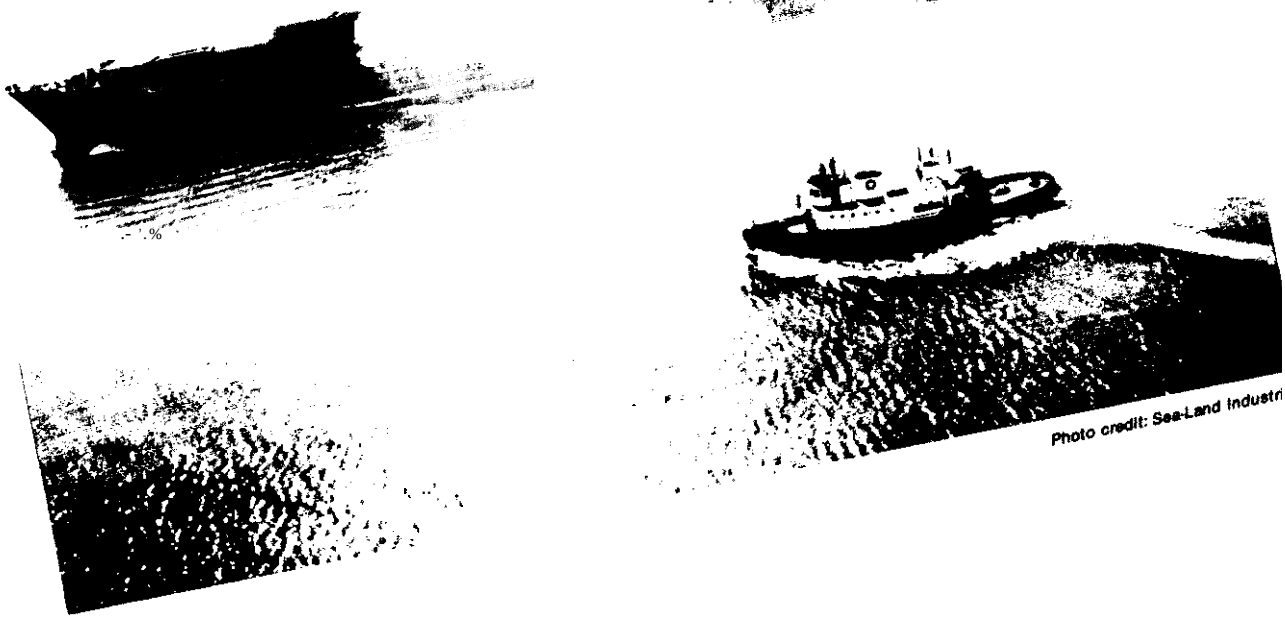
Chapter 3
The U.S. Shipping Industry



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OVERVIEW

The U.S. shipping industry consists of at least two clearly separate business sectors: liner and bulk. Liner companies operate containerships, roll-on roll-off (RO/RO) ships and other general cargo ships in a regular scheduled service carrying diverse cargoes from port to port at set rates, much like a railroad or trucking operation. The largest and most prominent liner companies are engaged increasingly in cargo transportation between inland locations in which ships serve only as links in an overall transport system. The bulk-shipping business usually handles large tonnages of single commodities by operating one or a fleet of ships especially designed for one cargo. Bulk companies include shipping departments of major petroleum corporations who operate tanker fleets, as well as independent bulk ship operators, who may operate tankers, dry-bulk carriers (ore, coal, grain), and combination ships (under various long- and short-term leases or charters) in the bulk and ''neobulk' trades. (Neobulk is a term that describes movements of various cargoes in shipload lots—e. g., lumber, cars, or steel). Bulk and liner businesses often have very different problems and business outlooks, and the effectiveness of Government policies may depend on how well they reflect those differences. * This chapter is therefore divided into separate discussions of these two business sectors.

The U.S. shipping industry is also divided by flag of operation, as well as into international and domestic trades. The U.S. merchant fleet is usually considered to consist of U. S. -flag privately owned, self-propelled vessels of over 1,000 gross tons. This definition excludes inland waterway barge systems, small ships, and most service craft such as fishing boats, pleasure boats, or crew boats. It includes practically all U.S. -flag ships engaged in international trade and the major ships in the domestic coastal and offshore (i. e., Hawaii, Alaska, Puerto Rico) trades.

One could extend a definition of the U.S. shipping industry to include the fleets owned by U.S. corporations but registered in other countries. That fleet-consisting principally of' tankers and dry-bulk carriers—is significant by any standards. About 36 percent of the Liberian-flag fleet and 17 percent of the Panamanian-flag fleet is ' 'beneficially owned' by U.S. companies. *

The term used to describe the merchant ships registered in Liberia and similar countries is ''flag-of-convenience fleet. The term reflects the ease of registration and minimum taxes and regulations prevalent in those countries. The shipowners have the flexibility to use crews of any nationality, to construct the ships in any country, and to operate outside the framework of their own national laws and regulations. The shipowners themselves, prefer to use the term ' 'flags of necessity' for these fleets, reflecting the view that economics dictates the use of such flags where businesses can operate at competitive costs.

The term often given the U.S. flag-of-convenience fleet is the ''U.S. effective-control' fleet. The major petroleum and other U.S. corporations that own this fleet contend that because it is U. S.-owned, it is effectively under U.S. control and can be considered as part of the U.S. fleet, especially in times of national emergency. Although provisions to make this fleet available under emergencies are in effect through agreements between industry and Government and between U.S. and foreign governments, we will not in this report define the U.S. merchant marine to include this fleet. We

•Some analysts have described these two business sectors as "common carriers and "contract carriers" rather than liner and bulk. Such terms may more clearly denote the differences in the businesses rather than the kind of cargo carried. It is also of interest to note the difference in growth rates of these two business sectors and the difference in effectiveness of Federal policies on them.

*Based on data compiled by A & P Appledore, Inc. for the United Nations Conference on Trade and Development (UNCTAD) Secretariat in 1981. "Beneficially owned' is defined as designating the owner who receives the benefits or profits from the operation.

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will, however, in this chapter present some data on this fleet.

Table 10 lists vessels in the U.S.-flag merchant fleet by type of ships. Table 11 shows the age distribution of these vessels. Of this total fleet, the U.S. liner fleet is the predominant sector in international trade. Certain ships in international trade are eligible for a variety of Government subsidies (discussed in ch. 6) intended to allow them to compete with lower cost foreign-flag ships. Most liner companies belong to steamship conferences (discussed later in this chapter), which set rates and generally establish rules or cooperative operating agreements for their members. The U.S.-flag tanker and dry-bulk fleets dominate the domestic trades. Table 12 lists the ships which are owned by U.S. companies and registered under foreign flags (the U.S. effective-control fleet). The total tonnage is about twice the U.S.-flag fleet; 85 percent of the tonnage is in tankers and most of the remainder is in dry-bulk and combination-bulk carriers.

The domestic trade U.S.-flag fleet operates under entirely different circumstances than the foreign-trade fleet. By law, all domestic waterborne trade must be carried by U.S.-built, U.S.-flag ships.

Table 10.—U.S.-Flag Privately Owned Merchant Fleet (oceangoing ships 1,000 gross tons and over as of Jan. 1, 1983)

	Number of ships	Deadweight tons
General cargo	240	4,312,153
Breakbulk/partial container	104	1,404,688
Containership	97	1,868,274
RO/RO—vehicle carriers	18	274,043
Barge carriers	21	765,148
Bulk cargo	18	618,018
Tankers	233	14,220,469
Special products/liquefied natural gas (LNG)	33	1,601,551
Other (coastal, passenger)	17	110,396
Total	541	20,862,587

SOURCE: "Ship Register," Military Sealift Command, Department of the Navy, Washington, D. C., January 1983.

There is no foreign competition and no direct government subsidy. However, the ships and barges must compete with other modes of transportation (unless they engage in offshore trades, i.e., Hawaii, Puerto Rico) —pipelines, truck, and rail predominantly, and the domestic markets are open to potential new competitors. The following discussions of the foreign and domestic U.S. -flag fleet will examine the important aspects of each and note the dominant trends for both liner and bulk operations.

Table il.—Age Distribution U. S..Flag Privately Owned Fleet (Jan. 1, 1983)

	Total ships	Under 5 years "	5-9 years	10-14 years	15-19 years	20-24 years	25 years and over
Total all ships	541	59	72	81	70	93	161
General cargo	240	24	18	48	56	54	40
Breakbulk/partial container	104	1		7	45	47	3
Containership	97	19	;	22	9	7	37
RO/RO	18	2	8	6	2	0	0
Barge carriers	21	2	6	13	0	0	0
Buik cargo	18	4	3	2	0	1	8
Tankers	233	17	44	28	11	37	96
Special products/LNG	33	11	7	3	1	2	9
Other (coastai, passenger)	17	3	0	0	2	4	8

sOuRCE: 'Ship Register," Military Sealift Command, Department of the Navy, Washington, D. C., January 19S3.

Table 12.—The U.S. Effective=Control Fleet as of December 1982

	Number	000 dwt	Average 000 dwt
Total	*466*	47,221.8	101.33
General cargo	*73*	525.7	7.20
Breakbulidreefer	*52*	334.4	6.43
Containership	10	25.5	2.55
RO/RO	*6*	35	5.83
Barge carriers	*5*	130.8	26.16
Bulk	*106*	6,466,6	61.01
General bulk	*76*	3,537.9	46.55
Combination, ore/bulk/oil	**30**	2,928.7	97.62
Tanker	**259**	39,426.7	152.23
Special product/LNG	**27**	793.3	29.38
Passenger	1	9.9	9.90

SOURCE: Federation of American Controlled Shipping, March 1983.

THE U.S. LINER INDUSTRY (IN INTERNATIONAL TRADE)

The U.S.-flag liner industry engaged in international trade consists of 8 major ship-operating firms with fleets ranging from 3 to 46 vessels (see table 13). The three largest firms own and operate over half of the total tonnage. Seven of the major firms operate their foreign trade ships under the U.S. Maritime Administration's (MarAd) Operating Differential Subsidy (ODS) program whereby a portion (up to 20 percent) of each operator's cost differential with foreign-flag ships operating on the same trade route is covered by direct subsidies (see ch. 6). One of the largest firms, Sea-Land, does not receive direct subsidies. U.S. liner trades have increased about 30 percent in tonnage over the past decade, while the U.S.-flag industry has remained rather constant in tonnage capacity. However, the fleet has changed in character, improved its productivity, and moved toward offering intermodal services.

During 1982 and continuing into 1983, the U.S. liner industry suffered substantially from the worldwide recession, and the overall cargo volume in key trades shrank markedly. Industrywide losses were posted for the first quarter of 1983 even with subsidies. This has left some companies in a difficult financial position—especially the smaller operators, who are not well capitalized. On the other hand, a few of the larger companies are aggressively expanding their services and building new, large containerships to modernize their fleets.

Liner Trades

In the past two decades, U.S. liner cargo growth rates have averaged 2 to 3 percent per year. U.S. trade growth with Southeast Asia, at over 5 percent per year, has been particularly dramatic. At the same time, the mix of commodities has changed to much lower density cargo and thus, demand for shipping space has grown at a faster rate than cargo tonnage.

Table 13.—U.S.-Flag Liner Fleet, July 1983

Company	Number of ships	Gross tonnage (000)	Percent share tonnage
Engaged In International trades:			
● U.S. Lines	37a	708[a]	19
Sea-Land Service, Inc.[b]	36	672	18
● Lykes Brothers Steamship Co.	46[c]	558[c]	15
● American President Lines.	21d	472[d]	13
● Delta Steamship Lines	z4e	319e	9
● Waterman Steamship Corp.	1of	256f	7
● Farrell Lines	89	1409	4
● Prudential Lines	3	79	2
Engaged in domestic (offshore) trades:			
Matson Navigation Co.	6[h]	135fl	4
Navieras de Puerto Rico	8[i]	131'	4
Others	18	221	
Total	217	3,691	

"These companies operate with Federal operating differantlal subsidies, which totaled over S350 million in fiscal year 1982.
[a]Includes seven breakbulk ships on time charter to the Military Sealift Command (MSC) and six partial containerships, totaling 70,000 gross registered tons (grt), operated by Moore McCormack Lines.
[b]Sea-Land participates In the domestic trades as Well as the International trades.
[c]Includes nine vessels, totaling 99,700 grt, chartered to MSC.
[d]Includes one vessel, of 15,949 grt, chartered to MSC.
[e]Includes six ships on charter from Prudential Lines.
[f]Includes one LASH vessel, of 28,487 grt, chartered to MSC. Three LASH vessels in the Waterman fleet are on long-term charter from Central Gulf Lines.
[g]Includes two vessels, totaling 52,900 grt, chartered to MSC.
[h]Matson has two additional vessels, presently in indefinite lay-up, totaling 3%311 grt.
[i]Navieras owns three of the ships in their fleet and Charters the remaining five.

