

FEC-058/11RESTRICTEDFEC-058/1122 April 1947FAR EASTERN COMMISSIONLEVEL OF ECONOMIC LIFE IN JAPAN: PRELIMINARY STUDY  
OF JAPANESE REQUIREMENTS IN THE SHIPPING AND  
SHIPBUILDING INDUSTRY, 1950Note by the Secretary General

1. The enclosure, a preliminary United States study of estimated Japanese peacetime requirements in the shipping and shipbuilding industry in 1950, is submitted by the United States Representative for the information of the Far Eastern Commission, and is referred to COMMITTEE NO. 2: ECONOMIC AND FINANCIAL AFFAIRS.

2. The United States Representative wishes to draw attention to the fact that any conclusions presented in this study have been formulated within the terms of reference indicated in the foreword and do not represent statements of United States policy.

3. Due to the limited number of copies available only three copies of the enclosure can be furnished each delegation.

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Secretary General

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RESTRICTEDDEFINITIONS OF TERMSTonnage

Gross tonnage. Entire installed cubic area of ship (with the exception of certain spaces such as peaks and other water tanks, open forecastle, bridge and poop, excess of hatchways, certain light and air spaces, etc.), expressed in terms of 100 cubic feet to the ton.

Dead weight tonnage. Weight-carrying capacity of ships (expressed in long tons).

Displacement light weight tonnage. Weight of ship excluding cargo, passengers, and such items as fuel, water, stores, dunnage.

Measurement ton or volume ton. 40 cubic feet.

Long ton. 2,240 pounds or 1,016 kilograms.

Metric ton. 2,205 pounds or 1,000 kilograms.

Weight-volume ton. A composite of volume tons of 40 cubic feet and weight tons of 2,240 pounds used for totaling cargo. For Japanese foreign trade during the 1930's, an average weight of 2,380 pounds per weight-volume ton has been calculated on basis of import and export statistics.

Ships

Registered ships. Steamships and sailing ships over 20 gross tons holding certificate of nationality.

Unregistered ships. Steamships under 20 gross tons and sailing vessels between 5 and 20 gross tons holding ship license.

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Trampships. Vessels over 2,000 dead weight tons (about 1,200 gross tons) not on subsidized liner runs.

Routes

Coastwise routes. Routes along the coasts of Japan's four main islands, including interisland routes across the Inland Sea.

Nearseas routes. Coastwise routes plus routes to the coasts of Korea, China, Manchuria, and Formosa.

Ocean routes. All other sea routes.

Types of Trade

Intra-Empire trade. All shipments between ports in Japan and between ports in Japan and ports in Korea and Formosa.

Colonial trade. Japanese imports from and exports to Korea and Formosa.

Coastwise trade. All shipments between ports in Japan (intra-Empire trade minus colonial trade).

Foreign trade. Japanese imports from and exports to foreign countries, excluding imports from and exports to Korea and Formosa.

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RESTRICTEDSUMMARY

The tonnage of steamships and motorships registered in Japan averaged 3.83 million gross tons annually during the period 1928-30 and 3.86 million gross tons annually during the period 1930-34. During the period 1935-36 tonnage of registered steamships and motorships rose slightly, reaching 3.95 million gross tons in 1936. The tonnage of registered sailing vessels rose gradually from an annual average of 860,000 tons for the period 1928-30 to an annual average of over 900,000 tons for 1935-36.

In 1928 the tonnage of steamships and motorships registered in Japan amounted to 90 percent of total tonnage of steamships and motorships registered in the Japanese Empire, which included Korea, Formosa, and Kwantung Leased Territory. In the late 1930's the tonnage of steamships and motorships registered in Japan comprised up to 95 percent of the tonnage of steamships and motorships registered in the Japanese Empire. The tonnage of steamships and motorships reported in Lloyd's Register of Shipping includes steamships and motorships over 100 tons that were registered in Japan, Korea, Formosa, and Kwantung Leased Territory. The total tonnage of these ships averaged 4.21 million tons annually in the period 1928-30, 4.23 million tons in the period 1930-34, and 4.15 million tons in the period 1935-36.

In all years more than 50 percent of the ships over 100 tons registered in the Japanese Empire were steamships and motorships of from 2,000 to 4,000 or from 4,000 to 6,000 gross tons. After 1933, as a result of the "scrap and build" program, there was a marked decline in ships of the

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class from 2,000 to 4,000 tons.

Japan's shipbuilding declined sharply between 1929 and 1932. The average tonnage of steel ships constructed in the period 1930-34 was under 100,000 tons per year. By means of a program of subsidization, Japan's merchant fleet was expanded and improved in quality after 1933. The average annual tonnage of ships built in the period 1935-36 was nearly twice as great as that in the period 1930-34.

During the period 1933-34, the annual average tonnage of full-powered vessels over 100 tons used exclusively in coastwise transportation was 600,000 tons. In addition, about 650,000 tons of vessels between 20 and 100 tons, mostly sailing vessels, were used in coastwise transportation. Finally, the equivalent of 100,000 to 150,000 tons of shipping space was derived from primarily used ships in foreign trade. The average of total shipping space used in coastwise transportation in the period 1930-34 can be estimated at 1.4 million gross tons.

The tonnage of commodities imported by Japan from foreign countries was two to three times as great as the tonnage of exported commodities. The tonnage of imports from foreign countries averaged about 20 million weight-volume tons annually in the periods 1928-30 and 1930-34. Exports to foreign countries averaged 6.3 million weight-volume tons annually in the period 1928-30, and were slightly higher in the period 1930-34. Both imports and exports show a marked increase after 1933. During the period 1935-36 annual average imports reached 27 million weight-volume tons and exports amounted to over 9 million weight-volume tons.

Comprehensive statistics for total intra-Empire trade are available for the years 1934 to 1937. Total tonnage of intra-Empire in-



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shipments amounted to 91.6 million tons in 1934. The tonnage of in-shipments in strictly coastwise trade in 1934 was 86 million tons, or about three and a half times as great as tonnage of imports from foreign countries and three times as great as tonnage of imports from foreign countries and colonies.

Net receipts from shipping represented one of the largest credit items in Japan's balance of payments. During the late 1920's and the 1930's these receipts remained under the level of the period that immediately followed World War I; nevertheless, they averaged over 140 million yen annually during the period 1928-30. Even during the depression years net receipts from shipping remained at around 100 million yen, and the average of net receipts for the period 1930-34 fell only 20 million short of the 1928-30 average. Expansion of trade and rising freight rates led to a marked increase in net receipts from shipping during the period 1935-36. In these years net receipts from shipping averaged over 185 million yen and represented 7 percent of total receipts from exports to foreign countries.

Estimates of future shipping requirements for coastwise transportation and foreign trade are based on the assumption that the tonnage of imports in 1950 will amount to only 65 percent of annual average imports from foreign countries and colonies during the period 1930-34. It is estimated that the tonnage of imported commodities will be about 17 million metric tons in 1950, and that between 2.3 and 2.5 million gross tons of shipping will be required to transport these imports. On the other hand, the volume of coastwise shipments is expected to be higher

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in 1950 than during the period 1930-34. No restrictions are expected to be placed on the construction of ships under 100 tons; therefore, the Japanese will probably try to replace part of the full-powered ships over 100 tons used in coastwise transportation by ships under 100 tons.

If the Japanese were allowed to operate a merchant fleet of 3 million gross tons of ships over 100 tons, they might utilize 700,000 to 800,000 gross tons of ships over 100 tons in coastwise transportation. In this case 2.2 to 2.3 million gross tons of ships over 100 tons could be utilized in overseas trade; the Japanese then might earn 75-80 million yen (in 1930 prices) in net receipts from shipping. If no restrictions were imposed on the size of the fleet, net receipts from shipping might exceed 100 million yen (in 1930 prices) and thereby approach the level of receipts in 1930-34. If restrictions were imposed in the size of the merchant fleet of over 100 tons, the Japanese might be able to reduce shipping requirements for coastwise transportation to 600,000 tons of full-powered ships over 100 tons. If their merchant marine were restricted to 2 million gross tons of shipping, they would be enabled to utilize 1.4 million tons in transportation of foreign trade goods and would probably be able to earn up to 48 million yen (in 1930 prices) in net receipts from shipping. If total tonnage of their merchant marine were restricted to 1.5 million gross tons of full-powered vessels over 100 tons, maximum net receipts from shipping would probably be 30 million yen (in 1930 prices).

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RESTRICTEDA PROVISIONAL SURVEY OF JAPAN'S SHIPPING AND  
SHIPBUILDING FACILITY REQUIREMENTS IN 1950I. INTRODUCTIONA. Scope and Organization of the Report

This report consists of an analysis of the shipping position of Japan in the period 1928-36, a projection to 1950 of expected requirements for coastwise transportation and for foreign trade, and a discussion of several methods of meeting shipping requirements in 1950.

The available data and methods used in correlation of the data are described. The report presents analyses of the composition of Japan's merchant marine and of the allocation of merchant ships to ocean routes, nearseas routes, and strictly coastwise transportation. The report also describes Japan's shipbuilding position and analyzes the importance of net receipts from shipping for Japan's balance of payments. Shipping requirements for coastwise transportation and for overseas trade are projected to 1950. The shipping receipts that can be expected for 1950 are estimated under four possible assumptions as to the type of restrictions that may be imposed on the total size of Japan's merchant fleet.

B. Validity and Availability of Data

In correlating data on shipping, two kinds of difficulties have to be overcome: minor difficulties arising from statistical peculiarities of various sources, and major difficulties due to the fact that Japanese statistics do not deal with the basic problem of utilization of shipping, i.e., the distribution between strictly coastwise shipping and all other shipping.

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Minor difficulties arise from the fact that data on the size of the merchant marine have different coverage: sources vary as to the types of ships and the territory included. Lloyd's Register of Shipping reports registration in the Japanese Empire, including Korea, Formosa, and Kwantung Leased Territory, and excludes ships registered in Manchurian ports. It includes only full-powered ships over 100 tons. The Japanese Ministry of Communications reports registration for the same territory, but includes ships between 20 and 100 tons. It reports separately ships between 20 and 100 tons registered in the four main islands of Japan. Since total tonnage of full-powered ships between 20 and 100 tons averaged only 100,000 tons, the figures on gross tonnage reported by both sources agree fairly closely. With respect to the number of ships, however, the figures given by the two sources are markedly different. Since 1500-1800 full-powered ships between 20 and 100 tons were registered in Japan, the number of ships reported by the Japanese Ministry of Communications for Japan exceeds the number of ships as reported by Lloyd's in each year (Tables 1 and 2).

Major difficulties arise from the unavailability of data on ships that were used in strictly coastwise transportation. The Nippon Shipping Exchange, Kobe, reports distribution of tramp steamers over 2,000 dead weight tons between ocean routes and nearseas routes. A breakdown of the nearseas routes to which ships were allocated is available up to 1934. Since only ships over 2,000 deadweight tons are included in these statistics, smaller ships that played an important part in coastwise transportation are neglected. A more complete picture of utilization of shipping in coastwise and overseas transportation can be obtained by

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using the Japanese marine statistics found in the Kaiji Yorán (Handbook of Marine Affairs), which reports entrances and clearances of ships by ports, and for one year, 1934, also reports tonnage of commodities carried together with the tonnage of ships used to transport them. Data on tonnage of commodities carried in foreign trade are available for all years; data on total tonnage of commodities carried in intra-Empire Trade (colonial plus coastwise) are available for the years 1934 to 1937. By deducting the total tonnage of colonial trade from tonnage of commodities carried in intra-Empire Trade, data on tonnage carried in coastwise trade can be obtained. The analysis of data on fishing vessels that was made in OCL-2682, The Japanese Merchant Marine and Coastwise Shipping, has been accepted as the basis for estimates concerning the utilization of ships under 100 tons in coastwise transportation.

On the basis of the available data it was possible to estimate the tonnage of goods moved in coastwise transportation during the period 1930-34. By using the data on tonnage of transported commodities and available shipping space, it was possible to arrive at an estimate of shipping requirements in 1950 and to estimate shipping receipts in 1950.

#### C. Sources

The principal sources used in this report were:

Japanese Ministry of Finance, Gaikoku Boeki Nempyo (Annual Returns of the Foreign Trade of Japan), 1928-36.

Chosen Government General, Chosen Boeki Nempyo (Annual Returns of the Trade of Korea), 1928-36.

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- Taiwan Government General, Taiwan Boeki Nempyo (Annual Returns of the Trade of Formosa), 1928-36.
- Kaiji Yoran (Handbook of Marine Affairs), 1936.
- Dai Nippon Teikoku Tokei Nenkan (Statistical Yearbook of the Japanese Empire), 1939.
- Lloyd's Register of Shipping, London, 1928-36.
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- OCL-2682, The Japanese Merchant Marine and Coastwise Shipping, November 19, 1945, RESTRICTED.
- OCL-2815, The Place of Foreign Trade in the Japanese Economy, Vol. I, Part I, August 29, 1946; Vol. I, Part II, October 3, 1946.
- OCL-3436.71A, Summary Estimate of Foreign Trade Balance of Japan in 1950, October 21, 1946, RESTRICTED.

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II. JAPAN'S SHIPPING POSITION, 1928-36A. The Size and Composition of the Japanese Merchant Fleet

1. Registered Tonnage in Japan and in the Japanese Empire. The total tonnage of the merchant fleet, including sailing vessels, registered in Japan showed little change between the late 1920's and 1934. During the period 1930-34 the tonnage registered in Japan averaged 4,745,000 gross tons annually. This average annual tonnage exceeded the tonnage registered at the end of 1927 by less than 200,000 tons and was only 70,000 tons less than that registered in 1930 and 1931, the two highest years of the period (Table 1). Only after 1935 was a strong upward trend evident; by the end of 1938 total tonnage registered in Japan for the first time exceeded 6 million tons. For the years after 1938 tonnage registered in Japan has not been separately reported. Lloyd's Register of Shipping reports tonnage of steamships and motorships registered in the Japanese Empire <sup>1</sup> up to 1941. The coverage of the figures reported by Lloyd's differs from that of the figures reported for Japan in Table 1. Lloyd's figures exclude sailing ships and include all steamships and motorships of 100 tons and over registered in Kwantung Leased Territory, Korea, and Formosa (Table 2); Table 1 includes sailing ships and all steamships and motorships over 20 tons registered in Japan.

The tonnage of sailing ships registered in Japan rose from 800,000 tons in 1928 to about 1 million tons in 1938 (Table 1). The

1. Including Kwantung Leased Territory, Korea, and Formosa.



total tonnage of steamships registered in Japan averaged 3,827,000 tons annually for the period 1928-30; 3,856,000 gross tons for the period 1930-34; and 3,948,000 tons for the period 1935-36. By the end of 1938, total tonnage of steamships registered in Japan exceeded 5 million tons.

Ninety to ninety-five percent of the steamships registered in the Japanese Empire from 1928 to 1938 were registered in Japan; the proportion of ships in colonies to ships in Japan declined during this period (Tables 3 and 4). Most of the tonnage not registered in Japan was registered in Kwantung Leased Territory; 270,000 to 280,000 were registered in that territory in the middle 1930's. The total tonnage of steamships and sailing ships registered in Korea and Formosa averaged less than 100,000 gross tons annually during the period 1930-34, and it has to be assumed that most of the very substantial commodity trade between Japan and its colonies was carried by ships registered in Japan rather than in the colonies.

The total tonnage of merchant ships registered in the Japanese Empire has been reported by the Japanese Ministry of Communications and by Lloyd's Register of Shipping. According to Lloyd's Register, the tonnage of steamers and motorships registered in the Japanese Empire as of June 30 averaged 4,214,000 gross tons annually during the period 1928-30 and 4,235,000 gross tons during the period 1930-34 (Table 2). The tonnage was slightly lower in 1934 and 1935, but totaled over 5 million gross tons by June 1938 and was over 5.6 million tons by June 1939. At the time of the outbreak of the Pacific War the merchant fleet of the Japanese Empire, excluding ships, had reached 6.4 million metric tons. After the outbreak of the war the size of the Japanese merchant marine fell



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from year to year, despite desperate efforts to increase shipbuilding. The position of Japan's merchant ships over 100 gross tons during the war may be summarized as follows: <sup>1</sup>

December 1941	6,376,000 gross tons
December 1942	5,942,000 " "
December 1943	4,944,000 " "
December 1944	2,564,000 " "
August 1945	1,526,000 " "

At the end of 1943 the tonnage of the Japanese merchant marine was still higher than it had been on the average for the period 1930-34. War losses during 1944, however, reduced the Japanese merchant marine so drastically that, by the end of 1944, its tonnage was less than it had been at any time in the 1920's.

