Public Port Financing in the United States

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PUBLIC PORT FINANCING IN THE UNITED STATES

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INTRODUCTION

This is the third report on *Public Port Financing in the United States* published by the Maritime Administration (MARAD). The first report was published in June 1974 and the second in June 1985. MARAD jointly with the American Association of Port Authorities (AAPA) has undertaken the study which focuses on public port financing as it relates to port development and expansion.

PURPOSE

The past decade has witnessed global changes such as internationalization of the economies, development of regional trading blocks, vessel sharing agreements among carriers, changing trade routes and new environmental legislation. As major changes take place in the port industry, it becomes imperative to address the pressing issues and challenges.

This study assesses the new and emerging financial, technological and environmental milieu under which ports operate.

This report will be available at a time most needed, and provide the required information for:

- Decision-making bodies and government regulatory agencies
- Legislators, voter constituencies, and the general public
- Port users and the port industry.

SCOPE

This report utilizes data from the three AAPA survey questionnaires listed below:

1. Port Capital Expenditure Survey
2. Port Finance Survey
3. Public Port Financing Questionnaire.

The report focuses on the public ports of the U.S. and the territories. It aggregates the public ports in seven regions defined below:

- North Atlantic: Comprises public ports ranging from the State of Maine through Virginia.

- South Atlantic: Comprises public ports ranging from the State of South Carolina through the east coast of Florida and includes Puerto Rico and the U.S. Virgin Islands.

- Gulf: Comprises public ports ranging from the west coast of Florida through the State of Texas.

- South Pacific: Comprises public ports including California, Hawaii, Guam and Saipan.

- North Pacific: Comprises public ports in Oregon, Washington and Alaska.

- Great Lakes: Comprises all public ports ranging in the Great Lakes through the St. Lawrence Seaway.

- Mississippi River: Comprises the inland waterways within the Mississippi River system (information included in chapter 8).

Chapter 1

EXECUTIVE SUMMARY

PUBLIC PORT FINANCING

A study of the financial reports of public port authorities in the United States for the five year period, 1988 -1992, utilizing the Annual Finance Surveys of the American Association of Port Authorities, demonstrates no trend toward financial self-sufficiency nor increased profitability. This is contrary to the findings in two previous MARAD studies.

Paul Amundsen, in Current Trends in Port Pricing, U. S. Department of Commerce/Maritime Administration, August 1978, stated in page *i*:

> The trend in public port development is away from public support and toward a revenue base. To assure a continuing presence of port facilities in number and kind necessary for the ongoing needs of national and world commerce, the strengthening of the industry's revenue base becomes an important overall objective.
>
> Port management is becoming strongly attuned to the objective of revenue financing as versus an earlier philosophy of public support and developmental rates.

In the Executive Summary, Volume I, Public Port Financing in the United States, U. S. Department of Transportation, Maritime Administration, June 1985, included in its findings the following:

> In general, public ports in the United States are being asked by all levels of government to become more self-sustaining in terms of development and operation. Public ports, in turn, are gradually moving away from public support, toward a more self-sufficient revenue base as the amount of government dollars decreases and as competition for these funds increases.

The present study found that the majority of the public port authorities in the United States continue to subscribe to the philosophy that their objective is to maximize economic activity within the region they serve. They would like to achieve a degree of financial self-sufficiency, but this is not the primary objective.

There appears to be no trend toward increased financial self-sufficiency in any port region. In fact, the financial results

for 1992 indicate a decrease generally, with major decreases in the number of profitable ports in the Gulf and South Pacific.

Certain port regions will continue to follow past practices of cross-subsidizing marine terminal operations, receiving state or local government assistance for developmental costs, and using the local port ad valorem tax base to obtain new funds for the development of new port facilities and, in some cases, for port operations and maintenance expenses.

Chapter 3 includes a detailed analysis of the five year financial study by port regions as well as an analysis of the responses to the Public Port Financing questionnaire which included questions related to port pricing strategy and management philosophy.

Port self-sufficiency has been again defined, as well as port profitability, and both have been quantified.

LEGISLATIVE ISSUES

U. S. public ports are not currently using the provisions of the Shipping Act of 1984, as amended, to its fullest potential to establish regional marine terminal conferences as an effective pricing tool.

Dredging and environmental issues continue to tax the patience and financial resources of public ports which are generally the local sponsors of dredging projects.

The Water Resources Development Act of 1990 has had the effect of increasing user fees to a level that will allow maintenance dredging costs to be fully funded by the users of U. S. ports. The mechanism in the 1986 Act that allows the ports to assess a user fee to recover local sponsor costs has not been used due to its technical restrictions.

The Tax Reform Act of 1986 has further inhibited the ability of public ports to issue tax exempt bonds to finance needed port infrastructure and functionally related facilities.

The recently enacted California State budget legislation affects its ports' future ability to finance capital projects, raises doubts for their autonomy and brings into question how ports will operate in the future.

Legislative issues are discussed in Chapter 5.

ECONOMIC IMPACT OF PORTS

The economic impact of the port industry, port users and port capital expenditures is presented in Chapter 8. The port industry impact includes the economic activities needed in the movement of cargo. The port users comprise the businesses that make significant use of the ports for shipping and receiving waterborne cargo. Public port capital expenditures include new construction, expansion and rehabilitation projects.

An estimated 2.887 billion metric tons of domestic and international waterborne cargo was handled at U. S. deep and shallow draft ports in 1992 and generated the total effects for the port industry operations.

Foreign trade has become an increasingly important component of our national well being. In 1992, the total value of exports and imports shipped through the U.S. ports amounted to $488 billion. The port users section measures the impact of the U. S. industrial dependence on foreign trade. The port users impact refers to jobs, payroll, sales revenues, contribution to GDP[1] and taxes generated by industries which use the ports for shipping and receiving their products/inputs.

The port capital expenditures' impact is based on the expenditures effected during 1992, which amounted to $671.8 million.

The total impact of the port industry, port users and public port capital expenditures is presented in the following table.

	PORT INDUSTRY	PORT USERS	PORT CAPITAL EXPENDITURES	TOTAL
Employment	1,540,225	13,749,605	27,320	15,317,150
Income	$ 52 billion	$470 billion	$935 million	$523 billion
Sales	$139 billion	$1.4 trillion	$ 2.2 billion	$1.5 trillion
GDP	$73.7 billion	$705 billion	$ 1.3 billion	$780 billion
Federal Taxes	$14.5 billion	$139 billion	$252 million	$154 billion
State & Local Taxes	$5.5 billion	$ 51 billion	$ 96 million	$56.5 billion

[1]Gross Domestic Product

PORT CAPITAL EXPENDITURES

From 1946 through 1992, the U. S. public port industry has invested $12.5 billion in capital improvements for new facilities and the modernization and rehabilitation of existing ones.

Expenditures for the four year period 1989 - 1992 were in excess of $2.7 billion with 63% of such expenditure used for new construction and 37% used for modernization/rehabilitation. Container and specialized cargo facilities accounted for 31.8% of the total expenditures and 23.9% was used for general cargo facilities.

Projected port expenditures for the period 1993 through 1997 are $5.25 billion, of which 32.6% is for container and specialized facilities and 14.6% is for general cargo facilities. Of particular interest is the projected $609 million in off-terminal infrastructure expenditures, a large part of which cannot be financed with tax exempt bonds under the present tax laws.

The pattern of financing port construction and improvements has changed materially since the 1978 MARAD Port Expenditure Survey as shown in the chart below:

CHANGES IN FINANCING PATTERN FOR PUBLIC PORT FACILITIES
(Percentage of Total)

Description	1973-1978 Survey	1979-1989 Survey	1990-1992 Survey	Projected 1993-1997
Port Revenues	26.7	27.0	39.0	32.8
Revenue Bonds	29.1	47.7	28.9	29.4
Sub-total	55.8	74.7	67.9	62.2
G. O. Bonds	30.6	10.5	12.5	16.5
Other	13.6	14.8	19.6	21.3
Total	100.0	100.0	100.0	100.0

The projected $5.25 billion in capital expenditures will require public port management to carefully prioritize capital projects for the next five years.

Chapter 2 contains the capital expenditures history and projections.

INTERNATIONAL TRADE CLIMATE

Projections are that the value of U. S. exports and imports will increase in value from $454 billion in 1990 to $1.6 trillion in 2010, and the volume of such cargo will grow from 875 million metric tons in 1990 to 1.5 billion metric tons in 2010.

The volume of containerized cargo moved in 1992 amounted to 117 million metric tons which represented 13.5% of the total foreign waterborne traffic. Containerized cargo comprised 65% of the total foreign commerce in 1992, but the percentage annual growth of containerized cargo is projected to level off in 1997. As this decade proceeds a slower growth rate in world trade is expected.

International trade issues are reviewed in Chapter 6.

DEVELOPMENTS IMPACTING PORTS

Vessel sharing agreements are a new trend in the maritime industry and generally cover vessel space, terminals, and to some extent containers. These agreements are superseding slot charters and represent the latest step in the rationalization of the industry. These agreements are resulting in fewer vessels calling at fewer ports which is accelerating the development of existing geographic load centers.

U. S. public ports must carefully plan and justify present expansion in view of the expected demand and existing capacity. The financial capability of U. S. ports may no longer allow the "build it and they will come" port management philosophy to prevail.

An extensive discussion of the technological developments impacting ports is presented in Chapter 7.

TRENDS OUTSIDE THE UNITED STATES

The desire for ports outside the United States to become more efficient and financially self-sufficient is intense due to the elimination of government funding and the lack of productivity by the politically powerful organized port labor forces.

The key stimulus to port privatization is the unwillingness of some national governments in developing countries to continue to subsidize costly, inefficient and unproductive port operations when such subsidies could be better applied to meeting other needs of their population.

Chapter 4 contains an overview of the current status of port privatization and/or commercialization in the United Kingdom, Australia, Canada, and Latin America.

CONCLUSIONS

In today's economic climate it is doubtful that there will be any change in the port management philosophy of maximizing economic activity in the regions the port serves.

As long as port operations and facility development can be cross-subsidized, funded by state or local governments, or local tax payers, ports having such financial assistance will continue to compete with other regional ports using a pricing strategy other than the "financial approach" of covering all port costs and earning a reasonable rate of return.

If the outside financial assistance enjoyed by ports in some port regions is reduced or eliminated, the importance of effective regional marine terminal conference pricing may be recognized and utilized.

There is a trend to increased financing of new or improved port facilities from a combination of port revenues and revenue bonds.

The rate of growth in container exports will tend to level off in the decade. Vessel share agreements and round-the-world service will result in fewer calls at U. S. ports. The building of new facilities, or the rehabilitation of older ones, in order to handle still larger container vessels may be difficult for many ports to finance.

Substantial time, resources, and effort will continue to be expended by port management to continue to resolve dredging and environmental problems and to seek cost-effective solutions to balancing the environmental effects of port operations and maintenance.

This decade will witness major changes in the operation of Latin American ports and the funding of port development in Mexico, Central America, and South America.

Chapter 2

CAPITAL EXPENDITURES HISTORY AND PROJECTION

HISTORICAL PERSPECTIVE

The information contained in this chapter is extracted from the American Association of Port Authorities (AAPA) Expenditure Survey on public port financing in the United States. The following aggregate tables are derived from the response of 55 deep-draft and Great Lakes ports fully analyzed in MARAD's *U.S. Port Development Expenditure Report* published in February 1994.

HISTORICAL PERSPECTIVE

The U.S. public port industry remains committed to providing this Nation with a network of modern and efficient cargo facilities for the handling of our foreign and domestic waterborne commerce.

From 1946 through 1992, the U.S. public port industry has invested $12.5 billion in capital improvements to its port facilities. This investment covers expenditures for the construction of new facilities and the modernization and rehabilitation of existing ones. Table 2.1 summarizes the historical expenditures by coastal region.

Table 2.1
U.S. Port Capital Expenditures for 1992 - 1946
(Thousands of Dollars)

Region	Expenditures	Percent
North Atlantic	3,049,877	24.3%
South Atlantic	1,695,694	13.5%
Gulf	2,547,555	20.3%
South Pacific	2,807,096	22.4%
North Pacific	1,371,629	11.0%
Great Lakes	491,284	3.9%
AK, HI, PR, and VI*	444,123	3.6%
Guam, Saipan	122,457	1.0%
Total	$12,529,715	100.0%

* Alaska, Hawaii, Puerto Rico, & Virgin Islands

1. CAPITAL EXPENDITURES IN THE 1990's

In 1992 the total expenditures amounted to $671.7 million, which is a decrease of 1.5 percent over 1991. Table 2.2 and Figure 2.1 compare the annual expenditures for 1992 through 1989 broken down by coastal region. Between 1989 and 1992 the public port capital expenditures range from a minimum $668 million to a maximum $689 million. During this period over 75 percent of the port public expenditures were expended within the Gulf, South Pacific, North Atlantic and South Atlantic regions. A significant variation during 1992 pertains to a $99 million capital investment in Puerto Rico.

Between 1989 and 1992 public port capital expenditures among the leading regions averaged as follows:
South Pacific 26%, South Atlantic 20%, North Atlantic 19%, Gulf 18.3% and North Pacific 11%. The remaining regions averaged less than 5%.

Table 2.2
U.S. Public Port Capital Expenditures for 1992 - 1989
(Thousands of Dollars)

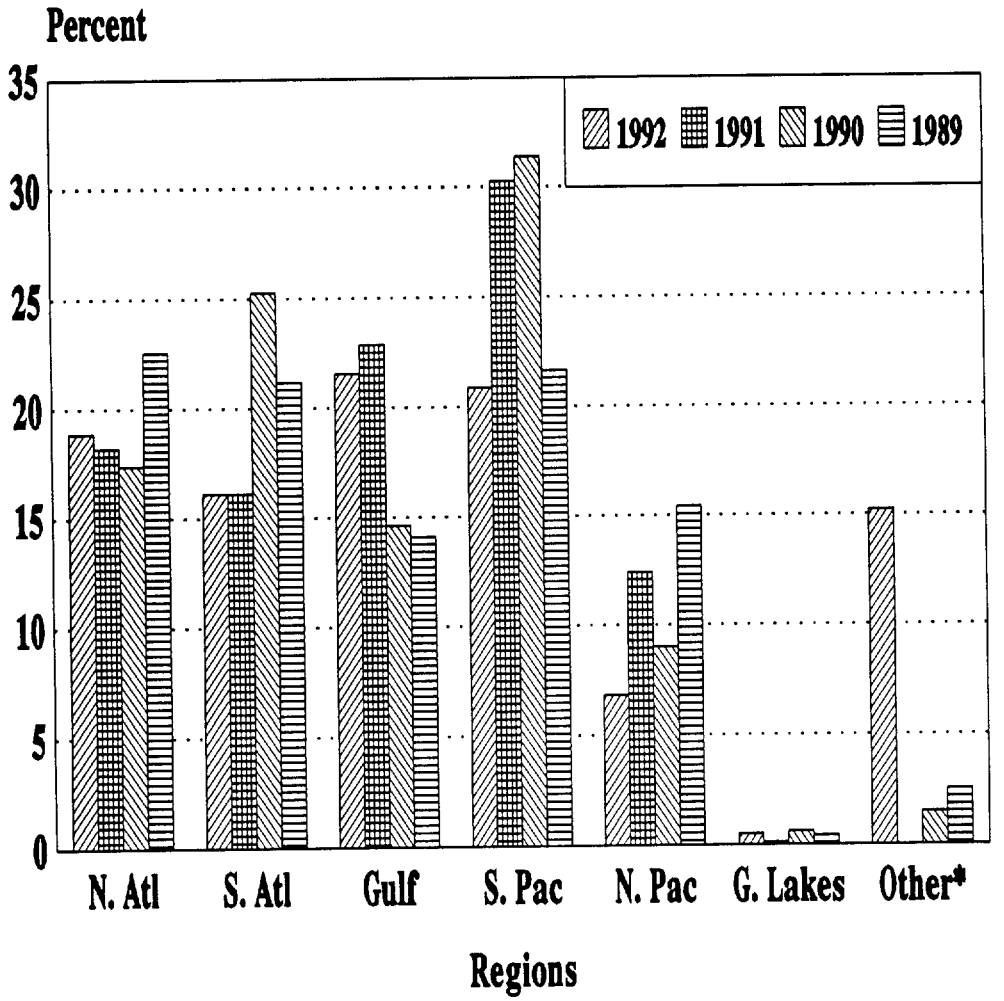
Region	1992	1991	1990	1989
North Atlantic	$127,018	$124,399	$116,365	$155,981
South Atlantic	108,237	109,639	169,303	146,355
Gulf	145,358	156,091	97,669	97,122
South Pacific	140,296	206,406	209,906	149,279
North Pacific	45,632	84,851	60,402	106,142
Great Lakes	3,206	653	4,271	2,569
AK, HI, PR, & V.I.*	102,021	-	10,177	16,971
Guam, Saipan	-	-	-	14,799
Total	$671,768	$682,039	$668,093	$689,218
Annual Change	-1.5%	+2.1%	-3.1%	+.6%

* Alaska, Hawaii, Puerto Rico, & Virgin Islands

Figure 2.1, depicts the percent capital expenditures by region for the period 1989-1992.

U.S. Public Port Capital Expenditures for 1992-1989

(Percentage by Region)



*AK, HI, PR & VI

Figure 2.1

a. Capital Expenditures - by Facility Type

Table 2.3 provides a breakdown of capital expenditures by type of facility. Each of the five cargo type categories includes expenditures for the pier or wharf structure, storage facilities, and handling equipment. Infrastructure expenditures cover improvements in roadways, rail, sewer, lighting, and parking either on or off terminal property. Dredging consists of local port expenditures associated with the dredging of Federal and non-Federal channels and berths as well as the local costs for land, easements, rights-of-way, and disposal areas (LERD). The "other" category includes those structures, spaces, and fixtures not directly related to the movement of cargo, such as maintenance and administrative facilities.

As shown in the table, container and other specialized general cargo facilities amount to $214 million of the total U.S. outlays. General cargo investments amounted to $160 million. Both facilities account for over 55 percent of the 1992 capital expenditures as shown in figure 2.2.

Table 2.3
U.S. Port Capital Expenditures by Type of Facility - 1992
(Thousands of Dollars)

Region	Type of Facility									
	General Cargo	Specialized General Cargo	Dry Bulk	Liquid Bulk	Passenger	Other	Infrastructure		Dredging	Total
							Off-Terminal	On-Terminal		
North Atlantic	$22,497	$45,468	$5,969	$85	$615	$16,435	$13,980	$17,950	$4,019	$127,018
South Atlantic	7,437	39,145	115	194	12,051	8,010	19,822	5,060	16,403	108,237
Gulf	52,236	7,748	23,588	382	1,918	10,487	9,124	1,081	38,794	145,358
South Pacific	12,033	98,622	2,023	110	1,400	10,732	12,443	1,103	1,830	140,296
North Pacific	6,291	22,907	698	-	266	12,085	2,807	141	437	45,632
Great Lakes	458	-	-	-	-	2,038	465	235	10	3,206
AK,HI,PR, & VI*	59,535	-	-	346	33,800	4,154	1,880	85	2,221	102,021
Guam, Saipan	-	-	-	-	-	-	-	-	-	-
Total	$160,487	$213,890	$32,393	$1,117	$50,050	$63,941	$60,521	$25,655	$63,714	$671,768

* Alaska, Hawaii, Puerto Rico, & Virgin Islands

Port infrastructure improvements represent 12.8 percent of the 1992 expenditures. The off-terminal segment totalled 70 percent of the infrastructure investments.

U.S. Port Capital Expenditures by Type of Facility - 1992
(Percent by Facility)

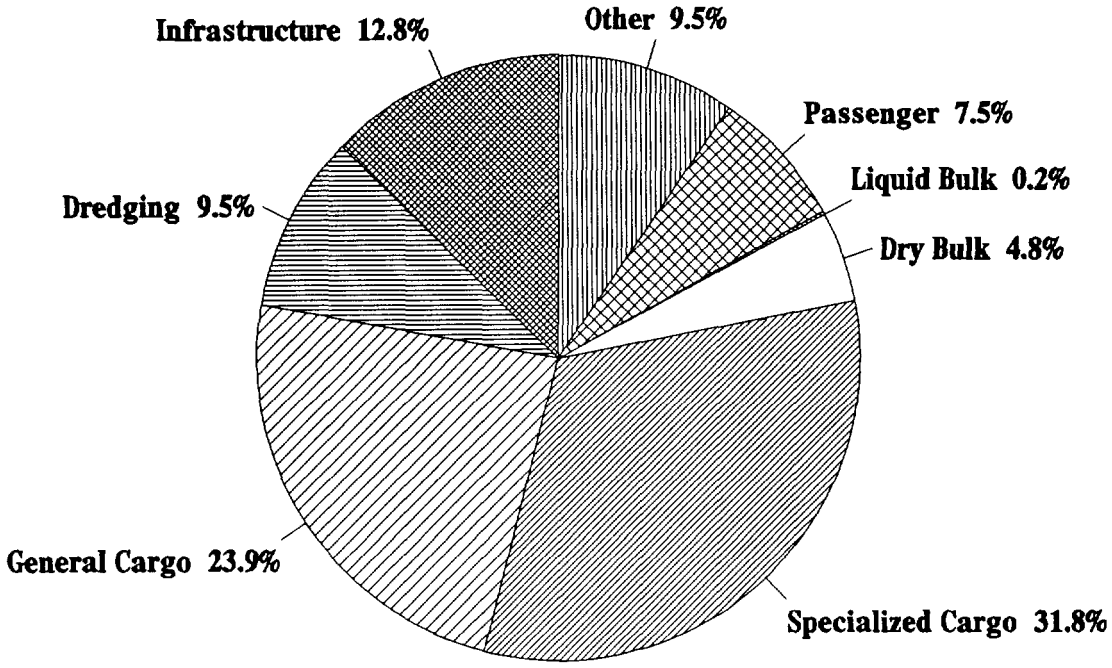


Figure 2.2

b. Capital Expenditures - New Construction vs. Modernization\Rehabilitation

Table 2.4 summarizes the public port expenditures by type of expenditure and facility. The expenditures for new construction totaled $425 million for 1992 vs the modernization/ rehabilitation (M&R) at $247 million. Most of the funds (41.9%) for new construction went to container and other specialized cargo facilities (figure 2.3). However, most of the funds for modernization/rehabilitation (33.4%) were advanced to general cargo investments.

The South Pacific region led new construction expenditures with $129.1 million (30.4%) with the Gulf and South Atlantic regions following at $100.2 million (23.6%) and $91.5 million (21.5%) respectively. Within the specialized general cargo category, the South Pacific region accounted for $95.8 million (53.8%) of these

expenditures. The Gulf region led the general cargo investments with $43.4 million (55.6%).

The North Atlantic region led total M&R expenditures with $78.1 million (31.6%) followed by the non-contiguous region (AK, HI, PR, VI) at $77 million (31.2%) and the Gulf region with $45.1 million (18.3%). For the general cargo segment, the non-contiguous region (AK, HI, PR, VI) accounted for the majority of the investment with $59.5 million (72.2%). Specialized general cargo expenditures were focused in the North Atlantic and North Pacific regions with $19.5 million (54.3%) and $9.9 million (27.6%), respectively. The North Atlantic region accounted for the majority of the infrastructure improvements with $25.3 million (53.5%). Dredging expenditures were centered in the Gulf region with $22.4 million (72.9%).

U.S. Port Capital Expenditures by Type of Expenditure and Facility - 1992
(Percent Distribution)

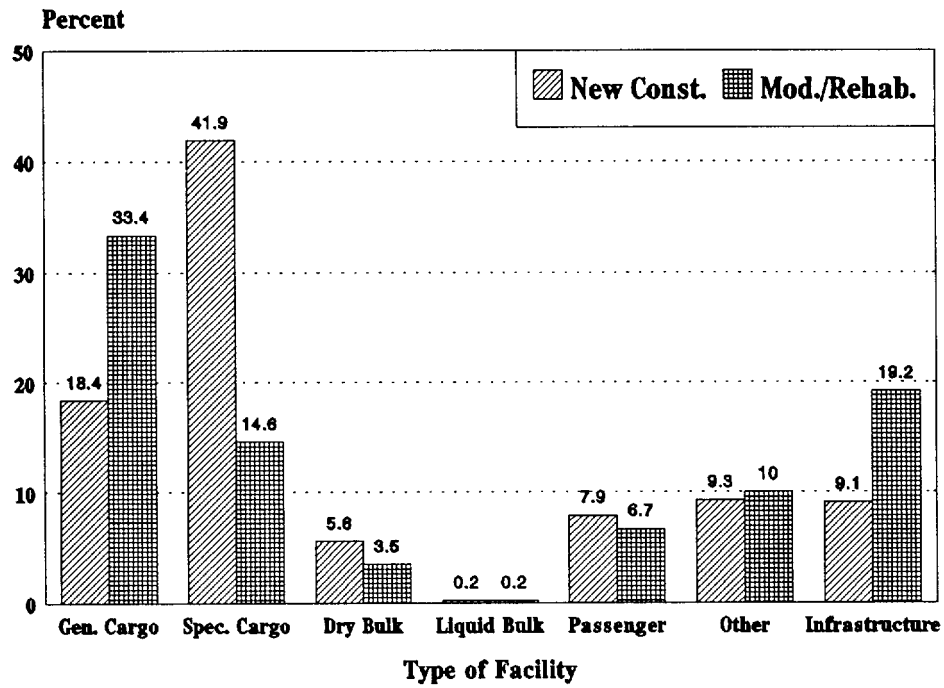


Figure 2.3

Table 2.4
U.S. Port Capital Expenditures by Type of Expenditure and Facility - 1992
(Thousands of Dollars)

Region	New Construction									
	General Cargo	Specialized General Cargo	Dry Bulk	Liquid Bulk	Passenger	Other	Infrastructure		Dredging	Total
							Off-Terminal	On-Terminal		
North Atlantic	11,701	25,892	174	-	-	3,898	6,533	-	630	48,828
South Atlantic	5,629	36,402	-	177	8,096	6,612	19,193	2,335	13,129	91,573
Gulf	43,462	6,712	21,575	138	1,544	7,589	2,470	391	16,353	100,234
South Pacific	11,948	95,898	1,418	54	1,277	10,179	6,606	1,103	634	129,117
North Pacific	5,338	12,934	637	-	262	9,835	83	-	-	29,089
Great Lakes	-	-	-	-	-	1,030	-	-	10	1,040
AK,HI,PR, & VI*	-	-	-	321	22,300	180	16	-	2,200	25,017
Guam, Saipan	-	-	-	-	-	-	-	-	-	-
Total	$78,078	$177,838	$23,804	$690	$33,479	$39,323	$34,901	$3,829	$32,956	$424,898
Percent by Facility Type	18.4%	41.9%	5.6%	0.2%	7.9%	9.3%	8.2%	0.9%	7.8%	100%

Region	Modernization/Rehabilitation									
	General Cargo	Specialized General Cargo	Dry Bulk	Liquid Bulk	Passenger	Other	Infrastructure		Dredging	Total
							Off-Terminal	On-Terminal		
North Atlantic	10,796	19,576	5,795	85	615	12,537	7,447	17,950	3,389	78,190
South Atlantic	1,808	2,743	115	17	3,955	1,398	629	2,725	3,274	16,664
Gulf	8,774	1,036	2,013	244	374	2,898	6,654	690	22,441	45,124
South Pacific	85	2,724	605	56	123	553	5,837	-	1,196	11,179
North Pacific	953	9,973	61	-	4	2,250	2,724	141	437	16,543
Great Lakes	458	-	-	-	-	1,008	465	235	-	2,166
AK,HI,PR, & VI*	59,535	-	-	25	11,500	3,974	1,864	85	21	77,004
Guam, Saipan	-	-	-	-	-	-	-	-	-	-
Total	$82,409	$36,052	$8,589	$427	$16,571	$24,618	$25,620	$21,826	$30,758	$246,870
Percent by Facility Type	33.4%	14.6%	3.5%	0.2%	6.7%	10.0%	10.4%	8.8%	12.5%	100%

2. FINANCING METHODS

In AAPA's 1992 capital expenditure survey the following funding categories were used to classify the financing sources: Port Revenues (Retained Earnings), General Obligation Bonds (GO bonds), Revenue Bonds, loans, grants and other. "Other" includes state transportation trust funds, state and local appropriations, taxes on property and sales and lease revenues.

Traditional financing methods still prevail in the 1990's. Port revenues and revenue bonds still form the core of public port financing with general obligation bonds further declining. However, port revenues and revenue bonds have steadily declined from a high of 88.3 percent in 1988 to 60.9 percent in 1992. Figure 2.4 provides a baseline for comparing the changes in the main financing methods. An increased average of 19.6 percent of "other" financial methods indicate a weighty shift into state appropriations and/or tax revenues.

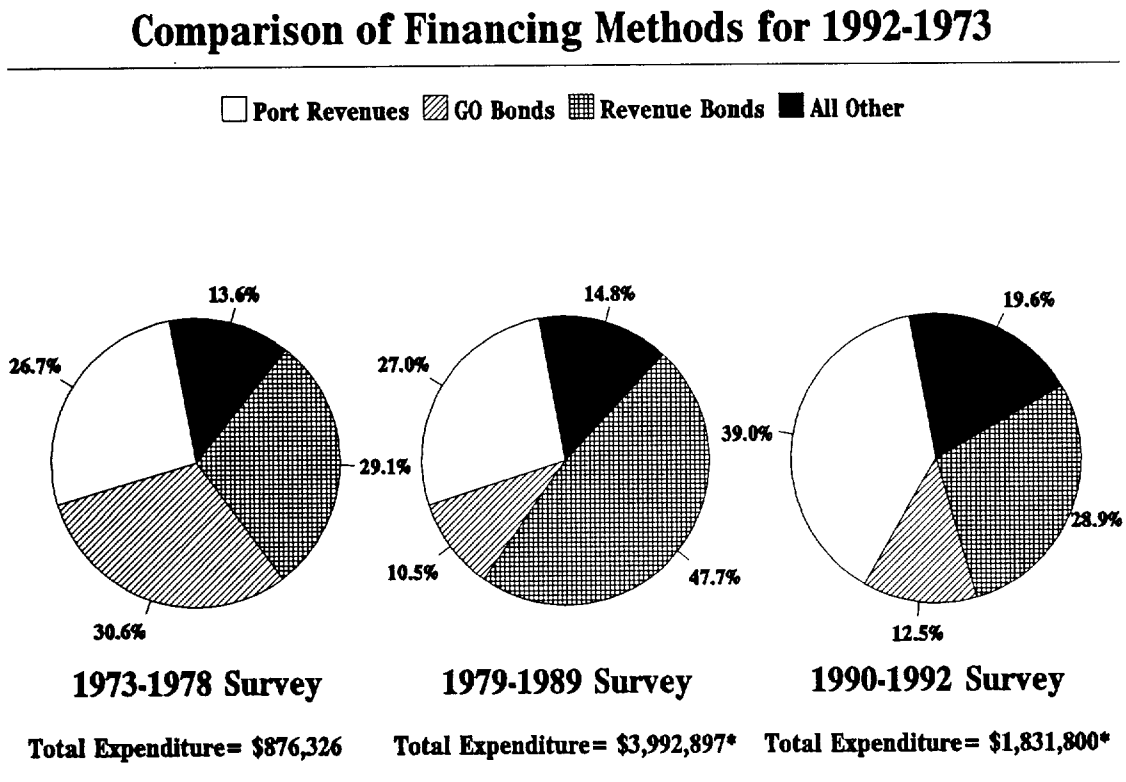


Figure 2.4

Table 2.5 and figure 2.5 outline the Nation's total and regional expenditures by the respective financing method. They also show financing method totals over all regions and indicate the percent of regional source. Port revenues dominate in the South Pacific region, whereas general obligation bonds, grants and other appropriations dominate in the Gulf. Among the secondary funding sources, Puerto Rico accounted for virtually all of the loan funding (98.8%).

