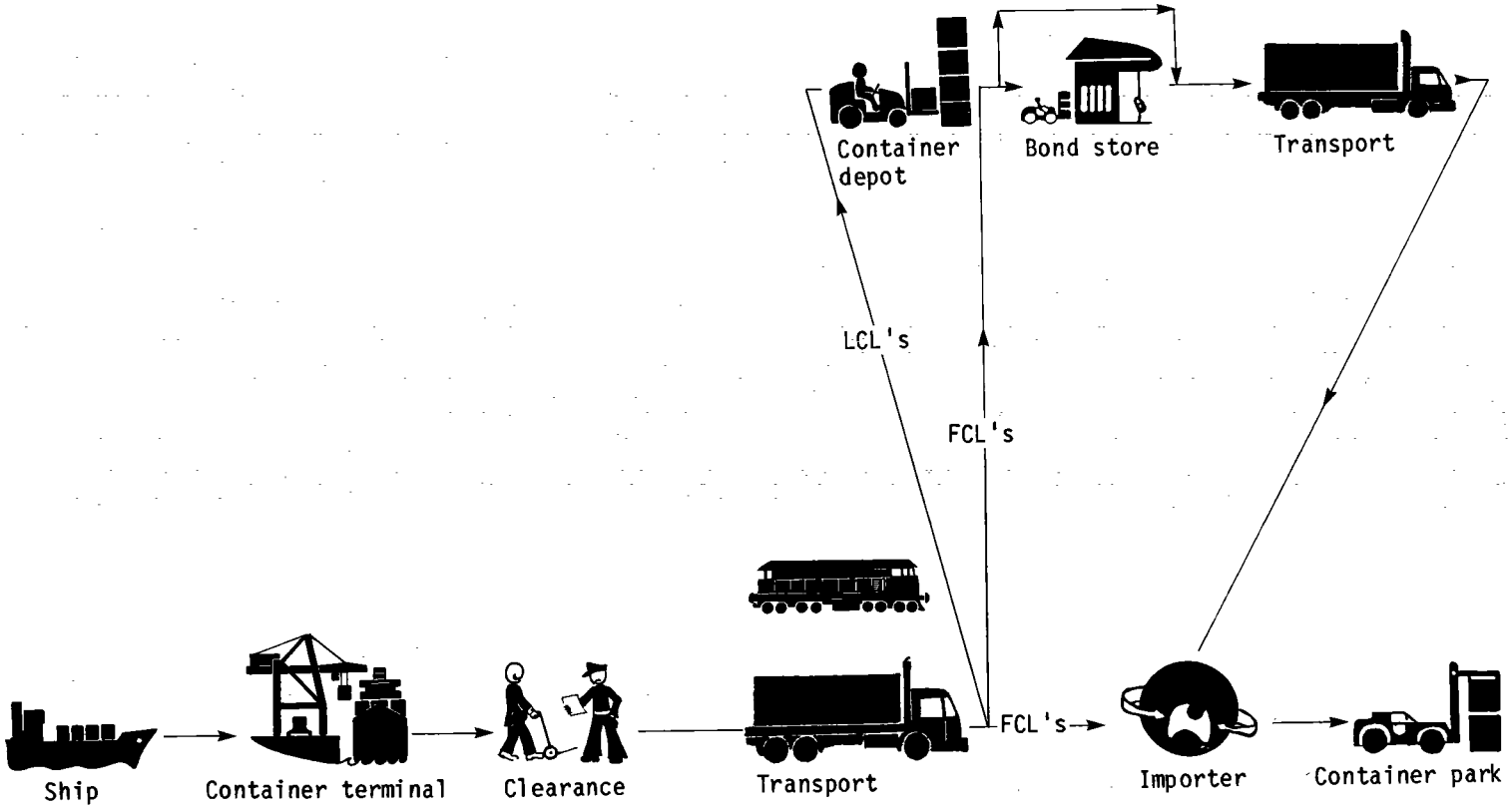
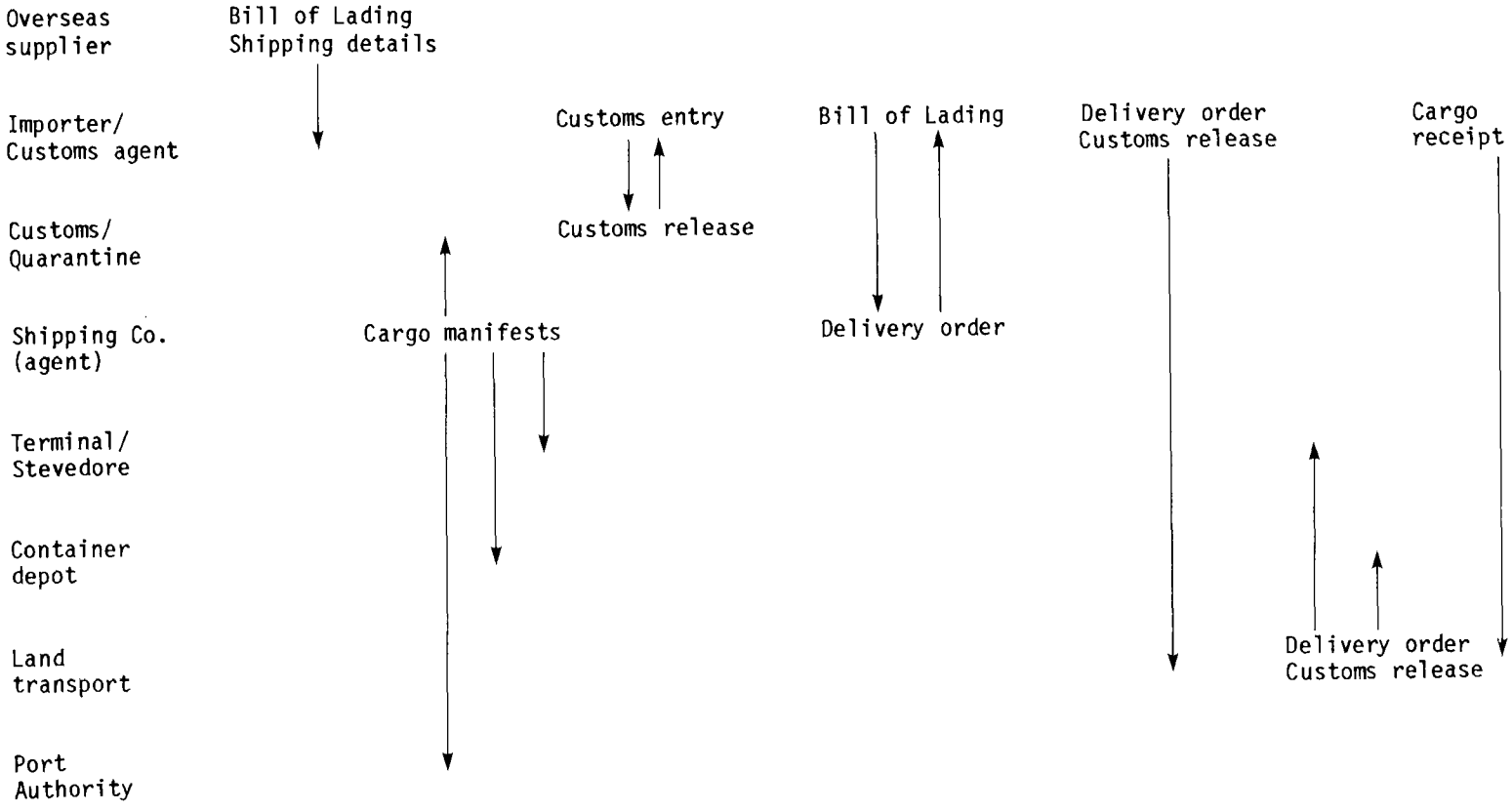
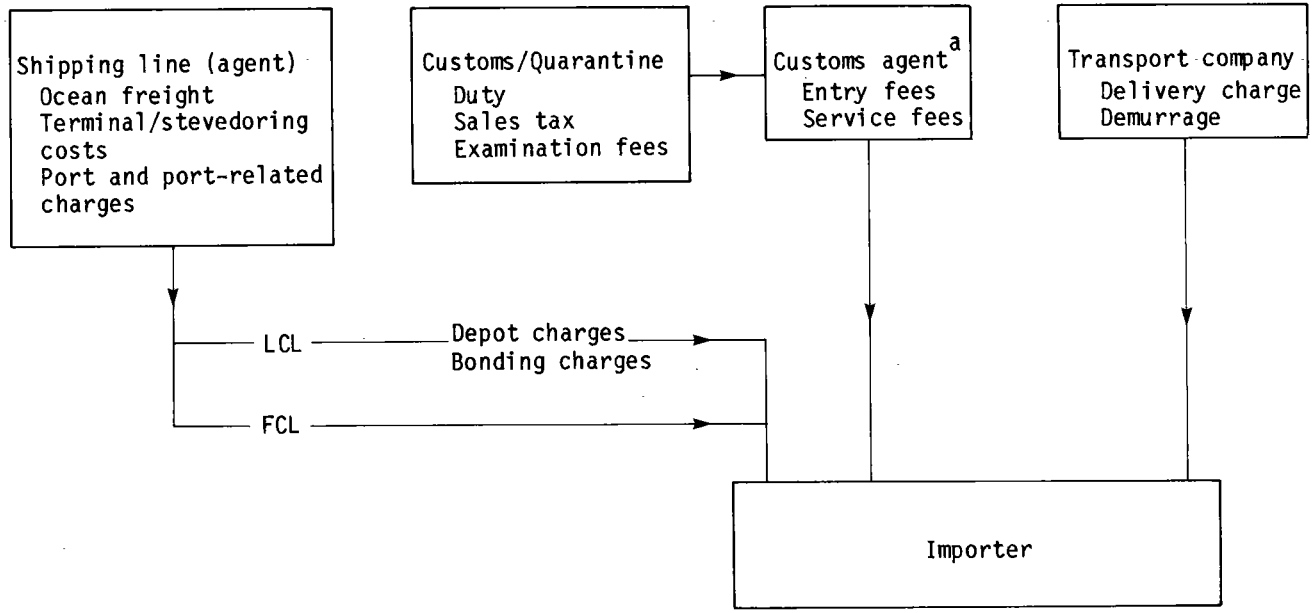


Figure 3.2 Import container trade: physical flow pattern



Source Sealane Pty Ltd (1985).

Figure 3.3 Flow of major documentation associated with imports



a. If a customs agent is not employed all customs/quarantine charges flow direct to the importer.

Figure 3.4 Flow of costs to the importer under FOB arrangements

In an attempt to show the relatively complex interrelationships between the physical, documentary and financial systems, a series of tables (Table 3.1 to 3.6) has been prepared to describe the principal links in the import transaction chain. The tables are based on information contained in Sealane Pty Ltd (1985). For each link, the tables provide general details of the activities taking place, the participants in those activities, the documentation and financial transactions involved in finalising the activities.

Table 3.1 describes the reporting and other procedures involved for an overseas trading vessel to gain entry into an Australian port. This includes giving notice of arrival to various government departments and authorities, and the payment of statutory charges associated with use of shipping facilities.

Table 3.2 reflects the berthing procedures involved from the time a ship enters an Australian port until the ship is ready for stevedoring. These procedures include arranging for a pilot to navigate the ship within the port and for tugs to assist in the positioning of the ship.

Table 3.3 summarises the stevedoring process and associated activities for the import transaction chain. Stevedoring includes the unloading of containers from the ship and loading them onto land transport. Individual items of cargo unpacked at conventional wharves are loaded by the transport carriers. Activities associated with making LCL cargo available from a depot are also covered. The centralisation of cargo for despatch interstate is included in the table. Most of the participants in the shore-based transaction chain are involved in these activities, resulting in a relatively complex set of financial transactions.

Table 3.4 shows the procedures to be followed by the importer, customs agent or freight forwarder in order to gain access to the cargo. Table 3.5 describes these procedures from the perspective of the ship's agent.

Table 3.6 describes the role played by the land transport operator in collecting the cargo from the terminal or depot and delivering the cargo to the importer's premises.

EXPORT CONTAINER TRADE

In most respects the process of exporting containerised cargo is simply the reverse of the importing process described previously. The export procedure generally begins with receipt of a purchase order

from an overseas buyer and ends with receipt of goods by the buyer. As with importers, exporters vary in size and nature and this is reflected in the quantity and type of goods exported. A breakdown of Australia's major non-bulk exports was given in Table 2.4 in Chapter 2.

The major export commodities that are shipped in containers are primary products such as wool, boneless beef and cotton. The responsibility for arranging the conditions of export lies with commodity organisations such as the Australian Wool Corporation and the Australian Meat and Livestock Corporation. These commodity organisations co-ordinate the activities of all the individual producers and negotiate commodity freight rates with the shipping companies. However, other exports such as chemicals and farm machinery are organised by individual firms rather than representative organisations. To this extent there are some similarities to the procedures for imports which, being mainly manufactured goods, are also organised by individual businesses or companies.

The physical movement of the goods is the reverse of the importing process, that is:

- from Australian supplier to Australian port
- from Australian port to overseas port
- from overseas port to overseas importer.

The following discussion is concerned with the first stage and examines the procedures and user costs involved from the point at which the goods are collected from the exporter to point of departure of the ship from the Australian port. As for the import transaction chain previously described, the export transaction chain is very complex and is described in a similar fashion.

The physical, documentary and financial systems for containerised exports are shown in Figures 3.5, 3.6 and 3.7. For these figures and subsequent tables, the terms of the commercial contract are assumed to be FOB. Thus the Australian exporter is responsible for Australian shore-based activities but not the 'blue water' component of the transport costs.

Figure 3.5 gives an overview of the physical system relating to the export container trade by diagramatically representing the different physical flow patterns for exported FCLs and LCLs.

TABLE 3.1 THE IMPORT TRANSACTION CHAIN: REPORTING THE SHIP INWARDS TO AUSTRALIA

Activity	*Participants*	*Documentation*	*Financial transaction*
Vessel operator gives notice of arrival	Ship's agent notifies Port authorities Federal Dept of Transport Australian Customs Service Australian Quarantine Service Trade Press (for publication purposes)	Telex	Part of ship's agent's fee or commission
Vessel reports outside first port of call for clearance to enter the port	As above	Ship's agent sends copy of ship's manifest to Port authority Australian Customs Service Australian Quarantine Service Ship's agent confirms arrival with Federal Department of Transport	Ship's agent pays Harbour and light charges to port authority Navigational aids charge to Federal Department of Transport Australian Quarantine Service for clearance and container inspection Payment recovered by ship's agent for shipping company Shipping company recovers the cost as a component of the freight charge
Ship boarded by various authorities for inspection and clearance granted	Australian Customs Service Australian Quarantine Service		See above

Source Sealane Pty Ltd (1985).

TABLE 3.2 THE IMPORT TRANSACTION CHAIN: BERTHING THE SHIP AT AN AUSTRALIAN PORT

Activity	*Participants*	*Documentation*	*Financial transaction*
Ship operator applies for berth and required services such as pilotage and towage	Ship's agent Port authority	Dangerous cargo list submitted to Federal Department of Transport and port authority	No direct cost
Berth allocated	Port authority Ship's agent	Dangerous cargo handling instructions returned and conveyed to stevedore	Ship's agent pays Pilotage to port authority (except Melbourne) Berthage/tonnage to port authority
Towage	Ship's agent Towage company	Order/invoice	Ship's agent pays towage charges to tug company
Mooring	Ship's agent Launch and lines operator	Order/invoice	Ship's agent pays launch and lines operator
Watchmen on the gangway	Ship's agent Stevedore (in most cases)	Order/invoice	Ship's agent pays the stevedore
			For all of the above transactions payment is recovered by the ship's agent from shipping company. Shipping company recovers the cost as a component of the freight charge.

Source Sealane Pty Ltd (1985).

TABLE 3.3 THE IMPORT TRANSACTION CHAIN: STEVEDORING THE SHIP AND ASSOCIATED ACTIVITIES

Activity	*Participants*	*Documentation*	*Financial transaction*
Cargo details given to container terminal and depot	Ship's agent Container terminal operator/ stevedore Depot operator	Cargo bay plan/storage plan Ship's manifest	Part of overall contract
Customs/quarantine impediment lists passed to container terminal/ stevedore	Australian Customs Service Australian Quarantine Service Ship's agent Container terminal operator/ stevedore Land transport operator Importer/freight forwarder	Quarantine impediment lists Customs Stop Notice	As above
Unloading the ship	Ship's agent Container terminal operator/ stevedore	Ship's manifest and other cargo details	Ship's agent pays container terminal operator/ stevedore Payment is recovered by the ship's agent from the shipping company Shipping company recovers the the cost as a component of the freight charge.

TABLE 3.3 (Cont.) THE IMPORT TRANSACTION CHAIN: STEVEDORING THE SHIP AND ASSOCIATED ACTIVITIES

Activity	*Participants*	*Documentation*	*Financial transaction*
Transfer of LCLs to depot where applicable	Ship's agent Container terminal operator/ stevedore Land transport operator Depot operator	Cartage and delivery order	Ship's agent pays land transport operator Recovered from importer in Basic Service Rate Additional (BSRA)[a] charge levied by the ship's agent
Cargo requiring centralisation is transported to destination	Container terminal operator/ stevedore Road transport operator Railways	Rail/road consignment note Customs permits	Rail and road freight paid by ship's agent and recovered from shipping company Shipping company recovers the cost as a component of the freight charge
Unpack LCL cargo and stack	Depot operator	Container packing list	Paid by ship's agent to depot Recovered from importer in BSRA and similar charges by agent

TABLE 3.3 (Cont.) THE IMPORT TRANSACTION CHAIN: STEVEDORING THE SHIP AND ASSOCIATED ACTIVITIES

Activity	*Participants*	*Documentation*	*Financial transaction*
Delivery of FCLs that are not subject to customs or quarantine impediments	Container terminal operator/ stevedore Land transport operator Importer	Delivery order Customs 'May Be Delivered' stamp Customs entry Quarantine permit	Paid by importer/freight forwarder as part of documentary clearance and haulage to land transport operator Storage penalties payable to container terminal/stevedore or port authority
Delivery of FCL containers that are subject to customs or quarantine impediment	Container terminal operator/stevedore Australian Customs Service Australian Quarantine Service Land transport operator Importer/freight forwarder	Delivery order Customs permit Quarantine permit	Same as previous item with the additional fees of inspection to fumigation company and haulage fee to land transport operator
Cargo not collected may be transferred to a bond store	Stevedore Depot operation Land transport operator Bond store operator	Undelivered cargo bond Container note	Bond and transport fees to be paid by importer/freight forwarder

TABLE 3.3 (Cont.) THE IMPORT TRANSACTION CHAIN: STEVEDORING THE SHIP AND ASSOCIATED ACTIVITIES

Activity	*Participants*	*Documentation*	*Financial transaction*
Delivery of LCL cargo from depot to importer	Depot operator Land transport operator Importer/freight forwarder	Delivery order/stamped Bill of Lading Customs permit	Depot fee included in BSRA and similiar charges paid to ship's agent. Importer/ freight forwarder pays land transport operator
Delivery of cargo from bond store to importer	Bond store operator Australian Customs Service Land transport operator Importer/freight forwarder	Delivery order/stamped Bill of Lading Customs permit Quarantine permit Undelivered cargo bond	Importer/freight forwarder pays bond charges and land transport operator
Empty containers returned to container parks for storage and maintenance	Land transport operator	Equipment Handover Receipt	Paid by ship's agent and recovered from shipping company or container leasing company

a. Basic Service Rate Additional (BSRA) is a charge levied on a per container basis by the shipping company to recover the cost of wharfage and harbour light dues (see Chapter 5) from the importer. For LCLs, this also includes a fee for transport of the container from the terminal to the depot and some unpacking cost.

Source Sealane Pty Ltd (1985).

TABLE 3.4 THE IMPORT TRANSACTION CHAIN, CLEARING THE CARGO: IMPORTER, FREIGHT FORWARDER AND CUSTOMS AGENT

Activity	*Participants*	*Documentation*	*Financial transaction*[a]
Importer places order for cargo	Importer Overseas supplier Bank	Purchase order Letter of credit	Importer arranges for the issue of a letter of credit to an overseas bank through an Australian bank
Importer receives documents from overseas supplier	Importer Customs agent Bank Overseas supplier	Supplier invoice Banking documents Survey certificates Fumigation certificates Bill of Lading	
Freight forwarder/ customs agent prepares clearance and checks documentation	Freight forwarder/ customs agent	Internal job sheet	
Consignee notification received from ship's agent usually advising freight and other charges payable	Ship's agent Importer/freight forwarder	Consignee notifications	
Freight forwarder/ customs agent prepares customs entry and obtains details of freight and other charges payable. Calculates duty and sales tax	Freight forwarder/ customs agent	Supplier invoice Banking documents Survey certificates Fumigation certificate Bill of Lading Customs entry	Freight forwarder/ customs agent sends disbursement invoice to importer

TABLE 3.4 (Cont.) THE IMPORT TRANSACTION CHAIN, CLEARING THE CARGO: IMPORTER, FREIGHT FORWARDER AND CUSTOMS AGENT

Activity	*Participants*	*Documentation*	*Financial transaction*[a]
Freight forwarder/ customs agent lodges Bill of Lading and pays for freight, wharf handling, wharfage to ship's agent and obtains the delivery order	Ship's agent Freight forwarder/ customs agent	Bill of Lading Consignee notification Invoice and delivery docket	Freight forwarder/ customs agent pays ship's agent Freight forwarder/customs agent invoices the importer
Freight forwarder/ customs agent pays quarantine fee	Freight forwarder/ customs agent Australian Quarantine Service	Quarantine Plant Entry (QP26)	Freight forwarder/ customs agent pays fee at quarantine office
Freight forwarder/ customs agent organises fumigation or inspection if required	Freight forwarder/ customs agent Fumigator	Phone/telex	
Freight forwarder/ customs agent finalises payment of duty and sales tax. Obtains customs 'May Be Delivered' release. Organises customs inspection if required	Freight forwarder/ customs agent Australian Customs Service	Supplier Commercial Invoice Customs entry Customs release	Freight forwarder/ customs agent pays Australian Customs Service

TABLE 3.4 (Cont.) THE IMPORT TRANSACTION CHAIN, CLEARING THE CARGO: IMPORTER, FREIGHT FOWARDER AND CUSTOMS AGENT

Activity	*Participants*	*Documentation*	*Financial transaction*[a]
Freight forwarder/ customs agent gives customs release and the delivery order to the land transport operator	Freight forwarder/ customs agent Land transport operator	Customs release Delivery order Cartage order	Freight forwarder/ customs agent may pay cartage on behalf of importer
Freight forwarder/ customs agent attends to additional functions if required Customs or quarantine inspection Survey for damage and lodging claims Bonded warehouse or transhipment entries	Freight forwarder/ customs agent Australian Customs Service Australian Quarantine Service Ships agent Cargo surveyor	Cargo Survey Report Claim form Bond entry	Freight forwarder/ customs agent pays customs and/or quarantine for inspections
Freight forwarder/ customs agent gives detailed account to importer	Freight forwarder/ customs agent Importer	Invoice Transaction file	Importer pays freight forwarder/ customs agent

a. The freight forwarder/customs agent usually bills the importer before paying the relevant charges.

Source Sealane Pty Ltd (1985).

TABLE 3.5 THE IMPORT TRANSACTION CHAIN, CLEARING THE CARGO: SHIP'S AGENT

Activity	*Participants*	*Documentation*	*Financial transaction*
Manifest and a copy of the Bill of Lading received from overseas supplier or agent	Overseas supplier Ship's agent	Manifest Copy of Bill of Lading	
Consignee notifications prepared and dispatched	Ship's agent Freight forwarder/ customs agent Importer	Consignee notification (including details of freight and other charges)	
Freight forwarder/ customs agent pays freight and other charges to ship's agent	Freight forwarder/ customs agent Ship's agent	Original Bill of Lading Delivery order Customs 'May Be Delivered' stamp	Freight forwarder/ customs agent pays ship's agent who in turn pays shipping company less commission and expenses
Ship's agent notifies terminal and may arrange for transfer of container to depot for unpacking	Ship's agent Container terminal operator Land transport operator Depot operator	Telex	Ship's agent pays port authority, depot and land transport operator (recovered in part through BSRA charge on importer)

Source Sealane Pty Ltd (1985).

TABLE 3.6 THE IMPORT TRANSACTION CHAIN: LAND TRANSPORT

Activity	*Participants*	*Documentation*	*Financial transaction*
Land transport operator instructed by importer/ freight forwarder to collect FCL from terminal or collect LCL cargo from depot and deliver to importer's premises or warehouse	Importer/freight forwarder Land transport operator Container terminal operator/stevedore Depot operator Warehouse operator	Bill of Lading Delivery order Customs entry	Importer/freight forwarder pays land transport
Land transport operator instructed by ship's agent or container terminal operator to cart LCL container under bond to depot for unpacking	Ship's agent Container terminal operator Land transport operator Depot operator	Cartage order Customs authority	Ship's agent/container terminal operator/depot operator pays land transport operator Recovered from BSRA revenue and/or shipping company
Land transport operator instructed by ship's agent, container terminal operator or depot operator to cart uncollected FCL containers or LCL cargo to a nominated bond store	Ship's agent Container terminal operator Depot operator Land transport operator Bond store operator	Cartage order Customs authority	Ship's agent/container terminal operator/depot operator pays land transport operator Cost is recovered from importer prior to bond order of release being given
Empty containers returned to nominated container park	Ship's agent Container terminal operator Land transport operator Container park operator	Cartage order Equipment handover agreement	Part of overall charge contained in previous items

Source Sealane Pty Ltd (1985).

Figure 3.6 illustrates the flow of documentation involved from the receival of the overseas buyer's purchase order by the Australian exporter until the goods are loaded aboard the ship in the Australian port.

Figure 3.7 shows the flow of costs to the exporter.

In an attempt to show the interrelationship between the physical, documentary and financial systems, a series of tables (Tables 3.7 to 3.10) have been prepared to describe the principal links in the export transaction chain (Sealane Pty Ltd 1985). For each link the activities, participants, documentation and financial transactions are described in a similar way to the previous tables dealing with the import chain.

Table 3.7 describes the role played by the exporter (or freight forwarder engaged by exporter) in consigning the cargo to the shipping company for transport to the overseas buyer, and the loading of the cargo aboard the ship.

Table 3.8 summarises the role played by the land transport operator in collecting the cargo from the exporter's premises and delivering the cargo to the container terminal or depot.

Table 3.9 discribes the stevedoring process and associated activities for the export transaction chain. This includes the receival of the container by the terminal and the loading of the container onto the ship.

Table 3.10 shows the reporting procedures involved for the ship to depart an Australian port. This table also incorporates the arrangement of tugs and a pilot to assist in the ship's departure.

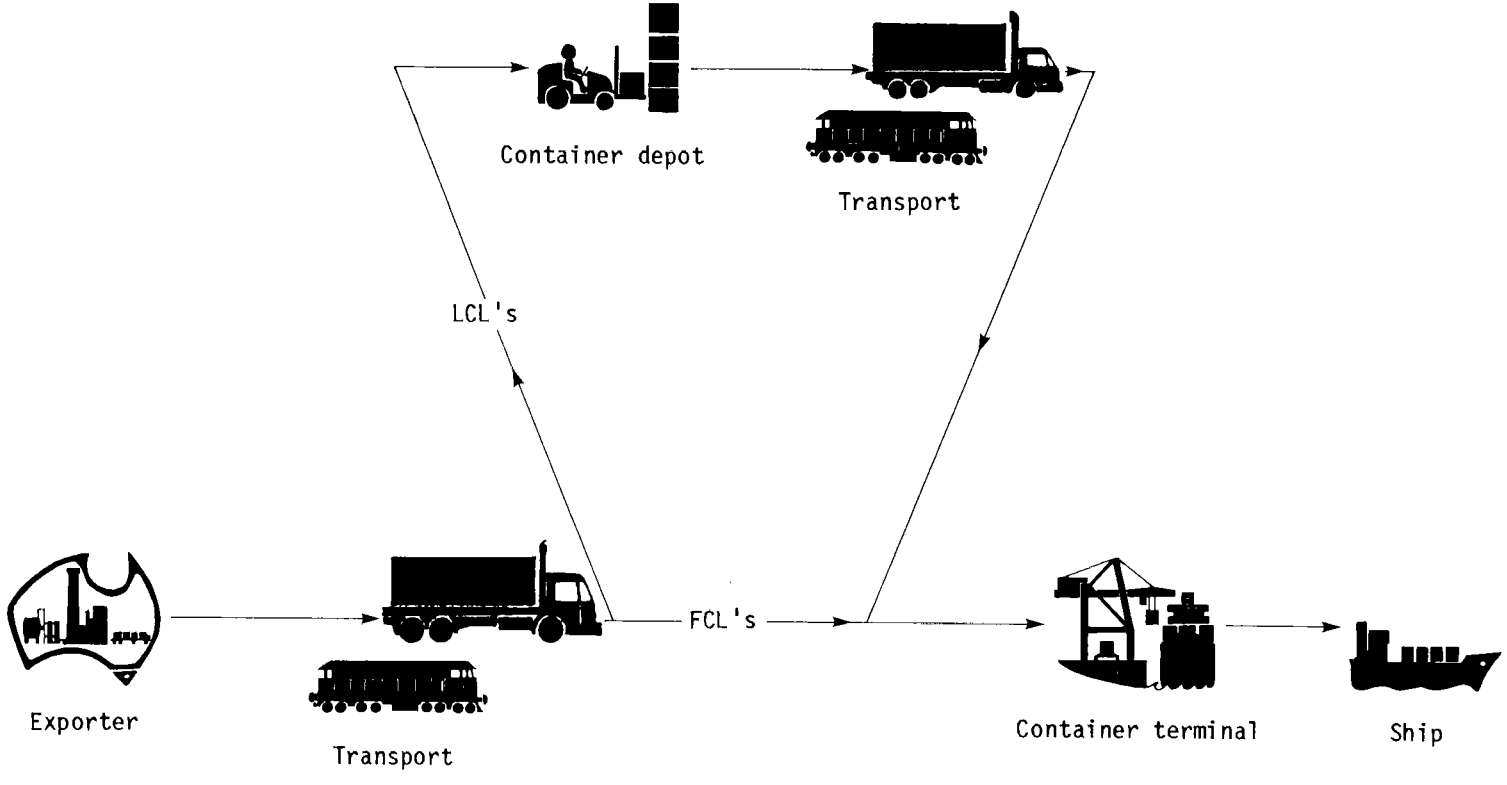
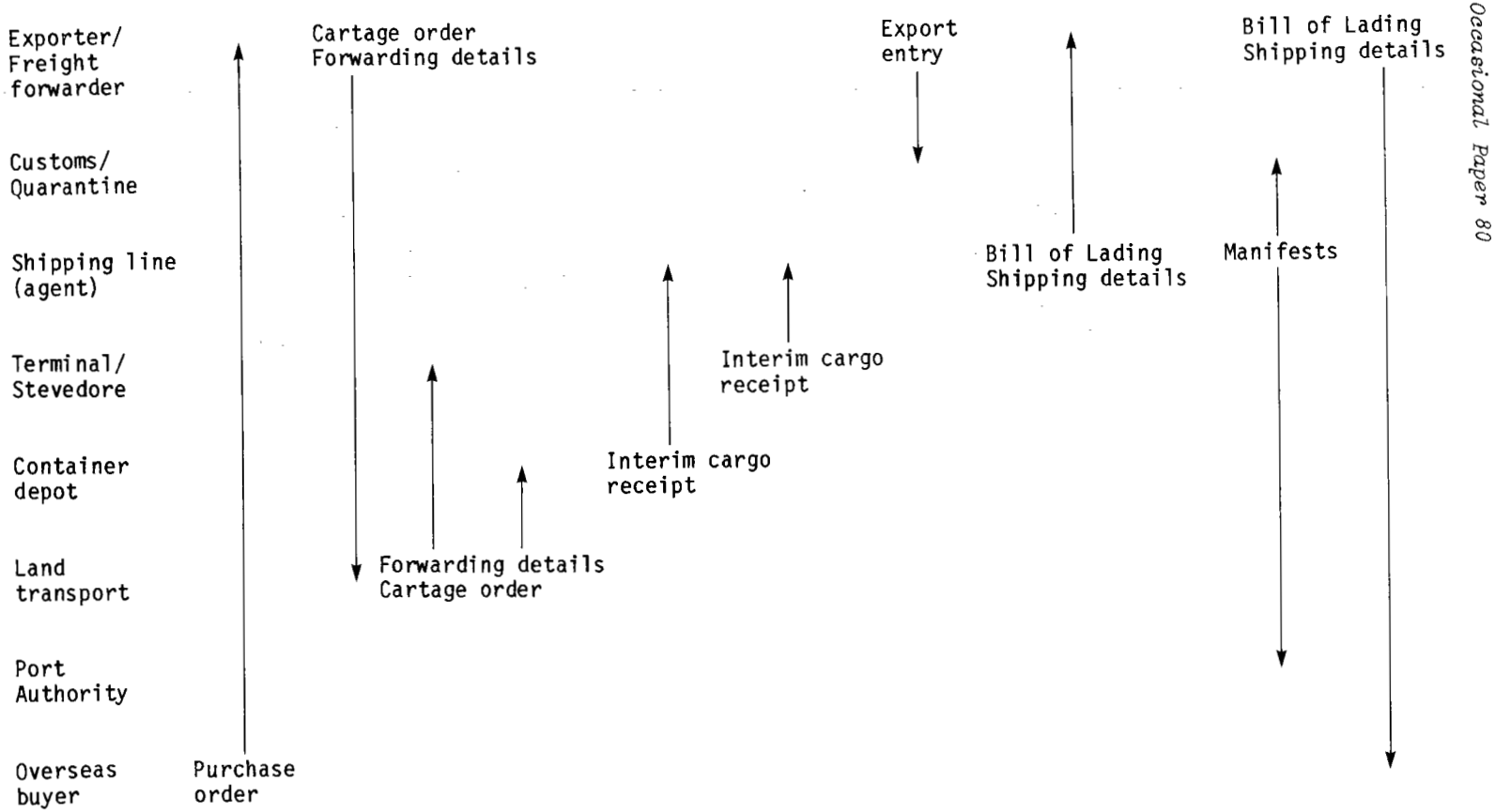
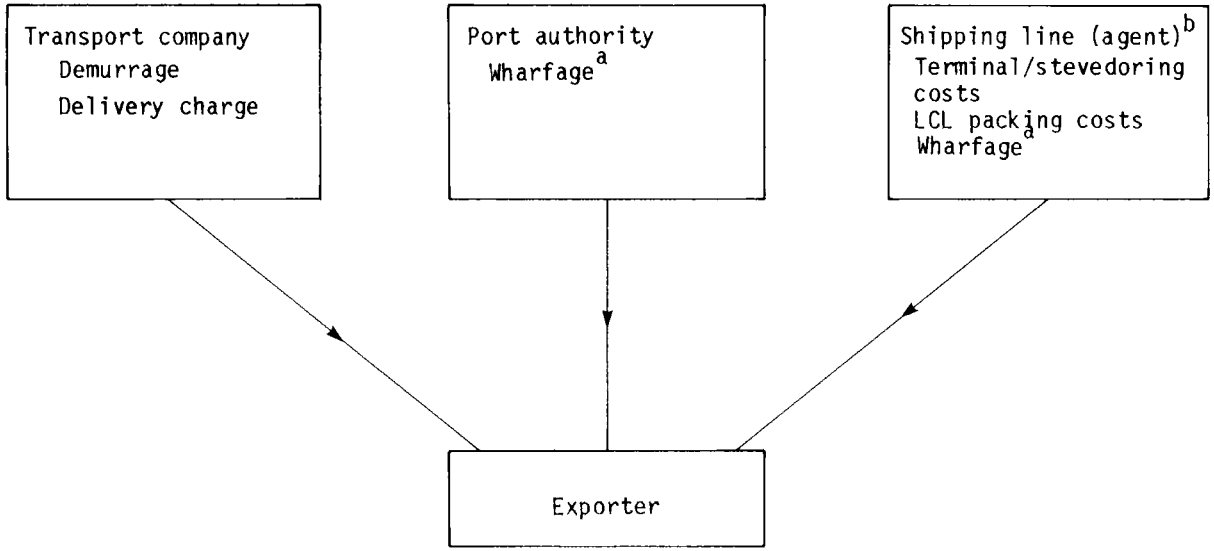


Figure 3.5 Export containers: physical flow pattern



Source Sealane Pty Ltd (1985).