2. Distribution of Steamships and Motorships by Gross Tonnage. In all years up to 1938, 25 and 30 percent of the total tonnage of steamships and motorships registered in Japan was under 3,000 tons. There was not much change in the total tonnage of steamships under 3,000 tons during the 1930's: it rose from an average of 1 million tons for the period 1932-34 to 1.2 million tons in 1938. Through 1937 the total tonnage of ships between 3,000 and 6,000 tons also remained fairly constant, but during the years 1938 and 1939 this class rose from less than 1.7 million tons to nearly 2 million tons. The class between 3,000 and 6,000 tons represented in all years by far the largest class, averaging about 40 percent of the total of available steamships (Table 5). The class between 6,000 and 10,000 tons, the second largest class, averaged 1.1 million tons in the periods 1932-34 and 1934-36, or between 25 and 30 percent of total steamship tonnage. It exceeded one and a half million tons in 1938,

1. Data obtained from the Japanese by the United States Strategic Bombing Survey (unpublished).

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but was smaller in 1939. The tonnage of ships over 10,000 tons in all years constituted less than 10 percent of total tonnage.

According to Lloyd's Register, which gives a more detailed breakdown for the Japanese Empire than is available for Japan, the largest groups of merchant vessels in all years were the groups between 2,000 and 4,000 tons and between 4,000 and 6,000 tons (Table 2). The number of ships in the class of 2000-4000 tons declined after 1928, in which year there were 336 ships in this class, and was lowest in 1935, when there were only 309 ships in this group. Between 1930 and 1933 the class of ships between 4,000 and 6,000 tons comprised 255 to 259 ships with a tonnage of 1.3 million tons in 1930 and 1.34 million tons in 1933. In 1934 and 1935, 238 ships with a total tonnage of 1.23 million tons fell into this class. By 1939 this class of ships comprised 314 ships with a total tonnage of 1.6 million metric tons. Lloyd's Register shows that there was a steady increase in the group between 6,000 and 8,000 tons after 1932, in which year it comprised 100 ships with a total tonnage of 685,000 tons. By 1939 this group was composed of 167 ships with a total tonnage of 1.14 million metric tons.

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## B. Shipbuilding

1. Construction of Steel Merchant Ships. In 1932 Japan built a low of less than 40,000 gross tons of steel merchant ships (Table 7).<sup>1</sup> The annual average tonnage of steel merchant ships built during the period 1930-34 was 96,500 tons. This average is 44,000 tons below the average of the period 1928-30. After 1934 construction of ships increased very rapidly, stimulated by a program of subsidization. Average construction during the two years 1935-36 exceeded the 1930-34 average by 84,000 tons. The tonnage of steel ships built reached 374,000 gross tons in 1937, but fell between 1938 and 1941 (Table 7). In 1941 production was at the level of 1936. After 1942 the Japanese made a great effort to expand shipbuilding. In 1944 an all-time peak was reached with a production of 1.4 million gross tons of steel merchant vessels.<sup>2</sup>

2. Comparison between Construction of Steel Ships and Total Construction of Ships. In all prewar years the value of steel ships built represented from 90-95 percent of the value of all ships built. Even in 1937, the peak year of peacetime wooden shipbuilding, when building of non-steel vessels was valued at over 16 million yen,<sup>3</sup> the value of non-steel vessels

1. Even in 1937, the highest production year of the 1930's, the tonnage of Japanese ships built was only 60 percent of that in the previous peak year 1919. During the early 1930's Japan utilized only a small part of its shipbuilding capacity.

2. United States Strategic Bombing Survey. The same source reports Japan's monthly shipping position for the war years. According to these reports the increase in shipbuilding was at all times insufficient to offset sinkings. (See II, A above.) Only during the last years of the war was building of wooden ships carried out on a significant scale; actually the wooden ship program never gained the great importance attributed to it in Japanese propaganda.

3. Japan Year Book, 1940-41, p. 724.



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amounted to less than 10 percent of the value of steel vessels.<sup>1</sup>

Before 1931, almost all of the ships built in Japan were steel ships; the figures on total ships built agree closely with figures on steel ships built (Tables 6 and 7). Between 1931 and 1936 total shipbuilding exceeded construction of steel ships slightly. The average annual tonnage of ships launched, including all ships of 100 gross tons and over, for the period 1930-34 was 106,000 tons, as against an average construction of 96,000 tons of steel ships over 100 tons. By 1937 and 1938 the construction of wooden ships had become rather significant. In both years the reported tonnage of ships launched exceeded 460,000 tons, a tonnage much greater than the reported tonnage of steel ships built, which was 374,000 tons in 1937 and 350,000 tons in 1938.

3. The Effect of the Subsidization Program on Shipbuilding. Even during the boom period from 1927 to 1930, the tonnage of ships launched in Japan averaged only 145,000 tons annually, or around one-fourth of the tonnage launched in 1919, the year of highest launchings after World War I. In 1930 and 1931 there was a sharp decline in construction. The number of workers in shipyards that had facilities for building ships of 1,000 gross tons and over fell from 95,000 in 1918 to 34,000 in 1931. After 1932, however, mercantile shipbuilding increased considerably. The two main forces bringing about this rapid expansion were general economic recovery

1. The tonnage of wooden ships built in 1937 is estimated at 80,000 to 90,000 tons. The tonnage of wooden ships built in 1938 is estimated at 100,000 to 110,000 tons. The basis for these estimates is a comparison of the data on shipbuilding, including steel ships and other ships, published in the Japan Year Book, 1939-40, p. 600, and in the Oriental Year Book, 1942, p. 116, with the data on steel shipbuilding reported by USSBS (Table 7).

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and a program of intensified subsidization. In 1932 the government introduced its first "Ship Improvement Plan" to include replacement of out-of-date ships by new ships. Ships to be scrapped had to be over 25 years old and larger than 1,000 tons.<sup>1</sup> New ships were subsidized at the rate of 50 yen per ton. They had to be over 4,000 gross tons and were to have a speed of at least 13.5 knots. The plan provided for the scrapping of 400,000 gross tons of ships and for the building of 200,000 tons. The cost of the plan totaled 10 million yen for the years 1932 to 1934. The costs of the second and third improvement plans in 1935 and 1936 were lower and led to replacement of 50,000 tons.<sup>2</sup>

4. Shipbuilding During the Late 1930's and During the Pacific War. By 1935 the number of workers in shipyards that had facilities for building ships of 1,000 gross tons and over reached 75,000; by 1939 the number had risen to 103,000. After 1942 the Japanese made a great effort to expand shipbuilding. It is reported that 288,000 workers were working in commercial shipyards that had facilities for building ships of 1,000 tons and over in 1941. The increase in workers engaged in shipbuilding paralleled the increase in size and number of commercial shipyards.<sup>3</sup> The increase in the number of minor yards was even greater than the increase in larger commercial shipyards.

5. Imports and Exports of Steamers. In 1928 Japan imported 25 ships valued at 11 million yen, mostly from Great Britain. A smaller number

1. Schumpeter, p. 615.

2. For further modifications and consequences of the subsidization plan see Schumpeter, p. 778.

3. The numbers of shipyards engaged in construction of ships increased from 79 in 1935 to 110 in 1940 (data given by USSBS).

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of ships were bought in Italy and in the US. After 1928 imports of ships declined; there were hardly any imports from 1928 to 1935 (Table 11). In 1935 and 1936 Japan spent over 3 million yen annually for imports of ships; in 1936 the number of ships imported equalled the number imported in 1928, but the average value of imported ships was considerably lower. The data available on imports and exports of steamships from colonies and to colonies are not complete. From 1928 to 1932, the value of exports of ships to foreign countries, mostly to Kwantung Leased Territory and to Asiatic Russia, ranged between 2 and 5 million yen. In 1932 some large ships were sold to China. Exports were negligible until 1936, when a large number of ships with an average value of 115,000 yen per ship were sold to Asiatic Russia and Kwantung Leased Territory.

C. Use of the Japanese Merchant Fleet

1. Tonnage of Japan's Prewar Waterborne Commodity Trade. The difficulties involved in getting full data on the tonnage of cargo moved in Japan's waterborne trade are caused by the incompleteness of available statistics. Complete information on shipping is available only for 1934, for which year data cover tonnage of commodities transported in foreign trade an intra-Empire trade and tonnage of the ships utilized. <sup>1</sup> Data on Japan's intra-Empire trade, including both trade with Korea and Formosa and strictly coastwise trade, are available for 1934 to 1937. <sup>2</sup> Data on trade with foreign countries are available for

1. Kaiji Yorun (Handbook of Marine Affairs), 1936.

2. See Table 9.

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all years up to 1939 in weight-volume tons (Table 8). By converting weight-volume tons into weight tons, it is possible to arrive at total tonnage of imports from foreign countries and exports to foreign countries. By calculating the tonnage of trade with Korea and Formosa and deducting this tonnage from the reported total of intra-Empire trade, it is possible to estimate the tonnage of strictly coastwise trade in the period 1934 to 1937 with a small margin of error (Table 9). No data on intra-Empire trade are available for years prior to 1934. If it is assumed that the relation between intra-Empire trade and foreign trade was essentially the same in 1930-34 as in 1934-37, it is possible to arrive at an estimate of tonnage shipped in intra-Empire trade during the period 1930-34.<sup>1</sup> Between 1934 and 1936 the rate of increase in imports from foreign countries was roughly equal to the rate of increase in intra-Empire inshipments. In 1937 the increase in imports from foreign countries was especially great, whereas the rate of increase in intra-Empire inshipments was about the same as in preceding years. Average annual imports from foreign countries during the period 1930-34 were 18 percent lower than imports in 1934. This average includes the two years 1930 and 1931, which are about equal, the lower year 1932, the year of recovery 1933, and the year of marked expansion 1934. (See Table 8.) The annual average of inshipments in intra-Empire trade for the period 1930-34 may be estimated at 78 million tons. By deducting inshipments from the colonies, one arrives at an average of about 73

1. In order to make this estimate as reliable as possible, data concerning all sectors of the Japanese economy have to be consulted.

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million tons of strictly coastwise transportation.<sup>1</sup>

The tonnage of outbound trade was in all years considerably below the level of inshipments, a situation characteristic of industrial countries greatly dependent on imports of raw materials. The bulk of Japan's imports consisted of raw materials and food; the largest part of its exports consisted of silk, textiles, and machinery.

Between 1934 and 1937 exports to foreign countries increased at a slower rate than outshipments in intra-Empire trade. By 1934 the volume of exports had already reached a very high level, about 25 percent above the average level of the period 1930-34. Outshipments in intra-Empire trade, on the other hand, reflected the industrial expansion that occurred after 1934. Average annual outshipments in intra-Empire trade for the period 1930-34 may be estimated at about 60 million metric tons, as against 73.9 million metric tons in 1934. Strictly coastwise outshipments probably totaled about 58 million tons.

The average annual volume of all waterborne trade (foreign, colonial, and coastwise shipments) during 1930-34 may be estimated at 166 million metric tons, consisting of about 99 million metric tons of inshipments and 67 million metric tons of outshipments.

2. Use of Foreign Ships in Japan's Foreign and Colonial Trade. The United States Tariff Commission has estimated in weight-volume tons the volume of Japan's waterborne trade with foreign countries and colonies

1. For tonnage used to transport these inshipments, see estimates in section 3 below.

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carried on Japanese and foreign vessels.<sup>1</sup> According to this estimate, which is given in terms of an average for the five years 1928-32 and for the five years 1933-37, the ratio between the tonnage of commodities carried on Japanese vessels and the tonnage carried on foreign vessels did not change between these two five-year periods. In both periods about 76 percent of the quantities of commodities measured in weight-volume tons was carried on Japanese vessels.<sup>2</sup> The absolute quantity of commodity trade increased from 32 million weight-volume tons in the first period to 44.7 million weight-volume tons in the second period. A significant change occurred in the regional distribution of the totals. During the five years 1928-32, trade between Japan and the areas under Japanese control -- Manchuria, Kwantung Leased Territory, Korea, Formosa, and the Mandated Islands -- averaged only 9 million weight-volume tons annually. In the five years 1933-37 the average share of trade with these regions had risen absolutely and relatively to 15 million out of 44.7 million weight-volume tons.

The value and proportion of foreign trade -- excluding trade with Korea and Formosa -- carried on foreign vessels was greater for imports than for exports. During the period 1928-32 the average value of imports from foreign countries was 1.7 billion yen. An average value of 620 million yen, or about 36 percent, was imported on foreign vessels. During the same period the average value of exports to foreign

1. United States Tariff Commission, Japanese Trade Studies, The Shipping Industry of Japan, July 1945.

2. Ibid, p. 5.

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countries was 1.6 billion yen, of which an average of 395 million yen, or less than one-fourth, was exported on foreign ships.<sup>1</sup> In 1938, out of total imports valued at 2.6 billion yen, imports valued at 1 billion yen were carried on foreign vessels. In the same year, of total exports valued at 2.67 billion yen, exports valued at 712 million yen were carried on foreign ships.

3. Use of Tramp Steamers in Nearseas Routes, Ocean Routes, and Coastwise Transportation. Data on the distribution of ships between nearseas routes and ocean routes are available only for tramp ships of 2,000 dead weight tons and over. The tonnage of ships employed in both types of routes is summarized in the following tabulation in 1,000 gross tons:

	Nearseas Routes	Ocean Routes	In Docks, Stranded, etc.	Grand Total
Dec. 1928	1,549	1,642	218	3,409
1929	1,520	1,597	313	3,430
1930	1,423	1,699	425	3,547
1931	1,259	1,762	450	3,471
1932	1,289	1,948	217	3,454
1933	1,230	1,827	218	3,278
1934	1,383	1,709	132	3,222
1935	1,601	1,580	110	3,291
1936	1,606	1,648	89	3,343
Averages:				
1928-30	1,497	1,646	319	3,462
1930-34	1,317	1,789	288	3,394
1935-36	1,603	1,614	100	3,317

Source: Table 10

1. The Oriental Economist, Foreign Trade of Japan, A Statistical Survey, 1935.

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The reported total allocated to nearseas routes and ocean routes did not change significantly between 1928 and 1936. After 1936, allocations to ocean routes increased because of the inclusion of "Government Chartered Ships," a category that accounted for nearly 1.8 million tons in 1938, but fell in 1939 and 1940. It may be assumed that in 1935 and 1936, when reported use was lower than the average for 1928-30 and 1939-34, government-chartered tramp ships were not reported in the statistics.

During the period from 1928 to 1930 allocations to nearseas routes averaged 1.5 million gross tons annually and allocations to ocean routes averaged 1.6 million gross tons. During the period 1930-34 annual average allocations to nearseas routes fell to 1.3 million tons and allocations to ocean routes increased to nearly 1.8 million tons. In 1935 and 1936 allocations to each of the two types of routes were 1.6 million tons.

The reported allocation to nearseas routes falls short of the total tonnage actually used in nearseas transportation, since the tonnage of ships used for nearseas transportation, especially in strictly coastwise transportation, included a sizable tonnage of ships under 2,000 dead-weight tons not included in the discussed statistics.