Table 2.5
U.S. Port Capital Expenditures by Type of Financing Method for 1992
(Thousands of Dollars) 1/

Region	Facility Expenditures by Financing Method						
	Port Revenues	G.O. Bonds	Revenue Bonds	Loans	Grants	Other	Total
North Atlantic	7,521	13,200	11,899	-	3,104	14,095	49,819
South Atlantic	42,127	27,493	18,619	261	2,124	17,613	108,237
Gulf	47,332	32,799	176	-	10,120	41,687	132,114
South Pacific	78,755	-	37,088	-	8,304	16,149	140,296
North Pacific	18,863	-	14,030	-	-	12,739	45,632
Great Lakes	530	-	-	-	1,343	-	1,873
AK, HI, PR, VI*	1,828	-	74,288	21,534	3,962	-	101,612
Guam, Saipan	-	-	-	-	-	-	-
Total	$196,956	$73,492	$156,100	$21,795	$28,957	$102,283	$579,583
Percent by Funding Source	34%	12.7%	26.9%	3.8%	5.0%	17.6%	100%

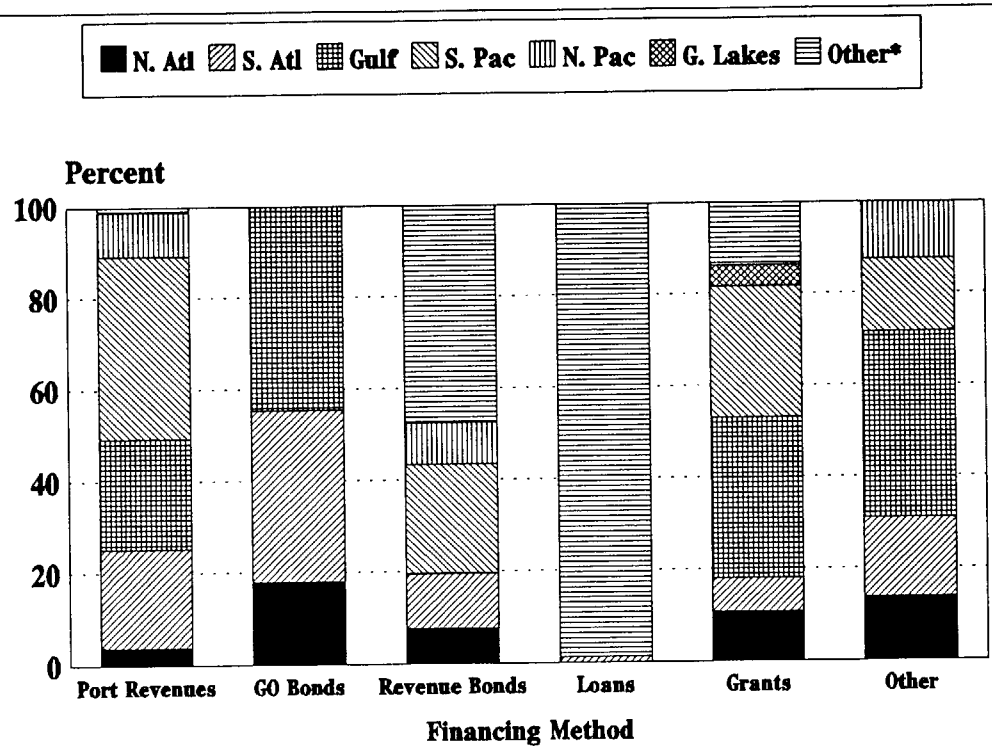
1/- Excludes expenditures of $92,185,000 for which there was no information on funding source.

* Alaska, Hawaii, Puerto Rico, & Virgin Islands

Figure 2.5

U.S. Public Port Capital Expenditures

(Percentage by Financing Method)



*AK, HI, PR & VI

3. PROPOSED CAPITAL EXPENDITURES

The projections for the next five years indicate a dynamic increase in public port capital expenditures. As shown on Table 2.6, $5.5 billion are forecasted for public capital expenditures for the five-year period 1993-1997. Most of this activity (39.8 percent) is expected to be concentrated in the South Pacific region. The other four regions range from 12 to 17 percent as shown in Figure 2.6.

Table 2.6
U.S. Port Capital Expenditures for 1993 - 1997
(Thousands of Dollars)

Region	Expenditures
North Atlantic	$657,718
South Atlantic	722,075
Gulf	920,172
South Pacific	2,196,763
North Pacific	857,448
Great Lakes	16,000
AK, HI, PR, & VI *	155,184
Guam, Saipan	-
Total	$5,525,360

*Alaska, Hawaii, Puerto Rico, & Virgin Islands

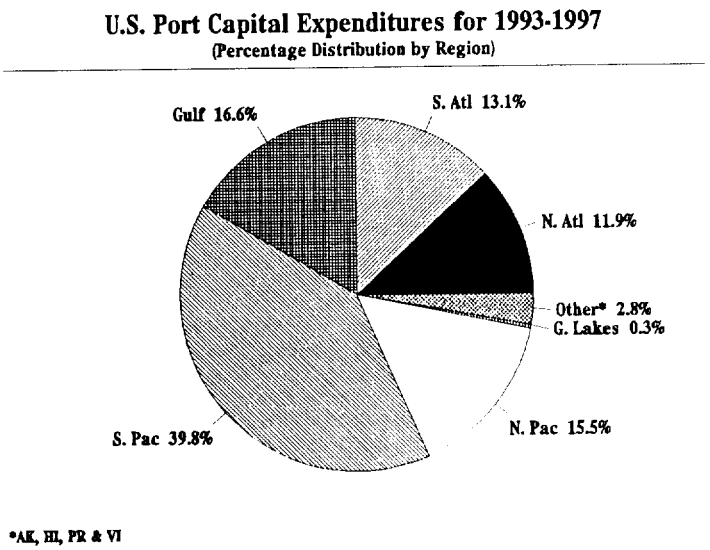


Figure 2.6

a. Capital Expenditures by Facility Type

Table 2.7 and Figure 2.7 show the proposed expenditures by type of facility. The container/specialized facilities are leading (32.6 percent) and together with the general cargo facilities will expend almost half of the indicated total expenditures. The center of the container/specialized expenditures will be in the west coast. General cargo facility expenditures concentrate in the Gulf followed by the South Atlantic and to a lesser extent by the North Atlantic. South Atlantic will be the focus of the passenger facility, whereas infrastructure costs will dominate the South Pacific.

Table 2.7
U.S. Port Capital Expenditures by Type of Facility for 1993 - 1997
(Thousands of Dollars)

Region	Type of Facility									
	General Cargo	Specialized General Cargo	Dry Bulk	Liquid Bulk	Passenger	Other	Infrastructure		Dredging	Total
							Off-Terminal	On-Terminal		
North Atlantic	136,711	202,658	2,751	1,040	7,953	36,660	139,741	8,550	121,654	657,718
South Atlantic	202,661	139,835	-	7,283	111,245	19,803	114,713	8,526	118,009	722,075
Gulf	262,389	169,686	40,448	11,665	36,405	118,205	79,866	93,612	107,896	920,172
South Pacific	67,018	736,012	140,776	1,720	2,162	698,535	251,144	184,945	114,451	2,196,763
North Pacific	69,359	552,490	19,700	-	10,816	116,573	15,289	47,378	25,843	857,448
Great Lakes	300	-	15,000	-	-	-	200	-	500	16,000
AK,III,PR,VI*	67,687	-	-	692	27,050	3,327	7,660	23,068	25,700	155,184
Guam, Saipan	-	-	-	-	-	-	-	-	-	-
Total	$806,125	$1,800,681	$218,675	$22,400	$195,631	$993,103	$608,613	$366,079	$514,053	$5,525,360

* Alaska, Hawaii, Puerto Rico, & Virgin Islands

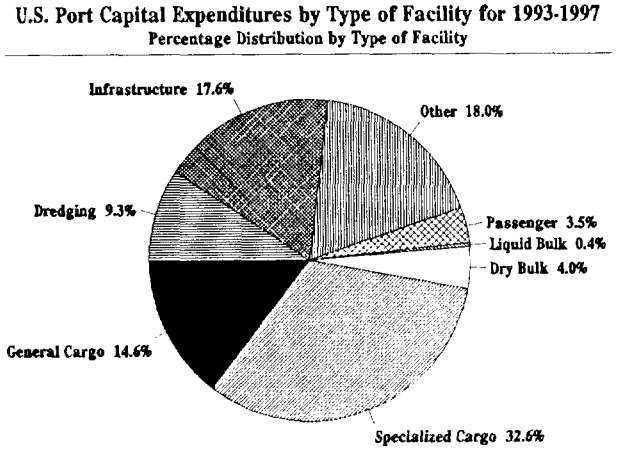


Figure 2.7

b. Leading Port Authorities

The leading port authorities for the projected capital expenditures during the 1993-1997 period are presented on Table 2.8. The top four, all west coast ports, account for almost 50 percent of the total expected expenditures.

Table 2.8
Leading Port Authorities for 1993 - 1997
by Total Capital Expenditures
(Thousands of Dollars)

Rank	Port	Expenditures
1	Port of Long Beach	$1,099,900
2	Port of Los Angeles	703,489
3	Port of Seattle	577,264
4	Port of Oakland	302,989
5	Port Authority of New York/New Jersey	294,232
6	Port of Miami	279,730
7	Port of New Orleans	238,974
8	Port of Houston	217,663
9	Georgia Ports Authority	193,100
10	Port of Tacoma	170,028
	Total Top Ten Ports	$4,077,369
	Total Expenditures	$5,525,360
	Percent of Total	73.8%

c. Financing

The outlook for budgetary and financial constraints persists and the pressure for self-sufficiency remains as is indicated by the leading port authorities.

Port revenues and revenue bonds will dominate the financing methods. Table 2.9 and Figure 2.8 present the financing methods for 1993-1997 by region. The South Pacific, where most of the activity will center in the next five years, indicates a 50/50 ratio in financing port revenues and revenue bonds. General obligation bonds will be favored by the South Atlantic and the Gulf.

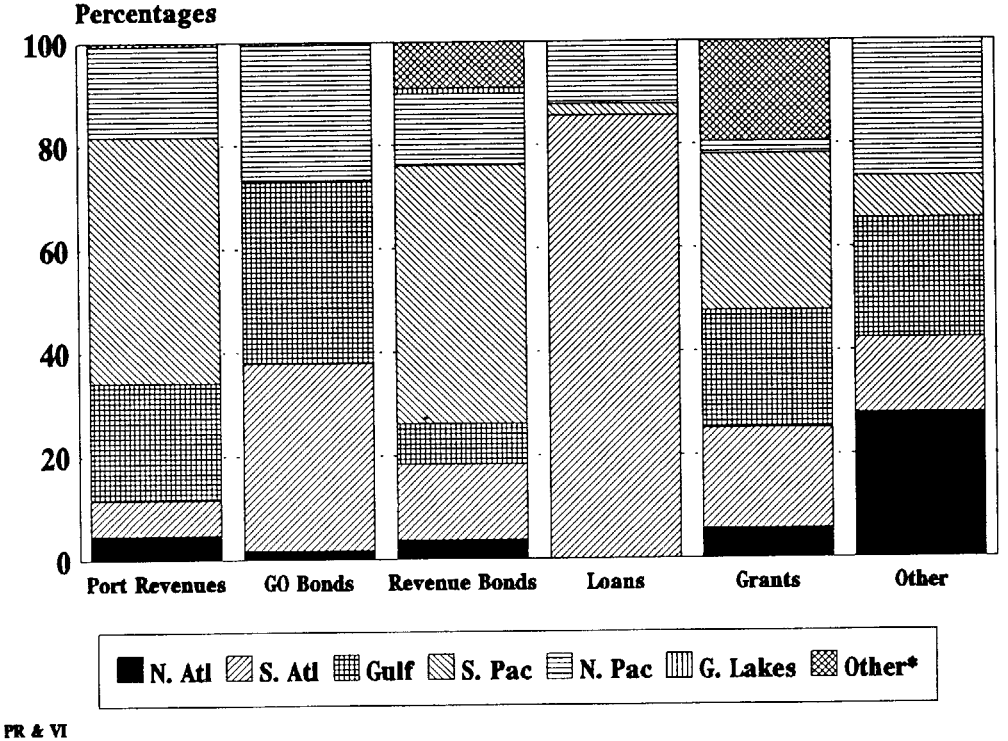
Table 2.9
U.S. Port Capital Expenditures by Type of Financing Method for 1993 - 1997
(Thousands of Dollars) 1/

Region	Facility Expenditures by Financing Method						
	Port Revenues	G.O. Bonds	Revenue Bonds	Loans	Grants	Other	Total
North Atlantic	69,187	13,368	48,720	-	7,950	224,261	363,486
South Atlantic	101,859	268,627	194,005	13,986	27,004	116,594	722,075
Gulf	335,262	262,673	103,404	-	31,884	186,949	920,172
South Pacific	707,514	1,973	665,703	375	42,418	66,311	1,484,294
North Pacific	260,582	195,299	183,989	1,952	3,226	211,308	856,356
Great Lakes	1,000	-	15,000	-	-	-	16,000
AK,HI,PR VI*	6,789	3,000	118,087	-	27,308	-	155,184
Guam, Saipan	-	-	-	-	-	-	
Total	$1,482,193	$744,940	$1,328,908	$16,313	$139,790	$805,423	$4,517,567
Percent by Funding Source	32.8%	16.5%	29.4%	0.4%	3.1%	17.8%	100%

1/ - Excludes expenditures of $955,282,000 for which there was no information on funding source.
* Alaska, Hawaii, Puerto Rico, & Virgin Islands

Figure 2.8

U.S. Port Capital Expenditures by Type of Financing Method for 1993-1997
Percentage Distribution



*AK, HI, PR & VI

CONCLUSION

Port development in the U.S. has traditionally resulted from local public and private initiative, and it has been government policy to support the growth of public ports. Private capital investment in shoreside terminals is estimated to be more than twice the amount of public expenditures.

The U.S. public port industry remains committed to providing efficiency in cargo facilities around the Nation. The public port industry appears to continue spending an average of $670 million annually despite the recent recession. Container facilities continue to absorb most of the public port funding, followed by general cargo which in 1992 received most of the modernization funds. In particular, the west coast of the U.S. is leading in container facilities' expansion.

In the 1990's there is a sharp increase in port revenues funding capital expenditures, which average 39 percent. During the same period the public port financing witnessed a drop in revenue bonds. It appears that earned revenues will constitute a larger percentage of all funds available for capital investment projects. The pressure is on the industry to become more self-sufficient, and full analysis is provided in the following chapter.

The outlook for the projected five-year capital expenditures is very strong at $5.5 billion, with major development in the South Pacific region. Under tight budgets, prioritizing of capital projects should be a major management challenge for any public port authority.

Chapter 3

PUBLIC PORT FINANCING - TREND TO SELF-SUFFICIENCY?

The results of the 1992 American Association of Port Authorities (AAPA) Expenditure Survey may indicate a trend toward financing new port construction and facility rehabilitation through the use of port revenues and port revenue bonds, with the relative percentage of such funding sources increasing from 55.8% during the 1973-1978 period to 74.7% for the period 1979-1989, but dropping to 67.9% for the 1990-1992 period. Do these results indicate that U. S. ports are now achieving a greater degree of self- sufficiency?

SELF-SUFFICIENCY

Some indications of the current level of self-sufficiency are discussed below. These indications are based on the fifty-five U. S. port responses to the 1992 AAPA Public Port Financing Survey, a copy of which is found in Appendix A along with a list of the responding ports.

Twenty-eight of the fifty responding ports (56%) claimed to be 100% self-sufficient; but their responses to other survey questions indicate that some ports whose marine terminal operations are cross-subsidized by airport, bridge, tunnel, and other non-marine activities considered themselves to be 100% self-sufficient. Other ports claimed to be 100% self-sufficient except for capital projects funded with the proceeds of state or local government general obligation bonds. Since the survey failed to define "self-sufficiency", the responses were not uniform.

Table 3.1 is a recap of the responses by percentage range and port region. The Virginia Port Authority responses are included in the South Atlantic port region in this chapter.

Table 3.1
U. S. Ports
Percentage of Self Sufficiency

Port Region	0	1-49	50-59	60-69	70-79	80-89	90-99	100	Total
North Atlantic	1		1		2	1		2	7
South Atlantic					1		1	7	9
Gulf		1	1	3		2	1	5	13
North Pacific					2	1	1	5	9
South Pacific				1			1	8	10
Great Lakes							1	1	2
Total	1	1	2	4	5	4	5	28	50

CATEGORIES OF FINANCIAL ASSISTANCE

Thirty-one ports received assistance for capital projects; nine received financial assistance for maintenance and operations; and six ports received assistance for administrative expenses. Some ports received financial assistance for two or more of the above categories of expenditures. Table 3.2 recaps the number of ports, by region, receiving the various categories of financial assistance.

Table 3.2
U.S. Ports
Financial Assistance by Type of Expenditure

Port Region	None	Capital Projects	Maint. & Operations	Administra-ation
North Atlantic	2	6	1	2
South Atlantic	7	5	0	0
Gulf	5	11	6	3
North Pacific	5	5	1	1
South Pacific	8	2	0	0
Great Lakes	1	2	1	0
Total	28	31	9	6

SHORT TERM FINANCIAL ASSISTANCE

In 1992 eight ports received $7.5 million in short term financial assistance from local governments; twenty ports received $69.7 million in short term assistance from state governments; and six ports received $15 million in other types of short term financial assistance. Tables 3.3 and 3.4 recap the short term financial assistance by port regions.

Table 3.3
Number of U.S. Ports Receiving
Short Term Financial Assistance by Source
1992

Port Region	Short Term Financial Assistance by Source			
	Local	State	Other	Total
North Atlantic	0	5	2	7
South Atlantic	1	3	0	4
Gulf	3	6	3	12
North Pacific	2	2	1	5
South Pacific	1	0	0	1
Great Lakes	1	4	0	5
Total	8	20	6	34

Table 3.4
U.S. Ports
Amount of Short Term Financial Assistance by Source
1992

Port Region	Short Term Financial Assistance by Source ($000)			
	Local	State	Other	Total
North Atlantic	0	51,151		51,151
South Atlantic	800	7,954	0	8,5744
Gulf	4,161	7,167	2,699	14,027
North Pacific	1,614	1,890	12,279	15,783
South Pacific	481	0	0	481
Great Lakes	200	1,500	0	1,700
Total	7,256	69,662	14,978	91,896

LONG TERM FINANCIAL ASSISTANCE

Long term financial assistance to fifteen ports totaled $342.9 million in 1992. One port received $0.8 million in long term local government financial assistance; thirteen ports received $294.6 million in long term financial assistance from state governments; and five ports received $47.4 million in long term financial assistance from other sources. This information is tabulated by port region in Tables 3.5 and 3.6 below.

Table 3.5
Number of U.S. Ports Receiving
Long Term Financial Assistance by Source
1992

Port Region	Long Term Financial Assistance by Source			
	Local	State	Other	Total
North Atlantic	0	3	0	3
South Atlantic	0	3	1	4
Gulf	1	4	1	5
North Pacific	0	1	1	1
South Pacific	0	1	2	1
Great Lakes	0	1	0	1
Total	1	13	5	15

Table 3.6
U.S. Ports
Amount of Long Term Financial Assistance by Source
1992

Port Region	Long Term Financial Assistance by Source ($000)			
	Local	State	Other	Total
North Atlantic	0	197,312	0	197,312
South Atlantic	0	12,687	10,000	22,687
Gulf	807	74,000	21,500	96,307
North Pacific	0	10,000	998	10,998
South Pacific	0	123	14,935	15,058
Great Lakes	0	500	0	500
Total	807	294,622	47,433	342,862

TAXING AUTHORITY

Twenty-two of the fifty-five responding ports have statutory authority to levy and collect ad valorem taxes on property. Ten of such ports were in the Gulf region and seven were in the North Pacific. Six ports advised that their tax rate had increased during the last five years, and five ports anticipated a rate increase during the next five years. A summary of this information by port region is found in Table 3.7. Some ports with the authority to tax did not respond to the survey questions on tax increases.

Table 3.7
U.S. Ports
Taxing Authority

Port Region	Authority to Tax		Tax Rate Increased			
			Last 5 Years		Next 5 Yrs.	
	Yes	No	No	Yes	No	Yes
North Atlantic	0	8	N/A	N/A	N/A	N/A
South Atlantic	2	7	2	0	N/A	N/A
Gulf	10	6	3	5	3	4
North Pacific	7	1	5	0	7	0
South Pacific	2	8	0	1	0	1
Great Lakes	1	3	1	0	1	0
Total	22	33	11	6	11	5

PAYMENTS MADE BY PORTS IN LIEU OF TAXES

Ten of the responding ports make payments to state and/or local governments in lieu of taxes. At least one additional port in the North Atlantic (which did not respond to the survey) makes a payment to local government in lieu of taxes.

Five of the California ports were affected by the recent California state legislation which provided for payments to cities from port reserves. Only three of these ports have been called on to make such payments to date.

Only the California ports indicated that payments in lieu of taxes might have a negative influence on their ability to finance future capital projects. The California legislation is addressed more completely in a subsequent chapter.

Table 3.8
U.S. Ports
Payments Made by Ports in Lieu of Taxes

Port Region	Payments in Lieu of Taxes		Payments Increased			
	Yes	No	Last 5 Years		Next 5 Yrs.	
			No	Yes	No	Yes
North Atlantic	4	4	4	0	2	2
South Atlantic	0	9	N/A	N/A	N/A	N/A
Gulf	1	15	1	0	1	0
North Pacific	3	5	3	0	3	0
South Pacific	2	8	2	0	2	0
Great Lakes	0	4	N/A	N/A	N/A	N/A
Total	10	45	10	0	8	2

SELF-SUFFICIENCY REVISITED

The failure to define self-sufficiency in the survey requires some further analysis to determine the accuracy of the survey responses.

There may be many ways to define port financial self-sufficiency, but the following three broad-ranged definitions have been used before:[1]

> Narrow Self-Sufficiency: A port is considered self-sufficient when current revenue covers administrative and operating expense, including maintenance and minor improvements of existing facilities; however, revenue is not high enough to provide for amortization of initial capital investments nor for major improvement and expansion work.

Relative Self-Sufficiency: A port is considered relatively self-sufficient when it is able to finance from operating income a portion of major port improvement projects but relies on subsidies or grants to cover remaining costs.

Fully Self-Sufficient: When a port relies exclusively on its own funds and earning capacity for all major improvements and maintenance and administrative cost, it is considered fully self-sufficient.

The above analysis cannot be done without detailed comprehensive annual financial reports or audit reports, since certain of the information concerning amortization of debt and cash flows is not available from survey data.

An alternative scenario, using a port's condensed statement of revenue and expenses, has been developed, which provides some measure of self-sufficiency based on the categories outlined above.

No Self-Sufficiency: Negative Operating Income (Operating Loss) and Negative Net Income (Net Loss) before Taxes and Contributions.

Narrow Self-Sufficiency: Negative Net Income (Net Loss) before Taxes and Contributions is less than the amount of Bond Interest Expense.

Relative Self-Sufficiency: Positive Net Income before Taxes and Contributions, but still receives Taxes and/or Contributions.

Fully Self-Sufficient: Positive Net Income and receives no Taxes and/nor Contributions.

In the categories above, Operating Income (Loss) is defined as Operating Revenue less Operating Expenses **including** Depreciation Expense.

The above definitions do not really cover off-balance sheet state and/or local government payments of bond interest and expense, nor other direct grants and/or contributions, unless such payments are recorded as contributions in the port's income statement, and most ports account for such payments as donated assets.

In addition, if a port receives its budgeted expenses from state or local government, and all the port's revenues go to the state or local government, it may not be self-sufficient; but its income and expense statement could show a net profit and appear to be completely self-supporting using the above analysis.

Despite the short-comings outlined above, an analysis of the condensed income and expenses of those ports which responded to the 1992 AAPA Finance Survey, and the summary of this analysis are shown in Table 3.9 below.

Table 3.9
U.S Ports
Degree of Self Sufficiency
(Based on 1992 AAPA Port Finance Survey)

Port Region	Degree of Self-Sufficiency				
	None	Narrow	Relative	Fully	Total
North Atlantic	4	2	0	2	8
South Atlantic	1	1	2	6	10
Gulf	9	5	0	3	17
North Pacific	2	1	3	4	10
South Pacific	3	1	0	6	10
Great Lakes	2	0	1	1	4
Total	21	10	6	22	59

This analysis indicates that twenty-eight of the fifty-nine responding ports (47%) could be considered relatively or fully self-sufficient, and ten more had a narrow degree of self-sufficiency.

The final step in the analysis calculated net income without a deduction for depreciation expense. The results found that if no deduction for depreciation expense is made from net income, only four U. S. ports would have had a net loss in 1992.

The detailed analysis of the year 1992 can be found in Appendix B, Table B-1.

TRENDS IN SELF-SUFFICIENCY

The same self-sufficiency analysis was performed using the AAPA Port Finance Surveys for the years 1988-1991. The results of the analysis of the five year period are summarized below by port regions in Tables 3.10 - 3.16 and Figures 3.1 - 3.7.

It must be understood that the analysis is based on all U. S. ports reporting in the respective years, and no effort has been made to eliminate the results of those ports which did not report for each of the five years.

There appears to be no trend toward increased financial self-sufficiency in any port region. In fact, the financial results for 1992 indicate a decrease generally, with major decreases in the number of profitable ports in the Gulf and South Pacific regions. The Great Lakes show an increase in self sufficiency, but this was the direct result of two profitable ports responding to the 1992 Port Finance Survey.

Table 3.10
U. S. PORT SELF-SUFFICIENCY
1988 - 1992
TOTAL - ALL PORTS REPORTING

Based on AAPA Port Finance Surveys for the years 1988 - 1992

Year	None (1)	Narrow (2)	Relative (3)	Fully (4)	Total
1988	13	8	11	26	58
1989	17	10	12	23	62
1990	17	7	10	23	57
1991	15	5	9	24	53
1992	21	10	6	22	59

Figure 3.1

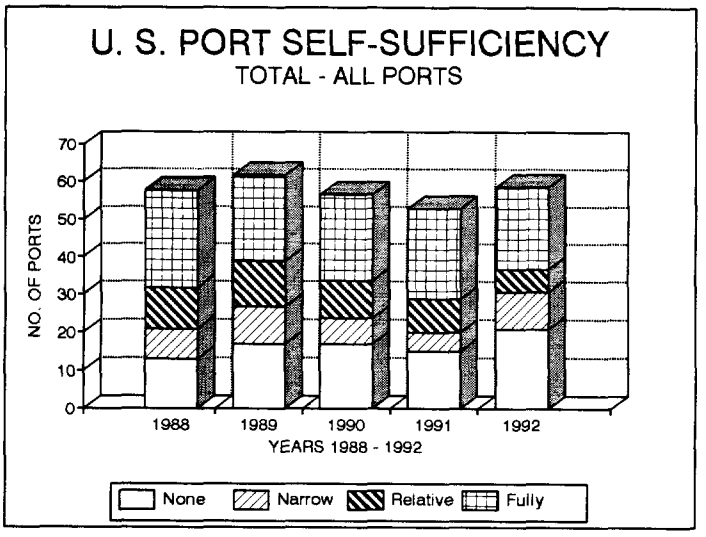


Table 3.11
U. S. PORT SELF-SUFFICIENCY
1988 - 1992
NORTH ATLANTIC PORTS

Based on AAPA Port Finance Surveys for the years 1988 - 1992

Year	None (1)	Narrow (2)	Relative (3)	Fully (4)	Total
1988	2	0	1	2	5
1989	5	0	1	2	8
1990	2	0	2	2	6
1991	3	0	0	1	4
1992	4	1	0	2	7

Figure 3.2

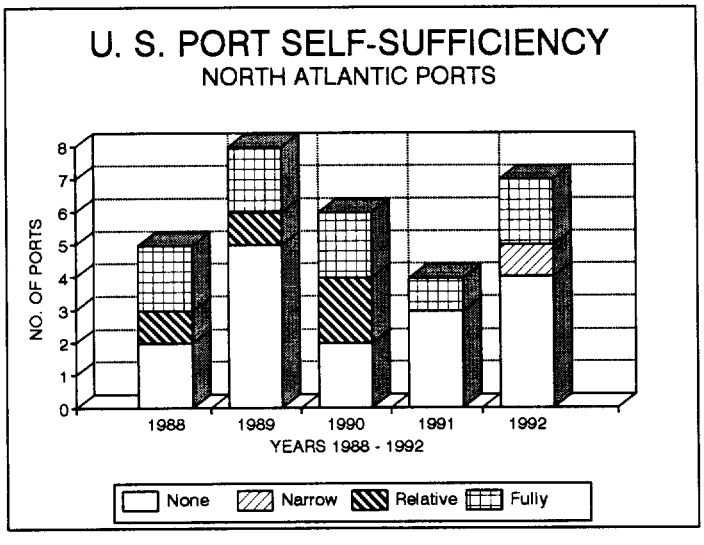


Table 3.12
U. S. PORT SELF-SUFFICIENCY
1988 - 1992
SOUTH ATLANTIC PORTS

Based on AAPA Port Finance Surveys for the years 1988 - 1992

Year	None (1)	Narrow (2)	Relative (3)	Fully (4)	Total
1988	1	3	0	5	9
1989	2	3	0	5	10
1990	2	1	0	8	11
1991	2	0	2	6	10
1992	1	2	2	6	11

Figure 3.3

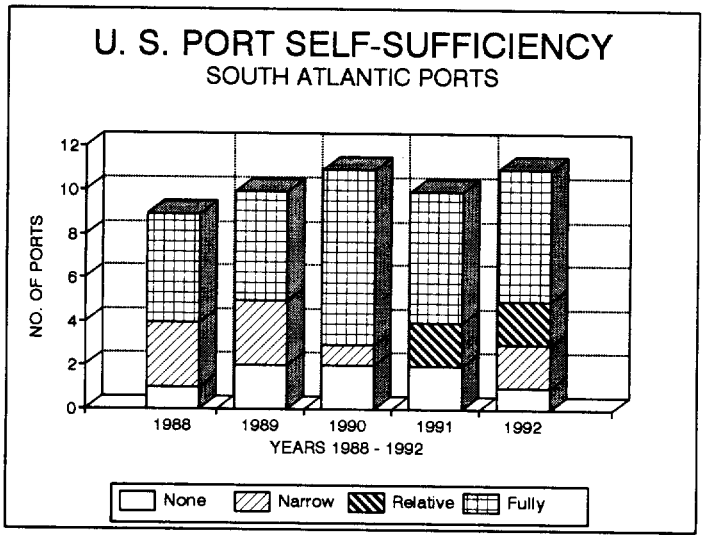


Table 3.13
U. S. PORT SELF-SUFFICIENCY
1988 - 1992
GULF PORTS

Based on AAPA Port Finance Surveys for the years 1988 - 1992

Year	None (1)	Narrow (2)	Relative (3)	Fully (4)	Total
1988	5	3	4	6	18
1989	5	3	4	4	16
1990	7	2	3	3	15
1991	4	4	4	3	15
1992	9	5	0	3	17

Figure 3.4

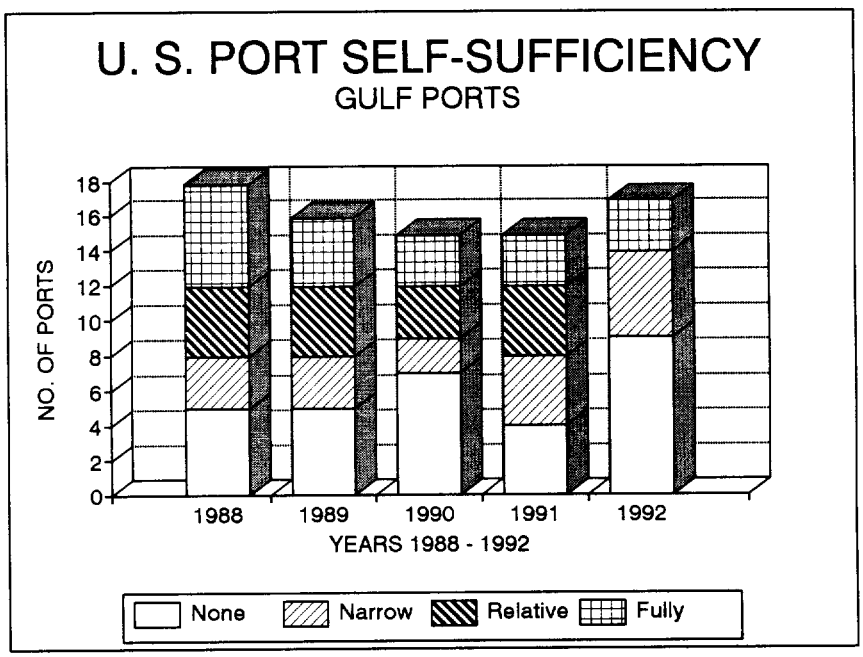


Table 3.14
U. S. PORT SELF-SUFFICIENCY
1988 - 1992
NORTH PACIFIC PORTS

Based on AAPA Port Finance Surveys for the years 1988 - 1992

Year	None (1)	Narrow (2)	Relative (3)	Fully (4)	Total
1988	2	1	4	4	11
1989	3	2	3	4	12
1990	2	3	4	3	12
1991	2	1	2	5	10
1992	2	1	3	4	10

