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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

THE SHIPPING ACCOUNT IN THE WORLD BALANCE OF PAYMENTS

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I. SUMMARY AND CONCLUSIONS

The bulk of international trade is transported by sea. About 65% of the world shipping services are provided by the merchant fleets of the U.K., the U.S. and Norway. These countries, as well as a few others, have merchant fleets well in excess of the requirements of their foreign trade and therefore, enjoy a net surplus on ocean freight payments.

The importance of the shipping account in the balance of payments of a country depends on the relation of the shipping account to the value of exports and imports and also, in the postwar period, on the balance between hard and soft currencies. For countries like the U.K. and Norway, the net receipts from shipping are of great importance in bridging the gap between the value of exports and imports.

Most countries in the world run a net deficit on the international shipping account; some, like France and Italy, despite a considerable national tonnage. Europe and North America have a surplus on shipping account, while the rest of the world has a deficit on international shipping services. The relation between gross receipts of the domestic merchant fleet from international shipping services, and freight payments to foreign vessels, is modified by the amount of port disbursements paid out by the domestic fleets in foreign ports and received by national ports from foreign vessels.

In gross shipping receipts or payments, we include liner freights, charter hire (voyage, time- and bareboat charters), as well as foreign exchange passenger fares. Freight rates are determined basically by the relation of supply and demand. This is particularly true of short-term rates, but long-term rates are also influenced over a period of time.

Estimates based on data submitted to the International Monetary Fund show that international freight payments were at a level of \$3.7 billion in 1949, and \$3.5 billion in 1950. We estimate the 1951 gross freight payments at \$5.5 billion. This reflects an estimated average increase in freight rates of 50% for dry-cargo vessels and 30% for tankers, as well as an estimated 6.5% increase in the volume of world dry-cargo trade, and 12% in the volume of oil trade. Somewhat more than of the \$2 billion estimated increase in shipping payments in 1951 was probably paid by Europe and North America, and somewhat less than half by the rest of the world. The volume of world trade increased an estimated 22% in 1948-1951, while world oil demand increased about 27%. The volume of world trade is estimated to increase about 12% in 1952-1956, and the volume of oil demand by about 20%.

By the end of 1951, the oceangoing world fleet was 79 million gross tons, of which 18.5 million GRT were tankers and 60.5 million GRT were dry-cargo vessels and passenger vessels. The active world fleet was about 70 million GRT because of the withdrawal of about 9 million GRT of dry-cargo vessels in the U.S. Reserve Fleet.

Total world fleet increased by 10.2% from December 31, 1948 to December 31, 1951, while the tanker fleet increased by 24%. The total world fleet of oceangoing vessels is estimated to reach 90 million gross tons in 1956, while the active merchant fleet may be about 75 million gross tons.

About 65% of the world dry-cargo fleet and of the world tanker fleet are engaged on a long-term basis. The freight rates for tonnage in long-term employment (liner rates and long-term tanker charters) were rather steady during 1948 through 1950. In 1951, increases in liner rates from 10% to 25% were announced, while long-term timecharter rates for tankers increased about 20%. About 25% of the world dry-cargo fleet and 10% of the tanker fleet are employed on a short-term basis, either on voyage charter or timecharter.

In 1949, short-term dry-cargo rates (voyage and timecharter) declined somewhat below the average 1948 level. A rather dull market continued during the first half of 1950, but a boost in rates was experienced in the fall because of the impact of the Korean war and defense requirements, so that the average rates for 1950 were close to the 1949 level. In 1951, rates increased tremendously, reaching a postwar high in November. The average voyage charter rate was 108% and average timecharter rates were 155.6% above the 1950 level.

Short-term tanker voyage charter rates increased rapidly in the fall of 1950 and in 1951. The 1951 level (average of dollar and sterling fixtures) was 100% above the 1950 level.

The remainder of the world fleet, about 10% of the dry-cargo fleet, and about 25% of the tanker fleet, is employed on an intermediate term basis. The charter rates for these vessels lie between the short-term and the long-term rates.

Port disbursements are the most important foreign exchange operating costs. In port disbursements, we include stevedoring, port fees, bunkering, supplies and repairs. Port disbursements have been estimated in 1949 at \$1.3 billion, in 1950 at \$1.2 billion, and in 1951 at \$1.5 billion. Port disbursements have been estimated on a basis of an average of 40% of gross income for dry-cargo vessels and 25% of the tanker gross receipts in 1949 and 1950. The 1951 port disbursements are based on the 1950 level, reflecting an estimated 12% increase in port costs, a 6.5% increase in dry-cargo trade and a 12% increase in the volume of petroleum trade above the 1950 level.

The 1951 increases in port disbursements are mainly due to the increased cost of oil bunkers and of cargo handling. The estimated increase in the cost of port disbursements was thus less than the freight increase, even of long-term shipping rates.

The cost of shipping services as a percentage part of the CIF-cost of imports or as part of the sales price to the consumer, varies according to the intrinsic value of the commodity, the ruling levels of freight rates, and the distance carried.

Business cycles are historically reflected in the world shipping market in an accelerated way. If a general recess in world trade should occur, the decline in shipping receipts and payments is thus likely to be more marked than the decline in world trade.

Indications are that 1951 was a peak year in regard to shipping receipts and payments on a world basis, as well as shippings earnings by the principal maritime nations. The outlook for tanker employment seems favorable for 1952-1954, with prospects of sustained activities in 1954-1956. The liner dry-cargo market will probably hold firm during 1952-1956. The tramp ship market will probably weaken substantially until enough tonnage is withdrawn from active service to establish a new balance with the envisaged subtracted demand, particularly in coal shipments.