SOURCE: Telephone conversations with liner companies; Seatrade, U.S. *Yearbook 1982*; U.S. Maritime Administration.

As can be seen in table 14, more than half of the trade by volume is with Europe (including the Mediterranean region), Japan, and South Korea. There is also significant trade with Central and South America, Southeast Asia, the Middle East, and Africa. In 1981, 84 billion ton-miles of liner carriage was provided to and from these regions. Table 15 illustrates the containerized cargo-shipping routes by percentage of volume transported. More than one-third of the total in 1980 went from the United States west coast to Japan and one-fourth from the United States east coast to Europe.

The world trade outlook in chapter 2 indicates that U.S. trade volume probably will continue to grow throughout the rest of the century, albeit at slower rates than for the last 10 to 15 years. Trade with developing countries, particularly in the Far East, could grow at a higher rate than total trade. One major possible negative development would be aggressive protectionism in the United States and abroad, particularly in the short run, as a response to the worldwide recession and to the serious balance-of-payments problems of many countries, especially oil-importing less developed countries (LDCS).

If a more moderate trade-growth rate does occur, U, S. carriers will be forced to compete with rapidly growing foreign-flag fleets for the limited cargo available and will need to continually increase service efficiency and capability. For example, the LDCS are now developing the infrastructure required for containerization, and may also improve the capabilities and efficiency of their fleets. It is likely that intermodal services will continue to expand in all trades. This could lead to increased competition among those liner conferences that serve the same trades; e.g., the U.S. Pacific coast-to-Europe trade is served by both direct all-water carriers and by using a combination of truck or rail to cross the United States and ships to and from U.S. Atlantic coast ports. But it may also offer opportunities for those U.S. operators that are in the forefront of intermodal technology and management systems.

U.S.-flag operators can also benefit from the increased trade volumes, particularly in the Far East trade. Operators in the less developed trades—particularly South America and Africa—may face declining trade volumes outbound from the United States in the near future, since the LDCS are likely to restrict imports to protect their balance-of-payments positions.

Table 15.—Major U. S. "Foreign Trade Routes for Containerized Cargo, 1980

Trade route	Percent of total containers carried in and out
U.S. Pacific coast to Far East and Australia	38
U.S. Atlantic coast to Europe including Mediterranean)	29
U.S. Atlantic coast to Far East and Australia	11
U.S. gulf coast to Europe	5
U.S. Atlantic coast to Caribbean and South America	5
U.S. Pacific coast to Europe	4
U.S. gulf coast to Far East	2
U.S. gulf coast to Caribbean	1
All others	5

SOURCE: US. Maritime Administration, ***Containerized Cargo Statistics— 1980.***

Table 14.—U.S.-Flag Liner Shares, Total U.S. Trade Volumes, and U. S. "Flag Ton-Miles Carried

	U.S.-flag shares			Total U.S. trade volumes (roil LT)			1981 U.S.-flag carriage (billions of ton-miles)
	1967 (“/0)	1981 (“lo)	1981/1967	1967	1981	1981/1967	
Japan and South Korea	11.8	21.9	1.86	10.22	11.03	1,08	14.3
North Europe	13.7	27.9	2.04	13.97	13.44	0.96	15.4
Australia	19.4	24.5	1.26	1.38	2.37	1.71	4.7
Mediterranean	25.3	30.2	1,19	3.71	5.18	1.40	**7.5**
Southeast Asia	30.4	28.0	0.92	4.11	8.93	2.17	19.2
Mideast/South Asia	30.7	29.3	0.95	3.35	3.66	1.09	7.9
Americas	32.6	30.9	0.95	7.68	9.24	1.20	9.9
Africa	51.0	26.8	0.53	2.28	3.66	1.61	5.1
Total	22.1	27.2	1.23	46.79	57.54	1.23	84.0

SOURCE: Manalytics, Inc., "Assessment of Maritime Trade and Technology—Task on U.S. Shippingl" prepared for the Office of Technology Assessment, U.S. Congress, December 1982.

The Liner Fleet

During the last decade, there has been a substantial transformation of the U.S.-flag general cargo fleet, of which the foreign trade liner segment now accounts for approximately 75 percent. The fleet has changed from mostly small multipurpose general cargo carriers to mostly large special-purpose containerships. Between 1971 and 1981, the total U.S.-flag general cargo fleet tonnage actually declined, largely as the result of scrapping old multipurpose ships. For the remaining component—the liner fleet of full containerships, partial containerships, and RO/ROs—the growth has been dramatic—from 1.5 million to 3.9 million deadweight tons (dwt), or almost 10 percent per year. The growth rate in the U.S.-flag liner fleet in terms of capacity, from 1971 to 1981, was almost 5 percent per year.

Unlike the world fleet as a whole, the U.S.-flag fleet's most important ship type is the containership. The average size of containerships in the U.S. fleet is about 19,000 dwt. U.S. companies have, however, operated some of the largest containerships and at present have on order a group of super containerships. While some other major maritime nations operate fleets of large containerships, they generally are not in service in the U.S. trades. These containerships are in service in the Europe-Far East and other long route trades, usually as part of multiflag consortia.

Most of the U.S.-flag liner fleet is dedicated to U.S.-foreign trades. This is a result of a number of laws, as well as the economics of this trade. For example, a large portion of the liner fleet operates under Federal operating differential subsidies (ODS) which, among other constraints, requires operators to serve specific assigned (i. e., essential) foreign trade routes. Those operators who receive ODS are prohibited from carrying cargo between domestic points except when authorized by MarAd under Section 506 of the 1936 Merchant Marine Act. One unsubsidized liner operator carries some domestic trade cargo when it fits their overall trade route schedule. Others may also carry some foreign-to-foreign (cross trade) cargo along a specific route, but most of this cross trade is not dominated by U.S.-flag operators.

U.S. Liner Shares

Because of successful productivity improvements by some major operators, the U.S.-flag liner fleet has maintained a healthy share of U.S. foreign trade despite effective foreign-flag competition. The U.S.-flag share was 27 percent in 1981, up from 22 percent in 1967. It peaked in 1974-75 at approximately 30 percent. Some claim that Federal subsidies helped to maintain the U.S. liner fleet's cargo share position, while others claim that subsidies have constrained growth because of inflexible requirements (see ch. 6).

There is a variation in U.S.-flag share and level of ship sophistication by foreign area of service. Fifteen years ago, U.S.-flag shares were much higher in LDC trades, where both the economies and shipping technology and infrastructure were less developed than in developed countries' trades. Recently, however, U.S.-flag shares have declined in the LDC trades, as national-flag competitors have entered those trades and expanded rapidly from a very small base, often with substantial government support. U.S.-flag shares have increased significantly in the developed countries' trades, mainly in the period 1972-74, due largely to conversion (by now essentially complete) to containerization. Now, as seen in table 14, U.S.-flag liner shares only vary by 10 to 20 percent, from region to region. Furthermore, large segments of the developed countries trades formerly served by liner operators have switched to neobulk/contract/proprietary service (autos, iron and steel products, scrap, and forest products), which tend to move almost entirely in foreign-flag ships, leaving behind the common carriage, high-service segment of the developed countries' trade for U.S. -flag carriers.

Technological Developments

As discussed in chapter 5, most recent technological innovations in liner shipping have been spurred by a need to reduce costs. The United States has been among the world's leaders in the introduction of major new technologies in the 1960's and 1970's, such as containerships and other intermodal concepts like lighter aboard ship (LASH) and integrated tug barges (ITBs). Coun-

tries other than the United States quickly adopted the most successful of these technologies into their fleets, however, and have been much more active in the introduction of certain fuel- and cost-saving features and automation to reduce crew size. In these respects, the United States has been constrained by certain union agreements regarding crew reduction and by some Government policies which, until waivers were granted very recently, prohibited the use of foreign-built main machinery in ships constructed with either title XI loan guarantees (see ch. 6) or construction subsidies. Since there are no U.S. manufacturers of large, slow-speed diesels, this Federal policy, in effect, denied U.S.-flag operators access to an advanced fuel-efficient technology common in other major maritime nations. Because of this, it probably will be some time before U.S. liner operators catch up to other countries.

Chapter 5 also describes the recent emphasis on reducing energy costs. This has manifested itself in the reduction of operating speeds for liner ships and the introduction of new technologies and procedures such as more efficient diesel engines, better controls to maximize the efficiency of the powerplant, fuel-treatment systems that allow use of lower grade fuels, and bottom scrubbing.

In the liner trades, there has also been a trend toward specialized ships (particularly container, but also LASH and RO/RO) over the past two decades. This trend is expected to continue but not to the point where the conventional multipurpose ships are completely phased out of service. Ships with flexible capabilities will undoubtedly be necessary for certain trades where:

- significant amounts of heavy-lift cargoes are moved;
- a substantial container imbalance exists;
- there is a significant amount of cargo in both directions that is only marginally containerizable; and
- national priorities and investment strategies do not favor the development of the domestic transportation infrastructure needed to support container service.

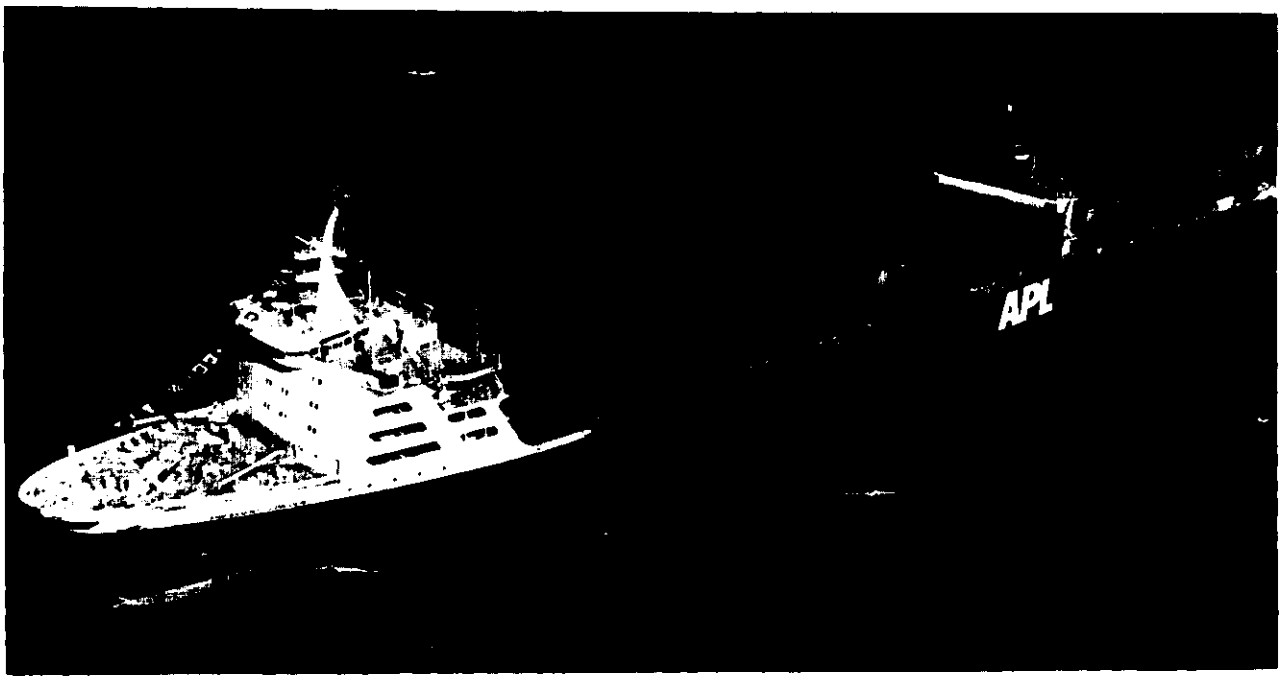
New ship types such as auto carriers and wide-hatch forest products ships have been introduced during the 1970's and are referred to as ''neobulk' ships, These ships have specialized hulls and cargo-handling systems designed to significantly reduce costs. U.S.-flag operators have not developed these systems to the same extent as foreign operators. Combination ships such as auto/bulk and container/bulk ships also have been introduced, often sailing on triangular voyages with foreign-to-foreign legs incorporated into their itineraries. The development of these neobulk and combination vessels is expected to continue,

There is also a clear trend toward larger ships in the liner trades, brought about in large part by the trend toward specialized ships. However, the largest such ships currently on order (U.S. Lines' 4,200-teu ships) are approaching the draft, beam, length, and shoreside crane constraints imposed by the world's harbors and channels. *

According to the 1982 yearbook published by Containerization International, of the approximately 930 containerships over 500 teu, about 5 percent are in the super carrier size range of over 2,000 teu. A sizable number of new buildings, however, are of these larger ships and in the more distant future, as intermodal activity concentrates on fewer, larger volume ports, with great economies of scale, there will be more incentive to deepen or widen channels to accommodate even larger, more specialized ships. Thus, liner shipping operations may become more focused around fewer major port complexes with feeder services to and from the "hub" ports.