Figure 3.6 Flow of major documentation associated with exports



a. Wharfage is paid to the port authorities, in some cases directly, and in other through the shipping line.

b. In some cases these charges are paid by the overseas importer as part of the freight rates.

Note A freight forwarder, if employed, would co-ordinate all payments by the exporter.

Figure 3.7 Flow of costs to the exporter under FOB arrangements

TABLE 3.7 THE EXPORT TRANSACTION CHAIN: CONSIGNING THE CARGO

Activity	*Participants*	*Documentation*	*Financial transaction*
Exporter receives and processes order from overseas buyer	Exporter Overseas buyers	Order (specifying shipping requirements) Letter of credit	Exporter receives letter of credit from overseas buyer's bank via Australian bank
Exporter/freight forwarder books space with shipping agent	Exporter Freight forwarder Shipping agent	Phone/telex	
Exporter obtains necessary permits	Exporter Freight forwarder Federal Department of Transport Department of Primary Industry Australian Customs Service	Permits for hazardous goods Permits for primary products Export licenses and permits	Exporter pays fees to appropriate government department
Ship's agent/freight forwarder advises cargo receiving requirements. Cargo delivered to terminal or depot	Ship's agent Freight forwarder Land transport operator	Forwarding instruction	Exporter pays freight forwarder or land transport operator
Exporter pays wharfage and other charges	Exporter Freight forwarder	Interim cargo receipt Copy of forwarding instructions	Exporter/freight forwarder pays wharfage and other charges to ship's agent
Ship's agent produces a Bill of Lading and sends original copy to exporter/ freight forwarder	Ship's agent Port authority	Wharfage entry Bill of Lading	Overseas buyer will pay FOB sea freight

TABLE 3.7 (Cont.) THE EXPORT TRANSACTION CHAIN: CONSIGNING THE CARGO

Activity	*Participants*	*Documentation*	*Financial transaction*
Manifests prepared and lodged with customs and port authority and copies sent to destination port	Freight forwarder Ship's agent Australian Customs Service Overseas agent	Manifest Copy of Bill of Lading	Ship's agent pays wharfage to port authority
Exporter sends shipping documents to overseas buyer	Exporter/freight forwarder Australian bank Overseas bank Overseas buyer	Bill of Lading Shipping details	

Source Sealane Pty Ltd (1985).

TABLE 3.8 THE EXPORT TRANSACTION CHAIN: LAND TRANSPORT

Activity	*Participants*	*Documentation*	*Financial transaction*
Land transport operator collects empty container from container park and delivers it to exporter's/ freight forwarder's premises	Land transport operator Container park operator Exporter/freight forwarder	Cartage order Equipment Handover Agreement	Exporter pays land transport operator
Exporter may instruct land transport operator to deliver cargo to freight forwarder/depot to be consolidated	Exporter Land transport operator Freight forwarder Depot operator	Cartage order	Exporter pays land transport operator
Land transport operator delivers containers from exporter's premises to container terminal	Exporter Land transport operator Container terminal operator	Cartage order	Exporter pays land transport operator
Land transport operator delivers container from depot/freight forwarder to container terminal	Land transport operator Depot operator Freight forwarder Container terminal operator	Cartage order Equipment Handover Agreement	Depot operator/freight forwarder pays land transport operator Recovered from exporter

Source Sealane Pty Ltd (1985).

TABLE 3.9 THE EXPORT TRANSACTION CHAIN: STEVEDORING THE SHIP AND ASSOCIATED ACTIVITIES

Activity	*Participants*	*Documentation*	*Financial transaction*
Shipping company/ship's agent fixes stevedoring contract	Shipping company/ship's agent Container terminal operator/ stevedore	Contract or Agreement	
Voyage and broad cargo details advised	Ship's agent Container terminal operator/ stevedore	Telex Facsimile Telephone	Part of overall contract
Cargo loading list and cargo plan given to container terminal/depot	Ship's agent Container terminal operator/stevedore Depot operator	Booking list Cargo storage plan Cargo manifest	Part of overall contract
Customs/quarantine impediment lists given to container terminal operator/stevedore	Ship's agent Australian Customs Service Australian Quarantine Service Container terminal operator/ depot operator	Impediment lists relating to manifest	Part of overall contract
Receival and consolidation of LCL cargo by depot	Exporter/freight forwarder Ship's agent Land transport operator Depot operator	Forwarding instructions Container packing list Export permits and licences	Ship's agent pays depot operator Recovered from exporter/ freight forwarder as a packing charge

TABLE 3.9 (Cont.) THE EXPORT TRANSACTION CHAIN: STEVEDORING THE SHIP AND ASSOCIATED ACTIVITIES

Activity	*Participants*	*Documentation*	*Financial transaction*
Receival of export containers (FCL, LCL and empties) by the container terminal and stacked prior to loading onto vessel	Exporter/freight forwarder Depot operator Land transport operator Container terminal operator/stevedore	Forwarding instruction Interim cargo receipt Cargo list Export permits and licenses	
Loading of containers onto the vessel	Container terminal operator/ ships agent/shipping company	Cargo stowage plan Ship's manifest	Part of overall contract

Source Sealane Pty Ltd (1985).

TABLE 3.10 THE EXPORT TRANSACTION CHAIN: REPORTING THE SHIP OUTWARDS FROM AUSTRALIA

Activity	*Participants*	*Documentation*	*Financial transaction*
Final export cargo receipts checked with container terminal operator/ stevedore. Booked cargo not received is followed up and cut-off date for receival of containers set	Exporter/freight forwarder Land transport operator Depot operator Container terminal operator/ stevedore Ship's agent	Forwarding instructions Booking list Cargo receipts	
Final check to ensure all export permit licenses and customs cargo clearance obtained	Exporter/freight forwarder Ship's agent Australian Customs Service Australian Quarantine Service Department of Transport Department of Primary Industry Container terminal operator/ stevedore	Export permits and licenses Customs cargo clearance	
Final check on vessels stability calculations	Container terminal operator/ stevedore Ship's Officer Ship's agent	Working papers	
Vessel receives final customs clearance	Ship's agent Australian Customs Service	Customs clearance	

TABLE 3.10 (Cont.) THE EXPORT TRANSACTION CHAIN: REPORTING THE SHIP OUTWARDS FROM AUSTRALIA

Activity	*Participants*	*Documentation*	*Financial transaction*
Departure arrangement booked with harbour control Arrangements made for tugs and pilot	Ship's agent Port authority Towage company	Telex	Ship's agent pays port authority/ towage company
Ship departs berth	Ship's agent Port authority Towage company	Orders/invoices for services	Ship's agent pays all related charges and recovers cost from shipping company Shipping Company absorbs cost as an operating cost to be recovered as a component of the freight charge
Advice of departure given to shipping company and next port of call	Ship's agent	Telex	
Manifests completed with copies sent to customs, port authority and next port of call	Ship's agent Australian Customs Service Port authority	Ship's manifest	
Ship's agent prepares voyage account covering all export shipment revenues and costs	Ship's agent Shipping company	Voyage account Ship's manifest	Ship's agent charges shipping company

Source Sealane Pty Ltd (1985).

TABLE 3.11 INDICATIVE AUSTRALIAN SHORE-BASED CHARGES FOR CONTAINERISED IMPORTS AND EXPORTS, 1984-85
(dollars per TEU)

	Imports		*Exports*	
Item	*FCL*	*LCL*	*FCL*	*LCL*
Port and related charges	180	180	120	120
Stevedoring	230	230	230	230
Clearance procedures	80	300	40	220
Transport to wharf[a]	..	..	120	60
Transport from wharf[a]	120	60	..	..
Packing of container[a]	..	..	150	600
Unpacking of container[a]	150	600	..	..
Transport to depot	..	..	..	390[b]
Transport from depot	..	390[b]	..	..
Total	760	1 760	660	1 620

a. See qualifications in Tables I.1 and I.2 in Appendix I.
b. Refers to the user cost of transporting all individual cargo consignments which comprise the LCL.

.. Not applicable.

Sources BTE (1985a, 1985b). DoT, personal communication.

USER COSTS

Based on the information in Appendix I, Table 3.11 presents indicative user costs for each step of the process relating to the transport and handling of containerised imports and exports. It must be emphasised that these are indicative costs and that actual costs to users can vary from customer to customer and among suppliers of services. The data presented in Table 3.11 are subject to certain assumptions which are:

- The terms of the commercial contract assumed for both imports and exports are FOB, which implies that the Australian importer or exporter must bear any Australian shore-based costs involved.

- It is assumed that LCL containers are packed or unpacked at an international container depot while FCL containers are packed or unpacked at the consignors' or consignees' premises.
- Depot charges for packing and unpacking LCLs shown in Table 3.11 do not apply to the New Zealand trade. Charges relating to the New Zealand trade are significantly lower on average (see Chapter 8).
- For FCL and LCL containers it is assumed that the goods are not refrigerated and that they are transported only between the port of import or export and the urban area served by that port.
- Port and related charges include Federal Department of Transport (DoT) navigation charges, sea pilotage, harbour light dues, tonnage, wharfage, tugs, berthing lines, gangway watchmen and an allowance for overtime (penalty) storage of imported containers. These port and related charges are defined in Chapter 5.

CHAPTER 4 AUSTRALIAN PORTS

More detailed accounts of the particular segments in the shore-based transport and handling claim, which were introduced in general terms in Chapter 3, are provided in this and subsequent chapters.

Central to the issue of shore-based shipping activity are the ports through which Australia's import and export trade is conducted. Australia has 45 trading ports either privately or publicly owned which provide a wide variety of services. The private ports specialise in movements of particular bulk commodities, and the major public ports are multipurpose in nature, handling general cargo (container traffic and break-bulk cargo) and often including some bulk commodity facilities.

The vast majority of Australia's international non-bulk cargo movements (especially containerised cargo) pass through a relatively small number of ports.

Non-bulk containerised and general (break-bulk) cargo throughputs for Australia's nine largest ports were presented in Table 2.5. These ports account for almost all of Australia's overseas container trade and most of the non-bulk cargo movements. From this, it can be seen that the five largest non-bulk ports are Sydney, Melbourne, Brisbane, Adelaide and Fremantle, with over 96 per cent of container tonnage and over 86 per cent of total non-bulk cargo movements taking place at these ports. Movements through Melbourne and Sydney predominate, with these ports handling over three-quarters of Australia's international container tonnage and almost two-thirds of all Australia's non-bulk international cargo.

Non-bulk cargo movements, broken down into container and break-bulk by import and export categories for the five major ports, were presented in Table 2.6. Container tonnages as a proportion of total non-bulk tonnage were also provided to indicate the significance of containerisation in the movement of general cargo. From this table it can be seen that, with the exception of Adelaide, containerisation accounts for the greater proportion of general cargo movements, and is particularly dominant in the ports of Sydney (75.9 per cent) and

Melbourne (79.3 per cent). With the recent upgrading and promotion of container terminal facilities in Adelaide, containerisation could also gain an increasing share of general cargo movement there.

An historical series for Australian overseas container movements is presented in Table 4.1. Data are broken down into imports and exports for full and empty containers for the financial years 1977-78 to 1983-84. It can be seen that container usage has grown considerably over the period shown, total container movements having increased by 41 per cent. This can be attributed mainly to the growth in imports of full containers (47 per cent) and a commensurate increase in the export of empties (by 63 000 TEUs or 93 per cent) which occurred because of the slower growth in the export of containers carrying cargo (26 per cent).

Growth in container movements had been consistent up to 1982-83 when a sharp decline occurred as a result of the world trade slump. Container usage then rose again in 1983-84, though not quite to the maximum levels achieved in 1981-82.

Overseas container movements, in terms of numbers of TEUs moved in the five major ports during 1983-84, are presented in Table 4.2. For full containers, it can be seen that imports exceed exports in Sydney and Melbourne. As noted in Chapter 8, the uneven distribution of empty containers between ports is alleviated by relocating them by road or rail, with containers being relocated to ports which need empty containers for packing export commodities. This arrangement is mutually beneficial in that the trucking companies and railways gain use of the containers for storage of their domestic goods during shipment, while the shipping lines are able to move their containers cheaply. The Australia-wide surplus of empty containers is resolved by the shipping lines relocating them to ports overseas.

A study on cargo centralisation (BTE 1982) revealed that imports of empty containers through the Port of Brisbane exceeded exports. This situation results from Brisbane's position as a major exporter of boneless beef and the imported empty containers (mainly reefers) are used to service this trade.

The statistics shown in Tables 4.1 and 4.2 are not directly comparable as Table 4.1 data were obtained from stevedoring company records as collected by the Federal Department of Transport whereas Table 4.2 data are sourced from port authority annual reports. Coverage and definitional anomalies tend to understate the number of container

movements in Table 4.1, resulting in import data for total Australia in this table being lower than the corresponding data for the five ports in Table 4.2.

The ABS also publishes some data on container movements as part of a collection derived from information provided by shipping lines to the Australian Customs Service. There are significant discrepencies between these figures and those reported by the port authorities and the Department of Transport figures. Since the latter two are in closer agreement and are more directly sourced they are preferred for this discussion of container movements.

With the above outline of the activity levels and characteristics of Australian container ports as background, the remainder of the chapter covers the administrative and structural characteristics of ports generally before proceeding to assess the individual financial performances of the five major ports. The more specific revenue sources for Australian ports are then examined under the broad classifications of charges levied against vessels and charges levied against cargo.

TABLE 4.1 TOTAL OVERSEAS CONTAINER MOVEMENTS AT AUSTRALIAN PORTS, 1977-78 TO 1983-84

(number of TEUs)

	Import			*Export*		
Year	*Full*	*Empty*	*Total*	*Full*	*Empty*	*Total*
1977-78	307 859	41 785	349 644	265 177	68 420	333 597
1978-79	342 724	50 954	393 678	307 237	71 305	378 542
1979-80	357 151	55 135	412 286	319 650	73 093	392 743
1980-81	395 413	45 105	440 518	326 127	97 806	423 933
1981-82	452 323	51 965	504 288	344 403	134 576	478 979
1982-83	384 607	54 138	438 745	340 876	96 616	437 492
1983-84	451 309	42 749	494 058	335 411	131 832	467 243

Source DoT (1984a).

TABLE 4.2 OVERSEAS CONTAINER MOVEMENTS AT MAJOR PORTS, 1983-84
(number of TEUs)

	Import		*Export*		
Port	*Full*	*Empty*	*Full*	*Empty*	*Total*
Sydney	197 121	8 149	92 133	64 828	362 231
Melbourne	199 782	15 697	147 313	52 955	415 747
Brisbane[a]	41 351		54 967		96 318
Adelaide	10 182	950	12 943	3 335	27 410
Fremantle	26 580	6 650	31 512	6 945	71 687
Total	506 462		466 931		973 393

a. Breakdown by full and empty containers is not available.

Source Port Authorities' 1983-84 Annual Reports.

PORT ADMINISTRATION

The historic and geographic characteristics of port development, together with the two tiers of Federal and State government systems have led to quite diverse styles of port administration in Australia.[1]

Most major Australian ports developed before Federation and their operations were thus initially the responsibility of the colonial administrations. Major responsibilities for port operations were transferred to the respective State administrations at the time of Federation, interest being retained by the Commonwealth in areas of national interest.

Commonwealth interest in the ports' area is derived from the Australian Constitution under sections 51 and 98, with further powers being conferred under sections 90, 92, 96 and 101. These sections relate to a wide spectrum of activities such as trade and commerce between States and internationally, customs and quarantine, taxation, provision of Commonwealth loans, property acquisition, defence, and external affairs. State responsibility is maintained through port authorities and/or navigation authorities established under State

1. Local government is also involved in the development and operation of some ports, usually through the statutory authorities responsible for individual ports.

legislation. Thus, although Australian public port administration and development are broadly influenced by the Commonwealth, they are primarily under the control of State governments, often operating through statutory authorities specifically charged with these responsibilities.

Against this background, ports have evolved to be either privately controlled, departmentally administered, administered by a statutory authority or a composite of these forms. Under private control, a firm undertakes the operation and development of the port, while direct departmental administration generally encompasses all public ports within a State and statutory authorities administer one or more ports in a State.

PORT STRUCTURE AND COMPETITION

At the State level, ports in New South Wales and South Australia are controlled by single, State-wide bodies (the Maritime Services Board (MSB) and Department of Marine and Harbors (DMH) respectively), although South Australia also has a number of private ports. Victoria, Queensland, Northern Territory and Western Australia also have departmentally administered State-wide bodies as well as statutory authorities. Western Australia also contains some private ports. In Tasmania, apart from the privately operated Port Latta, major ports are controlled by independent statutory authorities.

The high degree of centralisation of Australia's container trade is illustrated by the dominance of the ports of Sydney and Melbourne in this trade. This situation has arisen because of shipping company perceptions of substantial economies in minimising vessel port calls, as well as economies of scale and scope associated with the ownership of capital-intensive container terminal facilities. Economies of scope in this case refer to savings associated with owning and controlling inter-related (and hence inter-dependent) facets of the cargo transport and handling chain.

There are also significant economies of scale associated with the provision of port facilities. Large multi-berth ports are likely to realise economies in the provision of shipping channels, wharves, port administration and so on.

Government involvement in the administration of Australia's ports impacts significantly on any discussion of the relative competitiveness of ports, and particularly on the ability of other interests to develop new ports. In any event there are commercial barriers to the establishment of new ports since the major centres of economic activity are already well served.

With the introduction of containerisation, various ports including Brisbane and Adelaide lost much of their general cargo trade as operators centralised their cargo to the major ports of Sydney and Melbourne. Brisbane and Adelaide have both built modern container terminals in recent years and are trying to encourage shipping conferences to make direct calls at their ports and reduce the degree to which containers are centralised at the two major ports. Brisbane and Adelaide are therefore providing some competitive pressure for the two major ports to retain their trade. However, the study on cargo centralisation (BTE 1982, 78) based on data for the financial year 1979-80 determined that the effects of centralisation alternatives on the larger ports of Sydney and Melbourne would be minimal.

Centralisation alternatives considered in the above study concentrated on a redistribution of container handling from Sydney to Brisbane and Melbourne to Adelaide, by increasing the number of port calls by container vessels to Brisbane and Adelaide, without decreasing the numbers of port calls to Sydney and Melbourne. The number of containers handled at the current ports of call would decrease in favour of the new ports of call. On the basis that container vessel port calls to Adelaide would be expanded by the introduction of additional fortnightly calls by United Kingdom and European vessels and monthly calls by East Asian, Japanese and Korean vessels, the Bureau estimated that port authority revenue in Adelaide would rise by 3.9 per cent, with a resultant fall of 2.4 per cent revenue earnings in Melbourne. Likewise, additional monthly calls to Brisbane by United Kingdom and European vessels would result in a rise in revenue of just 1.4 per cent for Brisbane with a revenue fall of only 0.5 per cent for Sydney.

The combined effects of economies of scale, proximity of dominant ports to major population centres and economic and regulatory barriers to new port operators should result in a continuation of the existing centralised market for port services. Hence, the dominant positions of the ports of Melbourne and Sydney are not likely to be significantly challenged.

PORT AUTHORITY RESPONSIBILITIES

Though functions vary among individual port authorities due to different administrations (for example, departmental or statutory) the major responsibilities comprise:

- maintenance of wharves, buildings and other port facilities;
- control and administration of these facilities;

- cargo handling (but not normally direct stervedoring operations);
- provision of supplies, moorings etc for vessels in port; and
- levying and collecting port rates and other charges.

The following functions are also undertaken by many port authorities:

- planning and provision of wharves, buildings and other port facilities; and
- dredging of channels.

Some port authorities are also involved in the provision of pilotage, navigation aids, aspects of maritime safety (although these responsibilities may be divided) and maintenance of recreational and fishing fleet wharves. The latter is undertaken by the Department of Marine and Harbors (DMH) in South Australia and, as will be shown, markedly affects that department's revenue position.

In addition, some port authorities appear to be taking an increasingly active interest in the efficient movement of cargo through the whole port, including the stevedoring and land transport operations. This interest has been generated by the perceived need to operate efficiently and economically in order to remain viable financial entities while serving the broader needs of their respective States.

PORT FINANCING

Port revenues and expenditures are influenced by a number of historical and structural characteristics. The factors having most influence are:

- the ports' founding legislation, which determines the type of administration and its specific responsibilities;
- the ports' statutory dependence upon State Governments in relation to investment decision-making and the securing of capital works funds;
- successive government attitudes towards port operators and financial responsibilities;
- Commonwealth economic and trade policies which affect cargo volumes, past examples of this being the Commonwealth Government decisions to reduce tariff levels by 25 per cent across the board in 1973 and, more recently, the removal of the superphosphate bounty in 1984; and

- State government control and influence over mineral development, land transport pricing arrangements and wharfage rates - the latter being exemplified by the NSW Government's move to temporarily freeze coal loading charges to assist the coal industry, and the policy of the WA Government to hold transport charges for wheat below those of other bulk commodities.

State government control also extends to environmental protection, local planning and regional development and industrial relations, all areas which ultimately impact on port administration and development.

When considering port investment, allowance must be made for the legacy of historical debts still outstanding. These debts, made in an era when perceptions of port financing were less strictly based on economic criteria than they may be now, have repercussions on the areas of current loan debt servicing, present loan raising capacity and the sources of those loans. Historical commitments of this nature can mask the effect of sounder economic management principles now being adopted in relation to port operations and investment.

While generalisation is difficult, most of the State governments can co-ordinate loan raising and capital expenditure among their ports. Of those ports examined, the Port of Melbourne Authority (PMA) is the most independent in relation to State government capital assistance. It raises about half of its funds internally and the balance from government-backed open market loans. All the other port authorities receive either government loans, grants or guarantees on their loans (Stubbs 1983).

FINANCIAL PERFORMANCE OF MAJOR PORTS

Because the ports of Sydney and Adelaide are part of State-wide administrations, some published financial data are not provided separately for the individual ports administered by the State authorities. This limits the degree to which their respective financial performances can readily be assessed. The remaining major container ports of Melbourne, Brisbane and Fremantle are administered by single port authorities which publish separate financial accounts.

Operating income and expenditure data for these individual port authorities and for the two authorities which have State-wide jurisdictions covering the financial years 1979-80 to 1983-84 inclusive are provided in Table 4.3. As can be seen, only the PMA experienced an operating deficit in any of the years covered, incurring a loss of $1.7 million in 1982-83. However, expenditure during that year included an abnormal superannuation item of $10.8m,

and this coincided with a poor trading year for Melbourne and Australia as a whole (see Table 4.2). PMA performance in other years has been better. The Authority realised large surpluses in both 1981-82 ($14.4 million) and 1983-84 ($10.1 million), the latter despite another abnormal superannuation expenditure item of $11.6 million. All other port authorities comfortably covered operating expenses from revenue received.

However, when account is taken of capital debt payments and contributions to State consolidated revenue where applicable, the ports' individual performances appear less favourable. A summary of the five major Australian ports' financial status and commitments for the financial year 1983-84 is presented in Table 4.4.

From this table it can be seen that, while all ports managed to cover their operating costs, the PMA and the Fremantle Port Authority (FPA) were unable to fully cover their additional capital debt payments and respective contributions to State consolidated revenue. Likewise, the DMH was unable to cover additional capital debt payments.

The MSB and Port of Brisbane Authority (PBA) were able to cover all operating expenses, including, in the case of MSB, contributions to State consolidated revenue of 6 per cent ($13.3 million).

After operating costs and additional capital debt payments, the PMA incurred a total deficit of $18.4 million in 1983-84 (see Table 4.4). Performance in this year was exacerbated by the large superannuation adjustment mentioned previously and recent heavy expenditure on the World Trade Centre complex ($102 million in total to 1983-84). This expenditure is reflected in the high capital debt payment to operating revenue ratio (31.5 per cent).

The DMH of South Australia has historically incurred a deficit, a situation resulting from a number of factors. Table 4.4 shows that the DMH capital debt payment to operating revenue ratio is considerably higher than for the other ports (41.5 per cent), a situation reflecting the acquisition of private port facilities in the mid-1960's and recent modernisation projects. This, in conjunction with the Department's heavy financial commitment to maintaining fishing wharves ($8 million in 1983-84) with very little income realised from this source ($0.3 million in 1983-84), has resulted in substantial expenditure not readily offset by revenue earned. Hence, despite the Department's general cargo operations being economically viable, subsidisation by way of contributions from State consolidated revenue will continue to be necessary if the Department is to maintain its other (non-cargo) responsibilities.

TABLE 4.3 MAJOR AUSTRALIAN PORT AUTHORITY OPERATING INCOME AND EXPENDITURE LEVELS, 1979-80 TO 1983-84

($ million, current prices)

	Year				
Port authority	*1979-80*	*1980-81*	*1981-82*	*1982-83*	*1983-84*
MSB (NSW)					
Operating					
Income	126.0	164.0	189.2	200.9	238.8
Expenditure[a]	98.5	130.5	140.7	148.6	179.4
Surplus	27.5	33.5	48.5	52.3	59.4
PMA (Vic)					
Operating					
Income	39.7	45.7	56.1	59.4	71.5
Expenditure[b]	32.1	37.1	42.0	61.1[c]	61.4[d]
Surplus	7.6	8.7	14.1	-1.7	10.1
PBA (Qld)					
Operating					
Income	16.2	20.0	24.3	24.5	27.8
Expenditure	12.5	16.2	18.2	17.2	20.8
Surplus	3.7	3.7	6.1	7.3	7.0
DMH (SA)					
Operating					
Income	23.1	22.6	25.1	24.2	31.3
Expenditure	15.4	17.6	19.1	22.1	22.8
Surplus	7.7	5.0	6.0	2.1	8.5
FPA (WA)					
Operating					
Income	23.2	27.5	30.6	32.6	31.3
Expenditure[e]	20.5	24.0	26.9	29.4	29.2
Surplus	2.7	3.5	3.7	3.2	2.1

a. Excludes contributions to State consolidated revenue comprising 6 per cent of annual port revenue.
b. Excludes contributions to State consolidated revenue comprising 10 per cent of annual port revenue.
c. Excludes additional depreciation due to re-assessment of useful lives of assets of $19.7 million but includes abnormal superannuation item of $10.8 million.
d. Includes abnormal superannuation item of $11.6 million.
e. Excludes contributions to State consolidated revenue comprising 3 per cent of annual port revenue.

Note MSB and DMH accounts cover all public ports in their States. The remaining authorities cover single ports only.

Source Port authorities' Annual Reports, various years.

TABLE 4.4 MAJOR AUSTRALIAN PORT FINANCIAL STATUS AND CAPITAL COMMITMENT, 1983-84

Port authority	*Total assets ($m)*	*Revenue ($m)*	*Expenditure ($ million)*				*Revenue less expenditure ($m)*	*Capital debt payments to operating revenue ratio (per cent)*
			Operating costs[a]	*Contribution to State consolidated revenue*	*Capital debt payments*	*Total*		
Maritime Services Board of NSW[b]	739.6	238.8	179.4	13.3	39.9	232.6	6.2	16.7
Port of Melbourne Authority	453.1	71.5	61.4	6.0	22.5	89.9	-18.4	31.5
Port of Brisbane Authority	88.3	27.8	20.8	nil	5.2	26.0	1.8	18.7
Department of Marine and Harbors, South Australia[c]	na	31.3	22.8	nil	13.0	35.8	-4.5	41.5
Fremantle Port Authority	47.4	31.3	29.2	1.0	3.1	33.3	-2.0	9.9

a. Includes abnormal items and depreciation costs.
b. Maritime Services Board of NSW is responsible for Port Jackson, Port Botany, Bass Point, Catherine Hill Bay, Clarence River, Newcastle, Port Kembla, Trial Bay, and Twofold Bay.
c. Department of Marine and Harbors is responsible for Port Adelaide, American River, Kingscote, Klein Point, Port Giles, Port Lincoln, Port Pirie, Thevenard, and Wallaroo.

na Not available.

Source Port authorities' 1983-84 Annual Reports.

The FPA, despite incurring an overall $2.0 million deficit in 1983-84, historically tends to cover operating costs (including a 3 per cent government levy which amounted to $1.0 million in 1983-84). Recent deficits have been a result of the general down-turn in trade and a report (BTE & DGT 1981) on WA port financing prepared jointly by the Bureau and Director General of Transport in WA concluded that the FPA was an economically healthy operation.

Although three of the major port authorities incurred deficits for 1983-84, both the PMA and FPA experienced problems created by short-run trade fluctuations and, in the case of the PMA, recent heavy investment commitments to the World Trade Centre. In contrast, the DMH was committed to certain non-commercial activities as part of normal State government administration.

The only notable underlying financial weakness in port investment relates to the very high capital debt payment to operating revenue ratios for both the PMA and DMH (31.5 and 41.2 per cent respectively). This commitment to high and relatively rigid long-term loan repayments increases the potential for short-run deficits in a climate of falling revenue earnings caused by volatile trade levels, a situation typifying the early 1980's.

Both the MSB and PBA comfortably maintained an operating surplus for 1983-84, the MSB achieving this despite covering numerous smaller (including non-container) ports and contributing to State consolidated revenue. It should be noted that the performances of these ports was achieved against a background of record trade levels (see Table 2.1) following the severe trade slump of 1982-83.

In 1982-83, the MSB incurred a small deficit, but has been an economically healthy operation since becoming independent of the State budgetary process in 1981-82. It achieved this under the Maritime Services (Amendment) Act 1981, when the Board restructured accounting procedures and adopted recognised commercial accounting practices. Likewise, the PBA performance has been one of consistent growth, the Authority recording healthy financial surpluses.

However, one general weakness existing in the loan portfolios of most port authorities is the commitment to foreign capital. The recent devaluation of the Australian dollar on international markets has resulted in increased overseas loan servicing commitments, as these loans are measured in foreign currencies.

SOURCES OF REVENUE

Major sources of revenue for Australian ports are:

- statutory charges levied against cargoes and vessels;
- commercial charges for property leasings and services provided; and
- interest earned on investments.

A number of ports also have other revenue sources specific to their operations, the most notable of these being the PMA service charges attributable to the World Trade Centre activity. Others, such as the DMH charges to the fishing industry, are less financially significant in isolation but are noteworthy in that expenditure on this sector far exceeds income.

The principal port revenue sources associated with shore-based shipping operations are charges against cargoes and vessels. The components of these charges together with associated State and private service charges are described in the following sections.

Principal charges levied against vessels

The principal charges applied against ships by port administrations are pilotage and tonnage dues. Other charges are Federal harbour and light dues, State harbour and light dues, and towage, tying up and gangway watch services which are generally provided by private operators. Pilotage, towage, tying up and gangway watch charges are covered in Chapter 5.

'Tonnage' is a ship-related charge to recover the costs associated with the use of a berth for a stated period of time. The charge is normally based on the gross registered tonnage (GRT) of a vessel per six hours alongside or part thereof.

Harbour and light dues are charges set and levied by the State for the provision and maintenance of lights, beacons, buoys and other aids to navigation.[2] As revenues accrue to the States, the charges are not strictly port related but have been included here to give a broader view of total vessel costs. This type of charge is generally based on the GRT of the vessel, payable on first entry to a port and normally valid for six months.

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2. Federal light dues are also payable. These are referred to latter in this chapter.

Typical tonnage charges and harbour and light dues expected to be incurred by a container vessel of 25 000 GRT are presented for the five largest Australian ports in Table 4.5.

From the table it can be seen that tonnage dues are very similar for all ports except Adelaide (for which they are higher). Both the major ports of Sydney and Melbourne maintain comparable charges to the lesser ports despite their relative dominance of Australian non-bulk sea trade.

Of greater interest in the table are the State harbour and light dues, for there is a considerable variation between the States. Of note are Fremantle's charges, which are the lowest for the ports presented, and Adelaide's, which are the highest. No charges for Melbourne are available as Victoria does not levy harbour and light dues. These charges form part of the general State tonnage dues.

TABLE 4.5 PORT CHARGES FOR MAJOR AUSTRALIAN CONTAINER PORTS FOR A 25 000 GRT CONTAINER VESSEL[a], 1985

Port	*Tonnage dues*[b] *($ per day)*	*State harbour and light dues*[c] *($)*
Sydney	1 600	4 650
Melbourne	1 750	d
Brisbane	1 450[e]	3 500
Adelaide	2 050	5 150
Fremantle	1 600	1 650

a. Estimates based on published rates assuming ship arrival during a normal working week. Due to frequently changing rates, the given charges are rounded and only presented as a guide to approximate charges prevailing at different ports.
b. Charges are maximum applicable. Coastal intrastate and interstate vessels with a Tonnage Rate Concession certificate pay a lower rate.
c. Valid for six months.
d. Victoria does not levy separate harbour and light dues. These charges are incorporated in the general State tonnage duties.
e. Brisbane does not levy tonnage dues. The rate given is the berthage charge (based on a 217 metre vessel.)

Sources DoT, personal communication. Port authorities' published rates.

In addition to the charges listed, Federal light dues and the oil pollution levy are payable at the first port of call in Australia. For a vessel of 25 000 GRT, these charges would amount to approximately $6 000 for a certificate valid for three months.

Principal charges levied against cargo

The principal charges levied by port administrations against cargo are wharfage and storage. Wharfage is levied against the shipping company based on the amount of cargo handled over the wharf. Most port authorities have established a container rate schedule which involves the following factors in determining the rate:

- size of container;
- nature of container (for example, refrigerated or dry);
- load of container (for example, full or empty); and
- classification of container (for example, import, export, transhipment).

Inward and outward container wharfage rates during 1985 for the five major Australian ports are provided in Table 4.6. Most ports have very similar rates for inward cargo except Brisbane, where the rates are lower. Outward rates vary considerably among the ports.

TABLE 4.6 WHARFAGE ON CONTAINERS FOR MAJOR AUSTRALIAN CONTAINER PORTS, 1985

(dollars)

	Dry[a]		*Refrigerated*	
Port	*Inward*	*Outward*	*Inward*	*Outward*
Sydney[b]	87.00	54.95	75.05	47.20
Melbourne	86.65	78.56	75.10	68.09
Brisbane	68.00	68.00	57.50	57.50
Adelaide	84.00	63.00	72.00	54.00
Fremantle	91.85	36.39	79.60	31.54

a. Based on a full dry TEU container.
b. Rebate rate. Applies to containers handled through container terminals.

Source Port authorities' published rates.