II. DISCUSSIONS OF SOURCES AND ESTIMATES

The shipping account in the World Balance of Payments for 1949 and 1950 as discussed in this paper, is based on data from the International Monetary Fund and on the writer's estimates where such data are lacking (Tables 1-A, 1-B, 1-C, 2, 2-B, 3 and 3-B). The 1951 account is wholly estimated (Table 4). The IMF receives data on international shipping transactions from member countries in answer to a questionnaire (1) whose main features are listed below:

<u>Receipts</u>	<u>Payments</u>
<u>A. Receipts by Domestic Vessels on account of:</u>	<u>C. Payments to Foreign Vessels on account of:</u>
1. Gross freight on exports and cross trades.	1. Gross freight on imports.
2. Receipts from timecharters.	2. Payments for timecharters.
3. Passenger fares from foreign passengers.	3. Passenger fares paid by nationals on board foreign ships.
<u>B. Port Disbursements from Ships in national Ports:</u>	<u>D. Port Disbursements by Domestic Ships in foreign Ports:</u>

NOTE

A and C: The gross freight (A-1 and C-1) is meant to include gross liner freights as well as voyage charters and bareboat charters. The amounts stated under A-1 are, on a world basis, the counterpart to the amounts stated under C-1. The same is the case with A-2 and C-2, A-3 and C-3.

B and D: Port disbursements include: port dues and fees, bunker fuel, stevedoring, ship's stores, repairs, etc. The amounts stated under "B" and "D" should logically equal each other.

Coastal and domestic shipping transactions are excluded, although some countries do not separate international and domestic shipping transactions. The currencies most generally used in international shipping are sterling and dollars.

Some countries, like the U.S.S.R., China and several smaller, under-developed countries, do not submit any data at all. Of the reporting countries, very few submit complete data on the shipping account. A number of countries - in particular in South America, Africa and Asia - do not separate freights paid on imports from the delivery price of imports (CIF-price). In such cases, the freight has been estimated in this paper at an average of 12% of the CIF-price of imports (Percentages by trade routes are given in Table 2-C).

(1) I.M.F. Balance of Payments Manual, January 1950, Table V. Certain changes in the IMF formula have been suggested.

Canada and Belgium do not clearly separate international ocean shipping from international inland waterway shipping, and no breakdown has been estimated.

Many countries have not yet sent in information about 1950. In these instances, estimates based on 1949 figures have been used.

In the United Kingdom, shipping account tanker receipts and payments are excluded. Estimates have been submitted on the basis of the size of her tanker tonnage and by comparison with the earnings of the Norwegian tanker fleet.

The I.M.F. data are not broken down between the receipts and payments on account of dry-cargo and tanker services. On a world basis, dry-cargo gross receipts 1949 and 1950 have been estimated in this study as 70% and tanker receipts as 30% of total receipts, on the basis that dry-cargo tonnage is about 75% of the world fleet and tanker tonnage about 25%, assuming somewhat higher earnings per ton for tankers.

In regard to port disbursements, receipts are lacking for most ports in South America, Africa and Asia. Total receipts of these areas are, therefore, somewhat understated, and their net payments consequently somewhat overstated. The exclusion of payments of port disbursements for these areas is not very important, since they do not possess any extensive merchant tonnage. Also for Europe, the port disbursement account is far from complete. The U.K., France, Italy and Sweden e.g. submit neither port disbursements receipts nor payments. The amounts of port disbursements received and paid on a world-wide basis are, therefore, grossly understated.

We have attempted to adjust the port disbursement account (port disbursements received and paid) by estimating that port disbursements for dry-cargo liner vessels in 1949 and 1951 were about 48% of gross freights (see Tables 13-A and 13-B) and for dry-cargo bulk carriers about 25%. Assuming 65% - 35% distribution as between liners and bulk carriers, the weighted average port disbursement as per cent of gross freight is about 40%. For tanker vessels, 25% of gross voyage income is assumed to represent the magnitude of port disbursements.

The 1951 port disbursements have been estimated on basis of the 1950 port disbursements, taking into account an estimated increase of 12% in the cost of port disbursements, a 6.5% increase in the volume of dry-cargo trade and a 12% increase in the volume of petroleum trade. Because of the steep increase in gross freights in 1951, it would not have been feasible to apply the same percentage of port disbursements related to gross freights in 1951 as in 1949 and 1950.

Although the available balance of payments data are incomplete, they may be regarded as indicative of the relative magnitude of the world shipping account and the relative position of areas and countries.

III. THE WORLD SHIPPING ACCOUNT IN THE BALANCE OF PAYMENTS

1. World Account 1949-1951

On a world basis, the estimated bill for shipping freights was \$3.7 billion in 1949, \$3.5 billion in 1950 and \$5.5 billion in 1951 (Tables 2-B, 3-B and 4).

The year 1951 was a year of exceptionally high freight rate levels. We believe that the gross freights (received or paid) will level off in 1952, perhaps dropping to approximately \$4 billion. It could well be that the 1951 gross shipping receipts may not be equalled or surpassed for several years to come. When freights again attain a level like that of 1951, it will probably be due to a larger volume of world trade rather than to any boost in freight rates similar to the 1951 performance, unless there is a threat of another war.

2. Gross Freight Receipts and Payments 1949 and 1950 by Countries

The nation with the largest shippings earnings from its national fleet is the United Kingdom. In 1949, freight receipts exceeded freight payments by an estimated \$383 million and in 1950 by \$531 million. Of the 1949 total, receipts from dry-cargo and passenger shipping, after deducting foreign payments, were \$233 million, with an estimated \$150 million from tanker shipping (Table 2).

In 1950, the U.K.'s comparable surplus of receipts from dry-cargo and passenger shipping were \$311 million, while net tanker receipts have been estimated at \$220 million (Table 3).

The importance of shipping in the U.K. balance of payments may be seen by comparing the above estimated net receipts with the deficit between imports and exports, amounting to the equivalent of \$1,204 million in 1949 and \$983 million in 1950.

