

## **Japan's Resource Imports**

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## 1. Introduction

There is a paradox in Japan's external trade. Merchandise exports and imports have been less than 10% of gross domestic product (GDP) in the late 1980s<sup>1</sup> -- the lowest among the group of seven (G7) countries (except for the United States)<sup>2</sup> -- and yet when one turns to individual commodities, one finds Japan's dependence on foreign trade to be the highest among these countries on both the export and import sides. For instance, in 1987, 82% of watches and clocks, 64% of VTRs, and 57% of passenger cars produced in Japan were exported,<sup>3</sup> and 100% of crude petroleum and iron ore and 86% of wheat consumed in Japan were imported.

The paradox arises from the structure of Japan's international trade, that is, from its high dependence on a few major commodities on both the export and import sides. This structure implies that, should, for some reason, Japan's exports and/or imports be severely disrupted, the Japanese economy would be thrown into an economic chaos of formidable magnitude. Such was the case with the first oil shock of 1973-74. As the price of petroleum quadrupled, Japan's trade went into a deficit and its economy was thrown into a heavy recession coupled with a high inflation. On the other hand, when the terms of trade turn in favor of Japan, the economy enjoys a boom with stable prices as in the latest boom which began at the end of 1986. Japan's growth and inflation are quite sensitive to external economic conditions despite its low aggregate dependence on the foreign sector.

Though Japan's dependence on other countries is high for both exports and

imports, this article is limited to a review of Japan's import dependence for resource goods, namely, foods, fuels, and crude materials.<sup>4</sup> The next section of the article reviews the deepening of Japan's dependence on resource imports, section 3 examines the supply side and the demand side of resource imports, and section 4 considers the possibility of structural change of the Japanese economy.

## 2. Japan's dependence on resource imports

The fatal weakness of Japan as an economy is in its poor resource endowments. For instance, it has no reserves of petroleum in its land and the whole of petroleum it consumes has to be imported. In fact, the lack of petroleum, if nothing else, doomed Japan's military pursuits in World War II. The situation became worse after World War II as Japan lost its overseas territories that supplied raw materials. As the economy recovered and started to grow in the 1950s, the need for resources expanded. As exports were limited, it was necessary to place imports under strict government control. Imports of primary goods were given priority in foreign exchange allocation. Imports of nonessential goods such as consumer goods were discouraged. This bias still lingers in Japan's import structure.

As the Japanese economy kept up its growth and Japan's exports became internationally competitive, the balance-of-payments constraint was gradually relaxed and imports were allowed more freedom. As resource imports were liberalized, their share of total resource supplies continued to increase. In the case of farm products, agricultural policy was in a somewhat schizophrenic state. On the one hand, the rapid

growth of the 1960s required a massive relocation of workers from agriculture to industry. To offset the resulting contraction of farm output, it became necessary to increase food imports. On the other hand, the government wanted to protect the economic interest of farmers (who were the staunch supporters of the ruling political party) through income maintenance and price support. For this purpose, the government placed import restrictions on many agricultural products. Agriculture was far more protected in Japan than elsewhere in the world.<sup>5</sup> These restrictions (except for rice) have been gradually relaxed, however.

See Table 1 for changes in the self-sufficiency ratio (the ratio of domestic output to total supplies) for a number of primary goods from 1960 to 1987. A few different patterns of change are observed in the self-sufficiency ratios of agricultural and fishing products. Rice, vegetables, and fish remained highly self-sufficient throughout the period under review. Fruits, meat, and milk and dairy products witnessed a slow decline from full self-sufficiency. Wheat and pulse (including soybeans) were less self-sufficient to begin with and became even less so over time. Exceptions are sugar and oils and fats, whose dependence on imports remained relatively high but fell over time in recent years.

In interpreting data of this table, however, one must take care because a high self-sufficiency ratio may be the result of agricultural protection (as in the case of rice, fruits, meat, and milk and dairy products). Rice remains self-sufficient because of the continuing protection of rice on both production and distribution that was instituted

during World War II for the sake of food security. The need for the control remained after World War II because of the supply shortage. But soon rice production recovered, while rice consumption has been steadily falling.<sup>6</sup> Thus, the need for rice control disappeared a long time ago. Nonetheless, the government still refuses to decontrol rice. The consequence is a persistent overproduction as the official price of rice has been kept high. The true intention of the government is no longer food security but providing special favors to rice farmers who have been staunch supporters of the ruling Liberal-Democratic Party.

The United States is the largest exporter of rice, and among foreign strains of rice the rice produced in the southern U.S. is the closest to sticky Japanese rice. Thus the U.S. wants Japan to open its domestic rice market to American rice but Japan adamantly refuses to comply. Rice has been one of the unresolved trade issues between the U.S. and Japan.<sup>7</sup>

The Engel coefficient (food expenditure divided by total consumption expenditure) has been falling -- from 41.6% in 1960 to 25.5% in 1988. Excluding rice, the fall has been more modest -- from 31.2% to 23.7%. As the standard of living has been rising, the real value of food consumption (other than rice) has been increasing. In this process, Japanese diets have become richer and more Westernized. For instance, the annual consumption of milk doubled from 49 liters in 1960 to 108 liters in 1988 per household.

Westernization of Japanese diets has increased protein intake. But self-

sufficiency has fallen only moderately for meat and milk and dairy products? Though one may be tempted to attribute the fall to the quota restrictions on these products,<sup>8</sup> the fact is that meat is produced at home by feeding grains that are imported. Thus, when one eats domestically produced meat, one is in fact consuming imported feed grains. For that matter, the high degree of self-sufficiency in fish is also illusory because the Japanese fishing fleet must depend on imported petroleum to go on its long-distance fishing expeditions.