For the years 1928 to 1934 a breakdown for allocations of tramp ships to different areas of Japan and the Asiatic mainland is available (Table 10); for later years only the total of allocations to nearseas routes is available. In analyzing the breakdown of nearseas routes as reported for 1928 to 1934, it should be borne in mind that a part

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of coastwise shipping was carried out by ships allocated to other areas. The actual tonnage of ships over 2,000 dead-weight tons used for strictly coastwise purposes was therefore greater than the figures of allocations for "Hokkaido and Karafuto" and "Honshu, Japan Sea, and Others" indicate. More reliable estimates of tonnage used in coastwise shipping are those based on statistics of entrances and clearances of Japanese ports. These statistics are not available for all years, but they are sufficient to use as a basis for estimates of strictly coastwise shipping in different years. According to these statistics, which cover full-powered ships of 100 tons and over, tonnage used in nearcoast routes totaled 1.77 million tons in 1933 and 1.74 million tons in 1934.<sup>1</sup> It then rose to over 2 million tons in 1936 and to 2.5 million tons in 1939. In 1933-34 an average of 680,000 tons of full-powered vessels over 100 tons was used in strictly coastwise transportation.<sup>2</sup> In addition, coastwise shipping was carried out by sailing and auxiliary engined vessels, principally sailing vessels in the 20 to 100 tons class. The total tonnage of all non-full-powered ships used in coastwise shipping was about 650,000 tons.<sup>3</sup> Furthermore, a small contribution to coastwise transportation was made by ships engaged primarily in trade with the Asiatic mainland. This contribution of shipping space derived from ships primarily engaged in trade with the Asiatic mainland can be estimated at 100,000 to 150,000 tons annually.<sup>4</sup>

1. OGI-2682, The Japanese Merchant Marine and Coastwise Shipping, November 1945, Table IV, RESTRICTED.
2. Ibid, Table IV.
3. Ibid, p.20.
4. Ibid, p. 15.

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The average of total shipping space used in coastwise transportation during the period 1930-34 can be estimated at 1.4 million gross tons.

4. Type of Services Rendered by Japanese Ships. Japanese ships not only carried commodities in which Japan traded, but also carried trade between other countries. In this respect the functions of the Japanese merchant marine can be compared to the function rendered by the British and Norwegian merchant fleets. The most important services rendered by Japanese ships in overseas trade were the carrying of Oregon pine from the Pacific Northwest of the US to Far Eastern countries; the shipping of Australian wheat to India and Japan; the shipping of Manchurian soybeans to Europe; and the shipping of coal from Wales to Port-Said.<sup>1</sup> During the period under consideration, trade with Manchuria bulked large in the total picture of shipments in nearseas areas. Shipments of rice and sugar from Korea and Formosa to Japan's main islands constituted the largest group of commodity transports in nearseas intra-Empire transportation. Other important items in colonial trade were bananas and other fruits from Formosa and soybeans from Korea. In later years shipments of metals and fishcake from Korea gained importance.

The most important item in strictly coastwise transportation was coal, which was shipped from Kyushu and Hokkaido to the industrial centers of Honshu. Other important commodities in coastwise transportation were lumber, which was shipped from Karafuto and Hokkaido to the industrial centers of Honshu, and raw cotton and machinery, which were redistributed

I. The main competitive advantage of Japanese ships was the low labor cost on Japanese ships. According to a comparison of wages and salaries paid on British and Japanese vessels of about 8,000 dead-weight tons in 1936, the average monthly wage bill for the Japanese vessel amounted to only 52 percent of the corresponding bill on the British vessel of the same size.

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from the large ports of foreign trade to industrial centers. In later years synthetic fertilizers and synthetic fibers from various ports on the Inland Sea and on the Japan Sea became important cargoes.

D. Receipts from Shipping Services

1. Total Receipts and Net Receipts. Between 1929 and 1931 total Japanese receipts from shipping services fell considerably (Table 12). After 1932 total receipts began to increase and after 1934 they rose faster than net receipts. This development was a result of the devaluation of the yen, which led to a rapid increase in the charter rates for foreign ships. Although receipts received for shipping services rendered by Japanese ships were much in excess of the outlay for chartering of foreign ships, net receipts from shipping did not rise as fast as total receipts. The increase in the outlay for services of foreign ships does not reflect an increase in the use of foreign ships in proportion to Japanese ships. It has been shown in II, B above that the ratio of imported and exported commodities moved on foreign ships to imports and exports moved on Japanese ships remained fairly constant between 1928 and 1937.

2. Net Receipts. In view of the great sums that were spent as subsidies to the Japanese shipbuilding industries, especially in 1933 and 1934, it may appear that reported net receipts from shipping overstate the benefit Japan derived from its shipping services. Actually, however, total costs of the subsidization program in the two peak years of subsidization, 1933 and 1934, were less than  $8\frac{1}{2}$  million yen, whereas net receipts from shipping in the same years amounted to over 270 million

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yen (Table 13). Average net receipts from shipping for the period 1930-34 were 119.3 million yen annually. The low average for this period is due to the fact that in 1930 and 1931 annual net receipts amounted to only 100 million yen, the lowest receipts from shipping since the World War I. The reasons for this decline were the decrease in shipping rates<sup>1</sup> and the general decline in the tonnage of transported commodities.<sup>2</sup> Table 12 shows that net receipts from shipping for the period 1928-30 averaged 140.9 million yen annually, or 18 percent above the 1930-34 average. The average for 1935-36 is one-third higher than that for 1928-30 and more than 50 percent higher than that for 1930-34. The high receipts for 1935 and 1936 were brought about by increases in freight rates and by the remarkable expansion of both foreign and intra-Empire transportation. Even in 1935-36, however, net receipts from shipping services were considerably below the average receipts of the periods 1914-18 and 1919-23.

3. The Importance of Receipts from Shipping for Japan's Balance of Payments. The economic importance of receipts from shipping is illustrated by comparing these receipts with other items in Japan's balance of commodity trade and in Japan's balance of payments. In 1930 net receipts from exports of Japan's principal textile industries (silk, silk piece-goods, cotton manufactures, and other textile manufactures) amounted to 730 million yen.<sup>3</sup> In the same year net receipts from shipping amounted

1. The Japan Yearbook, 1933, p. 772.

2. See Table 6.

3. OCL-2815, The Place of Foreign Trade in the Japanese Economy, Vol. I, Part I, p. 83.

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to 125 million yen, or nearly one-fifth of total net receipts of Japan's most important export industries (Table 12). In the same year the adverse balance of Japan's commodity trade was 160 million yen; more than three-fourths of this adverse balance was offset by net receipts from shipping.

In the period 1930-34 annual average net receipts from shipping amounted to 119 million yen, a sum slightly in excess of the average adverse balance of commodity trade in those years, which was 113.5 million yen.

In 1930 receipts from shipping exceeded Japan's outlay for interest and dividend payments and net government payments abroad. In 1936 net government payments abroad were much higher than in 1930, but, since net receipts from shipping had increased at the same time, the total of net interest and dividend payments and government payments exceeded net shipping receipts only slightly.

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RESTRICTEDIII. SHIPPING REQUIREMENTS AND PROJECTED NET RECEIPTS IN 1950A. The Pattern of Japan's Import Requirements in 1950

The future volume of Japanese waterborne overseas trade will be considerably lower than the volume of this trade during the period 1920-32 or 1930-34. The commodities that took up the largest proportion of shipping space were raw materials that will be imported to a lesser extent in the future. The weight of total commodity imports from foreign countries amounted in 1934 to 24.8 million metric tons; exports amounted to only 8.9 million metric tons (Table 9). More than one-half of the tonnage of imports from foreign countries consisted of the following commodities: coal, salt, oil cakes, raw cotton, wool, iron ore, soybeans, cereals other than rice, and chemical fertilizers. The total tonnage of imports from colonies amounted to 5.5 million tons, most of which consisted of rice and sugar. Imports from the colonies rose to 6.7 million tons in 1937 and to 7.4 million metric tons in 1938. The tonnage of imports from foreign countries rose gradually to reach a peak of 32.6 million metric tons in 1937. The main reason for the increase in colonial trade was the increase in minerals and metals from Korea.

Future imports into Japan will be restricted by the following developments: (1) Japan has become more self-sufficient in the production of chemical fertilizers, coal, and iron ore than it was during the period 1930-34; (2) Japan's heavy industries will be restricted to a level of industrial activity lower than that in 1934, a year that was characterized by rising activity in war-supporting industries; (3) Japan will have to economize on imports of all non-essential items. Consequently, imports

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of coking coal, iron ore, and nitrogen fertilizers, which bulked large in prewar import figures, will be lower than in 1934. (In 1934, total imports of coal reached 5 million metric tons, not imports were over 3.3 million metric tons.) On the other hand, it is estimated that tonnage of food imports will be higher than in 1930-34, since the probable increase in food production is not expected to parallel the increase in population.<sup>1</sup>

The estimate of total tonnage of future imports into Japan presented in Table 13 is based on two DRF research studies on Japan's balance of payments in 1950.<sup>2</sup> The estimate of the composition of imports in 1950 presented in Table 13 is based on two sets of assumptions: (1) that the standard of living in 1950 will be similar to the standard of 1930-34 and (2) that the production of coal, iron ore, salt, ammonium sulphate, and synthetic fibers will be considerably higher than in the period 1930-34. Total tonnage of commodity imports into Japan in 1950 is estimated at 17 million metric tons, as compared with imports of 30.3 million metric tons from foreign countries and colonies in 1934 and average imports of 26 million metric tons for the period 1930-34. The volume of imports is expected to be at the same level in 1950 as in 1925 and 1926.

This great decrease in tonnage of imports in the future can be achieved because the expansion of Japan's domestic production during the

1. In order to arrive at shipping space required for Japan's future waterborne trade, it is necessary to estimate Japan's future import requirements. Since shipping space required for imports was at all times much greater than the shipping space needed for exports, it does not seem important to estimate the tonnage of future exports.
2. OCL-3436.71A, Summary Estimate of Foreign Trade Balance of Japan in 1950, October 21, 1946, RESTRICTED; OCL-2815, The Place of Foreign Trade in the Japanese Economy, Vol. I, Part II, October 3, 1946, RESTRICTED.

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late 1930's and during the war has made it less dependent on imports in certain categories. Although the volume of production was very low in all fields by the end of the war and during the first year of the occupation, it may be assumed that by 1950 the production level of the late 1930's will be reached in many industries. This assumption cannot be made for those war-supporting industries that will be restricted by reparation removals and therefore are expected to operate at a lower level than in 1930-34. On the other hand, there will be industries like the building industry that probably will not have reached the post-reconstruction stage and may still be operating at a "higher than normal" level.

B. Shipping Tonnage Required for Foreign Trade in 1950

In 1934, when total imports amounted to 30.3 million metric tons (24.8 from foreign countries and 5.5 from colonies), ships available for the transportation of these imports were distributed as follows:

Tramp ships allocated to ocean routes	1.7 million gross tons	1
Tramp ships allocated to nearseas routes, excluding coastwise routes	1.1 million gross tons	2
Foreign ships	<u>0.7</u> million gross tons	3
Total tonnage	3.5 million gross tons	

The tonnage of tramp ships used in ocean routes in 1934, but not reported in the statistics, has been estimated to be about 320,000 gross tons.<sup>4</sup> This tonnage has been neglected in the above tabulation on the

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1. Table 10.
  2. OCL-2682, Table II.
  3. See B, 2, above.
  4. OCL-2682, Table II.

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hypothesis that the tonnage of these ships may have been of the same order of magnitude as the tonnage of Japanese ships used in the carrying trade for other nations. There was probably a certain degree of fluctuation in the tonnage used for carrying trade from year to year. It may be assumed that in years of heavy business in carrying trade the Japanese were able to draw on ships otherwise used in coastwise transportation. It may be estimated that the volume of shipping required for imports into Japan in 1950 will be between 2.3 and 2.5 million gross tons. The reason for the range in the required tonnage is the uncertainty as to future sources of imports. If routes to be covered are much longer than they used to be before the war, the required tonnage will be nearer to 2.5 million tons than to 2.3 million tons. It has to be anticipated that the US, Canada, and Australia will to some extent supplant Asiatic countries as sources of food imports.

C. Shipping Tonnage Required for Coastwise Transportation in 1950

In contrast to foreign trade, which is expected to be only 56 percent of the 1934 volume and 65 percent of the average annual volume in 1930-34, the volume of coastwise trade is expected to be higher in 1950 than it was in the period 1930-34. In 1934 the volume of coastwise transportation was 86 million metric tons (Table 9); in 1930-34 it has been estimated to have been about 73 million metric tons. In 1950 the volume of coastwise transportation is expected to be between the average of the period 1930-34 and the level of 1934, or about 80 million metric tons. The increase in coastwise transportation as compared with the average for 1930-34 will be brought about largely by an increase in shipments of coal from mining centers to industrial areas. Coal production is expected to

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reach between 38 and 40 million tons in 1950, as compared with an average of 30.7 million tons during the period 1930-34. Available data on coastwise coal transportation indicated that in 1935, when total coal production was near 38 million tons, one-half of the production, or about 19 million metric tons, was shipped in coastwise transportation.<sup>1</sup> It may therefore be assumed that in 1950 coastwise coal shipments will exceed coal shipments of the 1930-34 period by about 4 to 5 million tons. An increase of about 2 million tons in shipments of fertilizer and food is anticipated in view of an increase in production and hence an increase in shipments from producing areas to consuming areas. In estimating coastwise transportation at around 80 million tons, it is assumed that an increase in the transportation of lumber will be roughly offset by a decrease in the transportation of metals and minerals. The estimate of coastwise shipping assumes that the ratio between land and sea transportation will not be changed significantly in the near future.

D. Allocation of Merchant Ships to Foreign and Coastwise Trade in 1950

In 1933-34, an annual average of 680,000 tons of ships of over 100 tons was used in coastwise transportation. An equal amount of tonnage was provided by ships between 20 and 100 tons.<sup>2</sup> Should increased building of ships under 100 tons increase the tonnage of shipping space supplied from this source beyond the 1930-34 level, the Japanese may be in a position to free a corresponding amount of ships over 100 tons for transportation of commodities that used to be carried on ships over

1. Kaiji Yoran, 1936, pp. 213-214.

2. See II, C, 3.

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100 tons in earlier years.<sup>1</sup> Since existing restrictions refer only to ships over 100 tons, it may well be that the Japanese will try to transport a larger proportion of their coastwise shipments in ships under 100 tons and to free as many ships as possible for overseas foreign trade in order to save the expense of chartering foreign ships. In view of the technical and economic limitations of using ships under 100 tons, however, the possibility seems very limited. It is estimated that the total shipping space required for coastwise transportation in 1950 will be 1.5 million gross tons, as compared with 1.4 million tons in the period 1930-34. If the tonnage of ships under 100 tons were to reach about 900,000 tons, as against an average of 680,000 in the period 1933-34, a minimum of 600,000 tons of ships over 100 tons would be required in coastwise transportation. If Japan's total tonnage of ships over 100 tons were restricted to 2 million tons, a total of 1.4 million tons could be used for foreign trade. If Japan's merchant fleet were restricted to 1.5 million tons, the maximum Japan would be able to utilize for the transportation of imported and exported goods would be 900,000 tons.

Restriction of the merchant marine to 2 million tons of ships over 100 tons would mean that a maximum of 60 percent of Japan's overseas trade could be carried in Japanese ships. A restriction to 1.5 million tons would mean that a maximum of 40 percent of Japan's overseas trade could be carried in Japanese ships.

1. These smaller vessels were used widely in the Inland Sea (see Kaiji Yoran, 1936), but much less in the longer routes between Hokkaido and Honshu.

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RESTRICTEDE. Receipts from Shipping in 1950

Japan's foreign trade statistics report import values c.i.f.<sup>1</sup> and export values f.o.b.<sup>2</sup> In this way allowance is made for out-payments of foreign exchange to cover freight costs of imported commodities. If freight costs for imported commodities are paid to foreign ships, they do not represent a separate debit item in Japan's balance of payments. If these payments for freight of imports are paid in yen to Japanese ships, the demand for foreign exchange falls short of the import values reported in the foreign trade statistics.

Values reported for exports do not include costs of freight and insurance. Freight costs that are paid to Japanese shipping companies represent foreign exchange receipts over and above receipts from merchandise exports.

Japan's net receipts from shipping averaged 119 million yen annually in the period 1930-34, when tonnage allocated to foreign trade averaged 2.8 million tons. If by 1950 the Japanese were allowed to operate a total of only 1.5 million tons of ships over 100 tons, they would not be able to utilize more than 900,000 tons in shipping to foreign countries, since they need at least 600,000 tons of shipping space in ships over 100 tons in coastwise transportation. In this case, the maximum receipts the Japanese could earn from shipping would be 30 million yen (in 1930 prices). This estimate assumes that receipts from shipping will fall more than in proportion to the tonnage allocated to foreign trade, a develop-

1. Costs of insurance and freight included in import values.  
2. Valued when leaving port ("free on board").

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ment that seems to be probable in view of the expected restrictions on routes, on size of ships, and on speed.