Storage is usually charged against the consignee by the port authority for the storage of containers at the wharf. However, in Melbourne and Brisbane storage charges are set and collected by the terminal operators. Normally the first three days of storage are free with an increasing scale of charges being applied thereafter should the container remain in storage rather than going to bond. This charge is normally levied on a daily rate per container. Table 4.7 presents data on container storage charges at major Australian ports for 1985.

From these charges, it can be seen that the ports have varying perceptions of the value of storage space, these perceptions being expressed not only in the base charges, but also in the rate of change of these charges over time. The largest ports, Melbourne and Sydney, have the highest base charges, signifying the premium these ports place on storage space in relation to cargo throughput. However, Melbourne reinforces this with a higher escalating rate of change in its charges over time than Sydney, which discourages long-term storage.

TABLE 4.7 CUMULATIVE CONTAINER STORAGE CHARGES AT MAJOR AUSTRALIAN PORTS, 1985

(dollars per TEU)

	Storage period (days)										
Port	*1-3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13+*[a]
Sydney	-	27	54	81	121	161	201	255	309	363	+54
Melbourne	-	28	56	84	149	215	280	401	522	643	+121
Brisbane	-	15	30	45	75	105	135	195	255	315	+60
Adelaide	-	4	11	26	41	67	93	121	152	181	+37
Fremantle	-	-	22	44	66	88	110	132	154	176	+20

a. The figures shown indicate the daily rate applicable (dollars per day per TEU) at which the storage charges cumulate after the twelfth day.

\- Nil.

Source Port authorities' published rates for 1985.

Brisbane imposes a somewhat lower base charge with a similar escalation rate to Sydney. Charges for Adelaide and Fremantle are comparable, particularly for longer storage periods. They are considerably lower than those of Sydney, Melbourne and Brisbane. Fremantle has four free storage days as opposed to three for Adelaide. However, the extra free day is more than compensated for by higher charges over the following seven days.

CONCLUDING COMMENTS

Unfortunately, no direct comparison of the financial performance of the Port of Sydney can be made with other ports since the published figures from the MSB cover all the ports under its jurisdiction. However, from the data presented for the PMA there appears to be no evidence that its dominant market position is reflected in high port charges or particularly high revenue flows relative to other major ports, given their respective container movement levels. Competition between the two ports dominating the container trade, Melbourne and Sydney, could have more effect on limiting port authority charges than competition from the smaller and more distant ports.

CHAPTER 5 PORT-RELATED SERVICES

As noted previously, services associated with the berthing of a ship are considered to be part of the shore-based transport chain as defined in this Paper. This chapter covers the aspects of vessel pilotage and towage both into and out of port, together with provision of line services and gangway watch operations. Some charges for an average sized container vessel are presented, along with a brief analysis of the economic structure, conduct and performance of the various services provided.

PILOTAGE

For a large vessel to enter and leave port safely, a navigation pilot is often required to guide the vessel. The pilot has expert local knowledge of navigation hazards which may be encountered or procedures which may apply both for approaches to, and manoeuvering within, the port.

Pilotage is the responsibility of the government marine boards in each State, except Victoria and Western Australia. In Victoria, this function is covered by the Port Philip Sea Pilot Service in Melbourne and by the port authority at Portland.

In Western Australia, the pilotage service is provided by the individual port authorities in the cases of Fremantle, Port Hedland, Dampier, Koolin Island and Barrow Island, and by the Department of Marine and Harbours in all other commercial ports. Charges for these services are determined by each of the independent port authorities for their own facility and by the Department for other ports.

The general procedure to arrange pilotage is for the vessel (or the ship's agent) to contact the appropriate harbour master 24 to 48 hours before arrival, who in turn arranges for the vessel to receive a pilot. The pilot is usually ferried to the vessel by launch.

Ship's masters can obtain exemption certificates which have various requirements regarding knowledge of the port and frequency of visits. Smaller vessels (generally under 35 metres in length) are also granted

exemptions. In addition, most States give exemptions to both foreign and Australian warships. Other exemptions may also apply to vessels in distress or those not berthing to load or discharge cargo.

TOWAGE

Tug requirements for vessel placement are considerably affected by the size and power of the tugs and the size and type of vessel being towed. In the case of modern container and ro-ro vessels, the fitment of bow and/or stern thrusters reduce the tug requirement. These systems, fitted to the front or rear of a vessel to increase manoeuvering capability, are effectively equivalent to one tug. Other determinants influencing tug requirements are weather and tidal conditions and whether vessel movement is conducted during the day or at night.

Individual vessel tug requirements are influenced by all these factors. However, total tug requirements at any single port are ultimately determined by the number of vessel calls over any given time period.

Table 5.1 shows the numbers of tugs in operation for the major capital city ports in Australia.

TABLE 5.1 TUGS IN OPERATION AT MAJOR CAPITAL CITY PORTS, 1985

Port	*Operator*	*Number*
Sydney	J. Fenwick and Co. Pty Ltd[a]	6
	Waratah Towage Tug and Salvage Co. Pty Ltd	6
Melbourne	Melbourne Tug Services	6
Brisbane	Qld Tug and Salvage Co. Pty Ltd	6
Adelaide	Ritch and Smith Pty Ltd (Adelaide Steamship Co. Group)	4
Fremantle	Fremantle Tug Operators	4

a. J. Fenwick & Co. Pty Ltd have an additional tug which is used in their interchangeable maintenance program, and hence is non-operational.

Sources DoT (1985a). BTE personal communication with towage companies.

Sydney has two towage companies operating in both Port Jackson and Port Botany. Each of the remaining ports has one company operating. Some implications of this situation on the supply of towage services in these ports are discussed later.

Towage performance

In 1984, the Australian Chamber of Shipping published a study on tug utilisation in major Australian ports (ACOS 1984). The study obtained the separate views of masters of overseas and coastal vessels on the level of tug usage associated with almost 600 vessel movements at 21 ports. Masters of vessels tend to have a sound understanding of their vessels' towage requirements in given situations and often play some part in negotiating tug services in particular cases. However, it must be emphasised that the provision of tugs is often beyond the direct control of the master, for agents may arrange tugs without informing the master, doing so on the advice of the pilot and/or based on standard recommendations of port authorities.

The problem of over-use stems from the inclination of agents to accept port authority recommendations on tug requirements based on vessel size, without regard to vessel type (for example whether it has bow/stern thrusters to assist the berthing process). The ACOS study was critical of a disregard for weather and weather forecasts when assessing tug requirements, tug numbers frequently being based on an anticipation of bad weather despite prevailing clear conditions and favourable forecasts.

The report also noted that pilots were often reluctant to handle a vessel unless a certain number of tugs were present, even when the master considered fewer tugs were required.

Hence, the over-use of tugs, as perceived by the ships' masters surveyed, was seen as a direct result of the masters' limited participation in the decision-making process and/or lack of familiarity with specific port conditions.

Tug usage data collected by ACOS are summarised in Table 5.2. Comparative data on numbers of tugs required in relation to numbers used over a period during 1983 (ranging from one to three months, depending on port) are presented, with reported tug over-use given in percentage terms.

The ACOS study suggests that, in the opinion of ships' masters, there was a substantial over-use of tugs in Sydney and Melbourne, with only marginal over-use in the remaining major ports.

TABLE 5.2 COMPARISON OF LEVELS OF USE OF TUGS WITH ESTIMATED REQUIREMENTS[a] AT MAJOR AUSTRALIAN PORTS, 1983

Port	*Selected number of vessel movements*	*Tugs required*[a]	*Tugs used*	*Level of apparent over-use (per cent)*
Sydney				
Port Jackson	50	67	90	34.3
Port Botany	50	92	112	21.7
Melbourne	50	95	115	21.1
Brisbane	51	92	95	3.3
Adelaide	50	102	105	2.9
Fremantle	52	97	103	6.2

a. As estimated by ships' masters.

Source ACOS (1984).

In addition to the port data tabulated, the ACOS study covered 15 other Australian bulk and non-bulk (including some container) ports of various sizes. Of these ports, only Hobart and Newcastle were claimed to have experienced significant tug over-use (29 per cent and 19 per cent respectively). The remaining ports experienced 10 per cent or less over-use, three of these ports actually reporting varying degrees under-use of tugs.

The survey of tug utilisation led to the conclusion that a reduction in tug costs of 10 to 20 per cent should be possible in most major ports (ACOS 1984, 14).

There is no evidence that the level of overservicing claimed to occur results from any lack of competition. As noted above, towage companies do not directly influence the number of tugs supplied to service a vessel.

One characteristic which the lack of competition between tug operators may produce is that of excessive capital overheads resulting from the maintenance of too many tugs for the given number of vessel visits. However, no data on tug idle time were available to examine this aspect of the industry.

TABLE 5.3 TOWAGE AND LINES OPERATORS IN THE MAIN AUSTRALIAN PORTS

Port	*Operator*	*Owner*
Sydney & Port Botany	J. Fenwick & Co. Pty Ltd	Brambles Industries Ltd
	Waratah Towage Pty Ltd	The Adelaide Steamship Co. Ltd Howard Smith Ltd
	Harbour Lighterage Pty Ltd[a]	Brambles Industries Ltd The Adelaide Steamship Co. Ltd
	Stannard Bros Launch Services Pty Ltd[a]	The Adelaide Steamship Co. Ltd Howard Smith Ltd (through Marine Plant Holdings Pty Ltd)
Melbourne	Melbourne Tug Services	Howard Smith Ltd McIlraith McEacharn Ltd
Brisbane	Queensland Tug & Salvage Co. Pty Ltd	The Adelaide Steamship Co. Ltd Howard Smith Ltd
Adelaide	Ritch & Smith Pty Ltd	The Adelaide Steamship Co. Ltd
Fremantle	Fremantle Tug Operators	Howard Smith Ltd (through The Swan River Shipping Co. Ltd) McIlraith McEacharn Ltd

a. Line launch only.

Sources Personal communication with towage and lines operators and shipping lines, October 1986.

Entrance to industry

The vertical affiliations of existing tug operators with other companies, (see Table 5.3) can assist these operators to resist entry of new participants. However, possibly the greatest barrier to new

entrants is that the demand for tug services is insufficient to support more than one or two operators in each port.

Other constraints on the ability of new firms to contest the towage market could be the difficulty of obtaining appropriately skilled labour and the possible sunk costs associated with the ownership of tug boats (the specialised nature of the vessels and small local market making disposal a more difficult and costly business).

BERTHING LINES AND LAUNCH SERVICES

Berthing lines are used to tie the vessel up to the wharf after the tugs have moved it into position. In certain cases, a launch is required to ferry the shipboard lines from the vessel to the wharf during docking and conversely from the wharf to the vessel upon departure. In the latter instance, the launch is mainly employed as a safety measure.

The service represented by the provision of berthing lines and subsequent tying up of vessels is organised in different ways at the various ports. In Sydney, berthing lines are provided by a commercial organisation except in the case of Australian National Line (ANL) vessels which are serviced by its own waterside labour. Arrangements for this service are made by the shipping agents.

In Melbourne, the berthing lines service is arranged and provided by the Port of Melbourne Authority (PMA), while in Brisbane this service is arranged and provided by each of the terminals. In Adelaide, the berthing lines service is arranged and provided by the Department of Marine and Harbors, while in Fremantle this function is organised by the port authority.

GANGWAY WATCH

Gangway watchmen at terminals and conventional wharves in each port are provided by the Association of Employers of Waterside Labour (AEWL), watchmen being members of the Federal Miscellaneous Workers' Union (FMWU). However, administrative arrangements vary, in that members of the AEWL (which includes some shipping lines) are able to negotiate direct with the AEWL, whereas non-members must deal through the stevedoring companies. In certain instances, stevedoring companies may stipulate that gangway watch services be booked through them regardless of the shipping line affiliations.

In Sydney and Melbourne, gangway watch may vary, depending on whether the vessel is working or not. If the vessel is loading or discharging

cargo, the ship's crew may maintain the watch, stevedoring watchmen being employed when the vessel is not being worked.

PORT-RELATED SERVICE CHARGES

Table 5.4 presents indicative charges for the pilotage, towage, berthing lines and gangway watch services discussed above. The estimates in the table apply to a 25 000 GRT container ship and refer to the year 1985. Charges for the various services are discussed below.

Pilotage

The pilotage charges shown for the major ports are the total charges incurred for a vessel arriving and departing the port. These indicative charges range from a low of some $1 600 in Port Adelaide to $7 000 in Melbourne and Brisbane. No investigation has been undertaken into the factors which might contribute to this variation.

Towage

Tug charges per port call for each of the major ports vary between $1 500 and $3 200 per tug for each of the arrival and departure legs of a vessel. These charges apply to normal operating hours. Higher unit charges may apply at other times. Dependent on the vessel specifications (dictating tug requirements) and arrival time, the charge per port call will range from approximately $2 000 to $13 000. These charges are derived from towage charges per tug and normal tug requirement data for each port, the latter being the number of tugs required for a vessel of this size given normal operating conditions and fair weather.

Total towage charges vary considerably between ports as a result of the variability between charges per tug and the tug requirement per vessel. Tug requirements for a vessel of 25 000 GRT may vary in the Port of Melbourne dependent upon tidal conditions and ships' masters' preferences. Also, due to navigational characteristics, only one tug is required to effect the tow in Adelaide, two further tugs being required only for the berthing. However, in each case, total tug charges shown in Table 5.4 have been based on the need for three tugs for the duration of the towage and berthing procedure. Hence, total towage charges may be overstated in these two ports.

Towage charges per tug for each of the ports suggest that there is no direct relationship between the level of charges and the size (measured by vessel throughput) of the port or the number of tugs available. Adelaide has the lowest tug charges and Brisbane the

highest (over twice that of Adelaide). The charges at Fremantle and Brisbane differ significantly, although both ports attract similar levels of shipping activity (DoT 1984a). Towage charges (per tug) in Sydney are slightly below those in Fremantle which has only half Sydney's level of shipping activity.

Likewise, tug availability, when considered in conjunction with numbers of vessel working visits per annum and tug requirements per vessel for each port, also appears unrelated to tug charges. Brisbane, with the highest tug charges, has the lowest vessel to tug ratio, whereas Adelaide and Sydney, which have similar charges, have vastly different vessel to tug ratios.[1] Other factors also influence these charges. For example, as indicated in Table 5.4, tug transit time from home base to the Fishermans Island terminal at Brisbane is considerable and adds to towage costs. This also influences the level of utilisation obtainable from each tug and the number based at Brisbane may be justified by the need to meet peak demand periods efficiently.

Any attempt to establish robust relationships between towage charges and activity and supply levels requires detailed information on the different operating practices in individual ports. However, it seems reasonable to conclude from the towage cost figures in Table 5.4, and from general information on port operations, that unit towage charges in the various ports reflect the costs of providing the service (at least in a relative sense) including the relative difficulty of navigation and distances over which ships are towed.

Berthing lines and launch services

Table 5.4 gives indicative charges for provision of berthing lines and line launch (where applicable or separately charged) for the five major Australian ports. The major ports of Sydney and Brisbane maintain generally comparable charges and are by far the most expensive of the five ports covered. Charges for this service in Melbourne are considerably lower even when the additional launch service is included, while Fremantle charges for berthing lines are half those of Melbourne and line launch charges are substantially less.

In Adelaide, no separate charges for line services are imposed during normal operating hours (0700 to 1500 hours). Presumably, payment for

1. The overhead costs associated with tugs in Brisbane are spread over only relatively few vessel calls, contributing to the high unit charges.

these services is included in other port authority charges. Where provision of berthing lines are required outside normal hours, a work gang is specially employed, with a four-hour minimum charge. Should the gang service more than one vessel during this period, the total charge for the four hours is spread over the number of vessels serviced.

Gangway watch

Table 5.4 provides comparative data on gangway watch charges for the five major capital city ports. Charges shown for conventional wharves are the AEWL basic hourly award rates applicable in each State for operations during normal day shift working hours (0700 to 1500 hours). Additional penalties and rates applicable to other shifts are indicated in footnote (b) of the table. It can be seen from these data that hourly charges vary greatly from port to port, Sydney being the least expensive and Brisbane the most expensive. Notably, the two largest ports of Sydney and Melbourne are the least expensive of the major ports.

Gangway watch charges at terminals come under The Federal Miscellaneous Workers (Container Terminals and Depots) Security Officers Award, 1984. This award provided for a standardised Australia-wide base rate of $355.30 per week. Rates applicable to shipping lines which negotiate for gangway watchmen through the stevedoring companies can be considerably more than those rates presented in Table 5.4.

TABLE 5.4 INDICATIVE PILOTAGE, TOWAGE, BERTHING LINE AND GANGWAY WATCH CHARGES[a] FOR A 25 000 GRT CONTAINER VESSEL, 1985

Port	*Pilotage* ($)	*Towage charges per tug* ($)	*Number of tugs required* ($)	*Total towage charges*[a] ($)	*Berthing lines* ($)	*Line launch* ($)	*Gangway watch at conventional wharves basic rate*[b] ($/hr)
Sydney	5 400	1 518	3	9 108	2 210	d	8.11
Melbourne	5 500	2 185	2 or 3	13 110	840	900	9.94
Brisbane	5 200	3 170[c]	2	12 680	2 200	d	11.38
Adelaide	1 700	1 480	3	8 800	..	..	10.12
Fremantle	3 000	1 840	2	7 360	400	140	10.65

a. Total towage charges assume the greater number of tugs required when variations are indicated. Charges for inward and outward movements of the ship are included and it has been assumed that the same number of tugs are required for departure as are required for arrival.

b. Gangway watchmen at conventional wharves come under the AEWL hourly award rates in each State. The basic rate shown is for the day shift covering 0700 to 1500 hours. Evening shift (1500 to 2300 hours) is paid is time and a half, night shift (2300 to 0700 hours) is paid at double time, and night shift for Sundays paid at double time and a half. A leave levy in lieu of holidays is also paid and this rate varies between States. The loading is generally between $1.00 and $1.50 per hour. See text for situation relating to container terminals.

c. Charges relate to towage to Fishermans Island. Charges for towage to Hamilton Reach are $2 420 per tug. The difference in charges is attributable to the differing transit times of tugs from their base to the respective terminals. Tug transit times are one and one-half hours to Fishermans Island and twenty minutes to Hamilton Reach.

d. Included in charges for berthing lines.

e. No separate charges during normal operating hours (0700 to 1500 hours).

.. Not applicable.

Sources BTE personal communications with port authorities and State marine boards.

CHAPTER 6 TERMINALS AND STEVEDORING

Today, stevedoring involves the loading and unloading of a ship's cargo and incorporates the landside responsibilities of storing the cargo and, in most cases, transferring the cargo to or from land transport. Historically, in the years of sail, stevedoring did not include these landside responsibilities. Instead, a ship was worked on a 'hook to hook' basis where the cargo was delivered to the ship's side by the exporter and collected at the destination port by the importer.

With the industrial revolution, steam powered handling equipment was introduced both on the ship and the wharf, and this increased cargo handling rates. Cargoes become more sophisticated and valuable, and consignments become smaller and more numerous. These changes made the concept of storing the cargo at the wharf attractive to shipowners because the amount of cargo to be moved equated better with the increased handling rate of the equipment, which resulted in faster turnaround times for the ship. Because of the larger capital equipment required to move containers, the advent of containerisation saw terminal operators assume responsibility for transferring the cargo to or from land transport. However, at some conventional wharves, such as Darling Harbour in Sydney, road transport operators still often transfer LCL or break-bulk cargoes to or from the truck.

The stevedoring of non-bulk cargoes is carried out by either a conventional stevedoring company operating at a conventional wharf, or a specialised container terminal operation. Conventional stevedoring companies handle cargo that is frequently break-bulk as described in Chapter 2, but may also be equipped to handle containerised cargo. Container terminals specialise exclusively in the handling of containerised cargoes and usually represent more capital-intensive operations.

The first part of this chapter gives a brief insight into conventional wharves and their associated stevedoring operations. Aspects such as operations, ownership and economic characteristics are addressed. The latter and major part of this chapter focuses on the operations of container terminals.

CONVENTIONAL WHARVES AND STEVEDORING

Conventional stevedoring companies operate at wharves which are generally common-user facilities owned by the relevant port authorities. These berths and associated handling facilities are made available to various shipping companies which then contract a stevedoring company to service their ships. The stevedoring company is responsible for providing the labour and any extra equipment required to load and unload the ship.

The emergence of container terminals and specialised container ships has led to a contraction of conventional stevedoring operations. The multiplicity of conventional stevedoring companies that existed in Australia prior to containerisation has been reduced to three. In fact, for all the major ports except Melbourne, the conventional stevedoring industry has virtually become a duopoly, as shown in Table 6.1. The conventional stevedoring companies, Conaust Pty Ltd and Patrick Stevedoring Co. Pty Ltd, operate in most of the major Australian ports. A third company, F G Strang Pty Ltd, operates in Melbourne, Adelaide and some smaller ports. Table 6.1 indicates that P&O Australia Ltd is the major shareholder of Conaust Pty Ltd but that the other two companies do not have any direct connection with liner shipping interests. Patrick Stevedoring Co. Pty Ltd and F G Strang Pty Ltd are also involved in container terminal operations, as illustrated in Table 6.2.

In the major ports, each conventional stevedoring company and container terminal operator employs a labour force of waterside workers. There is a system of inter-employer and inter-port transfer of labour through which employers are able to make adjustments to the size of their labour force. These adjustments give the employers the flexibility necessary to cater for fluctuating trade levels.

The allocation of waterside workers to stevedoring companies and container terminal operators is assessed quarterly. This allocation is considered by the Federal Co-ordinating Committee and individual port co-ordinating committees which comprise representatives of the Association of Employers of Waterside Labour (AEWL) and the Waterside Workers' Federation (WWF). The roles of these committees are described in detail in Chapter 12.

For Newcastle and some smaller ports, a labour pool exists from which employers may draw sufficient waterside workers to cope with demand on a daily basis. These labour pools are administered by Stevedoring Employers of Australia Ltd (SEAL), which is also discussed further in Chapter 12.

TABLE 6.1 CONVENTIONAL STEVEDORING COMPANIES OPERATING AT MAJOR AUSTRALIAN PORTS

Location	*Stevedore*	*Owner*
Sydney	Conaust (NSW) Pty Ltd	P&O Australia Ltd Burns Philp Ltd
	Patrick Stevedoring	James Patrick & Co. Pty Ltd[a]
Melbourne	Conaust (Vic) Pty Ltd	Seatainer Terminals Ltd[b]
	Patrick Stevedoring	James Patrick & Co. Pty Ltd[a]
	F G Strang Pty Ltd	F G Strang Pty Ltd
Brisbane	Conaust (Qld) Pty Ltd	P&O Australia Ltd Burns Philp Ltd
	Patrick Stevedoring	James Patrick & Co. Pty Ltd[a]
Adelaide	Conaust (SA) Pty Ltd	P&O Australia Ltd
	Patrick Stevedoring	James Patrick & Co. Pty Ltd[a]
	F G Strang Pty Ltd	F G Strang Pty Ltd
Fremantle	Conaust (WA) Pty Ltd	P&O Australia Ltd
	Patrick Stevedoring	James Patrick & Co. Pty Ltd[a]
	Fremantle Port Authority	

a. Owned by Howard Smith Ltd.
b. Owned by OCAL and P&O Australia Ltd.

Source Personal communication with stevedoring companies and shipping lines, October 1986.

For conventional stevedoring, the two main barriers to entry to the industry are the difficulty in gaining access to stevedoring labour and the potential for the existing companies to deter entry through short-term pricing strategies. The existing companies could restrict access to stevedoring labour to discourage any further competition in the industry. For example, in 1985, a stevedoring company operating in one port had to resort to arbitration within the AEWL mechanism before being granted permanent labour to operate in another.

Furthermore, even if a new company gained access to labour, existing companies may have the potential to cross subsidise their operations and charge lower prices until the new entrant exits the market.

Conventional stevedoring charges

Responses from shipping companies to a Bureau survey on the market characteristics of the shore-based shipping industry indicate that, in 1984-85, conventional stevedoring charges approximated $20 per cubic metre or $35 per tonne for general cargo. For refrigerated cargo, charges were approximately $25 per cubic metre, and for roll-on roll-off (ro-ro) cargo, the charges were approximately $45 per cubic metre.

With only two or three conventional stevedores operating in any one port and potential entrants facing substantial entry barriers, there may not be a great deal of competition in the industry. However, this assessment must be placed into context and viewed in relation to the volume of cargo handled by the stevedores and the highly regulated labour conditions which apply to employees of all stevedoring companies. The volume of cargo, at least in the recent past and in the forseeable future, may be insufficient in some ports to allow additional stevedores to be viable. The generally similar labour costs faced by all stevedores (and noting that labour costs account for a high proportion of their total costs) would also influence the level of price competition in the industry.

The remainder of this chapter focuses on container terminals and their associated stevedoring operations.

CONTAINER TERMINALS

A container terminal is a large open area, normally located at the rear of a berth, where containers are stored before loading or after discharge from a vessel. Incorporated in the terminal's functions are the traditional stevedoring role of loading and unloading the vessel and the management of the road and rail transport interfaces. These interfaces involve the receival of export containers and the delivery of import containers.

Fully cellular container vessels, specifically designed for carrying containers, are generally handled at purpose-built berths which have portainer cranes capable of lifting containers from the vessels' holds to the shore and vice-versa. For ro-ro vessels which allow forklifts to carry containers and other cargo onto and off the vessel, a minimum of specialised facilities is required at the terminal if the vessel

has its own ramp which may be lowered onto the berth.[1] Exceptions to this are stern-door vessels of the type operated by the Australian National Line (ANL), which can only be served at berths providing a shore-based stern ramp.

Stevedoring operations

For the import of containers, the operations of a container terminal can be divided into three separate activities: ship-to-shore handling, shore-to-stack handling and the stack-to-land transport handling. The reverse sequence applies to the export of containers. A more detailed description of each activity follows, and Figure 6.1 shows some of the types of equipment used.

Ship-to-shore

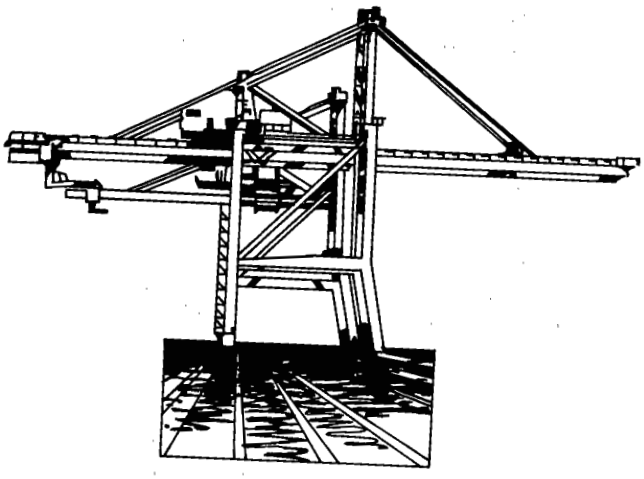
The task of loading or unloading cellular container ships is performed using portainer cranes, which are the single most expensive pieces of machinery (at a cost of about $6 million each) utilised by terminals. These portainer cranes can be double lift, capable of lifting two 20 foot containers simultaneously or lifting a single 40 foot container, or alternatively single lift, capable of lifting only one container (either 20 foot or 40 foot) at a time. The portainer cranes convey the containers from the ship to the shore or load them directly onto Internal Transfer Vehicles (ITVs) positioned on the berth for movement elsewhere.

For ro-ro vessels, fork lifts gain access to the vessel by either a ship-based or shore-based ramp. These forklifts (which cost about $300 000 each, depending on size) move the containers between the ship and the shore. Other vessels, including some ro-ro vessels, carry their own lifting gear for loading and unloading cargo.

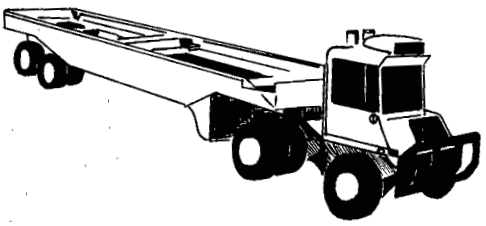
Shore-to-stack

The shore-to-stack operation involves the movement of containers from the ship's side to the terminal's storage area for imports, and the reverse for exports. This operation may be performed by a variety of container handling equipment such as front loading or top loading forklifts, straddle carriers, tractor-trailer internal transfer vehicles (ITVs) or a combination of these. Each terminal tends to specialise in one or more types of equipment. ANL terminals in Sydney, Melbourne and Brisbane all use forklift trucks for the transfer of containers within the terminal. The Seatainers terminal

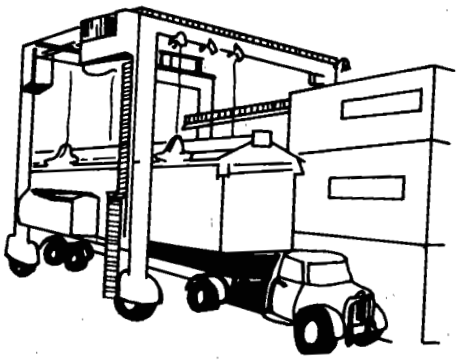
1. Deck strengthening is sometimes required at berths which have not been built to withstand heavy wheel loads or ramp loads from ro-ro vessels.



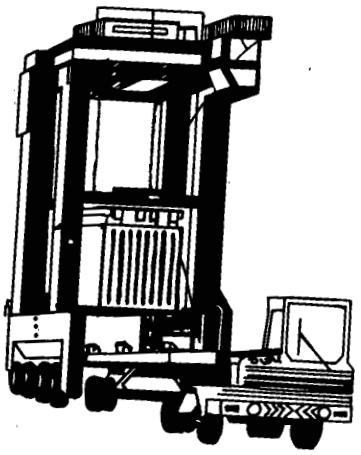
Portainer crane



Internal transfer vehicle (ITV)



Transtainer



Straddle carrier

Figure 6.1 Equipment commonly used in container terminal operations

in Melbourne uses straddle carriers to perform the loading and unloading of ITVs at the stack. Trans Ocean Terminals in Adelaide and Melbourne use straddle carriers for the shore-stack transfer with some assistance from forklifts.

The characteristics of each terminal (for example, available space) will influence the type of equipment and stacking procedures utilised. Access stacking, where containers are stacked in rows that are two containers wide and two high, is employed at terminals that have considerable storage area such as the Container Terminals Australia Limited (CTAL) terminal at Port Botany. This type of stacking enables access to any container by requiring a maximum of only one other container movement. Block stacking (where containers are stacked in large blocks which are generally three containers in height) is employed where a terminal has limited space, such as the Glebe Island terminal at Port Jackson. This may require a number of container movements to gain access to a particular container. Access stacking is generally performed by forklifts whereas block stacking is performed by straddle carriers.

Stack-to-land transport

This operation involves transferring containers between the terminal storage area and rail or road transport. A number of different types of equipment are in use, including fixed overhead travelling gantries (often referred to as transtainers), forklifts and straddle carriers, with no individual system dominating. The system adopted will also be influenced by the space available and stacking procedures followed, as mentioned above.

Ownership

In general, container terminals are owned by various consortia of shipping companies which utilise the ports where the terminals are located. Table 6.2 sets out the operators and owners of the major container terminals in Australia. Ownership of container terminals is dominated by five groups, Australian National Line (ANL), P&O Australia Ltd, Overseas Containers Australia Limited (OCAL), Associated Container Transportation Australia Pty Ltd (ACTA) and Patrick Operations Pty Ltd. Four of these groups are controlled by shipping interests whilst the fifth (Patrick Operations Pty Ltd) is owned by a diverse company with, *inter alia,* conventional stevedoring and shipping interests. The companies controlled by shipping interests are almost exclusively members of various shipping conferences serving Australia. Three of the groups (P&O Australia Ltd, OCAL and ACTA Pty Ltd) which own the major terminals have parent companies in the UK, and P&O Australia Ltd and OCAL are linked through

TABLE 6.2 MAJOR AUSTRALIAN CONTAINER TERMINALS

Location	*Terminal*	*Owner(s)*
Sydney		
Glebe Island	Glebe Island Terminals Pty Ltd	James Patrick & Co. Ltd[a]
Botany Bay	Australian National Line (ANL)	ANL
	Container Terminals Australia Ltd	OCAL Mitsui OSK Nippon Yusen Kaisha Yamashita-Shinnihon Hapag-Lloyd Lloyd Triestino Campagnie Generale Maritime Nedlloyd
White Bay[b] (Ro-ro operation)	Union Steamships Co. of Australia Pty Ltd	Union Shipping Group Ltd[c]
Melbourne		
Webb Dock	ANL	ANL
Swanson Dock West	Seatainer Terminals Ltd	OCAL P&O Australia Ltd
Swanson Dock East	Patrick Stevedoring	James Patrick & Co. Ltd[a]
Swanson Dock East	Terminal Properties of Australia Pty Ltd (Trans Ocean Terminals)	Associated Container Transportation (United Kingdom) (ACT(UK)) Ltd ANL
Swanson Dock East	F G Strang Pty Ltd	F G Strang Pty Ltd
Brisbane		
Newstead	ANL	ANL
Fisherman Islands	Brisbane Amalgamated Terminals Ltd	P&O Australia Ltd ANL

TABLE 6.2 (Cont.) MAJOR AUSTRALIAN CONTAINER TERMINALS

Location	*Terminal*	*Owner(s)*
Fremantle		
North Quay	Fremantle Terminals Limited	Seatainer Terminals Ltd P&O Australia Ltd Knutsen Line
Adelaide		
Outer Harbour	Termainal Properties of Australia Pty Ltd (Trans Ocean Terminals)	ACT(UK) Ltd ANL
Berth 25 (Ro-ro operation)	ANL	ANL

a. Owned by Howard Smith Ltd.
b. Handles predominantly New Zealand and coastal cargo.
c. Owned by TNT Ltd and independents.

Source Personal communication with container terminals and shipping companies, October 1986.

their parent companies. The remaining two (ANL and Patrick Operations Pty Ltd) are Australian owned (BTE 1986b).

There have been some changes to the participants in the container terminal industry since the early 1970s. Apart from terminal developments carried out by liner shipping interests in various ports, two firms with involvement in conventional stevedoring have commenced operating container terminals. Patrick Operations Pty Ltd now operate Glebe Island Terminal in Sydney which was originally developed and operated by the Maritime Services Board. In Melbourne, Patrick Operations Pty Ltd and F G Strang Pty Ltd both operate terminals at East Swanson Dock, although strictly speaking these are both common user berths.

Vertical integration

Vertical integration may be considered as a form of diversification and is a management strategy employed to reduce costs and minimise uncertainty and risk. A shipping company which is a significant shareholder in a container terminal may be able to ensure that it has access to a suitable berth and loading and unloading services, particularly at times of high demand. The shipping company is also in

a better position to influence pricing of the services the terminal provides. By having interests in terminal and stevedoring operations, depots and storage areas, a shipping company may have the flexibility that enables it to optimise the cost and revenue structures of the whole group or pursue some other corporate objective. Ownership of terminals also gives shipping companies some influence over the equipment and operating procedures employed in the terminal.

As shown in Table 6.2, there are five purpose-built international container terminals in Melbourne, three in Sydney and one each in Brisbane, Fremantle and Adelaide. The ownership of these terminals is dominated by five groups, four of which are controlled by liner shipping interests. Hence, there is extensive vertical integration of liner shipping and container terminals. Although vertical integration is presumably considered to be beneficial to the operation of the shipping lines, its effect on shore-based transport and handling operations warrants some discussion.