The average crew size of the U.S.-flag liner ships has been declining (but very slowly) as automated engine rooms and other labor-saving devices have been introduced. The cost savings, however, are not proportional to the reduction in crew size due to expenses associated with the automated equipment and increases in shoreside contracts for maintenance and repair formerly performed by shipboard personnel. Discussions with maritime unions to decrease personnel requirements are likely to continue since the technology exists for further reductions in crew size. One possible change is

*Containership sizes are commonly stated in terms of teu (the number of twenty-foot-equivalent units, or twenty-foot containers, the ship could carry). The U.S. Lines' 4,200-teu ship designs are reported to be about 58,000 dwt. The recently completed 2,500-teu containerships for American President Lines are each 49,000 dwt with a length of 860 ft, a beam of 105 ft, and a draft of 35 ft.



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modification in the seamen per billet ratio (the total number of employees compared to the number required onboard ship at any one time). Typically in the United States today, that ratio is 2 to 1, with each crew member on board ship 6 months per year, as per typical union contracts. Discussion of a 3 to 2 ratio is taking place. Other possible trends include multiskilled crew designations and elimination of certain exclusive billets, such as radio operator. These changes, while brought about by technology and automation advances, will require labor policy changes by the unions and in Federal regulations. The U.S. seafaring unions, to date, have been reluctant to accept reductions in crew size except for certain new ships.

Terminals, particularly container terminals, have been increasingly automated to reduce labor costs and improve service levels. Automated terminals can stack containers higher than nonautomated terminals, thereby reducing the amount of land required for a given amount of cargo handled. This trend toward automation is likely to continue. A development that has not been apparent, at least in the United States, is the introduction of large, multiberth, multiuser terminals. These can reduce land requirements and thus may reduce costs (per unit of through capacity) significantly. If the apparent cost effectiveness of this type of terminal is proven, it could be introduced in the United States.

The U.S. maritime industry has developed more than its share of advanced technology. However, it has not excelled in the economic use of new technology or the adoption of technology from other countries and other industries. U. S, -flag carriers have been slow to introduce shipboard automation and to convert to diesels. As noted above, foreign-built diesel engines were prohibited by law for vessels built with construction differential subsidies (CDS) until 1977, and U.S. Navy policies promoted the use of steam turbines as acceptable defense features for subsidized merchant ships because they could be more readily designed with large reserve power. Some U.S.-flag carriers now are buying management services regarding diesel operation from divisions of European companies set up just to provide these services.

Since the 1977 MarAd waiver which permitted a new class of American President Lines containerships to be built with foreign-supplied diesel power-

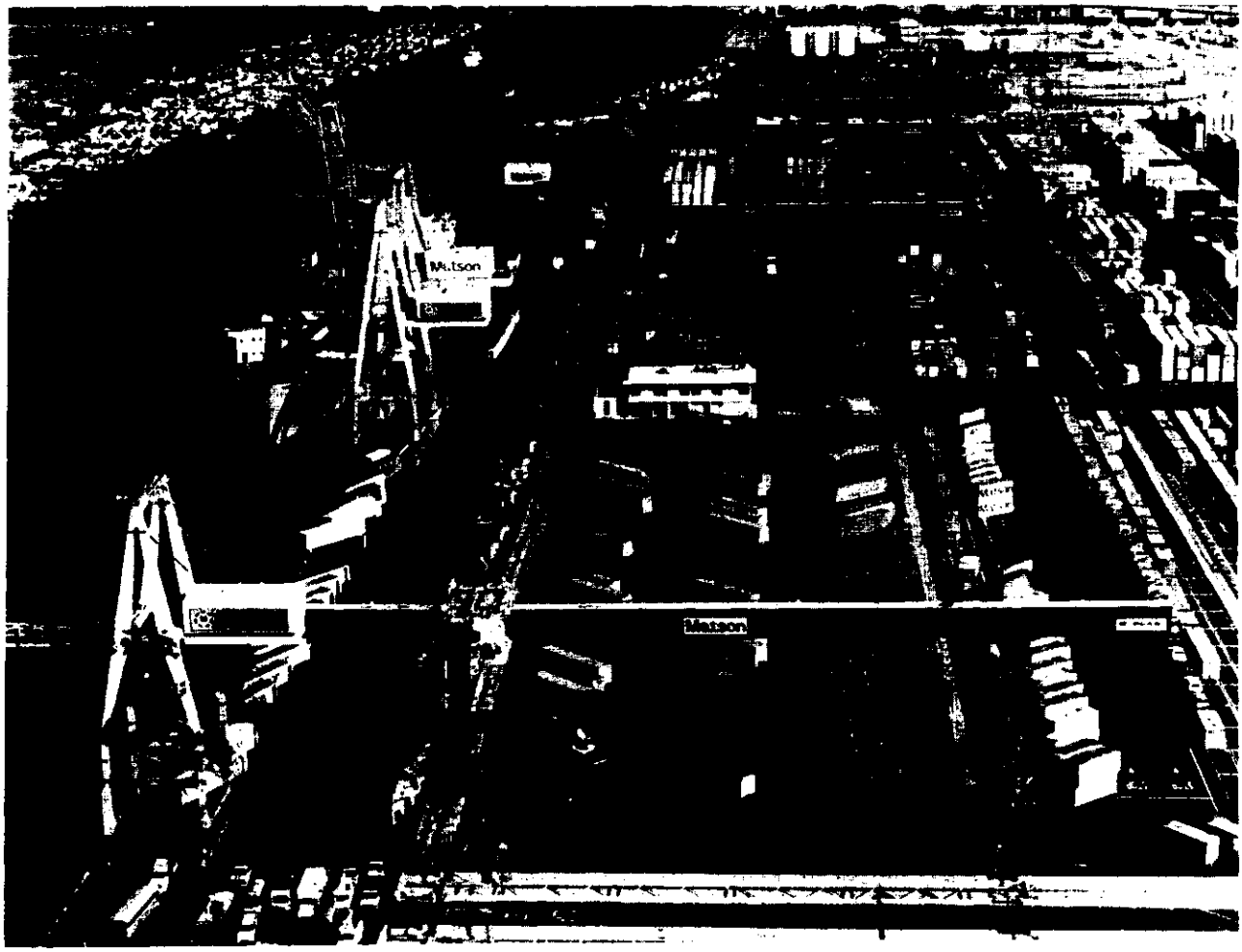


Photo credit: Matson Lines

Modern container-handling terminals, such as this one in Los Angeles, have markedly increased the productivity of liner shipping

plants, a major shift toward the use of medium- and low-speed diesel engines in the commercial shipping industry in the United States has been underway. This shift was also prompted by the oil embargo of 1973, which resulted in fuel costs becoming the fastest growing operating expense. U.S. operators are also now constructing a number of ships in foreign yards and are not constrained by either CDS ''buy America' policies or a need to meet U.S. Navy requirements for generous ' 'reserve power. Recently, there also has been a change in U.S. naval vessel propulsion designs to medium-speed diesel and lightweight gas turbine engines. Thus, the rationale for requiring the use of steam propulsion as a national defense feature has been eroded. The U.S. Navy and its logistics support arm, the Military Sealift Command, have incorporated new technology medium-speed diesel engines into several new classes of logistic support and amphibious ships.

Some observers believe that the ODS Program, with its downside protection and service constraints, is largely responsible for the rather poor record of U.S.-flag operators in the adoption of new technologies. Others contend that the high manning levels negotiated between the carriers and the unions (and paid for in part by the taxpayers through ODS) are to blame, since investment in innovation requires as a quid pro quo a reduction in labor

costs. Whatever the cause, a valid goal for future policies should be to eliminate such distortions and barriers to more productive shipping, whether subsidized or not.

Among the most notable of U.S.-flag management successes has been the extensive implementation of intermodal service, particularly in landbridge* offerings in the U.S./Far East trade and the U.S./Europe trade. Microbridge " (point-to-point intermodal service with through 'rates) is becoming more important and the volume of these activities can be expected to grow significantly.

Containerization technology was an American innovation and has provided opportunities for U.S..-flag carriers who took advantage of intermodal service opportunities to penetrate trades where their all-water market shares were small. The ability to offer intermodal service is considered a prime reason for the large increase in the U.S.-flag share between 1967 and 1981 in trade with Japan, South Korea, and Europe. An important example is the Far East-U. S. Atlantic and gulf coasts trade, where the U.S.-flag share in 1967 was approximately 15 percent. Half of that trade has now been diverted to the Pacific coast, where the U.S.-flag share was 30 percent in 1981, up from 23 percent in 1967.

*" Landbridge" and "microbridge" are terms describing a combination of land and seaborne intermodal service. In *landbridge*, rates and total service are offered by a carrier for cargo shipments from a foreign port to a U.S. port, across U. S. land to another U, S. port and finally by sea to a fore ign port destinat ion. *Microbridge* refers to total rates and service offered by a carrier for cargo shipments from any inland U S loc at ion to a port, by sea to a foreign port and finally overland to another inland destination. It also refers to variations of such service from point -to- port and port-to-point.

Cost, Productivity, and Competitiveness

Compared to other major U.S. industries, the liner industry as a whole has had a mediocre performance in terms of return on equity. Out of 10 major industry groupings, in 1980 liner shipping ranked eighth. It is interesting to note, however, that the 9th and 10th places were held by two other transportation industries—railroads and air transport. Tables 16 and 17 summarize the financial sta-

Table 16.—Financial Data for U.S.-Flag Liner Companies Engaged in Foreign Trade

Aggregate total	1977	1978	1979	1980	1981
● Net profit (loss) ($000)	$63,865	$105,998	$32,512	$159,956	$99,351
tReturn on equity	5.9 "/0	10.4 "/0	3.2"\o	10.6"\o	6.80/0
tReturn on invested capital (total debt Plus equity)	6.1°/0	6.8"!0	3.90/0	7.5 "/0	6.7°)o
t"current assets to current liabilities	1.3	1.1	1.0	1.3	1.1
● Long-term debt to owner's equity	0.84	1.60	2.03	2.67	1.65
t Operating revenue per freight payable ton (subsidized operators)	$81.95	$91.15	$99.13	$110.03	$120.43
t Subsidy per freight payable ton	$13.38	$14.83	$14.82	$14.05	$15.04
t Operating expense per freight payable ton (subsidized operators)	$76.15	$83.45	$93.22	$99.19	$108.03
t Nonoperating expense per freight payable ton (subsidized operators)[a]	$17.45	$19.01	$20.31	$22.59	$22.55
t Operating margin per freight payable ton (subsidized operators)[b]	$1.73	$3.52	$0.42	$2.30	$2.89

KEY ● = Includes nonsubsidized companies; t . Weighted average,
alnterest, overhead, vessel depreciation, and charter hire.
bo$_m$r$_a$tin$_g$ revenue plus subsidy less operating and n0n0peratin9 exPense

SOURCE: U.S. Maritime Administration, Office of Financial Management.