If the Japanese were allowed to operate 2 million tons of shipping and if they were able to engage 1.4 million tons of ships over 100 tons in foreign trade, they could probably earn up to 46 million yen of shipping receipts. This estimate also assumes that restrictions on routes and size and speed of ships will contribute to an over-proportional fall in receipts from shipping.

If the Japanese were allowed to rebuild their merchant fleet to a level of 3 million gross tons of ships over 100 tons, they probably would not be forced to resort to the device of building as many ships under 100 tons as they would be in the case of the more drastic restrictions on ships over 100 tons. If the Japanese had a fleet of 3 million tons, they could be expected to use from 700,000 to 800,000 tons of ships over 100 tons in coastwise transportation and to utilize from 2.2 to 2.3 million tons of shipping tonnage in overseas trade. They would have to employ only a small tonnage of foreign merchant ships, if any. In this case, Japan could be expected to earn 75 to 80 million yen (in 1930 prices) in net receipts from shipping services. It seems significant that these receipts would represent a very considerable in-payment in Japan's future balance of payments.

If restrictions on the total size of the Japanese merchant marine were removed in the future, the Japanese might be able to build up a merchant marine approaching the level of the period 1930 to 1936, provided that the restrictions imposed on steel production were not prohibitive. In view of the low volume of the currently available tonnage,

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it does not seem possible that Japan could reach the level of the period 1930-34 by 1950, but it might reach it by 1955.<sup>1</sup> Since no more than 2.5 million tons of shipping seem to be required for Japan's foreign trade in a normal post-reconversion year and since only 700,000 tons of ships over 100 tons seem to be required for coastwise transportation, a tonnage of about 800,000 tons would be available for carrying services between other nations. This tonnage is larger than the tonnage engaged in carrying trade during the 1930's, when the level of foreign trade was considerably higher than that which is to be anticipated for a normal post-reconstruction year. If the Japanese were to utilize a tonnage of 800,000 tons in carrying trade, however, freight rates would probably show a tendency to fall below the level of 1930. It therefore seems doubtful whether Japan's net receipts from shipping will ever be as great as they were when Japan's imports and exports were at the level of the 1930-34 period.

The amount of receipts that Japan could earn if 3.3 million tons of shipping were available for foreign trade and carrying trade will be determined also by the type of restrictions imposed on the size and speed of ships and on the routes on which Japanese ships will be allowed to operate. If freight rates were to remain at the level of 1930 and if restrictions on size and speed of ships and on routes were removed, Japan might earn a maximum of 140 million yen (in 1936 prices) in net receipts

1. The size of the merchant fleet was reported at 1.8 million tons as of May 1, 1946, including ships in repair and ships under construction. The rebuilding of a merchant fleet of 3.6 million tons of steel ships by 1955 would imply that the Japanese could build an average of 230,000 tons of shipping per year.

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from shipping services. It seems more realistic, however, to assume that freight rates will tend to fall and that restrictions on size and speed of ships and on routes will decrease receipts from shipping. It therefore seems more realistic to assume that net receipts from shipping might range between 110 and 115 million yen, thus approaching the level of the period 1930-34. Even so, a sizable fraction of Japan's outlay for imports might be covered by net receipts from shipping.

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Table 1. NUMBER AND TONNAGE OF VESSELS REGISTERED<sup>a</sup> IN JAPAN, 1927-36

	No. of Steam Ships <sup>b</sup>	Tonnage in 1,000 Gross Tons	No. of Sailing Ships	Tonnage in 1,000 Gross Tons <sup>c</sup>	Total Tonnage in 1,000 Gross Tons
Dec. 31, 1927	3,287	3,670	17,748	883	4,553
" " 1928	3,321	3,754	17,771	799	4,553
" " 1929	3,350	3,820	15,212	882	4,702
" " 1930	3,351	3,908	15,497	908	4,816
" " 1931	3,358	3,918	15,746	896	4,814
" " 1932	3,308	3,875	15,346	877	4,752
" " 1933	3,295	3,780	15,257	872	4,652
" " 1934	3,365	3,812	15,290	882	4,694
" " 1935	3,471	3,863	15,443	906	4,769
" " 1936	3,602	4,034	15,783	960	4,994
Average 1928-30	3,341	3,827	16,160	863	4,690
Average 1930-34	3,335	3,858	15,427	887	4,745
Average 1935-36	3,536	3,948	15,613	933	4,881

a. Unregistered tonnage was lowest with 512,000 tons in 1934 and highest with 570,000 in 1935. The annual average in 1930-38 was 540,000 gross tons. The bulk of the unregistered tonnage consisted of sailing vessels between 5 and 20 tons. The tonnage of unregistered steamers of 5 to 20 tons usually constituted less than 10 percent of registered tonnage.

b. Includes motorships

c. Includes small number of small sailing ships, the tonnage of which was reported in koku.

Sources: For 1927 through 1933: Japan Year Book, 1934, p. 744

For 1934: Japan Year Book, 1936, p. 724.

For later years: Far East Year Book, 1941, p. 212

Orient Year Book, 1942, pp. 106 and 107.

Note: It is assumed that figures reported in the above-mentioned sources refer to Japan Proper, which is about 90 percent of the tonnage registered in the Japanese Empire. This assumption is borne out by statistics of registration in the Japanese Empire as shown in Japan Year Book, 1930, p. 747; and 1936, p. 724.



RESTRICTEDTable 1. NUMBER AND TONNAGE OF VESSELS REGISTERED<sup>a</sup> IN JAPAN, 1927-36

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3,471	3,863	15,443	906	4,769
3,602	4,034	15,783	960	4,994
30 3,341	3,827	16,160	863	4,690
34 3,335	3,858	15,427	887	4,745
36 3,536	3,948	15,613	933	4,881

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motorships

small number of small sailing ships, the tonnage of which was reported in koku.

For 1927 through 1933: Japan Year Book, 1934, p. 744

For 1934: Japan Year Book, 1936, p. 724.

For later years: Far East Year Book, 1941, p. 212

Orient Year Book, 1942, pp. 106 and 107.

assumed that figures reported in the above-mentioned sources refer to Japan Proper, or to 90-95 of the tonnage registered in the Japanese Empire. This assumption is borne out by the facts of registration in the Japanese Empire as shown in Japan Year Book, 1930, p. 295; 1935, and 1936, p. 724.



Table 2. STEAMERS AND MOTORSHIPS REGISTERED IN THE JAPANESE EMPIRE, 1928-36

(As of 30 June of each year in gross tons)

Ton Class	1928		1929		1930	
	No.	G.T.	No.	G.T.	No.	G.T.
100-500	778	172,114	787	172,865	786	172,064
500-1,000	237	181,439	236	180,611	231	177,100
1,000-2,000	260	374,591	260	376,642	257	372,578
2,000-4,000	386	1,093,557	386	1,094,106	380	1,075,447
4,000-6,000	255	1,313,141	254	1,306,654	255	1,315,367
6,000-8,000	99	676,570	100	684,415	103	705,293
8,000-10,000	22	200,577	23	210,033	29	263,089
10,000-15,000	11	127,726	11	127,726	16	184,466
15,000-20,000	0	0	2	33,600	3	51,400
20,000 and above	0	0	0	0	0	0
Total	2,048	4,139,815	2,059	4,186,652	2,060	4,316,804

  

Ton Class	1931		1932		1933	
	No.	G.T.	No.	G.T.	No.	G.T.
100-500	732	160,838	747	162,116	821	170,728
500-1,000	213	164,104	206	157,748	198	151,822
1,000-2,000	241	345,652	236	337,196	229	326,492
2,000-4,000	373	1,055,265	364	1,032,406	355	1,009,495
4,000-6,000	257	1,321,656	256	1,319,318	259	1,338,770
6,000-8,000	100	685,692	100	685,048	102	699,545
8,000-10,000	34	305,331	36	323,260	36	323,386
10,000-15,000	16	186,446	16	186,473	16	186,473
15,000-20,000	3	51,448	3	51,448	3	51,448
20,000 and above	0	0	0	0	0	0
Total	1,969	4,276,341	1,964	4,255,014	2,019	4,258,159

  

Ton Class	1934		1935		1936	
	No.	G.T.	No.	G.T.	No.	G.T.
100-500	820	169,209	1,024	203,939	1,222	237,882
500-1,000	193	147,969	196	148,932	202	151,570
1,000-2,000	217	309,396	211	300,977	215	306,603
2,000-4,000	317	899,443	309	874,717	313	888,377
4,000-6,000	238	1,229,254	238	1,222,961	238	1,222,927
6,000-8,000	107	741,434	112	770,865	118	811,132
8,000-10,000	39	351,449	37	332,263	38	341,651
10,000-15,000	15	173,105	16	179,548	18	204,100
15,000-20,000	3	51,448	3	51,448	3	51,448
20,000 and above	0	0	0	0	0	0
Total	1,949	4,072,707	2,146	4,085,650	2,367	4,215,690

Source: Lloyd's Register of Shipping, London

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Table 3. TONNAGE OF SHIPS REGISTERED IN THE JAPANESE EMPIRE, 1934 and

(In 1,000 gross tons)

A. <u>Steamships</u>	Tonnage	September 1 9 3 4				Total	Tonnage	September
		Japan Proper	Korea	Formosa	Kwantung L.T.			
	20-100	75	9	5	1	90	20-100	86
	100-500	130	4	3	5	142	100-500	174
	500-1,000	148	3	1	3	155	500-1,000	166
	1,000-3,000	650	34	0	38	722	1,000-3,000	774
	3,000-6,000	1,511	3	0	190	1,704	3,000-6,000	1,916
	6,000-10,000	1,001	0	0	40	1,041	6,000-10,000	1,536
	Over 10,000	235	0	0	0	235	Over 10,000	321
	Total	3,750	53	9	277	4,089	Total	4,973
B. <u>Sailing Ships</u>								
	20-100	596	27	2	8	633	20-100	658
	100-500	265	0	1	0	266	100-500	318
	500-1,000	2	0	0	0	2	500-1,000	2
	Over 1,000	10	0	0	0	10	Over 1,000	10
	Total	873	27	3	8	911	Total	988
	Total	4,623 <sup>b</sup>	80	12	285	5,000		5,961
	Percent	92	2	0	6	100		94

a. Includes motor ships.

b. See Table 1. The figure of 4,694,000 metric tons as reported as of Dec. 31, 1934 represents tonnage between September and December.

c. Increased to 6,116 by the end of the year 1938.

Sources: Japan Year Book, 1934, p. 747; 1939-40, p. 599.



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## SHIPS REGISTERED IN THE JAPANESE EMPIRE, 1934 and 1938

(In 1,000 gross tons)

a

Formosa	Kwantung L.T.	Total	Tonnage	September 1938			Kwantung L.T.	Total
				Japan Proper	Korea	Formosa		
	1	90	20-100	86	24	6	3	119
	5	142	100-500	174	13	3	6	195
	3	155	500-1,000	166	5	1	4	176
	38	722	1,000-3,000	774	41	0	42	857
	190	1,704	3,000-6,000	1,916	13	0	173	2,102
	40	1,041	6,000-10,000	1,536	0	0	33	1,570
	0	235	Over 10,000	321	0	0	0	321
	277	4,089	Total	4,973	96	10	261	5,340
	8	633	20-100	658	40	2	13	713
	0	266	100-500	318	2	1	1	322
	0	2	500-1,000	2	0	0	0	2
	0	10	Over 1,000	10	0	0	0	10
	8	911	Total	988	42	3	14	1,047
	285	5,000		5,961 <sup>c</sup>	138	13	275	6,387
	6	100		94	2	0	4	100

100 metric tons as reported as of Dec. 31, 1934 represents the September figure plus the increase in December.

for the year 1938.

747; 1939-40, p. 599.



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Table 4. TONNAGE OF VESSELS REGISTERED IN THE JAPANESE  
EMPIRE IN SELECTED YEARS  
(In 1,000 gross tons)

	Lloyd's Register of Shipping <sup>a</sup>	Japanese Ministry of Communications <sup>b</sup>	Steamers Registered In Japan	Percent of Total
1928				
30 June	4,140		3,754	90
30 Sept.		4,162		
1934				
30 June	4,073		3,812	93
30 Sept.		4,089		
1935				
30 June	4,086		3,863	93
30 Sept.		4,142		
1938				
30 June	5,007		5,074	95
30 Sept.		5,340		

- a. Steamers under 100 tons and sailing ships excluded.  
b. Sailing ships excluded; full-powered ships of 20-100 tons included. Tonnage of full-powered ships under 100 tons averaged 100,000 gross tons annually (see Table 3).

Sources: Column 1: Lloyd's Register of Shipping, London  
Column 2: The Japan Year Book, 1930, p. 295; 1935, p. 747;  
1936, p. 723.  
Column 3: Table 1, Col. 2

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Table 5. DISTRIBUTION OF STEAMERS REGISTERED IN JAPAN BY GROSS TONNAGE, 1932-38  
(In 1,000 gross tons as of the end of the calendar year)

		Under 500	500-1000	1,000-3,000	3,000-6,000	6,000-10,000	Over 10,000
1932	Tonnage	196	153	735	1,608	946	236
	% of Total	5	4	19	41	25	6
1933	Tonnage	197	151	682	1,540	985	225
	% of Total	5	4	18	41	26	6
1934	Tonnage	208	150	649	1,507	1,051	245
	% of Total	5	4	17	40	28	6
1935	Tonnage	227	156	650	1,515	1,085	231
	% of Total	6	4	17	40	28	5
1936	Tonnage	240	157	674	1,552	1,164	248
	% of Total	6	4	17	39	29	5
1937	Tonnage	249	161	716	1,676	1,338	262
	% of Total	6	4	16	38	30	6
1938	Tonnage	265	169	781	1,932	1,591	359
	% of Total	5	4	15	38	31	7

a. See Table 1. Except for a slight difference in 1938, the totals of this Table agree with column of Table 1.

Source: Orient Year Book, 1942, p. 107.



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NUMBER OF STEAMERS REGISTERED IN JAPAN BY GROSS TONNAGE, 1932-38  
(in thousands of gross tons as of the end of the calendar year)

	1,000-3,000	3,000-6,000	6,000-10,000	Over 10,000	Total <sup>a</sup>
53	735	1,608	946	236	3,876
4	19	41	25	6	100
51	682	1,540	985	225	3,780
4	18	41	26	6	100
50	649	1,507	1,051	245	3,810
4	17	40	28	6	100
56	650	1,515	1,085	231	3,864
4	17	40	28	5	100
57	674	1,552	1,164	248	4,035
4	17	39	29	5	100
61	716	1,676	1,338	282	4,422
4	16	38	30	6	100
69	781	1,932	1,591	359	5,097 <sup>a</sup>
4	15	38	31	7	100

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a slight difference in 1938, the totals of this Table agree with 2nd

book, 1942, p. 107.



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Table 6. JAPANESE MERCHANT SHIPS LAUNCHED, 1928-36

(In 1,000 gross tons)

	Total of Vessels over 100 Tons <sup>a</sup>	Vessels over 1,000 Tons	Ships between 100 and 1,000 Tons
1928	112.6	98.8	13.8
1929	167.4	n.a.	n.a.
1930	154.2	n.a.	n.a.
1931	84.0	n.a.	n.a.
1932	58.8	43.8	15.0
1933	79.8	68.7	11.1
1934	154.9	124.2	30.7
1935	146.0 <sup>b</sup>	111.7	34.3
1936	295.0 <sup>b</sup>	270.7	24.3

## Averages:

1928-30	144.7
1930-34	106.3
1935-36	220.5

n.a. = not available

a. Includes sailing ships unless otherwise stated.

b. Excludes sailing ships.

Sources: Column 1: Based on reports of Japanese Ministry of Communications as given in Japan Year Book and Schumpeter.

For 1928 thru 1933; Japan Year Book, 1935, p. 607.

For 1934; Japan Year Book, 1936, p. 724.

For 1935 and 1936: Schumpeter, p. 615.

Column 2: Orient Year Book, 1942, p. 116.