To understand the commercial relationships established between terminals and shipping lines it must be stressed that the shipping lines are the clients of the terminals (even in those cases where a shipping line has some stake in the terminal). Given this, there are indications that, guided by the strong desire of these shipping lines to avoid ship delays, terminal operators may not be in a strong position to withstand labour demands. In addition, the priority given to 'working' the ship relative to servicing land transport can be detrimental to the operating efficiency of the terminal and land transport interface. These pressures may be stronger for terminals which have shipping companies as their major shareholders.

Potential entrants to the container terminal industry face various barriers to entry. There are substantial sunk costs involved in the establishment of a terminal. It can cost at least $50 million to establish a modern container terminal and a substantial proportion of this total may be difficult to recoup on exit from the industry.

Various resource constraints also represent barriers to entry. It is often difficult to find suitable berths with the large areas of adjacent land that are required to develop a container terminal. Government policies relating to the development of new berths and the development of the land transport infrastructure required by a new terminal may represent barriers to entry. The complex regulations and agreements that exist with regard to the employment of waterfront labour also represent a barrier to entry, as noted previously.

Finally, it is of interest to examine the proportion of a terminals' business which is represented by its shipping company shareholders or their conference partners. This provides some measure of the extent to which vertically integrated terminals service 'independent' shipping lines. Table 6.3 presents a breakdown of vessels served at the major terminals in Sydney and Melbourne, by ownership class. The table shows the proportions of vessels calling at each terminal, or group of terminals, which are either operated by a direct shareholder of the terminal or by a conference partner. The figures indicate that terminals owned by liner shipping interests have access to substantial business from their shareholders and associates. It is unlikely that this business would be materially affected by the advent of new terminal operators.

Productivity

Container terminal productivity is critically dependent on the level of trade and, to some extent, the productivity of waterside workers would be expected to rise with increased trade levels. Table 6.4 provides a measure of container terminal productivity by comparing the quantity of cargo stevedored at container terminals to the number of manhours used in the stevedoring operations for the periods 1980-81 to 1983-84. The manhours are estimates, supplied by the terminal operators, of the actual number of manhours spent on 'working' vessels and exclude idle time and time lost due to industrial disputes.

As Table 6.4 and previous chapters show, 1982-83 produced a significant trade slump in terms of cargo volumes handled. However, it appears that the number of ship calls did not decline as much as the cargo volumes and that ships, on average, carried less cargo. In stevedoring operations there is a much higher handling rate on the marginal tonne of cargo due to economies of scale. This means that the average productivity declines if smaller amounts of cargo (per ship) are being stevedored. The aggregate 1982-83 productivity figure in Table 6.4, which is lower than those of other years in the table, is likely to have been influenced by this effect.

A Bureau study on container terminal productivity (BTE 1985c) gives an insight into the time frames and possible delays involved in stevedoring a container vessel. This study examined operations at the CTAL terminal during the 1983 calendar year and found that some 49 per cent of average vessel alongside time (of 51 hours) comprised non-operational delays. Nearly half of these delays represented non-working of the mid-night shift, and the remainder (some 14 hours per vessel on average) represented time lost because of industrial matters, meal and other breaks, and delays in vessel sailing. It

should be noted, however, that in the year to which these figures apply a decrease in trade occurred, and this in itself may have affected productivity levels.

TABLE 6.3 OWNERSHIP OF VESSELS CALLING AT CONTAINER TERMINALS IN MELBOURNE AND SYDNEY, 1983-84

		Vessels owned or operated by	
Terminal operator	*Number of vessel calls*	*Terminal shareholders (per cent)*	*Terminal shareholders and their shipping conference partners (per cent)*
Sydney			
With major shipping line interests			
Australian National Line	208	36	84
Container Terminals Australia Ltd	121	60	99
Without major shipping line interests			
Glebe Island	136	0	0
Other	3	0	0
Melbourne			
With major shipping line interests			
Australian National Line	130	46	98
Seatainer Terminals Ltd	111	33	86
Trans Ocean Terminals Pty Ltd	81	49	100
Without major shipping line interests			
Liner Services[a]	188	0	0
FG Strang	66	0	0
Other	50	0	0

a. Now operated by Patrick Stevedoring Co.

Source DoT (1986).

TABLE 6.4 PRODUCTIVITY OF WATERSIDE WORKERS AT CONTAINER TERMINALS, 1980-81 TO 1983-84

	Terminal cargo		
Period	*Tonnes ('000)*	*Working manhours ('000)*	*Tonnes per manhour*
1980-81	18 612.1	4 186.1	4.4
1981-82	17 794.3	4 142.1	4.3
1982-83	15 286.1	3 938.5	3.9
1983-84	16 165.5	3 492.2	4.6

Source DoT (1984a, 1984b).

Terminal charges

As with other sections of the shore-based shipping industry, the published tariff rates of the container terminals are subject to commercial negotiation and discounting for volume. Discussions with users of terminals and information from the terminals themselves indicate that terminal charges in Australia are approximately $230 per TEU. This charge covers all the stevedoring operations discussed previously and storage for three days. For container terminals in Sydney, indicative terminal charges range from $215-240 per TEU, and for container terminals in Melbourne the charges are from $180-225 per TEU. The lower charges in Melbourne may be the result of a greater level of competition between container terminals within that port, or they may reflect lower cost structures for those terminals.

Cargo requiring refrigeration, such as meat, dairy products and some agricultural products, are shipped in refrigerated containers (reefers). Charges levied to cover the additional cost of handling reefers at container terminals are estimated to total approximately $190 per TEU.

The terminal charges outlined above represent the largest single component of shore-based costs involved in handling FCLs. These charges are paid by the shipping companies to the terminal operators and are recovered from shippers or consignees through freight rates.

Summary of container terminal performance

Users have been expressing concern about the performance of container terminals since they were first developed some fifteen years ago.

Users' concern at the rate of increase in terminal tariffs led to enquiries by the Prices Justification Tribunal (PJT) into the practices of Seatainer Terminals Limited and the Patrick Stevedoring Co. in 1977. The PJT found that Seatainer Terminals Limited was in a position of having no real price competition for its terminal services in Sydney and Fremantle. From the Patrick's inquiry, the PJT established that stevedoring was a highly profitable business. Concern about terminal performance and the interaction between container terminals and land transport contributed to the establishment in 1984 of the Task Force on Shore-Based Shipping Costs.

The economies of scale and the size of the total market are such that there will only ever be relatively few container terminals in any one port. In addition, for reasons stated previously, it is difficult for new operators to enter the market for the provision of stevedoring services.

One possible response to any situation of limited competitiveness where there is some community-wide adverse impact is for governments to regulate or introduce other measures to ensure appropriate performance standards are met. However, stevedoring in general and container terminals in particular are complex operations which are subject to various external pressures and so it would be very difficult for a regulatory body to determine the levels of prices that could be justified and the levels of service that would be appropriate. Furthermore, it is possible that regulatory intervention would inhibit container terminals from engaging in any form of service competition or from maintaining their facilities at efficient levels.

Although the vertical integration of container terminals and shipping lines may work against competition among terminals, the removal of vertical integration from the market structure would not in itself make the market more competitive. The various factors suggested as applying to conventional stevedoring operations (common labour costs and conditions, economies of scale and so on) also apply to terminals, and given these factors, all types of stevedoring operators will continue to be limited in their ability to compete on price and service.

CHAPTER 7 DEPOTS

The function of the container depots is primarily to pack and unpack those containers carrying cargo either from a number of individual shippers or to a number of individual consignees (that is, LCL). These depots play a small yet significant role in both the import and export of containers. This role has diminished over the years with the world-wide move to greater use of FCLs (which do not generally pass through depots). However, LCL traffic is still significant, accounting for approximately 13 per cent of total Australian container usage, and is anticipated to stabilise only slightly below this level in the foreseeable future.

Apart from the trend towards reasonably large consignments being destined for individual consignees, the tendency against LCL usage also results from the higher costs associated with their usage, the bulk of these costs being attributable to additional charges and time lags associated with the need to use depot facilities. This chapter examines the structure of depots in Australia and discusses their operational and economic characteristics.

DESCRIPTION

A container depot is a place where:

- Import containers are unpacked and cargo is stored, ready for delivery. Normally these containers will be LCLs but FCLS for a single consignee are sometimes also unpacked when that consignee does not have the necessary facilities to do so; and
- Export cargo is received and packed into containers. Normally these containers will also be LCLs but container loads from a single consignor are sometimes also packed.

Some depots also have facilities for receiving and storing export cargo, holding containers with perishable cargo under refrigeration and repairing and cleaning containers. Bond stores may also be incorporated as part of a depot's operation or operated as an separate activity at premises within close proximity.

Bond facilities provide secure storage for import cargo which has not been collected from the depots, or to a limited extent, the terminals, and which has not received final Customs clearance. Relatively little FCL cargo is bonded. However, when bonding is necessary, the depot (or terminal) obtains permission from Customs and arranges to move the containers or their contents to the bond store. All costs associated with this procedure such as cartage, bond fee, storage and ultimate delivery are the responsibility of the consignee.

Availability dates for LCL cargo (that is, the dates on which cargoes are unpacked from particular containers at specified depots) are advertised in the *Daily Commercial News*. From the date of availability, consignees are allowed three days to take delivery of the cargo. Upon expiration of this time, the cargo is subject to bonding by the depot. As with FCL cargo, all charges related to the bonding are settled directly between the consignee and the bond store.

The depot used for packing and unpacking containers is determined by the shipping agent responsible for the cargo. Thus, containers from one vessel may go to a number of different depots if more than one agent controls cargo on the vessel. A list of the container depot operators servicing the major container ports is given in Table 7.1.

DEPOT OPERATION

Imported LCL containers are moved to depots by either road or rail transport. If the depot is part of the terminal complex, a depot-transfer-vehicle (DTV) is used. This is a vehicle specifically designed to transport containers and is not intended for use on public roads. If the depot is located outside the port, regular road transport vehicles are used or, when appropriate (for example, block container movements), rail is used where the depot has a rail link.

In the depot, the container is unpacked and the contents laid out in marked bays on the shed floor for collection by the importer's carrier.

The carrier must present the following delivery documents to the depot in order to take delivery of the cargo:

- delivery order
- customs clearance
- quarantine clearance (if required).

The cargo is brought from the depot shed by small forklifts using

TABLE 7.1 CONTAINER DEPOT OPERATORS SERVICING MAJOR AUSTRALIAN PORTS

Location	*Depot*	*Owner*
Sydney[a]	Terminal Properties of Australia Pty Ltd (Freightbases)	Associated Container Transportation (United Kingdom) (ACT(UK)) Ltd ANL
	Liner Services Pty Ltd	Wilh Wilhelmsen Farrell Lines Inc.
	Consolidated Cargo Services (NSW) Pty Ltd.	Conaust Pty Ltd[b]
	Seatons Container Freight Station Pty Ltd	Privately owned
	Universal Transport Aust.[c]	A large number of customs agents and port road carriers
	Trans-Tasman Depot[c]	Freight Management International[d]
Melbourne[a]	Terminal Properties of Australia Pty Ltd (Freightbases)	ACT(UK) Ltd ANL
	Patrick Stevedoring	James Patrick & Co. Pty Ltd[e]
	Strangtainer	F G Strang Pty Ltd
	Seatainer Terminals Ltd	OCAL P&O Australia Ltd
	Southport Freight Station[c]	Universal Transport Australia Ltd
	Zealand Depot[c]	Freight Management International[d]
	Tradex Depot[c]	F G Strang Pty Ltd

TABLE 7.1 (Cont.) CONTAINER DEPOT OPERATORS SERVICING MAJOR AUSTRALIAN PORTS

Location	*Depot*	*Owner*
Brisbane[f]	Brisbane Amalgamated Terminals Ltd (Fisherman Islands)	P&O Australia Ltd ANL
	Rivers Trading Co. Pty Ltd	TNT and private ownership
	Macpak Pty Ltd	Australian Freight Services Pty Ltd
	Herston Properties Pty Ltd	Finney Bryce Transport Ltd
	Interport (Brisbane) Pty Ltd	International Transport Consultants Pty Ltd Wilene Holdings Pty Ltd and other private ownership
Adelaide	Terminal Properties of Australia Pty Ltd (Freightbases)	ACT(UK) Ltd ANL
	Austainer Services	Charlick Trading Ltd
	Seatainer Terminals Ltd	OCAL P&O Australia Ltd
Fremantle	Fremantle Terminals Ltd	Seatainer Terminals Ltd P&O Australia Ltd Knutsen Line

a. Trans-Tasman export cargo is also packed (but not unpacked) at a number of small depots in Sydney and Melbourne as well as at depots operated by Brambles, TNT and Tradex in Sydney and by Brambles and TNT Melbourne. These depots are not licensed by Customs for unpacking operations.
b. Owned by P&O Australia Ltd and Burns Philp Ltd.
c. These depots handle trans-Tasman cargo only.
d. Owned by Mayne Nickless Ltd.
e. Owned by Howard Smith Ltd.
f. There are also several small depots in Brisbane with variable operating abilities in terms of negotiated industrial arrangements.

Sources Personal communication with container depots and shipping lines, October 1986.

pallets and is normally transferred to the truck via loading bays or portable platforms. Cargo may be left on the pallet, transferred to another pallet, or depalletised onto the truck tray.

Discussions with users of the depots indicate that the time period between the arrival of a vessel and the availability of LCL cargo for collection from the depot can vary between one and three weeks.

In most cases LCL containers are not available for transfer to the depot until the end of the vessel discharge as, until recently, allocation of equipment by the terminal invariably gave priority to servicing the vessel rather than transferring LCL containers. However, emphasis on vessel servicing has been reviewed by a number of terminals and a more equitable allocation of container handling equipment between vessel and road and rail transport has resulted. This rearrangement in priorities has allowed earlier movement of LCL containers from the terminal to the depot in some situations.

DEPOT THROUGHPUT

Despite containers being increasingly utilised for the movement of non-bulk cargo, the growth in container usage was halted by the trade slump of 1982-83 (see Table 4.1). Utilisation of LCL containers fell by 25 per cent in that year. This slump precipitated the closure of a number of depots in Australia and threatened the viability of others.

The high costs associated with the use of international depots in Australia, and the attendant delays to cargo which also resulted, have exacerbated the declining proportion of LCL cargo. These costs have encouraged users with relatively small consignments to seek ways of shipping cargo as FCLs which need not be processed through a depot.

Information available to the Bureau (BTE 1985a) indicates that charges in many overseas depots are substantially lower than those in Australia. Yet, as noted previously, the trend to lower usage of LCLs is world-wide and hence cannot simply be attributed to high Australian depot costs alone. Rather, avoidance of depot facilities effectively removes one additional transport movement from the total shipping process and allows the container packing and unpacking operation to be undertaken under supervision at the premises of the consignor or consignee.

INTERNATIONAL AND TRANS-TASMAN CONTAINER DEPOTS

The 1967 Memorandum of Understanding between the Association of Employers of Waterside Labour (AEWL) and the Federated Clerks' Union

(FCU) (see Appendix II) provided for all container terminals owned or controlled by shipping companies to employ only clerical staff nominated by the FCU. It also provided for all LCL shipments either to be packed and unpacked by employees in the wharf area or for wharf clerks to be employed at depots outside the wharf area, thus ensuring the employment of traditional stevedoring labour in the depot and terminal sector. However, depots dealing with the trans-Tasman trade between Australia and New Zealand are exempt from this requirement according to a decision handed down by the Conciliation and Arbitration Commission in 1969 (see Appendix III). Hence two categories of depots have arisen, which for the purpose of this discussion, will be termed international depots and trans-Tasman depots.

Within the major international depots listed in Table 7.1, packing or unpacking is carried out by labour covered by either the Waterside Workers' Federation (WWF) or the Federated Storemen and Packers' Union (FSPU) with WWF tally clerks, according to the Container Depots Demarcation Award made by the Australian Conciliation and Arbitration Commission in 1969.

Industrial agreements restrict the number of depots at which international containers can be packed or unpacked, and these can also restrict the level of competition among those depots. For example, shipping lines can find it difficult to change from using a depot manned by WWF labour to one manned by FSPU labour. Similarly, a shipping line that generally unpacks at the wharf with WWF labour may not have the freedom to send cargo to an inland depot when the waterfront is congested.

Shipping lines have interests in three of the four Sydney international depots and two of the four Melbourne international depots (one of which is the very large Freightbases operation). Many of the other depots around Australia also exhibit shipping line involvement. It does not appear that shipping lines would directly achieve significant economies of scope from involvement in container depots. However, there are perceived advantages in shipping lines offering a total service 'package' to attract customers, and lines may have greater control over the turnaround time for their containers. Stevedoring firms which are also involved in depot operations can benefit from the flexibility gained by moving labour between the depot and stevedoring operations.

There are five depots handling trans-Tasman cargo in Sydney and four in Melbourne. The Conciliation and Arbitration Commission Decision

C No. 14 of 1969 (see Appendix III) allocates all trans-Tasman depot work to TWU labour. These depots are largely owned by freight forwarders who provide a door-to-door service between Australia and New Zealand.

Competition constraints

Economies of scale, sunk costs and government policies are not significant barriers to entry into the industry. The major deterrents to potential entrants are the risk of vertically integrated depots cross-subsidising their operations, and the limited access to depot business that results from this vertical integration. Problems related to union coverage of labour to be employed at new international depots can also provide obstacles to potential entrants.

Freight forwarders dominate the non-bulk traffic on the trans-Tasman route and shipping lines carrying LCL cargo give reduced rates to 'approved forwarders' (BTE & MoT NZ 1980, 23). It has been suggested that the volumes of traffic a forwarder has to provide to qualify for the lower rates are set in such a way that they favour forwarders that are affiliated with the shipping line (BTE & MOT NZ 1980, 131).

Further, although sunk costs in the depot industry generally are not large, Customs Service requirements for greater security at depots can cause depots to incur costs that may not be easy to recover on exit from the industry.

International versus trans-Tasman depot charges

There appear to be significant differences between the prices charged by international depots and trans-Tasman depots for their services. The BTE survey of depot operators, covered in more detail later, quantifies this to some extent, noting that in 1985 the cost of labour (including on-costs) represented between 70 and 80 per cent of total operating costs at depots employing WWF and FSPU labour, but less than 50 per cent at trans-Tasman depots which employ Transport Workers Union (TWU) labour. These differences are illustrated by the fact that TWU depots generally charge less than $15 per cubic metre for packing or unpacking, while the international depots generally charge over $20 per cubic metre. Discussions with the industry also indicate that the costs incurred at international depots manned by FSPU labour are generally lower than those of depots manned by WWF labour.

From discussions with the shore-based shipping industry it appears the average prices charged (in 1985) for packing or unpacking an LCL container were $500-600 per TEU for international depots and $300-400

per TEU for trans-Tasman depots.[1] These charges contrast with a typical consolidation cost of $150 to $200 per TEU at an exporter's premises.[2] These figures should be regarded as indicative only, since actual prices charged vary significantly depending on commodity type, quality of packing and other factors. Conditions under which packing and unpacking of containers take place also differ among the different types of depot operations, and these charge differentials reflect the cost variations resulting from this factor.

The Prices Justification Tribunal (PJT 1977) concluded that a seemingly competitive market existed and prices being charged for depot services in 1977 were justified in terms of the costs incurred. The main reason given for the significant differentials in prices between packing cargo at an exporter's premises and depot consolidation relates to differences in working conditions and the corresponding award rates applicable to labour covered by the WWF, FSPU and TWU.

DEPOT CHARACTERISTICS

Contact with 15 major international shipping companies indicated that they were generally satisfied with the time taken by depots to pack or unpack goods under normal conditions, although they were concerned with the excessive delays that were associated with industrial stoppages. The shipping companies also noted the lack of price competition among depots, the high cost structure of depots and the restrictive industrial practices in the industry.

A survey of depots undertaken by the Bureau (BTE 1985b) gave a broad insight into their operations and pricing structures. Fifty two depots were approached and 36 responded. Twenty four of these still operated as licenced depots.[3] The responses covered the States of New South Wales, Victoria, Queensland and South Australia and included all the major international depots. A summary of results follows.

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1. In 1985-86, packing or unpacking charges for an FCL container at international depots were reported to be as high as $680.
2. This estimate is qualified in Chapter 2. Additional activities are required at depots in comparison with consolidation at exporters' premises. Hence this cost is not directly comparable with the depot charges. Nevertheless, the figures illustrate the cost disadvantage in using depots.
3. For this survey depots were defined as all premises licensed to receive undocumented cargo as defined under regulation 17b of the *Customs Act 1901*, including both international and trans-Tasman depots, bond stores and transport yards.

Size distribution

Based on the number of containers packed and unpacked in a year, the sizes of depots responding to the survey varied considerably. The smallest respondent claimed to have processed only a dozen containers, while the largest depot processed over 15 000 in 1984.

About half the depots unpacked between 500 and 5000 containers, with a similar proportion applying to containers packed. Of the eight depots which handled 7000 or more containers in 1984, seven were involved in the international trade. Bond stores and transport companies tended to handle significantly fewer containers.

Historical data provided by 14 depots indicate that packing operations have decreased noticeably since 1975, particularly among the large depots. In fact, some of the smaller depots have actually expanded their packing business over the 1975 to 1984 period, while the larger depots all pack far fewer containers than previously. Of the depots reporting data for 1975, the five which packed the most containers in that year packed 60 per cent fewer containers in 1984. The survey showed also that the aggregate number of containers being unpacked by the depots has not changed much over the last 10 years. Since the total number of containers coming into Australia has increased considerably, this implies that a much greater proportion of imports are FCLs than in 1975, and these are unpacked primarily at the importers' own premises.

Tariff and depot type distributions

Packing rates were supplied by 22 depots and unpacking rates by 23. Rates varied from depot to depot, though nearly all claimed that tariff charges have fallen behind the rate of cost increases since 1975. Three respondents considered that charges have kept pace with cost increases. However, two of these were not operating in 1975, the third being a small transport yard dealing with FCLs only. The depot operators also stressed that their charges varied depending on commodity type, packing quality and volume of business. The tariffs discussed in this section should therefore be regarded as only indicative of the rates charged.

Average unpacking charges ranged from less than $10 to more than $25 per cubic metre, although half the depots charged less than $15 per cubic metre, and most of the rest between $20 and $25. Of those that charged more than $15 per cubic metre, all but one dealt only with overseas containers. Packing charges were generally reported to be similar to unpacking charges. For depots that provided the relevant

information, box rates ranged from less than $200 per TEU to $500 per TEU dependent on depot type, commodity and volume of business.

In addition to the packing and unpacking charges there are additional charges involved for some operations. In particular, bond stores have a receival charge which typically amounts to $200 per container, effectively adding some $10 to the cost of processing each cubic metre depending on storage time.

LABOUR CHARACTERISTICS

Of the 25 depots which responded to the survey, nine were asked additional questions relating to labour characteristics and costs (including on-costs). These depots comprised two trans-Tasman and seven international depots, and were all fairly large operations. The total number of containers handled in each depot in 1984 ranged from around 2000 up 15 000.

Composition of unpacking gangs varied from an average of 2.3 men per gang at some depots to four men per gang at others. The most common gang size was four which is the standard gang size for international depots, comprising three men handling cargo (two unpacking and one operating the forklift) and a tally clerk. Specialist tally clerks are not used in packing and unpacking gangs in the trans-Tasman depots. In addition, the international depots employ security staff who are members of the Miscellaneous Workers' Union. It is understood that trans-Tasman depots have contract security arrangements.

The four main unions involved in depot work are the WWF, the FSPU, the TWU and the Federal Clerks' Union (FCU). Six of the nine respondents employ members of the FCU for administrative and clerical work in their depots, while the others employ WWF clerks. For packing and unpacking operations, three depots employ only members of the WWF, four employ both WWF and FSPU members, and two of the trans-Tasman depots employ TWU members only.

The number of containers unpacked per gang per day was stated to be generally four to five, with one depot claiming an average of six and another only three. Standard working hours per week were stated to range from 30 to 35.5 hours. Some depots stated that they utilise overtime to accommodate periods of peak activity.

Labour costs

Labour costs were reported to vary between 70 and 80 per cent of total costs for the seven depots employing WWF and FSPU labour, and less than 50 per cent for the two depots employing TWU labour. However,

some respondents emphasised that comparisons between TWU staffed (trans-Tasman depots) and international depots should not be taken too far because their respective operations tend to be dissimilar. One specific distinction noted was the smaller size of many of the containers handled in TWU depots and differing commodities (and hence packing techniques) compared with the standard TEU passing through international depots. (The latter being evidenced by the higher average tonnage carried in trans-Tasman containers despite their smaller size).

VARIATIONS IN THROUGHPUT

Variations in numbers of containers processed through a depot can have a considerable effect on costs. Peaks in throughput were generally reported to be covered by overtime or by employing casual labour, generally at cost to the depots. Two of the depots responding to the survey are operated by terminals, providing them with flexibility to move labour from terminal to depot as required. The possible economies of scope resulting from this arrangment have been mentioned previously. For other depots, uneven throughput can be a serious problem. It was stated in some responses that depots tend towards low volume, high cost operations rather than high volume, low cost, in order to maintain a back-log of containers, and so ensure an ongoing availability of work. Generally, the depots said that their response to a permanent increase in throughput would be an increase in the permanent workforce.

FACTORS INFLUENCING SHIPPING LINES' CHOICE OF DEPOTS

The Bureau also contacted a number of major shipping companies in Sydney and Melbourne to obtain their views concerning the existing operations of container depots. It was found that some shipping lines have a policy of using only one depot in each port, while other lines prefer to spread their business across two or three depots. The shipping lines take a number of factors into account in choosing a depot. However, a large proportion of the shipping lines indicated that union policies aimed at reserving packing and unpacking activities in particular depots restrict their choice of depot. For example, shipping lines find it difficult to change from a depot manned by WWF labour to one manned by FSPU labour. The WWF has stated that in regard to stevedoring and depot operations it has sought to maintain stability by restraining the movement of ships and 'boxes' from one area to another (Bull 1984). Two shipping lines mentioned that they prefer, in general, to unpack at the wharf (with WWF labour) but would appreciate greater freedom to send some cargo to inland depots at times when the waterfront is congested.

Where a shipping company does have a free choice, various aspects of quality of service, such as time taken to pack and unpack, location of the depot and truck delays at the depot, are primary considerations influencing that choice. The rates charged by depots are generally of less concern to shipping lines than quality of service. Some shipping lines use a particular depot because they are associated with that company.

The time taken to pack and unpack containers was the quality of service aspect most commonly mentioned by shipping lines as being of primary significance. The time taken varies from three days to 10 days or more depending on the depot and on the activity level it supports. Shipping companies whose containers are unpacked in three to five days appeared to be reasonably satisfied with the service, although they were concerned about the extra delays which occurred when the depots were congested.

Two aspects of location were mentioned as factors to be considered. Firstly, some lines preferred to unpack on the wharf as this reduced the container transport. It was noted that containers were sometimes taken from a vessel, unpacked at the wharf and put straight back onto the vessel from which they have been unloaded. On the other hand, other shipping lines indicated that they prefer to have packing and unpacking operations undertaken away from the wharf for the convenience of their clients.

A number of shipping lines indicated that the industrial relations record of the depot was an important consideration. As mentioned above, many lines were satisfied with the unpacking time under normal conditions but were concerned with the added delays that can result from factors such as industrial disputes.

Demurrage (that is, additional charges resulting from failure to process in a given time) incurred by clients as a result of truck delays at depots was of concern to several shipping lines. However, a number of other lines said that demurrage was not a problem. Some lines suggested that, in general, demurrage was a greater problem away from the waterfront than it was at the waterfront.

It was also noted by shipping lines that it was desirable for a depot to be served by both road and rail as this allows containers to be moved by an alternate mode if disruptions occur in one mode of transport.

CHAPTER 8 LAND TRANSPORT

When containerisation was introduced into Australia in the late 1960s, the shipping companies offered a door-to-door service and about two-thirds of containerised cargo was carried under these arrangements. Shipping companies saw this concept as an opportunity to greatly increase the operational efficiency of the industry, and to obtain the economic advantages that would accompany control of a number of steps in the transport chain. Although shipping companies have maintained, and perhaps even increased, their involvement in terminals, stevedoring and depots, they have tended to withdraw from a number of elements of the concept (such as insurance and land transport) because in many cases importers and exporters prefer to make their own arrangements.

The land transport of shipping containers is performed by either road or rail services and is generally arranged by the shippers or consignees or an agent (customs agent, freight forwarder) acting on their behalf. Some shipping companies still offer a door-to-door service but sub-contract the land transport operation.

ROAD TRANSPORT

The term carrier (road transport operator) refers to the individual or company engaged to transport containers to or from a terminal, or LCL cargo in break-bulk form from depots after unpacking.

A carrier may be:

- an owner-driver who operates on his own;
- a relatively small private or public company which employs people to drive its trucks; or
- a large private or public company.

A large company many employ any or all of the following:

- drivers employed to drive the company's fleet of trucks;
- permanent sub-contractors who own their own trucks (but who may use the company's name on their trucks); and

. casual sub-contractors (often used to cover peak periods).

Road vehicle load restrictions

The existing legal gross vehicle weight limit in the Eastern States is 38 tonnes. This allows for the use of TEUs which currently have a maximum allowable gross weight of 25.4 tonnes without exceeding the permissable wheel and axle loading on Australian roads. However, problems can arise with 40 foot containers, which have a gross permissable weight of 30.48 tonnes and which, in combination with the vehicle, may exceed the present gross vehicle weight limit. There are therefore restrictions on the ability to move fully loaded 40 foot containers by road in Australia.

Competition

There are believed to be over 50 road transport operators carrying FCL containers in each of the two major ports, Sydney and Melbourne. The vast majority of container shipments are FCLs and a substantial proportion of this FCL cartage is performed by some dozen carriers in each of the two major ports. However, no single carrier could be said to dominate the market area.

Conversely, a very large number of carriers are involved in the cartage of LCL cargo to and from depots for packing and unpacking, and a more even distribution of carrier involvement is evident due to a greater participation of owner-drivers in this area. This is because less specialised, smaller trucks are required for this type of operation.

Entry to the road transport industry serving the movement of containerised cargo is unrestricted as there are no significant sunk costs and only limited economies of scale, although it may be more difficult for an owner-driver to obtain the mix of jobs which would optimise truck utilisation. Containers cannot be loaded onto a tray truck unless the truck is fitted with the necessary pins to secure the container. This can preclude a non-wharf carrier from occasionally sending a truck to collect a container, unless suitable modifications have been made to the vehicle. There is no significant vertical integration in the industry although a small number of truck fleets are owned by companies with stevedoring and depot interests.

Service and charges

As a result of the ease with which operators can enter and leave the industry, the market for road transport services is very competitive. This competition leads to the provision of reasonably efficient and innovative transport services and the industry provides a wide range

of price and quality combinations in response to the needs of the client. For example, depending on the nature of their operation, transport operators can arrange evening delivery of containers to avoid demurrage, arrange 'stack runs'[1] for large consignments of containers, or they can store containers at the transport operator's premises until they are wanted by the client.

The road transport associations in each State issue schedules of recommended tariffs for road haulage. However, the rates actually charged are generally negotiated between carrier and client and reflect the competitive position of the road transport industry. As discussed in Chapter 9, road transport is usually charged as a fee plus demurrage for any excessive delays incurred in picking up or delivering cargo. However, some larger customers prefer to negotiate a 'flat rate' per container, in which no explicit demurrage charge is made.

One problem with road transport which has given rise to concern over a long period is the occurrence of significant delays associated with delivery or receival access to a terminal or depot. This issue is addressed in Chapter 9 which focuses on the interfaces between land transport and the container terminals.

RAIL TRANSPORT

Rail movements of containers are performed by the various State and Federal rail authorities. These authorities are:

- State Rail Authority of NSW (SRA)
- State Transport Authority of Victoria (V/line)
- Queensland Government Railways (QR)
- South Australian State Transport Authority - Rail Division (STA)
- The Western Australian Government Railways Commission (Westrail)
- Australian National Railways Commission (AN).

The operations of AN cover South Australia's non-metropolitan network and Tasmania.

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1. A 'stack run' for deliveries refers to multiple containers destined for a single consignee and involves a number of truck movements programmed in close succession. The reverse applies to receivals of containers at the terminal.

Competition

Rail transport competes with road transport for the containerised cargo market, particularly for those movements involving significant numbers of containers (so called 'bulk movements' of containers). This can apply to both long-haul (interstate movements undertaken to centralise cargo at certain major ports) and short-haul (local movements such as LCL containers to depots).

Limitations on access to rail sidings by shippers and importers reduce the potential of rail for short-haul container consignments. The flexibility of road transport for the short hauls represents a natural advantage for this market.

Service and charges

As rail services are operated by State and Federal authorities, strict commercial viability is not always considered to be their sole objective. Governments have often perceived rail services as contributing to the fulfilment of various social, regional and other aims. Hence, as indicated previously, pricing of particular rail services is not always in line with actual costs related to the provision of those services.

However, rail systems are being required by their respective governments to place increasing emphasis on accepting commercially sound pricing structures as indicated by the recent decisions by both AN and V/line to increase surcharges on overseas containers to cover the real costs of wagon placements (DCN 1986). This is noteworthy in that a recent study by the Inter-State Commission (ISC 1986) found that while AN managed to fully cover long-run avoidable costs and most fully distributed costs for freight operations (with cost recovery percentages of 108 and 80 respectively), V/line fell well short of covering either costs (69 per cent and 52 per cent respectively). The study further noted that Westrail was the only system to cover both long-run avoidable and fully distributed costs on freight operations with cost recovery levels of 211 per cent and 119 per cent respectively). The ISC found that the cost recovery ratios for SRA and QR were the lowest of the five systems.

ROAD AND RAIL MODAL COMPARISON

Table 8.1 provides a breakdown of the movement of import and export containers by road and rail for the major container terminals in Australia. Data by modal split are incomplete for certain terminals. However, a few general observations can be made.

TABLE 8.1 BREAKDOWN OF MOVEMENTS OF FULL CONTAINERS THROUGH MAJOR AUSTRALIAN PORTS BY LAND TRANSPORT MODE: IMPORTS AND EXPORTS, 1985

(TEU's)

State and terminal	*Imports*			*Exports*			*Total*		
	Road	*Rail*	*Total*	*Road*	*Rail*	*Total*	*Road*	*Rail*	*Total*
NSW									
ANL	75 226	10 246	85 472	47 631	13 689	61 320	122 857	23 935	146 792
CTAL	50 644	11 011	61 655	32 058	14 664	46 722	82 702	25 675	108 377
Glebe Is	32 537	3 362	35 899	21 862	6 796	28 658	54 399	10 158	64 557
Vic									
ANL[a]	75 000	..	75 000	20 000	..	80 000	155 000	..	155 000
Patricks	na	na	43 289	na	na	32 574	na	na	75 863
Seatainer	na	na	57 856	na	na	52 751	na	na	110 607
TOT	25 739	3 322	29 061	21 043	5 069	26 112	46 782	8 391	55 173
F G Strang	na	na	61 000	na	na	42 000	na	na	103 000
Qld									
ANL[a]	13 100	..	13 100	12 100	..	12 100	25 200	..	25 200
BATL	14 756	1 877	16 633	20 064	5 119	25 183	34 200	6 996	41 816
SA									
TOT	na	na	3 700	na	na	4 800	na	na	8 500
WA									
Fremantle Cargo Services	na	na	31 796	na	na	34 566	na	na	66 362

a. All container movements into and out of the ANL terminal in 1985 were by road as no direct rail access existed at that time.