Figure 3.5

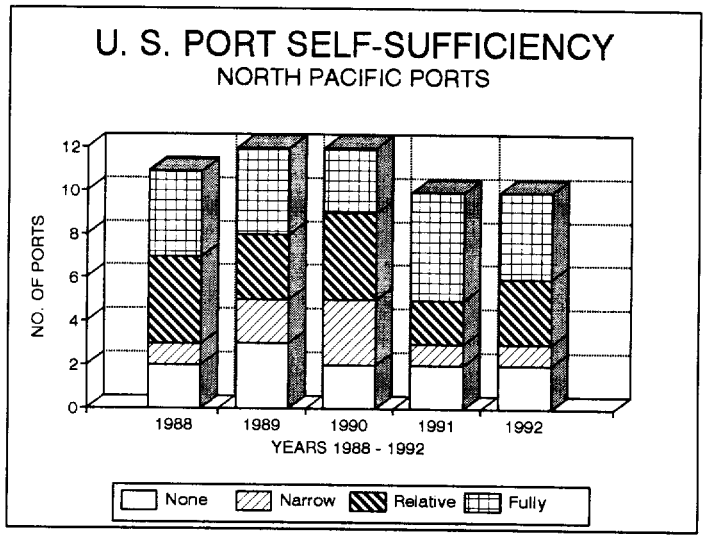


Table 3.15
U. S. PORT SELF-SUFFICIENCY
1988 - 1992
SOUTH PACIFIC PORTS

Based on AAPA Port Finance Surveys for the years 1988 - 1992

Year	None (1)	Narrow (2)	Relative (3)	Fully (4)	Total
1988	1	1	1	9	12
1989	0	2	3	8	13
1990	2	1	1	7	11
1991	2	0	1	9	12
1992	3	1	0	6	10

Figure 3.6

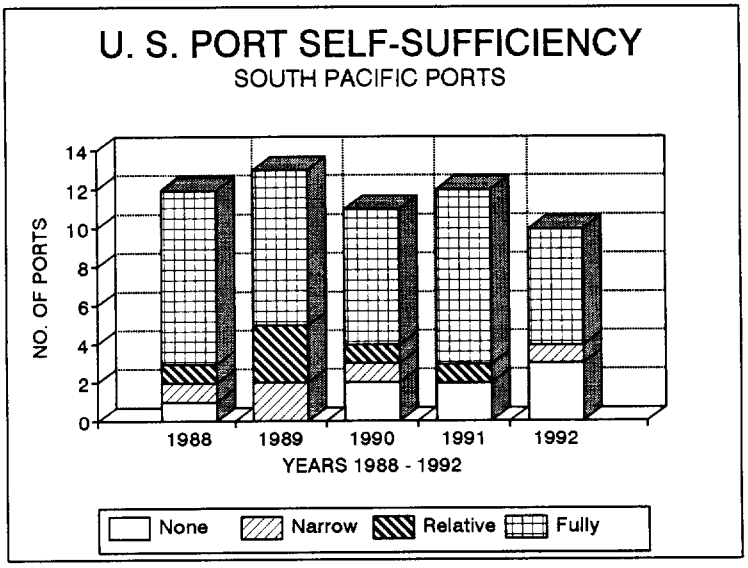
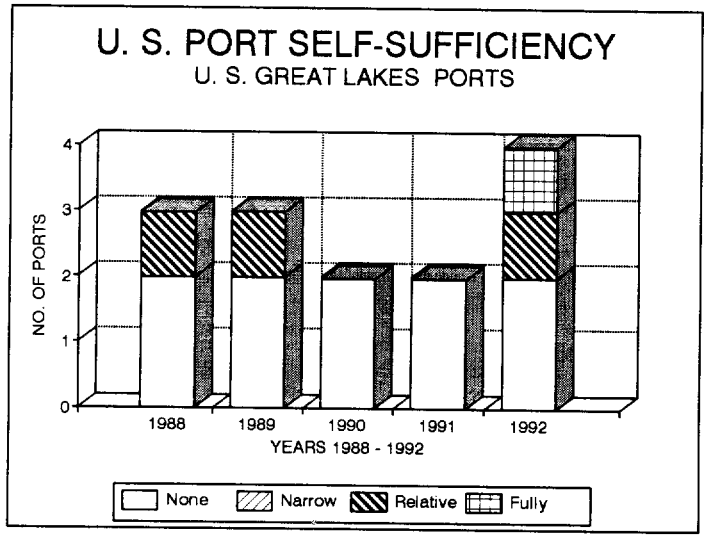


Table 3.16
U. S. PORT SELF-SUFFICIENCY
1988 - 1992
GREAT LAKES PORTS

Based on AAPA Port Finance Surveys for the years 1988 - 1992

Year	None (1)	Narrow (2)	Relative (3)	Fully (4)	Total
1988	2	0	1	0	3
1989	2	0	1	0	3
1990	2	0	0	0	2
1991	2	0	0	0	2
1992	2	0	1	1	4

Figure 3.7



U. S. PORT PROFITABILITY

The same AAPA Port Finance Survey data for the period 1988 - 1992 can be used to make a "bottom line" decision on the profitability of each of the U. S. ports. If a port has a net profit (net income) before taxes and contributions it is profitable. If it has a net loss (negative net income) before taxes and contributions it is not profitable.

This analysis, though simpler than the self-sufficiency analysis, still does not take into consideration off-balance sheet payments of bond interest and expense, nor other direct grants and/or contributions that are not recorded as contributions in the port's income statement.

The data and related graphs are shown in Tables 3.17 - 3.23 and Figures 3.8 - 3.14, and the analysis of the 1992 AAPA Port Finance Survey can be found in Appendix B, Table B-2.

The overall analysis for all U. S. ports shows a decline in profitability for the five year period ending 1992.

There is no marked improvement of the North Atlantic ports, and most of the profitable ports are smaller ports.

The South Atlantic ports have been able to sustain their profitability growth attained in 1990 for the last two additional years.

The number of profitable Gulf ports has declined from ten in 1988 to three in 1992, and the number of unprofitable ports has increased from eight to fourteen over the same period. This lack of profitability can be attributed to excess capacity, intense pricing competition, and the continued public financial support from state and/or local governments and the port's local constituency.

The North Pacific ports have been able to sustain their profitable status over the period analyzed. During this same period, the number of ports in this region receiving tax support has been reduced.

The major South Pacific ports continue to remain profitable, but more of the smaller ports in 1992 reported a net loss before taxes and contributions than in previous years.

The Great Lakes ports which had unprofitable operation in 1988 continue in that status, the two ports showing profitable operations in 1992 did not respond to the 1990 and 1991 surveys.

Table 3.17
U. S. PORT PROFITABLITY
BEFORE TAXES AND CONTRIBUTIONS
1988 - 1992
TOTAL - ALL U. S. PORTS

Based on AAPA Port Finance Surveys for the years 1998 - 1992

Year	Net Loss Before Taxes & Contributions	Net Profit Before Taxes & Contributions	Total
1988	21	37	58
1989	27	35	62
1990	24	33	57
1991	20	33	53
1992	31	28	59

Figure 3.8

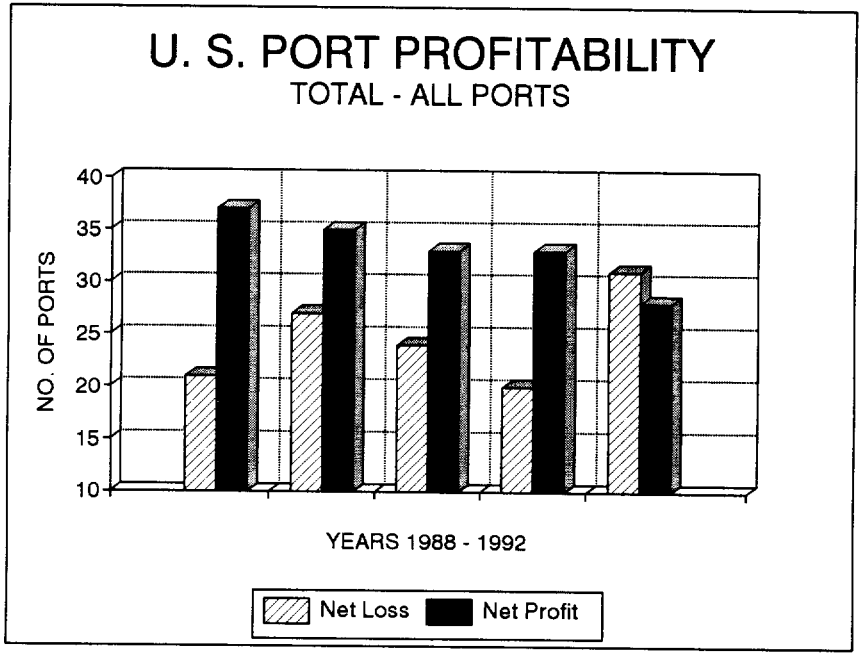


Table 3.18
U. S. PORT PROFITABLITY
BEFORE TAXES AND CONTRIBUTIONS
1988 - 1992
NORTH ATLANTIC PORTS

Based on AAPA Port Finance Surveys for the years 1998 - 1992

Year	Net Loss Before Taxes & Contributions	Net Profit Before Taxes & Contributions	Total
1988	2	3	5
1989	5	3	8
1990	2	4	6
1991	3	1	4
1992	5	2	7

Figure 3.9

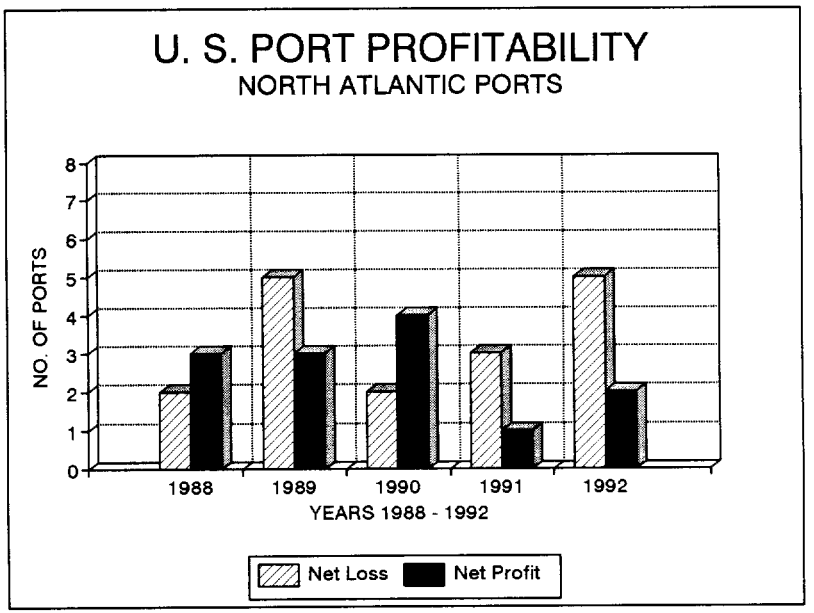


Table 3.19
U. S. PORT PROFITABLITY
BEFORE TAXES AND CONTRIBUTIONS
1988 - 1992
SOUTH ATLANTIC PORTS

Based on AAPA Port Finance Surveys for the years 1998 - 1992

Year	Net Loss Before Taxes & Contributions	Net Profit Before Taxes & Contributions	Total
1988	4	5	9
1989	5	5	10
1990	3	8	11
1991	2	8	10
1992	3	8	11

Figure 3.10

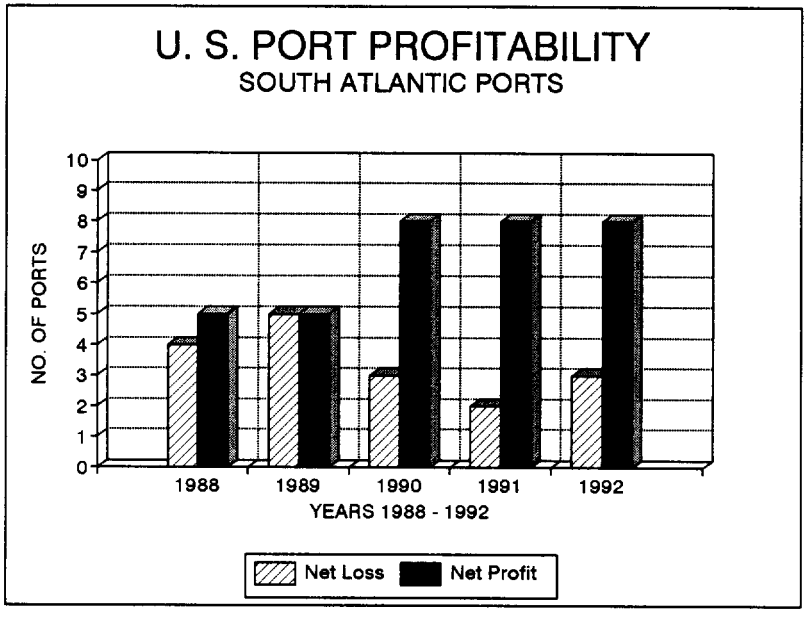


Table 3.20
U. S. PORT PROFITABLITY
BEFORE TAXES AND CONTRIBUTIONS
1988 - 1992
GULF PORTS

Based on AAPA Port Finance Surveys for the years 1998 - 1992

Year	Net Loss Before Taxes & Contributions	Net Profit Before Taxes & Contributions	Total
1988	8	10	18
1989	8	8	16
1990	9	6	15
1991	8	7	15
1992	14	3	17

Figure 3.11

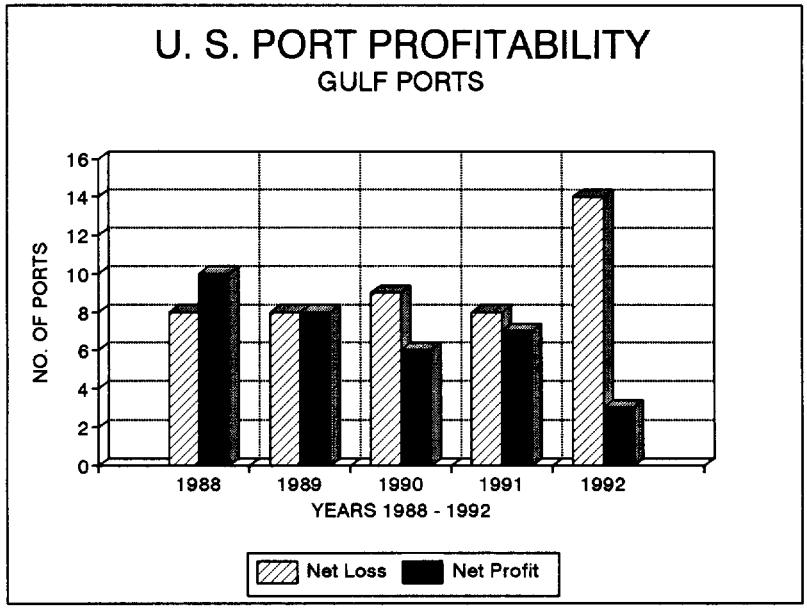


Table 3.21
U. S. PORT PROFITABLITY
BEFORE TAXES AND CONTRIBUTIONS
1988 - 1992
NORTH PACIFIC PORTS

Based on AAPA Port Finance Surveys for the years 1998 - 1992

Year	Net Loss Before Taxes & Contributions	Net Profit Before Taxes & Contributions	Total
1988	3	8	11
1989	5	7	12
1990	5	7	12
1991	3	7	10
1992	3	7	10

Figure 3.12

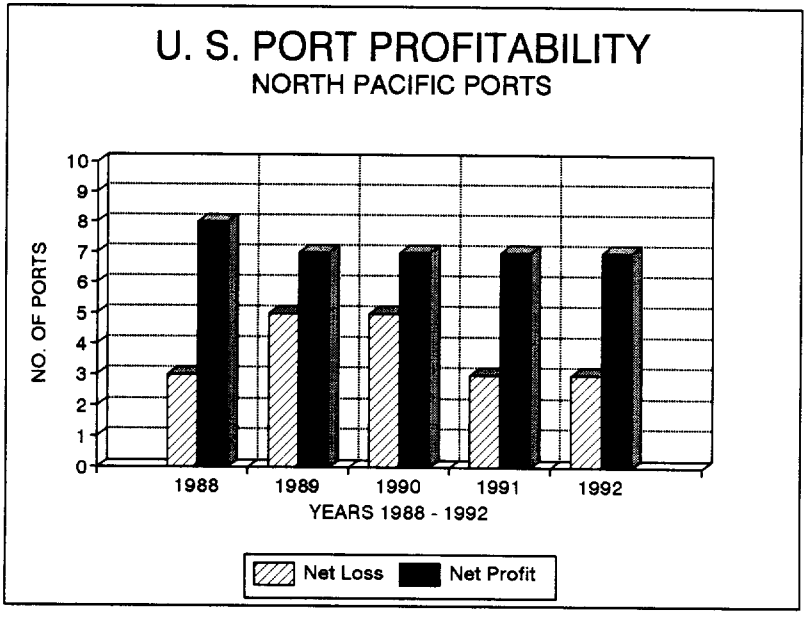


Table 3.22
U. S. PORT PROFITABLITY
BEFORE TAXES AND CONTRIBUTIONS
1988 - 1992
SOUTH PACIFIC PORTS

Based on AAPA Port Finance Surveys for the years 1998 - 1992

Year	Net Loss Before Taxes & Contributions	Net Profit Before Taxes & Contributions	Total
1988	2	10	12
1989	2	11	13
1990	3	8	11
1991	2	10	12
1992	4	6	10

Figure 3.13

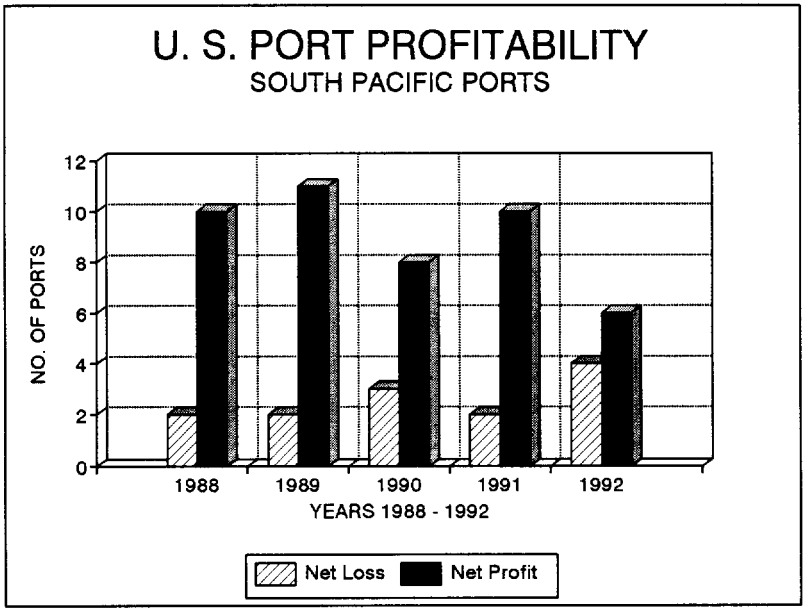
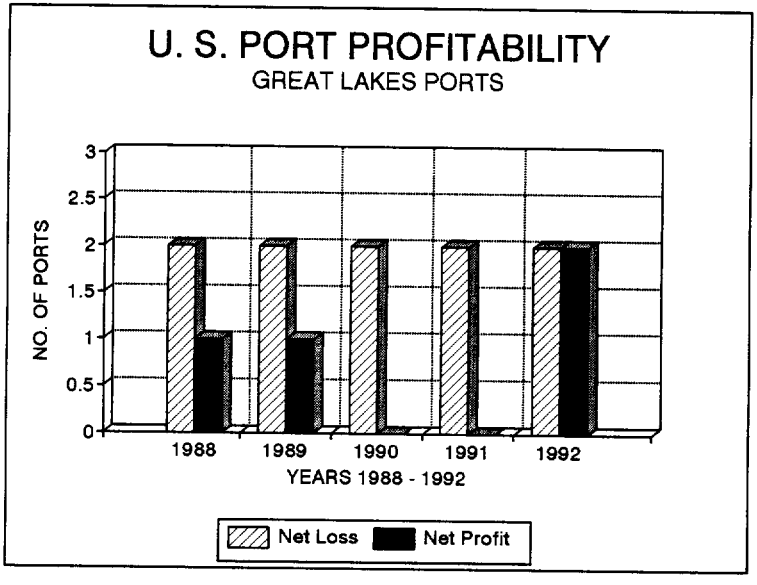


Table 3.23
U. S. PORT PROFITABLITY
BEFORE TAXES AND CONTRIBUTIONS
1988 - 1992
GREAT LAKES PORTS

Based on AAPA Port Finance Surveys for the years 1998 - 1992

Year	Net Loss Before Taxes & Contributions	Net Profit Before Taxes & Contributions	Total
1988	2	1	3
1989	2	1	3
1990	2	0	2
1991	2	0	2
1992	2	2	4

Figure 3.14



Despite the declining profitability of ports in some port regions, if depreciation is not treated as an Operating Expense in calculating Operating Income, only four U. S. ports would have sustained a net loss in 1992, compared with four in 1988, seven in 1989, six in 1990, and three in 1991.

HISTORIC PORT EARNINGS

The public port finance survey asked the U. S. ports if they had a historic profit or loss and whether the response was true for the last five years. Of the fifty-five ports responding, forty-five reported a historical profit, and ten reported that historically they had net losses.

Forty-five ports also reported that the net profit or loss response was applicable to the last five years, and ten ports advised that the response was not true for the last five years. There was no correlation between the responses to the two survey questions.

Table 3.24 shows the responses by port region.

Table 3.24
U.S. Ports
Port Earnings - Historic Profit or Loss
1992

Port Region	Net Profit	Net Loss	True for Last 5 Years	
			Yes	No
North Atlantic	5	3	7	1
South Atlantic	6	3	6	3
Gulf	12	4	11	5
North Pacific	8	0	8	0
South Pacific	10	0	9	1
Great Lakes	4	0	4	0
Total	45	10	50	10

At this point some knowledge of the type of operation of the responding ports may be of value. Twenty-seven, of the ports responding to this question are landlord ports; fourteen are operating ports; and twelve combine both types of operations as shown in Table 3.25.

Table 3.25
U.S. Ports
Type of Operation

Port Region	Seaport		
	Landlord	Operate	Both
North Atlantic	5	1	2
South Atlantic	5	2	1
Gulf	6	4	5
North Pacific	1	5	3
South Pacific	7	2	1
Great Lakes	3	0	0
Total	27	14	12

Some U. S. port authorities are multipurpose agencies with additional responsibilities and activities including the responsibility for airports, bridges and tunnels, trade centers, marinas, and other transportation or marine commerce related activities. The range of these activities is summarized in Table 3.26.

Table 3.26
U.S. Port Authorities
Other Non-seaport Activities

Port Region	Airport			Bridge/Tunnel		
	Landlord	Operate	Both	Landlord	Operate	Both
North Atlantic	1	1	1	0	2	0
South Atlantic	2	0	0	0	0	0
Gulf	0	0	0	0	1	0
North Pacific	2	1	0	0	0	0
South Pacific	0	1	1	0	1	0
Great Lakes	0	1	0	0	0	0
Total	5	4	2	0	4	0

Port Region	Trade Center			Other		
	Landlord	Operate	Both	Landlord	Operate	Both
North Atlantic	1	1	1	1	0	0
South Atlantic	0	0	0	1	0	0
Gulf	1	0	0	1	0	1
North Pacific	2	0	0	1	2	0
South Pacific	1	0	0	1	0	2
Great Lakes	0	0	0	1	0	0
Total	5	1	1	6	2	3

PRICING STRATEGY AND MANAGEMENT PHILOSOPHY

Much has been written about pricing strategy, and there is probably a consensus that the following three strategies apply to the port industry:

Financial Approach
Set prices to recover fixed and variable costs and provide for a rate of return adequate to cover debt service and to provide funds for reinvestment in port facilities and equipment.

Economic Approach
Set prices to achieve a "break even" basis. This method is also known as marginal cost pricing.

Business Development Approach
Set prices to fit state and/or local economic goals. This approach generally requires some subsidy from the government, the taxpayers, and/or other port activities.

The financial approach is used by 51% of the responding ports when setting vessel charges. No North Atlantic ports and only 33% of the South Atlantic ports use this pricing strategy. The financial approach is used principally by the Gulf, North Pacific, and South Pacific ports with percentages of 54%, 83%, and 75% respectively.

Table 3.27
U.S. Ports
Pricing Strategy - Vessel Charges

Port Region	Fin.	Eco.	Bus. Dev.	Fin. & Eco.	Fin. & Bus. Dev.	Eco. & Bus. Dev.
North Atlantic	0	1	2	0	0	2
South Atlantic	3	2	3	1	0	0
Gulf	7	1	2	1	0	2
North Pacific	5	0	0	0	0	1
South Pacific	6	0	1	1	0	0
Great Lakes	1	0	1	0	0	0
Total	22	4	9	3	0	5

Fewer than 40% of the responding ports use the financial approach in setting cargo charges. A combination of strategies is used by 35% of the ports; 12% use the economic approach; and 14% use the business development approach. The financial approach to setting vessel charges is used primarily by the North Pacific (60%) and South Pacific (63%) ports.

Table 3.28
U.S. Ports
Pricing Strategy - Cargo Charges

Port Region	Fin.	Eco.	Bus. Dev.	Fin. & Eco.	Fin. & Bus. Dev.	Eco. & Bus. Dev.
North Atlantic	1	0	1	1	0	2
South Atlantic	3	2	1	2	1	0
Gulf	4	2	2	2	1	2
North Pacific	3	0	0	0	1	1
South Pacific	5	0	1	2	0	0
Great Lakes	1	1	1	0	0	0
Total	17	5	6	7	3	5

The financial approach is used by 57% of the ports to price leases and rentals, and an additional 30% use some combination of strategies which includes the financial approach. This is the predominant pricing strategy used for leases in the South Atlantic, Gulf, North Pacific, and South Pacific port regions.

Table 3.29
U.S. Ports
Pricing Strategy - Leases & Rentals

Port Region	Fin.	Eco.	Bus. Dev.	Fin. & Eco.	Fin. & Bus. Dev.	Eco. & Bus. Dev.
North Atlantic	2	0	0	1	2	0
South Atlantic	7	0	0	0	2	0
Gulf	7	1	2	2	0	1
North Pacific	3	0	0	0	3	0
South Pacific	5	0	1	2	0	0
Great Lakes	1	0	1	1	0	0
Total	25	1	4	6	7	1

Only seven ports responded to the survey question on pricing other port activities which, according to the responses, included foreign trade zones, marinas, shipyards, etc. The results are shown in Table 3.30.

Table 3.30
U.S. Ports
Pricing Strategy - Other

Port Region	Fin.	Eco.	Bus. Dev.	Fin. & Eco.	Fin. & Bus. Dev.	Eco. & Bus. Dev.
North Atlantic	0	0	0	0	0	0
South Atlantic	1	0	2	1	0	0
Gulf	1	0	0	0	0	1
North Pacific	0	0	0	0	0	1
South Pacific	0	0	0	0	0	0
Great Lakes	0	0	0	0	0	0
Total	2	0	2	1	0	2

In examining port pricing strategies it appears that over 50% of the U. S. ports take the financial approach and/or a combination of strategies which include the financial approach. However, when the U. S. ports management philosophies are examined, the responses indicate that only five ports of forty-seven responding ports, or 11%, exclusively try to maximize earnings. The five ports, along with the six ports that use a combination of philosophies which includes maximizing earnings, represent only 23% of the responding ports and 31% of those ports which specified their management philosophy. On the other hand, eleven ports (31%) try solely to maximize economic activity; and nineteen (53%) of the responding ports which specified their management philosophy include maximizing economic activity in their philosophy. Table 3.31 below is a summary of the responses by port region, and a more detailed summary is found in Appendix B, Table B-3.

Additional support for the conclusion that more ports are interested in maximizing economic activity than in maximizing earnings can also be found in Table 3.31. Fourteen of the responding ports reported they do not attempt to maximize earnings. This is double the seven ports which stated that they do not maximize economic activity.

Table 3.31
U.S. Ports
Port Management Philosophy

Port Region	Maximize						Combination of Two or More	
	Earnings		Market Share		Economic Activity			
	Yes	No	Yes	No	Yes	No	Yes	No
North Atlantic	0	2	0	1	0	0	5	0
South Atlantic	1	3	0	1	1	0	8	0
Gulf	3	4	0	7	4	2	8	4
North Pacific	0	2	0	3	3	1	3	1
South Pacific	1	2	0	2	0	3	7	2
Great Lakes	0	1	1	0	1	1	1	1
Total	5	14	1	14	9	7	32	8

A sample of the summarized port management philosophies included the following:

"Maximize economic activity and maintain self-sufficiency."

"We do not expect to be subsidized other than by general obligation debt service via ad valorem taxes. We are primarily interested in maximizing economic activity ...within a framework where we are able to show a modest operating profit through competitive industry pricing."

"The port's philosophy is to generate jobs in the region by providing facilities to attract tenants and cargo to the port."

"The port's mission is to develop marine commerce and to engage in economic development for the people of the county and the state. The port's profit motive is to earn sufficient revenues to maintain a prudent level of reserves and produce capital for future development."

"Attempt to price at a level that will at a minimum cover all costs except depreciation and provide sufficient cash flow to meet funded debt requirement. The desire to maximize earnings is always conditioned by the necessity to maximize economic activities within the parameters first stated."

Business development approach "does not relate to a competitive market place. Our pricing is driven by the local market and is not subsidized."

"The port's philosophy is a combination of maximizing earnings and economic activity. By maximizing earnings and cash flow, we have more resources to construct additional facilities to put more people to work."

"The primary goal of the port is to be self sufficient, ... As long as it remains so, its presence in the community will lower transportation costs and provide employment without burdening the local taxpayers."

"Maximize earnings and market share allowable based on competitive nature of the port industry."

"Market share and earnings have equal weight in determining optimum pricing for long-term revenue growth. It is felt (that) economic activity will be a natural result of a healthy, viable port."

"The port's mission is to support national, regional and local interests with respect to promotion of maritime related commerce, fisheries, recreation, industrial and commercial activities, and to do so on a self-supporting basis. Although the port is viewed by management as a business undertaking, its primary purpose is not to maximize profit, but to serve these interests."

"We try to maximize earnings but are very much aware of economic impact to the region. To the extent public funds as contributions are available, we may price at a rate which ignores contributed capital or at a 'no return' on contributed capital."

"Our pricing is targeted toward meeting our corporate mission of providing effective transportation access benefitting regional businesses and local economies."

"The port tries to maximize market share and economic activity while attaining earnings that are sufficient to cover operating and maintenance expenses, debt service, and provide funds for reinvestment in port facilities and equipment."

"The mission of the Port District is primarily to foster economic activity in the region; as such maximizing market share is a critical element. Maximizing earnings is of secondary value as compared to keeping cargo activity healthy within the region."

FINANCING PORT IMPROVEMENTS AND REHABILITATION

The fifty-six responding ports had outstanding long term debt exceeding $3.6 billion, with $658 million due within the next five years, $753 million due in five - ten years, and $2.2 billion due in ten years or longer. Table 3.32 shows in detail the survey results.