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Table 7: ANNUAL CONSTRUCTION OF JAPANESE STEEL MERCHANT SHIPS  
OVER 100 TONS, 1931-44  
(In gross tons)

Year	Passenger	Passenger Cargo	Cargo	Tankers	Total
1931	1,038	302	67,384	29,366	98,090
1932	4,558	18,094	15,955	236	38,843
1933	937	13,599	46,627	--	61,163
1934	7,112	15,800	93,839	19,283	135,034
1935	3,071	20,482	98,389	17,972	139,914
1936	2,472	35,622	126,031	56,739	220,864
1937	1,475	63,853	271,696	36,877	373,901
1938	1,781	11,223	249,235	42,540	349,779
1939	n.a.	49,790	214,145	56,531	320,466
1940	3,500	82,194	194,418	13,500	293,612
1941	n.a.	40,397	156,596	13,380	210,373
1942 <sup>a</sup>	n.a.	b	310,599 <sup>b</sup>	47,743	358,342
1943 <sup>a</sup>	n.a.	b	573,424 <sup>b</sup>	363,143	936,567
1944 <sup>a</sup>	n.a.	b	908,422 <sup>b</sup>	491,361	1,399,783

n.a. = not available.

a. Fiscal years.

b. Passenger cargo ships included under cargo ships for years  
1942-44.

Source: The United States Strategic Bombing Survey.

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Table 8. CARGO TONNAGE MOVED IN FOREIGN TRADE OF ALL PORTS  
IN JAPAN, 1924-39<sup>a</sup>  
(In 1,000 weight-volume tons)

Year	Imports	Exports	Total	Index of Imports (1930-34=100)	Index of Exports (1930-34=100)	Index of Total Foreign Trade (1930-34=100)
1924	16,795	4,351	21,146	86	66	81
1925	14,731	5,918	20,649	75	90	79
1926	16,987	6,090	23,077	87	92	88
1927	17,772	5,785	23,557	91	88	90
1928	20,182	6,485	26,667	103	98	102
1929	21,181	6,206	27,387	108	94	105
1930	18,635	6,255	24,890	95	95	95
1931	18,263	5,295	23,558	95	80	90
1932	17,733	5,956	23,689	91	90	91
1933	19,959	7,307	27,266	102	111	104
1934	23,053	8,265	31,318	118	125	120
1935	26,259	9,045	35,304	134	137	135
1936	27,903	9,464	37,367	143	143	143
1937	30,280	9,844	39,924	155	146	153
1938	23,615	9,124	32,739	121	138	125
1939	27,493	11,322	38,815	141	172	148
Average						
1928-30	20,000	6,315	26,315	102	95	101
1930-34	19,528	6,616	26,144	100	100	100
1935-36	27,081	9,255	36,336	139	140	139

a. Japanese official statistics exclude commodities carried on Navy ships and other government transports.

Sources: Japanese Ministry of Finance, Monthly Returns of Foreign Trade of Japan, 1924-39.

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Table 9. TOTAL CARGO TONNAGE MOVED IN INBOUND AND OUTBOUND  
TRADE OF JAPANESE PORTS, 1934-37  
(In 1,000,000 metric tons)<sup>a</sup>

A. Inbound Trade

	Total	Foreign	Intra- Empire	Colonial	Coastwise	Index (1934 = 100)			
						Total	Foreign	Intra- Empire	Colonial
1934	116.4	24.8	91.6	5.5	86.1	100	100	100	100
1935	126.8	28.3	98.5	6.1	92.4	109	114	108	111
1936	139.4	30.0	109.4	6.1	103.3	120	121	119	111
1937	148.9	32.6	116.3	6.6	107.7	128	131	127	120

B. Outbound Trade

	Total	Foreign	Intra- Empire	Colonial	Coastwise	Index (1934 = 100)			
						Total	Foreign	Intra- Empire	Colonial
1934	82.8	8.9	73.9	3.1	70.8	100	100	100	100
1935	92.1	9.7	82.4	3.8	78.6	112	109	112	123
1936 <sup>1</sup>	101.2	10.2	91.0	4.2	86.8	122	115	123	129
1937	109.7	10.4	99.3	4.2	95.1	133	116	135	129

a. Long tons reported in Japanese source converted into metric tons

Sources: Column 1: Column 1: For 1934, Kaiji Yoran, 1936; for other years, derived by adding  
and 3.  
Column 3: Dai Nippon Teikoku Tokai Nenkan, 1939, number 38.  
Columns 2 and 4: Calculated from Annual Returns of the Foreign Trade of Japan; Annual  
the Trade of Korea and Annual Returns of the Trade of Formosa.



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Table 9. TOTAL CARGO TONNAGE MOVED IN INBOUND AND OUTBOUND  
TRADE OF JAPANESE PORTS, 1934-37  
(In 1,000,000 metric tons)<sup>a</sup>

Foreign	Intra- Empire	Colonial	Coastwise	Index (1934 = 100)				
				Total	Foreign	Intra- Empire	Colonial	Coastwise
1.8	91.6	5.5	86.1	100	100	100	100	100
3.3	98.5	6.1	92.4	109	114	108	111	107
10.0	109.4	6.1	103.3	120	121	119	111	120
2.6	116.3	6.6	107.7	128	131	127	120	127

Foreign	Intra- Empire	Colonial	Coastwise	Index (1934 = 100)				
				Total	Foreign	Intra- Empire	Colonial	Coastwise
3.9	73.9	3.1	70.8	100	100	100	100	100
9.7	82.4	3.8	78.6	112	109	112	123	111
10.2	91.0	4.2	86.8	122	115	123	129	123
10.4	99.3	4.2	95.1	133	116	135	129	134

...ted in Japanese source converted into metric tons

Column 1: For 1934, Kaiji Yoran, 1936; for other years, derived by adding columns 2

and 4; Dai Nippon Teikoku Tokai Nenkan, 1939, number 38.

and 4: Calculated from Annual Returns of the Foreign Trade of Japan; Annual Returns of  
of Korea and Annual Returns of the Trade of Formosa.



Table 10. TRAMP SHIPPING ACTIVITY BY AREAS OF OPERATIONS, 1928-36<sup>a</sup>  
(In 1,000 gross tons)A. Ocean Routes, 1928-1936

	Total Reported Ocean Routes	Europe & Africa	North America (Pacific Coast)	North America (Atlantic Coast)	Australia and India	South Sea Islands and Straits Settlements	South America	In Docks
1928	1,642	213	239	689	180	321	n.a.	165
1929	1,597	213	151	603	227	403	n.a.	250
1930	1,699	227	333	469	190	350	130	103
1931	1,762	364	185	559	212	359	83	141
1932	1,948	711	214	380	249	312	82	88
1933	1,827	475	238	431	160	523	n.a.	152
1934	1,709	309	306	371	252	471	n.a.	132
1935	1,580 <sup>b</sup>	120	230	315	309	314	n.a.	115
1936	1,648 <sup>b</sup>	163	386	299	247	375	n.a.	120

B. Near Sea Routes, 1928-1934

	Total	Hokkaido and Karafuto	Dairen and Vladivostok	North China and Korea	Kyushu and Shanghai	Formosa and Hongkong	Honshu, Japan Sea
1928	1,549	258	250	165	263	177	428
1929	1,520	264	241	65	368	97	458
1930	1,423	183	296	78	270	166	423
1931	1,259	63	294	28	228	87	402
1932	1,289	120	318	120	240	113	347
1933	1,230	135	218	121	268	113	330
1934	1,383	142	240	90	324	195	347

n.a. = not available

a. Refers to ships over 2,000 dead weight tons as of December 1.

b. Includes some routes not separately reported.

Source: For 1928-1934: Japan-Manchoukuo Year Book, 1936, p. 281.  
For 1935 and 1936: Japan Trade Guide, 1940



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TRAMP SHIPPING ACTIVITY BY AREAS OF OPERATIONS, 1928-36<sup>a</sup>  
(In 1,000 gross tons)

	North America (Atlantic Coast)	North America (Pacific Coast)	Australia and India	South Sea Islands and Straits Settlements	South America	In Docks	Stranded and Uses Not Reported
		689	180	321	n.a.	165	53
239		603	227	403	n.a.	250	63
151		469	190	350	130	103	322
333		559	212	359	83	141	309
185		380	249	312	82	88	129
214		431	160	523	n.a.	152	66
238		371	252	471	n.a.	132	n.a.
306		315	309	314	n.a.	115	30
230		299	247	375	n.a.	120	15
386							

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	Dairen and Vladivostok	North China and Korea	Kyushu and Shanghai	Formosa and Hongkong	Honshu, Japan Sea	Other Routes and Uses Not Reported
		165	263	177	428	8
250		65	368	97	458	27
241		78	270	166	423	7
296		28	228	87	402	157
294		120	240	113	347	31
318		121	268	113	330	75
218		90	324	195	347	45
240						

<sup>a</sup>2,000 dead weight tons as of December 1.  
not separately reported.  
4: Japan-Manchoukuo Year Book, 1936, p. 281.  
1936. Japan Trade Guide, 1940



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Table 11. JAPAN'S IMPORTS AND EXPORTS OF STEAMSHIPS, 1928-36

	Number of Imported Ships	Value of Imported Ships (in 1,000 yen)	Number of Exported Ships	Value of Exported Ships (in 1,000 yen)
1928	25	11,059	52	2,465
1929	8	2,478	128	5,229
1930	2	230	173	2,879
1931	2	68	12	3,286
1932	0	0	9	5,428
1933	2	1	20	886
1934	2	113	9	216
1935	14	3,216	6	78
1936	24	3,293	42	6,090

Source: Annual Returns of the Foreign Trade of Japan, 1928-36.

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RESTRICTEDTable 12. JAPAN'S NET RECEIPTS FROM SHIPPING, 1913-36  
(In 1,000,000 yen)

	Credits	Debits	Net Receipts
1913	56.8	17.9	38.9
1914	55.1	16.1	39.0
1915	69.9	20.3	49.6
1916	185.3	27.4	157.9
1917	307.6	33.8	273.8
1918	505.9	50.8	455.1
Average 1914-18	224.7	29.7	195.0
Average 1919-23	275.6	74.8	200.8
Average 1924-28	198.0	69.5	128.5
1928	217.0	78.7	138.3
1929	238.5	79.4	159.1
1930	194.4	69.1	125.3
1931	166.9	66.3	100.6
1932	181.8	82.1	99.7
1933	231.8	105.7	126.1
1934	251.5	106.9	144.6
1935	303.2	125.5	177.7
1936	334.6	140.8	193.8
Average 1928-30	216.6	75.7	140.9
Average 1930-34	205.3	86.0	119.3
Average 1935-36	318.9	133.1	185.8

Sources: Schumpeter, Appendix Tables I, I-A, I-B, and III.

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RESTRICTEDTable 13. ESTIMATES OF JAPANESE IMPORTS IN 1950  
(In 1,000 metric tons)

<u>Food</u>	<u>6,145</u>
Rice	1,600
Wheat, barley, and minor grains	3,005
Soybeans	1,100
Sugar	440
<u>Fertilizers</u>	<u>1,710</u>
Organic fertilizers	450
Phosphate rock	1,100
Potassium salts	160
<u>Fuel</u>	<u>2,725</u>
Coal	750
Petroleum	1,975
<u>Metals and Minerals</u>	<u>2,011</u>
Iron ore	1,540
Pig iron	300
Zinc <sup>a</sup>	42
Lead <sup>b</sup>	72
Copper <sup>b</sup>	40
Tin	5
Nickel	2
Aluminum <sup>b</sup>	10
<u>Textile Raw Materials</u>	<u>1,061</u>
Raw cotton	808
Wool	73
Rayon Pulp	180
<u>Other Materials</u>	<u>3,245</u>
Lumber	2,000
Rubber	60
Salt	885
All others	300 <sup>c</sup>
GRAND TOTAL	<u><u>16,897</u></u>

a. Concentrates.

b. Refined.

c. No provisions made for imports of ships.

Sources: OCL 3436.71, Summary Estimate of Foreign Trade Balance of Japan in 1950, October 1946,  
RESTRICTED.OCL-2815, The Place of Foreign Trade in the Japanese Economy, Vol. I, Part I, August 1946.RESTRICTED



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RESTRICTEDA PROVISIONAL SURVEY OF JAPAN'S 1950 REQUIREMENTS  
OF RAW RUBBER AND RUBBER PRODUCTS

OIR Report No. 4114

February 10, 1947

A projection of Japan's requirements of raw rubber and rubber products in a typical post-reconstruction year labeled 1950 for convenience, based on an analysis of requirements for domestic consumption and export in the years 1928-36.

DEPARTMENT OF STATE

Division of Research for Far East  
OFFICE OF INTELLIGENCE RESEARCHRESTRICTED



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RESTRICTEDREWORD

This study is one of a series of special industry analyses undertaken to determine Japanese production, imports, and exports and civilian consumption of various commodities in the past, and to project the findings into the future in order to determine Japan's peaceful requirements in a typical early post-reconstruction year which has been labeled 1950 for convenience. It must be emphasized that the hypothetical year 1950 referred to in these studies is not identical with the calendar year 1950; it is recognized that certain of the criteria for normality in the Japanese economy will not have been met by the calendar year 1950. For purpose of convenience, however, the population estimated for the calendar year 1950 has been used in the projections.

The historical period included in the studies covers the years from 1928 to 1936 provided sufficient data are available, and later years if the data for the earlier period appear to be inadequate. In general the period 1930-34 has been used as the base for provisional projections of the peaceful needs of the Japanese people in 1950. For many of the industries data for the period 1928-30 are available and are presented, but from an over-all point of view the statistics for 1928-30 are not as satisfactory as those of the period 1930-34 as a basis for projections. Japanese statistical reporting improved after 1928-29; in addition, adjustments for technological change cannot be made on the basis of the inadequate data available for many of the industries in the earlier period. The data for 1935-36 are useful so far as they serve as a check on trends beyond the earlier period.

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Because of the urgent need for even a preliminary survey, each industry analysis is being issued independently as completed. Attention, therefore, is directed to the provisional nature of the individual studies, particularly in regard to the projections of Japanese requirements to 1950. Upon completion of all the provisional surveys, it is planned to reconsider each in the light of the others and to synthesize the projections into an over-all picture of the Japanese economy in 1950.

Similarly, because of the urgent need for a trade balance estimate prior to the completion of the industry analyses, a preliminary set of projections of Japan's exports and imports in 1950, as yet unrelated to the industry studies, has been issued in Vol. I, Part I of OIR-2815, The Place of Foreign Trade in the Japanese Economy. Upon completion of the industry studies, a final step will be to synthesize these studies and the trade balance estimates in order to make such modifications in both the individual industry levels and in the total export and import balance as may be required to meet the peaceful needs of Japan as defined by the Far Eastern Commission.

This synthesis will entail a revision of some of the industry studies and, in certain cases, a choice among several possible projections. Because the appropriate choice cannot be made until each industry can be reexamined with full regard for mutual relationships with other industries and with full regard for the over-all trade balance, several alternative projections are presented for certain of the industries. It is anticipated that the final projection in certain cases may differ somewhat from any of those now provisionally presented.

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Most of the data in these analyses were taken from official and semi-official Japanese sources. Not only have inconsistencies and errors frequently been detected within a single source, but also many data from different sources, presumably reporting on the same subject, are irreconcilable.

All references to Japan in this study, unless otherwise noted, refer only to the four main islands -- Hokkaido, Honshu, Shikoku, and Kyushu -- and immediately adjacent small islands. Similarly, the trade of Japan with Korea and Formosa, as well as with other countries, is classified as external trade unless otherwise indicated.

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RESTRICTEDSUMMARY

In the five-year period from 1930 to 1934 Japan's net average annual consumption of raw rubber for both domestic use and for export amounted to approximately 54,000 metric tons. Of this amount, about 2,000 metric tons was reclaimed from domestically collected scrap. The remainder, about 52,000 metric tons, was imported at a cost, in 1930 prices, of about 27½ million yen per year.

Production of all rubber goods <sup>1</sup> in the years 1930 to 1934 was valued, in 1930 prices, at an average of 79 million yen per year. Production of soft and hard rubber goods of high rubber content was valued at 65 million yen, or 82 percent of the total.