.. Not applicable.
na Not available.

Source Personal communication with container terminals. BTE (1986b).

Of those terminals for which a modal split is available, road transport accounted for 87 per cent of all containers moved through the terminals, handling 84 percent of export containers and 91 per cent of import containers. Rail accounted for the remaining 13 per cent of total container movements, handling 16 per cent of export containers and 9 per cent of import containers. However, when considering these data, it must be kept in mind that some terminals do not have direct rail access and many containers brought into a terminal by road may well have been moved primarily by rail for the greater part of the journey.

The predominance of road transport for container movements through terminals is applicable to movements within Australia generally, the majority of these being short-haul movements within metropolitan areas around the ports. Rail transport is the dominant mode for long-haul bulk movements of containers, participating only to a limited extent in short-haul bulk movements.

The following analysis of the container transport market is divided into three sectors:

- transhipment of containers
- relocation of empty containers
- short-haul container movements.

Transhipment of containers

Transhipment of containers is a term covering the movement of containers to or from the port for the purposes of centralisation. Centralisation of containers is defined as the movement of containers between traditional or feeder ports and centralised or major ports, which are the ports of call for modern container ships.

The introduction of containerised vessels on overseas routes resulted in the rationalisation of port calls to minimise port and related charges (by minimising vessel port calls), optimise utilisation of the specialised (and expensive) port facilities required and also to optimise utilisation of the ships. Hence, many ports lost their trade in the late 1960s, with the cargo previously handled by them being centralised at the major ports.

The original plans for centralisation in the late 1960s focused on the three ports of Sydney, Melbourne and Fremantle. However, Brisbane has also become a significant centralisation point, especially for meat exports from the region. Adelaide and Townsville have invested heavily in new facilities in an attempt to attract more trade through their ports.

When originally conceived, the conference lines agreed to meet the cost of feeder movements for existing customers and cargoes only, new cargoes and customers being subject to commercial negotiation. Centralisation of containers is undertaken mainly by road or rail, sea feeder services having largely been discontinued except for Tasmania.

The numbers of loaded containers transhipped throughout Australia in 1976-77 (BTE 1982) are illustrated in Figure 8.1.[2] From this it can be seen that the Brisbane-Sydney and Melbourne-Adelaide corridors carried the largest volumes of transhipment traffic, accounting for some 77 per cent of containers transhipped that year. The remaining 23 per cent of movements were over the Sydney-Melbourne, Adelaide-Perth and Melbourne-Tasmania corridors.

Conference lines usually have contract agreements with railways for the carriage of containers. Hence, long-haul feeder movements tend to be dominated by rail. No modal split data are available for movements over all corridors. However, on the Sydney to Brisbane route, road transport accounted for some 1000 TEUs (9 per cent) in 1976-77 (BTE 1982). Similar modal splits could be expected for other routes.

Relocation of empty containers

Unequal container import and export volumes at individual ports create problems in the container numbers available for packing export commodities. This localised imbalance between the supply of and demand for containers is reduced by relocating empty containers to ports or centres requiring more containers than those made available through normal cargo import operations at the centres. In this context, the term 'empty' is itself anomalous, for many empty containers actually contain domestic cargo. This situation arises as many positioning movements are undertaken by freight forwarders and container leasing companies which take advantage of repositioning movements to use the containers for carrying domestic freight.

Use of empty containers for this purpose is permitted under the terms of the Customs Convention on Containers 1972. The convention permits containers granted temporary entry to Australia to be used for the carriage of domestic cargo, given that the container moves closer to its final port of export. This usually involves only one domestic journey.

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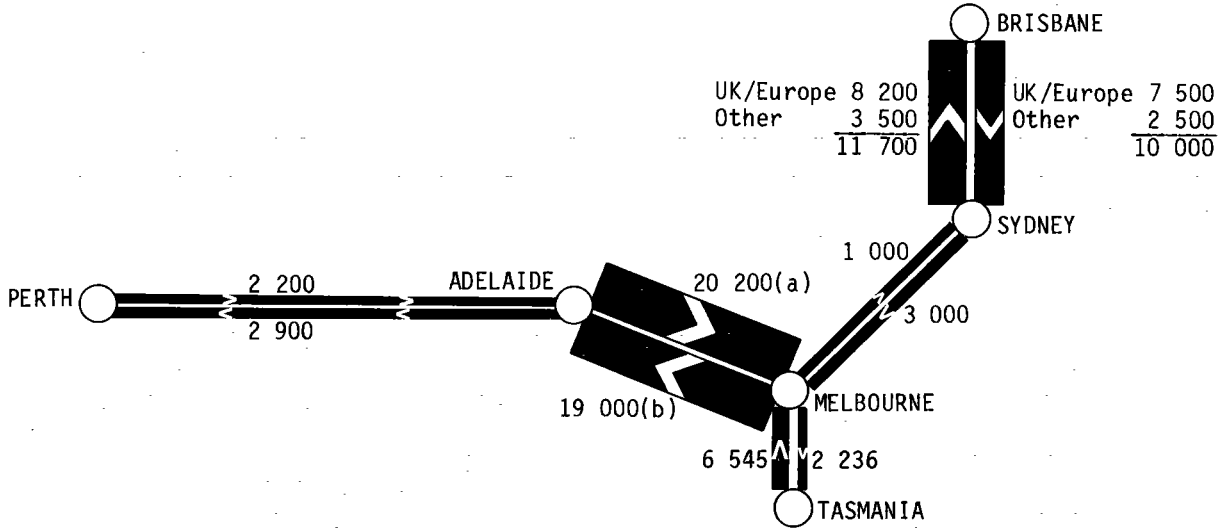
2. This information was obtained by a consultant to the Bureau in 1981. More recent data relate to tonnage rather than container numbers.



(a) Trade breakdown of containers transhipped Adelaide to Melbourne:

Europe	3 900
Japan	2 400
ECNA/WCNA	700
East Asia	1 000
South East Asia	700
Other	300
Unknown	9 000
Perth to Melbourne	2 200
	20 200

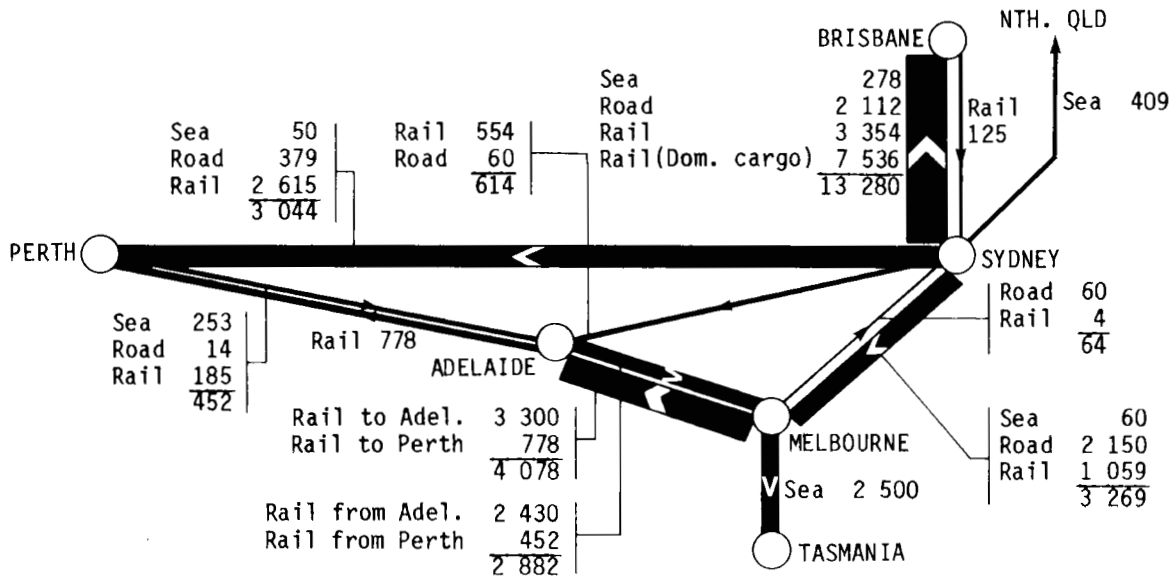
(b) Trade breakdown of containers transhipped Melbourne to Adelaide:

Europe	6 200
Japan	5 790
ECNA/WCNA	1 800
East Asia	1 430
South East Asia	740
Other	140
Melbourne to Perth	2 900
	19 000

(c) Term used to describe the movement within Australia of a container loaded with overseas cargo. Figure not to scale.

Source BTE (1982).

Figure 8.1 Container transhipments,[c] 1976-77



(a) Terms used to describe the movement within Australia of overseas containers that are not loaded with overseas cargo. Some of these containers are used for carrying domestic cargo during the repositioning movement. Not all movements involving domestic cargo have been included here. Figure not to scale.

Source BTE (1982).

Figure 8.2 Container positioning movements,[a] 1976-77

To illustrate the extent of the above practice, the SRA estimated that 70 per cent of the empty containers positioned from Sydney to Brisbane during 1976-77 were loaded with domestic cargo (BTE 1982, 32). A similar or higher percentage could be expected for road transport relocation movements.

Figure 8.2 illustrates the relocation or container positioning movements of empty containers throughout Australia by mode for 1976-77 (BTE 1982). It can be seen that the Brisbane-Sydney and Melbourne-Adelaide corridors again carried the largest volumes of relocation traffic, accounting for approximately 65 per cent of containers relocated that year.

Once again, rail was the dominant transport mode, carrying 82 per cent of empty containers on the Sydney to Brisbane route and virtually all containers over the Melbourne-Adelaide corridor.

Short-haul container movements

The major container ports of Australia are located in the major city centres, and hence most container movements tend to occur between the port and the city's industrial hinterland. These short-haul movements are between terminals, depots, container parks and consignee or consignor.

No Australia-wide data are available on short-haul movements. However, a recent study of container movements in Sydney (Travers Morgan 1983) gives some insight into road and rail participation in this market. Table 8.2 summarises the results of this study, showing the distribution of movements of various containers by category in the Sydney region during 1982-83.

Travers Morgan estimated total annual throughput of containers to be approximately 300 000, each container giving rise to roughly 2.3 movements within the Sydney area. About 84 per cent of these movements were by road and the remaining 16 per cent by rail, the latter having accounted for approximately 12 per cent of import containers and 20 per cent of export containers. Eighty per cent of rail movements were within the Sydney region, the remaining 20 per cent being split roughly equally between intrastate and interstate movements.

Table 8.2 shows that 58 per cent of Sydney's container movements comprised movements of empty containers to or from container parks. Of the 42 per cent full container movements, depots accounted for only 7 per cent. The other 35 per cent of full container movements

TABLE 8.2 DISTRIBUTION OF CONTAINER MOVEMENTS, SYDNEY, 1982-83

Type of movement	*Container*		*Per cent of movements*
	Load	*Movement*	
Terminal to depot[a]	Full	Import	5
Terminal to consignee	Full	Import	23
Terminal to park	Empty	Import	4
Depot to consignee	Full	Import	1
Depot to park[b]	Empty	Import	5
Consignee to park	Empty	Import	24
Park to consignor	Empty	Export	12
Park to terminal	Empty	Export	11
Park to depot[b]	Empty	Export	2
Consignor to terminal	Full	Export	12
Depot to terminal[a]	Full	Export	1
Total			100

a. Includes movements between Darling Harbour berths and goods yards.
b. Includes movements of containers packed or unpacked at Darling Harbour.

Source Travers Morgan (1983).

occurred between consignee or consignor and terminals. This confirms the relatively small number of LCL container movements.[3]

3. BTE estimates based on communication with container terminals placed LCL containers as forming approximately 13 per cent of total container numbers.

CHAPTER 9 TRUCK DELAYS AT THE WATERFRONT

It was shown in Chapter 6 that the majority of containers are moved to and from the waterfront by road transport. Prior to containerisation, trucks called at a large number of wharves to collect cargo. The relatively large number of service points in the wharf area resulted in relatively little transport congestion at individual collection points.

Since the introduction of containerisation, the number of cargo collection points has reduced greatly. Three container terminals in Sydney and five in Melbourne now handle a substantial proportion of Australia's non-bulk trade, and it is not uncommon for long queues of trucks to form at this relatively small number of service points. While truck delays at container terminals tend to be of greatest concern, delays also occur at conventional berths and at container depots.

Because the occurrence of truck queues is one of the more visible problems associated with the shore-based shipping chain, these queues have been the focus of considerable discussion in the industry. This chapter describes the problem of truck queuing at container terminals and explores its causes and possible solutions.

Container terminals generally commence serving road transport from 0730 hours and continue this service through an average of two working shifts. In Sydney and Melbourne these shifts handle an average of some 250 trucks per day although substantially higher numbers have been accommodated at times. It is common to find that a considerable queue of trucks has formed outside the terminal prior to 0730 hours. The delays experienced by these trucks, and by those arriving later in the day, can on rare occasions be up to eight hours, although the average delay is considerably less. The delays tend to be caused by:

- container handling equipment breaking down and priority being given to working vessels;
- consignees' delivery requirements causing a peak in the demand for truck servicing in the early morning exacerbated by the mismatch of working hours;

- the terminal being congested due to the peaking of vessel arrivals; and
- industrial disputes occurring within the terminal.

The terminal (or depot) gate represents a significant operational interface. The lack of a commercial link between the container terminal and the road transport operator is an important factor which limits the incentive, and in fact makes it difficult, for the parties themselves to overcome problems which produce truck delays. The container terminal derives its revenue from the shipping companies and so its operations can impose delay costs on road transport operators without the terminal itself incurring any direct financial penalty. The limited number of container terminals and their vertical integration with shipping lines discussed in Chapter 6 suggest that their ability to service land transport efficiently is not a very significant competitive factor in attracting increased ship traffic. The incentive for road transport operators to reduce truck delays can also be limited by their ability to recover the costs from the importer or exporter in the form of demurrage charges and higher freight rates.

THE NATURE AND EXTENT OF TRUCK DELAYS

Container terminals generally measure truck turn-around times as the time from lodgement of papers until departure from the terminal. Such figures provide information about the period of time a truck spends in the terminal, but they do not quantify total truck delay as they exclude any time spent queueing outside the terminal gate before lodgement of papers.

Total truck delay is defined to be the total elapsed time from the arrival of a truck at a terminal gate or the queue leading to the gate, to the departure of the truck from the terminal. Surveys of transport operators were conducted in Sydney and Melbourne to obtain estimates of the delays which were occurring prior to the implementation by some terminals of procedures to reducing truck queuing. The results of these surveys are discussed below. In addition, an analysis of truck delays occurring before and after the introduction of truck booking systems or other measures at four major Melbourne terminals is presented. Factors which can cause the delays to vary are also discussed later in this chapter.

Sydney

Concern from road transport operators about truck delays at Sydney terminals prompted the New South Wales Government to request the New

South Wales Road Freight Transport Industry Council and the Cargo Facilitation Committee to form a joint working party to prepare a report on the matter.

The working party surveyed 12 transport operators who ranged from small firms with two or three trucks to large firms operating some 100 vehicles. Information on the delays experienced by trucks delivering or collecting FCL containers from ANL, Container Terminals of Australia Ltd (CTAL), Glebe Island Terminals (GIT) and Darling Harbour during the period 1 September 1984 to 30 November 1984 was collected. The total sample consisted of 6290 container movements, which represented approximately 7 per cent of the total road movement of containers into and out of the four locations during the survey period.

The average truck delay experienced at the four Sydney locations by all vehicles in the sample was 89 minutes, but this average delay varied across the locations from 55 minutes to 117 minutes. This difference of one hour in average delay time between one terminal and another could be valued at over $8 500 per day, if the slower location were handling a throughput of 250 trucks per day with a demurrage charge of $35 per hour. Trucks arriving at locations before 0700 hours generally experienced delays substantially greater than the daily average of 89 minutes. The relatively small number of trucks arriving after 1800 hours generally experienced much shorter delays than did vehicles arriving earlier in the day.

The average delay experienced for the collection of import containers was 100 minutes and for the delivery of export containers was 69 minutes. Overall, 61 per cent of export containers were delivered to the terminal with a delay of less than 60 minutes, while only some 39 per cent of import containers were collected with a delay of less than 60 minutes.

Detailed tables and cumulative distributions of average truck delays for both imports and exports at the four wharves handling containers in Sydney are contained in Appendix IV.

Melbourne

The Victorian Road Transport Association (VRTA) asked its members to record the total delay incurred by their trucks in collecting or delivering containers at seven locations in the Port of Melbourne. This request provided estimates of delays for 3786 vehicles during the period 27 June 1984 to 21 August 1984.

The overall average delay experienced by these trucks was 101 minutes. This estimate of delay is somewhat greater than the average delay of 89 minutes incurred by the sample of trucks in Sydney. However, it must be remembered that the survey periods were different in the two ports and that overall cargo volumes can fluctuate substantially over time.

The VRTA survey again showed that road transport operators prefer to arrive at terminals early in the day. Over 33 per cent of trucks sampled by the VRTA arrived at the wharf before 0900 hours while only 3 per cent arrived after 1600 hours. To a large degree this situation is a reflection of the hours available for receival of cargo by the consignee. These hours require trucks to pick up cargo at the waterfront as early as possible.

The Bureau also obtained data on truck delays from a major wharf-carrier in Melbourne. Details of truck movements to and from four terminals were obtained from the company's job-cards over two two-monthly periods, July and August 1985 and November and December 1985. Two terminals had introduced booking systems between the two periods, and the other two had made efforts to introduce measures which would reduce truck delay times.

Industrial disputes and the Christmas period could influence queueing times. There were stoppages on the Melbourne waterfront in early July. This period and the five subsequent working days were excluded. The week preceding Christmas was also included.

The average delays experienced by the wharf-carrier's trucks during the first period varied from 111 to 172 minutes across the four terminals, 156 minutes being the average delay for all terminals. In the second period, the average delays ranged from 72 to 114 minutes with an average delay of 100 minutes for all terminals. The overall average delay of 156 minutes for the first period is substantially higher than the 101 minutes obtained in the VRTA survey and the 89 minutes experienced by the sample of trucks in Sydney. However, not only do the survey periods differ, but in this instance, data have been gathered from only one road carrier and the sample size is considerably less than those of the other two surveys.

There were substantial reductions in truck delay times at all terminals between the two periods examined in the Bureau's analysis. Statistically, these reductions were all highly significant. However, there were no significant differences between reductions at terminals where the booking systems had been introduced and at the terminals

where some other measures relating to operational practices were introduced.

The data confirmed the observation that transport operators preferred to arrive at the terminals early in the day. Between 30 and 40 per cent of trucks arrived before 0900 hours at terminals, the lower figures applying after the introduction of truck booking systems at some terminals. In contrast, the proportion of trucks arriving after 1600 hours rose from 2 per cent to 7 per cent between the two periods examined.

The average truck delays at the container terminals for both periods as well as the percentage changes over both periods, are given in Appendix IV.

Truck delays at other locations

Users of transport services have also reported the existence, on occasions, of substantial truck delays at container terminals in Brisbane and Fremantle. Delays appear to be less significant at other locations including Adelaide.

Transport operators can also incur substantial delay costs while collecting LCL cargo from container depots.

THE COST OF TRUCK DELAYS

The Joint Working Party of the Port of Sydney NSW Cargo Facilitation Committee and the NSW Road Freight Transport Industry Council has estimated the direct cost to shippers and consignees associated with the estimated average truck delay in Sydney of 89 minutes. Road transport operators generally consider a 30-minute turn-around at the wharf acceptable and make an allowance for this time in setting their freight rates. Carriers recover the cost associated with the additional delay of 59 minutes either by charging demurrage or by setting higher overall freight rates on a per container basis. The Joint Working Party estimated the total annual cost of truck delays to shippers and consignees at Sydney's container terminals to be $5.3 million. This was based on the average demurrage rates charged and total (import and export) FCL cargo volumes through these terminals.

The VRTA performed a similar analysis on truck delays in the Port of Melbourne. Assuming again that a 30 minute truck turn-around time is acceptable, then the average additional delay incurred in Melbourne is 71 minutes (based on the survey period). Again based on the annual FCL throughput and recommended VRTA demurrage rates, the VRTA

estimated that the total annual direct costs of delays borne by shippers and consignees at the Port of Melbourne amount to $7 million.

While the total additional direct cost of truck delays at all container terminals and container depots in Australia is estimated to be in the order of $15-20 million per annum, it is possible that some trucks that are delayed at terminals and depots do not have any alternative revenue-generating use at the time. To the extent that the operators of these trucks can charge demurrage (and not all can) such delays could provide them with some financial advantage which they would otherwise not obtain. In such circumstances there would be no incentive for truck operators to seek ways of reducing delay.

However, in addition to the direct costs of truck delays, shippers and consignees can also incur indirect costs. These include overtime payments for out of hours operations, as well as other costs difficult to quantify, arising from uncertainty and relating to larger inventories and possible loss of business.

POSSIBLE MEASURES FOR REDUCING TRUCK DELAYS

The container terminal viewpoint

The manager of a container terminal generally sees the efficient loading and unloading of vessels as his first priority because the terminal's client is the shipping line. In a commercial sense, the concern of container terminal managers to service road transport is limited because there is no financial transaction between these two parties.

Nevertheless, terminal managers argue that they provide labour and equipment which is adequate for serving road transport under most circumstances. They consider that delays only become excessive under exceptional circumstances, such as equipment breakdowns or peaking of vessel arrivals, and that it is not viable to invest in resources to deal with these occasional situations.[1] Furthermore, terminal managers point out that average truck delays would be reduced if truck

1. It is noted later that some terminals have changed their work practices to give greater priority to servicing land transport at certain times of the day. This has been a decision terminals managements have taken largely as a result of pressure from the road transport sector and others as expressed through a number of committees of inquiry. Some terminals have limited container storage space, and this has also motivated them to increase throughput rates at the gate.

arrivals were spread more evenly through the day and if transport operators made greater use of the hours after 1700 hours.

The road transport viewpoint

Road transport operators note that they must provide the service that their clients demand. Most importers want the carrier to deliver a container before 1500 hours because the importer would incur additional labour costs to take delivery after that hour. This forces most carriers to collect containers early in the day rather than during the container terminal's evening shift.

For some carriers the reduction in delay costs resulting from an evening pick-up can outweigh any costs associated with overtime payments and overnight storage of the container. This is particularly true where a truck can still be fully utilised during the day, and the opportunity cost of delay to the carrier exceeds the revenue received from demurrage.

Transport operators argue that container terminals do not provide sufficient resources to enable carriers to supply the service their clients demand. Transport operators' criticisms of container terminals include:

- provision of insufficient equipment to serve trucks, especially when equipment breakdowns occur;
- meal breaks, shift changes and so on result in a substantial loss of productive time;
- terminals place too great an emphasis on serving vessels at the expense of road transport; and
- terminals lack flexibility in matters such as block stacking large consignments of containers and arranging stack runs to move these containers out of the terminal.[2]

Reducing costs to the consumer

Truck delays at container terminals and depots have the effect of reducing the utilisation of the transport operator's resources, thereby increasing the charge to the importer or exporter for each container carried. In order to reduce the charge to the consumer it is therefore necessary to improve the overall utilisation of trucks and drivers. There are various measures which might contribute towards achieving such an increase in resource utilisation.

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2. Stack runs are described in Chapter 8.

Establishment of commercial relationship

Distortions at the interface could be reduced if market forces were given more opportunity to influence resource allocation by both terminals and transport operators. One way to create a market situation could be to split the stevedoring charges in two. The shipping company would be charged for loading and unloading the ship and the trucking company for loading and unloading the truck, with ranges of charges for different levels of service.

In practice this approach would involve a substantial increase in administrative costs in both the terminal and road transport industries. However simpler, partial applications could be contemplated. For example, the truck operators could be charged a fee for service in the daily peak periods. The revenue generated could be used by the terminals to either acquire additional labour and equipment resources for the peak or reduce the stevedoring rates. In the latter case, the total transport bill for those who choose to use the peak period will have an appropriate weighting while non-peak users will pay less.

Booking systems

Some container terminals and one container depot introduced or expanded truck booking systems during 1985 in response to the changing climate influenced by the Task Force on Shore-Based Shipping Costs. These spread the arrival of the trucks more evenly throughout the day. This reduces average waiting times compared with the more peaked arrival pattern that otherwise occurs.[3]

To operate a booking system, a container terminal operator estimates the number of trucks that can be handled in, say, each two-hour period and then books an appropriate number of trucks. By ensuring that the truck arrivals are more or less consistent with the terminal's ability to serve, the average delay to each truck is reduced. However, any reduction in transport charges resulting from this reduced delay and associated increase in truck utilisation would need to be weighed against the additional costs incurred by the terminals and depots in operating truck booking systems.

It may be noted that if additional work cannot be scheduled in the increased time available, the trucking company would still incur the same costs, but demurrage revenue would be reduced. In these

3. Usually, terminals adopting a booking system have provision for trucks arriving at random as well. However, this queue of random arrivals receives lower service priority.

circumstances, depending on competitive pressures, the trucking company may increase its basic charges to cover the reduction in demurrage.

Operational practices

A method of reducing truck delays, which was implemented at some terminals during 1985, is to alter the terminal's work practices to place greater emphasis on serving road transport during the first few hours of the day shift. It appears that such changes can be made without causing either the terminal or the shipping lines to incur any significant costs. The flexibility of this approach allows trucks to arrive at the terminal at their convenience rather than at a pre-booked time. Any increase in truck utilisation may therefore be greater than would occur with a truck booking system.

Maintenance policies

Lack of maintenance of container handling equipment can result in circumstances which are detrimental to the processing of trucks through a terminal. On occasions, a large proportion of the equipment that could be serving road transport is broken down and in need of repair. Such situations can arise when container handling equipment is nearing the end of its working life and where industrial practices limit the extent to which the repair of equipment can be undertaken outside the terminals by contractors.

Shift arrangements

A further proposal for change is that terminals rearrange their shift structure so that they commence serving trucks at an earlier hour on the morning shift. Road transport operators would consider an additional hour and a half at the start of the day to be very productive while the loss of an hour and a half at the end of the day would do them little harm as their customers do not generally want to take delivery at that hour. Road transport operators would also like the terminal shifts altered to reduce the time lost at meal breaks and shift changes. Shift arrangements are subject to industrial negotiations and the effectiveness of some of these suggested changes would need to be established in more detail before any changes were negotiated.

Container terminal managers also propose that transport operators could make much greater use of the second shift of the day at the container terminals to alleviate congestion. As mentioned previously, some transport operators do make use of the second shift but it appears that for many operators the costs outweigh the benefits. The transport operator could incur overtime costs and must arrange either

to hold the container overnight or to deliver to the customer outside business hours. These receivals generally also result in additional direct costs to the customer.

Nevertheless, greater use of the evening shift can produce net benefits in some circumstances. For example, an evening shift can be used to arrange a stack run for a large consignment of containers.

Communications systems

The adoption of up-to-date, computerised communications systems in the shore-based shipping industry could assist in reducing truck delay costs. These systems would increase the general level of awareness of operating conditions throughout the industry which could result in more informed decision-making by the various participants, including the importers and exporters.

Communications systems are discussed in Chapter 11.

CONCLUDING COMMENTS

The relatively high degree of competition within the road transport sector was noted in Chapter 8. Competitive markets tend to operate efficiently within the constraints imposed by other sectors with which they interact. In the case of transport to and from the waterfront, terminals represent an external influence on the operation of the trucking industry. The lack of a commercial transaction between trucking companies and terminal operators associated with cargo movements means that the trucking industry has little influence on the operation of terminals. Thus, the appearance of truck queues and the occurrence of associated delays may well be compatible with a (transport) industry which is operating efficiently within an environment partially determined by other factors. The approaches discussed in this chapter suggest possible ways of changing this environment to achieve greater operational efficiency of the shore-based transport system as a whole.

CHAPTER 10 SHORE-BASED SHIPPING ORGANISATIONS AND USER VIEWS

This chapter covers the users of the shore-based shipping chain (that is, importers and exporters), the enterprises which provide the services within this chain, and the various organisations which represent these bodies.

As noted in Chapter 2, non-bulk imports are primarily manufactured goods, particularly machinery and technical equipment, and to a lesser extent textiles and motor vehicles. Conversely, non-bulk exports are mostly primary products such as wool and beef. Exports of processed metals such as iron, steel, aluminium and alloys are also significant. Hence, importers are generally retailers and manufacturers located in eastern seaboard centres, while exporters tend to comprise the operators of various processing plants and, less directly, a large number of farmers scattered throughout the country.

This diversity of interests among importers and exporters and the widespread physical distribution of individual exporters has resulted in the formation of a variety of user and user-related associations, federations, boards and authorities to represent those interests. These organisations are numerous and diverse, and only the major users and user-related organisations and their interests are discussed below.

USER ORGANISATIONS

The Australian Shippers Council (ASC) is the most wide-ranging of these bodies in its role as negotiator for all shippers (exporters) in respect of shipping freight rates. The ASC was formed in 1972 to negotiate on the shippers' behalf with conference lines. The ASC generally makes and receives requests to negotiate with the conferences, which in turn are required to comply and provide cost and revenue data under the Trade Practices Act. However, ASC-negotiated rates are not binding on members, and shippers of major commodities often negotiate separately with the shipping lines.

At the Shore-Based Shipping Costs Seminar in July 1984 (BTE 1984a),

the ASC also expressed broader concerns for members. These related to organisational and institutional arrangements within the shore-based shipping chain which, the ASC claim, are conducive to high costs and low accountability, the end user ultimately suffering through higher service charges. Specific organisational concerns were the problems of co-ordination at the various levels of government involved and the vertical integration existing in many shore-based operations. The latter was considered especially important in the context of the competitiveness of the stevedoring industry, an industry the ASC believes plays a pivotal role in the cost structure of the shore-based shipping chain.

In a submission to the BTE, the Australian Manufacturing Export Council (AMEC) also expressed great interest in the potential effects of vertical integration by the shipping lines. AMEC believes that such a structure creates little incentive for competition in the shore-based shipping chain and results in low motivation to update terminal and depot equipment or maintain efficient throughput.

Shippers are also represented by various organisations dealing with certain major commodities or commodity groups. Such organisations include the National Farmers' Federation, the Australian Meat Exporters' Federation, the Metals and Minerals Shippers' Association of Australia, the Australian Wool Corporation, the Wool Council of Australia and the Federal Chamber of Automotive Industries Manufacturers' Group (FCAI). The interests of these organisations tend to be more specific than those of the ASC. However, their aims are similar in that they attempt to minimise transport and handling costs to their specific industry through either their representation on the ASC or through independent negotiation.

In a submission to the Task Force on Shore-based Shipping Costs, the FCAI covered most of the general areas of concern common to all shippers (with particular emphasis on Melbourne's port operations). Concerns raised related to delays in delivery of containers to and from container terminals with the inherent associated costs these delays imposed on the shipper and consignee. In their submission, the FCAI suggested that these problems were largely the result of union and management friction and terminal inefficiency as a result of equipment breakdown and poor utilisation, terminal priority given to servicing vessels and lack of terminal co-ordination and communication with carriers.

The submission also noted the adverse effects these delays imposed on inventory levels and export competitiveness, believing that the

industry could no longer bear the brunt of these costs while remaining competitive both domestically and overseas.

These views were reinforced at a recent Bureau seminar when the Director of Supply of General Motors-Holden's (GM-H), stressed the problem of continuity of supply as being a major concern of the company's overseas customers (Deveson 1986). GM-H attributed this problem to both shipping and waterfront industries in Australia being unreliable and non-competitive. GM-H believed that the increasing emphasis on just-in-time production techniques made stability of service levels a critical issue. They noted that some shipping lines were already reverting from containerisation to break-bulk shipment of motor vehicle components to reduce shore-based delivery time problems associated with containerised cargoes.

SERVICE PROVIDERS

There are numerous organisations representing various sectors which provide the services in the shore-based shipping chain. Each of the following service providers are represented by one or more bodies:

- shipowners by the Australian Chamber of Shipping;
- customs agents by the Customs Agents Federation of Australia and state associations;
- the stevedoring industry by the Association of Employers of Waterside Labour;
- freight forwarders by the International Freight Forwarders' Association of Australia and the National Freight Forwarders' Association;
- port and marine authorities by the Association of Australian Port and Marine Authorities; and
- trucking concerns by road transport associations at Federal and State levels.

This list, whilst by no means exhaustive, indicates the diversity of bodies operating in this area.

There also exist a number of general umbrella groups which take an active interest in port operations and the wider considerations related to importing and exporting. The various Chambers of Commerce represent many users of the shore-based shipping chain in this way.

USER CHARACTERISTICS

To gain some insight into user characteristics and problems users were experiencing with the shore-based shipping chain, the Task Force established a User Panel. As one of its activities, the panel, with the assistance of the Bureau, undertook a survey of users. The survey population comprised 11 of the panel members and five other companies representing smaller users. The latter were selected by the NSW Chamber of Commerce and Industry, which itself was represented on the User Panel.

A more extensive survey of users was also conducted independently by the Department of Trade, although only a very small proportion responded. Neither of these exercises can be regarded as rigorously representative of the concerns of all users of the shore-based shipping chain. Their comments related to both cost and quality of service characteristics of the chain and are outlined below.

User awareness of the system

Both surveys of users revealed that individual users have varying degrees of awareness of, and interest in, the shore-based shipping system. Generally, users can be categorised as either large or small importers or exporters, and their perceptions vary considerably depending on the group to which they belong and the importance of international trade in their business activities. It may be noted that whether or not all of their views on the chain are soundly based is to some degree irrelevant. They are based on the perceptions (whether correct or incorrect) users have of the chain, which will influence how users react commercially.

Direct costs of service

A number of cost issues were identified by users, the most commonly noted being demurrage charges incurred due to truck waiting time at terminals. Major importers were acutely aware of road transport costs, and by and large were addressing the problem through independent negotiation with road transport companies. Their size and hence market power tended to be conducive to satisfactory negotiation.

In contrast, small importers were often unaware of demurrage charges incurred and/or were not unduly concerned, for although demurrage costs per unit were considered high, it would appear that absolute costs were not high enough to warrant any particular action. A lack of negotiating power with the transport companies could also be seen as a strong disincentive to any negotiation attempts.

General user perception was also that stevedoring charges were high due to a lack of competitiveness amongst stevedoring companies. Users felt that this lack of competitiveness, combined with the present industrial awards, agreements and work practices, had led to high overtime and penalty rates in the industry. Depot charges were also considered high for similar reasons.

User organisations noted the impediments to efficient operation of the road transport industry as a result of changes to State road regulations and differences in regulations between States, especially in the area of vehicle carrying capacity restrictions. The Australian Road Transport Federation noted that current regulations in the eastern States prohibit the use of 40 foot refrigerated containers due to vehicle axle load restrictions, while other open containers are often illegal due to dimensional restrictions.

Despite user belief that charges for certain services were too high, the overriding impression gained was one of general acceptance of these direct cost aspects. This was especially so among the smaller users who perceived a situation where they had little negotiating power and no great savings potential. To a lesser extent, the knowledge that additional costs incurred could be passed on to the final consumer does nothing to encourage either large or small importers to achieve economies through negotiation. In line with the relative elasticities of demand as discussed in Chapter 2, exporters were less able to pass on these costs to their overseas clients and showed a correspondingly higher level of concern.