Norway came second to the U.K. in surplus foreign exchange earnings from her merchant fleet. After deducting freights paid to foreign vessels, Norway had a freight income of \$333.4 million in 1949 and \$308.5 million in 1950. Her foreign trade deficit by comparison, was \$867 million in 1949 and \$108.5 million in 1950.

Other European nations with shipping receipts exceeding freight payments were: the Netherlands, Sweden and Denmark. France, Italy and Greece, despite considerable gross income from their fleets, recorded a net debit balance (Tables 1-A and 1-B).

In the U.S., the excess of freight receipts from U.S. vessels over payments to foreign flag vessels was \$369 million in 1949, as against only \$53.5 million in 1950 (Tables 1, 2 and 3). This decline may be accounted for

partly because of the drop in U.S. exports, partly because of an increase in the transfer of U.S. tankers to Panamanian flag, and partly because of the relatively low level of freight rates, rendering the U.S. merchant marine in an unfavorable competitive position for foreign freights, because U.S. operating costs are the highest in the world.

Canada had a net surplus of \$42 million in 1949 and an estimated \$40 million in 1950. These figures include, however, a contingent of earnings from inland waterways.

In Asia, India was the largest net debit nation with net payments of an estimated \$216.1 million in 1949 and \$132.6 in 1950 (Tables 2 and 3).

The drop in freight payments between 1949 and 1950 is due to a decline in imports, following the imposition of foreign exchange regulations.

3. Shipping Receipts from Vessels Registered under Foreign Flags

Only the receipts from the national merchant fleet appear in the balance of payments of a country. Shipping receipts, however, may also accrue from earnings of vessels owned by nationals but registered under foreign flags. In the postwar period, a sizable amount of tonnage owned by U.S. or European interests has been registered under Panamanian, Honduran or Liberian flags, in order to avoid national regulations increasing operating costs or restricting the disposition of foreign exchange earnings.

On a world basis, the size of the shipping receipts from vessels thus registered, is held to equal the difference between the total recorded receipts from national fleets and the total recorded payments of gross freights. Such difference amounted to \$538 million in 1949 and \$617 million in 1950 (Table 1-C). Since most of these "missing" receipts are earned by vessels under the Panamanian flag, we have apportioned these receipts according to the assumed flow of Panamanian shippings earnings (Table 1-C).

We estimate that in 1949 U.S. nationals received about \$269.2 million from U.S.-owned Panamanian flag vessels, and that European nationals deposited in the U.S. about \$134.6 million of their receipts from Panamanian vessels, making total shippings earnings accruing to accounts in the U.S. from Panamanian ships about \$403.8 million.

For 1950, we estimate a total of \$463 million to flow to the U.S. The part of Panamanian shippings earnings to benefit the European Balance of Payments has been estimated at \$134.6 million in 1949 and \$154.3 million in 1950. We have not attempted to distribute the part of the European shippings earnings deposited to European accounts on a country basis. It is not impossible that a country like Greece would be a net surplus nation on shipping account if earnings by Greek nationals from Panamanian flag vessels were added to the earnings of the Greek flag fleet.

4. Gross Freight Receipts and Payments by Areas

The following table shows gross receipts and payments by areas in 1949 and 1950. Gross receipts are adjusted to include the "missing" receipts from Panamanian vessels as discussed above. (For details and methods of adjustments and estimates see Tables 1-A, 1-B, 1-C, 2, 2-B, 3 and 3-B of the Statistical Appendix).

	(in millions of dollars)					
	1 9 4 9	Recorded & estimated freight payments	Balance	1 9 5 0	Recorded & estimated freight payments	Balance
	Adjusted freight receipts			Adjusted freight receipts		
North America	1,318.8	504.0	+ 814.8	1,098.5	542.0	+ 556.5
Central and South America	126.8	526.2	- 399.4	97.8	523.3	- 425.5
Europe	2,182.7	1,623.8	+ 558.9	2,294.2	1,621.5	+ 672.7
Africa	57.0	238.1	- 181.1	41.1	214.2	- 173.1
Asia	2.0	607.7	- 605.7	5.8	414.7	- 408.9
Australia and New Zealand	4.0	191.5	- 187.5	2.6	224.3	- 221.7
TOTAL WORLD:	3,691.3	3,691.3	0	3,540.0	3,540.0	0

It will be seen, that North America and Europe were the only areas enjoying a surplus balance between freight receipts and freight payments in 1949 and in 1950. Asia had the largest deficit in 1949, followed by Latin-America, while the reverse was true in 1950.

We have estimated that international freight receipts or payments will be about \$3.7 billion in 1951 (Table 4). We have not made any breakdown of this estimate as to areas, but it may be assumed that the 1951 shipping account follows the pattern of 1949 and 1950, with Europe and North America as surplus and the rest of the world as deficit areas in regard to shipping service.

Of the \$2 billion increase in the 1951 world freight bill, somewhat more than half is estimated to have been paid by the industrialized areas of the world (Europe and North America), and somewhat less than half by the primary producing countries (rest of the world), based on the relative increase in foreign trade (Table 7-B).

5. Port Disbursements

The balance of gross freight receipts and payments between areas and countries is modified by the amounts of port disbursements paid by national fleets in foreign ports and received by domestic ports from foreign vessels.

The effect of port disbursements on the net freight surplus of Europe and North America, is thus to reduce the favorable balance, and for Latin America, Africa and Asia to reduce the negative balance accrued from shipping freights.

In ports where oil and coal bunkers, ships supplies, etc. have to be imported, the foreign exchange receipts from port disbursements are partly income from entrepot trade. The most important sources of port revenue, however, are generally the stevedoring charges and the port fees and dues which represent net foreign exchange earnings when levied from foreign ships.

In our opinion, both port receipts and port payments, recorded at \$800 and \$543 million in 1949 and \$651 and \$560 million in 1950 respectively, are grossly understated. We have estimated port disbursements (receipts or payments) of about \$1,311 million in 1949, about \$1,147 million in 1950 and \$1,493 million in 1951 (Tables 2-B, 3-B and 4).