Table 17.—U.S..Flag Liner Companies in Foreign Trades: Summary of Financial Results, 1980-83 (millions of dollars)

Category	1983 (first quarter only)	1982	1981	1980
Gross revenue	1,116	4,200	4,671	4,308
Subsidy	93	307	312	299
Gross operating expenses	1,110	4,225	4,765	4,429
Gross profit (water line)	99	282	218	178
Interest, taxes, and other expenses less other income , , , , , , ., ., , ., , ,	121	95	122	20
Net profit	(22)	187	96	158

NOTE: The above figures represent aggregate financial data from all subsidized and one unsubsidized liner operator(s) in the foreign trades. For the years 1980 and 1981, some small portion of the data includes the domestic operations of one operator; for the 1982 and 1983, the domestic trade portion has been extracted. The 1982 net profit total includes over $80 million of extraordinary income items such as the sale of ships.

SOURCE U S Maritime Administration, Office of Financial Management, personal communications, July 1983, with OTA additions from data furnished by Sea-Land Industries

tus of U.S. liner companies. (Note that some data is not available for nonsubsidized operators, who do not have to report to the Federal Government the extensive financial data required from the subsidized operators.)

U.S.-flag ship costs are substantially higher than foreign-flag costs for both ship acquisition and operation. Data from MarAd for 1982 indicate that new construction costs for containerships are 2 to 2 times higher in U.S. shipyards than in comparable foreign yards, such as Japan. Even this cost ratio of U. S.-to-foreign building, however, understates the effective ratio from the buyer's perspective because the figures given represent shipyard costs, and market prices now quoted are substantially lower than costs. Furthermore, those price comparisons refer to Japanese yards; prices at Korean yards, where Sea-Land placed its recent orders and where U.S. Lines is now planning to build its new ships, are lower still. *

While all operating expense categories are usually higher for the U.S. operator than the foreign operator, crew costs are a major item of difference, particularly due to differentials in manning scales rather than in per-man wages. Foreign crew costs for containerships range from one-half to one-sixth of equivalent U.S.-flag crew costs (see fig. 26). In most cases, U.S. crew size exceeds foreign crew size, which, for comparison with developed countries, is much more significant than the wage rates.

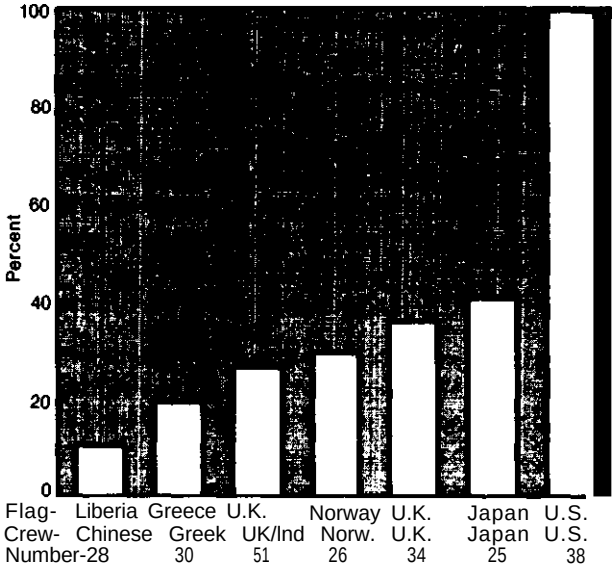
The U.S. standard of living largely accounts for much higher wage rates compared with those in LDCS, However, it should be noted that European and Japanese seamen wages are no longer ''cheap, and that national crews of these nations are also facing a competitive disadvantage with LDC crews. Many European and Japanese ship operators have countered the wage rate problem with smaller crews, use of foreign nationals in ship's crews, and more automation—an approach only now beginning to be applied by U.S. operators.

Subsistence, stores, and supplies are usually proportional to crew costs. U.S. maintenance and repair costs are also higher than foreign counterparts, because it costs more to repair a ship in a U.S. yard and because a U.S. operator who repairs in a foreign yard must now pay a 50-percent ad valorem tax on the value of the repair. U.S. insurance costs reflect the higher capital costs of U.S. ships and the fact that settlements made to injured U.S. seamen are considerably higher on the average than comparable foreign settlements.

Another significant reason for high U.S. operating costs is fuel. Most of the U.S.-flag liner fleet is still powered by steam turbine engines which are much less efficient than modern slow-speed diesel engines which predominate in foreign-flag ships. That portion of the differential, however, will disappear as new U.S. ships come into the fleet. In fact, it is the need to increase energy efficiency and reduce crew size which justifies modernizing the U.S. fleet, rather than the age of the ships. When these two goals are achieved, the U.S.-flag liner fleet will become more competitive with the rest of the world.

For a number of reasons, U.S. liner vessels—even with their higher capital cost, higher wage cost, and higher fuel cost—are able to compete in some trades with their foreign-flag counterparts. In the

Figure 26.—Relative Costs for Crew for a Typicai Containership Operating Under Various Flags



SOURCE: "Comparative Operating Costs for U.S. and Foreign-Flag Ships," by Paul Ackerman, presented at SNAME Ship Cost and Energy Symposium, October 1982.

"In May 1983, U.S. Lines announced signing a contract with Korea's Dae-Woo Shipbuilding Co. for 12 large containerships (4,200 teu and 58,000 dwt) at a price of $50 million each. Even this price was 10 percent lower than that announced a year earlier for the same ships.

past, U.S. construction subsidies were available to mitigate higher construction costs. Operating subsidies also helped. In addition, three other major factors are important in explaining this success—factors that are not applicable to the same degree to the bulk trades. They are:

1. U.S. preference cargoes are available to cover some added costs;
2. some U.S. operators have made substantial advances in ship and cargo-handling productivity; and
3. some U.S. operators excel in marketing.

Liner operations have a broad scope, covering cargo-handling and often intermodal movement as well. The annual capital, crew, and fuel costs for a liner operation are only about one-quarter of the carrier's total costs (whereas, these costs can be more than 75 percent of a bulk ship operator's costs). A liner operator incurs higher cargo-handling, sales, documentation, and administrative costs than does a bulk ship operator. Further, a liner operator incurs other costs—e. g., such as container stuffing/stripping, pick up/delivery, inland transportation, and container leasing—which have no equivalent in bulk operations, U. S, -flag liner operators have no inherent advantages or disadvantages with respect to their foreign-flag competitors on these nonvessel costs. The advantage could, however, depend on effective and efficient management and marketing practices.

U.S. liner productivity is, in some cases, comparable with foreign competition, and productivity improvements have helped mitigate significant U.S. cost disadvantages. During the 1970's, the U.S.-flag merchant fleet underwent major productivity improvements. Table 18 shows that in the liner sector, the fleet went from 403 ships in 1971 to 303 ships in 1976 (a 25-percent reduction), with an 11 -percent increase in deadweight ton-mile capacity. Modern technology and management innovations are important to maintaining these improvements. However, as discussed in chapter 6, the availability of regulatory advantages is also a major consideration in meeting foreign competition.

Influence of Cargo Preference

Many of the major liner trades are heavy inbound—i. e., more loaded containers are imported than exported. U.S.-flag liner operators have historically reduced the economic impact of this imbalance by carrying Government *cargoes outbound*. The United States has long had a policy of granting preference to U.S. carriers on its own cargoes. (Cargo preference is discussed in ch. 7.) The primary components are Agency for International Development (AID) and Export-Import Bank cargoes and military cargoes.

Table 19 gives an indication of the importance of preference cargoes to U.S.-flag liner operators. The impact of these cargoes on individual carriers varies widely. In some cases, up to 30 to 40 percent of total revenue is derived from such carriage. But it is difficult to determine the fraction of liner company profits produced from preference cargoes. In some cases, the addition of preference cargoes is significant enough to a U.S.-flag operator that the resulting higher utilization of his ships will bring down unit costs by a sizable amount.

Table 18.—Productivity Comparison of U.S. Privately Owned General Cargo Fleet, Annual Maximum Deadweight Ton-Mile Capacity per Year

	1971 fleet	1973 fleet	1976 fleet
30 knot intermodal ships. .	—	4 ships = 13,304 MTM	8 ships = 26,608 MTM
20 knot intermodal ships. .	35 ships = 73,920 MTM	68 ships = 145,044 MTM	87 ships = 214,542 MTM
20 knot conventional ships	98 ships = 108,682 MTM	86 ships = 95,288 MTM	86 ships = 95,288 MTM
15 knot intermodal ships. .	80 ships = 77,600 MTM	61 ships = 58,743 MTM	49 ships = 48,956 MTM
15 knot conventional ships	190 ships = 138,890 MTM	94 ships = 74,072 MTM	73 ships . 61,574 MTM
Total	403 ships = 399,092 MTM (5,389,000 dwt)	313 ships = 388,451 MTM (4,651 ,680 dwt)	303 ships = 446,968 MTM (5,058,185 dwt)

NOTE: Intermodal catego~ Includes containerships, roll-on/roll-off ships, and barge carriers.
MTM = miliion deadweight ton-nautical-miies.
Deadweight ton-nautical-mile capacity (DTMC) = S x T x K x C
St = Seadays (165 per year per conventional ship); S, = Seadays (220 per year per containership); T = Time, 24 hours; K = Maximum nautical-miles per hour; C - Capacity, average dwt capacity for ship category.

SOURCE: Maritime Transpotiation Research Board, NAS, *Toward An Improved Mercfranf Marine: A Recommended Pro6rrmn of Stud/es,* Washington, D. C.: January 1976, p. 17.

Table 19.—Importance to Liner Vessels of Carriage of Government Preference Cargoes

	1978		1979		1980	
	($ millions)	percent	($ millions)	Percent	($ millions)	Percent
Total U.S. operator revenue. .	$3,105	–	$3,707	–	$4,308	–
Preference revenue—civilian cargo	283	9	266	7	294	7
Preference revenue—military cargo.	201	7	376	10	401	9
Total preference revenue . .	484	16	642	17	695	16

SOURCE: U.S. Maritime Administration, Office of Policy and Plans, November 1982,

It is interesting to note that during 1982 a new carrier submitted bids for a Military Sealift Command (MSC) contract to carry military cargoes to Europe and underbid the other carriers who had historically won these contracts. When MSC announced the next round of bidding in 1983, two of the operators which had been underbid on the previous contract lowered their bids by about one-half from the earlier round, It therefore appears that this Government cargo is important to operators even at very low rates.

To demonstrate the importance of preference cargo to a U.S.-flag operator, an illustrative example was presented in a recent paper. It showed (see table 20) that some U.S. operators who take advantage of military or other preference cargoes which are reserved for U.S. flags, can increase their profits to exceed foreign-flag competitors. Government policy has probably played a key role in competitiveness in this case without direct or complex subsidy arrangements.

Most experts agree that U.S.-flag liner operators can be productive and competitive in the world market despite some cost disadvantages. Government policy can mitigate important cost disadvantages, in some cases, without direct subsidy. The record of Sea-Land, the largest U.S.-flag operator (without direct subsidy), seems to illustrate this contention. On the other hand, a number of subsidized U.S.-flag operators appear to depend heavily on direct subsidy payments for their financial survival. These companies would require major productivity improvements or substantial future cost reductions to meet foreign competition. If future subsidies are eliminated, attention to productivity improvements for these operators must receive high priority.

Table 20.—Hypothetical Profit Impact of U. S..Flag Preference Cargo on Containership Operations[a]

Given:
- Vessels of 1,200 teu
- Vessel operating cost per voyage of $270,000 excluding labor
- Foreign crew cost of $30,000 per voyage
- U.S. crew cost of *$60,000* per voyage
- Average load is 900 teu @ $725 revenue per teu
- Container and other variable costs are $333 per teu

Financiai resuits based on commercially competitive cargo oniy:

	Foreign flag	*U.S. flag*
Revenue.	$652,500	$652,000
cost	600,000	630,000
Profit	$52,000	$ **22,000**

Financiai resuits with 15% extra cargo (miiitary and coastwise-generated) to U.S. carrier

	Foreign flag	*U.S. flag*
Revenue.	$625,500	$749,800
cost	600,000	659,970
Profit	$ 52.000	$89,830

aAll data for illustrative purposes only.

SOURCE: John Blnkley, "Impacts of the U, S.-Flag on Shipping Cost and Productivity, " presented at SNAME Symposium on Ship Costs and Energy, October 1982.