This general attitude was further reflected in users' lack of interest for such concepts as itemised shipping freight bills showing separate terminal and depot cost components. All users approached felt such a facility was of little value.

Quality of service

Quality of service was the most significant area of concern to emerge from comments from both users and representative user organisations. Concern for quality of service emanates from the potentially high indirect costs of delays associated with inefficiencies in the shore-based shipping chain. This, coupled with users' abilities to more readily identify these costs in the form of reduced or cancelled sales and delayed use of inventories and finance, has created a greater awareness of service reliability and timeliness.

Another factor identified, but of less concern, was the cost associated with loss or damage of goods. Containerisation minimises

loss of goods and damage due to handling of cargo. However, instances of perishables being rendered unusable were not infrequent. Generally, this was associated with time delays in movement of goods rather than mishandling (for example, failure to connect refrigerated units to cooling systems).

In both surveys, importers and exporters emphasised that quality of service was of utmost importance, for not only did it affect their present viability, but also their long-run competitiveness both domestically and overseas. The consensus among those users surveyed was that most problems revolved around stevedoring and depot operations, with some concern also for delays caused by the need to meet certain requirements of government agencies.

General user opinion was that container terminals' quality of service is adversely affected by a number of factors, the major ones being industrial difficulties and emphasis by terminals on servicing vessels. Most users felt that terminals should maintain a higher level of equipment efficiency and/or equipment levels, together with a greater ability to allocate manpower to meet demand requirements. This would permit terminals to reassess their servicing priorities.

Depot operations were also subject to critical comment from users, criticisms being directed particularly at the long delays for unpacking LCL containers. Waiting periods of two to three weeks are common and users were acutely aware of the problems this created with inventories, deliveries and manufacturing.[1]

Delays due to government agency requirements were of less concern to users. However, while appreciating that these formalities are essential, many users believed that some delays could be reduced. The majority of users indicated that customs and quarantine procedures were often overly complex and time consuming in instances where minimum formality was required. Although the recent move by customs to reduce clearance procedures to four hours for containers with standard clearance requirements was greeted with enthusiasm by all users contacted, more selective procedures were still considered desirable. Many users also made mention of time delays created by quarantine laboratory testing on imported products and also felt that government agency work hours were too restrictive, there being a need for some form of after hours consultancy service for user inquiries.

1. The two to three weeks waiting period refers to the time from which the vessel has discharged to containers to the time the goods are available for collection at the depot.

CHAPTER 11 ADMINISTRATIVE PROCEDURES AND ASSOCIATED INFORMATION FLOWS

All cargo entering or leaving Australia requires some form of clearance from the appropriate Government authorities, the major ones being the Australian Customs Service (ACS) and Australian quarantine authorities.

Customs agents are commonly employed by importers and, to a lesser extent, exporters, to arrange customs and quarantine clearance of their goods.[1] In order to obtain cargo clearance, certain information is exchanged between the main participants including the ACS, quarantine authorities, customs agents, importers, exporters, shipping companies, terminal operators, depot operators and transport companies. This information is transmitted through a range of communication systems.

The first part of this chapter examines the functions and clearance procedures of the ACS, quarantine authorities and customs agents. This is followed by a description of the present information and communications system used, together with an account of possible developments.

CARGO CLEARANCE

Cargo entering Australian ports is subject to clearance from the ACS and quarantine authorities. Although there is considerable interaction between those bodies in carrying out their respective activities, a separate description of the functions and operations of each follows so as to give better understanding of the whole clearance process.

Australian Customs Service (ACS)

The ACS is an autonomous authority within the Industry, Technology and Commerce portfolio and is headed by a Comptroller-General who has full

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1. If a shipper or consignee employs a freight forwarder to organise cargo movements, the forwarder may also arrange customs and other clearances. Chapter 3 discussed the relationship between freight forwarders and customs agents. Customs procedures can of course also be carried out by importers themselves.

administrative powers and reports directly to the Minister. The three main functions of the ACS are:

- the control of imports and exports for community protection purposes, for example, the interception of prohibited imports and exports, such as restricted drugs, flora or fauna;
- the provision of assistance to Australian industry through the administration of the customs tariff, by-law, anti-dumping and bounty systems; and
- the collection of customs and excise revenue.

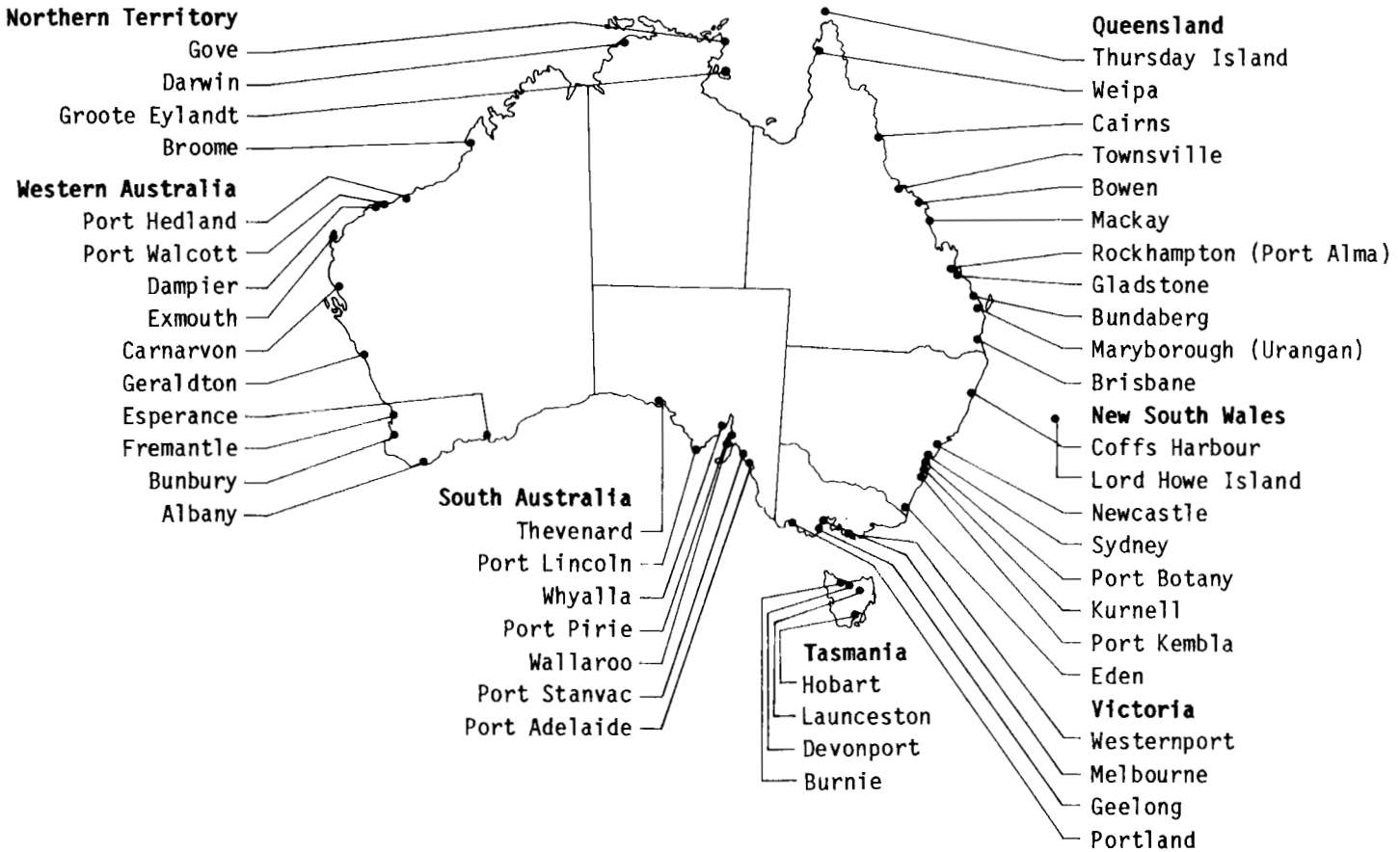
For the effective discharge of these functions, the ACS has an extensive legislative base for providing a viable and operative barrier for the protection of community standards, as well as ensuring that a proper level of assistance is provided to Australian industry. Some of the main Acts administered by the ACS are as follows:

- *Customs Act 1901*
- *Customs Tariff Act 1982*
- *Excise Act 1901*
- *Excise Tariff Act 1921*.

In order to carry out these functions in relation to sea cargo, the ACS has offices located in most Australian ports (see Figure 11.1) which are linked by national communication and data processing networks.

Import procedures

Before issuing a clearance for import cargo, the ACS requires documentary information from the importer who has ordered the goods and from the shipping line (agent) which is carrying the goods. The importer is required to provide information from which a customs entry is prepared identifying the ship, importer, container number, destination, quantity and type of cargo, and usually the duty payable on the goods. Other supporting documentation such as invoices and shipping documents may also be required. Shipping companies or their agents are required to submit a copy of the ship's manifest to the ACS within 24 hours of vessel arrival, though this is usually submitted prior to arrival. The manifest is a document produced by the shipping company (agent) when the vessel was loaded and is a transcription of relevant data from each Bill of Lading issued for the ship's cargo. The Bill of Lading is contractual evidence of cargo shipment and is usually given to the overseas supplier who forwards it and other documentation to the Australian importer. The ACS screens the



Source Department of Industry, Technology and Commerce (1985).

Figure 11.1 Australian Customs network: shipping ports staffed full time

manifest data for possible prohibited imports and checks the customs entries for accuracy.

On 1 July 1985, the ACS introduced a new processing system for imported goods which is aimed at reducing the average processing time to less than four hours compared to the previous average of 3 to 4 days. Under the new system, all entries are separated into 'high risk' or 'low risk' groups. The 'high risk' entries, which on average represent approximately 10 per cent of the total number of entries, receive detailed scrutiny. In contrast, the remaining 90 per cent of entries or the so called 'low risk' entries receive minimal scrutiny and are processed more rapidly.

In addition to this processing, the ACS randomly selects consignments from the ship's manifest for physical checking at a later date. This checking is necessary to verify that the quantity and type of goods have been accurately described for customs duty calculations and that prohibited imports have not entered the country. In the case of FCL containers such checking is normally carried out at the importer's premises, and at the appropriate container depot for LCL cargo. If after processing the customs entries the ACS is satisfied that all documentation is in order and the correct duty has been paid, then the ACS will issue a Clearance Advice to the importer. This Clearance Advice usually takes the form of a 'May be Delivered' stamp on the Customs Entry. The ACS may also require the importer to provide a cleared Quarantine Entry for some goods, before this Clearance Advice is issued. The importer (or agent) is required to produce this Clearance Advice to the terminal or depot, before delivery of the goods is effected.

Export procedures

For export movements, documentation procedures are somewhat simpler than for import movements, largely because ACS requirements are less stringent. Although export entries are required for all shipments, large exporters generally submit only a monthly export return to the ACS which is used for statistical purposes. Exports of primary products also require clearances from the Department of Primary Industry and the export of hazardous or dangerous goods require the approval of the Federal Department of Transport.

Quarantine

Quarantine services within Australia are provided jointly by the Federal and State Governments. The Federal Government is responsible

for the legislation *(Quarantine Act 1908)*, policy, funding and overall co-ordination of quarantine services, which are administered by the Australian Agricultural Health and Quarantine Service (Department of Primary Industry) and the Human Quarantine Section of the Department of Health. The State Governments are responsible for the operational aspects such as provision of quarantine inspectors and facilities necessary to implement the Federal legislation. The relevant State Government departments co-ordinate these activities.

All plant material, including timber and wooden articles, is subject to Australian Plant Quarantine requirements to ensure that plant diseases, organisms causing diseases and insect pests are not imported into the country. Animals and animal products are subject to animal quarantine requirements. Certain materials are subject to mandatory treatments immediately following import unless satisfactory evidence is produced to show that the prescribed treatment was given before export. For containerised cargo, quarantine requirements relate to the container itself and the packaging used within the container as well as to the cargo.

Procedures

The shipping company (or agent) forwards a copy of the ship's manifest to the quarantine authorities prior to the ship's arrival. The importer provides quarantine documents when necessary and shipping companies (or their agents) are notified of any cargoes requiring inspection, this information in turn being provided to consignees directly or by advertisement in a trade newspaper. For FCLs, quarantine inspectors process the manifest to check:

- whether the container has been registered as acceptable with the Department of Health;
- whether the packaging material has been treated; and
- whether the actual goods in the container are subject to quarantine.

For LCLs, all cargo is subject to quarantine scrutiny at the container depot where it is unpacked. The ACS also checks for goods to be quarantined, and for such goods will not issue a Clearance Advice without prior receipt of a cleared Quarantine Entry. Possible reasons for the placing of quarantine impediments on containers and the action required by the importer (or Customs Agent) are summarised in Table 11.1. Cargo is eligible for release to importers when the ACS and quarantine authorisations have been obtained and other charges have been paid.

TABLE 11.1 TYPICAL FORMS OF QUARANTINE IMPEDIMENTS ON IMPORTS

Reason for impediment	*Quarantine requirement*
Rural destination or destination unknown	Importer to lodge a QP26 Entry[a] with Approval Treatment Certificates for a Tailgate Inspection or declaration of a metropolitan delivery address
Contents subject to quarantine	Importer to lodge a QP26 Entry with further action, such as fumigation, as required
Timber components of container not treated	Importer to lodge a QP26 Entry with Approved Fumigation Certificate or inspection of interior of container
Empty container or pallets shipped from Papua New Guinea	Importer to lodge a QP26 Entry with inspection of exterior and interior of container and mandatory fumigation of pallets
Documentation query of packaging, dunnage or nature of contents	Importer to lodge a QP26 Entry with Invoices and/or Certificates of Treatment to clear goods or inspection required
Wood used in packaging or dunnage	Container importer to lodge QP26 Entry with Approved Certificates of Treatment or inspection at a break-bulk depot
No quarantine code on manifest	Importer to lodge a QP26 Entry with Tailgate Inspection as a minimum
Straw used	Importer to lodge a QP26 Entry with further action as required.

a. QP26 - Plant Quarantine Entry, a document lodged with the Quarantine Service which details the number of containers to be discharged and the serial numbers of FCL containers for delivery to rural destinations. The QP26 also gives a description of the quantity and type of cargo.

Source Port of Melbourne Cargo Facilitation Committee (1980).

Customs Agents

As mentioned in Chapter 3, the services provided by customs agents to their clients and traditionally associated with the role of customs agents include:

- preparation of customs entries;
- payment of customs duties;
- obtaining customs clearance;
- obtaining a cleared quarantine entry; and
- processing the Bill of Lading through the shipping agents.

Customs agents are licensed by the ACS. To obtain a personal licence it is necessary to complete a prescribed course of study and to pay a fee of $20 per year. A corporate licence requires a firm acceptable to the ACS to employ at least one licensed agent. The fee is $200 per year. These licensing requirements clearly do not represent a barrier to entry to the industry. There are approximately 170 corporate agents operating in Sydney and a similar number in Melbourne. Vertical integration of customs agents and shipping interests is not a feature of the industry, although customs agents frequently operate in conjunction with a freight forwarding business.

The provision of customs agent services is well suited to a small business operation as personal service can be important. Customs agents compete on price and quality of service, including degree of expertise on customs procedures.

Several of the State customs agents' associations issue a schedule of recommended charges. However, the rates actually charged are negotiated with clients and depend on various functions related to the amount of effort required to obtain customs clearance for particular cargoes. There are now more than twice as many customs agents as in 1969 and the rates charged by them can be as much as 40 per cent below the recommended tariff.

Following discussions with the shore-based shipping industry and examination of survey responses, indicative charges for customs agent service for FCL imports and exports have been assessed to be $80 per TEU and $50 per TEU respectively. Assuming an average of six individual consignments in each LCL, indicative charges for LCL imports and exports have been assessed to be $300 per TEU and $220 per TEU respectively.

INFORMATION AND COMMUNCIATION SYSTEMS

Customs documentation

In August 1976 the Bureau of Customs (as it was then known) began operating a computer data entry system in Sydney known as COMPILE (Customs On-line Method for Preparing from Invoices Lodgeable Entries). The system is now operating nationally, and is the first significant use of a computerised data entry system in the shore-based shipping industry in Australia.

Through COMPILE, customs agents and importers can use visual display units and printers in their own offices to communicate with the ACS. This has meant that the preparation of customs entries and the calculation of duty are undertaken through the computer system, and the customs entry is printed out on the equipment installed in the office of the relevant customs agent. During 1984-85, over 1.35 million customs entries were prepared using COMPILE by some 490 agents and importers throughout Australia.

The ACS is introducing a new data entry system in 1986, called COMPILE 2. Its major purpose is to increase the efficiency of the customs operating systems. From the user's point of view it will be easier to use and will include a number of enhancements of the present system. However, the customs entry and other supporting documentation must still be physically lodged with the ACS before the clearance procedure takes place.

Notification of cargo status

Understandably, importers wish to have information on the status of their cargo in terms of its current location and the state it has reached in the clearance process. This information is communicated to the importer (or agent) by various means, including phone, telex, post and the press.

Importers or their agents identify the ship which is carrying their goods, from information on the Bill of Lading. Vessels due in Australian ports are notified in the trade press (specifically the *Daily Commercial News* (DCN)) well before their arrival. Ship arrival and berthing information is also notified in the DCN. When the ship's cargo is discharged, the terminal or stevedore places a notice in the DCN to that effect or in some cases the shipping line takes responsibility for informing its clients (by telex, phone or other means). All of the FCLs from a ship are available from the same date (subject to customs and quarantine clearance).

LCL consignments are unpacked at container depots. This operation can take some time (typically from three days to two or three weeks from ship discharge) and each day the depots place a notice in the DCN identifying the containers which have been unpacked.

Responses to a Bureau survey on the market characteristics of the shore-based shipping industry indicate a demand for a better system to notify LCL availability in particular. The system based on the specialised daily press is considered to be subject to too much unreliability (late distribution of copies), and also delay resulting from publication deadlines.

Introduction of new systems

In response to the Bureau survey (BTE 1985a), the ACS indicated that possible future developments in information and communication systems included provision to lodge customs entries and pay duty electronically, but there are no definite agreements or timetables for these initiatives. They are not part of COMPILE 2 (which remains primarily a data entry system) but form part of a more general concept called the 'integrated system' which has been put forward by the ACS. This involves linking computer systems throughout the industry and government agencies. If it becomes accepted, it is expected that full implementation would take a considerable period of time (perhaps a number of years) although parts of the system, such as electronic entry and payment and links with quarantine, could be implemented sooner.

Another potential development would be the use of a videotex system (similar to that currently be provided by Telecom) to provide an integrated network for communication among the various sections of the shore-based shipping industry. Judicious integration of videotex technology with 'conventional' computerised data management systems could provide the communication and information facilities appropriate to the diverse interests in the shore-based shipping chain.

System outline

This section describes a broad conceptual outline of a communication and information system suitable for the shore-based shipping industry. It is presented here primarily to illustrate the capabilities which such a system could provide. Videotex technology would be particularly suitable for those components of the system which do not require transfer or analysis of significant volumes of data. The following points describe the system:

. Shipping companies would enter manifest data into the system.

This can be done electronically for those companies which use computers for processing manifest and the data would be available some time before the vessel arrives.

- Customs, quarantine and port authorities would have direct access to the information they required. This can be transferred electronically to their computers, representing a cost saving and an improvement on current practices which rely largely on data entry from hard copy. Quarantine authorities would be able to identify cargoes with impediments.
- Importers and their agents could search the database for their goods. The available information would include estimated time of ship arrival and identify relevant terminals or depots.
- When the ship is discharged the terminal or stevedore would enter a message to that effect, together with the date from which storage charges for FCL cargo would apply.
- Depots could use the system to notify customers of containers that had been unpacked. These entries could be updated throughout the day. Furthermore, forecasts of available containers could be made one or two days in advance.
- Shipping lines and customers could identify those cargoes which were cleared and for which all charges had been paid. This would be sufficient for the terminal or depot to release the cargo and carriers would then need to present only a single document authorising them to collect the cargo.
- Customs agents and importers could electronically request bookings to collect particular containers or consignments. The terminal or depot would send a message back, some time later, nominating a particular time.

A similar system could be developed for exports, involving the Department of Primary Industry and other relevant agencies. Some shipping lines may care to extend the system to include a booking service for exports.

The system outlined above is compatible with the integrated system concept developed by the ACS.

Although it appears that the technology required for an integrated system is currently available, the fragmentation of the shore-based transport and shipping industry presents significant problems for its implementation. These problems are addressed in Chapter 13.

CHAPTER 12 INDUSTRIAL ARRANGEMENTS

Except for the relatively small quantity of cargo transported by aircraft, all of Australia's international trade is moved by ship. The stevedoring industry which functions at the land-sea interface is a critical link in the cargo transport chain and is therefore of national importance to Australia's trading performance. The effectiveness of the industrial arrangements which apply to the stevedoring and other cargo-handling industries has a vital impact on the efficient flow of cargo and enhancement of Australia's status as a reliable trading nation.

The first part of this chapter addresses the industrial arrangements that exist at the waterfront. This is followed by a discussion of the industrial arrangements of container depots and road transport. Finally, the mismatch of working hours arising from differences in the various industrial arrangements is discussed.

WATERFRONT

This section summarises the history and structure of the stevedoring industry. It also looks at the representative bodies of employers and employees which are the major participants in industrial arrangements on the waterfront, as well as at the working conditions of union members. Some examination is also made of industrial disputation on the waterfront.

Legislative framework

There has been considerable Government involvement in the stevedoring industry dating back to arrangements developed during World War II. These were designed to end the instability of the industry which had relied entirely on a casual, day-to-day, labour force with little commitment to the requirements of the industry or the war effort.

The statutory role of the Federal Government was exercised initially by means of National Security Regulations which provided for a Stevedoring Industry Commission under the chairmanship of the Chief Judge of the Commonwealth Court of Conciliation and Arbitration. The Commission was replaced by the Australian Stevedoring Industry Board

in 1949, which in turn was replaced by the Australian Stevedoring Industry Authority (ASIA) in 1956. The responsibilities of ASIA included:

- registering waterside workers and employers;
- recruiting waterside workers and determining the size of the labour force;
- regulating the performance of stevedoring operations;
- oversighting all aspects of waterside worker training, employment, pay arrangements, redundancy benefits, long service leave and discipline;
- promoting efficiency and safety in stevedoring operations;
- prosecuting offenders against the *Stevedoring Industry Act 1956*, including employers; and
- compiling and publishing statistics and other information relating to the industry.

ASIA continued in operation until 1977 when the administration of the industry was handed over to its main participants, the employers and the waterside workers. These changes resulted from a number of Government-initiated inquiries and reforms. The most significant of these inquiries were the National Stevedoring Industry Conferences that were held from 1965 to 1967 and from 1976 to 1977, the reports of which are commonly known as the Woodward and Kirby reports respectively. A summary of the major changes to the industry arising from these conferences follows.

National Stevedoring Industry Conference (Woodward 1967)

In 1965, in response to industrial unrest on the waterfront, the Commonwealth Government passed the *Stevedoring Industry Act 1965*. This provided for declarations which, in effect, would have deregistered the WWF as an organisation under the Conciliation and Arbitration Act.

Shortly after the passage of that legislation, the Commonwealth Government, at the request of the Australian Council of Trade Unions (ACTU), set up the National Stevedoring Industry Conference under the chairmanship of Mr A. E. Woodward QC, with the objective of achieving a long-term improvement in conditions in the stevedoring industry. Participants in the conference were the ACTU, the Association of Employers of Waterside Labour (AEWL), WWF, ASIA and the Commonwealth Department of Labour.

The Conference's report was presented to the Government in 1967 with the following major recommendations:

- The casual employment of waterside labour was to be replaced by a system of permanent employment on a weekly hire basis in the major ports. The majority of waterside workers were to be employed directly by individual stevedoring companies (operational labour) and the remainder by a holding company (Stevedoring Employers of Australia Ltd also referred to as SEAL). SEAL was formed by employers to employ a 'pool' of labour, which was to be allocated on a daily basis to operational stevedores to meet labour shortages as required.
- Pension and past service benefit schemes were to be introduced.
- Arrangements for coping with anticipated redundancies were to be made.
- There were to be new disciplinary procedures for weekly hire of employees.
- The role of Industrial Relations Committees for dealing with potential and actual industrial disputes was to be strengthened.
- The functions of the Australian Stevedoring Industry Authority in permanent employment ports were to be reduced.

All recommendations were accepted and acted upon, and culminated in the *Stevedoring (Temporary Provisions) Act 1967*.

National Stevedoring Industry Conference (Kirby 1977)

In a statement to Parliament on 18 November 1976, the then Minister for Employment and Industrial Relations indicated that he would call a conference of the principal parties to the stevedoring industry to work out a framework of new industrial relations and administrative arrangements in the industry. The principal parties to the Conference were the National Industrial Council (and ultimately ANL and the Port Waratah Stevedoring Company), the WWF and the Department of Employment and Industrial Relations. Sir Richard Kirby was appointed Chairman of the Conference on 21 December 1976 and the report was presented to the Commonwealth Government in April 1977.

The major recommendations of the report involved:

- Commonwealth Government withdrawing from its regulatory role exercised through ASIA;
- industry accepting greater responsibility for its own affairs;
- improved flexibility in deployment of labour;

- establishment of the Stevedoring Industry Consultative Council; and
- Department of Transport taking over responsibility for port statistics.

The report also recommended that these new arrangements be reviewed after twelve months in operation.

All of these recommendations were accepted with major actions being:

- the abolition of the ASIA;
- the abolition of SEAL labour pools from major ports and this labour becoming employed by individual stevedores;
- establishment of the Stevedoring Industry Consultative Council (SICC); and
- establishment of the Federal and Port Co-ordinating Committees.

The roles of the co-ordinating committees and of the SICC are described later in this chapter.

As the result of a report by a special consultant to the Government, the Stevedoring Industry Finance Committee (SIFC) was established to undertake the financial function previously administered by the ASIA. The committee comprises representatives of the main participants in the industry under an independent chairman appointed by the Federal Minister.

Present framework

Legislation which specifically applies to the stevedoring industry is as follows:

- *Conciliation and Arbitration Amendment Act (No. 2) 1977*
- *Conciliation and Arbitration Amendment Act (No. 3) 1977*
- Conciliation and Arbitration (Port Co-ordinating Committees) Regulations 1977
- Conciliation and Arbitration (Federal Co-ordinating Committee) Regulations 1977
- *Stevedoring Industry Levy Act 1977*
- *Stevedoring Industry Levy Collection Act 1977*
- Stevedoring Industry Levy Collection Regulations 1977
- *Stevedoring Industry Finance Committee Act 1977*
- *Port Statistics Act 1977*

In addition, the stevedoring industry is subject to general legislation relating to industrial relations, safety and trade practices.

Though the Federal Government is no longer directly involved in the administration of the stevedoring industry, it does maintain indirect involvement through a number of statutory and non-statutory bodies that deal with aspects of the industry. A description of the functions of these bodies follows:

- The SICC is a non-statutory body consisting of representatives from the employers, trade unions, user groups, government departments and port authorities. The basic role of the council is to allow user groups to raise and discuss matters with the main industry parties and, through the Chairman of the Council, advise the government of matters warranting attention.
- The SIFC was established under its own Act of Parliament to administer revenue collected under the *Stevedoring Industry Levy Collection Act 1977*. The Act establishes two types of levies. A general levy covers employer contributions to the Stevedoring Employees Retirement Fund and, in non-permanent ports, attendance money, guaranteed wage, annual leave, compassionate leave, air fares, and so on. Three special levies which were previously used to pay out the deficit that existed when the ASIA was abolished are now used to finance loans which were raised to fund redundancy payments.
- Federal and Port Co-ordinating Committees (FCC and PCC) are employer-union committees established under the *Conciliation and Arbitration Act 1904*, and Statutory Rules Nos 235 and 236 of 1977. These deal with matters of WWF recruitment, allocation, redundancy, determination of port quotas and appointment of port conciliators. The FCC deal with the matters affecting all ports and may refer unresolved matters to the Conciliation and Arbitration Commission. The PCC deal with matters relating to their respective ports and may involve the relevant port authority. Unresolved matters may be referred to the Federal Co-ordinating Committee. The functions and compositions of the FCC and PCC are described in more detail in Appendix V.
- The Port Conciliator Service has part time conciliators appointed under the *Conciliation and Arbitration Act 1904* for all ports employing WWF labour. The conciliators are available at short notice to conciliate and, if agreed, arbitrate on-the-job disputes in their respective ports.

Supporting these arrangements is an agreement termed the 'General Agreement' between employers (AEWL, ANL and BHP) and the WWF which details the employment arrangements that came into existence in 1977. This agreement arose out of the Kirby Conference during 1976-77 which led to the restructuring of the stevedoring industry.

Participants

In line with industrial arrangements in general, the major parties involved in the industrial arrangements of the waterfront are the employer and employee representative bodies. A description of each follows.

There are three principal groupings of employer representation in the stevedoring industry. The largest is the Association of Employers of Waterside Labour (AEWL) which represents conventional stevedores and container terminal and depot operators, but whose membership also includes parent and related companies. The BHP Company handles its own stevedoring through the Port Waratah Stevedoring Company. In the bulk handling area, the Australian Mines and Metal Association represents numerous minerals and energy producers and shippers operating bulk loading facilities. Since the emphasis in this Paper is on containerised cargo, only the AEWL is considered further in the following.

Association of Employers of Waterside Labour (AEWL)

The AEWL was incorporated on 4 September 1963, and was registered on 19 December 1963 as an organisation of employers under the *Commonwealth Conciliation and Arbitration Act 1904*. The genesis of the AEWL can be traced back to 1929, when a committee known as the Central Committee of Overseas and Interstate Shipowners was established to determine and lay down policy and to deal with all questions of policy relating to industrial matters affecting the stevedoring industry.

Initially, the AEWL membership comprised shipping interests and conventional stevedoring companies. In 1977, following the Kirby report on the restructuring of the stevedoring industry, container terminal and depot operators also became members of the AEWL.

At 30 June 1985, there were 120 separate registered members of the AEWL, representing mainly shipping companies, terminal and depot operators, port authorities and other interests. There were 16 members of the Terminal and Depots Divison and 106 members in the General Division of the AEWL, with two members belonging to both divisions (AEWL 1985). The AEWL represents the employers in labour

award negotiations with the various unions involved in stevedoring work. It also levies members to contribute to certain industry funds which finance the following schemes:

- AEWL National Sick Leave Scheme
- AEWL National Long Service Leave Scheme
- AEWL Redundancy and Early Retirement Payment Scheme
- AEWL Annual Leave Scheme
- ANL Redundant Labour Funding Scheme
- ANL Ancillary Labour Redundant Idle Time Funding Scheme
- Ancillary Labour - Long Service Leave and Past Service Benefit Schemes.

Labour force

The major land-based unions involved in the chain of cargo handling operations which has arisen from containerisation are:

- Australian Foreman Stevedores' Association (AFSA)
- Amalgamated Metal Workers' Union (AMWU)
- Australian Society of Engineers (ASE)
- Australian Shipping Officers' Association (ASOA)
- Australian Stevedoring Supervisors' Association (ASSA)
- Electrical Trades Union of Australia (ETU)
- Federated Clerks' Union of Australia (FCU)
- Federated Miscellaneous Workers' Union of Australia (MWU)
- Transport Workers' Union (TWU)
- Waterside Workers' Federation of Australia (WWF).

In the context of this Paper it is not intended to discuss the awards and conditions applying to the membership of all these unions. The following discussion relates to the membership of the WWF, the most significant component of the stevedoring labour force.

All registered waterside workers are covered by The Waterside Workers' Award 1977. This award is in two parts with most workers being covered by Schedule A. Those employed by the Port Waratah Stevedoring Company (a subsidiary of BHP) are covered by Schedule B.

All workers employed under Schedule A are classified as 'normal award' workers. A large number are employed under conditions which are specified in further agreements and awards (such as The Waterside

Workers' Award (Container Terminals) 1984). Workers covered by these further agreements and awards, together with those employed under Schedule B, are classified as 'special agreement' workers.

Containerisation has made a significant impact on the stevedoring and shipping industries. The extent and character of change is illustrated by its effects on the size, scope and function of the WWF.

One of the major changes in recent years for the stevedoring industry has been the reduction in the labour requirement with the advent of containerisation and associated technological advances. Table 12.1 shows this trend and indicates that over the past 14 years the reduction in the labour force has principally occurred in the number of waterside workers under the normal award rather than under special agreement. Prior to this period, registered waterside workers numbered between 20 000 and 22 000 through the early and mid-1960s.

Working conditions

Members of those unions listed previously work under awards and agreements that are similar but not identical. The WWF biennial award negotiations appear to be the forerunners to subsequent series of negotiations with each of the other labour categories.

For a variety of reasons, both the AEWL and unions other than the WWF have opted to maintain their employment arrangements outside the formal provisions relating to WWF labour.

The 1967 'Memorandum of Understanding' between the AEWL and the FCU (see Appendix II) provided for all container terminals owned or controlled by shipping interests to employ only clerical staff nominated by the FCU. In most States, these clerks are now covered by the WWF, following a decision of the Federal Court of Australia which established that the WWF have an equal right to the FCU to enroll shipping clerks as members.

Penalty rates are payable for working overtime, shift and weekend work, and in an industry that basically works 'around-the-clock' throughout the year these penalty rates can provide a high earning capacity relative to average earnings of employees in other industries. Figure 12.1 compares the real average weekly earnings of waterside workers to the all-industries average. In 1971-72 the average weekly earnings for waterside workers were the same as the all-industries average for male employees, but by 1984-85 real average earnings of waterside workers were some 30 per cent above real average earnings of all male employees. The substantial reduction in the number of waterside workers and changes in the type of work performed

TABLE 12.1 REGISTRATIONS OF WATERSIDE WORKERS, 1970 TO 1985

	Regular waterside workers[a]					
As at 30 June	*Port quota*[b]	*Normal award*	*Special agreement*	*Total*	*Irregulars*[c]	*Total waterside workers*
1970	17 954	na	na	17 030	658	17 688
1971	16 873	14 924	1 114	16 038	815	16 853
1972	14 187	13 134	1 289	14 423	169	14 592
1973	13 039	11 416	2 034	13 450	141	13 591
1974	13 425	10 842	2 426	13 268	107	13 375
1975	12 679	10 534	2 731	13 265	86	13 351
1976	10 394	9 090	2 701	11 791	69	11 860
1977	9 752	7 561	2 775	10 336	50	10 386
1978	9 320	6 897	2 926	9 823	..	9 823
1979	8 884	6 329	2 982	9 311	..	9 311
1980	8 579	5 713	3 103	8 816	..	8 816
1981	8 409	5 176	3 138	8 314	..	8 314
1982	8 210	4 945	2 999	7 944	..	7 944
1983	7 320	4 531	2 595	7 126	..	7 126
1984	7 047	4 361	2 532	6 893	..	6 893
1985	6 095	3 894	2 186	6 080	..	6 080

a. Members of the WWF who are not directly involved in physical stevedoring activities such as clerks, shipwrights, first aid attendants and maintenance tradesmen are not included.
b. The port quota is given for the last Sunday in the period.
c. Waterside workers who, because of age or some special reason, were not obliged to attend regularly or make themselves available for employment. The category 'irregulars' ceased to exist under the new arrangements from 5 December 1977.

na Not available.
.. Not applicable.