The important cut in the gross shipping receipts by port disbursements may be exemplified by Norway. In 1949, Norway thus paid \$223 million in port disbursements compared with \$351 million gross freight receipts.

In 1950, port disbursements by Norwegian vessels in foreign ports were \$195 million, compared with gross receipts of \$326 million dollars. The relative decline in port payments in 1950 may perhaps be due to a larger proportion of the Norwegian fleet being on timecharter in 1950 than in 1949. On timecharter port disbursements are paid by the charterer. The receipts by Norwegian ports were unimportant as counter balance to freight payments to foreign ships.

The Netherlands illustrate how port earnings influence the overall position on shipping account. In 1949, port receipts totalled \$40 million, compared with \$56 million paid in gross freights to foreign ships and \$119 million received by the Dutch merchant marine (Table 2). No data are available as to the amounts disbursed by Dutch vessels in foreign ports.

Port disbursements are the most important foreign exchange costs offsetting gross freight receipts. However, a sizable proportion of seamen's wages are also frequently paid in foreign currencies. It would, therefore, not be accurate to determine a country's net foreign exchange position on shippings account by viewing only the balance of gross freights and charter hire received and paid as well as of port receipts and payments.

IV. FACTORS INFLUENCING THE SHIPPING ACCOUNT IN THE BALANCE OF PAYMENTS

The shipping account in the balance of payments of a country is determined basically by the supply of national tonnage and the ruling levels of freight rates. The level of freight rates reflects the relation between the supply and demand for tonnage, with some allowance for the cost of providing shipping services.

1. The Supply of World Tonnage

The oceangoing merchant fleet of the world reached 79 million gross ton (111 million DWT) by December 31, 1951 (Table 5). Dry-cargo tonnage amounted to 60.3 million gross tons and tanker tonnage to 18.5 million gross tons.

A distinction must be made between the total supply of world tonnage and the active oceangoing fleet. The active world merchant fleet at the end of 1951 stood at about 70 million GRT, of which about 51.5 million GRT were dry-cargo ships, and 18.5 million GRT were tankers. About 9 million GRT of dry-cargo vessels were laid up in the U.S. Reserve Fleet (October 31 1951).

In the postwar period, the tonnage of oceangoing, war-built vessels in the U.S. Reserve Fleet has fluctuated from about 7 million gross tons to about 13 million gross tons, vessels being laid up in times of declining freight rates and reactivated in times of increasing freight rates. The Reserve Fleet thus has a stabilizing effect on the freight market.

The total world fleet increased 2.9% in 1949, 2.8% in 1950 and 4.1% in 1951, the greatest increase being in tanker tonnage (Table 5). In 1949 however, the active oceangoing tonnage declined in spite of the additions through new construction, because of heavy withdrawals of tonnage to the U.S. Reserve Fleet. In 1950 and 1951, the active fleet was implemented by a large scale reactivation of Reserve Fleet vessels as well as by new construction.

As of January 1952, 14.3 million gross tons of oceangoing ships were under construction or on order, of which 8 million gross ton were tankers (Table 5-C). If steel supplies for ship construction are not severely reduced as compared with 1950 and 1951, the shipyards of the world will probably be able to maintain the 1950-51 level of output of about 3.5 million gross tons of vessels launched annually. (Table 5-B). It would then require about four years to complete the vessels now under construction or on order.

In order to estimate the possible withdrawals from the active merchant fleet 1952-1956, we make the following assumptions:

- a) that there will be no major war, nor severe business depression;
- b) that the level of liner freight rates will be relatively stable;
- c) that tramp rates may approximate 1949-50 levels;
- d) that tanker rates will be sustained in 1952-54, with some leveling off in 1954-56;
- e) that the cost of construction and operating costs will remain at about the current levels.

On these assumptions we estimate a withdrawal of about 4 million tons of dry-cargo vessels to the U.S. Reserve Fleet, which would then reach about 13 million gross tons. About 12 million GRT of the active dry-cargo vessels and 1.4 million GRT of tankers were more than 25 years old by 1951. We estimate that about 4.5 million GRT of dry-cargo vessels and about 1 million GRT of tankers of this obsolete tonnage will be withdrawn from active service by being laid up, or scrapped, in 1952-1956. Marine losses may amount to 0.3 million GRT for the four year period.

Total estimated withdrawals from the active merchant fleet would thus be about 9.8 million GRT, and the total net increase about 4.5 million GRT. Accordingly, the active merchant fleet by 1956 would be about 74.5 million GRT. The tanker fleet would be about 25.5 million gross tons, and the dry-cargo fleet about 49 million GRT, i.e. the active dry-cargo fleet would decline by about 1.5 million GRT and the active tanker fleet would increase by 7 million GRT compared with the status of the active fleet by the end of 1951.

The total oceangoing fleet by 1956 may be about 90 million GRT assuming that 3 million GRT of the laid up vessels will be scrapped.

2. The Supply of National Tonnage

In 1951, the United States, United Kingdom and Norway owned 64% of the world's oceangoing merchant fleet. Together with Panama, the Netherlands, France, Italy, Sweden, U.S.S.R. and Greece, these ten countries accounted for 85% of the registered gross tonnage of the world (Tables 2, 3, 5 and 5-E). Panama cannot be termed a shipping nation, since the tonnage registered under her flag is almost entirely owned and operated by nations of other countries (Table 5-D). Many smaller countries which had little or no tonnage prior to World War II, are pursuing programs for developing a merchant fleet (e.g. Colombia, Costa Rica, Ecuador, Guatemala, Iceland, India, Indonesia, Iran, Ireland, Israel, Korea, Liberia, Pakistan, Switzerland and Syria (1)). These plans are not expected to change materially during the next few years or to affect the current relative distribution of world tonnage.