Table 3.32
U.S Ports
Long Term Financing - Outstanding Debt
(Thousands of Dollars)

Port Region	Long Term Debt Outstanding		Outstanding Debt Maturing in:			
	Yes	No	5 Years or less	5 - 10 Years	10 Years or Longer	Total
North Atlantic: GO Bonds			12,275	14,868	22,244	49,387
Revenue Bonds			38,095	34,735	51,575	124,405
Leases (COP)			2,194	842	213	3,249
Other			0	0	0	0
Total	5	3	52,564	50,445	74,032	177,041
South Atlantic: GO Bonds			58,105	70,066	208,949	337,120
Revenue Bonds			60,920	73,075	442,810	576,805
Leases (COP)			3,698	2,590	11,654	17.942
Other			23,328	5,141	1,820	30,289
Total	9	0	146,051	150,872	665,233	962,156
Gulf: GO Bonds			51,315	47,810	69,910	169,035
Revenue Bonds			73,475	108,995	174,127	356,597
Leases (COP)			1,247	0	0	1,247
Other			14,850	7,900	15,200	37,950
Total	15	1	140,887	164,705	259,237	564,829
North Pacific: GO Bonds			60,578	25,010	57,175	142,763
Revenue Bonds			148,187	201,404	456,716	806,307
Leases (COP)			880	0	0	880
Other			1,489	498	5,277	7,264
Total	9	0	211,134	226,912	519,168	957,214
South Pacific: GO Bonds			54,739	68,554	193,802	317,095
Revenue Bonds			44,156	89,623	504,097	637,876
Leases (COP)			917	0	0	917
Other			5,698	1,366	22,732	29,796
Total	9	1	105,510	159,543	720,631	985,684

Table 3.32
U.S Ports
Long Term Financing - Outstanding Debt
(Thousand of Dollars)

Port Region	Long Term Debt Outstanding		Outstanding Debt Maturing in:			
	Yes	No	5 Years or Less	5 - 10 Years	10 Years or Longer	Total
Great Lakes: GO Bonds			1,665	615	208	2,488
Revenue Bonds			345	0	9,251	9,866
Lease (COP)			0	0	0	0
Other			0	0	0	0
Total	3	1	2,010	615	9,729	12,354
Total: GO Bonds			238,678	226,922	552,288	1,017,888
Revenue Bonds			365,178	507,832	1,638,846	2,511,856
Lease (COP)			8,964	3,433	11,866	24,263
Other			45,366	14,905	45,030	105,301
Grand Total	50	6	658,186	753,092	2,248,030	3,659,308

The responding South Atlantic, North Pacific, and South Pacific ports account for approximately 80% of the outstanding long term debt with the ports in the above regions being responsible for 26%, 26%, and 27% respectively. The North Atlantic ports are responsible for only 5% of the outstanding debt, the Gulf 15%; and the responding Great Lakes ports are responsible for less than 1%.

Table 3.33 shows the relationship of general obligation bonds and revenue bonds to the total outstanding long term debt by port regions.

Table 3.33
U.S. Ports
Relation of General Obligation and Revenue Bonds to Outstanding Long Term Debt
1992

Port Region	Percentage of Outstanding Long Term Debt			
	G. O. Bonds	Revenue Bonds	Other	Total
North Atlantic	28	70	2	100
South Atlantic	35	60	5	100
Gulf	30	63	7	100
North Pacific	15	84	1	100
South Pacific	32	65	3	100
Great Lakes	20	80	0	100
Total	28	69	3	100

If one assumes that the $658 million in long term debt payable in the next five years is retired, and further assumes that the projected financing of capital expenditures with general obligation bonds and revenue bonds shown in Table 2.9 of the previous chapter is carried out, there would be outstanding public port long term debt of approximately $5.1 billion at the end of 1997, or an increase of 38.77% over the amount outstanding at the end of 1992.

During the sustained period of relatively high interest rates a number of ports used variable rate financing. Table 3.34 summarizes the use of variable rate financing by the responding ports.

Table 3.34
U.S. Ports
Use of Variable Rate Financing

Port Region	Have used Variable Rate Financing for Long Term Debt		Have Used Fixed Rate Debt to Refinance Variable Rate Debt	
	Yes	No	Yes	No
North Atlantic	3	4	2	3
South Atlantic	3	6	3	6
Gulf	5	11	1	14
North Pacific	4	5	4	4
South Pacific	2	8	2	8
Great Lakes	0	4	0	4
Total	17	38	12	39

As a result of the relatively low current long term interest rates on tax exempt bonds, a number of ports have elected to refund outstanding fixed rate and variable rate debt in recent years. At least one port is issuing a combination revenue/tax bond which pledges the payment of debt service from taxes if the revenues generated are not sufficient. Three West Coast ports are issuing tax exempt commercial paper, and two are using interest rate swaps. One responding port is involved in a public/private joint venture, and one port uses lease/purchase financing.

MAJOR PORT FINANCING PROBLEMS

As a part of the survey, the ports were asked to list the three most pressing problems facing the industry in terms of financing port development and expansion. A summary of the responses by major categories is found in Table 3.35.

Table 3.35
U. S. Ports
Major Port Financing Problems by Category

Major Problems	Number of Ports
Environment and Dredging	21
Competition for Capital Funds	19
Reduced Funding from Federal, State, and Local Government	16
Recovery of Capital Investment	16
Port Competition	13
State and Local Government Conflicts	7
Vessel Rationalization and Steamship Line Price Pressure	7
Excess Port Capacity	3
Tax Exempt Bond Financing	3
Transportation Access Problems	3
Land for Expansion	2
Other Land Use Problems	2
Other Miscellaneous	10

The detailed responses can be found in Appendix C.

PORT PLANNING

Certain questions were asked in the survey about port planning and the use of MARAD's port economic impact kit. The responses are shown in Table 3.36 below:

Table 3.36
U.S. Ports
Port Planning

Port Region	Use Port Economic Impact Kit		Strategic Plan		Five Year Development Plan		Five Year Financial Plan	
	Yes	No	Yes	No	Yes	No	Yes	No
North Atlantic	2	6	7	1	8	0	6	2
South Atlantic	2	6	8	0	8	0	8	0
Gulf	4	12	9	7	8	8	7	9
North Pacific	2	7	5	4	6	3	7	2
South Pacific	1	9	9	1	7	3	5	5
Great Lakes	2	2	3	1	2	2	2	2
Total	13	42	41	14	39	16	35	20

PORT COST ACCOUNTING

Thirty-nine U. S. ports have a cost accounting system, but only twenty-three ports allocate administrative and business development costs. Only nineteen ports had current estimated market values for their port physical properties.

PORT REVENUE ACCOUNTING

Certain questions were asked to determine the degree of consistency among the U. S. ports in accounting for certain income. The survey results are shown below:

Fifty-two ports agreed that port operating expenses are generally defined as the charges for the use of facilities and services which are charged against the vessel and the cargo and for the rental of space owned or controlled by the port. Only three ports disagreed.

Thirty-seven U. S. ports credit income from the lease of rail trackage, trackage fees, etc., to operating revenue; and three ports credit such income to other income.

Twenty-two ports credit income from trade center rents to operating revenue, and three ports credit such income to other income.

Seven ports credit taxes collected to operating revenue, and twenty ports credit such income to other income.

Six ports responded that they credit income from outside assistance, donations, grants, etc. to operating revenue; thirty-two advised they credited such income to other income; and three ports credit such income to contributed capital. Port accountants should insure that income from outside assistance and donations and grants be accounted for in accordance with generally accepted accounting principals for government enterprise funds.

RETURN ON INVESTMENT

Within the port industry constant reference is made to the phrase "return on investment". The survey included some questions designed to develop a standard definition for the industry. The responses to the questions are outlined below:

The ports were asked if their port measures return on investment on Total Assets using the formula: Income plus Interest Expense divided by Total Assets. Seventeen responded yes, and thirty-three responded no.

The ports were asked if their ports measure return on investment on Owner's Equity using the formula: Income divided by Owner's Equity. Six ports responded yes, and forty ports responded no.

The American Association of Port Authorities uses two ratios in measuring return on investment. One divides Net Income by Plant, Property and Equipment. The second divides Operating Income by Plant, Property, and Equipment. Thirty-nine ports responded that they approved of these two formulas, and seven responded no.

Twenty-eight U. S. ports track their annual return on investment, and twenty-seven do not.

Chapter 4

PORT FINANCING TRENDS OUTSIDE THE UNITED STATES

INTRODUCTION

Outside the United States the desire for ports to become more efficient, as well as self-sufficient, is intense due to the elimination of government funding and the lack of productivity by the politically powerful organized port labor forces. This investigation of privatization of ports is not unique. It is being considered whenever and wherever there are inefficiencies resulting in high operating costs as well as high capital costs.

The privatization of public utilities such as telephone, electric power, railroads, airlines, and airport services is either being considered or has been accomplished. Much of the impetus has come from the international lending institutions such as the World Bank, the International Development Bank and the Asian Development Bank, who are demanding some level of co-financing of major new port development.

The key stimulus to port privatization is the unwillingness of some national governments in developing countries to continue to subsidize costly, inefficient and unproductive port operations when such subsidies could be better applied to meeting other needs of their population. On the other hand, some national governments see port privatization and the increased revenues from the port system as a means for subsidizing activities of the national government in other areas, such as economic development and/or the providing of additional services to its citizens.

Edward Boatman-Guillon and Hernan Resenberg in their paper, *Ports in the Developing World*[1] described the ports of some developing countries as follows:

> At the risk of over simplification, the physical and operating systems developed in response to internal factors. Characteristically under the ownership and control of local interest, they shared the limitations and constraints of the national economy. Quite frequently, the sector was chronically short of capacity and equipment. By and large, under the control of a ministry or with a semiautonomous status, the ports were a reflection of public sector enterprise. Budgetary restraints, competition for resources with other governmental bodies, chronic shortages of foreign exchange, inadequate physical plants, unsatisfactory

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[1]see references

maintenance standards, cumbersome and burdensome procurement and tariff regulations were basic characteristics. Port management positions were staffed by appointees all too frequently without knowledge of port operations, and the formation of professional staff was hampered by the politicization of the appointment process and by a high rate of personal turnover. Over the decades, labor conquests for improved conditions and the politicization of labor management relations led to the creation of large, firmly entrenched, powerful port workers' organizations which in line with the perceived mission, tenaciously defended past conquests and attempted to expand the frontiers of remuneration, working conditions and benefits. As a part of the internal political interplay port unions wielded significant weight in national policies.

Due to the generally higher level of wages and salaries in the sector that evolved under this system, in a condition of surplus labor and subsistence wages in the general economy, port workers developed into a labor elite, controlling access to port employment and jealously guarding acquired privileges.

The overall consequences of this system were relatively inefficient, high cost port services. The entrenched interest of port labor acted to restrain technological innovation and resist changes, such as containerization. The containers were handled at a slower rate, without specialized facilities, and furthermore were infrequently permitted to leave the port unopened thereby negating one end of the savings from the innovation.

There has been some subsequent development of specialized container handling facilities, but productivity has been constrained, and costs are still high as a result of inadequate maintenance and repair procedures and over-manning of terminal activities both aboard the vessel and shoreside.

In recent years the U.S. ports in some regions have benefited from enough competition in the port labor market to gain increased efficiency and productivity in certain types of cargo handling which have produced lower overall unit cost for the ports and their users. Some of the productivity has resulted from joint labor-management training courses for specialized equipment operators. Other changes include reduced gang sizes for certain types of cargo and piece work by gang for other types of cargo. Most port labor leaders now recognize that providing port services is highly competitive; and that, all other things being equal, the most productive ports will handle the most cargo.

Most other countries, including some highly industrialized ones, have not realized the same results from collective bargaining. As a result major maritime labor reforms have been undertaken in the United Kingdom, Australia, New Zealand, and France.

Many of the countries considering privatization are now confronting these same problems of inflexible waterfront labor unions and are finding that privatization alone is not a solution. This has resulted in national policies which range from legislative disenfranchising of waterfront labor unions to mandatory buyout plans, many of which are financed by the international lending institutions.

Twenty-five years ago Walter Hedden, in *Mission Port Development*[2], discussed the various aspects of public port operations in developing countries and set out some guidelines for determining what specific port operations and services should continue to be performed by private contractors or by the newly organized national or regional port authorities. Now we find that the same type of review is being applied to the question of which public port functions should be handled by private contractors and the method of transferring a function to private parties.

Privatization is taking many different forms, including the categories listed below:

- Sale of shares. This method has been used very successfully in the United Kingdom.

- Sales of assets. This method involves the sale of assets through competitive bidding which is the method that is now being attempted in Columbia through the formation of regional port societies.

- Lease or concessions of terminals. This involves taking bids or direct negotiations for lease or concession of terminal areas but allows the authority to continue to retain title to the assets. This method is widely used in the United States and Canada.

- Licensing. This method contemplates licensing certain private functions such as stevedoring, towing, and piloting to qualified parties who in return for the license will make a payment which is generally a percentage of gross revenue to the authority.

- Lease of land for development by terminal operator. This contemplates the lease of land adjoining a deep water harbor. The terminal operator is then responsible for the

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[2]see references

total costs of the development of the infrastructure and its equipment.

- Management contracts. Privatization of certain specialized terminals, such as container terminals can be accomplished through a management contract with a private party which is based upon either a flat or a percentage fee for providing such services.

- Decentralization. This basically is the method that was used in Venezuela when the determination was made that the assets of the national port authority would be transferred to state authorities who would have the responsibility for the operation of such facilities and the cost of providing improvements thereto.

UNITED KINGDOM[3]

The ports in the UK can be divided into "public trust" ports, municipal ports, company ports, and wholly state-owned ports. Public trust ports are set up under an individual Act of Parliament and are administered by an autonomous board, usually comprising the port's Chief Executive and representatives from a variety of interested groups such as key port users, local business and the local authority, all of whom are appointed to the Board by the Secretary of State for Transport. There are currently 108 trust ports in existence around the UK. In many instances their boards are restricted as to what they are permitted to do within the port boundaries and with its land. Although some exceptions to the rule do exist, it is usual that the ports only undertake activities which are recognized as port activities, such as importing and exporting goods by sea, ensuring safety of navigation by providing necessary navigational aids within the port and maintaining adequate depth of channels and berths.

Municipal ports are those which are owned by local authorities and are more comparable in this respect with many ports found around the continent of Europe; port employees are strictly local authority employees. There are approximately 25 to 30 municipal ports around the UK.

Company ports include those which are privately owned, either as public limited companies, perhaps as a result of a management buy-out (MBO), or as subsidiaries to larger private companies. Furthermore, there may exist, operating within private, municipal and trust ports, other privately owned wharves and terminals. Currently the company ports account for approximately 70 percent

[3]see references

of the UK's cargo handling capacity.

In 1991 the Ports Bill was passed and became the Ports Act, which enabled trust ports with an annual turnover in excess of £5 million to be sold into private ownership, with the Government taking only 50 percent of the sale value. But privatization of publicly owned ports had occurred before the arrival of the Port Act. In 1983 the British Transport Docks Board was privatized and became Associated British Ports PLC, which comprised major ports such as Southhampton, Immingham and Hull, and a collection of smaller coastal and inland ports. Sealink and its port interests was sold off in 1984; and, furthermore, Bristol City Council sold a lease on Bristol's port to First Corporate Shipping in 1991.

Before the Ports Bill was introduced, both Tees and Hartlepool Port Authority and Clyde Port Authority were attempting to have their own private bills passed through Parliament to allow them to privatize. In 1992 Clyde Port Authority became Clydeport Ltd. after a successful management buy-out (MBO), but Tees and Hartlepool's port management were unsuccessful in their attempts to buy out their port from the Authority's Board. Instead, after much heated and strongly contested argument - locally, nationally and within Parliament - the port was sold to a consortium of companies with a port industry and investment company background.

Further port privatizations have followed in the course of 1992 with the successful MBO of Medway Ports Authority, the public flotation of Forth Ports Authority in Scotland, and the MBO of Tilbury, which has separated it from, and made it independent of, the Port of London Authority.

AUSTRALIA[4]

Port authorities in Australia fall into three basic categories, i.e., State Government Statutory Authorities, State Government Departments, and authorities with locally elected board members.

The majority of Australian port authorities, including all the capital city ports (with the exception of Adelaide and Hobart), are statutory authorities with appointed board members. State Government departments control a number of ports, including Adelaide and some regional bulk ports in several states. The Department of Marine and Harbors, for example, is responsible for all public ports in South Australia. The Tasmanian ports are controlled by port authorities with locally elected board members. These authorities have a relatively minor degree of influence imposed on them by the State Government.

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[4]see references

Over the past few years, most port authorities have been moving towards commercialization and corporatization. Ports have adopted commercial management policies, albeit with full Government ownership and some residual Government controls. Although there are some private ports in Australia, it is considered unlikely that current Government owned Australian ports will be privatized in the short/medium term.

Port authorities have in recent years undertaken significant reforms, involving restructuring and downsizing. Substantial progress has been made with significant efficiency improvements resulting. These improvements have reduced costs which have flowed into lower port prices. From 1988 to 1993, port authority employee numbers fell by 43.48 percent. Between 1987/88 and 1991/92, port authority charges fell by an average of 16.34 percent in real terms.

The move towards commercialization of activities and structures has raised a number of issues for Australian ports. A number of port authorities are now required to achieve a set rate(s) of return on their assets by their Government shareholders. The problem to be resolved is how port assets should be valued. Port authorities are participating in ongoing discussions with State Government Treasuries on this issue.

The Government Treasuries have combined to develop a common paper outlining asset valuation methods for all Government Business Enterprises (GBEs). The Treasuries, in the hope of increasing consistency in the reported returns of GBEs, have opted for a common method of valuation for all GBEs. This approach ignores the significant differences in purpose, type of assets, operating environment, etc. of different GBEs.

Furthermore, port authorities are concerned that the valuation methods proposed by Treasuries could overvalue port authority assets. Port authorities and other GBEs are often seen as revenue sources for cash-starved State Governments, and it is considered likely that Treasury asset valuation guidelines may attempt to overvalue port authority assets so as to ensure a higher financial return on assets which would of course lead to higher port charges.

Commercialization has meant that port authorities are required to be self funding. All capital expenditure is thus financed from surplus funds and borrowing. There are no cases in Australia of port authorities being given direct subsidies, either in the form of cash grants or loans at concessional interest rates. Some Governments stipulate in advance the amount to be paid each year by the port authorities in dividends, as they are regarded as an important source of revenue to Governments.

Port authority borrowing is subject to the approval of the

Australian Loan Council, a body established to limit the amount of public sector borrowing. State Governments (often Treasury) exert control over investment, evaluating proposed expenditures against various investment benchmarks, taking into account the availability of funds. In the allocation of borrowing approval between the various state agencies, a port authority may miss out on the opportunity to undertake sound commercial investment and development in its port.

Aside from these general controls on financing which apply to all Government enterprises, specific controls are exerted on a number of port authorities. For example, Governments may control price structures and levels, set target rates of return on assets, impose taxes and dividends and control investment and borrowing.

CANADA[5]

The Canadian port system stands institutionally in the middle, sharing certain similarities with those of both the United States and Latin America. As in Latin America, Canadian port authorities are subject to national government control and operate under charters or enactments by the Canadian Parliament. Many, however, like their U.S. counterparts, operate as landlords, leasing out facilities and operations to private enterprise, with a degree of autonomy from the national government.

In general, Canada's ports are organized into three distinct groupings. The fist are those affiliated with the Canada Ports Corporation, or Ports Canada. These include seven quasi autonomously managed "local port corporations" (Montreal, Vancouver, Prince Rupert, Saint John, Quebec, Halifax, and St. John's) and nine "divisional" ports which remain under the direct administrative control of Ports Canada. The second grouping consists of nine "harbor commissions" (Fraser River, North Fraser River, Port Alberni, Nanaimo, Hamilton, Thunder Bay, Toronto, Windsor and Oshawa), which though federally chartered, enjoy greater autonomy and a greater degree of local participation than is true of those affiliated with Ports Canada. The third group is comprised of more than 500 smaller "public harbors and ports" scattered across the country and is administered directly by the Canadian Coast Guard on behalf of the Minister of Transport.

Though there are significant structural differences between the three groups, there are also basic similarities. Most important, however, is the fact that they are creatures of federal authority, established by enactments of the Canadian Parliament, not the provinces or municipalities. The governing boards of Ports Canada and the local port corporations are all appointed by

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[5]see references

the federal Minister of Transport. Limits are placed on discretionary action even of the local port corporations, requiring them for example to receive the approval of Ports Canada for capital expenditures of $10 million or more. The harbor commissions are composed of both local and federally-appointed members, but in every case save Toronto and Hamilton the majority by law must be federal. Furthermore, under certain circumstances, the national government is empowered to revoke local port corporation or harbor commission charters. The enabling statutes themselves, of course, may be repealed or amended by Parliament. As in the United States, most of the larger Canadian port authorities function as landlords. Furthermore, approximately 10 percent of the country's waterborne commerce moves though facilities that are privately owned. In Canada, too, the private sector is typically the provider of port services such as towing, inland transportation, bunkering, pilots, ships stores, and so forth. Privatization of public ports, especially the Ports Canada group, was considered but then shelved by the government of Prime Minister Mulroney. Interestingly, a recent consultant's study has recommended that the Toronto Harbor Commission privatize its marine terminal.

At this juncture, it seems reasonable to conclude that port privatization is not a major priority in Canada. However, there continues to be an interest in further decentralization of Canada's port management.

CHILE[6]

In 1981 the Government of Chile adopted legislation that forced the National Port Authority, EMPORCHI, to give up its monopoly over landside cargo handling operations to private sector stevedoring companies. The same legislation also ended the monopoly powers of the unions that controlled dockside labor and opened employment to all workers meeting minimum age and physical standards. As a result of these reforms, productivity was raised substantially. This was the first approach to privatization, or commercialization, of port operations in Latin America.

VENEZUELA[7]

In 1991, Venezuela took steps to dissolve its national port agency, and the transfer of its functions to state government control was completed in 1992. This decentralization was accompanied by concessions being granted to private firms for

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[6]see references

[7]see references

operating port facilities. This action was also accompanied by a large reduction in the dock labor force, and substantial savings in costs are anticipated.

ARGENTINA[8]

In 1992 the National Assembly of Argentina passed the Ley de Puertos which basically results in the abolition of the National Port Agency just as soon as the ports under its jurisdiction are transferred to the various provinces. In November 1992, bids for the reconstruction and operation of six terminals at the Port of Buenos Aires were received from eight different consortiums, and it was then anticipated that the bids would be awarded in the first quarter of 1994.

In December, 1993, the Supreme Court of Argentina ruled that the emergency decrees issued by the President, which overrode or suspended many contract provisions, were constitutional and were necessary in order to reform a country with extreme economic problems. The number of stevedoring jobs at the port has dropped from 3,300 in June 1992, when the decree was issued, to about 1300.

BRAZIL

Nine months after passing a contested port reform law, Brazil is finally granting its first eight specialized private port terminals a right to handle third party cargoes. Four years after closing the inefficient federal port's holding company, Portobras, the government is now offering up its first ports for privatization. The transport minister has finally presented contracts to the first eight private terminals recognizing their right to handle cargoes other than those belonging to the terminal owner-operators. At the end of 1993 eighteen private port terminal contracts were being negotiated. Owner-operators of thirty-three specialized private port terminals have applied for the twenty-five year contracts.

The effect of these changes will be to allow highly efficient private terminals, using their own labor, to move cargoes other than those belonging to the owner-operator.

The transport ministry is in the process of selecting the next fifteen ports of a total of seventy-one coastal and river facilities to be offered for private operation. It is expected that the divestiture process may extend into 1995.

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[8]see references

URUGUAY

Uruguay's new privatization law became effective in September, 1992, when private stevedore services began in the nation's ports. There are now twenty-eight stevedore companies registered. Since preparation for privatization began in 1991, total employment with Uruguay's Administracion National de Puertos has been cut from 4,400 employees to 2,500.

As a result of privatization the total number of containers handled has been increased by about 30%, and productivity in bulk and other areas has been increased between 200% and 300% according to port officials.

COLOMBIA

In accordance with legislation passed in 1991, the national port authority in Colombia has been abolished, and the operation of the four major Colombian ports has been turned over to regional port societies. Under the terms of the legislation, the provision of services - such as stevedoring, terminal operations, piloting, and towing - had been reserved for private companies which have been awarded concessions through public bidding by the regional port authorities.

In order to insure that the interests of the public are served and that monopolistic prices are not set, Superintendent of Ports office has been established. This office has the responsibility for monitoring and supervising the tariffs of the regional port authority, private terminals and port services provided by private companies.

PANAMA

The government of Panama has initiated a program of fundamental reform of the Transisthmian Highway (Atlantic/Pacific Corridor) ports of Balboa, Bahia La Minas, Coco Solo North and Cristobal. At the present time general studies are being carried out taking into consideration the following areas:

a. Concession Development
b. Development of New Port Sites
c. Environmental Protection
d. Organization Development
e. Regulatory Legal Framework
f. Port Infrastructure
g. Tariff Analysis and Financial Evaluation

Upon the completion of these studies, the modernization program of the National Port Authority will be set in place to:

1. Achieve greater efficiency at the ports of Balboa and

Cristobal by granting concessions and permissions for cargo handling operations.

2. Attracting private investment for the development of new port installations.
3. Reorganizing the National Port Authority in accordance with the recommendations of the studies listed above.

MEXICO[9]

In August, 1993, the Mexican Government approved the sale of twenty-seven concessions worth approximately U.S. $190 million for the construction and operation of terminals, mostly bulk cargo handlers in various ports. During the same month it published an international tender offer for the privatization of dredging equipment and services.

In October, the first Integral Port Administration (IPA) was established in Puerto Madero on Mexico's Pacific Coast. In November, 1993, six more IPAs were established at the ports of Veracruz, Altamira and Tampico on the Gulf of Mexico, and Manzanillo, Lazaro Cardenas, and Guayamas on the Pacific.

International tender offers have been made for concessions to operate dedicated container terminals at Veracruz, Altamira, Lazaro Cardenas and Manzanillo. These developments have resulted from the decision by the President of the Republic of Mexico to make the privatization of state owned enterprises a major policy objective. The National Port Authority, Puertos Mexicanas, established in March, 1989, for the purposes of coordinating the construction, dredging, operation and administration of the commercial, industrial and tourist ports of Mexico, has now been abolished; and its functions have been assumed by the General Director of Ports and Merchant Marine, an agency within the Secretariat of Communications and Transport. The assets of Puertos Mexicanas and nine port administration bodies were assigned to the Ministry of Finance, which had previously been entrusted with the privatization of other state owned assets. The objectives of Mexico's present port policy are:

1. Redefinition of the government's role by eliminating the federal government in the administration and operation of ports.

2. Decentralization of port administration with a goal of having separate independent, financially self sufficient and competing ports.

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[9]see references

3. Private sector participation in all areas of port activity including management.

4. Deregulation

5. Elimination of market barriers which will allow free entry for both labor and capital. Closed shop union practices are to be eliminated.

The existing port infrastructure, including land and water areas belonging to the port enclosure, will remain in the public domain and only their use, development and exploitation will be subject to concession.

Foreign investment in ports is regulated by Mexican law. Regarding IPAs, foreign participation will be limited to 49%. However, foreign investors chartered as Mexican corporations will be allowed 100% participation in the operation of terminals, facilities and services.

Initially the equity of the IPAs will be fully underwritten by the federal government. Once they are in a financially sound position, the IPAs will be put up for sale to the private sector through an international tender offer. Even while fully owned by the federal government, IPAs will be managed in each case as an independent administrative bodies that will be able to establish policy and make decisions in all matters respecting port administration.

Simultaneously with the establishment of the IPAs the federal government will, as it is already doing, seek bids for the licensing of terminals, facilities, and services so as to expedite private participation. These and other existing licenses will be converted into the contracts with the IPAs once they are set up.

UNITED STATES

Many of the benefits of privatization have already been realized by U.S. ports who have pure landlord operations and those who perform both non-operating (landlord) and operating port functions. There appears to be no impetus to privatize those operations which can be performed profitably.

If financing of improvements becomes a problem, then a much greater participation of private terminal operators in financing new facilities may be required.

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2. American Association of Port Authorities, 1967

3. Andrew Traill, *Port Privatization and the Conditions for Change*, ICHCA

4. John K. Hurst, *Australian Port Financing*, The Association of Australian Ports and Marine Authorities, Inc., October, 1983.

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6. *AAPA Advisory*, American Association of Port Authorities, November 15, 1993.

Chapter 5

LEGISLATIVE ISSUES

INTRODUCTION

Federal legislative activity continues to have a major impact on the financing of U.S. public port facilities. This chapter includes a technical discussion of the impact of the Tax Reform Act of 1986 and the Water Resources Development Act of 1986 along with recent state legislation which has created a major controversy in one port region. There is also included a brief discussion of the status of seaport terminal conferences under the provisions of the Shipping Act of 1984 and its predecessors.

FINANCIAL PROBLEMS CONFRONTING PUBLIC PORT AUTHORITIES

A preponderance of public port authorities in the United States primarily view their marine terminal activities as generators of economic activities for the local communities and states they serve (see Chapter 3 for pricing strategy and management philosophy). Such activities in many port regions continue to enjoy public support through state and local government assistance, taxing authority, and/or cross subsidies from revenues of other authority activities such as airports, bridges, tunnels, etc.

Since the primary focus of many U.S. ports is to maximize economic activity, they do not adopt the financial approach to port pricing, nor do they maximize earnings. As a result they fail to take full advantage of existing laws which permit a rationalization of port operations and charges.

The Shipping Act of 1984 and its predecessors make no distinction between marine terminal operators which happen to be public agencies and those that are private corporations. In theory, rates charged by marine terminal operators should be compensable[1]. Because public port agencies primarily view the development and operation of marine terminal facilities as public projects undertaken to generate commerce and jobs for their area, there is a general impression that competing ports are reluctant to raise the issue concerning possible violations of the Shipping Act for the simple reason that most are now participating in similar practices. This competition has resulted in excess capacity and growing pressure on public port authorities to

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[1]see for example, In the Matter of Agreements between the city of Los Angeles and Japan Line, FMC Docket No. 68-26

further lower their rates to meet the demands of stevedores and carriers who are quick to exploit this trend[2].

A number of port ranges are now exploring the possibility of creating or using existing port conferences as a means to rationalize what could turn out to be destructive competition. The Shipping Act of 1984 permits the creation of conferences which would have the authority to set rates. The North Atlantic Ports recently created the North Atlantic Ports Conference which, pursuant to the creating agreement, has such authority. Similar authority exists with the California Association of Port Authorities, the North West Marine Terminal Association Inc., and the Virginia Port Authority (Terminal Operators Conference of Hampton Roads). The Florida ports may now be studying the creation of such a conference. These conferences are in addition to conferences representing the South Atlantic, Gulf ports and ports in Pacific Northwest. With the exception of the California Association of Port Authorities, which has made some modest attempts at setting rates, the other port conferences have been unsuccessful in reaching a level of trust or mutual interest which would support such an undertaking. Hence, while legislative devices exist for public port authorities to protect the return on their investments, they have been reluctant to take advantage of the existing laws.

DREDGING ISSUES

Various dredging and environmental issues have created a drain on the resources of port authorities, and they represent the most prevalent port financial problems of the U.S. port industry[3]. Although dredging is not a direct financial issue, in terms of specific cost to the public port authorities, the necessity of compliance with regulations[4] and agencies involved creates

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[2]see Table 3.35 (Chapter 3)

[3]see Table 3.35

[4]Main Legislation:
National Environmental Policy Act 1969
Clean Water Act 1987
Marine Protection, Research, and Sanctuaries Act 1972
River and Harbor and Flood Control Act 1970
Water Resources Development Acts
Coastal Zone Management Act 1972
Rivers and Harbors Act 1899
Endangered Species Act 1973
Fish and Wildlife Conservation Act 1980

enormous delays in obtaining approval for any projects into the navigable waters. This delay indirectly leads to additional outlay of port funds as a result of escalating cost during the permitting period. The passage of the Water Resources Development Act of 1986 dramatically changed the relationship that exists between the Federal government and public port authorities with regard to Channel Navigation Projects. The Water Resources Development Act requires, among other things, that a non-Federal interest, typically the local port authority, pays up to 35 percent of the total cost of the dredging project. These projects have become enormously expensive and in many cases, the local sponsor does not have the ability to recover its contribution to the total costs. In theory[5], the Act permits the non-Federal interest to levy port or harbor dues to recover the local share of the project cost. During the legislative process, however, certain restrictions were imposed[6] that severely limit the ability of the non-Federal interest to collect such dues. It appears that, since 1986 no Court has successfully imposed fees or dues to recover the local share of the costs of such projects, and such capital costs remain a drain on the financial resources of the agency.