Japan was a net exporter of rubber goods in all years (1928-36) covered by this report. In the period 1930-34, net annual receipts from exports amounted to 23½ million yen in 1930 prices. Net receipts from exports of soft and hard rubber products of high rubber content alone amounted to about 21 million yen annually in those years.

On the assumptions the population of Japan will be 19 percent larger in 1950 than it was in the 1930-34 period and that the pattern of supply, consumption, and external trade in 1950 will be similar to the 1930-34 pattern, Japan's total requirements for raw rubber in 1950 will be 64,000 metric tons, of which approximately 2,500 metric tons might be reclaimed from domestically collected scrap. The remaining 61,500 metric tons required would have to be imported, at a cost of about 33 million yen in 1930 prices.

1. Total production of rubber goods, as reported in Japanese statistics, excludes rubber-covered wire and cable.



FC-058/12RESTRICTEDFEC-058/125 May 1947FAR EASTERN COMMISSIONLEVEL OF ECONOMIC LIFE IN JAPAN:  
PRELIMINARY STUDY OF JAPANESE REQUIREMENTS  
IN THE RUBBER INDUSTRY, 1950Note by the Secretary General

1. The enclosure, a preliminary United States study of estimated Japanese peacetime requirements in the rubber industry in 1950, is submitted by the United States Representative for the information of the Far Eastern Commission, and is referred to COMMITTEE NO. 2: ECONOMIC AND FINANCIAL AFFAIRS.

2. The United States Representative wishes to draw attention to the fact that any conclusions presented in this study have been formulated within the terms of reference indicated in the foreword and do not represent statements of United States policy.

3. Due to the limited number of copies available only three copies of the enclosure can be furnished each delegation.

NELSON T. JOHNSON  
Secretary General

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Requirements for domestic consumption alone in 1950 are estimated at 48,000 metric tons of raw rubber. Deduction of the approximately 2,500 metric tons that may be reclaimed from domestic scrap leaves a requirement of 45,500 metric tons which would cost about 24 million yen in 1930 prices.

A significant point emerging from these requirements is that importation of the estimated 16,000 metric tons of raw rubber required to maintain per capita exports at the 1930-34 level would cost Japan about 8½ million yen but would permit exports valued at 28 million yen, or almost sufficient to pay the cost of total raw rubber imports.

Production facilities in Japan might easily be expanded to allow exports of rubber goods considerably greater than those estimated on the basis of the 1930-34 pattern. It is questionable, however, that foreign markets would continue to absorb greatly increased exports after the present period of abnormal demand is over.

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A PROVISIONAL SURVEY OF JAPAN'S 1950 REQUIREMENTS  
OF RAW RUBBER AND RUBBER PRODUCTS

I. INTRODUCTION

A. Scope of the Report

This report discusses Japan's requirements of crude rubber and rubber goods. Part I, Introduction, presents a brief background of the industry and discusses the sources used for the analysis. Part II of the report analyzes Japan's rubber position, domestic production, and imports and exports of crude rubber and rubber goods in the years 1928-36. Part III estimates Japan's requirements of raw rubber and rubber goods in the year 1950. These estimates are based on the pattern of domestic production, consumption, and external trade obtaining in the years 1930-34 and are expressed in terms of 1930 prices.

B. Availability and Validity of Sources

Data on Japan's crude rubber position and imports of scrap and rubber products are fairly complete for the years 1928 to 1936.

Difficulties are encountered, however, in analyzing the Japanese data on the production of rubber goods. In these statistics, no clear distinction is made between manufactures that are of high rubber content and certain low rubber content products such as rubber-soled tabi,<sup>1</sup> sporting goods, elastic webbing, clothing accessories, etc. No attempt is made in this report to reconcile the internal inconsistencies of the data, but, in an effort toward a clearer presentation of the subject, two sets of figures for domestic production and exports are presented:

I. The Japanese sock-shoe.

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one including only those items that clearly belong in the categories of soft and hard rubber goods of high rubber content; another that includes all products with rubber content.

Analysis of Japan's rubber position is complicated not only by the inconsistencies of the data covering manufactures, but also by the fact that complete figures on the amount of raw rubber reclaimed from domestic collection of scrap are not available. A very rough estimate of this yield has been made on the basis of the yield from imports of waste and scrap in the period 1928 to 1936.

Exports of rubber goods from Japan to Korea and Formosa are not shown in the Annual Trade Returns of the Foreign Trade of Japan; therefore, the totals shown in this source were augmented by amounts appearing in the Trade Returns of Korea and the Trade Returns of Formosa. In the case of exports, as in the case of production of rubber goods, an adequate breakdown of data was lacking, and for this reason estimates of tire and tube exports to these countries were made on the basis of automobiles, motorcycles, bicycles, jinrikishas, and parts exported.

The following sources were used in the analysis:

1. Japanese Ministry of Commerce and Industry, Kojo Tokei-hyo (Factory Statistics), 1928-36.
2. Japanese Ministry of Finance, Nippon Gaikoku Boeki Nempyo (Annual Returns of the Foreign Trade of Japan), Tokyo, 1929-36.
3. Government General of Formosa, Taiwan Boeki Nempyo (Trade Returns of Korea), 1929-36.
4. Government General of Formosa, Taiwan Boeki Nempyo (Trade Returns of Formosa), 1929-36.

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5. Japanese Rubber Control Union, A Summary Report on the Rubber Industry in Japan, May 1946.
6. Supreme Commander for the Allied Forces in Japan (SCAP), Summation of Non-Military Activities, March 1946.
7. The Foreign Affairs Association of Japan, Japan Year Book, 1939-40.
8. UYEDA Teijiro, The Small Industries of Japan (New York, 1938), pp. 200-201 ff., especially Table 87 (based on Factory Statistics).
9. United States Tariff Commission, Special Industry Analysis No. 35, Rubber and Rubber Manufactures, October 1945, pp. 6, 7 ff.
10. Foreign Economic Administration (FEA) data (various draft reports, notes, and statistical data prepared by sections of the FEA).

C. Background of Japan's Rubber Supply Problem

No natural rubber is grown commercially in the home islands of Japan. The Japanese rubber industry, therefore, is a rubber goods manufacturing industry based almost entirely on imports of crude rubber.

Before the war, Japan had easy access to the rich rubber resources of Southeast Asia, and by 1940 Japanese nationals owned controlling interests in over half a million acres of producing estates in the area. These estates supplied the dependent home industry at low import costs.

The production of synthetic rubber in Japan did not grow out of a shortage of natural crude but was the answer to war production demands for qualities in rubber lacking in the natural product. By the end of the war, the combined annual capacity of synthetic rubber plants was only 948 metric tons, virtually insignificant in terms of total annual consumption.

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Complete data on the production of crude rubber from reclaimed waste and scrap are not available, but import figures for waste and scrap indicate that in the years under consideration the amount of crude rubber obtained from such sources was probably less than 5 percent of total annual consumption. <sup>1</sup>

Rubber goods have been manufactured in Japan for seventy years. The industry originated in small production units and preserved this "home industry" character at least until the outbreak of the China War. By the late 1930's the industry was dominated by three large corporations: the Dunlop Far Eastern Rubber Company, which was controlled by British Dunlop until the late 1930's; the Yokohama Rubber Company, of which American interests owned 50 percent; and the Bridgestone Company, which was established in 1931 and controlled by Japanese interests.

A few large factories of these three major corporations produced the bulk of the output of automobile tires and tubes; great number of smaller rubber processing plants manufactured other rubber products. Before the war the total number of plants in Japan exceeded the number in the United States, but the total number of employees was only some 40 percent of the number of workers employed by the industry in the United States. <sup>2</sup>

1. After 1937, the Japanese Government encouraged the collection of domestic scrap in order to cut down the cost of imports. In 1938, it was estimated that 13 percent of the net annual supply of crude rubber was derived from domestically collected scrap. (Japan Year Book, 1939-40)
2. FEA data.

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Although reliable current information is not available, it is believed that the "home industry" character of the rubber industry changed after 1937, when industrial mobilization for war caused the disappearance of most shops employing less than ten workers. Further reduction of home industries was caused by the urban bombing of Japan, which destroyed a significant number of the small plants still operating at that time. The shift from home industry to larger plant units should result in greater efficiency and improved output of all important products and little, if any, reduction in total output.

II. JAPAN'S RUBBER POSITION, 1928-36

A. Raw Rubber Supply

The total absence of natural rubber in Japan necessitated the importation of all but a small fraction of total requirements of raw rubber. The average annual net new supply of raw rubber from imports for the years 1928 to 1930 was approximately 31,250 metric tons, of which 1,170 tons was reclaimed from imported scrap.<sup>1</sup> Domestically collected rubber scrap is estimated to have augmented this supply by an additional 1,000 metric tons annually. In the period 1930 to 1934, the average annual net new supply from imports was about 52,000 tons, of which only 570 tons was reclaimed from imported scrap. In 1935 and 1936, the annual net new supply was about 58,000 tons, of which 940 tons was reclaimed from imported scrap. During these years, 1930 to 1936, an estimated additional 2,000 metric tons of reclaimed rubber was available annually from domestic rubber scrap.

1. The yield from imported scrap is estimated at 60 percent (FEA).

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1. Synthetic Production. Synthetic rubber was not produced commercially in Japan until after 1936. Production of synthetic rubber is generally stimulated either by a shortage of natural crude rubber or by a need for types of rubber with qualities lacking in the natural product. The latter need was the reason for the development of highly uneconomical processes of producing synthetic rubber.

Considerable research and manufacturing effort were expended in the development and manufacture of synthetic rubber, which because of its oil-resistant qualities was used chiefly in the aircraft industry. By the end of the war, however, there were in existence only eight plants, with a combined annual capacity of 948 metric tons -- less than 2 percent of the net annual supply of raw rubber in 1936. Production costs were reported to have been roughly 100 times the cost of equivalent quantities of natural rubber. These plants were subsequently abandoned and are now in a state of disrepair.

2. Imports and Exports. The absence of natural rubber in Japan necessitated constant imports from Malaya, the Netherlands East Indies, Borneo, Indochina, India, Ceylon, and Siam. A small but rising percentage of these imports -- 2 percent in 1928-30 to 9 percent in 1935-36 -- was re-exported to Korea.

Net imports of raw rubber rose from about 26,000 metric tons in 1928 to over 61,000 metric tons in 1936. The cost of net imports of raw rubber, in 1930 prices, rose from about 13 million yen in 1928 to over 31½ million yen in 1936. The annual average cost of net imports of raw rubber in the years 1930 to 1934, in 1930 prices, was about 28 million yen for approximately 52,000 metric tons. (See Table 1.)

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Annual imports of scrap during the period 1928-30 averaged 1,170 metric tons of raw rubber content<sup>1</sup> and were valued at 142 thousand yen in 1930 prices. In the period 1930-34 scrap imports dropped to less than 600 metric tons annually, valued at 69 thousand yen. Imports in 1935-36 increased to over 900 metric tons annually, valued at 115 thousand yen. (See Table 1.)

For the years under consideration, there is no evidence of stockpiling of either crude or scrap. On the basis of trends in the net annual supply of raw rubber and production of rubber products, it is assumed that imports of crude and scrap were consumed currently.

B. Rubber Manufactures

1. Production. Manufactured rubber products are usually classified under two general headings, soft and hard. The former includes tires and tubes, rubber footwear, packing and insulation, toys, belting, and hose. The latter includes battery cases and other ebonite products.

Rubber is also used in the manufacture of a wide range of goods of low rubber content, e.g., rubber-soled tabi, sporting goods, elastic webbings, and clothing accessories. Since these products represent a considerable part of the total value of all rubber goods manufactures, they must be considered. It is desirable, however, for a clear understanding of requirements for domestic consumption and external trade, to segregate, insofar as possible, data for high content rubber goods from the data for low rubber content goods.

1. Estimated by FEI to be 60 percent of total scrap weight.

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a. All rubber goods.<sup>1</sup> The total value of production of all rubber goods in Japan (including soft and hard rubber goods of both high and low rubber content) rose, in current prices, from about 93 million yen in 1928 to 161 million yen in 1936. In the five-year period from 1930 to 1934, the average annual value of production in current prices was about 91 million yen. In terms of 1930 prices, the value of this production averaged 79 million yen annually. (See Tables 8 and 9.)

The value of production of soft and hard rubber goods only (excluding articles of low rubber content) rose, in current prices, from over 70 million yen in 1928 to over 135 million yen in 1936. The annual average value of production in the years 1930 to 1934 in current prices was over 74 million yen. In 1930 prices this production was valued at slightly more than 65 million yen. (See Tables 2 and 3.)

b. Soft rubber goods. In terms of current prices, the value of soft rubber goods production increased from 69 million yen in 1928 to 132 million yen in 1936, or about 90 percent. In terms of 1930 prices, the increase in value was even greater: from 36 million yen to 80 million yen, or 120 percent. Average annual production for the years 1930 to 1934 was valued at about 73 million yen in current values and 62 million yen in deflated values. (See Tables 2 and 3.)

The combined current value of production of tires, tubes, and rubber footwear in the years 1930 to 1934 comprised about 63 percent of the total value of production of both soft and hard rubber goods. (See Tables 2 and 7.)

1. Excluding rubber-covered wire and cable.

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The most important articles of soft rubber production were tires and tubes (for aircraft, automobiles, motorcycles, bicycles, jinrikishas, and other vehicles). The value of this production rose, in current prices, from about 25 million yen in 1928 to 51 million yen in 1936. Annual average production values were about 23 million in 1928-30, 27 million in 1930 to 1934, and 48 million in 1935 and 1936. In the entire period, the value of the production of tires and tubes represented, in current prices, between 32 and 39 percent of all soft rubber goods production. (See Tables 2 and 5.)

The article of soft rubber goods manufacture that ranked next in importance was rubber footwear. The value of production of rubber footwear rose, in current prices, from 21 million yen in 1928 to nearly 32 million in 1936. There was a sharp decline in 1931 to 16 million. The annual average value of production for the period 1930 to 1934, in current prices, was 20 million yen, or about 27 percent of the total value of soft rubber goods production. (See Tables 2, 6, and 7.)

The balance of soft rubber goods production in the years 1930 to 1934 was distributed as follows (in current values): rubber toys, 6 percent; rubber bolting, 7 percent; rubber hose, 4 percent; packing and insulation, 1 percent; other soft rubber goods, 18 percent. The production of rubber toys and bolting began to increase significantly in the middle 1930's owing to the widespread substitution of rubber for celluloid in toy making and the increased industrial demands for rubber bolting.

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c. Hard rubber goods. The production of hard rubber goods (i.e., battery cases and other ebonite products) during the years 1930 to 1934 was valued, in current prices, at slightly more than  $1\frac{1}{2}$  million yen annually, or only 2 percent of the aggregate value of soft and hard rubber manufactures.<sup>1</sup> (See Table 2.)

2. Imports and Exports

a. Imports. Imports of manufactured rubber goods, mostly tires and tubes, represented in the period 1928-30 about 6 percent of the total value of production, in current prices, for the same period. By 1935-36 this value had declined to less than 1 percent -- almost negligible in terms of the net annual supply. Average annual imports in the years 1930 to 1934 were valued at more than 2 million yen in current prices, as compared with exports valued at more than 30 million yen and production valued at almost 91 million. In 1930 imports of all rubber goods were valued at 5 million yen, exports at about 28 million, and production at almost 75 million yen. By 1936 imports had shrunk in value, in current prices, to less than 1 million yen, as against increased exports valued at 47 million yen and vastly increased production valued at 161 million yen. (See Table 8.)

1. Production of these items increased significantly after 1936. In 1937 and 1938 hard rubber products represented about 4 percent of total production value. (CIR-2815, The Place of Foreign Trade in the Japanese Economy, Vol. II.)

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b. Exports. The total value of exports of rubber goods to Africa, Europe, Asia, the South Sea Regions, and colonies in the period 1930 to 1934 was somewhat less than 31 million yen annually in current prices, or about 34 percent of the total value of production.

The value of exports of soft and hard rubber goods of high rubber content -- principally tires, tubes, and rubber footwear -- during the 1930 to 1934 period was about 27 million yen annually in current prices, or over 90 percent of the value of all exports of rubber goods. (See Tables 2 and 8.)