The main criterion as to whether a nation has a surplus or a deficit on the ocean transport account, is the relation of the available national demand for tonnage. In spite of considerable national tonnage, countries like France and Italy are on balance net shipping deficit nations, because of the large national demand for shipping.

Norway is a typical example of a country with tonnage far in excess of her foreign trade requirements: 85% of her fleet is engaged in "cross trade", i.e. trade between foreign ports. Part of Norway's imports, financed by U.S. loans or grants, are carried in U.S. vessels as required by U.S. legislation.

(1) Source: New York Times, January 15, 1952.

3. Composition of the Fleet

An important factor determining the total earning power of a nation's fleet is the breakdown into dry-cargo liners, bulk carriers, passenger vessels, tankers and special type vessels, such as refrigerated vessels, heavy lift vessels, whaling tankers, etc. These different types of ships cater to different markets. The composition of the fleet varies from time to time and from country to country.

Each of the above categories may be further divided into major groups according to size. Equally important is the quality of the fleet as measured by the number of old and new vessels, slow and fast ships, etc. Although the physical condition of a national merchant fleet greatly influences its earning power, the value of experienced management and seamanship cannot be overemphasized. The "tools" in the shipping industry are internationally made and traded, but the way a ship is operated is often decisive in this extremely competitive business.

4. Demand for Dry-Cargo Shipping

The demand for shipping services is determined by the level of ocean-born world trade and of ocean travels. World dry-cargo trade, taken as the total amount of seaborne traffic loaded into world ports, was estimated by the U.N. at about 490 million metric tons in 1948, 510 million tons in 1949, and 550 million tons in 1950 (Table 7). An increase of 6.5% has been estimated by the I.M.F. for 1951 (Table 7-B), which would bring the 1951 level of world trade to about 606 million tons.

The general increase in world oceanborne trade during 1949, 1950 and 1951 above the increase in tonnage supply, implied a better utilization of shipping space. The extent to which a vessel's cargo capacity is utilized, varies considerably however from trade to trade, between inbound and outbound movements, and according to seasonal fluctuations. The demand for shipping is very differentiated, e.g., the demand for luxury travelling accommodations and the demand for moving coal in bulk.

The geographical distribution of the demand for ocean services plays an important part in the employment of ships. Using 1948 as the basis, we find that in 1950 the dry-cargo loaded in European ports increased by 42%, in Asia by 41%, in Africa by 21% and in Oceania by 7%, while in the North American ports the tonnage of goods loaded in foreign trade declined by 19% (Table 7). (1)

We believe that the demand for transporting general merchandise, i.e. the demand for liner cargo, will increase an average annual rate of about 2.5% to 3% in the 1952-1956 period. We envisage a severe drop in the demand for bulk cargoes, compared with 1951, mainly because of a falling off in U.S. coal exports to Europe, but also because of the drive for greater food production in many countries would diminish the demand for overseas grain. Ore shipments on the other hand may show some increases above the 1951 level.

(1) U.N. Statistical Office.

5. Petroleum and Petroleum Products

Between 1948 and the end of 1951, world oil demand increased about 27%. The 1951 demand for oil was about 12% over the 1950 level, estimated on basis of mid-1951 figures (Table 8).

The demand for tanker tonnage as indicated by the demand for oil increased at a higher rate during 1948-1951 than the increase in the supply of tankers by new construction, and at a higher rate than the increases in production because of the added importance of Middle Eastern oil production, necessitating a long haul of oil by tankers.

The demand for oil transportation is seasonal: the fall and the winter are the peak seasons, while late spring and summer months are the off-seasons. The seasonal pattern reflects the demand for fuel oil.

In 1950, 47% of the world tanker fleet hauled oil and oil products from the Persian Gulf as against 23% engaged in the transport from the Caribbean (1). By point of destination, 33% of the world tanker fleet hauled oil for U.S. ports and 38% for European ports.

The brisk demand for tankers was evident in 1951 when some 300 tankers controlled by the Anglo-Iranian subsidiary, the British Tanker Company, were easily absorbed on other routes when oil ceased to flow from Abadan and Bandurmashu (2). Tankers can be divided into "dirty" tankers, used to transport crude oil, and "clean" tankers, for the transport of refined oil. It is believed that most of the oil tanker fleet is engaged in the transport of crude oil.

Whaling tankers are not part of the regular tanker fleet: they are used to carry whale oil during the whaling season and are generally laid up and overhauled during the off-season from about April to December.

The demand for tankers, if paralleled to the estimated increase in crude oil production in 1952-1956, may grow at an average annual rate of about 4.5% to 5%, or about 20% for the 1952-56 period (3).

Calculations have been made that the demand for tankers and supply of tanker tonnage will be in equilibrium by 1954, assuming no scrapping is done (4). According to our estimate of 1 million gross tons of tankers laid up or scrapped, employment for the active tanker fleet should be rather assured up to 1956. The impact on the demand for tankers by pipe line construction makes it more difficult to obtain a view of the future demand for tankers.

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- (1) Sun Oil Company, "Analysis of World Tank Ship Fleets", December 1951, by B. Saurino.
 - (2) British Information Service, December 20, 1951.
 - (3) The Oil and Gas Journal, December 1951, page 280, "The World Tank Ship Fleet", by B. Saurino.
 - (4) Ibid.

6. Type and Length of Vessel Employment

The type of vessel employed and its duration depend on the requirements of international trade, the cost of ship operation and the level of short-term freight rates.

Long-term employment of ships as discussed in this paper has been taken to imply liner services, and charters stipulating employment for two years or more. Short-term employment has been taken to include all charters for a duration of less than three months, and intermediate term employment as charters between three months and two years.

In the period after World War I, a trend towards long-term employment of vessels has been evident. The increased importance of liner services as against dry-cargo tramp services, reflects both the increased flow of manufactured goods in international trade, and the enhanced regularity of world trade movements, requiring scheduled shipping services.