The Project Cooperation Agreement, which must be entered into between the Federal government and the local sponsor as a condition to undertaking navigation projects, imposes certain obligations on the local sponsor. As an example, the local sponsor is required, among other things, to provide "all lands, easements, and rights of way, including suitable dredged material disposal areas" necessary for the completion of the project. In the past, the disposal of dredged material has been a relatively simple process involving the deposit of the material at sea. Because of current environmental concerns and improved scientific technology which is now testing material to parts per trillion, this method of dredged disposal, in many cases is being foreclosed, causing public port agencies to look to far more expensive alternatives. Considering the cost of property in many Metropolitan areas and the possible long term legal exposure of port agencies, it must be anticipated that future Federal navigation projects will impose a far greater financial burden on public port authorities than has been experienced in the past. In addition to the responsibility to provide disposal areas, the U.S. Army Corps of Engineers in many cases has also demanded that the local sponsor provide or pay the cost of providing all

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National Historic Preservation Acts 1966 & 1980
Marine Mammal Protection Act 1972

[5]Part 208 of WRDA

[6]Section 208(A)(3)

retaining dikes and embankments which may be required at the dredged material disposal areas. While the legal authority to make such a demand is questionable, it is clear that the Federal government as a matter of policy, is attempting to reallocate many of the costs of dredging projects that in the past have not been the responsibility of public port authorities.

User Fees

The User Fee legislation has been enacted by Congress in an effort to recover Federal expenditures for channel operations and maintenance. The Harbor Maintenance Fee (HMF) was established by the Water Resources Development Act of 1986[7] to defray up to 40 percent of the harbor maintenance costs by having the beneficiaries share the costs. Prior to the Act of 1986, all maintenance of authorized channels was Federally funded. However, budgetary constraints limited the amount of work actually performed. It was felt that this fee was an equitable way to ensure that needed channel maintenance was accomplished by creating a stable and reliable source of funding.

The HMF is an "ad valorem" fee equal to 0.125 percent (12.5 cents per $100 of cargo value) of a commercial cargo handled at a particular port. The fee became effective on April 1, 1987. It is uniform nation-wide and is paid by the exporter, importer, or shipper in the case of domestic cargo. The fees are collected by Customs and placed in the Harbor Maintenance Trust Fund. These funds can be used by the U.S. Army Corps of Engineers (Corps) to offset up to 100 percent of the Corps' eligible operations and maintenance costs associated with commercial navigation.

As part of the 1990 budget reconciliation process, the fee was increased from 0.04 percent to the present 0.125 percent[8] beginning on January 1, 1991. The Water Resources Development Act of 1990 contained a provision which increased the percentage of allowable Corps' harbor maintenance costs that could be funded from the Harbor Maintenance Trust Fund from the initial 40 percent to the current 100 percent. The net effect of these two changes means that maintenance dredging costs are fully funded by the users of U.S. ports.

The escalation of the fee had an impact, particularly on the northern U.S. ports that compete with the neighboring Canadian ones. As a result a Canadian diversion of cargo is increasingly being witnessed.

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[7]P.L.99-662

[8]S.2470

STATE AND LOCAL LEGISLATION
A NEW PROBLEM - THE CALIFORNIA CASE

A new problem has emerged by the 1992 enacted California budget legislation[9]. This legislation is anticipated to have severe financial impact on the Harbor Department and its operations, as well as the general economic health of the entire Southern California region. This Department is very concerned about how the transfer of "discretionary reserves" will affect its competitiveness, especially in relation to the ports of Long Beach, Los Angeles and other West Coast ports.

The legislation provides that a port that is located on tide or submerged lands within chartered cities may spend discretionary reserves for municipal services within those cities. This legislation defines "discretionary reserves" as the greater:

a) Twenty-five percent of the total current assets of a port less current liabilities, as reported in the most current independently audited annual financial statement of the port and made public before June 30, 1992, and each year thereafter.

b) Four million dollars ($4,000,000)

However, the bill provides these discretionary reserves should not exceed the amount of property tax revenues foregone by the chartered city in which the port is located. The legislation applies to the ports of San Francisco, Oakland, Los Angeles, Long Beach and San Diego. This legislation will remain in effect only until June 30, 1994, and is repealed as of January 1, 1995.

Although the legislation refers to the funds to be transferred as "discretionary reserves", the calculation used to determine this amount does not take into account indebtedness resulting from bond financing or the Harbor Department's Capital Development Program. As a result, the loss of any of the port's so-called cash reserves will result in the need to borrow earlier to replace those funds.

Impact on Port Operations and Legal Issues

The ports of Los Angeles, and to a lesser extent, of Long Beach effected the transfer payments. The rest of South California ports have not transferred any payments. The legal and operational implications are presented and, although regional, they may constitute a precursor of a national trend.

One of the immediate effects of this legislation was on the

[9]S.B.844

ports' bond rating. Standard & Poor placed the ports of Los Angeles, Long Beach, San Francisco and Oakland on Credit Watch, a special alert status that often is the precursor of a lowered credit-worthiness rating. A lower rating makes it more costly for the ports to borrow money for expansion and construction, because it warns investors of heightened credit, which in turn means higher interest rates. The large reduction in cash reserves resulting from transfers over a two-year period would require the ports to finance a larger portion of the Capital Development Program through borrowing and at an increased cost.

The bailout was engineered by Los Angeles-area lawmakers and resulted in having the autonomy of the ports being questioned. Specifically, constitutional questions have risen on the power of the legislature to act as it did. There is a serious question whether the Legislature has the power to direct that State Tideland Trust Funds be expended for general municipal purposes. Another significant legal issue which arises from the legislation is the possible violation of bond covenants. These covenants represent a contractual relationship between the ports as issuers of the bonds and the bond holders. The covenant expressly provides that Harbor funds will not be used for purposes other than commerce, navigation and fisheries. If this contractual relationship is abrogated by an action of any of the parties to transfer the funds to the City for general purposes, the commissioners, council members and other officers could be held liable to the bond holders. In addition, the bonds could be in technical default if a transfer of Harbor Revenue funds is made to the City's General Fund.

In conclusion, the 1992 Legislature acted despite the objections of the ports. This affects the ports' future ability to finance capital projects, raises doubts for their autonomy and brings into question how ports will operate in the future.

The California ports are now challenged with a new bill that would keep such transfers alive. And although California's relatively wealthy ports present an extreme example, States and port cities nationwide are using similar tactics to fund budget shortfalls with harbor revenues. These measures include payment from ports in lieu of taxes, leasehold taxes on port tenants and excise charges to ports for city services.

TAX-EXEMPT PORT FACILITY FINANCING

Modern port financing is accomplished primarily through the issuance of "exempt facility bonds"[10], the interest of which is exempt from Federal income taxation. Exempt facility bonds are "private activity bonds" which are "qualified", and thus their interest cannot be included for Federal income tax purposes in the gross income of recipients[11]. They are accorded tax-exempt treatment because Congress chose to define them as qualified bonds; however, interest on such bonds is taken into consideration for certain Federal tax purposes, i.e. the alternative minimum tax for individuals and corporations, the environmental tax on corporations, the foreign corporations branch profits tax, and income taxes on a portion of social security and railroad retirement benefits for individuals. Specifically - with regard to ports - docks, wharves and related storage and training facilities qualify as exempt facilities[12] subject to certain limitations described below.

Docks, wharves and related storage and training facilities are defined according to their customary meaning and use[13]. The definition of dock or wharf includes property functionally related or subordinate to exempt docks and wharves such as the structure along side which a vessel docks, on-loading and off-loading equipment for cargo and passengers (cranes and conveyors) and related storage, handling, office and passenger areas. The Treasury Department has held that they must be used primarily as "transportation" and not "manufacturing" facilities in order to qualify for tax-exempt financing[14]. To illustrate this distinction consider the following; dry docks used for construction are ineligible for tax-exempt financing, while dry docks used for maintenance and repair are eligible[15]. Related storage and training facilities must be directly related to the operation of the dock or wharf, and physically adjacent to it as well[16]. Examples of storage facilities (training facilities are not considered, because they are not practically relevant to port finance) which are "related to" docks and wharves include grain

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[10]26 U.S.C.A. §142

[11]26 U.S.C.A.§§103(b);142(e)

[12]25 U.S.C.A.§142(a)(2),(c)(1)

[13]PLR 8127121

[14]Rev.Rul.77-186

[15]Rev.Rul.77-233

[16]Treas.Reg.1.103-8(e)(3)

elevators, silos, warehouses, and oil and gas storage tanks. In limited circumstances (e.g., onshore storage facilities functionally related to an oil tanker docking terminal located some 30 miles offshore), the "adjacent to" requirement has been held to be met because the functionally related facility was located "as near as feasible" to the exempt facility[17]. An intermodal container transfer rail facility serving adjacent ports was also qualified as an exempt facility under this analysis[18] although it was not located at either port site.

In addition, the facility must be available for use by the public or by common carriers or charter carriers servicing members of the public. Additionally, a dock or wharf is deemed to meet the public use requirement if it is "part of a public port"[19]. Finally, the definition of dock or wharf is modified by the exclusion under the 1986 Tax Reform Act[20] of lodging; retail facilities (including food and beverage facilities) in excess of a size necessary to serve passengers and employees at the exempt facility; any retail facilities (other than parking) for passenger or the general public located outside the exempt terminal facility; any office building for individuals who are not employees of a governmental unit or of the operating authority for the exempt facility and any industrial park or manufacturing facility[21] which has been declared by Congress to be outside the definition of an exempt facility.

As more fully discussed below, most of the restrictions imposed on port facility financing under current law pre-date the 1986 Act, e.g., the change from 90 percent to 95 percent in the required percentage of net proceeds which must be used for the exempt facility itself[22]. The changes have left issuers with fewer dollars to apply to non-qualifying expenditures. Indeed, when port financing is considered in isolation, the single provision of the 1986 Act noted above had little practical effect, instead reserving its most significant impact to the area of airport financing. Nevertheless, the 1986 Act did nothing to make port financing easier.

Generally, issuers of port facility bonds must comply with the

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[17]Rev.Run.79-385

[18]PLR 8311049

[19]PLR 7823038

[20]Pub.L.99-514

[21]26 U.S.C.A.§142(c)(2)

[22]Pub.L.98-369(1984)

following provisions to qualify for tax-exempt treatment under the rules applicable to "exempt facility" financing:

1. the facility must be governmentally-owned, although leasing of the facility to a non-governmental entity is permitted under a safe harbor rule, so long as:

   (i) the entity irrevocably elects not to claim depreciation or an investment credit with respect to the facility

   (ii) the lease term does not exceed 80 percent of the reasonable expected economic life of the facility, and

   (iii) the entity has no option to purchase the facility at the end of the lease term other than at fair market value (as of the time such option is exercised)[23]

2. office space and/or office buildings are not qualified for tax-exempt financing unless they fall within the "functionally-related facility" category referenced above, and, as noted above, unless they are "physically adjacent" to it or "part of a public port". As a result, the following are excluded from the definition of functionally related facility:
   (i) office buildings for individuals other than employees of either the governmental unit or the operating authority for the exempt facility.
   (ii) office space within a facility which does not have a sufficient nexus to the actual operation of the facility[24]

3. 95 percent or more of the net proceeds of the bonds (original proceeds less amounts deposited into a 4R fund) must be used to finance capital costs of the exempt facility, which leaves only 5 percent that may be allocated to non-conforming uses. Issuance costs, which are permitted to be as high as 2 percent of the net proceeds, must be charged against this 5 percent figure as well[25].

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[23]26 U.S.C.A.§142(b)(1)

[24]See Treas.Reg 1.103-8(e)(2)(c) and 26 U.S.C.A.§142(b)(2)

[25]26 U.S.C.A. §142(b)(2)

4. the bonds must be publicly approved[26]

5. the weighted average maturity of the bonds cannot exceed 120 percent of the reasonably expected economic life of the facility[27]

6. no more than 25 percent of the net proceeds of the bond may be used to acquire land or an interest therein (note: special rules apply with respect to the acquisition of "existing property": unless rehabilitation expenditures have been incurred out of the net proceeds of the issue in an amount equal to or exceeding 15 percent of the cost of acquisition, the "first use" of such property must be pursuant to the acquisition for the acquired property to qualify for tax-exempt financing)[28].

The American Association of Port Authorities supports the following changes which would materially enhance the ability of public port authorities to finance the additional facilities outlined in Table 2.7.

1. **establish a list of "public activities"(to include port financing) that could be financed with "public activity" bonds, a new category of bonds treated as governmental, not private activity bonds.**

2. **expand the definition of functionally related facilities to include rail and other transportation-related facilities necessary for the movement of cargo and/or passengers.**

3. **increase the annual issuance limit for arbitrage rebate exemption from $5 million to $10 million and increase the annual issuance limit for bank qualified tax exempt bonds from $10 to $25 million.**

4. **restore the 90 percent rule regarding the use of net proceeds.**

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[26]26 U.S.C.A.§147

[27]26 U.S.C.A.§147(b)

[28]26 U.S.C.A.§147(c)

Chapter 6

INTERNATIONAL TRADE CLIMATE

INTRODUCTION

International trade has become increasingly important as exports and imports are now equal to about one quarter of our Gross Domestic Product (GDP). The United States ports and harbors are essential to our national competitiveness in world trade. About 95 percent of all U.S. foreign trade is waterborne through U.S. ports.

Expansion of waterborne commerce, containerization and intermodalism, globalization of the economy, improvements in vessel technology along with automation in information and communication systems will continue to impact the U.S. ports. However, tighter fiscal budgets, environmental awareness and heightened public involvement will increasingly challenge the U.S. port industry. Strategic planning will be critical under these tensions as well as with a U.S. port system which competes among itself and with foreign ports. In this chapter a forecast of the U.S. foreign trade will be presented.

U.S. INTERNATIONAL WATERBORNE TRADE

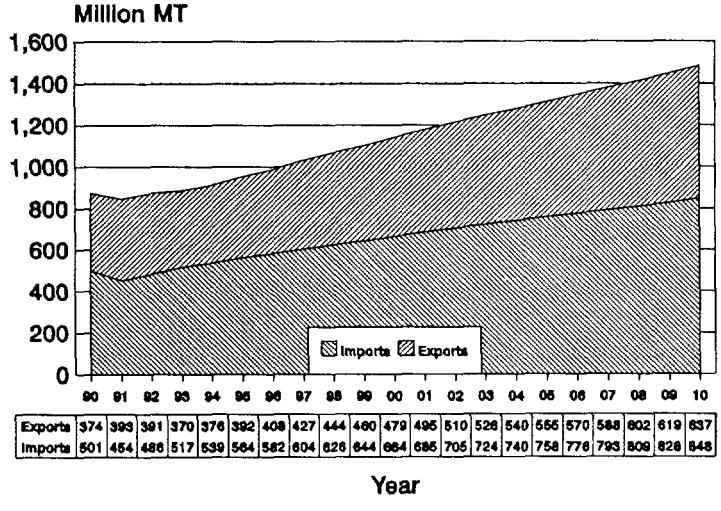
There has been an ever growing consensus with regard to the increasing importance of world trade to the economic well-being of the United States. The U.S. international waterborne trade is pivotal in the maritime industry. Most projections of waterborne commerce are static estimates of dynamic events. Although fluctuations are common on a yearly basis, forecasts are most important in indicating general trends and capacity demands.

Figures 6.1 and 6.2 present the volume and value of waterborne international trade for the period 1990-2010 (forecasts are projected from 1993-2010). It is expected that the value of imports and exports will increase from $454 billion in 1990 to $1.6 trillion in 2010. In terms of volume the 875 million metric tons (MT) recorded in 1990 is expected to grow to 1.5 billion MT in 2010.

Since 1986 trade in manufactured goods started to dominate the total world trade. The increasing integration of markets, which is fostered by the shift towards outsourcing for manufacturing production for lower value manufactured goods, helped propel this growth in trade.

Strong growth in manufactured goods, capital, and consumer goods is forecast through 2000. The U.S. exports of intermediate manufactured goods will also increase as Asian countries develop.

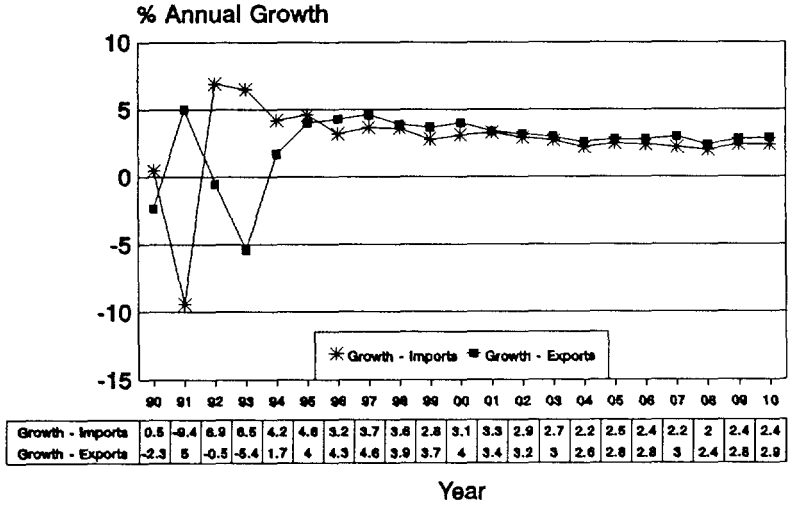
Total Imports and Exports
1990 - 2010



Source: DRI/Mercer World Sea Trade Service Forecast

Figure 6.1

Total Volume of Imports and Exports
1990 - 2010



Source: DRI/Mercer World Sea Trade Service Forecast

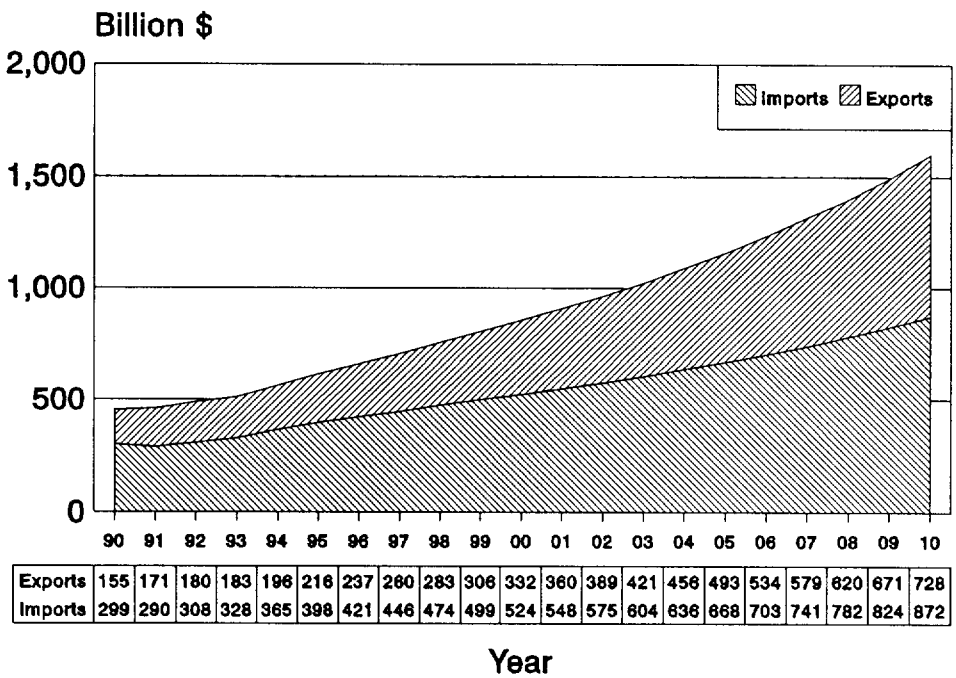
Figure 6.1a

In Figures 6.1a and 6.2a, the expected annual growth in the volume of waterborne trade averages at 2.5 percent. The average

annual growth of the value of trade, for the same period, is 7.5 percent for the exports and 5.6 percent for the imports. The value of exports will exceed that of imports as the U.S. is becoming export driven. As a result, a net trade surplus is forecasted starting in the late 1990's.

The recessions of 1983 and 1991 are clearly marked in the graphs showing plunged consumers' spending in imports (Figures 6.1, 6.1a, 6.4 and 6.4a).

Value of U.S. Seaborne Imports and Exports
1990 - 2010

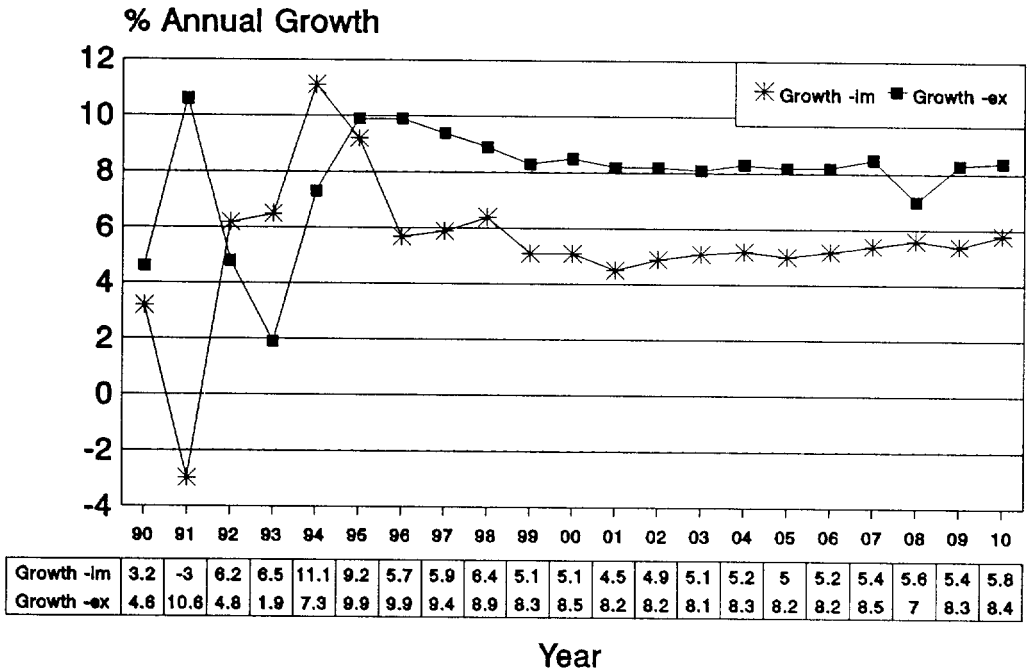


	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10
Exports	155	171	180	183	196	216	237	260	283	306	332	360	389	421	456	493	534	579	620	671	728
Imports	299	290	308	328	365	398	421	446	474	499	524	548	575	604	636	668	703	741	782	824	872

Source: DRI/Mercer World Sea Trade Service Forecast

Figure 6.2

Value of U.S. Seaborne Imports and Exports
1990 - 2010



	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10
Growth -im	3.2	-3	6.2	6.5	11.1	9.2	5.7	5.9	6.4	5.1	5.1	4.5	4.9	5.1	5.2	5	5.2	5.4	5.6	5.4	5.8
Growth -ex	4.6	10.6	4.8	1.9	7.3	9.9	9.9	9.4	8.9	8.3	8.5	8.2	8.2	8.1	8.3	8.2	8.2	8.5	7	8.3	8.4

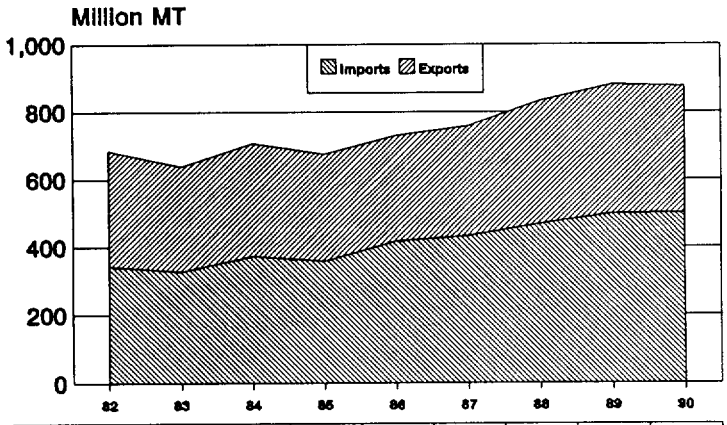
Source: DRI/Mercer World Sea Trade Service Forecast

Figure 6.2a

The following Figures, 6.3 and 6.4, depict the volume and value of U.S. waterborne international trade for the period 1982-1990. The volume of imports averaged 413 million MT for this period, whereas the exports averaged 340 million MT. In terms of value, the imports averaged $220 billion, twice as much as the value of exports at $110 billion.

Figures 6.3a and 6.4a present the annual growth for the past decade 1982-1990. In terms of volume this period also shows an increased averaged annual growth of imports at 4.4 percent compared to 1.3 percent for exports. The annual growth of value of the imports was 11.5 percent, almost double that of exports, at 6 percent.

Total Imports and Exports
1982 - 1990



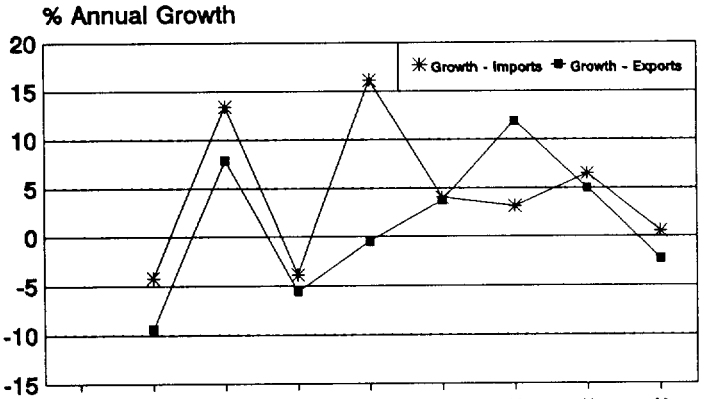
	82	83	84	85	86	87	88	89	90
Exports	342	310	335	316	314	326	365	383	374
Imports	343	329	373	359	416	433	468	499	501

Year

Source: DRI/Mercer World Sea Trade Forecast

Figure 6.3

Total Volume of Imports and Exports
1982 - 1990



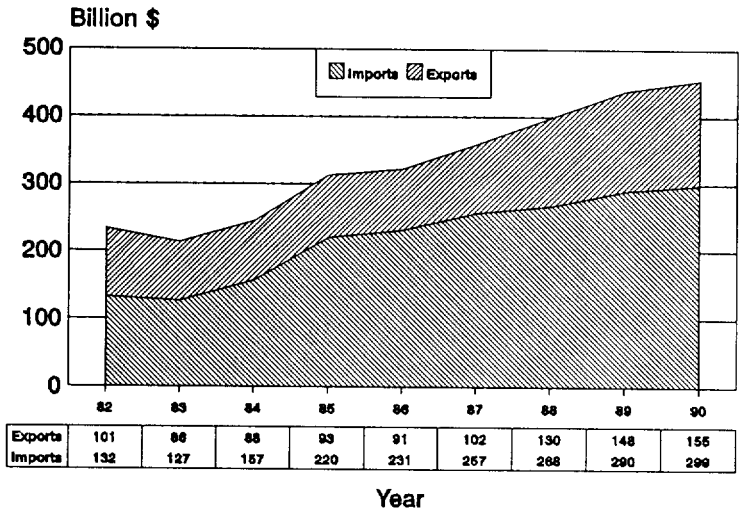
	82	83	84	85	86	87	88	89	90
Growth - Imports		-4.2	13.4	-3.9	16.1	4	3.1	6.5	0.5
Growth - Exports		-9.4	7.9	-5.6	-0.5	3.7	11.9	5	-2.3

Year

Source: DRI/Mercer World Sea Trade Forecast

Figure 6.3a

Value of U.S. Seaborne Imports and Exports
1982 - 1990

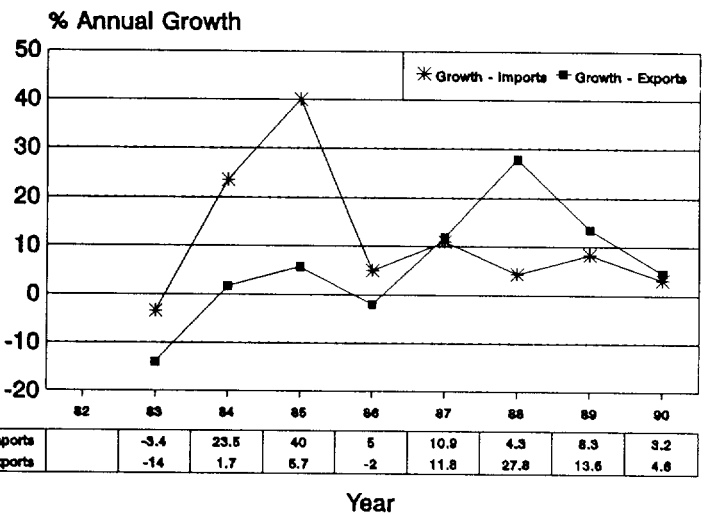


	82	83	84	85	86	87	88	89	90
Exports	101	86	88	93	91	102	130	148	155
Imports	132	127	157	220	231	257	268	290	299

Source: DRI/Mercer World Sea Trade Forecast

Figure 6.4

Value of U.S. Seaborne Imports and Exports
1982 - 1990



	82	83	84	85	86	87	88	89	90
Growth - Imports		-3.4	23.5	40	5	10.9	4.3	8.3	3.2
Growth - Exports		-14	1.7	5.7	-2	11.8	27.8	13.6	4.6

Source: DRI/Mercer World Sea Trade Forecast

Figure 6.4a

CONTAINERIZED vs NON-CONTAINERIZED CARGO

The volume of containerized cargo moved in 1992 amounted to 117 million MT. This comprised 13.5 percent of the total foreign waterborne commerce transported in 1992. Figure 6.5 presents a detailed breakdown between imports and exports as well as with liquid bulk (tanker) and other (dry bulk, general cargo, neobulk, etc).

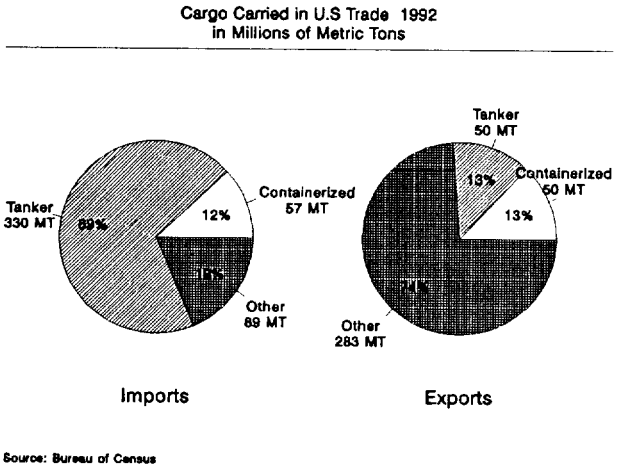


Figure 6.5

The containerized cargo is a high value waterborne cargo, comprising 65 percent of the total worth of foreign commerce in 1992. Figure 6.6 depicts a detailed breakdown between the value of containerized and non-containerized cargoes in import and export waterborne trade.

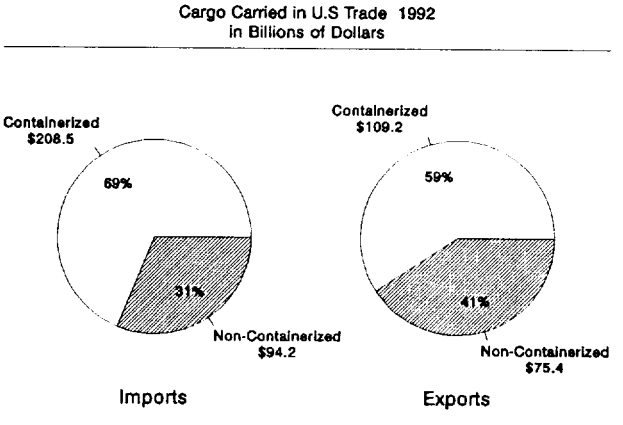
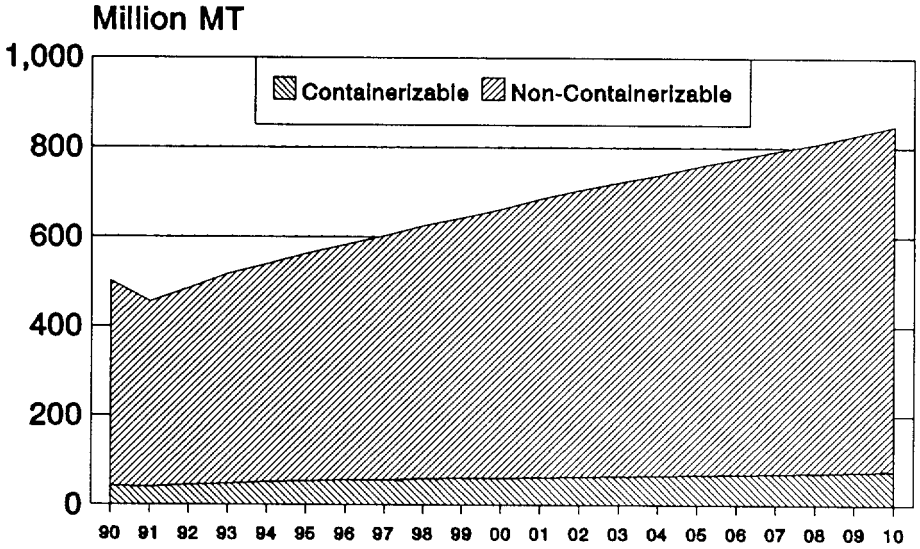


Figure 6.6

The following figures recap the World Sea Trade Service (WSTS)[2] forecasts in containerizable and non-containerizable cargos in the 1990's and the following decade. WSTS uses a set of allocation factors to categorize trade into liner, tanker, tramp and further allocations of trade on a commodity by commodity basis.