The value of tires and tubes exported rose, in current prices, from about 9 million yen in 1928 to over 20 million in 1936. Annual average exports, valued at over 11 million yen in the years 1930 to 1934, represented about 37 percent of total exports of all rubber goods for those years. (See Tables 4 and 8.)

Exports of rubber footwear declined significantly over the period -- from 13 million pairs in 1928 to less than 5 million pairs in 1936. In current prices, the value of these exports declined from a little more than 9 million to less than 3 million yen. In the years 1930 to 1934, the average annual export value of rubber footwear was about 7 million yen, in current prices, or 25 percent of the aggregate export value of hard and soft rubber goods. In 1935-36, rubber footwear exports represented only 8 percent of the aggregate export value of these products. (See Tables 2 and 6.)

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C. Balance of Trade in Rubber in 1930 Prices

In terms of 1930 prices, the value of net imports of crude and scrap rubber rose from 13 million yen in 1928 to almost 32 million in 1936, averaging about 27 million yen in the years 1930-34. (See Table 1.)

Japan was an annual net exporter of rubber goods in the entire period covered by this report. Receipts from net exports of all rubber goods rose, in 1930 prices, from  $6\frac{1}{2}$  million yen in 1928 to 29 million yen in 1936. Average annual receipts from net exports in the years 1930 to 1934 amounted to  $23\frac{1}{2}$  million yen. (See Table 9.) In the entire period under discussion, net receipts from exports were nearly adequate to pay the cost of all imported raw rubber processed in Japan. (See Tables 2 and 1.)

Net export receipts from soft and hard rubber goods of high rubber content rose, in 1930 prices, from about 6 million yen in 1928 to  $24\frac{1}{2}$  million in 1936. In the period 1930-34, these net export receipts averaged 21 million yen annually, or 34 percent of the value of Japan's production of soft and hard rubber goods of high rubber content during the period. (See Table 3.)

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III. JAPAN'S REQUIREMENTS OF RAW RUBBER AND MANUFACTURED RUBBER GOODS IN 1950

In the years 1930 to 1934, Japan's average annual net new supply of raw rubber was 54,000 metric tons, of which 52,000 metric tons were imported and an estimated 2,000 metric tons were obtained from domestic scrap collection. This supply would allow a rubber consumption rate of 0.81 kilograms per capita. With allowance made for an estimated population increase of 19 percent by 1950 and on the assumption that the same pattern of domestic consumption, external trade, and estimated domestic scrap collection that obtained in 1930-34 will obtain in 1950, Japan's 1950 requirements may be estimated at about 64,000 metric tons of raw rubber (crude or equivalent crude and scrap), of which 61,500 metric tons would be imported at a cost of about 33 million yen in 1930 prices. The cost of these imports would be only slightly more than the annual cost of imported crude and scrap in the years 1935-36 in 1930 prices. (See Table 1.)

Although available data do not allow an accurate assessment of raw rubber requirements for domestic consumption alone, it is estimated that these requirements would amount to approximately 48,000 metric tons annually.<sup>1</sup>

1. The lack of adequate quantitative data on rubber products domestically consumed and exported, and the total lack of information on the raw rubber content of the various products, make it extremely difficult to estimate the amount of raw rubber processed for domestic consumption as opposed to export. The estimates herein given may be subject to considerable revision. To arrive at these estimates, it has been assumed that the rubber content of export goods is generally similar to that of goods consumed domestically. The relationship between the value of domestic supply and the value of exports as given in Table 2, which includes only goods of high rubber content, is roughly 70:30. The comparable values given in Table 8, which includes all rubber goods, stand in roughly the same relationship. It has therefore been assumed that the ratio between raw rubber requirements for domestic consumption and requirements for export is 70:30.

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In connection with this estimate, it should be noted that domestic consumption of tires and tubes in the years 1930 to 1934 represented, in current values, almost 35 percent of the value of total domestic consumption of soft and hard rubber products (Tables 4 and 2) and 27 percent of the value of consumption of all rubber goods (Tables 4 and 8). If the level of domestic consumption of these items is increased above or restricted below the 1930-34 level, the requirement of 48,000 tons of raw rubber will be subject to revision.

The import requirements for domestic consumption and for export may be decreased if domestic collection of scrap is increased. In 1938, government pressure to increase the yield of raw rubber from collections of scrap in order to cut down the cost of imports resulted in an estimated yield of 13 percent of the annual net supply for that year, as against a normal yield of about 4 percent. If it is possible to increase the rate of scrap collection in 1950, import requirements may be lowered. It is considered unlikely, however, that Japan will increase the collection of domestic scrap beyond the normal annual rate unless forced to by abnormally high costs of imported crude and scrap. Since market trends indicate that the price for such imports in the future will probably be lower than that which obtained in the late 1930's, no allowance has been made for scrap collecting beyond the normal rate. It seems likely that 2,500 tons of raw rubber may be reclaimed annually from domestic scrap. Import requirements for domestic consumption would therefore be 45,500

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metric tons; <sup>1</sup> import requirements for all purposes, including exports, would be 61,500 metric tons. The cost of the 45,500 metric tons of raw rubber required for home consumption would be about 24 million yen in 1930 prices. The cost of the total 61,500 metric tons would be 33 million yen (1930 prices).

No adjustment has been made for technological development. There are indications that developments in the manufacture of synthetic rubber will contribute to a lower price for both synthetic and crude rubber. Japan's industry, being wholly dependent on imports of rubber, will stand to benefit from this trend. Plastics may eventually supersede most ebonite products; however, Japan's industry is largely concentrated on the manufacture of soft rubber goods, for which satisfactory non-rubber substitutes have thus far not been developed.

On the assumption that the per capita value of exports and consumption of rubber goods will be the same in 1950 as it was in the period 1930-34 and that there will be an increase in population of about 19 percent, Japan would require in 1950 rubber goods valued at 94 million yen in 1930 prices.

1. The Japanese Government has estimated minimum requirements for rubber manufactures in 1947 at about 40,000 metric tons. This estimate is believed to be somewhat high in view of the fact that the consumption of raw rubber during the period 1938-44, including that which was used for military purposes, averaged 43,000 metric tons annually. Japanese Government estimate from SCAP, Summation of Non-Military Activities in Japan, March 1946; estimated consumption for 1938-44 from Japanese Rubber Control Union, A Summary Report of the Rubber Industry in Japan, May 1946.

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Domestic consumption alone would require goods valued at 66 million yen, while net exports would be valued at 28 million yen. It would not be necessary to import rubber manufactures. Manufacturing capacity sufficient to process the crude rubber requirements could be developed easily.

Production facilities in Japan might easily be expanded to allow for exports of rubber goods considerably greater than those estimated on the basis of the 1930-34 pattern. It is questionable, however, that foreign markets would continue to absorb greatly increased exports after the present period of abnormal demand is over. Net export receipts for rubber goods in the years 1935-36 were almost 30 percent higher than the average for the years 1930-34. Thereafter, until 1938, exports of tires, tubes, tabi, and miscellaneous rubber goods increased slightly, but exports of rubber footwear, a major item, declined. Future markets for Japanese tires, tubes, and rubber footwear undoubtedly will be affected if, and when, projected new plants in the Netherlands East Indies and China get into operation. The products of these plants will probably undersell similar Japanese goods. Furthermore, protective trade barriers may restrict Japanese markets. It is therefore difficult to predict the opportunities for expansion, or even retention, of Japanese markets for rubber exports in the future.

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Table 1. JAPAN: RAW RUBBER SUPPLY POSITION

Year	Physical Quantities					Value in Current Prices			
	Imports		Exports <sup>d</sup>	Net Imports	Total Per Capita <sup>e</sup>	Imports		Exports	Net
	Natural	Scrap <sup>c</sup>				Natural	Scrap		
.....(in metric tons)...		.....(in kg)		.....(in 1,000 yen).....					
1928	26,054	1,090	1,346	25,788	.411	27,895	221	1,411	26,705
1929	34,896	1,700	1,193	35,397	.557	33,885	324	1,117	33,092
1930	33,433	730	1,590	32,573	.505	17,930	89	975	17,044
1931	44,246	654	2,068	42,872	.655	13,181	72	727	12,526
1932	57,140	374	3,058	54,456	.821	15,988	51	1,033	15,006
1933	69,930	489	4,541	65,878	.979	29,685	71	2,049	27,707
1934	71,623	550	6,623	65,750	.963	57,338	126	4,371	53,093
1935	59,682	508	6,238	53,952	.777	51,636	126	5,428	46,334
1936	63,868	1,370	4,072	61,186	.870	72,957	299	4,683	68,573
Annual Averages:									
1928-30	31,459	1,170	1,376	31,253	.491	26,570	211	1,168	25,613
1930-34	55,314	567	3,576	52,305	.785	26,824	82	1,832	25,074
1935-36	61,785	939	5,155	57,569	.823	62,296	213	5,055	57,454

- a. Supply of reclaimed rubber from domestic scrap is not considered in this table.  
 b. Values in 1930 prices were computed by applying an index of changes in value per for each year. (See table 10.)  
 c. Scrap in terms of reclaimed rubber content, which is estimated by FEA to be 60  
 d. Exports are to Korea; exports to Formosa were small and are not included in the  
 e. For 1930 and 1935, population figures are based on official Japanese census; f

Sources: Annual Returns of the Foreign Trade of Japan, 1928-36.  
Trade Returns of Korea, 1928-36.

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ON,<sup>a</sup> 1928-36

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Imports Per Capita <sup>e</sup> (in yen)	Value in 1930 Prices <sup>b</sup>			Net Imports Total Per Capita <sup>e</sup> (in yen)	
	Imports Natural	Scrap	Exports		
	(in 1,000 yen)....				(in yen)
.43	13,947	132	825	13,254	.21
.52	18,721	266	730	18,197	.29
.26	17,930	89	975	17,044	.26
.19	23,537	85	1,275	22,347	.34
.23	30,746	46	1,878	28,914	.44
.41	37,576	60	2,049	35,587	.53
.78	38,482	67	4,047	34,502	.51
.67	32,072	62	3,822	28,312	.41
.96	34,092	167	2,491	31,768	.45
.40	16,866	142	843	16,165	.25
.37	29,654	69	2,045	27,678	.42
.82	33,082	115	3,156	30,041	.43

per metric ton of exports or imports to total current values

percent of total weight.

is table.

for all other years, estimated by Japan Branch, DPF.



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Table 2. JAPAN: VALUE OF PRODUCTION, IMPORTS, AND EXPORTS OF SOFT AND HARD RUBBER GOODS OF HIGH RUBBER CONTENT (in 1,000 yen)

Year	Production			Imports	Exports
	Soft	Hard	Total		
1928	69,075	1,395	70,470	6,406	23,270
1929	74,872	1,727	76,599	6,434	27,294
1930	58,564	1,203	60,767	4,796	25,422
1931	54,992	1,113	56,105	3,194	18,614
1932	64,828	1,055	65,883	1,470	23,447
1933	84,981	1,723	86,704	866	35,744
1934	100,583	2,715	103,298	994	34,797
1935	116,406	2,621	119,027	839	34,658
1936	131,729	3,559	135,288	885	39,820
Annual Averages:					
1928-30	67,837	1,442	69,279	5,879	25,329
1930-34	72,974	1,562	74,536	2,264	27,605
1935-36	124,067	3,090	127,157	887	37,244

a. Excludes elastic webbing, rubber-soled tabi and other shoes with fabric uppers. production, imports, and exports.

b. For 1930 and 1935, population figures are based on official Japanese census; for

Sources: Factory Statistics, 1936, pp. 860-62; Annual Returns of the Foreign Trade of Japan, 1928-36.

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3. JAPAN: VALUE OF PRODUCTION, IMPORTS, EXPORTS, AND NET NEW SUPPLY  
OF SOFT AND HARD RUBBER GOODS OF HIGH RUBBER CONTENT<sup>a</sup> IN CURRENT PRICES, 1928-36.  
(in 1,000 yen)

Total	Imports	Exports	Net Exports	Net New Supply	Per Capita <sup>b</sup> New Supply (in yen)
70,470	6,406	23,270	16,864	53,606	.85
76,599	6,434	27,294	20,860	55,739	.88
60,767	4,796	25,422	20,626	40,141	.62
56,105	3,194	18,614	15,420	40,685	.62
65,863	1,470	23,447	21,977	43,906	.66
86,704	866	35,744	34,878	51,826	.77
103,213	994	34,797	33,803	69,415	1.02
119,027	839	34,638	33,779	85,248	1.23
135,288	885	39,820	38,935	96,353	1.37
69,279	5,879	25,329	19,450	49,829	.78
74,538	2,264	27,505	25,341	49,195	.74
127,158	887	37,244	36,357	90,800	1.30

<sup>a</sup> tabi and other shoes with fabric uppers. See Tables 4, 5, 6, and 7 for breakdown of  
are based on official Japanese census; for all other years, estimated by Japan Branch, DRF.

30-62; Annual Returns of the Foreign Trade of Japan, 1928-36; Trade Returns of Korea, 1928-36;  
36.

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Table 3. JAPAN: VALUE OF PRODUCTION, IMPORTS, EXPORTS  
OF SOFT AND HARD RUBBER GOODS OF HIGH RUBBER CONTENT

Year	Production <sup>b</sup>			Imports <sup>b</sup> .....(in 1,000 yen).....	Exports
	Soft	Hard	Total		
1928	36,548	1,423	37,971	4,966	10,874
1929	48,936	1,762	50,698	5,274	19,636
1930	59,564	1,203	60,767	4,796	25,422
1931	48,239	488	48,727	3,758	20,455
1932	55,409	2,344	57,753	1,709	22,545
1933	69,657	3,668	73,325	1,139	21,150
1934	76,720	8,758	85,478	1,080	27,838
1935	95,415	9,707	105,122	773	27,514
1936	80,323	14,829	95,152	776	25,363
Annual Averages:					
1928-30	48,349	1,463	49,812	5,012	18,644
1930-34	61,918	3,292	65,210	2,496	23,482
1935-36	87,869	12,268	100,137	774	26,438

- a. Excludes elastic webbing, rubber-soled tabi, and other shoes with fabric uppers. See Table 2 and exports.
- b. Values in 1930 prices were computed by applying indexes of changes in unit value each year of rubber footwear production; for exports, the index of rubber footwear exports; and for imports, the index of rubber footwear imports. The use of rubber footwear production and export indexes for production and exports is not perfect, but these indexes are the best available. (See Table 10.)
- c. For 1930 and 1935, population figures are based on official Japanese census; for all other years, population figures are based on official Japanese census.

Source: Table 2.



TABLE 19: VALUE OF PRODUCTION, IMPORTS, EXPORTS, AND NET NEW SUPPLY  
OF RUBBER GOODS OF HIGH RUBBER CONTENT<sup>a</sup> IN 1930 PRICES, 1928-36

Total	Imports <sup>b</sup> (in 1,000 yen)	Exports <sup>b</sup>	Net Exports	Net New Supply	Per Capita <sup>c</sup> New Supply (in yen)
7,971	4,966	10,874	5,908	32,063	.51
10,698	5,274	19,636	14,362	36,336	.57
10,767	4,796	25,422	20,626	40,141	.62
8,727	3,758	20,455	16,697	32,030	.49
7,753	1,709	22,545	20,836	36,917	.56
13,325	1,139	21,150	20,011	53,314	.79
15,478	1,080	27,838	26,758	58,720	.86
15,122	773	27,514	26,741	78,381	1.13
15,152	776	25,363	24,587	70,565	1.00
19,812	5,012	18,644	13,632	36,180	.57
15,210	2,496	23,482	20,986	44,224	.66
10,137	774	26,438	25,664	74,473	1.07

and other shoes with fabric uppers. See Tables 4, 5, 6, and 7 for breakdown of production, imports

and indexes of changes in unit value each year for different commodities: for production, the index of rubber footwear exports; and for imports, the index of tire and tube import values. The export indexes for production and exports of all goods of high rubber content is not entirely satisfactory. (See Table 10.)

<sup>a</sup> based on official Japanese census; for all other years, estimated by Japan Branch, DRF.