In the tanker market, long-term employment through long-term timecharter or direct ownership of tankers by the large oil companies, reflects the requirements of the companies for assured deliveries. In principle, the oil companies try to meet their regular shipping requirements by a fleet owned or operated on long-term contracts and fill their marginal requirements by short-term chartering.

The increased costs of ship construction, particularly noticeable in the postwar period, also influence ship owners to place a vessel in long-term employment for a more secure return on the investment. This is particularly true of newly constructed tankers, where a long-term charter frequently forms an integral part of the financing of the vessel.

In times of higher freight rates, the part of the active world tonnage on short-term employment increases. This is due in part to the transfer of vessels from intermediate term or long-term employment to short-term contracts as their old contracts expire, and to the reactivation of laid-up vessels to take advantage of the market.

Because of the fluctuations of tonnage between the various types and length of employments, it is difficult to ascertain the percentage distribution of the active world merchant fleet in this respect. We estimate in this paper, that in the 1949-1951 period, the average proportion of the active world fleet engaged in long-term services was 65%, applied to dry-cargo as well as tanker tonnage. We further estimate that about 25% of the dry-cargo fleet was employed on a short-term basis, and that the remainder tonnage, 10% of the dry-cargo fleet, and 25% of the tanker fleet, was engaged on an intermediate term basis.

The percentage of the various national fleets employed in short-term and long-term engagements vary considerably from one country to another. In Norway (as of December 31, 1950) only about 18.4% of the dry-cargo fleet was contracted for a short-term basis, with another 2.3% on an intermediate term basis, while liners were 52% and long-term timecharters were 27.2% of the dry-cargo fleet.

Of the tanker fleet, 11.5% was on short-term voyage charter, 73.8% on long-term timecharter and 14.7% on intermediate term consecutive voyage charter (1).

In the United Kingdom, mid-1950 tramp tonnage made up 27% of the dry-cargo fleet, operating in foreign ports, while liners constituted 73% (2).

In the Netherlands, only 13% of the dry-cargo fleet operates in tramp trade, as against 87% employed in liner services (as of December 31, 1951)(3).

7. Freight Rates

Freight rates may be divided into the following main categories:

- a) the free market rate for dry-cargo bulk carriers (tramps);
- b) the free market rate for tankers;
- c) the liner rates for dry-cargo and passenger vessels in regular service;
- d) the long-term charter rates for tankers;
- e) the inter-company voyage charter rates (tankers).

Only categories (a) and (b) fluctuate from day to day according to the current supply and demand. The liner rates (c), and the long-term tanker charter rates (d) react slowly to the general trend in the market, as do the inter-company voyage charter rates (e), which are set to reflect the rate of two years timecharters. Consecutive voyage charters (dry-cargo and tanker) and medium-term timecharter constitute the borderline cases, the degree of response varying with the length of the charter.

(a) The Free Market Rate for Dry-Cargo Bulk Carriers (Tramps)

Dry-cargo rates for tramps are either quoted on a voyage charter or a short-term timecharter basis. The voyage charter rate is quoted per ton of commodity freighted, the timecharter per D/T of the ship. The main difference between the two types of charter parts, is that the charterer on a timecharter undertakes the expenses of fuel and regular port disbursements, which are paid by the shipowner on a voyage charter.

The freight index for dry-cargo tonnage fixed on voyage charter stood at 105.5 by January 1948. (July-December 1947 = 100) (Table 9). It fell steadily during spring and summer, reaching a low of 81 in October, but recovered to 88 by December. The upward trend continued in 1949, reaching 91.2 in May. The index declined during the next period to a low of 67.5 in October, recovering again to 75.6 by December 1949.

In the spring of 1950, the voyage charter rate index showed minor variations of around 75%. In August, however, rates went up to 90 and the increase continued during the fall, with December closing at 121 (3).

(1) Norwegian Shipowners Association.

(2) No data available as to U.K. tanker employment.

Source: Chamber of Shipping of the U.K., Annual Report 1950-51, page 138.

(3) Norwegian Shipping News, Freight Index.

The rise continued at an accelerated pace during the spring of 1951, reaching a height of 190.3 by June. In July and August the index dropped to 176, recovering to a level of 186 in September and October. In November, 1951 a new high of 192 was recorded. The average for 1951 was 176.7, as compared with 84.9 in 1950, or an increase of 108%. In 1952, the index dropped to 167.9 in January, and to 155.8 in February, with indications of further declines, due mainly to the reductions in coal shipments from the U.S. to Europe. Short-term dry-cargo timecharter rates displayed the same general trends during 1948 and 1949, although they were at a higher level than the voyage charter rates during 1948 (Table 9).

The timecharter index, on the other hand, dipped much lower than the voyage charter in 1950, reaching a low of 64.2 by June 1950. The recovery started in July and continued during the fall at an increasing pace, with a remarkable increase from 91.4 by November to 117.5 by December. Then, in 1951, timecharter rates outdistanced voyage rates, increasing by leaps and bounds. From 147 in January 1951, they reached a height of 238 in June, dropping in July and August to a level of 208, then gaining 20% in September and climbing to a peak of 249.5 in November. The average timecharter rate in 1951 was 210.7 compared with a level of 78.6 in 1950, or an increase of 155.6%.

The relative cost of ocean freight as part of the CIF-cost of a bulk commodity varies according to the value of the commodity freighted. For coal shipped from the U.S. East Coast to Antwerp, e.g. the January 1952 freight rate aboard a U.S. vessel was \$10.50 per ton. The CIF-price of coal in Antwerp was \$22.50. The equivalent freight rate on grain was \$13.50 with the CIF-price on grain at \$75 per ton (1). As compared with consumer prices, freight rates generally constitute an amazingly low part. Of the price of Argentinean meat in the United Kingdom, in the beginning of 1952, e.g. ocean charges were barely 5%, or about 1 $\frac{1}{2}$ d. per pound for a 6,000 mile trip in refrigerated holds (2).