Conferences, Pooling, and Cooperatives

Liner operators employ a wide variety of commercial agreements in world trade whereby cargo shares, revenues, prices, and other factors are set between two or more parties in order to restrict competition and reduce overcapacity. The degree of cooperation and kinds of restrictions that are followed range from a simple allocation of sailings between regions to complex agreements allocating shares of specific commodities among parties.

Shipping is a very old industry, and problems stemming from aggressive competition and highly

variable rates were of even greater concern when ships were the only feasible means of long-distance transportation. After the opening of the Suez Canal in 1869, fierce shipping competition resulted, in particular on the profitable Indian trade. This led to the first successful liner conference, the Calcutta Shipping Conference of 1875, in which all lines in the trade agreed to apply the same rates between Calcutta and British ports. The conference system of establishing common rates and agreements to regularize service quickly became well established in many trades. It also was partially a response to excess capacity resulting from a technology change (larger, more reliable steamships were replacing smaller, slower sailing ships).

The liner conference is now a very common system employed by operators in most developed trades. Typically, a conference is an agreement among a group of shipping companies serving the same trade route, and includes some form of price or rate fixing. Thus, members of a conference would charge the same prices for similar services. In many trades outside the United States, the conferences are closed (new members are not admitted without consent of existing members) and the agreements are confidential. In all U.S. trades, the conferences are open to any new member who meets the terms of the agreement. The agreements must be approved by the Federal Maritime Commission (FMC), and the terms are public.

U.S. liner operators are members of several of the major conferences governing the key trading routes for U.S. exports and imports. Some operators join and leave conferences frequently when business opportunities make it worthwhile. In some trades—particularly with South American countries where the United States has bilateral agreements—the U.S. operators have longstanding and static arrangements for cargo-pooling and other practices.

For most of the past two decades, conferences serving U.S. trades have been relatively weak due largely to the historical U.S. free-trade philosophy. U.S. conferences are open, and all agreements between carriers, including cargo and revenue pooling and service rationalization, must be approved by FMC. Rebating is prohibited, independent action by conference members is encouraged and there are strong limitations on service rationalization. Independent operators have thus been able to enter U.S. liner trades easily and compete against the conferences. But many routes suffer from chronic overcapacity.

Beyond conference agreements, other arrangements seek to further control the market, A common arrangement is pooling, whereby parties to an agreement fix the shares of specific cargoes each may carry and thus limit service competition. Pools are a natural conference adjunct but in U.S. trades are subject to FMC review and approval and thus cover only a small fraction of U. S. liner trades. In general, FMC has approved pools where they have resulted from foreign government unilateral actions on cargo reservation. At present, a number of pooling agreements are in effect in U.S. trades with Brazil, Argentina, and Peru.

A cargo pool usually controls the carriage of a certain commodity or group of commodities. In a revenue pool, each member is entitled to receive a specified percentage of the total freight revenue earned by all the pool members. The pooling agreements filed with FMC pursuant to Section 15 of the Shipping Act of 1916 as amended, are all revenue-pooling rather than cargo-pooling agreements.

In return for a share of the revenue pool, each party must agree to a minimum number of sailings imposed by the agreement. A few of the agreements also require a minimum number of port calls. Some of the agreements require that the parties provide a certain amount of cargo space per sailing. If a specific amount is not required, then the parties must agree to provide cargo space sufficient to carry all the cargo covered by the agreement.

If a party fails to meet a sailing, port call, or cargo requirement, its share of the pool revenue is reduced. Some agreements provide a formula for calculating the loss. Others simply say that the revenue share is reduced in proportion to the deficiency in sailings, port calls, or cargo space.

The U.S./South American pooling agreements reserve certain cargo exclusively for pool members. Since pools guarantee each member a share of revenues, there is usually no incentive to increase sail-

[1]See Edgar Gold, *Maritime Transport, The Evolution of International Marine Policy and Shipping Law* (Toronto: Lexington Books, 1981), pp. 114-118.

ings above the minimum required by the agreement or to attract more cargo. Thus, pools appear to improve the carrier's capacity utilization since pool members tend to limit their capacity to that required by the terms of the agreement. [2] Many believe, however, that the final results can be and have been—particularly in the Brazil and Argentina trades—very detrimental to competition and good service.

Pools represent a form of carrier cooperation short of a joint service, a consortium, or joint venture. Many lines outside of the United States commonly operate under one of these types of cooperative arrangements. The following description of such commercial operating agreements is excerpted from a 1981 Review of Existing Agreements and Potential Cargo Sharing Arrangements:[3]

> Joint Service (Cartel or Syndicate). In this type of arrangement, some or all of the activities are provided as an integrated operation. Usually vessels and offices retain the separate identities of the two lines. A financial agreement between the parties outlines terms for splitting revenues and certain costs.
>
> **Consortium.** A form of cooperative intercompany agreement in which most capital assets are jointly owned (sometimes only the ships remain under separate ownership) and the operating company is jointly owned. Consortia have been discouraged in U.S. trades for U.S. -flag carriers by the U.S. Government as allegedly anticompetitive.
>
> **Joint Venture.** The closest form of cooperation between independent liner companies in which the participants jointly own (or lease) vessels, equipment, and terminals, and the venture has its own management. Tax considerations dictate that most joint ventures are among companies from a single country.

Table 21 illustrates typical areas of cooperation for the above forms and gives some examples of joint operations.[4]

Conference agreements and pools, while having the basic effect of limiting competition among parties to the agreements, also seek to reduce malpractice, stabilize rates, and improve efficiency by so doing. If competition is also assured among cooperating groups or with nonmembers, then the twin

[2] *See Changes in Federal Maritime Regulation Can Increase Efficiency and Reduce Costs in the Ocean Liner Shipping Industry* (Washington, D. C.: U.S. General Accounting Office, Report No. (GAO)/PAD-82-11, July 1982).

[3] See "Impact of Cargo Sharing on U.S. Liner Trade With Countries in the Far East and South East Asia' for the Federal Maritime Commission by E. G. Frankel, Inc., September 1981.

[4] For a more detailed discussion of joint operations, see VonSchirach-Szmigiel, *Liner Shipping and General Cargo Transport* (Stockholm: Stockholm School of Economics, 1979).

Table 21.—Cooperation Forms Practiced by Liner Operators

Cooperation areas	Cartel	Syndicate	Consortium	Joint venture
Service scheduling	common	common	common	common
Operation of:				
Vessels	common	common	common	common
Terminals	common	common	common	common
Tariffs	common	common	common	common
Revenues	common	common	common	common
Name	common	common	common	common
Marketing	individual	common	common	common
Inland container operations	individual	common	common	common
Management	individual	partly common	common	common
Investment plans	individual	partly common	common	common
Ownership:				
Vessels	individual	individual	individual	common
Terminals	individual	individual	common	common
Examples of joint operations	Trio Group Asia Container Europe (ACE) Scan Australia Caribbean Overseas Line (CAROL)	Scan-Dutch Australia/Europe Container Service (AECS) South Africa Group	Atlantic Container Line (ACL) Associated Container Transportation (ACT) Dart Container Line Atlantica SD. A.	Overseas Container Ltd. (OCL)

SOURCE: C. VonSchirach-Szmigiel, *Liner Shipping and General Cargo Transport,* Stockholm School of Economics, 1979.

goals of efficiency and best rates could be compatible. However, there continues to be concern over whether allowing certain restrictions on competition will be beneficial to shippers and the general public as well as to ship operators. Many believe that the anticompetitive features of revenue pools should be of much greater concern than simple conference agreements on rates.

Chapter 6 discusses the U.S. Government's regulatory policy toward conferences. The U.S. shipping industry is anxiously awaiting congressional action on the Shipping Act regulatory reform which would permit liner operators to engage more freely in cooperative business practices and thus increase utilization and lower costs,

Pricing, Rates, and Shippers' Councils

Those who purchase the transportation services to move their cargo are called shippers. Those who operate ships and provide transportation services are called carriers (though some confuse these terms). Even though this chapter primarily addresses the industries that operate ships, those industries only exist to serve shippers. In the liner business it is important to understand how rates and pricing structures are derived and how shippers are both involved in and affected by the process before policies are developed. Actions which are detrimental to shippers will quickly influence the demand for shipping services. One should also understand the benefits that high utilization and carrier cooperation can bring to shippers.

Individual carriers or conferences follow one of two basic theories of ratemaking: cost-of-service pricing and value-of-service pricing.

Simply put, in cost-of-service pricing the carrier computes its total costs for each voyage, adds a desired rate of return, and divides by the average number of containers it carries. Thus, it arrives at a rate which covers the cost of moving the container, regardless of what the container carries.

However, as reasonable as cost-of-service pricing appears, it is not the method generally in use. The method that is most widely used is value-of-service pricing, also known euphemistically as ‘ ‘charging what the traffic will bear. The theory underlying this method is that rates should be set at a level which makes transportation charges a minimum percentage of a commodity's landed cost. Under this theory, a containerful of electronic equipment can bear a much higher transportation charge than a containerful of rags, and still move. If equal rates covering all costs were charged for rags and electronics, the price for rags would be so high that the rags probably would not move. Under value-of-service pricing, both commodities can move. Underlying this method is a system of cross-subsidization. By charging high-value commodities more than their fair share of costs, and the lower valued commodities less than their fair share, the higher valued commodities actually subsidize the lower valued commodities. However, since lower valued commodities probably would not move if charged their fair share for space, the entire cost of the voyage would otherwise be borne by the high-va.lued commodities. Any contribution to overhead by the low-valued cargo actually brings the cost of the movement down for the high-rated cargo.

Container shipping is a capital-intensive business, with very high fixed costs. The break-even point is usually cited at about 85 percent capacity; i.e. , the carrier has to be 85 percent full to cover its fixed costs. In an overtonnaged trade, with lots of unused capacity, carriers may be tempted to carry cargo at anything over their variable costs, so long as some contribution is made to fixed costs, Since case law requires that rates be fully compensatory, that temptation is sometimes expressed in the form of rebates, whereby a carrier returns part of the tariffed rate (usually secretly) to the shipper in order to get his cargo. However, rebating and similar malpractice are strictly illegal under the Shipping Act, because they result in differential (i.e., discriminatory) treatment among shippers. Under the principles of common carriage, all shippers are entitled to the same rate for the same service. To enforce this principle, FMC requires strict adherence to the tariffed rates by both carrier and shipper. Any deviation is considered a violation of the Shipping Act and can result in penalties for both the carrier and the shipper.

The high break-even costs of liner operations and the above regulations tend to distort traditional supply/price relationships. For example, generally the greater the supply of cargo space available,

the **higher** the price, since a great supply of cargo space (i. e., overtonnaging) results in underutilized ships, which must spread their high fixed costs over a fewer number of containers. Thus, the rate generally rises.

The converse of this is that the lower the supply of cargo space available—i. e., ships running full to capacity—the lower the price can be, since the high fixed costs can be spread over a greater number of containers. This relationship of high supply high price and low supply low price is used as the best argument for close cooperation among carriers, for when carriers can limit their supply of cargo space and rationalize their sailing schedules, they are in a position to offer lower prices to shippers.

Under present U.S. policy and practices, a shipper has the following recourse if he feels that rates are too high: first, he can go to the conference and appeal for a lower commodity rate on the basis that his landed price is uncompetitive and he may lose the business. If the conference is not responsive, he can ship on an independent carrier—usually at a lower rate. Sometimes, when faced with the loss of the cargo, carriers may take some rate action to meet a shipper's needs. If the shipper suspects that he may be a victim of discrimination vis-a-vis the rates charged other domestic shippers or foreign shippers, he can file a protest with FMC, which will investigate the claim under section 16 and/or 17 of the Shipping Act.

In practice, however, shippers have not had very much interaction with FMC. They rarely become involved and they rarely protest agreements.[5]

In many trading countries outside the United States, shippers' councils are a counterpart to carrier conferences and other cooperative agreements. These councils are organizations of shippers formed to collectively negotiate rates and service with the conferences. In the United States, shippers' councils have not been granted antitrust immunity and shippers fear they would be in violation of the antitrust laws.

Shippers appear to be divided on the question of whether shippers' councils should be granted antitrust immunity. A survey of shippers taken by the General Accounting Office in 1980-81 indicated that shippers strongly supported the council concept and believed they would have a beneficial effect on rates and service quality.[6] However, some large shippers have recently argued against antitrust immunity for shippers' councils as a counterbalance to carrier antitrust immunity.[7] The general belief is that large shippers have enough economic ''power" to deal effectively with carriers individually, and do not need councils to protect their interests.