Source DoT (1985b).

and skills required during this period has clearly had a bearing on the wage rate for waterside workers. Bull (1984, 107) also comments on the divergence of average weekly earnings of waterside workers from the all-industries average since 1971-72. He notes that this reflects the changing work patterns on the waterfront over the years, resulting in a much higher percentage of waterfront labour now having its basic wage rate supplemented by the other allowances mentioned compared with 1971-72.

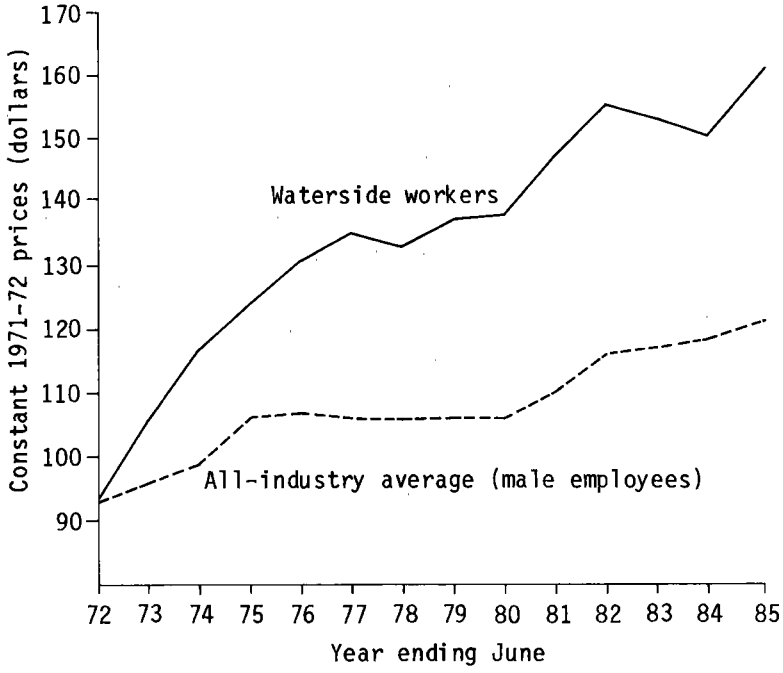


Figure 12.1 Real average weekly earnings: all industries (male employees) and waterside workers at permanent ports.

Rostering

The stevedoring industry in Australia has a variety of arrangements for rostering its employees at terminals. However, these arrangements generally reflect one of three different roster systems, namely:

- 5/2 roster
- 5/3 roster
- 7/1 roster.

A brief description of each roster system is given below.

5/2 roster

The 5/2 roster is basically a 35-hour week worked between the 5 days, Monday to Friday, with each shift of those days being of 7 hours duration. Weekends are worked on a voluntary overtime basis and are paid at the rates of double time for Saturday and double time and a half for Sunday. Within each seven-hour shift from Monday to Friday, two paid breaks or rest periods are allowed, being one of 20 minutes and one of 25 minutes, totalling 45 minutes. Hence there are 6¼ hours of productive work time available per shift.

The 5/2 rosters were historically described as totally irregular, meaning that on any of the weekdays an employee may be required to work either day shift, evening shift, or night shift as the workload dictates. However, with the advent of containerisation, degrees of regularity were introduced whereby, during a week, an employee may be able to work day shift only, or evening shift only, or depending on the roster cycle, any one of the three shifts.

Employees in some 5/2 roster areas are rostered on a 40 per cent day, 20 per cent evening and 40 per cent irregular (day or evening) shift basis, although this varies among terminal operators and conventional stevedores. The 5/2 roster is generally worked at terminals and conventional wharves where the 5/3 and 7/1 rosters are not in operation.

5/3 roster

The terminology 5/3 is used to outline the sequence of shifts. Under this roster system an employee works shifts of 8 hours duration for 5 consecutive days and is then rostered off for 3 days. This effectively means that at times he is rostered to perform work on Saturdays and Sundays as part of his ordinary 35-hour week. Various shift penalty rates apply for other than the day shifts. In the eight-hour shift system, the paid breaks or rest periods total 1 hour. Over the 56 day cycle of the 5/3 roster, it averages out to a 35-hour week.

A modified 5/3 roster was introduced in four major terminals in Sydney and Melbourne (ANL Webb Dock, STL, ANL Port Botany and CTAL).

7/1 roster

The 7/1 roster basically provides for employees to be rostered for 5 days, Monday to Friday, over a period of 7 weeks. Each shift is of 8 hours duration but employees are paid for only 7 hours. The balance of time on each shift is a credit towards the eighth week of the roster cycle for which the employees are 'rostered off' and receive their original wage plus 25 per cent.

The 7/1 roster is only worked port-wide by waterside workers in Brisbane, by shipping clerks employed at STL (Melbourne) and by WWF cleaners at CTAL (Sydney).

Training

The Training and Accident Prevention Division of the AEWL conducts various training courses for employees. These involve development courses for managerial and supervisory personnel and skill and safety training courses for operational personnel in ports around Australia.

TABLE 12.2 TRAINING COURSES CONDUCTED BY THE TRAINING AND ACCIDENT PREVENTION DIVISION OF THE AEWL, 1984

Category	*Number of courses*	*Attendance*
Management and office staff	19	220
Supervisory	8	78
National Waterfront Training Centre	22	112
Mechanical	63	303
Methods of instruction	6	31
Safety training	226	2291
Total	344	3035

Source AEWL (1984).

A breakdown of the categories covered by the training courses is outlined in Table 12.2.

Employees are required to hold certificates of competency for the different types of machinery such as portainer cranes and forklifts before being allowed to operate the machines. These certificates are issued, following examination by inspectors of the relevant State departments responsible for labour and industry.

Industrial disputation

Industrial disputes at the waterfront are the subject of much comment by shippers and consignees who express concern about the delays these disputes impose on their cargoes. Table 12.3 summarises the level and nature of industrial disputes at the waterfront over the period 1981-82 to 1984-85. The table gives a summary of manhours lost due to industrial disputes by operational employees of stevedoring companies. Operational employees include all workers involved in stevedoring and ancillary operations, and are covered by a number of the unions listed previously. Appendix VI gives a detailed breakdown of each classification in Table 12.3 for the same period.

The classification 'award conditions' accounted for 74.2 per cent of total manhours lost in 1981-82 and 43.7 per cent in 1983-84. These losses co-incided with, and were a reflection of, negotiations for new award conditions which traditionally take place biennially between the AEWL and the WWF. Table 12.3 also shows that 1984-85 registered a significant increase in man-hours lost following at least 3 years of steady decline. A significant component of this increase has been

classified as 'non-industrial', referring to issues not directly related to the waterfront workplace.

Dispute settling procedures

The disputes settling procedures currently in operation between the WWF and the employers are set out in the Avoidance of Disputes Procedure, Waterside Workers' Award, 1983 (Appendix VII). Under this agreement, the parties involved carry out direct negotiations in an effort to resolve their differences. Should this fail, then a port conciliator may be appointed under the *Conciliation and Arbitration Act 1904* to conciliate and, if agreed, arbitrate on-the-job disputes. Finally, if the dispute is still unresolved, it may be referred to the Conciliation and Arbitration Commission for resolution.

DEPOTS

Some consignments do not require the total volume of a container, and are consolidated with other similar consignments to form sufficient cargo to utilize a container. These packing activities in the case of exports, and unpacking in the case of imports, are performed at container depots licensed by the Australian Customs Service. Before containerisation there was little need to consolidate cargo and so the depot operation is a comparatively new activity combining aspects of cargo handling that might previously have been undertaken at the waterfront or at inland warehouses.

A range of industrial arrangements apply at container depots, with these arrangements stemming from the various industrial awards and agreements that have been developed over the years. The depots, for the purposes of this Paper, are categorised as being either international or trans-Tasman depots (see Chapter 7), with differing industrial arrangements applying in each type.

The international depots primarily handle the packing and unpacking of all overseas containers (mainly LCL) with the exception of those containers carried in the trans-Tasman trade which are handled by the trans-Tasman depots. International depots employ WWF labour or a combination of FSPU labour and WWF shipping clerks. In contrast, trans-Tasman depots employ TWU labour for their operations.

The manning of container depots had been the subject of various trade union demarcation disputes over the years. These were resolved by the implementation of the Container Depots Demarcation Award made by the Australian Conciliation and Arbitration Commission in 1969. The basic theme of the award was to give the FSPU the right to handle containers at depots, except certain depots designated as being located in the

TABLE 12.3 MANHOURS LOST DIRECTLY AND INDIRECTLY BY OPERATIONAL EMPLOYEES[a] DUE TO INDUSTRIAL DISPUTES, BY NATURE OF ISSUE, 1981-82 TO 1984-85

('000 manhours)

Nature of issue	*1981-82*	*1982-83*	*1983-84*	*1984-85*
Management and administration	17.9	55.9	12.1	17.3
	(6.5)	(45.5)	(13.6)	(11.1)
Award conditions	205.0	16.8	38.9	49.0
	(74.2)	(13.7)	(43.7)	(31.3)
Trade unionism	13.5	18.8	12.7	14.9
	(4.9)	(15.3)	(14.3)	(9.5)
Job conditions	11.4	18.2	21.1	17.8
	(4.1)	(14.8)	(23.7)	(11.4)
Safety[b]	0.3	0.2	0.0	4.6
	(0.1)	(0.2)	(0.0)	(3.0)
Discipline	10.9	0.2	1.8	4.8
	(3.9)	(0.2)	(2.0)	(3.1)
Non-industrial	17.4	12.7	2.5	47.8
	(6.3)	(10.3)	(2.8)	(30.6)
Total	276.3	122.8	89.0	156.3
	(100.0)	(100.0)	(100.0)	(100.0)

a. Operational employees are workers employed by stevedoring companies in stevedoring and ancillary operations, and include waterside workers.

b. The classification 'safety' only includes industrial disputes when the stoppage on the safety issue results in non-payment of employees in accordance with provisions of the relevant awards.

Notes 1. Owing to rounding, figures may not add to totals.
2. Figures in parentheses are percentages of manhours lost.

Sources DoT (1985c, 1985d).

wharf area which would continue to be manned by the traditional WWF labour. Those depots involved in the trans-Tasman trade would continue to be manned by traditional TWU labour.

As previously indicated, container depots are mainly involved with the packing and unpacking of LCL containers. However, for the purposes of industrial demarcation, the definition of LCL containers given in Chapter 7 can vary between ports. The main example of this variation occurs in Brisbane, where the so called 'Mansini Rules' are applied to the handling of containers.[1] In most ports, FCL containers may be packed or unpacked by road transport operators (TWU labour) at their clients' request. However, in Brisbane, only those operators who have been packing or unpacking their clients' containers prior to 28 February 1972 are allowed to do so now. Otherwise, if the client is unable to pack or unpack the container at the client's own premises, then the FCL container must be handled by an approved container depot.

In summary, industrial arrangements at depots involve three major unions, namely WWF, FSPU and TWU, depending on the type of depot concerned. International depot operators are represented by the AEWL in award negotiations and trans-Tasman depot operators are represented by the appropriate State Road Transport Association.

Comparative cost structures

The working conditions and associated labour cost structures at container depots will vary according to the labour award which covers the employees. Results from a Bureau survey of container depot operators conducted in 1985 (discussed in Chapter 7) indicate that standard working hours for depot employees range from 30 to 35 hours per week. However, some depots utilise overtime or operate a second working shift to cope with peak demand periods.

The survey revealed a difference in the size of unpacking gangs at the various depots. The gangs ranged from an average of 2 to 3 men at a trans-Tasman depot to 4 men at an international depot. The working conditions of WWF and FSPU employees at container depots are similar to those of waterside workers at the conventional waterfront, and generally involve 5/2 work rosters. Depots require labour each day from Monday to Friday, since they tend to have a workload which is regular in comparison with terminals. The Bureau survey found that the ratio of labour costs (including on-costs) to total operating

1. The Australian Conciliation and Arbitration Commission C No. 5345 of 1983 court decision on the handling of containers in the Port of Brisbane handed down by Commissioner Mansini.

costs varied significantly between the different types of depots. For those depots employing WWF and FSPU labour, the ratio indicated by survey respondents was 70 to 80 per cent, while for those depots employing TWU labour the ratio was less than 50 per cent.

The difference in charges between the two types of depots appears to be related to their respective cost structures resulting from the different working conditions and industrial arrangements applying in each case. The Bureau survey found that packing and unpacking charges in trans-Tasman depots were some 40 per cent less on average than in international depots.

Dispute settling procedures

The dispute settling procedures for international container depots are basically the same as those for container terminals and conventional stevedores, although the port conciliator service does not apply to disputes involving FSPU labour. The parties involved try to resolve the dispute through direct negotiation but may call on the services of a conciliator appointed by the Conciliation and Arbitration Commission to help resolve the dispute. Should this fail, then the matter may be referred to the Commission for resolution.

ROAD TRANSPORT

The major parties involved in the industrial arrangements of that section of the road transport industry engaged in shore-based shipping activities are the TWU representing the employees and the various State Road Transport Associations representing the employers. The majority of container movements by road are handled by large road transport companies which usually have a permanent labour force covered by the TWU award.

Sub-contractors are often employed by the larger transport companies or by customs agents for wharf work, with the contract terms negotiated on a commercial basis. Their drivers are members of the TWU.

Conditions of work for TWU workers are covered by the Transport Workers' Award 1983 which is also enscapsulated in the conditions of work covered by The Transport Workers' (Shift Work) Consolidated Agreement 1983. The Awards contain details of:

- the number of ordinary hours of work per week (on average, 38 hours) to be worked;

- conditions and exemptions pertaining to these hours of work;
- details of rosters;
- shift arrangements;
- overtime, Sunday and public holidays; and
- other conditions of employment.

MISMATCH OF WORKING HOURS

Container terminals can operate on a 'round the clock' basis, although the double shift (dayshift: 0730 hours to 1530 hours and evening shift: 1530 hours to 2300 hours) is the most common. In contrast, when dealing with container terminals, trucking companies would prefer to commence loading or unloading from 0600 hours and cease at 1430 hours. These times are related to the consignees' reluctance to receive containers at their premises after 1630 hours (due to staff overtime costs) and truck drivers' reluctance to park containers overnight without adequate security. Hence, to increase their effective work day, truck drivers often commence queueing at 0600 hours to wait for the terminal gates to open at 0730 hours.

This incompatibility in working hours is a contentious issue among trucking operators, terminals and end-users. The trucking companies would like the terminals to open earlier. Terminal operators believe that trucking companies should make greater use of the terminal evening shifts to load containers, and that importers and exporters should be more flexible in their operating times to permit later receival of containers. These measures would effectively increase the working time of trucking companies without the terminals resorting to earlier starts.

This mismatch in working hours contributes to the delays discussed in Chapter 9, and the costs of these delays are either passed on to the shipper or consignee or absorbed by the trucking company.

The net costs and benefits of changing the hours of operation by container terminals, road transport, shippers and consignees would require detailed analysis. These hours are subject to different industrial arrangements which are embedded in the various industrial awards covering the industries associated with the shore-based shipping chain. Bringing the hours into line could result in a redistribution of costs to other parties or could increase labour costs for the end user. Such cost increases would need to be balanced by increased productivity and efficiency in the transport chain as a whole, to be justified.

CHAPTER 13 ASSESSMENT OF THE SHORE-BASED SHIPPING INDUSTRY

The previous chapters of this Paper have:

- placed shore-based shipping costs in the economic context of Australia's trade;
- described the overall shore-based transport and handling system and the transactions which occur throughout that system;
- described the characteristics of each link in the transport chain;
- outlined the documentation and administrative procedures involved; and
- given an account of the industrial relations environment.

This chapter contains an assessment of these factors in an economic framework and draws some conclusions about the nature of the industry. Some possible future developments are discussed in relation to the report by the Task Force on Shore-based Shipping Costs (1986).

OVERVIEW

Australia is an island nation with a trading economy and has always relied heavily on shipping services and associated land-based operations. Given the cargo volumes to be shipped, the demand for these services has historically been fairly insensitive to price, at least in the short run. As well, Australia's relatively small economy, combined with the long distances between the major centres of economic activity, reduces the level of competition between shore-based shipping industries situated at different locations around the coastline. Hence there has not been strong pressure to encourage the development of efficient practices in each port. The circumstances surrounding the introduction of containerisation and the large investments involved tended to exacerbate the problem.

Costs in the shore-based shipping industry for containerised and break-bulk cargoes were estimated in Chapter 2 to be over $250 million per year in excess of similar tasks performed elsewhere in Australian

industry. In addition, there are indirect costs caused by delays and uncertainty. These increase the levels of inventories that have to be carried and affect the reliability of Australian industry as a source of supply.

Conditions which applied in the past were not conducive to the development of competitive markets in some sectors of the shore-based transport and handling chain and yet encouraged it in others. Current conditions are modifying some of these influences but it is not yet clear whether they will have some permanent impact. The standards of service and levels of charges in the less competitive sectors have led those involved in importing and exporting (the users of the chain) to express considerable dissatisfaction with the system's performance. The more competitive sectors have experienced difficulties too, predominantly at the interface with the less competitive sectors.

While it can often be difficult to establish the degree to which the conditions for competitive markets are met, it seems clear that such conditions apply within the road transport and customs agents sectors of the shore-based transport and handling system. Empirical evidence suggests that competitive conditions are limited in the other sectors. Factors which reduce the scope for competition within a sector include economies of scale and barriers to entry and exit. Substantial sunk costs, significant vertical integration and formal and informal labour arrangements are examples of these factors.

The lack of competitive conditions in a sector does not necessarily imply that services are being provided in an inefficient manner, but rather that measures in addition to reliance on existing market forces may be necessary to ensure efficiency. These can be internally-imposed mechanisms, for example, monitoring and comparing performance with a view to achieving improvements. Alternatively, externally-imposed regulatory mechanisms may be considered, although their administration represents a further cost which must be taken into account.

The following sections assess the economic characteristics of each sector in the shore-based shipping industry, identifying the particular factors which influence the degree to which the conditions for competitive markets exist. The sectors discussed are

- ports
- port related services
- container terminals
- container depots

- land transport
- customs agents and documentation systems.

PORTS

The development of containerisation had a marked world-wide effect on both ship and port productivity. The purpose-built larger ships spent less time in port at the specialised container terminals. In addition, the emphasis on large cargo volumes and substantial financial investment led to more centralisation of cargoes and to a reduction in the number of major international ports, further reducing the proportion of voyage time spent in port and increasing ship productivity. This international development was paralleled in Australia.

Ports in Europe and North America service major industrial hinterlands with substantial rail, road and waterway infrastructure. These conditions, and the use of standard container sizes in international trades, facilitated the adoption and expansion of intermodalism (the development of transport arrangements combining shipping with inland transport). In the United States, recent moves towards deregulation have aided this process.

As a result of extensive industrialisation and the spread of intermodalism in these countries the boundaries between port hinterlands have become blurred. In many cases substantial overlapping now occurs, with regional demand being serviced by more than one port. Given the importance of seaborne trade to national and regional economies, it is no surprise that inter-port competition is vigorous in those countries.

In contrast, Australia's secondary and tertiary industries are not extensive. They do not produce significant volumes of trade relative to the major industrialised nations and are predominantly located near the major ports which are widely dispersed. The distances from Adelaide to Melbourne, Melbourne to Sydney and Sydney to Brisbane are all about 700 kilometres, whereas the Benelux ports (Amsterdam, Rotterdam, Antwerp, Ghent and Zeebrugge) can be spanned in about 150 kilometres.

Inter-port competition is limited in Australia and this is accentuated by the economic dominance of Melbourne and Sydney. In pursuit of regional goals, container terminal facilities are being upgraded in Adelaide and Brisbane. This may introduce an increase in the degree of competition as those ports seek to attract more services to use their expanded facilities.

pattern of ownership, vertical integration and the consequent effects on competitive opportunities.

The container terminal (and conventional stevedoring) companies in Australia are, with two exceptions, owned by shipping interests.[1] ANL has substantial involvement in the industry, as does a range of shipping interests controlled by overseas companies. The two most significant interests in the Australian container terminal industry are ANL and a group of companies controlled by P&O (United Kingdom). These each handle one-third of Australia's container traffic.

These ownership characteristics mean that the container terminal industry has a high degree of vertical integration with shipping companies. There are, as described in Chapter 6, potential technical and commercial benefits flowing from these arrangements and vertical integration in itself is not necessarily an undesirable characteristic. Under some circumstances, however, it can provide opportunities for anti-competitive behaviour which in theory could lead to restricted access to markets, the use of cross-subsidisation practices to set prices which discourage independent operators and above normal profits for some of the operations. This can happen if any part of the vertically integrated structure is not subject to strong competition since it would then be in a position, potentially, to subsidise operations elsewhere in the structure. Even the possibility of such behaviour can be sufficient to discourage potential new entrants to the industry. Hence, if either one of the container shipping or container terminal industries is monopolistic in nature, the other can conduct its activities in an anti-competitive way.

There is, at present, a substantial oversupply of container shipping world-wide which is expected to last for at least the next few years (Gilman 1986). In the Australian trades non-conference penetration of the market has increased and freight rates have generally stabilised or fallen over the last few years. This situation of oversupply has provided a higher degree of competition in the liner shipping industry, although the extent to which the underlying market has the characteristics that will produce competitive outcomes under other circumstances is the subject of current debate (for example, see BTE 1986c and BTE 1986d).

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1. The exceptions are the Patricks stevedoring companies which are owned by Howard Smith Ltd, an industry conglomerate having various port-related services among its many interests, and F G Strang Pty Ltd, a Melbourne-based family business with involvement in stevedoring, depot and road transport activities.

A similar situation of oversupply exists in the container terminal industry in major Australian ports, although not to the same extent. With high fixed costs and low marginal costs, a terminal's profitability is critically affected by the level of throughput and so there is a substantial incentive to attract additional business. As noted previously, many of the terminals are controlled by shipping interests resulting in a substantial degree of 'captive' business from these interests and their associates. However, as the shipping lines have been more subject to competition, the downward pressure on freight rates has flowed on to influence stevedoring charges, even with the 'captive' business. In addition, the non-conference lines are not tied by ownership to particular terminals and it is this sector which has grown in recent years, offering the greatest potential to increase terminal throughput and profitability.

It appears, therefore, that stevedoring rates have been contained by a combination of three factors:

- a degree of oversupply of container terminal facilities;
- an increase in shipping activities by companies not tied by ownership or association with particular terminals; and
- downward pressure on freight rates caused by an oversupply of liner shipping.

It is not clear how permanent these factors will be, and whether the underlying market characteristics would, by themselves, result in a competitive situation. In this regard it is noteworthy that, referring to the mid-1970s when the terminal market was much tighter, the Prices Justification Tribunal found that there were excessive stevedoring charges. However, it could also be argued that the mid-1970s was a transitional period and the current situation is more indicative of the foreseeable future.

In summary, factors relating to the industry's structure, coupled with the prevailing supply-side conditions in the terminal and liner shipping industries, have led to competitive pressures within the container terminal industry in major ports. This has not always been the case however, and it is possible that a current oversupply may be masking anti-competitive institutional factors which would move to a dominant position in the future.

Organisational factors

The development of container terminals involved the concentration of resources both from the smaller to the larger ports and within the stevedoring industry in the major ports. It also involved an

extension of the stevedores' organisational responsibility in the shore-based shipping industry.

The terminals took over the management of the interface with land transport, which in traditional stevedoring is the responsibility of the wharf carrier or his employer. At this interface trucks are loaded and unloaded and containers moved between trucks and stacks in the container terminal yard. The equipment and the co-ordination required at the container terminals to perform this function precluded the traditional methods and led to an extension of the stevedores' role.

The extension of operational responsibility was not, however, accompanied by an extension of commercial arrangements to include the truck interface activity. The terminals' clients are the shipping companies and there are no financial transactions between the land transport operators and the terminals. Hence there is no normal mechanism for market adjustments at this interface.

In these circumstances it is commercially rational that the terminal operators should give higher operational priority to the ship-terminal interface. The level of resources allocated to landside operations would presumably be adjusted so as to just prevent excessive congestion of containers within the terminal and ensure that receivals for export are accommodated to suit the requirements of the shipping company. Delivery of imported containers would be expected to have a relatively low priority in the allocation of terminals' resources.

This situation flows directly from terminal operators taking responsibility for managing the land interface without having any client relationship with land transport operators. The result is most obviously manifested in truck queues, a phenomenon discussed in Chapter 9.

A discussion of organisational factors would not be complete without reference to the commercial interaction between the shipping lines and their clients, the importers and exporters. In theory, importers and exporters would choose the total shipping service on the basis of the total costs they incur, including the costs associated with the shore-based transport element. However, the relatively low volumes of Australia's non-bulk trade and the resulting restricted number of service providers mentioned previously restricts the degree of choice available. Furthermore, information on differences in terminal performance and associated landside costs may not be available to users of the system and may not influence their choice of shipping line. In summary, the market mechanism between shipping lines and

their clients would appear to have limited application in achieving improvements to the operating efficiency at the interface between terminals and land transport.

The problems at this interface were highlighted at the Bureau seminar in July 1984 (BTE 1984a) and given considerable attention by the Task Force on Shore-based Shipping Costs. The increase in interest shown in these problems appears to have led to greater priority and more resources being allocated by terminals to their land-side operations.

Two points should be noted regarding this development. First, it is not clear how long-lasting it will be since the underlying nature of the container terminal industry has not changed. Second, the level of resources required for allocation to the land-side to maximise overall efficiency is difficult to determine in the absence of normal market mechanisms at the interface. The Task Force has recommended that investigations be undertaken to determine how a commercial relationship could be established between the terminals and both importers and exporters. Such relationships may be established through customs or freight forwarding agents who effectively represent the consignees and consignors at the terminal.

One way to create a market situation at the terminal-land transport interface would involve the stevedoring charges being split in two. The shipping company would be charged for loading and unloading the ship and the land transport operator for loading and unloading on the land-side, with ranges of charges for different levels of service.

In practice, this approach would involve a substantial increase in administrative costs in both the terminal and road transport industries. An alternative approach based on improvements in communications and the public availability of terminal performance indicators could have a positive impact on the efficiency of operations at the interface but involve fewer additional costs and complexities.

Finally, in considering the operational aspects of container terminals, mention must be made of industrial arrangements and work practices. This is an area which is often highlighted by importers and exporters (see Chapter 10) and is described in Chapter 12. The Task Force report identifies industrial relations at the waterfront as one of the main areas where it focussed its attention and saw a need for improvement.

Various factors have influenced the development of the industrial relations climate and the community's perception of it. Some of these

are structural, relating to the way the industry has changed and the nature of its commercial relationships. There was a drastic reduction in the requirement for waterfront labour following containerisation, resulting in the number of waterside workers undertaking stevedoring work falling from 20 000 in the 1960s to less than 6000 in 1986. This inevitably brought with it countervailing pressures to preserve jobs where possible, with clear implications in the work practices area. In addition, the fact that a terminal's business is dependent on a small number of shipping companies which have a keen desire not to have their ships tied up in industrial disputes could enhance labour's bargaining position at the local level.

Referring to the substantial changes in waterfront employment circumstances the Task Force stated that

> ... Management has been actively engaged in the overriding need for a reduction of the workforce while understandably the unions in the industry have endeavoured to stem the loss of jobs by negotiating manning and rostering arrangements which maximise employment opportunities. The end result is that while the stevedoring industry is more cost-efficient than it was 15 years ago, it has not taken full advantage of current technology (Task Force on Shore-based Shipping Costs 1986).

Another characteristic of the industrial environment, described in Chapter 12, is the number of unions involved in waterfront operations and hence the various disparate opportunities for industrial disputes capable of stopping cargo movement. Many of these unions have a very small percentage of their members employed on the waterfront. Their waterfront presence can provide these unions with a great deal of industrial leverage to apply to non-waterfront disputes. The concept of an industry union has been supported by the WWF but although some progress has been made and attempts are continuing, there are still a number of obstacles to be overcome.

In Chapter 10 of this Paper some evidence was presented that importers and exporters considered the state of industrial relations on the waterfront to be the major problem in the industry, critically affecting the reliability of supply of goods. This view should be balanced by an appreciation of two important factors. There is a common tendency to ascribe any disruption to the movement of goods throughout the transport and handling chain (with their associated documentation requirements) to the waterfront unions, when clearly there are many other possible causes. The second factor is that progress has been made in reducing industrial disputation on the

waterfront in recent years (as outlined in Chapter 12) although it is still a very volatile area.

CONTAINER DEPOTS

Depots are a by-product of the technology of containerisation, and are an additional link in the transport and handling chain for LCL cargo. As explained in Chapter 7 they are the premises at which containers generally holding more than one consignment for international trade are packed or unpacked.[2] They are licenced by the Australian Customs Service and are permitted to unpack goods before they have custom's clearance. In a similar way to container terminals, the depots' clients are predominantly the shipping companies.

There are two broad categories of depots dealing with international cargo in Australia. Trans-Tasman depots handle goods in the New Zealand trade and are considered, in an industrial relations context, to be an extension of domestic freight forwarding. Goods in other international trades are handled in depots (called 'international depots' in this Paper) which are considered to be more an extension of the waterfront. The cost structure of the freight forwarding industry is lower than that of the waterfront and this is reflected by substantial differences in the packing and unpacking charges between the two main depot types.

With one exception, the international depots are owned by shipping and/or stevedoring interests. This type of vertical affiliation can reduce competitive opportunities. The industrial relations environment within the industry creates further rigidities and restrictions on the movement of business from one area to another.

The industry has suffered a substantial decline since the early days of containerisation, with importers and exporters making less use of LCL consignments and hence avoiding the extra costs and time involved. In recent years a number of depots have closed. However, it can be argued that depots have a strategic importance in the development of Australia's trade since trial shipments of manufactured goods, for example, may frequently be in relatively small quantities and hence consigned in LCL containers.

It appears that the activities undertaken in international depots are expensive compared with similar operations undertaken in other parts

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2. Under a Conciliation and Arbitration Commission decision in Queensland, some full container load consignments must also be packed or unpacked in depots.

of the Australian transport industry. Permitting freight forwarders to consolidate and deconsolidate international cargo for groups of their clients could produce a more efficient service, particularly given the competition which exists between forwarders. Experience in the international air freight and trans-Tasman depots indicates that appropriate security and customs arrangements could be provided at forwarders' premises.

The depot industry can also be viewed in the context of the general development of containerisation and its impact on work opportunities on the waterfront. Small consignments were handled by waterside workers before containerisation and they continue to perform this work in waterfront depots. Waterfront clerks are also employed at the international depots located inland. These arrangements have grown out of the structural changes imposed on the industry by the advent of containerisation, and represent an adaptation of previous industrial arrangements to the new situation. However, the arrangements are not compatible with traditional operations of freight forwarders.

In summary, the LCL cargo systems may well have been established on rather different lines if containerised cargo handling were a new industry rather than a development within an existing industry. There is evidence that opportunities exist for significant improvements in efficiency but there are substantial industrial difficulties to be overcome before these benefits could be achieved.

LAND TRANSPORT

Land transport of containerised cargo is performed by road or rail services. It is usually arranged by the shippers or consignees or an agent acting on their behalf.

While the land transport of containers is carried out predominantly by road, rail transport plays a significant role in the centralisation of containerised cargo to the major ports. The analysis in Chapter 8 suggests that the rail industry has a number of problems to overcome if it is to markedly improve its share of containerised traffic.

The road transport industry is generally competitive with the market structure encouraging efficient operations. Its clients are the importers and exporters or the customs or forwarding agents representing them.

The road transport operation generally forms the link between the importer and exporter and the container terminal. As mentioned previously in this chapter the terminal and road transport interface is managed by the terminals as part of the service they provide to the

ship operator. Costs can be imposed on the road transport industry through delays at the terminals which are passed on to the importer or exporter in the cartage bill.

Ill-matched working hours at terminals, depots and clients' premises adversely affect the operating efficiency of road transport. Deliveries to consignees generally have to occur before the early afternoon (so that the container can be unpacked without involving staff overtime). The road transport industry favours an earlier start to the day shift at the terminals, while the terminals would prefer the road transport industry to make greater use of the afternoon shift.

Investigations conducted by the Bureau in support of the Task Force on Shore-based Shipping Costs found that several smaller importers and exporters were not aware of the opportunities and implications of different pick up and delivery arrangements. This lack of knowledge may enable some transport operators to engage in practices which provide them with higher returns.

CUSTOMS AGENTS AND DOCUMENTATION SYSTEMS

The customs agents sector displays the basic characteristics of a competitive industry. There are many participants, no significant barriers to entry or exit and no other particular industry factors which would militate against free competition. Many large importers employ their own customs agents, often using a firm of agents as well. International freight forwarders also frequently have customs agents on their staff.

Customs agents deal with a range of documents which are both industry and government related. Computerised information transmission also plays a part, and customs agents can enter cargo data directly into the customs computer and receive printed customs entry forms. These forms must still be lodged and clearances obtained physically. The Australian Customs Service is pursuing plans to extend the range of computerised services which it provides.

There is very little standardisation of documentation in the industry. In its support activities for the Task Force the Bureau frequently encountered comments reflecting concern at this situation and claiming that substantial costs resulted. Depot operators face particular difficulties because they deal with large numbers of small consignments, and the number of documents involved in releasing a truck load of cargo can be substantial. The fragmentation in both the industry and government involvement is not conducive to standardisation of documentation.

Documentation is one element of the communications system in the industry and hence innovations in communications affect the documentation requirement. Electronic information transfer could replace the need for some documents while in other cases emphasising the benefits of standardisation to aid data entry. An assessment of this facet of the industry was contained in Chapter 11, which proposed that recent developments in communications appear to have a great deal to offer to the shore-based shipping industry. The Task Force has made recommendations in this area. The resultant availability of a wide range of information could result in a significant improvement to the level of knowledge and understanding that the different sectors have of each others' activities, leading to more efficient operations overall.

The major barrier to the adoption of up-to-date communications technology is the fragmentation in the industry and its complexity. This has the effect of severely limiting the number of organisations with sufficient knowledge to appreciate the advantages and to develop such systems. In this regard it is of interest to note that where some progress has been made overseas, it has been the public port authorities rather than private sector interests which have been active. In fact, many of these port authorities use the availability of such systems at their ports as a major marketing promotion.

CONCLUDING COMMENTS

The most important assessment of the performance of any transport system is that of its users. The critical concern with the shore-based shipping chain identified by a range of importers and exporters was its reliability. Uncertainty and delays attracted far more criticism than the direct financial costs for the movement of high value containerised cargo.

The two areas which offer the greatest potential for improvements in reducing uncertainty and delays are communications systems and industrial relations. At the national level, the introduction of computerised communications (using, for example, a videotex system) appears to require some stimulation and co-ordination. Little activity has occurred at the port level to introduce such systems. This development could also assist the smaller importer and exporter to increase their knowledge of the operation of the shore-based shipping industry.

The adoption of industry-wide electronic communications systems could also have organisational implications for the shore-based shipping industry. It might assist in overcoming some of the barriers to co-

ordination imposed by the fragmented nature of the industry. The freight forwarding and customs agents sectors could be well placed to take advantage of any such development since co-ordination is currently a major part of their business. A range of service-price packages might result, which could even see a return to favour of the door-to-door concept.

Industrial relations on the waterfront attract a great deal of critical comment. There are particular difficulties associated with the industry: its historical background, changing technology and reduced employment opportunities, an aging workforce and the consequent effects on work practices. An efficient waterfront industry is, however, strategically important to Australia's trade and so there are very large national benefits to be gained by any progress in this extremely delicate area.