(b) Tanker Voyage Rates

Tanker voyage charter rates are quoted in percentages above or below the ceiling rates which were in force during World War II: U.S.M.C. dollar rates and the M.O.T. sterling rates (Table 9, note 2), which are quoted per long ton of oil for the various routes.

On the basis of USMC = 100, tanker rates for dollar voyage charters stood at 61 by September 1949, and recovered to 84.4 by December 1949 (Table 10). The rates dropped in January and oscillated in the lower sixties in the spring of 1950. In July, a 6% increase was noted, with a further 16% rise in August. The rates continued to shoot upwards during the rest of the year, closing at 210.6. A phenomenal rise of 53 points took place in January, and a height of 278.1 was reached in February, 1951. A reverse came in March, with a drop to 267.1, followed by a downward trend, which led to a low of about 130 during July and August. Rates increased 18% in September, reaching 191.1 by October and 246.3 in November (Table 10).

(1) Source: M.S.A.

(2) Example cited in Presidential address of 75th Annual Meeting of U.K. Chamber of Shipping, "The Shipping World", March 1952.

The sterling MOT tanker rates closely paralleled the dollar rates (see Table 10). The devaluation of the sterling in September 1949 had the effect of increasing the sterling rates by the amount of the depreciation.

The impact of the Korean war and the rearmament during the fall of 1950 is thus clearly noticeable on the rates in both the short-term dry-cargo and the tanker markets. Competitive bidding for tonnage as well as extraordinary features of the bulk markets, such as the British domestic coal shortage and the Indian grain shortage, drove rates to much higher levels than could be expected from the standpoint of increased demand alone. In tanker rates, the seasonal fluctuations are readily discernible with spring and summer being the slow seasons. If studied in detail, both dry-cargo and tanker rates rapidly reflect the changes in trade caused by political or economic developments.

(c) Liner Freight Rates

Liner freight rates are determined by the liner conferences. Most of the liner conferences in the world have their headquarters in Western Europe (U.K., Scandinavia, the Netherlands) or the U.S., spanning the globe with their routes of scheduled services. The liner rates are relatively steady: they respond only slowly to the ups and downs of the tramp charter market or to changes in operating costs. In addition to the regular base rates, liner conferences may impose surcharges on movements to certain ports suffering from congestion, in order to compensate for lost time. Liner rates are comprised of detailed schedules for a large variety of commodities. Cargo is freighted either according to weight or measurement. Regular shippers receive "contract rates", which are generally about 10% below the "tariff rate".

During 1948 there were no general changes in dry-cargo liner rates. In 1949 also, rates were stable on the whole, although there were some rate increases, e.g. the U.S. Atlantic and Gulf, the Netherlands West Indies and Venezuela Conference authorized a 15% increase as of May 2, 1949, and the U.S. Atlantic and Gulf/West Coast of South America Conference a 15% increase as of April 18, 1949.

The devaluation of the sterling in September 1949 implied a reduction in dollar terms of the sterling Conference rates. Where rates are quoted in both sterling and dollars, the sterling rates were increased by the amount of the devaluation, e.g. in the North Atlantic Passenger Conferences.

In 1950, liner rates were again generally stable, although an upward trend was noticeable by the end of the year. The Continent/U.S. Pacific Conference thus increased their rate schedules by December 1, 1950.

In 1951, most of the liner conferences announced general rate increases of about 10% to 15% as of January, February, March and April. During the summer months, the liner rates seemed steady, and in September, October, November and December a further round of increases took place, mostly of about 10%, bringing the total general increase in liner rates for 1951 to 20-25%. Some of these conferences announced the effective date of this round of increases to be January 1, 1952 (For a partial list of conferences stating increases in 1951, see Table 11).

Passenger liner rates were generally steady in 1948-1951. The sterling fares were increased by the amount of the devaluation, where fares were quoted on a sterling-dollar basis. A postwar feature in passenger fares is the competition by airlines.

(d) Long-term Tanker Rates

Long-term timecharters for tankers vary from 2-13 years, many being fixed on a 5-year basis. The rate is quoted per DWT per month. Timecharters for new construction are generally concluded as part of the financing of the new tanker, frequently one or two years before the scheduled delivery. Although the influence of ruling voyage market conditions and the general outlook for short-term rates have a bearing on the long-term charter fixtures, the long-term rates show very slow movements. In 1948, 1949 and 1950, five-year timecharters on new tankers of 12,600 DWT to 14,500 DWT were concluded at 18 shillings to 22 shillings per DWT (Table 12).

In 1951, five-year charters were fixed at 23/6d. to 26/- per DWT for tankers ranging in size from 13,500 DWT to 17,400 DWT. A five-year dollar charter made in November 1951 for a tanker to be delivered by mid-1953, was fixed at \$3.50 per DWT (Table 12).

Consecutive voyage charters for 3-5 years are generally fixed on MOT- or USMC-rates with a stipulated minimum or maximum range.

(e) The Inter-Company Tanker Voyage Charter Rates

A very important feature of the tanker market are the inter-company rates which the large oil companies charge for tanker services. These inter-company rates are the transport charges which constitute a part of the calculations of the delivery price for oil and oil products. Through ownership, long-term and short-term charters, the big oil companies control about 90% of the world tanker fleet. The inter-company rates are made on a uniform basis by all the big oil companies and are reviewed every six months. These rates are calculated on the basis of the current rate for two-year timecharters spread on a voyage basis. The inter-company voyage rates thus differ from the free market voyage rate and from the charter hire paid to the shipowners. The inter-company voyage rate from April 1951 to October 1951 was USMC plus 25% per long ton of oil. The effective rate from October 1951 to April 1952 was USMC plus 50% (1).