Imports - Containerizable and Non-Containerizable Cargo
1990 - 2010



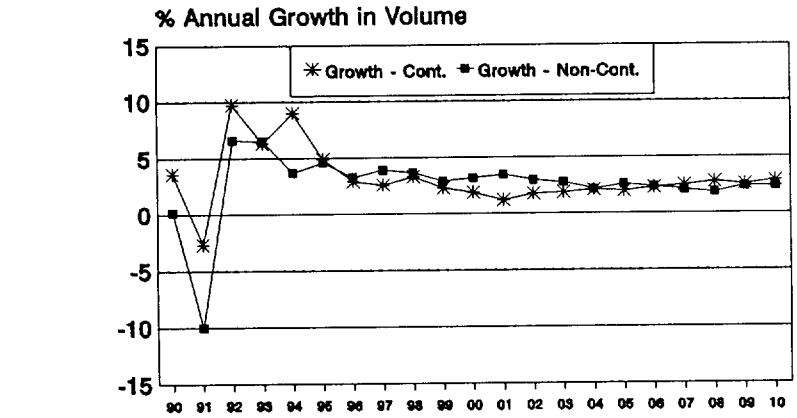
	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10
Non-Containerizable	460	414	441	470	488	510	527	547	567	583	602	623	642	659	674	691	708	723	736	754	772
Containerizable	41	40	44	47	51	53	55	56	58	60	61	62	63	64	65	67	68	70	72	74	76

Source: DRI/Mercer World Sea Trade Service Forecast

Figure 6.7

Figures 6.7 and 6.8 present the volume and value of containerizable and non-containerizable cargoes from 1990 to 2010 and Figures 6.7a and 6.8a recap the annual growth of volume and value for the same period.

Imports - Containerizable and Non-Containerizable Cargo
1990 - 2010



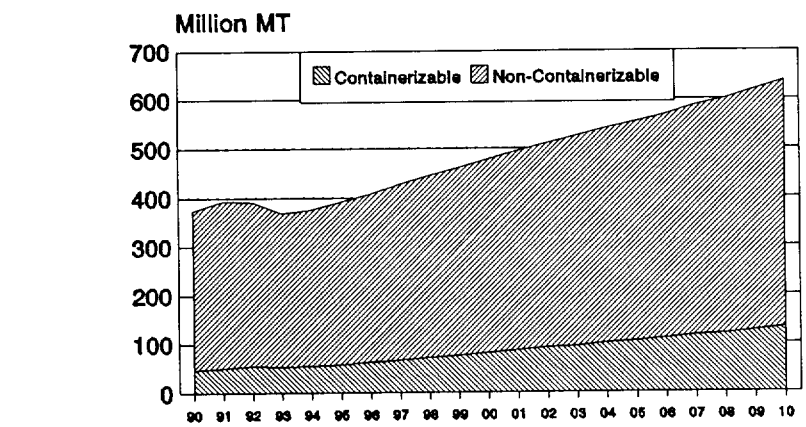
	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10
Growth - Cont.	3.6	-2.7	9.7	6.3	9	4.9	2.9	2.6	3.3	2.3	1.9	1.2	1.8	1.9	2.1	2	2.3	2.5	2.6	2.6	2.9
Growth - Non-Cont.	0.2	-10	6.6	6.5	3.7	4.6	3.3	3.9	3.7	2.9	3.2	3.5	3	2.8	2.2	2.6	2.4	2.1	1.9	2.4	2.4

Year

Source: DRI/Mercer World Sea Trade Service Forecast

Figure 6.7a

Exports - Containerizable and Non-Containerizable Cargo
1990 - 2010



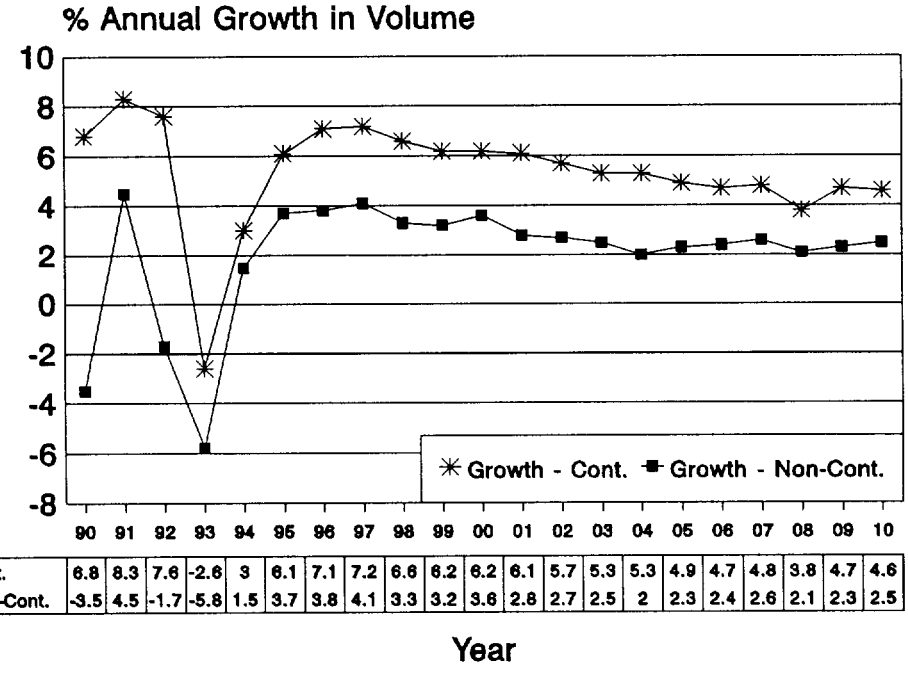
	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10
Non-Containerizable	327	342	336	316	321	333	345	360	372	384	397	409	419	430	439	449	459	471	481	492	505
Containerizable	47	51	55	53	55	58	62	67	72	76	81	86	91	95	101	105	110	116	120	126	132

Year

Source: DRI/Mercer World Sea Trade Service Forecast

Figure 6.8

Exports - Containerizable and Non-Containerizable Cargo
1990 - 2010



	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10
Growth - Cont.	6.8	8.3	7.6	-2.6	3	6.1	7.1	7.2	6.6	6.2	6.2	6.1	5.7	5.3	5.3	4.9	4.7	4.8	3.8	4.7	4.6
Growth - Non-Cont.	-3.5	4.5	-1.7	-5.8	1.5	3.7	3.8	4.1	3.3	3.2	3.6	2.8	2.7	2.5	2	2.3	2.4	2.6	2.1	2.3	2.5

Source: DRI/Mercer World Sea Trade Service Forecast

Figure 6.8a

The growth of containerizable cargo is stronger for the exports in this period. In terms of annual growth there is a leveling off in 1997 (Figure 6.8a). This substantiates Drewry's[1] report which point out that as more container trades move into maturity, continued and uninterrupted global growth in containerization will become unsustainable. For a quarter century, containerization has enjoyed uninterrupted growth, in part by taking share from traditional forms of cargo handling. As containerization's share of general cargo is reaching its logical limit, it should naturally find a point of equilibrium around which it would stabilize. As a result, global and regional economic growth will ultimately become the sole driving force behind container volumes.

In conclusion, and in accord with the outlook from WSTS[2], as the decade proceeds we should expect a slower growth rate in world trade. Despite the fact that there is significant room for expansion in consumer demand in the fast developing regions of

the world (in Asia and in recovering Latin America), the real trade growth that may be expected is less over time. This is a natural process that arises out of increased world specialization. In the earliest stages, when wages are relatively low, specialization can significantly improve wealth within the economy. As wages increase (a natural process of economic development), opportunities for specialization decrease. The net result is that the marginal contribution coming from trade declines over time. As the world becomes more integrated, world trade will move toward the average growth rate for real output in general.

Despite the world outlook, the U.S. container and domestic intermodal market is expected to continue to grow. New opportunities with the passage of NAFTA and the developing South America trade as well as expansion of intermodalism in domestic markets have emerged.

In terms of dry cargo seaborne trade, there is a strong correlation with world economic activity, resulting in dry cargo trade closely following the performance of world GDP. This seems logical due to the composition of dry bulk trade, primarily the raw materials for industrial production. However, in terms of liquid bulk commodities, the U.S. is increasingly dependent on foreign crude imports as the domestic crude output is falling. Petroleum and its products imports reached 327 million metric tons (MT) in 1990 and accounted for 66 percent of all U.S. oceanborne foreign trade imports.

[1] Drewry Shipping Consultants Ltd; see references
[2] DRI/Mercer World Sea Trade Service

Chapter 7

DEVELOPMENTS IMPACTING THE U.S. PORTS

INTRODUCTION

There has been a growing realization pertaining to the interdependence of the U.S. and the world economies. To this end there is also an uncertainty with regard to size and character of the future world economy, the nature of future oceanborne transportation into and out of the U.S. ports and the future mix of commodities that the nation will export and import.

In this climate the nation's ports are straining to build and enhance their intermodal capabilities as shippers, importers, and exporters become ever more oriented to intermodal transportation. U.S. ports are evolving in areas of equipment technology, information and communication systems, services and intermodalism. The general belief in the maritime industry is that containerization has spurred the impressive technological innovations of the recent years.

Containerization in the U.S. ports has contributed to a significant reduction of vessel in-port time as this remains the primary objective of shipping companies and shippers. Technological innovations have evolved for the most efficient interchange of cargo from the waterside to dock and landside distribution. The goal is to increase productivity, efficiency, expedite intermodal interchange, and reduce handling costs. Terminals are challenged to provide high-throughput in a timely and cost-effective way.

The expansion of intermodalism is linked with the innovation of double-stack containers in rail cars. Double-stack rail cars are lighter and carry the greatest number of revenue loads for a given train length. This results in lower fuel consumption and labor costs. Increased competition has forced innovations such as higher capacity dual-hoist dock side container cranes and other innovative equipment installed to increase savings and profits.

U.S. unified truck/rail partnerships have further facilitated and expanded intermodal transportation for both domestic and international trade.

The ultimate trend and goal lies in optimizing flow of freight transportation and service. Shippers' acceptance is of paramount importance as well as investment in terminals, technology and service quality.

CONTAINERSHIPS

Presently, fourth and fifth generation containerships are operating (figure 7.1).

Figure 7.1
Containership Evolution Capacity

Class of Ship	4GCV	5GCV
Generation	Fourth	Fifth
Year in service	1988/89	1994
Length Overall	273M	290M - 320M
Beam	39M	40M -47M
Draft	11M	11M
Approximate DWT	60,000	70,000
Maximum Capacity in TEU	3,900	4,900
TEU per Unit (Average) (Depends on Trade)	1.7	1.7
Maximum Capacity in Units	2,294	2,882

Source: Vickerman, Zachary, Miller (1993)

The long life expectancy of containership is an added advantage to the industry. The quality of the steel has steadily improved, and container vessels have their holds coated reducing corrosion and avoiding exposure to extreme wear and tear. Container vessels built in the 1990's are expected to be economical beyond 25 to 30 years of employment.

The industry focused on economies of scale is experimenting with the idea of ever bigger containerships. The question that has surfaced since operators started to abandon the concept of vessels able to transit the Panama Canal is just how large vessels will become. The limiting factor for vessels of 6,000 - 8,000 TEU's is the port. It is clear that many ports would not be available to very large container vessels unless considerable money is spent on extensive dredging of existing container facilities or adopting other deep-water facilities. However, less than ten years ago the concept of a 4,000-TEU containership was considered unrealistic, and today is almost a prerequisite for certain major trade routes.

The current new fleet of around 4,400 TEU's will probably not need replacing until the year 2010 or 2015, and this type of

vessel will probably continue to be built for the next ten years or so.
It thus becomes clear that future vessel design will be restricted by channel depths, and consequently, that the vessels cannot be built without joint planning. Since the number of ports requiring coordination will be very limited, the shift to 8,000 TEU vessels may take some time.

Lloyd Register's view is that in theory container vessels could be twice as large as those in current use. However, they would probably be limited by port draft restrictions, and unless new loading and unloading equipment were developed, these processes would probable become cost-prohibitive.

MAJOR DEVELOPMENTS

A major catalyst for higher productivity has been computerized control of facilities to increase the speed of container handling mechanisms, provide automated equipment identification and control yard traffic.

Improvements in computerization of cargo-handling operations are continuing to increase terminal throughput. Systems are being developed that use ultrasonic methods to determine optimum work paths for equipment and machinery. Other computer systems will provide complete inventory control as with the development of port community systems to automate the U.S. Customs Service and to create a single national system to process its commercial transactions and improve its document collection processes.

As shown from the public port capital expenditures, a significant amount of investment went to rehabilitation of general cargo terminals because of the intense capital investments required for container operations. General cargo facilities are modernized with new automated handling equipment. The primary goal is higher productivity and maximizing efficiency. New design general cargo ships built with square wide hatches and equipped with enhanced handling gear increase productivity and lower labor costs.

Similarly, bulk terminal facilities are evolving in speed, capacity, and automation by developing self-unloading cargo systems and automated handling systems.

Cargo-carrying Ro-Ros of large size are also growing as a percentage of the world fleet, as they are flexible vessels (many carry containers), able to load and unload in a great variety of ports and able to carry cargoes too large or awkward for packing into containers.

CONTAINERIZATION/INTERMODALISM

Although U.S. international trade appears to be growing at a slower pace during the present and next decade than in the 1980's, containerization remains the dominant trend.

Intermodalism has been in existence for the longest time, but it expanded dramatically in the 1980's. New cellular containership designs came into the market and along with the development of double-stack trains and other technological innovations give intermodalism new dimensions. Intermodalism, through the seamless movement of cargo through different modes of transportation, by use of new types of equipment, evolving technology and computer information systems, is impacting the port beyond its conventional geographical definitions.

The driving force behind intermodalism is the need to move containers seamlessly, faster and more economically, with higher quality of service, and the ability to track those containers for just-in-time delivery.

Containerships, because of their much higher productivity as compared to other general cargo ships, are displacing older general cargo vessels, and their productivity appears to increase with size.

In the 1990's most liner trade is containerized. Containerization is expected to grow, and there are trends for increasing tramp container trade. However, the latter will likely fall either under liner or near shore trade. For the U.S. ports NAFTA opens new opportunities for expansion.

Containerized cargo is primarily composed of manufactured goods. Recently the world started experiencing a movement of the manufacturing base further Southward and Westward through the Asian Region. This may result in a reverse containership movement through the Suez Canal as transit time gets shorter to reach the U.S. East coast ports. If this trend continues the expected growth in the traditional eastbound Trans-Pacific trade may be incremental.

Studies already have shown that North American container volume grew by 42% between 1984 and 1991 to 16.6 million TEU's, with further limited growth in 1992. During that period, ports in the South Atlantic recorded "dynamic growth in line with the rapid expansion in the regional economy".

The Administration's Maritime Security Program is a revitalization program designed to maintain a modern American merchant fleet, ensure continuing American presence in the transportation of the Nation's vast international commerce, and provide adequate sealift for national emergencies. Under this new

program, assistance will be provided to ship operators to maintain a U.S. flag fleet as well as the intermodal capacity and door-to-door service capability in order to respond in time of national emergency.

VESSEL SHARING AGREEMENTS (VSA) and ROUND-THE-WORLD (RTW) SERVICE

VSA are multi-year and multi-ocean carrier partnerships as opposed to an ad hoc function. The sharing is limited to vessel space and terminals and is independent of marketing and equity investment. Liner shipping companies have also started sharing containers.

Strategic partnerships will continue to evolve as carriers seek to leverage scale and service factors. Partnerships have been in the maritime industry for a long time, although the new agreements have been negotiated during the last four years. Virtually all major container carrier partnerships have changed significantly, as operators seek to improve service and avoid the risk of aggressive expansion. In 1992, the top 20 carriers had a 42 percent share of global capacity. This share is likely to increase to about 45 percent by the year 2000.

VSA are a new trend introduced to the very dynamic state of the maritime industry. The VSA focus on larger vessels, and since these vessels are also the newest, the smaller and older ones are forced out of business or into other trade routes. Also, VSA are resulting in calls at fewer ports, indicating that carriers will seek geographic-specific load centers. Contrary to conference agreements which are regressive to the industry, VSA appear to maximize capacity and operations without interfering with price mechanisms.

Along with the VSA, the Round-The-World (RTW) Services are gaining market share. Usually the later-generation containerships are entering RTW service in attempts by large liner companies to retain and enlarge their share of markets. However, in 1992 two of the three main trade routes generated deficits affecting the financial performance of the RTW operators over normal end-to-end services. In general, RTW Services offer container balance and administrative economies of scale with added potential to the profitability of a standard RTW Service compared to the end-to-end route.

FURTHER DEVELOPMENTS

The present climate shows a trend in building partnerships and joint ventures within and with other sectors to meet societal needs without adding transportation demand. There is an ever

increased concern to address optimal freight transportation. We are shifting from the old paradigm of changing modes to a present and future one of logistics value in a dynamic intermodal world marketplace. Transportation should be efficient in securing optimal movement of freight and people under sustainable rates.

Industry sources assess that competition among terminals is expected to keep container-handling charges at or below the rate of inflation for the foreseeable future. Leeper[3] indicates that the port industry is unique in American commerce in that it features both public and private entities competing against each other in a common marketplace.

The fierce competitive nature of the U.S. port system has led to some overcapacity. Ports must carefully plan and justify expansion in view of the expected demand and existing capacity. Leeper continues that some level of antitrust immunity is valuable and should be preserved for the purposes of discussing rates, providing rate guidelines, defining port range demand and capacity, providing a forum for complaints and resolution of disputes, and setting the rules of administration. As a result, discussions among public port authorities concerning their individual plans for expansion should be encouraged so that all ports can individually evaluate the supply-demand equation.

Another positive use of collective action is noted in the standardization of terms and conditions of leases and/or time volume agreements.

[3] See references

OUTLOOK

There is a consensus that containerization is growing in the U.S. due in part to the expansion of containers for movement of domestic cargo. In recent years agricultural commodities are increasingly containerized and transported intermodally. NAFTA has opened new horizons and the domestic market is growing in intermodal transportation. The Nation's container volumes have been remarkably resilient in the most recent recession on the lack of higher export volumes and should continue to grow particularly in trade with Central and South America.

However, concentrating the expanded container volumes to a few major ports would involve substantial infrastructure changes in

the harbor, dock and adjacent land. Extensive dredging would be required to accommodate the bigger containerships of the future and would be subjected to environmental requirements. On the dockside new and expanded capital investments would be needed to conform to new technological requirements. The intermodal distribution would have to be expanded to accommodate the increased flow while mitigating congestion and air pollution.

While this scenario is viable, "superports" are not the only answer to move freight less expensively and more efficiently. Port industry experts assert that mid and small size ports, if equipped and managed properly, offer more personalized service, better productivity levels and labor climates, and lower overhead than larger ports usually can. To this end, smaller ports may be urged to target for business opportunities.

The U.S. port industry, however, is consistently striving for further improvements and expanded capacity. A 1985 Marine Board study reviews the uncertainty and debate over additional port capacity and the complexity of the maritime industry as a whole. The study summarizes the arguments against major expansion as follows:

(1) The prices charged for ocean transportation have little relationship to costs. Rates depend on available vessel capacity relative to cargoes.
(2) The historical movement to larger ships reflects fashion more than economics, spurred by nations subsidizing their shipyards.
(3) The port expansion may reflect a trend as much as compelling economic reasons.
(4) The U.S. is a major factor in world economy and ocean transportation that shipowners will build their ships to ensure that they are able to use U.S. ports.
The study proceeds with the argument of the proponents of port expansion:
(1) Prices charged for transportation reflect costs over the long term.
(2) Only if the U.S. is able to capitalize on low-cost transportation will it be able to maximize its competitiveness in the international economy.
(3) Given the long lead times necessary to develop port capacity, the U.S. has no choice but to expedite port expansion.

While the arguments for and against port expansion advance in the 1990's, funding sources, the uncertainty of the dynamic nature of maritime industry, along with increased environmental awareness remain critical.

Chapter 8

ECONOMIC IMPORTANCE OF PORTS

INTRODUCTION

This chapter discusses the economic impact of the port industry, port users and public port capital expenditures. Although the economic impact of the cruise industry is evolving rapidly, the present Input-Output modelling capabilities limit the study of this sector in this report.

In particular, the economic impacts of the following sectors of port activities will be analyzed:

- Port industry, which includes the economic activities directly needed in the movement of waterborne cargo.
- Port users, including the impact of shippers and receivers nationwide.
- Public port capital expenditure, which includes new construction, expansion and rehabilitation projects.
- Tax revenues generated from port industry, port users and port capital expenditure economic activities.
- Economic impact of port industry projections for years 1995 and 2000.

The focus in this chapter is on the economic impact of the port industry, although the economic impact of the port users is notably greater.

The port industry in this analysis is defined as "any regional economic activity needed for the movement of waterborne cargo". This definition of the port industry is kept consistent with earlier studies and forms a basis for comparison. Furthermore, the port industry's economic activities may be viewed as an impetus for port improvements and its users.

1.ECONOMIC IMPACT OF PORT INDUSTRY

Traditionally, ports have existed primarily to stimulate the economic growth of their region. Ports, acting as a catalyst, encourage the private sector to make investments which generate jobs, local revenue, and development or they may do so themselves. From a larger perspective, ports are a vital link of the international transportation system which effects world markets and balance of trade.

A port economic impact study is an attempt to quantify the level of economic activity that is generated by the movement of cargo through the port.

MARAD's studies have been focused since the early 1970's on the economic impact of the port industry. In 1978, the Port Authority of New York and New Jersey presented the following criteria for the definition of the port industry:

- To reflect the port industry's unique mission to move waterborne cargo.
- To be consistent with the true contribution of ports to the national economy.
- To include only direct activities of port industry.
- To be formulated in terms of the port industry's output.

The application of the above criteria led to a concise definition that would be accurate for any port economic study:

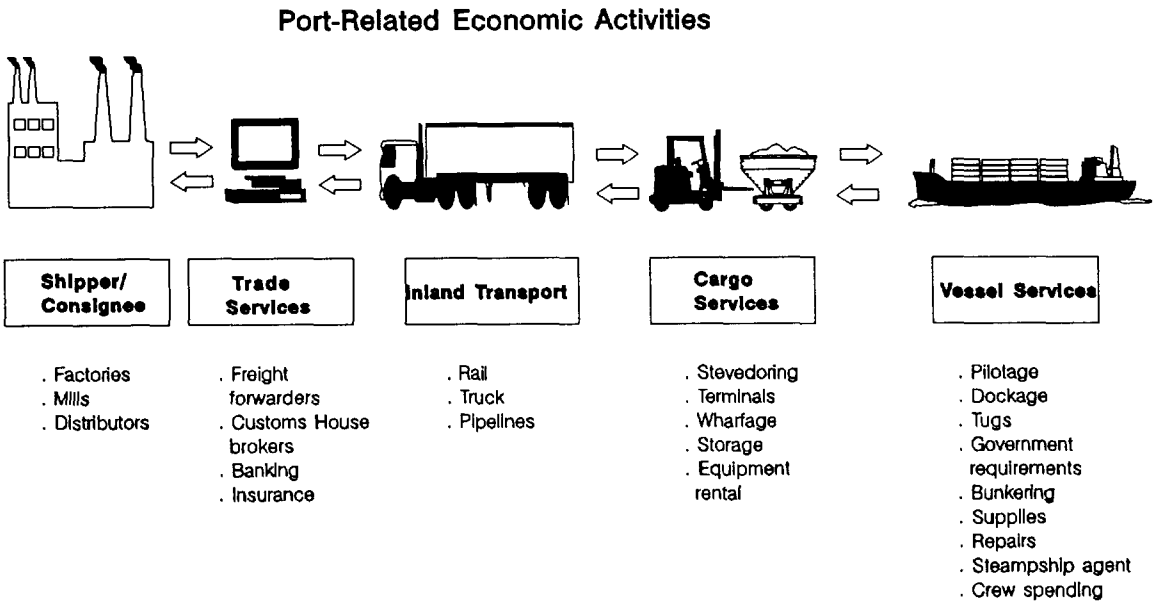
Port Industry is any economic activity that is directly needed in the movement of waterborne cargo.

Following the above criteria and definition, four main categories are included under "Port Industry" which are directly needed in the movement of waterborne cargo:

Vessel services	pilotage, dockage, bunkering, supplies, government services.
Trade services	freight forwarders, customs brokers, banking and insurance.
Cargo handling and storage	storage, terminal charges, equipment, warehousing, stevedoring, wharfage.
Inland Transportation	rail, truck, pipelines.

This definition not only includes the loading and discharging of ships but also the many port activities that take place beyond the piers.

Figure 8.1



Port industry demand is driven by cargo volume, whereas ship sizes are the principal factor determining the need for harbor improvement. The waterborne transportation system consists of vessels, channels, piers and/or wharves, cargo services and storage facilities, and connections to other modes of transportation. Water transportation and ports stimulate the economy by attracting new industries and by providing jobs, income and tax revenues. The application of multipliers to the model's data proved conclusively that ports are indeed valuable economic assets to the Nation.

A comprehensive analysis of the economic impact of the port industry will be presented followed by its foreign and domestic impact breakdown[1].

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[1] Domestic cargo includes all U.S. point-to-point movement and handling of commercial waterborne cargo. Foreign cargo includes the waterborne cargo imported in the U.S. and exported by the U.S.

During 1992 an estimated 2.887 billion metric tons (MT) of domestic and international waterborne cargo was handled at the Nation's deep and shallow draft ports.

In this study MARAD applied the 1992 domestic waterborne tonnage forecast by the U.S. Army Corps of Engineers. The foreign waterborne tonnage was based on the published foreign trade data by the Bureau of Census in 1992.

The analysis showed that port industry operations created the following total effects:

- o 1,540,225 jobs, created by the port industry;
- o $ 52 billion in total personal income;
- o $ 139 billion of business sales revenues;
- o $ 73.7 billion total contribution to the gross domestic product (GDP)
- o $ 14.5 billion in Federal taxes;
- o $ 5.5 billion in state and local taxes.

The port industry in the United States is an important part of the national economy not only because of its strategic function in assuring the flow of cargoes but also because of the chain of economic activity that it generates. The port industry's services to the economy in terms of sales (outputs), purchases (inputs), income, jobs, and taxes are on a par with those of major industries. The dollars that continuously flow into and out of the industry affect in some way each and every industry in the economy.

The movement of every 1,875 MT in waterborne national trade created one job in the national economy.

The handling of waterborne commerce was directly and indirectly responsible for $139 billion of sales revenues. This means that the movement of each metric ton of waterborne cargo in U.S. generated port industry revenues of $48 per metric ton.

The chain reactions initiated by the multiple purchases for operations gives the Nation a set of multipliers.
The multiplier effect, the measure of re-spending that occurs through indirect and induced activity in relation to the direct port industry activity varies by measured impact, reflecting differences in each industry. Based on the study year, the port industry generated an additional 3.17 jobs for each direct job, $2.28 additional sales revenues for each direct expenditure dollar. An additional $2.30 of income is generated for each direct $1 of wages and similarly additional $2.50 in GDP for each direct $1.

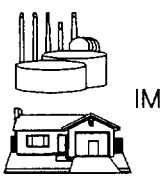
Figure 8.2 presents a diagram with the direct, induced, indirect and total effects divided into domestic and foreign trade.

Figure 8.2

TOTAL IMPACT

	DOMESTIC	FOREIGN	TOTAL
Cargo	1.99 Billion MT	897 Million MT	2.887 Billion MT
Jobs	743,473	796,752	1,540,225
Income	$25 Billion	$27 Billion	$52 Billion
Sales Revenues	$68 Billion	$71 Billion	$139 Billion
GDP	$36 Billion	$38 Billion	$74 Billion
Taxes	$10 Billion	$10 Billion	$20 Billion

DIRECT IMPACT 

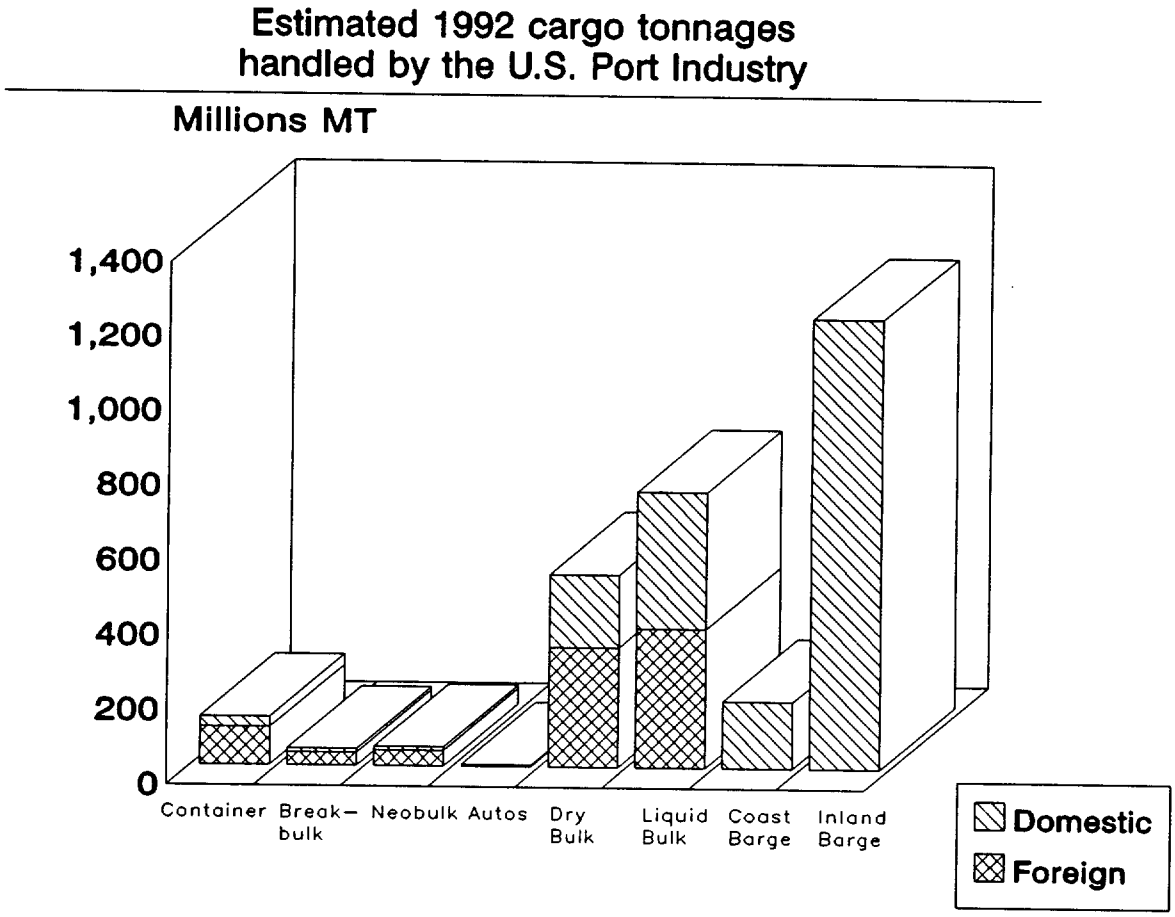
INDIRECT AND INDUCED  IMPACT

	DOMESTIC	FOREIGN	DOMESTIC	FOREIGN
Cargo	1.99 Billion MT	897 Million MT	1.99 Billion MT	897 Million MT
Jobs	176,736	192,352	566,741	604,400
Income	$ 7.5 Billion	$ 8 Billion	$17.6 Billion	$18.7 Billion
Sales Revenues	$20.3 Billion	$21 Billion	$47.5 Billion	$50.4 Billion
GDP	$10.6 Billion	$11 Billion	$25.4 Billion	$27 Billion

The impacts associated with transporting cargo through the Nation's ports are allocated to eight vessel types, based on incremental handling, storage and inland transportation costs. These eight vessel types are: container, breakbulk, neobulk, autos, dry-bulk, liquid-bulk, coastwise barges, and inland barges.