The debate about shippers councils continues with congressional consideration of the Shipping Act of 1983; the Senate and House versions of mid-1983 have different shippers' provisions.

The question of industry (shipper and carrier) support for alternative policies, such as shippers' councils, is only one consideration. Another is how to develop a system that will encourage growth in overall trade through fair and equitable treatment of shippers combined with competitive rates and service. For example, U.S. exporters compete with exporters from other countries in many markets around the world, and transportation is an integral part of that competitive equation. In the future, U.S. shares of that trade may depend on how effective and efficient our ocean carriers can transport U.S. goods abroad.

Future Competitiveness of U.S. Liner Fleet

Already the most successful sector of the U.S. fleet, the U.S.-flag liner fleet operating in foreign trades, will become even more cost competitive as it is replaced and upgraded with modern, automated, large, diesel-propelled ships.

However, if the trend toward specialized neobulk ships for certain trades continues, it may result in the diversion of cargo from the liner to the nonliner sectors. This may reduce the opportunity for

[5]The foregoing discussion was excerpted from a speech by Dr. Leslie Kanuk, former Chairman of the Federal Maritime Commission, before the Georgia World Congress Institute and International Trade Association, September 1980.

[6]*Changes in Federal Maritime Regulation Can Increase Efficiency and Reduce Costs in the Ocean Liner Shipping Industry,* op. cit.

[7]See *American Shipper,* July 1983, p. 11.

U.S.-flag ships since few U.S.-flag ships are being built for the neobulk trade (carrying contract cargoes). The introduction of combination vessels, such as container-bulkers can be expected to have a negative impact on U.S.-flag liner operators in the same way. These trends are therefore important to monitor and to consider when Federal policies are developed.

There is a trend in the U.S.-flag fleet to significantly increase containership size. American President Lines' new ships, and U.S. Lines' planned ships, point in that direction. Major constraints are the substantial risk of not being able to fill the ships and the difficulty of achieving high service frequency. Both these problems have been significantly reduced in the foreign-to-foreign trades as carriers have combined into consortia to reduce the risk of individual carriers. Whether such an avenue will be available to the U.S.-flag carriers will depend on U.S. regulatory and antitrust policies.

Labor unions can be expected to resist the reductions in crew size to the 18- to 24-men levels often employed by foreign competition. If economic pressures force reductions in manning levels, at least to the high end of that range, the ability of U. S.-flag liner ships to compete will be enhanced.

Ancillary ship-related, container, and terminal technologies should not significantly increase or decrease the ability of U.S.-flag liner ships to compete with foreign-flag ships as these technologies, once proven, are easily transferred from U.S. -flag operators to foreign-flag operators and vice versa.

THE U.S. BULK FLEET IN FOREIGN TRADES

As is the case worldwide, the U.S. bulk trades greatly exceed its liner trades in tonnage. In 1980, U.S. bulk trade (both liquid and dry) totaled 736 million metric tons (tonnes), while general cargo trade totaled 78 million tonnes. However, the U. S.-flag foreign trade dry-bulk and tanker fleets carry only a small percentage of this trade.

Worldwide, trade in the major dry-bulk commodities (iron ore, coal, and grain) increased by 50 percent between 1972 and 1982. At the same time, the world fleet of bulk and combined carriers increased by 119 percent, from 91.5 million dwt in 1972 to 200 million dwt in 1982. The world dry-bulk fleet continued to grow between 1982 and 1983 to a current level of 211.3 million dwt.[8]

An oversupply situation also exists in the world tanker fleet, although at the present time the size of the fleet is decreasing, along with demand. World trade in oil and oil products has dropped sharply, from 1,748 million tonnes in 1977 to an estimated 1,287 million tonnes in 1982, for a decline of 26 percent. In 1982, the world tanker fleet was essentially the same size as in 1977, 320 million dwt. A 6-percent reduction in the fleet occurred in 1983, to 301 million dwt. [8]

[8]Fearnleys, *Review 1982, Oslo,* Norway, 1983.
[8]Ibid.

The magnitude of the surplus in the world bulk fleet is reflected in the market value of the ships. A number of dry-bulk ships with useful life remaining sold for under $1 million each in the second half of 1982. Prices for tankers were nearly as low. In some cases, ships have been abandoned because the scrap value of the vessel is less than the costs of the scrapping process.

In the best of times, U.S. bulk operators have had difficulty competing in the world market because U.S. costs far exceed those of foreign competitors. The major difference in operating expenses between U. S.- and foreign-flag ships lies with crew costs. U.S. Department of Transportation (DOT) data show a ratio of U.S. daily costs v. comparable average costs for Organisation for Economic Cooperation and Development (OECD) countries for a 26-man dry-bulk ship crew of about 3 to 1. Expenses for crew and fuel account for a significantly higher proportion of overall operating costs for bulk ships than for liners, limiting the opportunities to reduce the cost differential through efficiency improvements in other operating cost components.

Construction costs for tankers and dry-bulk carriers in U.S. yards are two to three times the costs

in foreign yards (see table 22). The final cost differential to buyers is even greater because:

1. in recent years, prices at foreign yards have usually been lower than construction costs, the amount of difference varying according to the degree of excess capacity at shipyards;
2. delivery times at foreign yards are 1 to 2 years quicker, which reduces net present value costs;
3. foreign cost schedules often do not include cost escalation factors during the construction phase; and
4. financial terms (downpayment required, progress payments, etc.) at foreign yards are more favorable, further reducing the effective price.

The 1970 Merchant Marine Act allowed payment of CDS for bulk ships in hopes of enlarging the U.S.-flag bulk fleet. Thirty tankers and a few dry-bulk ships were built under the program, but no funds have been appropriated since 1980. Even when CDS was available, it was limited to 50 percent of the U.S. cost. Since foreign prices in 1983 tend to be less than half of U.S. costs, it would still be cheaper to buy ships abroad than from U.S. yards even with CDS.

The U.S.-flag foreign trade tanker fleet is small and is attracting little business in the severely overtonnaged international markets. Since 1976, U. S.-flag tankers have never carried more than 4.5 percent of the very large U.S. petroleum import trades. Of the 30 tankers built with CDS since 1970 (see table 23), only 3 have been delivered since 1977. Due to the lack of opportunities in the world market, much of the U.S. subsidized fleet took advantage of a provision allowing such vessels to enter the domestic trade on a 6-month-per-year basis, with a pro rata payback of subsidy.

Table 22.–Typicai U.S.- and Foreign-"Ship Construction Costs-1982 (miiions of doiiars)

	25,000 dwt	*70,000* dwt	*120,000* dwt	*265,000* dwt
Tanker				
United States	59.0	85.0	109.0	189.0
Foreign	23.0	35.2	44.3	75.7
	25,000 dwt	60,000 dwt	120,000 dwt	150,000 dwt
Dry-bulk				
United States	52.0	83,0	107.0	119.0
Foreign	19.6	33.0	42.6	47.0

SOURCE: U.S. Maritime Administration, Office of Shipbuilding Costs, "'Construction Cost Estimates for United States and Foreign-Flag Vessels."

Tabie 23.—CDS-Buiit Tanker Fieet

Vessei	Deadweight tons	Year buiit
Coronado	**39,712**	1973
Brookiyn	**225,281**	1973
Wiiliamsburgh	**225,281**	1974
Cherry Vailey	**39,675**	1974
Golden Endeavor	**89,700**	1974
Chelsea	**39,740**	1975
Massachusetts	**264,073**	1975
Golden Monarch	**91,388**	1975
Mormacstar	**38,300**	1975
Worth	**91,849**	1976
Patriot	**35,100**	1976
Beaver State	**91,849**	1976
New York	**264,073**	1976
Mormacsun	**39,232**	1976
Rose City	**91,849**	1976
Ranger	**35,100**	1976
Chestnut Hill	**91,295**	1976
American Heritage	**91,849**	1976
Courier	**35,000**	1977
Rover	**35,000**	1977
Mormacsky	**38,300**	1977
Kittanning	**91,344**	1977
Arco Spirit	**262,376**	1977
Arco independence	**262,376**	1977
Stuyvesant [a]	**225,281**	1977
Bay Ridge	**225,000**	1979
UST Atiantic	**398,143**	1979
UST Pacific	**398,141**	1979

NOTE: In addition, two CDS tankers are currently under construction, Falcon Leader and Falcon Champion, both 34,000 dwt. An additional ship, the *Golden Dolphin, was* built in 1974 with CDS but was lost.
%DS haa been repaid.

SOURCE: U.S. Maritime Administration, Office of Trade Studies and Statistics; "Ship Register," Military Seallft Command, Department of the Navy, Washington, D. C., January 19S3.

The very large tankers (known as very large crude carriers—VLCCS) have had a difficult time in international trade. In the late 1970's, two VLCC owners requested and were granted permission by MarAd to refund to the Government all CDS which had been paid and to enter the domestic trade permanently. Protracted court cases ensued, with the Supreme Court finally ruling for one vessel that MarAd had acted within its power. The case involving the second ship is still subject to litigation.

Following this precedent, a number of subsidized tanker owners are now interested in paying back subsidies in order to enter domestic operations, primarily in the Alaskan trade. Current domestic operators oppose such a policy as unfair, and hold that it will result in overtonnaging in these trades. Further complicating the issue is the question of

exporting Alaskan oil, which is currently prohibited. Allowing such exports would significantly reduce the markets reserved for domestic tankers.

The entire U.S. dry-bulk fleet operating in international trade consists of 23 vessels, many of which are over 20 years old (see table 24). Most of the ships continue to operate because they carry Government preference cargoes, primarily AID shipments, where they do not have to compete with foreign ships.

A major characteristic of the U.S. dry-bulk trades is the intense price competition. The shippers/consignees are large, sophisticated enterprises, many generating substantial volumes with access to proprietary carriage of their cargoes as well as to long-term contracts with independent carriers. Low-cost operators have essentially driven the higher cost operators (most significantly, the U.S.-flag operators) out of the market. Lower costs have been achieved through increasingly large, specialized ships with small crews paid low wages (relative to U.S.-flag crews).

Thus, it is likely that the U.S. dry-bulk fleet will continue to depend heavily on whatever preference cargo is available. The existing cargo preference laws which are significant to the bulk trades are those requiring 50 percent U.S.-flag shipping for Government-aid cargoes, primarily grain. Two new large grain carriers just entered this trade. They are former liquefied natural gas tankers which were converted in Korea and fitted with coal-fueled propulsion plants. These ships—large, modern, and fuel-efficient— have reduced grain export costs by a substantial amount—although not to the foreign-flag level.

Proposals to reserve some percentage of commercial bulk cargoes for U.S. -flag have been debated for several years. Studies have indicated that such cargo preference could encourage building a more modern, efficient U. S, bulk fleet, which would, in

Table 24.—U.S. Dry-Bulk Carriers in International Trade (as of Mar. 1, 1983)

Name of vessel	Type	Deadweight-tons	Year built
Inger	Bulk	23,510	1945
Jade Phoenix	BO (Bulk/Oil)	63,200	1982
Kopaa	Bulk	24,233	1944
Marine Princess	Bulk	52,565	1967
Merrimac	Bulk	25,002	1944
Overseas Harriette	Bulk	25,541	1978
Overseas Marilyn	Bulk	25,541	1978
Point Manatee	Bulk	15,316	1944
Point Susan	Collier (Coal)	24,345	1945
tPride of Texas[a]	Bulk	35,389	1981
Seadrift	Bulk/Oil	15,155	1942
tSpirit of Texas[a]	Bulk	32,100	1982
tStar of Texas[a]	Bulk	36,614	1982
Sugar Islander	Bulk	29,648	1973
Tamara Guilden	Bulk	23,800	1961
Traveler	Bulk	25,130	1945
tUltramaF	OBO (Ore/Bulk/Oil)	82,199	1973
tUltrasea[a]	OBO (Ore/Bulk/Oil)	82,199	1974
Walter Rice	Bulk	23,510	1945
Betty Wood	Bulk (Tug/Barge)	23,751	1973
Calrice Transport	Bulk (Tug/Barge)	25,000	1976
Jamie A. Baxter	Bulk (Tug/Barge)	24,372	1977
Moko Pahu	Bulk (Tug/Barge)	25,931	1982
Total (operating)		764,051	
tGolden Phoenix[b]	BO (Bulk/Oil)	129,000	1983
Ogden Parana[c]	Bulk	45,000	1983
Ogden Trent[c]	Bulk	45,000	1983

tvessel built with CDS.
%rrently operating in preference trades under Sec. 614 of Merchant Marine Act.
bunder reconstruction, Former LNG carriers
[c]Under construction.