On 36 degree API crude oil from the Persian Gulf, e.g. the winter 1952 inter-company freight rate, was \$17.40 per long ton to the U.K. and West Europe. The FOB price of the oil was \$1.75 per barrel or \$13.27 per long ton, and the delivery price in the United Kingdom was \$30.67. The inter-company freight rate from the Persian Gulf to U.S. ports, north of Hatteras, was \$18.88 per long ton, making a New York delivery price of \$32.15 (2).

(1) Source: Mutual Security Agency.

(2) About 75% of the Middle East crude oil output goes to West Europe, and about 25% to the U.S.

Because of the differences displayed in long- and medium-term tanker fixtures, it is extremely difficult to arrive at an average rate in any one year, even if only certain classes of tankers at specific time fixtures are selected. In order to fit the tanker market into our general balance of payments estimated for 1951, a rather arbitrary average increase of 22% for all long-term and intermediate term fixtures was selected (Table 4).

8. The Outlook for Freight Rates

If our set of assumptions and estimates in regard to the active world tonnage and the shipping demand are generally in the right order of magnitude, we anticipate the freight market to show the following main characteristics in the 1952-1956 period:

- a) relatively stable rates for liners (dry-cargo, passengers);
- b) a sustained market for tankers, but a leveling off of the short-term rates from the extraordinary high 1951 level;
- c) drop in dry-cargo bulk rates to a level similar to the 1949-1950 level or perhaps somewhat below.

9. The Cost of Ship Operation

At a given freight rate, the extent of utilization of the ship's cargo space and the cost of ship's operation determine the extent to which foreign exchanges accrue to the national balance of payments and the profit or loss to the shipping company.

Port disbursements constitute the largest foreign exchange operating costs. Port disbursements embrace port dues and fees, bunkers, stevedoring charges, ships' stores and supplies, repairs, etc. Some shipping lines, however, calculate fuel and repairs separately.

The cost of port disbursements vary considerably from one port to another, partly because of the differences in charges and price levels, partly because of the differences in the average rate of turnaround time.

As between types of vessels, general cargo carriers (liners) require more time in port than bulk carriers and, therefore, pay proportionately more in port disbursements. Among bulk carriers, the dry-cargo tramps spend on the average more time in port than tankers.

As an illustration of the relative cost of port disbursements (inclusive of bunkers) as part of gross freight earnings, West European liner vessels spend an average of about 45% of gross income on port disbursements over a postwar period (Table 13-A and 13-B).

Since dry-cargo tramps are shifted from one route to another, port disbursements related to either gross freight earnings or the total cost of a voyage vary to a considerable degree from one voyage to another.

The degree of variation in port disbursements also applies to the tankers which are shifted frequently from one route to another. For a U.S. flag T-2 tanker, on a voyage between U.S. Gulf and New York, port disbursements would thus represent about 6 $\frac{1}{2}$ % of total operating costs. For the same vessel on a voyage between U.S. Gulf and Japan, port disbursements exclusive of land tolls) would average only about 1% of the total voyage costs (1).

The port disbursements for vessels on timecharter or bareboat charter are paid for by the charterer, while the shipowner otherwise pays the regular port disbursements.

10. Cost of Port Disbursements

The cost of port disbursements has increased rapidly in the postwar period, mainly because of slower turnaround in ports and higher prices for bunker oil and stevedoring. While before the war vessels in international trade spent an average of 200 days at sea, 165 days in port, the situation has been reversed in the postwar period.

According to Norwegian estimates, the index for port disbursements (including fuel) for dry-cargo bulk carriers rose from 100 in 1947 to 116 in 1948, 117 in 1949 and 120 in 1950. It is held likely that the increases during 1951 equalled the ones in 1947-1950; in other words; that the 1951 index may be around 140 (2).

The turnaround time in ports improved somewhat between 1947 and 1950 but worsened in 1951, with the exception of European continental ports(3). Ports in Australia, New Zealand, some in South Africa and in Brazil have been particularly seriously congested during 1950-51, while considerable delays were experienced also in Indian ports, Colombo and Malaya. Even in the U.K., turnaround time was excessive.

Since about 81% of the world merchant fleet burns oil as against 19% coal burning, the postwar increases in the cost of bunker oil have been felt severely. Between March 1949 and mid-1951, the cost of diesel bunker oil thus increased by 40% and of marine fuel oil by 37%, based on Port of Antwerp figures (Table 16). Bunker coal prices on the other hand declined somewhat in 1949 and 1950 from the high 1948 level (Table 17). Stevedoring charges have risen in the postwar period because of higher wages of labor, and in many cases, because of lesser efficiency. In our estimates, we have rather arbitrarily assumed total port disbursements cost to increase 12% between 1950 and 1951. As to the outlook 1952-1956, we do not foresee any substantial reduction in port disbursements and operating costs generally, although shipowners and port authorities alike are seriously concerned about the economic waste represented by the slow turnaround time in ports, and strenuous efforts are made to reduce port expenditures and operating cost of ships by greater efficiency.

(1) Source: The Esso Shipping Company, New York.

(2) Source: Norwegian Shipping News, no.4, February 25, 1952, page 194.

(3) Source: Annual Survey of the Liverpool Steamship Association, Lloyd's List, March 17, 1952.

With a levelling off or decline of rates from the high 1951 level, the profit margin of the shipowners will thus be narrowed.

In the postwar period, construction costs have also increased rapidly. The cost of a standard dry-cargo vessel was thus about three times the prewar price in 1951, with consequent higher overhead charges and increased difficulties in financing replacements of overage tonnage.

While the economic position of the shipping companies is of great importance to the balance of payments position of countries with large merchant fleets, the threat of political interference in the international shipping market would have more worldwide effects. Flag discrimination in international shipping, of which there are many examples in the postwar period, leads to a fostering of uneconomic shipping, with subsequent increases in the world shipping charges.