The major issues associated with industry structure relate to ownership and control questions and accountability mechanisms for public authorities. The principal liner shipping interests are a major influence in the container terminal and depot sectors. These activities all have the potential to display monopolistic features, with the owners and operators having the opportunity to extract above normal returns from users. However, current market conditions with excess supply have reduced any such potential for at least the short to medium term. The current behaviour of the markets appears to be reasonably competitive, in contrast to the mid-1970s to late 1970s when supply was much tighter.

Two mechanisms which might assist in achieving a greater accountability for public authorities have been suggested by the Task Force on Shore-based Shipping Costs. These are the formation of 'high level' port user committees and the development and publication of performance indicators. Both initiatives would assist in providing the types of stimulus to performance improvements that market forces represent in more competitive markets.

In summary, there is evidence to indicate that the shore-based shipping industry has a range of opportunities for improving its efficiency. These occur throughout its institutions, organisation and practices. By considering all of its elements, both separately and as a system, this Paper has attempted to contribute to the process of understanding the industry and developing strategies for its improvement.

APPENDIX I INDICATIVE AUSTRALIAN SHORE-BASED SHIPPING CHARGES

This Appendix summarises the components of the indicative shore-based shipping user costs presented in Chapter 2. Tables I.1 and I.2 contain these components and indicate assumptions used in their derivation. The port and related charges component in these tables cover a number of different items which are detailed in Table I.3.

The information presented here is derived from various sources. The Bureau sought information from, and held discussions with, organisations representing all sections of the shore-based shipping industry. These included terminal operators, depot operators, transport companies, freight forwarders, customs agents, the Australian Customs Service, bond stores and both large and small importers and exporters. Other information has been collected from surveys on the market characteristics of the industry and depot operations carried out by the Bureau.

The charges presented are indicative only and in practice can vary substantially from customer to customer and among service providers.

The shore-based shipping charges for two major commodities, greasy wool and boneless beef, were discussed in Chapter 2. These differ from the general figures shown in Table I.2 due to characteristics such as wool dumping, meat refrigeration and lengthy land transport requirements. In September 1986, the total Australian shore-based charges for greasy wool from Newcastle were $2 020 per TEU, and for boneless beef from Townsville, $1 350 per TEU.

Motor vehicle imports and most iron and steel exports are examples of non-containerised cargo. Estimated shore-based charges for imported assembled vehicles were $105 per tonne in 1984-85 and for imported passenger vehicles in crates, $130 per tonne. Shore-based charges for exports of iron and steel were estimated at $35 per tonne.

TABLE I.1 INDICATIVE AUSTRALIAN SHORE-BASED CHARGES FOR NON-BULK IMPORTS, 1984-85

(dollars per TEU)

Item	*FCL*	*LCL*
Port and related charges	180	180
Stevedoring	230	230
Customs entries	80	300
Transport from wharf	120[a]	60
Unpacking	150	600[b]
Transport from depot	..	390[c]
Total	760	1 760

a. This estimate includes an allowance for delays at the waterfront.
b. The costs shown for LCL unpacking reflect indicative charges set by international depots, where the cargo must be tallied, located appropriately for different consignees and loaded on to transport for final delivery. The costs shown for unpacking FCL cargo apply to freight forwarders or the consignee's own operation and, in part, reflect a simpler physical operation.
c. Refers to the cost of transporting all individual cargo consignments which comprise the LCL.

Notes 1. For FCL and LCL containers it is assumed that the goods are not refrigerated and that they are destined for the urban area of the port through which they are imported.
2. All figures have been rounded to the nearest $10.

.. Not applicable.

Sources BTE (1985a, 1985b). DoT, personal communication.

TABLE I.2 INDICATIVE AUSTRALIAN SHORE-BASED CHARGES FOR NON-BULK EXPORTS, 1984-85

(dollars per TEU)

Item	*FCL*	*LCL*
Dumping, marking	..	..
Land transport	..	390
Packing	150[a]	600[a]
Transport to wharf	120[b]	60
Customs entries	40	220
Stevedoring	230	230
Port and related charges	120	120
Total	660	1 620

a. Footnote (b) in Table I.1 applies here as well, with appropriate allowance being made for the reversal of the cargo handling procedure to which this table refers.
b. This estimate includes an allowance for delays at the waterfront.

Notes 1. For FCL and LCL containers it is assumed that the goods are not refrigerated and that they originate in the urban area of the port through which they are exported.
2. The stevedoring charge for boneless beef includes a charge for refrigeration at the terminal.
3. All figures have been rounded to the nearest $10.

.. Not applicable.

Source BTE (1985a, 1985b). DoT, personal communication.

TABLE I.3 INDICATIVE PORT AND RELATED CHARGES FOR NON-BULK IMPORTS AND EXPORTS[a], 1984-85

(dollars per TEU)

Item	*Imports*	*Exports*
DoT navigation charge[b]	6	6
Pilotage	13	13
Harbour and light[c]	5	5
Tonnage	6	6
Tugs	22	22
Berthing lines[d]	4	4
Gangway watch	4	4
Water and electricity	1	1
Wharfage	89	57
Overtime storage	26	..
Total	176	118

a. This table assumes a 25 000 GRT vessel with an average time at berth of 36 hours, interchanging 516 containers of which 280 are imports (discharged), 132 are exports (loaded) and 104 are empties (in or out). These estimates were derived from overseas container throughput and container vessel calls at Sydney and Melbourne during 1983-84 and 1984-85.
b. This assumes 1.25 vessel calls per 3 months.
c. This assumes 2.5 vessel calls per 6 months.
d. Includes line launch.

.. Not applicable.

Sources Sealane Pty Ltd (1985). BTE (1985). Port authorities, personal communication.

APPENDIX II ARRANGEMENT OF CLERICAL FUNCTIONS IN CONTAINER TERMINALS AND DEPOTS

The following 'Memorandum of Understanding' details the arrangements agreed by the AEWL and the FCU on the employment of clerks on containerised cargo work.

MEMORANDUM OF UNDERSTANDING REACHED BETWEEN AEWL AND THE FEDERATED CLERKS UNION OF AUSTRALIA ON SUNDAY, APRIL 2ND, 1967

1. Where a consignor is shipping his own cargo to an associated or related company from his own store, no shipping clerk to be employed.

2. Where a consignor is shipping his own cargo manufactured, processed or produced by him from his own store to one consignee not being an agent of any kind, no clerk to be employed.

3. Where a container is being received by the consignee at his own store and not at an agent's or some other person's store, no clerk to be employed.

4a. The existing container terminals owned or controlled by shipping interests will engage all future clerical staff from persons nominated by the Federated Clerks' Union. (The Union indicates that these will be persons presently employed as wharf clerks.)

4b. The Union will work in these container terminals and on containers going to such terminals pending further negotiations about wages and conditions with the employer.

4c. Containers, other than those referred to in paragraphs 1, 2, 3, 4a and 4b, either will be packed or unpacked by

the employers in the wharf area and wharf clerks employed in association therewith, or wharf clerks will be employed away from the wharf area in connection with the packing or unpacking of the containers concerned, provided the employers shall not be required to employ clerks if the operation is performed at a geographical location which is an impracticable distance from the wharf area, eg loading of wool at Goulburn.

5. The Employers undertake to advise the Union of containers likely to be shipped into or out of Australia in advance of a container reaching the wharf area. (This will be done through the delivery clerk or chief receiving clerk).

6. These arrangements will be maintained for a period of one month from the date of this Understanding. Further conferences will be held to further discuss this matter and the Union will serve the Log of Claims during this period.

This above Memorandum has been re-affirmed subsequently and remains the basis for the employment of 'wharf clerks' in international depots. However, in most States these clerks are now covered by the WWF.

APPENDIX III CONCILIATION AND ARBITRATION COMMISSION DECISION ON INDUSTRIAL COVERAGE IN TRANS-TASMAN DEPOTS

In this decision, (C No. 14 of 1969) the Commission indicated that it was not prepared to interfere with the way in which the work connected with containers on the New Zealand (and inter-State) trades was carried out. Traditionally this work was undertaken by TWU labour. The Commission rejected a submission from the Federal Clerks' Union that their members should be employed to undertake the clerical functions associated with this work.

In handing down its decision the Commission noted:

> As against the position of waterfront clerks the evidence discloses that transport workers have been doing the clerical work connected with containers for many years, and in particular the work connected with containers with the inter-State and New Zealand trades. On the material before us we are not prepared to interfere with the way in which this trade is carried out, or, to be more precise in view of certain industrial pressures which have been applied, in the way in which the transport operators would wish to have it carried out.

APPENDIX IV TRUCK DELAYS IN SYDNEY AND MELBOURNE

In September and November 1984 the Joint Working Party on Delays to the Road Transport Industry at Sydney Ports (1985, unpublished) conducted a survey on truck delays experienced by twelve truck operating firms of varying sizes in Sydney. Results of the survey, showing truck delays experienced both for imports and exports at four Sydney container wharves are contained in Tables IV.1 to IV.4 and Figures IV.1 to IV.3. Table IV.5 contains data from a major Melbourne wharf-carrier on average truck delays at container terminals in Melbourne over 2 two-monthly periods in 1985, covering before and after the introduction of booking systems and other measures to reduce delays at four terminals. To retain confidentiality the terminals and wharves are not identified, the aim being to illustrate the absolute and relative sizes of the measured delays at each port.

TABLE IV.1 AVERAGE TRUCK DELAYS AT FOUR CONTAINER WHARVES IN SYDNEY
(minutes)

Location	*Collection of import FCLs*	*Delivery of export FCLs*	*All FCL movements*
A	96	75	90
B	72	32	55
C	107	64	92
D	121	109	117
Overall	100	69	89

Note The data are derived from a sample of truck movements during the period 1 September 1984 to 30 November 1984.

Source Joint Working Party on Delays to Road Transport Industry at Sydney Ports (1985).

TABLE IV.2 AVERAGE TRUCK DELAYS BY HOUR OF ARRIVAL AT FOUR CONTAINER WHARVES IN SYDNEY

(minutes)

Hour commencing	*Location*				
	A	*B*	*C*	*D*	*Overall*
6 am	167	94	174	112	133
7	89	59	127	110	99
8	64	56	73	130	77
9	93	46	81	108	87
10	85	53	77	104	77
11	86	53	78	115	79
12	109	33	80	103	88
1 pm	90	49	73	102	74
2	75	43	112	127	98
3	102	29	92	153	116
4	95	23	84	136	96
5	95	17	82	132	87
6	117	30	68	71	62
7	41	0	71	73	58
8	28	0	0	58	41
9	50	0	0	20	44
Average delay	90	55	92	117	89

Note The data are derived from a sample of truck movements during the period 1 September 1984 to 30 November 1984.

Source Joint Working Party on Delays to Road Transport Industry at Sydney Ports (1985).

TABLE IV.3 AVERAGE TRUCK DELAYS BY HOUR OF ARRIVAL FOR IMPORT CONTAINERS AT FOUR CONTAINER WHARVES IN SYDNEY

(minutes)

Hour commencing	*Location*				
	A	*B*	*C*	*D*	*Overall*
6am	166	147	185	116	150
7	96	89	138	113	105
8	72	74	104	119	91
9	190	70	92	130	95
10	101	57	101	115	88
11	103	76	95	116	98
12	119	64	91	134	100
1pm	98	46	88	103	85
2	73	52	122	131	105
3	97	75	96	150	119
4	88	99	84	138	107
5	111	93	80	132	105
6	0	105	74	78	78
7	140	48	71	73	73
8	10	0	0	58	46
9	0	0	0	20	20
Average delay	96	72	107	121	100

Note The data are derived from a sample of truck movements during the period 1 September 1984 to 30 November 1984.

Source Joint Working Party on Delays to Road Transport Industry at Sydney Ports (1985).

TABLE IV.4 AVERAGE TRUCK DELAYS BY HOUR OF ARRIVAL FOR EXPORT CONTAINERS AT FOUR CONTAINER WHARVES IN SYDNEY
(minutes)

Hour commencing	*Location*				
	A	*B*	*C*	*D*	*Overall*
6 am	169	41	53	106	95
7	58	50	99	96	75
8	44	39	50	97	57
9	76	37	68	130	77
10	54	20	47	99	56
11	50	25	56	84	52
12	91	36	55	92	69
1 pm	70	18	49	102	58
2	79	49	87	121	89
3	112	37	75	162	109
4	109	19	81	130	75
5	64	19	92	133	62
6	117	11	5	48	50
7	33	13	0	0	30
8	33	0	0	0	33
9	50	0	0	0	50
Average delay	75	32	64	109	69

Note The data are derived from a sample of truck movements during the period 1 September 1984 to 30 November 1984.

Source Joint Working Party on Delays to Road Transport Industry at Sydney Ports (1985).

TABLE IV.5 AVERAGE TRUCK DELAYS AT CONTAINER TERMINALS IN MELBOURNE, 1985

	Period		
Terminal	*July-August (minutes)*	*November-December (minutes)*	*Change (per cent)*
A	177 (104)	114 (103)	-36
B	165 (60)	114 (96)	-31
C	160 (34)	101 (102)	-37
D	110 (105)	72 (93)	-35
Total	148 (303)	100 (394)	-32

Note The number of cases are in parentheses.

Source Personal communication with a major trucking company.

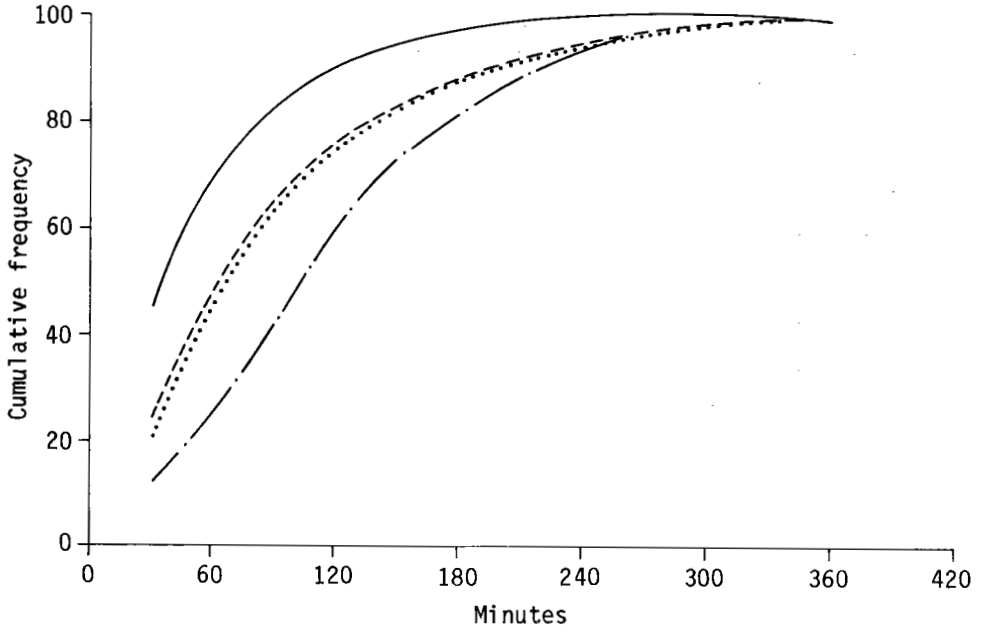

Figure IV.1 Cumulative distribution of truck delays at four container wharves in Sydney

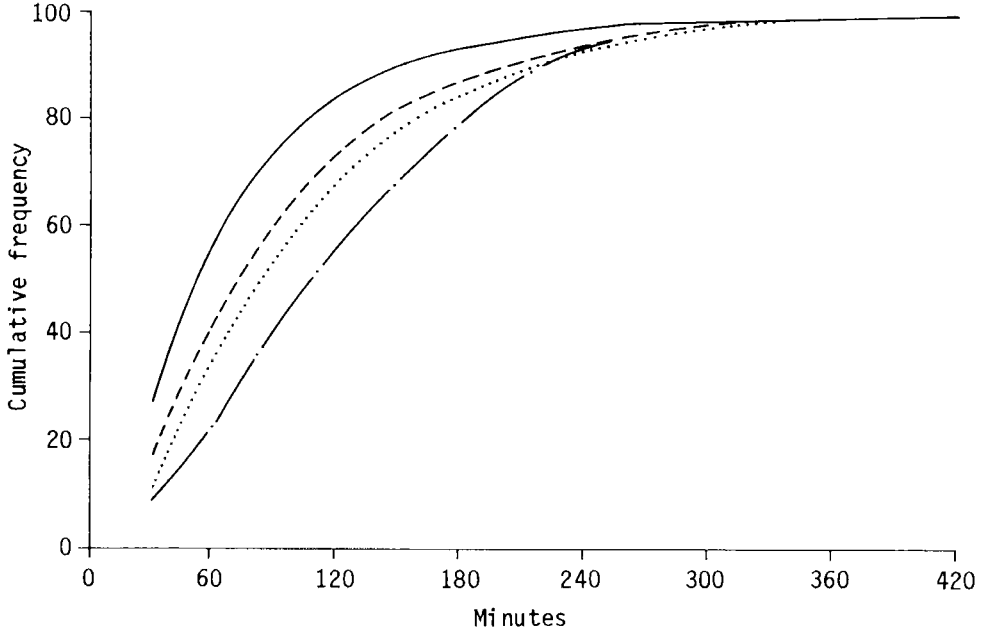

Figure IV.2 Cumulative distribution of truck delays for road receivals (imports) at four container wharves in Sydney

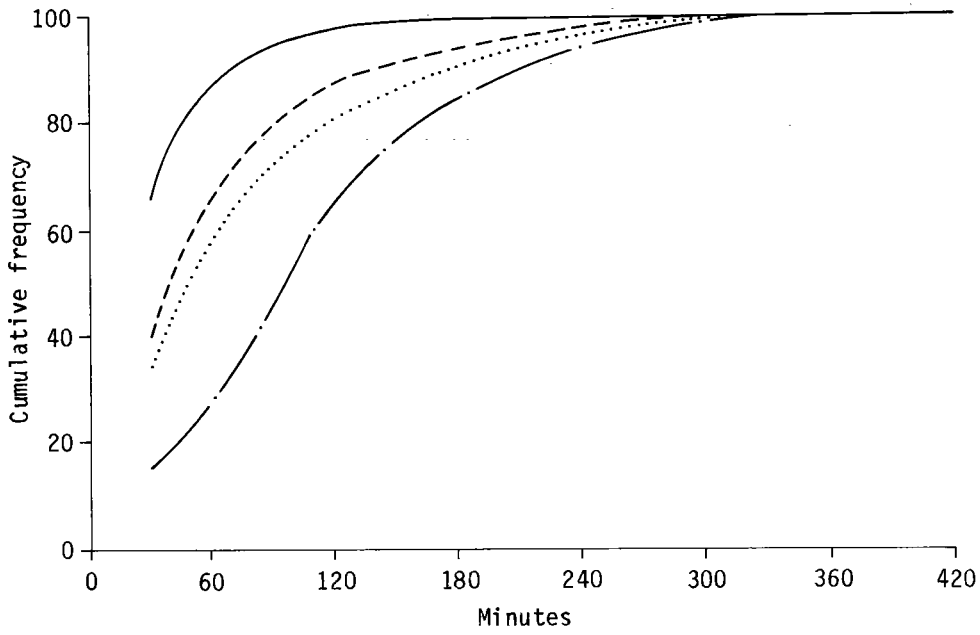

Figure IV.3 Cumulative distribution of truck delays for road deliveries (exports) at four container wharves in Sydney

APPENDIX V FEDERAL AND PORT CO-ORDINATING COMMITTEES

Federal and Port Co-ordinating Committees are employer-union committees established under the Conciliation and Arbitration Act in 1977. Their compositions and functions are described below.

FEDERAL CO-ORDINATING COMMITTEE

Composition

This Committee is composed of representatives of the major employers, AEWL, BHP, ANL and the WWF.

Functions

This Committee attempts to reach agreement on any matters such as:

- the number of waterside workers required in each port;
- requirements for recruitment including agreed procedural matters;
- establishment and operation of registers of waterside workers for each port;
- arrangements for application of agreed redundancy and early retirement procedures;
- arrangements for transference of labour between ports to cater for peak requirements;
- agreed arrangements concerning supplementary labour force; and
- matters referred to it from Port Co-ordinating Committees.

Frequency of meetings

The Committee meets at least once each quarter or as required.

Reference to Conciliation and Arbitration Commission

Where agreement cannot be reached the matter may be referred to a mutually agreed Counciliator or where appropriate to the Conciliation and Arbitration Commission.

PORT CO-ORDINATING COMMITTEES

Composition

These Committees are composed of equal numbers of representatives of the WWF and employers in the port. A representative of the port authority may be present when matters affecting its interests are being discussed.

Functions

These Committees discuss matters affecting labour operations in their ports including matters such as:

- numbers of waterside workers;
- recruitment arrangements agreed in the Federal Co-ordinating Committee;
- registers of authorised waterside workers and matters associated with removal of men from registers;
- redundancy or early retirement arrangements agreed in the Federal Co-ordinating Committee;
- local matters associated with the supplementary labour force or 'B' Registers;
- consideration of interport transfers; and
- reports received from AEWL concerning review of and adjustments to port labour distribution and on the transfer of labour between employers carried out in accordance with the agreed procedures.

Reference to Federal Co-ordinating Committee

Matters falling within the functions of the Federal Co-ordinating Committee are referred to that Committee and unresolved matters are also reported to the Federal Co-ordinating Committee at the request of any member of the Port Co-ordinating Committee.

Frequency of Meetings

Frequency of meetings is determined by the Committees but they are held at least quarterly.

APPENDIX VI MANHOURS LOST BY OPERATIONAL EMPLOYEES OF STEVEDORING COMPANIES DUE TO INDUSTRIAL DISPUTES

Considerable concern has been expressed by shippers and consignees about the delays which industrial disputes at the waterfront impose on their cargoes. A detailed breakdown of the manhours lost, both directly and indirectly, by operational employees of stevedoring companies due to these disputes, including the nature of the issue, is given below. The data cover the period 1981-82 to 1984-85 inclusive.

TABLE VI.1 MANHOURS LOST DIRECTLY AND INDIRECTLY BY OPERATIONAL EMPLOYEES[a] OF STEVEDORING COMPANIES DUE TO INDUSTRIAL DISPUTES, BY NATURE OF ISSUE, 1981-82 TO 1984-85

	Manhours lost ('000)				*Percentage of total manhours lost (per cent)*			
Nature of issue	*1981-82*	*1982-83*	*1983-84*	*1984-85*	*1981-82*	*1982-83*	*1983-84*	*1984-85*
Management and administration								
Labour allocation and deployment	13.0	17.0	10.8	2.8	4.7	13.8	12.1	1.8
Transfer arrangements	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Actions of employers	4.3	2.3	0.0	6.4	1.6	1.9	0.0	4.1
nec	0.6	36.6	1.3	8.1	0.2	29.8	1.5	5.2
Total	17.9	55.9	12.1	17.3	6.5	45.5	13.6	11.1
Award conditions								
Claim for specific rate	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.2
National log of claims	159.2	0.0	36.1	44.7	57.6	0.0	40.5	28.6
National Wage Case	43.4	0.0	0.0	0.0	15.7	0.0	0.0	0.0
Conditions of local agreement	1.1	16.1	2.8	2.2	0.4	13.1	3.1	1.4
Hours of work	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Leave, holiday, compensation	0.0	0.0	0.0	1.5	0.0	0.0	0.0	1.0
nec	1.4	0.7	0.0	0.0	0.5	0.6	0.0	0.0
Total	205.0	16.8	38.9	48.7	74.2	13.6	43.7	31.2

TABLE VI.1 (Cont.) MANHOURS LOST DIRECTLY AND INDIRECTLY BY OPERATIONAL EMPLOYEES[a] OF STEVEDORING COMPANIES DUE TO INDUSTRIAL DISPUTES, BY NATURE OF ISSUE, 1981-82 TO 1984-85

	Manhours lost ('000)				*Percentage of total manhours lost (per cent)*			
Nature of issue	*1981-82*	*1982-83*	*1983-84*	*1984-85*	*1981-82*	*1982-83*	*1983-84*	*1984-85*
Trade unionism								
Demarcation	1.3	0.3	11.8	1.1	0.5	0.2	13.2	0.7
In support of other union	6.6	16.4	0.0	3.6	2.4	13.4	0.0	2.3
Action of other union	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Use of non-union labour	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
nec	5.6	2.1	0.9	10.2	2.0	1.7	1.0	6.5
Total	13.5	18.8	12.7	14.9	4.9	15.3	14.3	9.5
Job conditions								
Manning	1.1	14.8	17.3	13.5	0.4	12.1	19.4	8.6
Working conditions	0.5	1.5	3.6	2.2	0.2	1.2	4.0	1.4
Gear or equipment	0.0	0.3	0.2	0.1	0.0	0.2	0.2	0.1
Method of work	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.5
Arduous physical task	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Protective clothing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Amenities	1.7	0.0	0.0	0.1	0.6	0.0	0.0	0.1
Excessive heat	4.3	0.9	0.0	1.1	1.6	0.7	0.0	0.7
nec	3.8	0.7	0.0	0.0	1.4	0.6	0.0	0.0
Total	11.4	18.2	21.1	17.8	4.1	14.	23.7	11.4

TABLE VI.1 (Cont.) MANHOURS LOST DIRECTLY AND INDIRECTLY BY OPERATIONAL EMPLOYEES[a] OF STEVEDORING COMPANIES DUE TO INDUSTRIAL DISPUTES BY NATURE OF ISSUE, 1981-82 TO 1984-85

	Manhours lost ('000)				*Percentage of total manhours lost (per cent)*			
Nature of issue	*1981-82*	*1982-83*	*1983-84*	*1984-85*	*1981-82*	*1982-83*	*1983-84*	*1984-85*
Safety[b]								
Method of work or equipment	0.2	0.0	0.0	1.6	0.1	0.0	0.0	1.0
Conditions of work	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Access to vessel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dangerous conditions of environment	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Health	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
nec	0.1	0.2	0.0	2.9	0.0	0.2	0.0	1.9
Total	0.3	0.2	0.0	4.6	0.1	0.2	0.0	2.9
Discipline								
Claim for payment for industrial dispute	0.0	0.0	1.6	1.0	0.0	0.0	1.8	0.6
Protest against disciplinary action	10.9	0.2	0.0	3.8	4.0	0.2	0.0	2.4
nec	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.0
Total	10.9	0.2	1.8	4.8	4.0	0.2	2.0	3.1

TABLE VI.1 (Cont.) MANHOURS LOST DIRECTLY AND INDIRECTLY BY OPERATIONAL EMPLOYEES[a] OF STEVEDORING COMPANIES DUE TO INDUSTRIAL DISPUTES BY NATURE OF ISSUE, 1981-82 TO 1984-85

	Manhours lost ('000)				*Percentage of total manhours lost (per cent)*			
Nature of issue	*1981-82*	*1982-83*	*1983-84*	*1984-85*	*1981-82*	*1982-83*	*1983-84*	*1984-85*
Non-industrial								
Action of Australian Federal Government	7.3	11.5	2.5	5.8	2.6	9.4	2.8	3.7
Action of Australian State Government	1.4	0.9	0.0	17.5	0.5	0.7	0.0	11.2
Action of foreign goverment	3.3	0.0	0.0	0.1	1.2	0.0	0.0	0.1
nec	5.3	0.3	0.0	24.4	1.9	0.2	0.0	15.6
Total	17.4	12.7	2.5	47.8	6.3	10.3	2.8	30.6
Cause of dispute not known	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	276.3	122.8	89.0	156.3	100.0	100.0	100.0	100.0

a. Operational employees are workers employed by stevedoring companies in stevedoring and ancillary operations, and include all waterside workers.
b. The classification 'safety' only includes industrial disputes when the stoppage on the safety issue results in non-payment of employees in accordance with provisions of the relevant awards.

nec Not elsewhere classified.

Note Owing to rounding, figures may not add to totals.

Sources DoT (1985c, 1985d).

APPENDIX VII AVOIDANCE OF DISPUTES PROCEDURES

The Avoidance of Disputes Procedure, Waterside Workers' Award, 1983 Clause 28, below, covers the dispute settling procedures currently in operation between the WWF and the employers.

AVOIDANCE OF DISPUTES PROCEDURE WATERSIDE WORKERS' AWARD, 1983

The following procedure for the avoidance and settlement of industrial disputes within the industry shall be followed in good faith and without delay:

1. a. The parties shall consult before the introduction of a new method of working or the introduction of a type of mechanism which is new to the port.

   b. Should any dispute arise between Employers and the Federation on any industrial matter they shall confer with a view to settlement of the dispute by conciliation.

   c. The Employer and the Federation shall respectively notify each other as soon as possible of any industrial matter which, in the opinion of the party notifying, might give rise to an industrial dispute.

   d. In the event of a dispute actually arising, the matter will be raised by the delegate with the immediate supervisor or by the supervisor with the delegate.

   e. If no agreement is reached pursuant to paragraph (d) above, a branch official shall discuss the matter in dispute with a representative of local management of the company who may be an officer of AEWL.

f. If agreement does not arise from the discussions referred to in paragraphs (d) and (e) hereof, the Employers or the Federation representatives at the port level may exercise a right to call in a Port Conciliator appointed in accordance with paragraph (k) hereof, or shall meet with a view to settling the dispute.

g. Where a Port Conciliator is called upon to act under the provisions of paragraph (f) hereof he shall expeditiously consult with and use his best endeavours to reconcile the parties in dispute and for this purpose may make a recommendation, or where the parties mutually agree, arbitrate in the matter. The Port Conciliator shall in all cases make, or cause to be made, a written summary of the matters in dispute including the facts as he discovers them. A copy of such record shall be provided to each of the parties concerned and the record shall be available in any later non-judicial proceedings between the parties relating to the matters in dispute.

h. Failing agreement on a local basis, efforts will be made to resolve the dispute by negotiations on a Federal basis.

i. Where disputes occur related to application or interpretation of the Memorandum of Agreement dated May, 1980, between the AEWL and the Federation or the Agreement dated the 4th day of November, 1977, between AEWL and the Federation, or any agreement or agreements amending or replacing either or those Agreements and national negotiations fail to resolve the dispute within a reasonable time, the matters in issue may be referred by either party to a mutually agreed Conciliator who shall use his best endeavours to effect settlement between the parties. Only where settlement cannot be effected by conciliation the Conciliator shall be empowered to decide the matter. If it appears that no mutual agreement as to the Conciliator can be reached either party shall be free to approach the Presidential Member of the Commission to act as such or to nominate some person to so act and the decision of the Conciliator so

appointed shall be accepted and acted upon by all parties.

j. Pending the completion of the procedures set out in this clause, work shall continue without interruption and all parties agree to use their best endeavours to ensure that continuation.

k. The following procedure shall apply in relation to the appointment of Port Conciliators:

i. The Port Co-ordinating Committee may reach agreement to nominate one or more persons to act as Port Conciliators for that port.

ii. In the event of disagreement in a Port Co-ordinating Committee the Federal Co-ordinating Committee shall attempt to reach agreement as to the Port Conciliators after considering those persons suggested by any of the parties represented on the Port Co-ordinating Committee and the qualifications of each.

iii. Any agreement to nominate in accordance with (i) and (ii) hereof shall be notified to the Commission with the request that the persons agreed upon be appointed as Port Conciliators.

iv. Where agreement is not reached in accordance with (i) or (ii) hereof the Commission shall be asked by either or both parties to appoint persons to act as Port Conciliators.

v. Where the parties so agree, they may recommend to the Commission that the appointment of any Port Conciliator be terminated and another person appointed in his place.

2. Other Industrial Disputes:

Subject to the right of members of the Federation to refuse to carry out an unreasonable instruction or to stop work because of a bona fide safety issue, any other industrial dispute within the the industry shall be handled in accordance with paragraphs (a) to (h) of sub-clause 1.

ABBREVIATIONS

ABS	Australian Bureau of Statistics
ACS	Australian Customs Service
ACOS	Australian Chamber of Shipping
ACTA	Associated Container Transportation (Australia) Ltd
ACTU	Australian Council of Trade Unions
ACT(UK)	Associated Container Transportation (United Kingdom) Ltd
AEWL	Association of Employers of Waterside Labour
AFSA	Australian Foremen Stevedores Association
AGLPS	Australian Government Publishing Service
AJCL	Australia Japan Container line Ltd
AMEC	Australian Manufacturing Export Council
AN	Australian National
ANL	Australian National Line
ARRDO	Australian Railway Research and Development Organisation
ASC	Australian Shippers Council
ASCL	Australian Straights Container liner
ASIA	Australian Stevedoring Industry Association
BATL	Brisbane Amalagamated Terminals Ltd
BHP	Broken Hill Proprietory Co. Ltd
BSRA	Basic service rate additional
BTE	Federal Bureau of Transport Economics
C&F	Cost and freight
CIF	Cost, insurance, freight
CKD	Completely knocked down (motor vehicles)
COMPILE	Customs On-line Method for Preparing from Invoices Lodgeable Entries
CTAL	Container Terminals of Australia Ltd
DCN	*Daily Commercial News*
DGT	Director-General of Transport (Western Australia)
DMH	Department of Marine and Harbor (South Australia)
DoT	Federal Department of Transport
DTV	Depot transfer vehicle
FAS	Free along side
FCAI	Federal Chamber of Automotive Industries Manufacturers' Group

FCC	Federal Co-ordinating Committee
FCL	Full container load
FCU	Federated Clerks Union
FMWU	Federated Maritime Workers Union
FOB	Free on board
FPA	Fremantle Port Authority
FSPU	Federated Storemen and Packers Union
GIT	Glebe Island Terminals
GM-H	General Motors-Holden's Pty Ltd
GRT	Gross Registered Tonnes
IAC	Industries Assistance Commission
ISC	Inter-State Commission
ISO	International Standards Association
ITV	Internal transfer vehicle
kg	kilogram
LCL	Less than container load
MISC	Malaysian International Shipping Corporation
MoT NZ	Ministry of Transport, New Zealand
MSB	Maritime Services Board of New South Wales
OCAL	Overseas Containers Australia Ltd
PBA	Port of Brisbane Authority
PCC	Port Co-ordinating Committee
PJT	Prices Justification Tribunal
PMA	Port of Melbourne Authority
QR	Queensland Government Railways
Ro-ro	Roll-on roll-off
SBSC	Shore-based shipping costs
SCI	Shipping Corporation of India Ltd
SEAL	Stevedoring Employers of Australia Ltd
SICC	Stevedoring Industry Consultative Council
SIFC	Stevedoring Industry Finance Committee
SRA	State Rail Authority of New South Wales
STA	State Transport Authority (South Australia)
STL	Seatainers Ltd
TEU	Twenty-foot equivalent unit
TNT	Thomas Nationwide Transport Ltd
TOT	Trans Ocean Terminals
TWU	Transport Workers Union
VRTA	Victorian Road Transport Association
WWF	Waterside Workers Federation

REFERENCES

Abbreviations

ABS	Australian Bureau of Statistics
ACOS	Australian Chamber of Shipping
AEWL	Association of Employees of Waterside Labour
ARRDO	Australian Railway Research and Development Organisation
BTE	Federal Bureau of Transport Economics
DCN	*Daily Commercial News*
DGT	Director General of Transport (Western Australia)
DoT	Federal Department of Transport
IAC	Industries Assistance Commission
ISC	Inter-State Commission
PJT	Prices Justification Tribunal
PMA	Port of Melbourne Authority

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