The following figure presents the cargo distribution among these vessel types.

Figure 8.3



o DOMESTIC TRADE

The U.S. Army Corps of Engineers estimates that in 1992, 1.99 billion MT of domestic waterborne cargo was handled. The domestic cargo is moved primarily by inland and coastwise barges (figure 8.3). The economic impact of barge transportation is presented in the table below and is compared with the remaining domestic water transportation modes. The cargo tonnage transported by barges contributes 70 percent of the total domestic tonnage. However, in terms of economic impact, the barged cargo accounts for 55% of the total domestic impact. Inland transportation rates have decreased as competition among the railroads and within the trucking sector has increased. One of the reasons is that as liner operators move toward loadcentering their intermodal cargo in a few ports, they can offer larger volumes to railroads in return for lower prices. Shipping lines also switch between ports and railroads along a given coastal range, forcing the railroads to compete with others not serving the same port.

Total Effect
Dollar values in billions
Waterborne cargo in million MT

	Cargo	Jobs	Output	Income	GDP	Tax
Inland & Coast barges	1,383	411,051	$37.4	$14.0	$20.1	$5.4
Non-barged	608	332,422	$30.3	$11.2	$15.9	$4.3

o FOREIGN TRADE

Ocean-going vessels move over 95 percent of U.S. overseas trade by weight and 75 percent by value.

897 million metric tons of foreign trade were handled in 1992 worth $488 billion. This figure is higher than the Bureau of Census because MARAD includes the in-transit cargo.

The analysis shows that the movement of 1,125 MT of foreign trade generated one job in the national economy.

The handling of foreign commerce was directly and indirectly responsible for $71 billion of port revenues. This means that the movement of each metric ton of waterborne cargo in the U.S. generated port industry revenues of $79 per metric ton.

Since 1973, foreign waterborne tonnage has accounted for approximately 45 percent and domestic 55 percent of the total. In terms of economic impact, however, both domestic and foreign components generate similar impact. The main reason is that containerized cargo is highly capital-intensive and produces greater revenue and economic impact than bulk cargoes. The

economic impacts for container and bulk cargos are presented below:

Total Effect
Dollar values in billions
Waterborne cargo in thousands MT

	Cargo	Jobs	Output	Income	GDP	Taxes
Container	100,715	283,409	$24.7	$9.6	$13.2	$3.6
Bulk[1]	717,036	300,422	$27.9	$10.2	$14.6	$4.0
Other[2]	79,250	212,921	$18.7	$7.1	$9.9	$2.6

1 Bulk : Dry and Liquid Bulk
2 Other: Breakbulk, Neobulk, Autos

A detailed impact of the port industry in terms of the impact on employment, income, sales revenue, GDP and regional distribution is presented in the following sections.

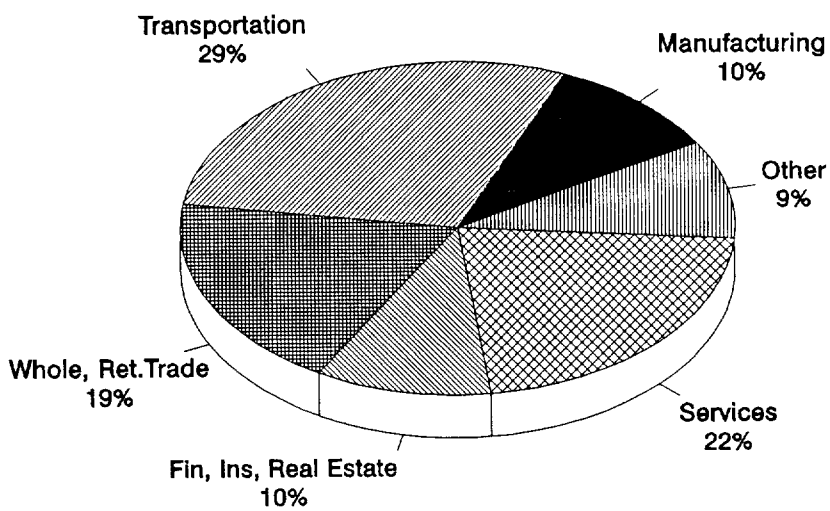
1a. Employment Impact

The Input-Output Model showed that 1,540,225 jobs were directly and indirectly generated by the port industry economic activity. Of these, 369,087 jobs were directly attributable to port operations. Another 1,171,138 were employed indirectly and induced spreading across several industrial and service sectors of the U.S. economy, reflecting the diversity of purchases made by the industry's suppliers and workers nationwide.

Figure 8.4 reveals that 29 percent of these jobs are in the transportation sector. Another 22 percent are in the service sector which provides a variety of services to the industry. The manufacturing (10 percent) and the wholesale and retail (19 percent) sectors also indicate a significant number of jobs attributable to the port industry's economic activity.

Figure 8.4

Total Employment by Sector, 1992



In the original economic impact study by the Port of New York/New Jersey, published in 1970, the total number of jobs assessed for 1970 was 1,046,800, and the number of jobs directly attributable to the port industry was 686,800. Although there is a significant increase in the total impact on jobs generated, the number of individuals directly employed or associated with the port industry has decreased. This 46 percent decrease between 1970 and 1992 appears to be attributed to economies of scale and higher productivity.

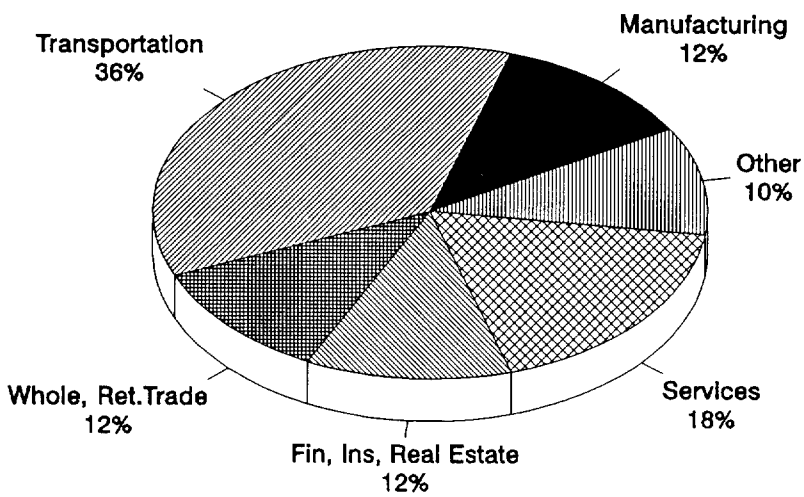
1b. Personal Income Impact

A total of $52 billion of total income was remunerated as a result of the nationwide economic impact of the port industry. A share of 36 percent ($18.6 billion) compensated the transportation industry itself.

Figure 8.5 displays the remaining distribution: Manufacturing 12 percent ($6.3 billion), services 18 percent ($9.4 billion), finance 12 percent ($6.2 billion), and trade 12 percent. Under "other", included are agricultural services with almost $1 billion in earned income, construction with $1.8 billion, public utilities with $0.9 billion and Government services with $1.7 billion.

Figure 8.5

Total Wages by Sector, 1992



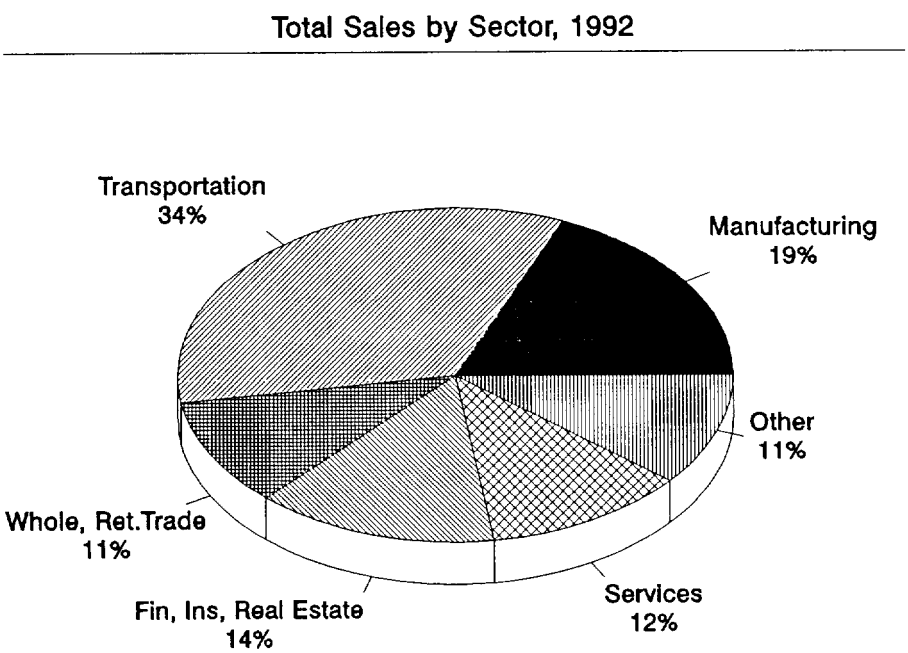
1c. Sales Revenues Impact

The sales revenues that the port industry economic activity generated for the transportation industry amounts to $47 billion, or 34 percent. The remaining 66 percent are spread across the other sectors as presented in figure 8.6.

Except from the transportation sector itself, sales revenues were generated for the manufacturing sector $26 billion (19 percent), financial, insurance and real estate businesses $20 billion (14 percent). Services and Trade (wholesale and retail) accounted for $16.5 and $15 billion respectively.

The port industry's impact upon the economy other than the above groups of industries runs deeply across a broad front of producers of goods and services. The purchasing power of the port industry, with its ripple effect extending to other industries, is of great importance to many suppliers in the Nation. Every day of the study year, the Nation's port industry provided an average of $381 million in services to its users.

Figure 8.6



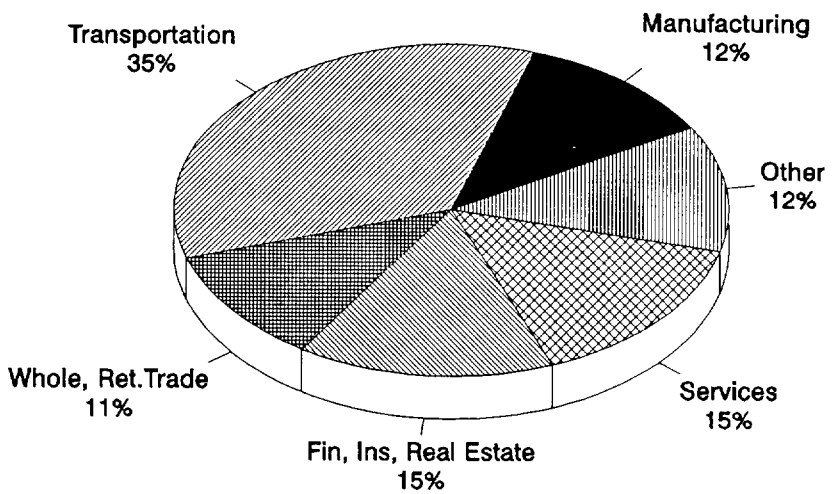
1d. Impact on Gross Domestic Product

The value added or Gross Domestic Product (GDP) concept is distinct from the sales revenue one. The GDP omits the cumulative resale values accounted in the sales output. As a result the economic impact of the port industry resulted in $73.7 billion contribution to the Nation's Gross Domestic Product with an average daily contribution of $202 million.

Half of it is contributed by the transportation industry itself (35 percent) and services (15 percent). Figure 8.7 details the contribution by each sector.

Figure 8.7

Total GDP by Sector, 1992

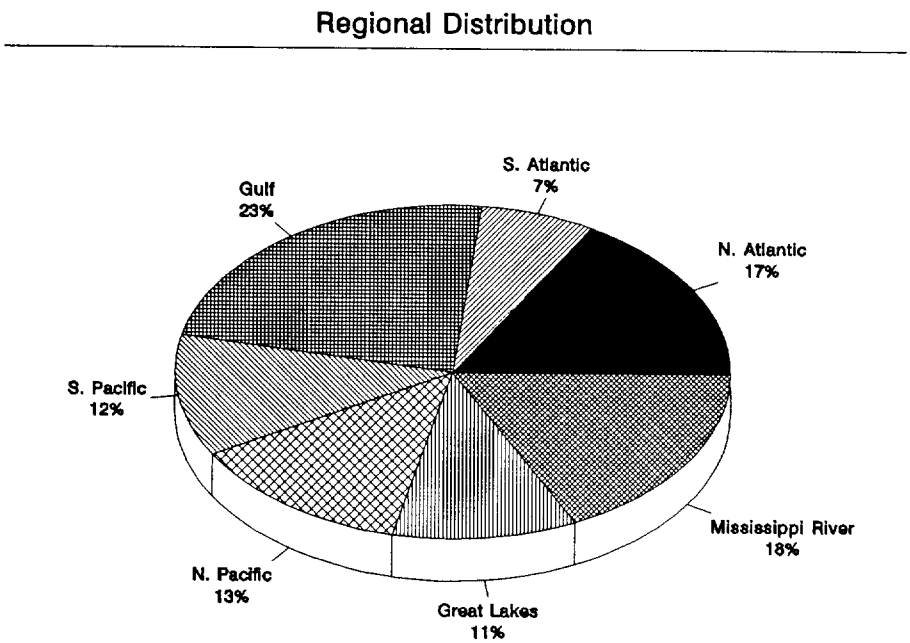


1e. Regional Economic impact

The port industry's economic impact - measured in employment, income, sales output and GDP generated - is spread across the Nation's regions and is presented in figure 8.8. The percentage distribution reflects all four economic impact measurements.

The Gulf region leads with a 23 percent share to the Nation's economic impact, followed by the Mississippi River region 18 percent, North Atlantic 17 percent, North Pacific 13 percent, South pacific 12 percent and South Atlantic with 7 percent.

Figure 8.8



2. ECONOMIC IMPACT OF THE PORT USERS

The Port Users section of the model measures the impact of the U.S. industrial dependence on foreign trade. The shipment value data was input for all industry sectors of the input-output table. Port users are businesses that make significant use of the ports for shipping or receiving goods. The port users impact refers to jobs, payroll, sales revenues, contribution to GDP and taxes generated by industries which use the ports for shipping their products or receiving their inputs. Foreign trade has become an increasingly important component of our national well-being. About 95 percent by weight of all U.S. foreign trade is waterborne through U.S. ports.

Export oriented port users' impact is easy to estimate as the estimation of export dependence of U.S. industries is relatively straightforward. It is assumed that the value of an export of a particular commodity from the U.S. is produced by an output of equal value by the corresponding industry in the U.S. that is the major producer of that commodity. The inland transportation generated by exports is not accounted for in this section as these expenditures have already been captured in the direct impact of the port industry.

The impact of import-dependent port users is much more difficult to estimate. This is especially true for individual port regions, because inflows of goods from outside a region can come either from other U.S. regions or from foreign sources. Unfortunately, the allocation between domestic and foreign goods purchases is only directly available for the U.S. as a whole.

But even for the U.S. as a whole, what is known is the proportion of total industrial and consumption demands for a good that are fulfilled by foreign imports. The allocation of foreign imports between industry and consumers, as well as among industries that might use foreign goods as inputs, depends upon a whole series of estimates. Furthermore, "double-counting" must be avoided by taking into account that an industry that is dependent on one imported good may well have that same import-dependent production simultaneously dependent on other inflows of foreign inputs, too.

The results of these estimates of import/input demands are incorporated in the model in a procedure that ranks industries by the extent of their import dependence. Foreign inflows are allocated to these industries sequentially by rank until all the flows of those imports intended for industrial uses are accounted for. The corresponding import-dependent outputs of these industries are then analyzed for their economic effects by use of the MARAD Input-Output model.

The total, direct, indirect and induced impact of the Port Users is provided in figure 8.9 and the following tables:

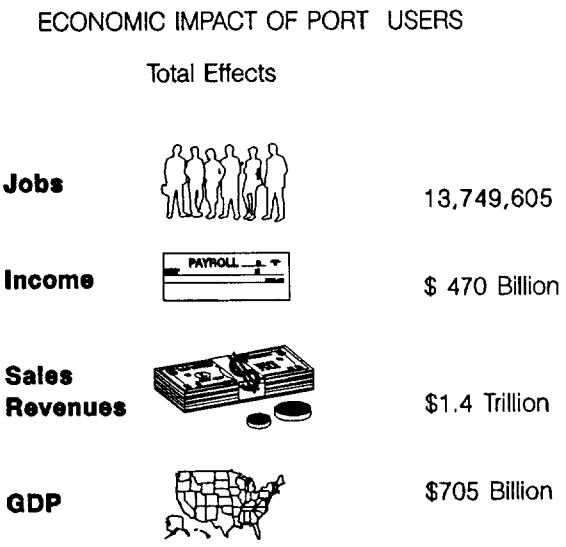
Total Impact of Export Oriented Port Users
Dollar values in billions

	Employment	Income	Sales Output	GDP
Direct	1,090,157	$ 52	$ 198	$ 77
Indirect & Induced	5,636,553	183	497	260
Total	6,726,710	$ 235	$ 695	$ 337

Total Impact of Import Oriented Port Users
Dollar values in billions

	Employment	Income	Sales Output	GDP
Direct	1,338,871	$ 54	$ 245	$ 92
Indirect & Induced	5,684,024	181	526	276
Total	7,022,895	$ 235	$ 771	$ 368

Figure 8.9



3. ECONOMIC IMPACT OF PUBLIC PORT CAPITAL EXPENDITURES

Innovations at port facilities throughout the world allow ports to handle more freight faster, safer, and more efficiently than ever before, sparking an explosive growth in world trade.

It has been government policy to support the growth of public ports. Congress has declared that all cities and towns located on federally improved harbors and navigable waters should have at least one public terminal.

From 1946 through 1992, the U.S. public port industry has invested $12.5 billion in capital improvements to its port facilities. This investment covers expenditures for the construction of new facilities and the modernization and rehabilitation of existing ones. The port capital expenditures' impact is based on the expenditures effected during 1992, which amounted to $671.8 million. Since 1988 the U.S. Port Capital Expenditures have ranged annually between $668 and $689 million.

The impact on employment, output, income, GDP and taxes is presented extensively in Figure 8.10. However, while the port industry captures the continuing impact of cargo-flow related expenditures, the port capital expenditures' impact counts for the one-time capital expenditure effect.

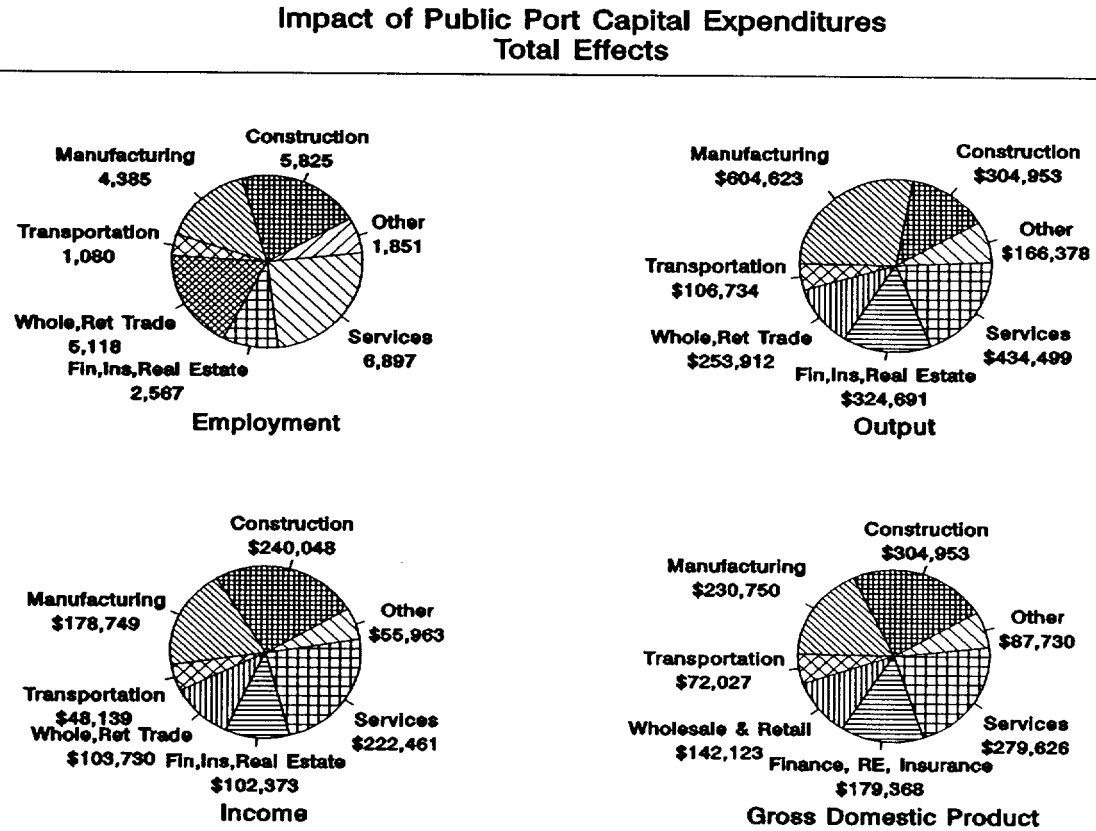
The input-output model is a static analyzing tool that provides a picture of only one year's economic transactions. It is not possible to use the model to measure fully the dynamic impact of port investments. A static analysis of capital investments' impact on the national economy is limited to the short-run impact-per-dollar delivered to the GDP, for example the annual operating expenses. The dynamic impact of long-term capital expenditures would take into account the impact of improvements in operating efficiency over the years. The model's development has not yet reached that capability.

Therefore, the induced impact that would be generated in future years as a result of the investments in new capacities and technologies in the port industry is not a part of the total impact figures in this study as presented in Figure 8.10.

Public port spending in 1992 created 27,320 jobs (5,825 in the construction service). The impact of public port investment generated $935 million in personal income, $2.2 billion in sales output and contributed $1.3 billion to GDP.

This analysis of public port capital expenditures pertains to public port capital expenditures only. It is estimated that private capital investment in shoreside terminals is more than twice the amount of public expenditures.

Figure 8.10

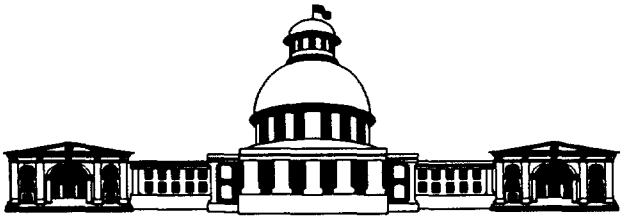


TAX REVENUES IMPACT

Port industry, port users and public capital expenditures in the United States are a significant source of Government tax revenues at all levels. During 1992 the U.S. Treasury collected an estimated $154 billion in taxes directly and indirectly from the port industry, port users and capital expenditures activities.

Figure 8.11

Tax Revenues



Port Industry	State & Local Taxes	$5.5 Billion
	Federal Taxes	$14.5 Billion
Port Users	State & Local Taxes	$51 Billion
	Federal Taxes	$139 Billion
Port Capital Expenditures	State & Local Taxes	$96 Million
	Federal Taxes	$252 Million

In particular, the U.S. Department of Treasury collected $14.5 billion in taxes generated by port operations. The I-O analysis indicates that 60 percent ($8.5 billion) represents general Federal Taxes and 40 percent ($6.0 billion) represents social security taxes. Tax contributions to state governments generated by port industry operations accounted for $3.4 billion and to local governments for $2.1 billion during 1992.

Tax contributions to state and local governments generated by port users accounted for $31 billion and $20 billion respectively.

Pertaining to capital expenditures, the tax contribution to general Federal taxes was $147 million (58 percent) and to social security was $105 million (42 percent) for 1992. The tax contribution to state and local governments was $60 and $37 million, respectively.

Port operations resulted in 70 percent or $11 billion of U.S. Customs revenues on imports.

ECONOMIC IMPACT OF PORT INDUSTRY
PROJECTIONS FOR YEARS 1995 AND 2000

The waterborne commerce forecast for the ensuing years was obtained from the U.S. Army Corps of Engineers and DRI/McGraw-Hill's international trade group. The U.S. Army Corps of Engineers (Corps) provided the domestic cargo forecast. The Corps estimates that the growth rate should range about 1 percent on an annual basis. DRI/McGraw-Hill provided the foreign trade forecast and its projections for the years 1995 and 2000 are given below:

Projected Year	Domestic Cargo[1]	Foreign Cargo[1]
2000	2,150 MT	1,123 MT
1995	2,050 MT	927 MT
Base Year 1992	1,990 MT	897 MT

[1] Cargo tonnage in million Metric Tons (MT)

For this analysis, MARAD projected the economic impact for years 1995 and 2000 based on the year 1992 constant dollars and cost vectors of the model. Therefore, the projected economic impacts should be understood with the above assumptions. Specifically, all dollar values are in "constant dollars" for 1992, the base year of the study. Therefore, the wages per employee are adjusted for year 1992. As a result the projected productivity and economies of scale for years 1995 and 2000 cannot and have not been attempted to be taken into consideration.

Based on the above assumptions the estimated economic impact projections for years 1995 and 2000 are presented in the following table.

Total Effects
Dollar figures in billions

	Projected Year 1995	Projected Year 2000
Employment	1,663,499	1,910,586
Income	$ 56.2	$ 64.5
Output	$149.8	$171.9
GDP	$ 79.5	$ 91.2

INPUT-OUTPUT METHODOLOGY

The objective of the economic impact analysis is to provide policy-makers in Government and its regulatory agencies as well as port users with a quantifiable assessment of the economic impact of the U.S. ports. The analysis is based on Input-Output (I-O) model which is the type of economic study that identifies interindustry purchases of goods and services.

These studies serve to enhance community relations and improve public education efforts. This objective is of great importance when taxpayers are becoming increasingly critical of public investment. Economic impact studies could also prove an invaluable tool to support and assist in planning tasks.

The economic impacts are measured in terms of jobs generated, sales revenues, payroll and contribution to Gross Domestic Product (GDP). Taxes (Federal, State and Local) are presented.

The Input-Output model is an economic tool used by industrial and government economists throughout the world for measuring and forecasting economic affairs. An Input-Output model is a statistical representation of an economy which reveals the transaction among its industries and its sectors. It is based on the assumption that the inputs to an industry are proportional to its output. It shows how various parts of the economy relate to the whole and recognizes the interdependence within which all changes can be estimated. The input-output analysis is considered the most satisfactory approach for regional analysis that has been developed.

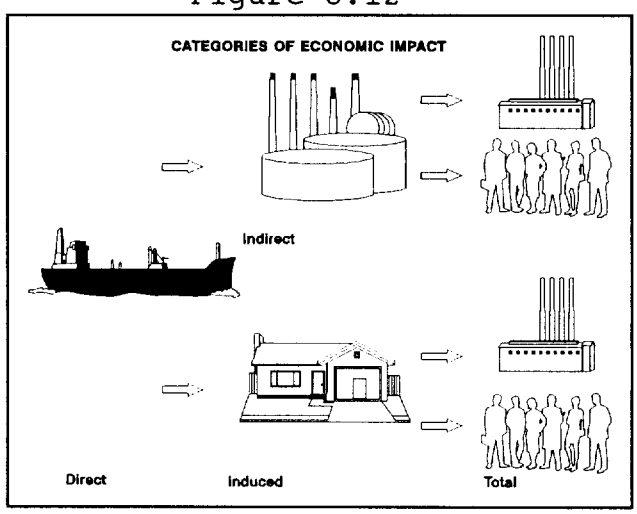
This analysis, like most other economic impact studies, includes estimates of the total economic impact -- indirect, induced and direct economic impacts. The indirect impacts include the effects of labor, services, materials, and other items purchased by the firms which supply the direct activities. The sales of each firm require it to make purchases from other firms, so that rounds of economic activity are generated. The economic activity of the directly and indirectly affected businesses generates wages and income for individuals and households. This increased income leads households to make additional purchases, which generate further effects on the economy. These purchases made by additional income to households are defined as induced effects.

The ability to produce multipliers is an advantage inherent to I-O models. The basic idea of a multiplier is that it expresses the total effect relative to the direct effect. As a result, the model calculates four standard multipliers: output, employment, wages (income) and value added/Gross Domestic Product (GDP), respectively.

The center of an I-O system for the Nation, a state or a region is the technology matrix. This matrix is commonly referred to as the I-O table. The core technology used in the table is taken from the U.S. National Bureau of Economic Analysis (BEA) Input-Output Table with some modifications.

The calculation of indirect and induced economic effects utilizes the Department of Commerce's Bureau of Economic Analysis national input-output table. This is a 515x515 sector technology matrix. This matrix was adopted to include the 515th sector which was assigned to household income and consumption. The I-O table used in this analysis, considers households an industry.

Figure 8.12



DESCRIPTION OF ECONOMIC MEASURES

Various measures are used in the Input-Output model to indicate the effects of a direct change on the total economy of the region. These measures include the changes in regional employment, output, wages, tax revenue, and value added.

Employment is measured in jobs, both full- and part-time. All jobs generated at businesses in the region are included as regional employment, even though the associated wages of commuters may be expended by households in other regions.

Output measures the value of production. Except for wholesale and retail trade, it is also the change in sales by the sector. For wholesale and retail sectors, output is the "margin" added to goods being sold. Thus "sales" for these sectors would equal output (margin) plus the cost of goods sold.

Wages include changes in wages, salaries, and proprietors' incomes only. They do not include changes in nonwage compensation (such as pensions, insurance, and health benefits); transfer payments (such as welfare or social security benefits); or unearned income (dividends, interest, or rent).

Federal Taxes consist of changes in corporate and personal income, social security, and excise taxes.

State Taxes are changes in revenues to state governments through personal and corporate income, state property, excise, sales, and other state taxes generated by changes in output or wages or by purchases by visitors to the region.

Local Taxes are changes in revenues to substate governments, occurring mainly through property taxes on new worker households and businesses, but including, income, sales, and other major local taxes in selected areas.

Value Added measures regional output in the same sense that Gross Domestic Product (GDP) measures national output: it is the difference between the value of goods and services purchased as production inputs and the value of goods and services produced.

The model calculates four standard multipliers: employment, output, income, and value added. Each of these multipliers is defined as the ratio of total effects to direct effects.