SOURCE: U.S. Depafiment of Transportation, Maritime Administration, Office of Trade Studies and Subsidy Contracts, Division of Statistics, Mar. 8, 1963.

turn, reduce the cost disadvantages of U.S.-flag bulk shipping. [10] No. test of this hypothesis is available, however, and the opposition, principally from the farmers who would bear the burden of increased costs for exporting, is very strong. It is significant, however, that efforts to modernize the fleet and make some segment cost competitive could bring sizable benefits to this industry because of the magnitude of present and future U.S. bulk trades. (Existing and proposed cargo-preference policies are discussed further in ch. 7.)

U.S.-bulk cargo reservation schemes and the authority for U.S. carriers to operate foreign-built, foreign-crewed ships under the U.S. flag are the only proposals now under consideration, which would bring a significant U.S.-flag bulk fleet into existence. While the ability to buy foreign-built ships would eliminate the capital cost disadvantage, there would remain a large differential between U.S. and foreign crew costs. As previously mentioned, the aggregate crew cost differential (including effects of higher U.S. manning scales and indirect costs) is perhaps more important than merely wage rate differentials.

The foreign-flag tanker and dry-bulk fleet under ‘ ‘effective’ U.S. control is cost competitive on a worldwide basis. In the past, this fleet (and the fleet on long-term charter to U.S. companies) has grown substantially and serves a large portion of U. S. international trade and many other foreign-to-foreign trade routes. The cost and technology advantages available anywhere in the world generally have been adopted by this fleet.

[10] See “Development of a Standardized United States-Flag Dry-Bulk Carrier, a report prepared for the Maritime Administration by M. Rosenblatt & Son, January 1979.

If U.S. dry-bulk export trade growth follows the Wharton Econometric forecast of over 4 percent per year between 1980 and 2000, such growth clearly will require additions to the fleet serving that trade. Table 25 illustrates trade-growth projections for several major bulk commodities. Without Government policy changes, the future fleet makeup will depend largely on the business strategies of large bulk shippers (the multinational natural resource companies) and the ship owners and operators who carry that cargo. Those business strategies clearly point toward expanding the U.S. controlled fleet under foreign flags rather than the U. S.-flag bulk fleet.

Table 25.—U.S. Dry-Bulk Export and Import Trades (million tonnes)

Commodity	1980 (actual)	1990 (projected)
Coal	*72.8*	**133.0**
Iron ore	25.5	**57.7**
Grain	97.2	**143.6**
Alumina/bauxite	20.2	**22.6**
Phosphate rock	14.8	**19.6**
Rice	2.0	**2.6**
Sugar	4.8	**5.1**
Sorghum	5.4	**6.3**
Soybeans/Meal	28.8	**30.0**
Forest products	27.6	**35.7**
Fertilizers	13.4	**17.8**
Potash	1.2	**,2**
Sulfur	1,7	**.8**
Chrome ore	1.2	**.9**
Gypsum	6.8	**9.5**
Manganese ore	1.2	**.9**
Iron/steel scrap	10.7	**11.4**
Petroleum coke	8.0	**13.0**
Other	4.9	**4.8**

SOURCE: U.S. Maritime Administration, 1979 and FACS, 1982.

THE U.S. DOMESTIC FLEET

Under the Jones Act, all vessels in the domestic trade must be constructed in the United States and be of U.S. registry. The domestic trades include coastwise, intercostal, noncontiguous, and inland waterway trades. Since this report focuses on seaborne trade, we have not included information or statistics on tug and barge transportation even though it is a very significant U.S. transportation sector on the inland waterways and on some coastal trades.

Table 26 summarizes the domestic fleet. As the table shows, the vast majority of domestic trade ships are tankers. As of May 1983, of a total ac-

Table 26.—Active U.S. Flag Domestic Fleet as of May 1,1983

	Number of vessels	Deadweight-tons
General cargo.	34	484,000
Bulk cargo	7	202,000
Tankers [a]	175	9,139,500
Total.	216	9,825,500

NOTE: Includes vessels of 1000~ gross tons and over.
Excludes vessels operating exclusively on the Great Lakes and inland waterways, those owned by the U.S. Army and Navy, and special types such as cable ships, tugs, etc.
~hera are an additional 6 tankers, totaling 1,427,500 dwt, built with CDS, presently operating in the domestic trades.

SOURCE: U.S. Maritime Admlnistration, Off Ice of Trade Studies and Subsidy Contracts, Dlvlsion of Statistics, July 1963.

tive fleet of 216 ships, totaling 9,825,500 dwt, 175 vessels of 9,139,500 dwt were tankers (93 percent).

The major domestic liner trades—Hawaii, Puerto Rico, and Alaska-have shown very little change since 1970. Trade volumes are mostly dependent on domestic economic growth, with some negative impact coming from the increase in foreign sources of goods for domestic consumption. For example, between 1970 and 1981, U.S. real economic growth was a rather modest 3 percent per year. Since much of this growth was in the service sector, the growth in the goods component was probably less than half that amount. This slow economic growth in goods correlates with very low annual growth rates in domestic commodity movements—5 percent per year for total U.S. intercostal movements and 2 percent per year for the domestic noncontiguous trades.

Most dry-bulk domestic cargo is carried on barges. Eight major bulk commodities accounted for 80 percent of total barge carriage. Barge service is generally lower cost than equivalent ship service because of the low manning levels which have been negotiated for tug and barge operations as compared with ships. Even if operators had access to foreign-built bulk ships, high U.S. crew costs probably still would favor barge service in the U.S. domestic trades unless major technological advances allow significant manning reductions. The shorter distances in the domestic trades also help to make barging more economical. While most of the barge carriage is of bulk commodities, some U.S. operators (notably the Crowley Maritime Corp.) have been successful with short-haul liner-type service on barges, especially in the west coast-to-Alaska trade and the east coast-to-Puerto Rico trade.

The Domestic Tanker Trades

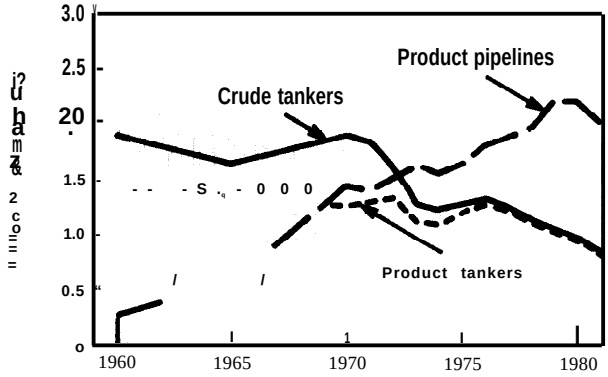
Domestic oil movements have undergone significant geographical shifts over the past 20 years, and this change has affected the demand for tankers. Twenty years ago the major oil trade was from the gulf coast to the east coast. Crude and product tanker movements totaled 2 million barrels per day then. These movements remained essentially constant until the early 1970's. In 1971 domestic crude production along the gulf coast began to decline and with it the demand for tankers to move this oil. Today, this crude trade—once accounting for over 25 percent of tanker movements—has essentially disappeared.

With the decline in crude production, product movements also began to fall in the late 1970's. In addition to less production, this also reflected a decrease in overall product demand and an increase in pipeline capacity. Product movements from the gulf to the east coast are expected to remain static for the foreseeable future.

Figure 27 illustrates the decline in tanker trade and the current increase in pipeline carriage from the gulf to east coast from 1960 to 1982. The tanker demand—for both crude and product movements gulf to east coast—is now less than 50 percent of what it was 20 years ago as pipeline systems have proven more cost effective than ships.

While tanker demand was declining on the other coasts, the west coast emerged as an area of crude surplus. Huge oilfields on the North Slope in Alaska were brought into production in the mid-1970's.

Figure 27.—Gulf-East Coast Tanker Movements



SOURCE: Exxon Shipping Co., 1963.

By 1978, production from the North Slope, which is pipelined to a tanker terminal at Valdez in southern Alaska, reached 1.1 million barrels per day and exceeded the capacity of west coast markets. Substantial tanker tonnage was needed to move this crude to the gulf and east coasts. Nineteen Jones Act tankers with deadweights in excess of 100,000 tons each were built during the 1970's to serve the Valdez, Alaska, trade. Currently, an average of 1.6 million barrels per day is transported.

Today, more than half of the domestic tanker tonnage is associated with the crude oil trade from Alaska, and many experts believe that the future of the U.S. tanker fleet rests primarily with the petroleum industry's search for oil reserves off the coasts of California and Alaska. Not only will new discoveries lead to new demand for tanker services, but much of the future potential is in Arctic or other hostile environments where improved transportation methods and technology will be the key to economic petroleum production. 11 However, future production off the coast of California and in the Arctic is extremely uncertain. By 1988, Alaskan North Slope production is expected to peak and then decline through 2000. The deficit in domestic tanker tonnage in the recent past has become a surplus in 1983 and will probably continue in the near future. Without new discoveries, a significant surplus of tankers could exist by 1995. However, offshore Alaska and California are the most promising regions in the United States for future oil and gas discoveries.

Recent estimates for California put the offshore oil resource potential of the region at 3.7 billion barrels, with two-thirds of this off southern California. New discoveries have already been announced in the Santa Barbara Channel and the Santa Maria basin.

The disposition of future offshore California production —estimated at 300,000 barrels per day by 1990—is uncertain. It could be transported via pipeline to Texas or alternately by tanker to the same area. A third possibility is displacement of Alaskan crude in west coast markets. This would increase tanker demand for the Alaska trade because that oil would be transported to more distant locations.

The largest potential source of undiscovered petroleum reserves lies in and off the coast of Alaska. Estimates have placed this total as high as 25.5 billion barrels. Lease sales, followed by exploration drilling scheduled for the next few years, could determine actual levels.

The areas where industry is most likely to discover producible oil and gas in the near future are the Beaufort Sea near-shore area (9.5 billion barrels possible) and the North Slope area adjacent to Prudhoe Bay (6.5 billion barrels possible). Assuming these fields are commercially viable, about 10 years can be expected to elapse between lease sale and production. Thus, the Prudhoe Bay production decline could begin before new fields start, and demand for new tanker tonnage to serve Alaska would not be significant until after 1995. Figure 28 is a projection by Exxon of the demand for tankers serving Alaskan petroleum production with a wide range of possibilities by the year 2000.

As shown, in the more distant future, major new finds in the Alaskan Arctic could result in significant demand for tankers. However, this area represents formidable technological challenges because

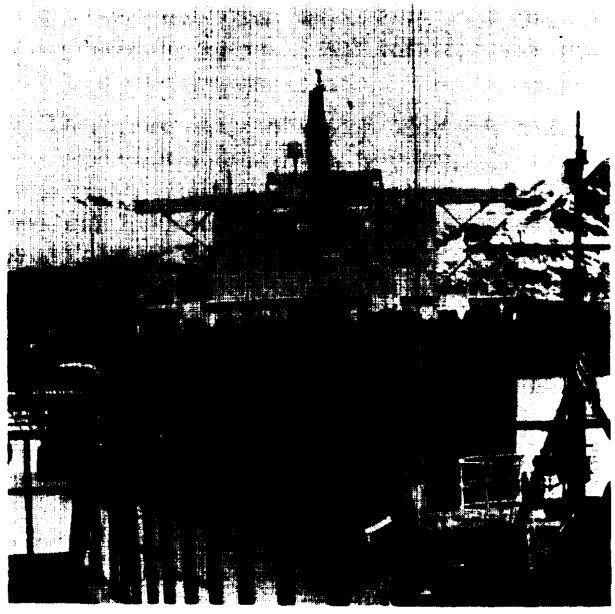
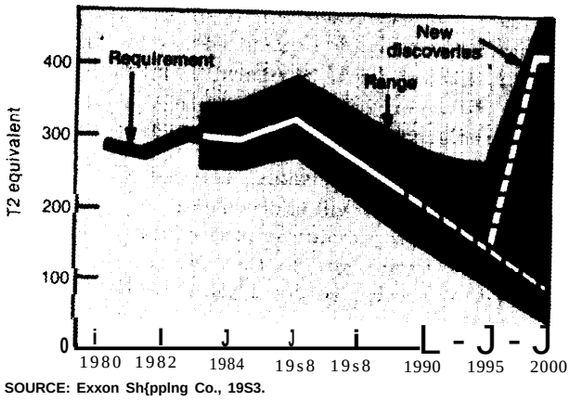


Photo credit: Atlantic Richfield Co.