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Table 4. JAPAN: VALUE OF PRODUCTION, IMPORTS, EXPORTS, AND NET NEW SUPPLY OF TIRES  
(In 1,000 yen)

Year	Production	Imports	Exports to		Other
			Korea <sup>b</sup>	Formosa <sup>b</sup>	
1928	24,975 <sup>a</sup>	4,671	1,900	1,150	5,7
1929	25,753	4,955	2,570	1,410	6,4
1930	19,286	3,831	2,920	2,190	5,1
1931	19,455	2,084	2,630	1,650	3,3
1932	24,080	423	2,680	1,920	4,3
1933	31,827	8	2,590	1,510	8,8
1934	40,588	9	4,440	2,320	9,9
1935	45,883	11	5,790	2,880	9,9
1936	51,067	14	6,970	3,200	9,9
Annual averages:					
1928-30	23,342	4,486	2,463	1,583	5,7
1930-34	27,047	1,271	3,052	1,918	6,4
1935-36	48,475	12	6,380	3,040	9,9

a. For 1928 only, Uyeda, The Small Industries of Japan, p. 187.

b. Estimated as a percentage of the value of exports of automobiles, motorcycles, bicycles, tires and tubes were estimated to constitute 30 percent of the total value of these and 35 percent in the years 1932-36.

Sources: Except where otherwise specified: Factory Statistics, 1936, pp. 860-62.  
Annual Trade Returns of the Foreign Trade of Japan, 1928-36.  
Trade Returns of Korea, 1928-36.  
Trade Returns of Formosa, 1928-36.

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RESTRICTED20IMPORTS, EXPORTS, AND NET NEW SUPPLY OF TIRES AND TUBES IN CURRENT PRICES, 1928-36  
(In 1,000 yen)

	Exports to		Total	Net	Net
Korea <sup>b</sup>	Formosa <sup>b</sup>	Other	Exports	Exports	Supply
1,900	1,150	5,724	8,774	4,103	20,872
2,570	1,410	6,300	10,280	5,325	20,428
2,920	2,190	5,273	10,383	6,552	12,734
2,630	1,650	3,858	8,138	6,054	13,401
2,680	1,920	4,377	8,977	8,554	15,526
2,590	1,510	8,839	12,939	12,931	18,896
4,440	2,320	9,995	16,755	16,746	23,842
5,790	2,880	9,946	18,616	18,605	27,278
6,970	3,200	9,939	20,109	20,095	30,972
2,463	1,583	5,766	9,812	5,326	18,011
3,052	1,918	6,468	11,438	10,167	16,880
6,380	3,040	9,942	19,362	19,350	29,125

of Japan, p. 187.

Exports of automobiles, motorcycles, bicycles, jinrikishas, and their parts and accessories. Estimate 30 percent of the total value of these products in 1928-29, 50 percent in the years 1930-31,

Factory Statistics, 1936, pp. 860-62.

Trade of Japan, 1928-36.

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RESTRICTEDTable 5. JAPAN: VALUE OF PRODUCTION OF TIRES AND TUBES, AC  
(in 1,000 yen)

Year	Airplane	Automobile and Motorcycle		Bicycle and Tires
	Pneumatic Tires	Solid Tires	Tubes	
1928	6,078 <sup>a</sup>	100 <sup>b</sup>	1,000 <sup>c</sup>	14,380 <sup>a</sup>
1929	8,819	102	1,442	11,589
1930	7,116	61	571	8,975
1931	6,640	286	783	9,430
1932	11,068	73	868	9,000
1933	15,303	130	1,588	11,452
1934	18,248	36	1,877	13,942
1935	21,564	259	2,105	15,994
1936	25,511	435	2,533	15,205
Annual averages:				
1928-30	7,338	88	1,007	11,648
1930-34	11,675	117	1,137	10,560
1935-36	23,537	347	2,319	15,599

- a. For 1928 only, Uyeda, The Small Industries of Japan, p. 187.  
b. For 1928 only, estimated from totals given for tires in Uyeda.  
c. For 1928 only, estimated on the basis of trend; it was assumed that totals for tires include tubes. This assumption was made upon examining data in Factory Statistics

Source: Factory Statistics, 1936, except where otherwise specified.

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RESTRICTED21VALUE OF PRODUCTION OF TIRES AND TUBES, ACCORDING TO TYPE, IN CURRENT PRICES, 1928-36  
(in 1,000 yen)

<u>Automobile and Motorcycle</u> <u>Tires and Tubes</u>	<u>Bicycle and Jinrikisha</u> <u>Tires and Tubes</u>	<u>Others</u>	<u>Total</u>	
1920 <sup>b</sup> 1,000 <sup>c</sup>	14,380 <sup>a</sup>	2,500 <sup>c</sup>	917 <sup>b</sup>	24,975
1922 1,442	11,589	2,518	1,283	25,753
1926 571	8,975	1,827	736	19,286
1928 783	9,430	1,576	740	19,455
1930 868	9,000	1,947	1,124	24,080
1932 1,588	11,452	2,611	743	31,827
1934 1,877	13,942	3,489	2,996	40,588
1936 2,105	15,994	4,147	1,814	45,833
1938 2,533	15,205	6,143	1,240	51,067
1940 1,007	11,648	2,282	979	23,342
1942 1,137	10,560	2,290	1,263	27,047
1944 2,319	15,599	5,145	1,527	48,474

Statistics of Japan, p. 187.

as given for tires in Uyeda.

of trend; it was assumed that totals for tires and tubes given in Uyeda in that year did not  
made upon examining data in Factory Statistics.

where otherwise specified.

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Table 6. JAPAN: PRODUCTION, IMPORTS, EXPORTS, AND NET NEW SUPPLY

Year	Physical Quantities (in 1,000 pairs)			Value in Current Prices (in 1,000 yen)		
	Production	Exports <sup>b</sup>	Net New Supply	Production	Exports <sup>b</sup>	Net New Supply
1928	26,143	13,075	13,068	21,306	9,478	11,828
1929	43,767	21,797	21,970	28,797	11,664	17,133
1930	47,437	25,682	21,755	20,443	9,916	10,527
1931	32,405	17,025	15,380	15,929	5,993	9,936
1932	34,418	15,443	18,975	17,353	6,211	11,142
1933	41,571	13,940	27,631	21,879	9,119	12,760
1934	44,689	9,119	35,570	25,103	4,398	20,705
1935	55,178	7,363	47,815	28,974	3,588	25,386
1936	45,068	4,460	40,608	31,791	2,711	29,080
Annual averages:						
1928-30	39,116	20,185	18,931	23,515	10,353	13,162
1930-34	40,104	16,242	23,862	20,141	7,127	13,014
1935-36	50,123	5,911	44,212	30,382	3,149	27,233

- a. Does not include tabi and other shoes with fabric uppers. See Table 7 for production.
- b. Includes exports to Korea but excludes those to Formosa. Exports to Formosa were not their quantity or value.
- c. Values in 1930 prices were computed by applying an index of changes in value per pair current values for each year. (See Table 10.)

Sources: Factory Statistics, 1936; Annual Trade Returns of the Foreign Trade of Japan, 1936.

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RESTRICTEDPRODUCTION, IMPORTS, EXPORTS, AND NET NEW SUPPLY OF RUBBER FOOTWEAR,<sup>a</sup> 1928-36

Supply	Value in Current Prices (in 1,000 yen)			Value in 1930 Prices <sup>c</sup> (in 1,000 yen)		
	Production	Exports <sup>b</sup>	Net New Supply	Production	Exports	Net New Supply
068	21,306	9,478	11,828	11,273	4,429	6,844
,970	28,797	11,664	17,133	18,822	8,391	10,431
,755	20,443	9,916	10,527	20,442	9,916	10,526
,380	15,929	5,993	9,936	13,973	6,586	7,387
,975	17,353	6,211	11,142	14,831	5,972	8,859
7,631	21,879	9,119	12,760	17,934	5,396	12,538
5,570	25,103	4,398	20,705	19,162	3,518	15,644
7,815	28,974	3,588	25,386	23,749	2,848	20,901
0,608	31,791	2,711	29,080	19,384	1,727	17,657
18,931	23,515	10,353	13,162	16,846	7,579	9,267
23,862	20,141	7,127	13,014	17,268	6,278	10,990
14,212	30,382	3,149	27,233	21,566	2,287	19,279

with fabric uppers. See Table 7 for production of tabi.  
 es those to Formosa. Exports to Formosa were not given in sufficient detail to determine  
 by applying an index of changes in value per pair for production and exports to total  
 Table 10.)

Trade Returns of the Foreign Trade of Japan, 1928-36, Trade Returns of Korea, 1928-36.

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Table 7. JAPAN: VALUE OF PRODUCTION OF ALL RUBBER GOODS  
(In 1,000 yen)

	Goods of High Rubber Content							Hard St Batter and
	Soft Rubber Goods							
	Tires and Tubes	Boots and Shoes	For Machinery	Hose, Tubing	Belts and Belting	Toys	Others	
1928	24,975 <sup>d</sup>	21,306	2,392 <sup>b</sup>	1,480 <sup>b</sup>	5,292 <sup>b</sup>	2,518	11,112 <sup>b</sup>	20
1929	25,753	28,797	2,126	1,319	4,693	2,318	9,860	21
1930	19,286	20,443	1,421	1,973	4,577	2,314	9,552	23
1931	19,455	15,929	636	1,747	4,005	3,320	9,899	26
1932	24,080	17,353	1,173	2,192	4,439	5,028	10,564	20
1933	31,827	21,879	1,001	2,989	5,662	5,563	16,051	27
1934	40,538	25,103	492	3,448	7,166	3,543	20,159	61
1935	45,833	28,974	1,133	4,422	8,263	4,619	23,113	53
1936	51,067	31,791	659	5,230	8,750	4,934	29,043	64
Annual averages:								
1928-30	23,338	23,515	1,930	1,591	4,856	2,383	10,175	21
1930-34	27,047	20,141	945	2,470	5,170	3,955	13,247	31
1935-36	48,475	30,382	996	4,826	8,507	4,801	26,080	59

a. Excludes rubber-covered wire and cable.

b. Calculated from the total soft rubber goods production on the basis of 1929 relative

c. Estimated on the basis of trend.

d. See Table 5.

Source: Factory Statistics, 1936.

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JAPAN: VALUE OF PRODUCTION OF ALL RUBBER GOODS<sup>a</sup> IN CURRENT PRICES, 1928-36  
(In 1,000 yen)

High Rubber Content				Hard Rubber Goods		Goods of Low Rubber Content		Total
Rubber Goods				Storage		Rubber-		
Hose, Tubing	Belts and Belting	Toys	Others	Battery Cases and Parts	Others	Elastic Webbing	soleed Tabi	
1,480 <sup>b</sup>	5,292 <sup>b</sup>	2,518	11,112 <sup>b</sup>	200 <sup>c</sup>	1,195	2,152	20,000 <sup>c</sup>	92,622
1,319	4,693	2,318	9,860	212	1,515	3,555	24,507	104,660
1,973	4,577	2,314	9,552	233	970	3,133	10,932	74,834
1,747	4,005	3,320	9,899	264	849	1,573	11,213	68,900
2,192	4,439	5,023	10,564	209	840	2,409	13,249	81,542
2,989	5,662	5,563	16,051	276	1,447	2,875	16,553	108,133
3,448	7,163	3,543	20,159	610	2,105	3,213	15,956	122,393
4,422	8,233	4,619	23,113	537	2,034	3,053	16,356	133,942
5,230	8,750	4,934	29,043	649	2,910	4,030	21,469	160,737
1,591	4,856	2,383	10,175	215	1,227	2,947	13,430	90,707
2,470	5,170	3,955	13,247	318	1,243	2,643	13,532	90,761
4,826	8,507	4,801	26,030	593	2,497	3,544	19,162	149,834

<sup>a</sup>goods production on the basis of 1929 relative values.

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RESTRICTEDTable 8. JAPAN: TOTAL VALUE OF PRODUCTION, IMPORTS  
NET NEW SUPPLY OF ALL RUBBER GOODS,<sup>a</sup> IN CURRENT  
(in 1,000 yen)

Year	Production	Imports	Exports	Net Ex
1928	92,622	6,406	24,577	18,1
1929	104,660	6,434	30,811	24,3
1930	74,834	4,796	27,995	23,1
1931	68,900	3,194	20,183	16,9
1932	81,542	1,470	26,227	24,7
1933	106,133	866	33,304	37,4
1934	122,393	994	40,450	39,4
1935	138,942	889	41,053	40,1
1936	160,787	885	47,133	46,3
Annual averages:				
1928-30	90,707	5,379	27,793	21,9
1930-34	90,761	2,264	30,632	28,3
1935-36	149,864	867	44,120	43,2

- a. Excludes rubber-covered wire and cable; includes goods of both high and low rubber content of production, imports, and exports. Goods of low rubber content include principally Formosa, 1928-36.
- b. For 1930 and 1935, population figures are based on official Japanese census; for all other years, based on official Japanese census.

Sources: Factory Statistics, 1936; Annual Returns of the Foreign Trade of Japan, 1928-36; Formosa, 1928-36.

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1: TOTAL VALUE OF PRODUCTION, IMPORTS, EXPORTS, AND PER CAPITA  
 SUPPLY OF ALL RUBBER GOODS,<sup>a</sup> IN CURRENT PRICES, 1928-36  
 (in 1,000 yen)

	Exports	Net Exports	Net New Supply	Per Capita <sup>b</sup> Net New Supply (in yen)
	24,577	18,171	74,451	1.19
	30,811	24,377	30,283	1.26
	27,995	23,194	51,640	.80
	20,183	16,994	51,906	.79
	26,227	24,757	56,785	.66
	33,304	37,438	68,695	1.02
	40,450	39,458	82,937	1.21
	41,053	40,164	98,778	1.42
	47,133	46,300	114,484	1.63
	27,793	21,914	68,793	1.08
	30,632	28,368	62,393	.94
	44,120	43,233	106,631	1.52

udes goods of both high and low rubber content. See Tables 4, 5, 6, and 7 for breakdown  
 of low rubber content include principally elastic webbing and tabi.  
 sed on official Japanese census; for all other years, estimated in Japan Branch, DRF.

ns of the Foreign Trade of Japan, 1928-36; Trade Returns of Korea, 1928-36; Trade Returns of

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RESTRICTEDTable 9. JAPAN: TOTAL VALUE OF PRODUCTION,  
NET NEW SUPPLY OF ALL RUBBER GOODS<sup>a</sup>  
(in 1,000 yen)

Year	Production <sup>b</sup>	Imports <sup>b</sup>	Exports <sup>b</sup>
1928	49,692	4,966	11,485
1929	69,039	5,274	22,166
1930	71,832	4,796	27,990
1931	59,952	3,758	22,185
1932	71,135	1,709	25,218
1933	89,250	1,139	22,665
1934	100,115	1,080	32,360
1935	121,445	773	32,582
1936	110,700	776	30,056
Annual averages:			
1928-30	64,521	5,012	20,547
1930-34	79,057	2,493	26,084
1935-36	116,072	774	31,319

- a. Excludes rubber-covered wire and cable; includes goods of both high and low production, imports, and exports. Goods of low rubber content include principal production, imports, and exports. Goods of low rubber content include principal production, imports, and exports. Goods of low rubber content include principal production, imports, and exports.
- b. Values in 1930 prices were computed by applying indexes of changes in unit value index of rubber footwear production; for exports, the index of rubber footwear values. The use of rubber footwear production and export indexes for production entirely satisfactory, but these indexes are the best available. (See Table c.)
- c. For 1930 and 1935, population figures are based on official Japanese census;

Source: Table 8.

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IMPORTS, EXPORTS, AND PER CAPITA  
IN 1930 PRICES, 1928-36

Net Exports	Net New Supply	Per Capita <sup>c</sup> Net New Supply (in yen)
6,519	43,173	.69
16,892	52,147	.82
23,194	51,638	.60
18,427	41,525	.64
23,509	47,626	.72
21,526	67,724	1.00
31,280	68,835	1.01
31,829	89,636	1.29
29,280	81,420	1.16
15,535	48,986	.77
23,588	55,469	.83
30,545	85,527	1.22

rubber content. See Tables 4, 5, 6, and 7 for breakdown of  
ipally elastic webbing and tabi.  
also each year for different commodities: for production, the  
ar exports; and for imports, the index of tire and tube import  
tion and exports of all goods of high rubber content is not  
10.)  
for all other years, estimated by Japan Branch, DRF.