APPENDICES

APPENDIX A PARTICIPANTS IN 1993 AAPA FINANCE SURVEYS

REGION/PORTS	FINANCE SURVEY	EXPENDITURE SURVEY	PUBLIC PORT FINANCING SURVEY
U.S. NORTH ATLANTIC			
Maryland Port Administration	X	X	X
Massachusetts Port Authority	X	X	X
New Hampshire State Port Authority	X	X	X
New York/New Jersey, Port Authority of	X	X	X
Richmond, Port of	X	X	X
Philadelphia Port Corporation	X	X	X
Wilmington (Del.), Port of	X	X	X
U.S. SOUTH ATLANTIC			
Canaveral Port Authority	X	X	X
Georgia Ports Authority	X	X	X
Jacksonville Port Authority	X	X	X
Miami, Port of	X	X	X
North Carolina State Ports Authority	X	X	X
Palm Beach District, Port of	X	X	
Ponce, Port of	X	X	X
Port Everglades, Port of	X	X	X
Puerto Rico Port Authority	X	X	X
South Carolina State Ports Authority	X	X	X
Virginia Port Authority	X	X	X

APPENDIX A PARTICIPANTS IN 1993 AAPA FINANCE SURVEYS

REGION/PORTS	FINANCE SURVEY	EXPENDITURE SURVEY	PUBLIC PORT FINANCING SURVEY
U.S. GULF			
Alabama State Docks Dept.	X	X	X
Beaumont, Port of	X	X	X
Brownsville, Port of	X	X	X
Corpus Christi, Port of	X	X	X
Freeport, Port of	X	X	X
Galveston, Port of	X	X	X
Greater Baton Rouge Port Commission	X	X	X
Greater LaFourche Port Commission	X	X	X
Houston Authority, Port of	X	X	X
Manatee County Port Authority	X	X	X
Mississippi State Port Authority at Gulfport	X	X	X
New Orleans, Port of	X	X	X
Orange, Port of	X	X	X
Pascagoula, Port of	X	X	X
Plaquemines Harbor District	X		
Port Arthur, Port of	X	X	X
Tampa Port Authority	X	X	X
U.S. NORTH PACIFIC			
Anchorage, Port of	X	X	X
Bellingham, Port of	X	X	X
Everett, Port of	X	X	X
Grays Harbor, Port of	X	X	X

APPENDIX A PARTICIPANTS IN 1993 AAPA FINANCE SURVEYS			
REGION/PORTS	**FINANCE SURVEY**	**EXPENDITURE SURVEY**	**PUBLIC PORT FINANCING SURVEY**
Kalama, Port of	X	X	X
Longview, Port of	X	X	X
Port Angeles, Port of	X	X	
Portland, Port of	X	X	X
Tacoma, Port of	X	X	X
Seattle, Port of	X	X	
U.S. SOUTH PACIFIC			
Hawaii DOT, Harbor Div.	X	X	X
Humboldt Bay Harbor	X	X	X
Long Beach, Port of	X	X	X
Los Angeles, Port of	X	X	X
Oakland, Port of	X	X	X
Richmond, Port of	X	X	X
Sacramento, Port of	X	X	X
Saipan, Commonwealth Port Authority of	X	X	X
San Francisco, Port of	X	X	X
Stockton, Port of	X	X	X

APPENDIX A PARTICIPANTS IN 1993 AAPA FINANCE SURVEYS

REGION/PORTS	FINANCE SURVEY	EXPENDITURE SURVEY	PUBLIC PORT FINANCING SURVEY
U.S. GREAT LAKES			
Duluth, Seaway Port of	X	X	X
Indiana Port Commission	X		X
Milwaukee, Port of	X	X	X
Toledo-Lucas County Port Authority	X	X	X

APPENDIX B
Table B–1
US Port Self–Sufficiency
1992
(Based on 1992 AAPA Port Finance Survey and the Criteria Outlined in the Notes below)

Region/ Port	Income & Expense Statement									Depreciation Expense Charged	Net Inc. Before Depreciation	Degree of Self–Sufficiency			
	Operating Revenue	Operating Income	Interest Earned	Bond Int. Exp.	Other	Net Income before Taxes & Contributions	Tax Levy	Contri–butions	Net Income			None(1)	Narrow (2)	Relative (3)	Fully (4)
North Atlantic:															
Massport	19,346	(2,670)	0	(5,380)	(4,729)	(12,779)	0	0	(12,779)	4,974	(7,805)	X			
Maryland	38,983	1,178	0	0	239	1,417	0	0	1,417	0	1,417				X
New Hampshire	419	139	0	0	0	139	0	0	139	0	139				X
NY/NJ	89,299	(8,909)	0	0	0	(8,909)	0	0	(8,909)	23,887	14,978	X			
Richmond, VA	1,236	308	38	(5)	(532)	(191)	0	0	(191)	413	222	X			
Philadelphia	3,602	(7,302)	436	(4,393)	0	(11,259)	0	9,835	(1,424)	2,999	1,575	X			
Wilmington, DE	13,898	1,757	637	(2,058)	(711)	(375)	0	0	(375)	1,831	1,456		X		
Total	166,783	(15,499)	1,111	(11,836)	(5,733)	(31,957)	0	9,835	(22,122)	34,104	11,982	4	1	0	2
Average	23,826	(2,214)	159	(1,691)	(819)	(4,565)	0	1,405	(3,160)	4,872	1,712				
South Atlantic:															
Canaveral	14,105	6,367	801	(2,079)	(288)	4,801	0	500	5,301	2,584	7,885			X	
Georgia	66,055	12,234	1,494	(8,077)	(83)	5,568	0	0	5,568	11,669	17,237				X
Jacksonville	22,307	2,714	2,169	(6,255)	(1,365)	(2,737)	0	0	(2,737)	7,786	5,049		X		
Miami	39,841	12,941	0	(10,471)	(1,451)	1,019	0	0	1,019	5,416	6,435				X
N. Carolina	25,168	486	830	(283)	0	1,033	0	0	1,033	4,565	5,598				X
Palm Beach	6,494	2,721	464	(1,087)	(820)	1,278	0	2,108	3,386	997	4,383			X	
Ponce	1,689	(343)	24	(99)	0	(418)	0	0	(418)	350	(68)	X			
Port Everglades	36,798	8,399	4,181	(8,354)	230	4,456	0	0	4,456	6,902	11,358				X
Puerto Rico	43,423	10,376	0	(2,852)	0	7,524	0	0	7,524	4,835	12,359				X
S. Carolina	46,414	6,022	1,425	(723)	(966)	5,758	0	0	5,758	11,636	17,394				X
Virginia	91,615	(3,562)	6,281	(9,671)	3,588	(3,364)	0	11,945	8,581	3,468	12,049		X		
Total	393,909	58,355	17,669	(49,951)	(1,155)	24,918	0	14,553	39,471	60,208	99,679	1	2	2	6
Average	35,810	5,305	1,606	(4,541)	(105)	2,265	0	1,323	3,588	5,473	9,062				
Gulf Region:															
Alabama	44,294	5,360	2,273	(7,748)	313	198	0	0	198	11,049	11,247				X
Beaumont	7,935	(601)	327	(563)	4	(833)	2,145	0	1,312	1,230	2,542	X			
Brownsville	5,112	718	242	(948)	(1,707)	(1,695)	1,042	0	(653)	1,040	387	X			
Corpus Christi	24,720	3,573	1,078	(776)	6	3,881	0	0	3,881	3,779	7,660				X
Freeport	2,602	(362)	296	(3,089)	(3,805)	(6,960)	5,290	0	(1,670)	515	(1,155)	X			
Galveston	11,212	(477)	279	(2,930)	2,182	(946)	0	0	(946)	1,832	886		X		
Baton Rouge	4,030	(226)	186	(193)	29	(204)	0	0	(204)	1,526	1,322	X			
Greater Laforche	1,819	(2,739)	65	0	20	(2,654)	691	1,985	22	0	22	X			
Houston	59,879	4,040	5,018	(8,747)	(1,056)	(745)	17,744	0	16,999	14,699	31,698		X		
Manatee	5,060	871	231	(1,483)	(14)	(395)	0	447	52	1,447	1,499		X		
Gulfport	5,177	(1,517)	60	0	118	(1,339)	930	0	(409)	830	421	X			
New Orleans	30,648	(1,864)	2,813	(1,458)	5,075	4,566	0	0	4,566	9,636	14,202				X
Orange	1,047	(442)	95	0	(105)	(452)	476	0	24	0	24	X			
Pascagoula	2,301	(196)	0	(2,768)	209	(2,755)	2,454	450	149	0	149		X		
Plaquemines	1,815	119	85	0	(212)	(8)	0	0	(8)	92	84	X			
Port Arthur	1,548	(1,353)	297	0	372	(684)	996	0	312	0	312	X			
Tampa	11,628	3,561	2,072	(5,848)	(305)	(520)	5,790	0	5,270	1,791	7,061		X		
Total	220,827	8,465	15,417	(36,551)	1,124	(11,545)	37,558	2,882	28,895	49,466	78,361	9	5	0	3
Average	12,990	498	907	(2,150)	66	(679)	2,209	170	1,700	2,910	4,609				

APPENDIX B
Table B-1
US Port Self-Sufficiency
1992
(Based on 1992 AAPA Port Finance Survey and the Criteria Outlined in the Notes below)

Region/ Port	Income & Expense Statement: Operating Revenue	Operating Income	Interest Earned	Bond Int. Exp.	Other	Net Income before Taxes & Contributions	Tax Levy	Contri-butions	Net Income	Depreciation Expense Charged	Net Inc. Before Depreciation	Degree of Self-Sufficiency: None(1)	Narrow (2)	Relative (3)	Fully (4)
North Pacific:															
Anchorage	5,637	968	1,097	(1,574)	178	669	0	0	669	2,038	2,707				X
Bellingham	2,847	531	0	0	0	531	445	39	1,015	853	1,868			X	
Everett	8,547	935	6,498	(1,025)	(98)	6,310	0	0	6,310	1,390	7,700				X
Grays Harbor	5,944	(1,533)	0	0	0	(1,533)	0	0	(1,533)	2,479	946	X			
Kalama	2,074	775	59	(329)	0	505	0	0	505	47	552				X
Longview	10,384	145	405	(805)	172	(83)	1,584	0	1,501	1,241	2,742		X		
Port Angeles	2121	1062	0	0	0	1,062	0	0	1,062	244	1,306				X
Portland	38,095	(2,306)	0	0	0	(2,306)	0	0	(2,306)	8,387	6,081	X			
Seattle	47,561	14,903	3,802	(8,050)	(5,824)	4,831	0	20,946	25,777	14,744	40,521			X	
Tacoma	52,453	10,402	3,136	(6,952)	1,363	7,949	6,397	0	14,346	10,581	24,927			X	
Total	175,663	25,882	14,997	(18,735)	(4,209)	17,935	8,426	20,985	47,346	42,004	89,350	2	1	3	4
Average	17,566	2,588	1,500	(1,874)	(421)	1,794	843	2,099	4,735	4,200	8,935				
South Pacific:															
Hawaii	41,204	13,466	6,631	(11,726)	293	8,664	0	0	8,664	4,245	12,909				X
Humbolt Bay	0	0	188	0	(532)	(344)	480	0	136	0	136	X			
Long Beach	111,839	61,317	23,469	(13,854)	(2,069)	68,863	0	0	68,863	22,939	91,802				X
Los Angeles	173,943	77,888	18,570	(9,757)	(5,017)	81,684	0	0	81,684	25,107	106,791				X
Oakland	45,109	23,130	2,788	(10,654)	(477)	14,787	0	0	14,787	8,308	23,095				X
Richmond, CA	4,157	1,382	138	(2,070)	0	(550)	0	0	(550)	1,156	606		X		
Sacramento	11,708	876	334	(1,350)	(1,917)	(2,057)	11	0	(2,046)	1,566	(480)	X			
Saipan	1,188	160	143	0	0	303	0	0	303	251	554				X
San Francisco	11,119	7,349	0	0	0	7,349	0	0	7,349	0	7,349				X
Stockton	10,272	(1,317)	760	(757)	0	(1,294)	0	0	(1,294)	1,815	521	X			
Total	410,539	184,251	53,041	(50,168)	(9,719)	177,405	491	0	177,896	65,387	243,283	3	1	0	6
Average	41,054	18,425	5,304	(5,017)	(972)	17,741	49	0	17,790	6,539	24,328				
Great Lakes:															
Duluth	785	(518)	103	(30)	67	(378)	77	285	(16)	178	162	X			
Indiana	3,322	(1,496)	277	0	1,719	500	0	0	500	2,278	2,778				X
Milwaukee	2,163	(381)	0	(176)	0	(557)	0	0	(557)	631	74	X			
Toledo	5,286	1,707	677	(478)	0	1,906	118	76	2,100	1,580	3,680			X	
Total	11,556	(688)	1,057	(684)	1,786	1,471	195	361	2,027	4,667	6,694	2	0	1	1
Average	2,889	(172)	264	(171)	447	368	49	90	507	1,167	1,674				
Grand Total	1,379,277	260,766	103,292	(167,925)	(17,906)	178,227	46,670	48,616	273,513	255,836	529,349	21	10	6	22
Average	23,378	4,420	1,751	(2,846)	(303)	3,021	791	824	4,636	4,336	8,972				

Notes:
(1) Negative Operating Income & Negative Net Income before Taxes & Contributions.
(2) Negative Net Income before Taxes & Contributions less than the amount of Bond Interest Expense.
(3) Positive Net Income before Taxes and Contributions, but receives Taxes and/or Contributions.
(4) Positive Net Income and no Taxes or Contributions

APPENDIX B
Table B–2
U. S. Port Profitability
1992
(Based on 1992 AAPA Port Finance Survey and the Criteria Outlined in the Notes below)

Region/ Port	Income & Expense Statement: Operating Revenue	Operating Income	Interest Earned	Bond Int. Exp.	Other	Net Income before Taxes & Contributions	Tax Levy	Contri– butions	Net Income	Depreciation Expense Charged	Net Inc. Before Depreciation	**Net Loss** before Taxes & Contributions (1)	**Net Profit** before Taxes & Contributions (2)
North Atlantic:													
Massport	19,346	(2,670)	0	(5,380)	(4,729)	(12,779)	0	0	(12,779)	4,974	(7,805)	X	
Maryland	38,983	1,178	0	0	239	1,417	0	0	1,417	0	1,417		X
New Hampshire	419	139	0	0	0	139	0	0	139	0	139		X
NY/NJ	89,299	(8,909)	0	0	0	(8,909)	0	0	(8,909)	23,887	14,978	X	
Richmond, VA	1,236	308	38	(5)	(532)	(191)	0	0	(191)	413	222	X	
Philadelphia	3,602	(7,302)	436	(4,393)	0	(11,259)	0	9,835	(1,424)	2,999	1,575	X	
Wilmington, DE	13,898	1,757	637	(2,058)	(711)	(375)	0	0	(375)	1,831	1,456	X	
Total	166,783	(15,499)	1,111	(11,836)	(5,733)	(31,957)	0	9,835	(22,122)	34,104	11,982	5	2
Average	23,826	(2,214)	159	(1,691)	(819)	(4,565)	0	1,405	(3,160)	4,872	1,712		
South Atlantic:													
Canaveral	14,105	6,367	801	(2,079)	(288)	4,801	0	500	5,301	2,584	7,885		X
Georgia	66,055	12,234	1,494	(8,077)	(83)	5,568	0	0	5,568	11,669	17,237		X
Jacksonville	22,307	2,714	2,169	(6,255)	(1,365)	(2,737)	0	0	(2,737)	7,786	5,049	X	
Miami	39,841	12,941	0	(10,471)	(1,451)	1,019	0	0	1,019	5,416	6,435		X
N. Carolina	25,168	486	830	(283)	0	1,033	0	0	1,033	4,565	5,598		X
Palm Beach	6,494	2,721	464	(1,087)	(820)	1,278	0	2,108	3,386	997	4,383		X
Ponce	1,689	(343)	24	(99)	0	(418)	0	0	(418)	350	(68)	X	
Port Everglades	36,798	8,399	4,181	(8,354)	230	4,456	0	0	4,456	6,902	11,358		X
Puerto Rico	43,423	10,376	0	(2,852)	0	7,524	0	0	7,524	4,835	12,359		X
S. Carolina	46,414	6,022	1,425	(723)	(966)	5,758	0	0	5,758	11,636	17,394		X
Virginia	91,615	(3,562)	6,281	(9,671)	3,588	(3,364)	0	11,945	8,581	3,468	12,049	X	
Total	393,909	58,355	17,669	(49,951)	(1,155)	24,918	0	14,553	39,471	60,208	99,679	3	8
Average	35,810	5,305	1,606	(4,541)	(105)	2,265	0	1,323	3,588	5,473	9,062		
Gulf Region:													
Alabama	44,294	5,360	2,273	(7,748)	313	198	0	0	198	11,049	11,247		X
Beaumont	7,935	(601)	327	(563)	4	(833)	2,145	0	1,312	1,230	2,542	X	
Brownsville	5,112	718	242	(948)	(1,707)	(1,695)	1,042	0	(653)	1,040	387	X	
Corpus Christi	24,720	3,573	1,078	(776)	6	3,881	0	0	3,881	3,779	7,660		X
Freeport	2,602	(362)	296	(3,089)	(3,805)	(6,960)	5,290	0	(1,670)	515	(1,155)	X	
Galveston	11,212	(477)	279	(2,930)	2,182	(946)	0	0	(946)	1,832	886	X	
Baton Rouge	4,030	(226)	186	(193)	29	(204)	0	0	(204)	1,526	1,322	X	
Greater Laforche	1,819	(2,739)	65	0	20	(2,654)	691	1,985	22	0	22	X	
Houston	59,879	4,040	5,018	(8,747)	(1,056)	(745)	17,744	0	16,999	14,699	31,698	X	
Manatee	5,060	871	231	(1,483)	(14)	(395)	0	447	52	1,447	1,499	X	
Gulfport	5,177	(1,517)	60	0	118	(1,339)	930	0	(409)	830	421	X	
New Orleans	30,648	(1,864)	2,813	(1,458)	5,075	4,566	0	0	4,566	9,636	14,202		X
Orange	1,047	(442)	95	0	(105)	(452)	476	0	24	0	24	X	
Pascagoula	2,301	(196)	0	(2,768)	209	(2,755)	2,454	450	149	0	149	X	
Plaquemines	1,815	119	85	0	(212)	(8)	0	0	(8)	92	84	X	
Port Arthur	1,548	(1,353)	297	0	372	(684)	996	0	312	0	312	X	
Tampa	11,628	3,561	2,072	(5,848)	(305)	(520)	5,790	0	5,270	1,791	7,061	X	
Total	220,827	8,465	15,417	(36,551)	1,124	(11,545)	37,558	2,882	28,895	49,466	78,361	14	3
Average	12,990	498	907	(2,150)	66	(679)	2,209	170	1,700	2,910	4,609		

APPENDIX B
Table B–2
U. S. Port Profitability
1992
(Based on 1992 AAPA Port Finance Survey and the Criteria Outlined in the Notes below)

Region/ Port	Income & Expense Statement									Depreciation Expense Charged	Net Inc. Before Depreciation	**Net Loss** before Taxes & Contributions (1)	**Net Profit** before Taxes & Contributions (2)
	Operating Revenue	Operating Income	Interest Earned	Bond Int. Exp.	Other	Net Income before Taxes & Contributions	Tax Levy	Contri– butions	Net Income				
North Pacific:													
Anchorage	5,637	968	1,097	(1,574)	178	669	0	0	669	2,038	2,707		X
Bellingham	2,847	531	0	0	0	531	445	39	1,015	853	1,868		X
Everett	8,547	935	6,498	(1,025)	(98)	6,310	0	0	6,310	1,390	7,700		X
Grays Harbor	5,944	(1,533)	0	0	0	(1,533)	0	0	(1,533)	2,479	946	X	
Kalama	2,074	775	59	(329)	0	505	0	0	505	47	552		X
Longview	10,384	145	405	(805)	172	(83)	1,584	0	1,501	1,241	2,742	X	
Port Angeles	2121	1062	0	0	0	1,062	0	0	1,062	244	1,306		X
Portland	38,095	(2,306)	0	0	0	(2,306)	0	0	(2,306)	8,387	6,081	X	
Seattle	47,561	14,903	3,802	(8,050)	(5,824)	4,831	0	20,946	25,777	14,744	40,521		X
Tacoma	52,453	10,402	3,136	(6,952)	1,363	7,949	6,397	0	14,346	10,581	24,927		X
Total	175,663	25,882	14,997	(18,735)	(4,209)	17,935	8,426	20,985	47,346	42,004	89,350	3	7
Average	17,566	2,588	1,500	(1,874)	(421)	1,794	843	2,099	4,735	4,200	8,935		
South Pacific:													
Hawaii	41,204	13,466	6,631	(11,726)	293	8,664	0	0	8,664	4,245	12,909		X
Humbolt Bay	0	0	188	0	(532)	(344)	480	0	136	0	136	X	
Long Beach	111,839	61,317	23,469	(13,854)	(2,069)	68,863	0	0	68,863	22,939	91,802		X
Los Angeles	173,943	77,888	18,570	(9,757)	(5,017)	81,684	0	0	81,684	25,107	106,791		X
Oakland	45,109	23,130	2,788	(10,654)	(477)	14,787	0	0	14,787	8,308	23,095		X
Richmond, CA	4,157	1,382	138	(2,070)	0	(550)	0	0	(550)	1,156	606	X	
Sacramento	11,708	876	334	(1,350)	(1,917)	(2,057)	11	0	(2,046)	1,566	(480)	X	
Saipan	1,188	160	143	0	0	303	0	0	303	251	554		X
San Francisco	11,119	7,349	0	0	0	7,349	0	0	7,349	0	7,349		X
Stockton	10,272	(1,317)	780	(757)	0	(1,294)	0	0	(1,294)	1,815	521	X	
Total	410,539	184,251	53,041	(50,168)	(9,719)	177,405	491	0	177,896	65,387	243,283	4	6
Average	41,054	18,425	5,304	(5,017)	(972)	17,741	49	0	17,790	6,539	24,328		
Great Lakes:													
Duluth	785	(518)	103	(30)	67	(378)	77	285	(16)	178	162	X	
Indiana	3,322	(1,496)	277	0	1,719	500	0	0	500	2,278	2,778		X
Milwaukee	2,163	(381)	0	(176)	0	(557)	0	0	(557)	631	74	X	
Toledo	5,286	1,707	677	(478)	0	1,906	118	76	2,100	1,580	3,680		X
Total	11,556	(688)	1,057	(684)	1,786	1,471	195	361	2,027	4,667	6,694	2	2
Average	2,889	(172)	264	(171)	447	368	49	90	507	1,167	1,674		
Grand Total	1,379,277	260,766	103,292	(167,925)	(17,906)	178,227	46,670	48,616	273,513	255,836	529,349	31	28
Average	23,378	4,420	1,751	(2,846)	(303)	3,021	791	824	4,636	4,336	8,972		

Notes:
(1) Net Loss (Negative Net Income) before Taxes and Contributions.
(2) Net Profit (Positive Net Income) before Taxes & Contributions. less than the amount of Bond Interest Expense.

APPENDIX B

Table B–3

U. S. Ports

Port Management Philosophy

Region/ Port	Maximize							
				Combination				
	Earnings	Market Share	Economic Activity	Earnings & Market Share	Earnings & Economic Activity	Market Share & Economic Activity	All Three	Not Specified
North Atlantic:	0	0	0	0	1	2	1	1
South Atlantic:	1	0	1	0	1	2	1	4
Gulf:	3	0	4	1	0	1	4	2
North Pacific:	0	0	3	1	0	0	1	1
South Pacific:	1	0	0	1	1	2	1	2
Great Lakes:	0	1	1	0	0	0	0	1
Grand Total	5	1	9	3	3	7	8	11

APPENDIX C
MOST PRESSING PROBLEMS FACING INDUSTRY IN TERMS OF FINANCING PORT DEVELOPMENT

Environmental and Dredging:
Approval process and waterfront development
Dredging and disposal costs
Dealing with government regulations
Environmental regulations and Fed requirements and support
Environmental restrictions - Coastal Zone Act and others
Dredging - environmental mitigation
Government regulations
Environmental regulations
Paying for environmental clean up and penalties
Uncertainty of development due to environmental concerns
Environmental compliance with current and future expansion
Cost of meeting environmental standards
Costs of regulations and environment increasing
Environmental regulations
Environmental mitigation
Environmental concerns
Complying with all the regulations that govern public entities
Environmental/mitigation issues
Channel maintenance dredging and disposal
Environmental: Wetlands, contaminated soils/waterway cleanup
Cost of dredging

Port Competition:
Not a true economic environment because ports are subsidized
Pricing competition
Revenue growth
Being in a competitive environment with other local ports
Revenue production in a competitive business environment
Low margins and increasing cost of capital
Competition between ports to attract customers
Competition with commercial development
Competing against non-compensatory rates
competing with ports that receive public assistance
Regional competition --low costs for services = low ROI
Need to set port prices to cover cost of operations and ROI
Competition with subsidized ports

Vessel Rationalization and Steamship Line Price Pressure:
Competition for a smaller number of shipping companies
Cut-throat competition between ports and shipping lines
Tenuous financial status of steamship lines
Carrier pressure to reduce rates
Pricing pressure from shipping companies
Rationalization - tendency to minimize operational revenue
Impact of VSAs on negotiated lease arrangements

Excess Port Capacity:
Duplicates of unneeded facilities
Overcapacity in port terminal facilities
Overcapacity of port authority assets

APPENDIX C
MOST PRESSING PROBLEMS FACING INDUSTRY IN TERMS OF FINANCING PORT DEVELOPMENT

Recovery of Capital Investment:
Lack of adequate ROI in port and shipping business
Low return on capital investments
Obtaining commitments from customers before financing facilities
High cost of capital relative to tariff rates for container business
Debt coverage
Revenue seems to lag development
Amortizing financing over the life of facility or terms of lease
Limited sources of revenue
Cash flow
Insufficient capital for financing projects
Rely on taxation for capital projects
Ensuring revenues can cover obligations in the future
Balancing terminal development with customer demands
Can't get financing if can't build facility
Upgrading facilities to meet current and future requirements
High cost of development

Reduced Funding from Federal, State, and Local Government:
Limit funding
Water Resource Development Act - fiscal impact for ports
Higher costs due to higher Fed requirements on cost-sharing
Federal funding for historical duties now part of local revenues
Competition for applicable Federal funding
Limited city/state funds for capital improvements
Outside sources of funds shrinking
Lack of Federal assistance
Lack of adequate Fed assistance for infrastructure
Non-availability of Federal and State grants
Decline in Federal support
Limited state funding
Reduced Fed participation in cost-shared projects
Lack of state appropriations
Lack of state and Federal funds

Competitions for Capital Funds:
Access to capital through state capital budget system
Competition for limited public resources
Capital for major investments
Competition for limited dollars
Tax limitations
Securing funds for capital projects
Necessity to generate additional funds through ad valorem taxes
Obtaining long-term commitments from users to underwrite financing
Keeping port funds generated by taxes for port use
Competition with many political and social projects for funds
Competition for capital funding
Identifying funding source for projects unfunded in the five-year capital plan
Obtaining public support for a WTC and additional FTZs
Getting taxpayers to vote on bond issue in hard economic times
Loss of G.O. funding

APPENDIX C
MOST PRESSING PROBLEMS FACING INDUSTRY IN TERMS OF FINANCING PORT DEVELOPMENT

Recovery of Capital Investment:
Lack of funds for capital improvements
Ensuring sufficient facilities are available for future needs
Generation of adequate funds to support capital needs
Multiple demand for state funds

Land for Expansion:
Cost of land for expansion
Acquiring off-port land needed for expansion

Transportation Access Problems:
Getting ISTEA to improve port road access
Costs associated with developing off-port landside access
Links to broader transportation issues

Tax Exempt Bond Financing:
Laws limiting type of improvements funded with tax-exempt bonds
Revenue bonds classified as private activity
Limitations on tax-exempt bonding

State and Local Government Conflicts:
State and municipal government raid on port revenues
Redistribution of port earnings to local governments
Trend of ports required to contribute to parent government bodies
Funding interrelationships w/local and state governments
Local government shifting non-maritime activities onto ports
State/local government siphoning funds
Diversion of port revenues to the city's general fund

Other Land Use Problems:
Conflicts and uses of prime waterfront land
Conflicting uses of waterfront land

Other Miscellaneous:
Inland Waterways tax being proposed by Congress
Trade restrictions
The slow economy
Difficulties on the financing process
Lack of public relations
Marketing port to U.S. bond investors
Acknowledgement and acceptance of port activity by citizens
World-wide economic downturn
Obtaining taxpayer support for projects
Politics

Breakbulk cargo includes pelletized cargo and miscellaneous items such as tanks, machinery, or bagged cargo that is not shipped in containers.

Business Income is business pre-tax profit type income. It includes profit, interest income, rental income, and depreciation.

Conference Agreement is an agreement among liner operators serving the same trade to fix rates, coordinate sailings and cooperate in various other areas related to the production and marketing of services.

Container cargo is packed in a container twenty-foot equivalent unit (TEU) or forty-foot equivalent unit (FEU) and move in a unitized form. Containerized cargo volumes are measured in metric tons in the model.

Direct Impacts represent impacts associated with the initial round of spending and employment generated by a maritime activity. The direct impact of the port industry is comprised of transportation activities (pilotage, bunkering, freight forwarding, cargo handling and inland transportation).

Economic Impact is a measure of economic activity performed by or closely related to a specified region.

Employment is measured in year-round jobs, both full- and part-time. No distinction is made between these two categories. All jobs generated at businesses in the region are included as regional employment, even though the associated wages of commuters may be expended by households in other regions.

Federal Taxes consist of corporate and personal income, social security, and excise taxes estimated from the changes in Value Added and wages that are generated in the model run.

Indirect Impacts include the effects of other industrial and service sectors caused by the direct activity. This includes the interindustry economic activity supported by the purchases of supplies, services, labor and other inputs.

Induced Impacts include the economic activity that comes from household purchases of goods and services made possible because of the wages generated by the direct and indirect economic activities.

Input-Output Analysis is a type of economic analysis that identifies interindustry purchases of goods and services. For every dollar spent on a purchase in one industry, input-output analysis would indicate how much is respent in all other industries.

Intermodal Transportation enables cargoes to be consolidated into economically large units (containers) optimizing use of specialized intermodal handling equipment to effect high-speed cargo transfer between ships, barges, railcars, and truck chassis using a minimum of labor to increase logistic flexibility, reduce consignment delivery times, and minimize operating costs.

Landbridge is an intermodal connection between two ocean carriers separated by a land mass, linked together in seamless transaction by a land carrier.

Liner is a cargo ship that is operated between scheduled advertised ports on a regular basis.

Local Taxes are equal to revenues that accrue to local governments (counties, municipalities, special districts, and school districts) through property tax, local sales taxes, and other revenues (i.e. local license fees).

Micro- or Mini-bridge is a joint water, rail or truck movement of containers offered by ocean carriers from a foreign port to an inland US city through an intermediate US port or the reverse.

Neobulk cargoes include those cargoes carried on specialized vessels that are not carried in containerized, bulk, or breakbulk form. Typical neobulk cargoes include lumber carried on wood products carriers and steel cargoes.

Port Industry is defined as any economic activity that is needed for the movement of waterborne cargo. Specifically, it includes the economic activities required for the total handling of both domestic and foreign waterborne cargo tonnages (not passengers). The port industry impact is estimated by entering cargo tonnage handled for each kind of vessel type (container, breakbulk, neobulk, dry bulk, liquid bulk, coastwise and inland barge).

Port Users are industries that make use of a port to receive inputs or ship outputs. The extent of port usage is defined by the proportion of inputs to the output received or shipped via a port. The dollar value of U.S. exports provides an indication of the extent that manufacturers, distributors, and shippers depend on the maritime industry.

Regional economic multiplier is defined as the total economic effect that occurs in a region per unit of the direct economic change that caused the effect.

Regional Purchase Coefficient-- A term used in Input-Output analysis to refer to a share of total purchases typically made locally (within a study region)

RO/RO identifies a cargo vessel (Roll-on/Roll-off) constructed to allow containerized or unitized cargo loading without vessel's gear or wharf cranes, but by wheeled trailers driven on and off the vessel by tractor power via ramps at the cargo terminal RO/RO berth.

Round-the-World service is a one-directional liner service that generally includes transatlantic, transpacific and Europe - Far East legs.

Sales (Output) is equal to the value of production and sales. The term is used to describe the transaction when money is exchanged for the provision of goods and services. A sales impact is typically a measure of economic impact (also referred to as output). It is intended to represent the total volume of economic activity related to the impact.

State Taxes are equal to revenues that accrue to state governments through personal and corporate income, state property, excise sales, and other state taxes generated by changes in output, wages, or tourist expenditures.

TEU is a twenty-foot equivalent unit, 20x8x8 foot container

Value Added measures regional output in the same sense that "Gross Domestic Product (GDP)" measures national output: it is the difference between the value of goods and services purchased as production inputs and the value of goods and services produced. Value-added consists of wages, state and local taxes, and "other value added". The latter includes non-wage employee compensation, profit-type income (other than proprietor's), net interest, and capital consumption allowances.

Vessel Share Agreement (VSA) is an agreement signed by two or more operators. There is no joint capital investment in ships or equipment. Shipping companies share vessels and costs.

Wages include wages, salaries, and proprietors' incomes only. They do not include non-wage compensation (such as pensions, insurance and health benefits).

Wages Net of Taxes are not equal to wages minus the total state and local taxes, because only taxes directly attributable to households are deducted from wages to obtain the net result. Total state and local taxes, however, include taxes on businesses.

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