Loading crude oil at Valdez, Alaska

[11] "Future Requirements for Tank Vessels" by F. J. Iarossi, Exxon Shipping Co., presented at the SNAME Spring Meeting, April 1983.

Figure 28.—industy Outlook for the Alaskan Tanker Trade



SOURCE: Exxon Sh{pplng Co., 19S3.

of the physical conditions there. The costs of extracting and transporting such reserves would be enormous. Potentially, a large market could result for domestic tankers, but major challenges would have to be met by ship designers, builders, and operators.

Regulation of Domesti$_{c}$ Liner Trades

The coastwise, intercoastal, and noncontiguous trades are subject to regulation by the Interstate Commerce Commission (ICC), which in recent years has reduced or eliminated rate regulation of domestic rail and truck carriers, effectivel$_{y}$ freeing the carriers to set rates at market levels, The noncontiguous trades are also subject to regulation by FMC. FMC and ICC require carriers in those trades to justify requests for rate increases to FMC. The currentl$_{y}$ accepted level of reasonableness for such rates in the Hawaiian trade provides carriers with a 13-percent return on assets. A recent request from FMC—und$_{er}$ Docket No. 82-14—for recommendations for changes in regulation of the noncontiguous trades received a unanimous response from the carriers askin$_{g}$ that the test of reasonableness for rates be dropped. FMC is still considering the issue.

Continuing the test of reasonableness by FM(3 should not prove a hardshi$_{p}$ on the carriers or the service provided during times of low inflation. In times of high inflation, however, the profits generated by rates limited by the current Ievel of reasonableness are inadequat$_{e}$ to encourage either new investment by existing carriers or to attract new carriers to the trades because the rate base on which the 13-percent return is calculated is depreciated book value rather than current market value,

Use of Foreign-Built Ships in Domestic Trades

Some in the U.S. shippin$_{g}$ industry, as well as consumer interests, have proposed that foreign-bufit ships be allowed to enter the domestic trades. In the noncontiguous domestic liner trades—Alaska, Hawaii, Puerto Rico, and Guam—use of foreign-built ships could result in lower freight rates and thus somewhat lower cost goods. Combined with the trend toward attempts at Government "buy-outs' of ODS for U.S.-fla$_{g}$ liner carriers, use of foreign-built ships could permit a number of U. S.-flag carriers to begin serving these trades en route to or from their foreign-trad$_{e}$ destinations. There is considerabl$_{e}$ debate on the overall costs and benefits of allowin$_{g}$ foreign-built or previousl$_{y}$ subsidized vessels to participate in domestic trades, as discussed further in chapter 6.

In the coastwise and intercoastal trades, where ocean shippin$_{g}$ is in competition with truck and rail, access to foreign-built ships by itself would be unlikel$_{y}$ to lead to new transportation services. The availabilit$_{y}$ of lower cost foreign-built ships combined with mixed proprietary and common carriage and flexible union mannin$_{g}$ requirements, however, might well lead to new, more competitiv$_{e}$ intercoasta. services.

Significant opposition to these proposals for foreign-built domestic ships has been voiced by U.S. shipbuilders. Chapter 6 discusses that issue in more detail.

In some domestic offshore trades, the U.S. liner fleet is limited in size and capabilities, and shippers have had difficult$_{y}$ when there was a need for special handling or equipment. Under present law, a U.S.-flag, U.S.-built ship must be used for domestic offshore carriage, even in cases where it is marginally able to carry the shipment compared to a foreign-fla$_{g}$ ship of much more suitable design,

It has also been proposed to increase the limit on foreign ownershi$_{p}$ of U.S. carriers (from 25 to

75 percent in the domestic trades and from 49 to 75 percent in the U.S.-foreign trades). The rationale used is that, historically, foreigners have been more willing than U.S. citizens to invest in shipping—even though it is a low-return industry. Thus, the argument runs, as owners they would be more likely to invest in new ships and facilities, thereby enhancing the efficiency and productivity of the fleet. However, the countervailing argument that increased foreign presence in U.S. shipping could have a detrimental impact on national security should also be considered. Of particular concern would be any investment by the U.S.S.R. or citizens of other controlled economies.

There is no reason to think that a good foreign operator would make business decisions in the U.S. environment any differently than would a good U.S. operator, except that, being less involved with U.S. shipping traditions, they might be expected to phase out marginally profitable or unprofitable businesses more quickly. Yet the current trend in the U.S.-flag liner fleet toward takeover of marginally profitable U.S. companies by financially stronger U.S. companies is already causing some industry restructuring and revitalizing. It is not clear that a change in the limitations on foreign ownership is in the best interests of the U.S. industry at present.

Opening U.S. carriers to majority ownership by foreigners could, however, increase the availability of capital and management to U.S. carriers, and it could open the way to joint ventures, and enhance the viability of the U.S. carriers.

Technological Developments

The domestic trades are served by various and specialized tanker, liner, and neobulk vessels (container, RO/RO, railcar, and lumber carriers) as well as barges. The need for special product carriers and flexible services will undoubtedly continue. The size of domestic noncontiguous liner ships should also increase as new ships are introduced into these trades. The size of the crews on U.S.-flag liner ships operating in the domestic noncontiguous trades could be reduced as crew size concessions are won by U.S. operators in the foreign trades. However, such reductions may be dependent on replacement of existing vessels.

The ancillary ship-related, container, and terminal technologies will probably be incorporated into the domestic noncontiguous fleet in essentially the same time frame as they are for the U. S.-flag ships operating in the foreign trades.

Liner service in the domestic inter- and intracoastal trades has declined markedly in the last two decades. AMPAC, a recent U.S.-flag intra-west coast service, did not survive. Because of the economic advantages of highway and rail transportation systems, it is unlikely that liner service in the domestic intercostal and intracoasta.1 trades will be introduced or provided in the near future except as an adjunct to other trades (e. g., U.S. Lines' east coast-to-west coast service). There are certain constraints now affecting the domestic maritime industry which, if lifted, could improve its competitiveness. One is MarAd's requirement under title XI regulations that prohibits the use of foreign-manufactured main machinery or major hull components. [12] There is, at present, discussion within MarAd of eliminating that requirement. If this were done, the construction cost of Jones Act ships with title XI guarantees may be reduced substantially.

Significant opportunities for the U.S. domestic fleet in the long run may lie in the need to move all cargo by the most fuel-efficient means. If unreasonable cost disadvantages of shipping versus other transport modes could be eliminated, it seems most likely that many trades would favor shipping because of its inherent energy efficiency.

[12] 46 CFR 298.11 specifies no foreign source materials or components shall be included in the vessel cost figures submitted for a loan guarantee except if the Secretary issues a waiver.

THE FUTURE U.S.-FLAG FLEET

In the past, the U.S. Maritime Administration published annual forecasts of the makeup of the U.S.-flag fleet. '3 This is no longer done. The 1981 forecast showed less than 10-percent decline in the total number of ships in the privately owned fleet from 1981 to 1991 (from 569 to 528 ships). It assumed no major policy changes and no major economic factors affecting trade flows. It also showed replacement in the tanker fleet and substantial (percentage) growth in the now very small bulk fleet (from 18 to 63 ships).

Whether or not this forecast was accurate, many recent conditions have affected the assumptions made about both policy and trade growth. The forecast base is very uncertain in 1983. The liner fleet has growth potential but is very dependent on policy actions which are yet to be clarified. The bulk and tanker fleet faces a much more uncertain economic picture in the near term. Pressures to shift subsidized tankers to the domestic trades and to reduce both subsidies and preference cargoes will affect the bulk carrier and tanker numbers drastically. Some experts believe that without policy changes, all segments of the U.S. fleet will decline markedly over the next 10 years.

The potential future U.S. liner fleet has been a matter of discussion recently by industry spokesmen. One view was offered by C. 1. Hiltzheimer, Chairman of Sea-Land Industries at the Joint Maritime Congress in June 1982.14 Hiltzheimer pointed out that, in order to be competitive, large portions of the U.S. liner fleet will need to be replaced by modern, efficient vessels. Assuming that a cost-competitive, unsubsidized fleet carrying a 40-perent share of U.S. liner trade by 1990 is a feasible goal, he believes it can be achieved by a massive capital improvement program. (Building 100 to 150 new ships and investing $8 billion to $9 billion). He also states that significant Federal policy changes would be required before industry would or could make such investments. Among these policy changes are: assured fair access to cargo, regulatory changes to allow rationalization and improve utilization, and promotional taxation incentives. If such changes were made and if industry invested in fleet modernization, it is claimed that the U.S. liner industry could compete in the world market, capture a reasonable share of U.S. trade, and offer good service to shippers. Such a scenario would show at least a doubling in capacity of the U.S. liner fleet and a transformation from mainly subsidized to mainly unsubsidized operations.

The potential for a U.S.-flag bulk fleet is considered by most to depend more on cargo-reservation policies than on ‘‘fair cargo access’ policies. While growth in that fleet could be postulated in the same way as that for the liner fleet, U.S. cost disadvantages are considered much more significant in bulk trades. It appears, however, that some consistency in existing cargo-reservation policies, combined with tax and other similar incentives provided to liner operators, could spur some rejuvenation of the U.S. bulk fleet.

Therefore, it seems clear that Federal policy in the 1980’s will determine the vitality of the U.S. shipping industry in the decades to come. If there are no changes in policy, there probably will be a decline in most segments of the industry, while certain positive policy changes could lead to rejuvenation and growth.

Those policies, which would have a positive effect on certain sectors of the U.S. shipping industry, are reviewed in chapters 6 and 7 of this report. Policies to promote growth in U.S. trade and assure

[13] The last one was “Forecast of the Privately Owned U.S. Ftag Fleet, 1981-1991, ‘ ‘ by the Maritime Administration, Office of Policy and Plans, December 1981.

[14] C. H iltzheimer, *Improving the operating Efficiency of the U.S. Flag Merchant Marine* (Novato, Calif.: TRANSPORT 2000, 1982).

fair access to all international trade for U.S. carriers would naturally benefit all sectors of the shipping industry. However, such policies would be most useful for continued success of those companies which have already attained high productivity and are now reasonably competitive in world shipping. Such qualities apply to certain of the U.S.-flag liner companies and to the U.S.-controlled, foreign-flag bulk fleet.

Several other Federal policy initiatives are also of major importance to the U.S.-flag liner operators. These include: maintenance of existing Government-impelled cargo preference, modification to the Shipping Act granting wider antitrust immunity in order to achieve benefits of high utilization and economies of scale, and modifications to taxation policies and/or financial incentives which would allow future capitalization on a cost-competitive basis with other shipping nations. Policies to promote cost-competitive industry capitalization are also critical to the U.S. effective control fleet.

For the U.S.-flag bulk fleet (tankers and dry-bulk) in foreign trades, future viability is uncertain unless major Federal support is applied. Since the world bulk business is so poor right now, and U.S. costs are significantly higher, U.S.-flag bulk operators are not competitive with other major shipping nations (nor are they competitive with the foreign-flag U.S.-controlled fleet). Federal support for the dry-bulk fleet to date has taken the form of cargo-preference policies, and current proposals are to expand these to the commercial U.S. bulk trades. Construction and operational subsidies (combined with taxation, loan guarantees, and other incentives) were successful in the 1970's in promoting an expanded U.S.-flag tanker fleet. However, it does not appear that such incentives would provide sufficient support if they were reinstated at the same level today. If it is considered in the national interest to promote through Federal support an expanded U.S.-flag bulk fleet, a thorough analysis of alternative approaches would probably be useful. For the U.S. domestic fleet, continuation of existing Jones Act provisions would probably lead to continued viability of those sectors which are successful today. Pressures to change those provisions will, however, continue from shippers and consumers served by the domestic fleet, who believe that increased competition would lead to more efficient and less expensive service.