As consumers turned from rice to bread, wheat imports rose. Soybeans, the raw material for Japan's daily necessities -- tofu, soy sauce, and miso condiments -- are nowadays imported mostly from the U.S. Japanese soybeans, even though superior in quality, could not compete in price with imported soybeans.

Japan was nearly self-sufficient in lumber in the 1960s, but nearly two-thirds of its lumber was imported in the 1970s and the 1980s -- such as pinewood from the Northwest of the U.S. and lauan wood from the Philippines. Japanese houses are now built with imported lumber.<sup>9</sup>

In terms of fuel calories, as shown by figures for 1987, Japan's primary energy is supplied nearly 80% (in 1987) by coal (18.0%) and petroleum (59.8%). Imports accounted for 89.4% of the coal and 99.7% of the petroleum.<sup>10</sup> Coal was once indigenously supplied but domestic coal mines could not compete with foreign supplies and most of them were phased out. Thus Japan's energy supply is mostly (82% in 1987) imported.

For mineral ores, the story is more or less the same. Iron and copper ores are almost wholly imported. Supplies of lead, zinc, tungsten, and other ores are a little better but they have become increasingly more import-dependent.

Until the first oil shock, Japan grew even more rapidly than other countries and its imports expanded even faster. Thus Japan's resource imports came to command an increasing share of world imports of resource goods as seen in Table 2. Since then, Japan's imports of crude materials and mineral fuels have slowed down. Thus, their shares of world imports reached a peak in 1970 for crude materials (SITC 2+4) and in the mid-1970s for mineral fuels (SITC 3).

At the three-digit SITC level, Japan's shares of world imports of primary goods is often very high. As shown in Table 3, Japan ranked first in 20 SITC three-digit categories, second in 6 categories, and third in 11 categories. Japan's world-market share is extremely high in several categories, commanding more than one-quarter of world imports.<sup>11</sup> Even when Japan is not the top importer, the concentration of imports is so marked that Japan's demand when combined with that of other top importers can exert a profound influence on the world market, as is the case with crude petroleum.<sup>12</sup>

This sort of market domination may give rise to serious international friction when Japan's tastes significantly differ from Western tastes. The best current example of this nature is Japan's imports of African elephant tusks. Ivory has been a commodity in strong demand in Japan for making personal seals, mah jong sets,

personal accessories, and various objects d'art, Even though trade in ivory was illegal in Africa, smuggling went on. Japan ivory imports were legal insofar as they came through a third country. Thus, in 1987, some 130 tons of ivory were legally imported into Japan, mostly via Hong Kong, accounting for about 40% of world ivory output.<sup>13</sup> Ivory is the most flagrant but not the only case of this nature.<sup>14</sup>

### 3. The Supply Side and the Demand Side

Resource imports are both a cause and an effect of macroeconomic activity. They are sensitive to supply shocks and demand shocks. Supply shocks, which originate overseas, became notable in the 1970s, especially during the two oil crises of 1973-74 and 1979-80. They significantly affect the country's growth and inflation. Demand shocks originate in Japan, and influence the economies of materials-supplying countries.

A. The supply side. A supply shock occurs when the supply curve of a commodity shifts abruptly due to natural or artificial causes. There have seldom been absolute restrictions on quantities supplied, however.<sup>15</sup> The oil shock of 1973-74 created havoc in Japan because the Japanese mistook the action of the OPEC for a quantity restriction rather than a sharp price increase. Nonetheless, it is true that the more dependent an economy is on resource imports, the more vulnerable it becomes to an adverse supply shock. When a country depends virtually wholly on imported key materials, it can become an economic hostage of supplying countries. Resource imports then are an Achilles' heel for such a country. For a country to safeguard against such vulnerability, it must prepare for the contingency. There are a number of alternative

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ways to do this.

The first is to produce the material at home regardless of the costs that involves. The best example of this is rice. Rice production continues to be protected in Japan despite its extremely high costs, and the reason for this protection is allegedly food security.

The second alternative is to enter into a long-term contract with a principal supplier. This arrangement, however, is difficult to maintain in a real world where the market price of the commodity tends to fluctuate a great deal.

The third alternative is to invest overseas for resource development. Japan did so in developing petroleum resources in Indonesia and the Middle East. This line of action, however, encounters strong resistance from host countries under resource nationalism. Further, when the host country is politically unstable, the political risk can be considerable.<sup>16</sup> In earlier years through the 1960s, resource development took a lion's share of Japan's overseas direct investment. Since then, its share has been steadily falling.<sup>17</sup>

The fourth alternative is to promote technological innovations toward materials saving at home. When the price of a material, for instance, petroleum, is raised, firms that use that material as an intermediate input would reduce the use of the material under a given technology. This is what economic theory calls the substitution effect. When, however, the price increase is large and is anticipated to be permanent, firms would respond in a more fundamental manner by altering technology itself so as to

decrease their dependence on the material. The same response occurs also among consumers when the material is consumed directly by households. What followed the oil shock of 1973-74 in Japan's efforts at energy conservation is a case in point. Until then, the demand for petroleum remained quite high, as reflected in the shift of power generation from hydraulic to thermal sources, the spread of motorization, and the expansion of petrochemical industries. Then came the oil shock which raised the petroleum price fourfold. It was thus high time that energy conservation should be attempted. In fact, the income elasticity of demand for petroleum fell from 1.44 for the years 1965-73 to 0.53 for the years 1974-88 according to my calculation.<sup>18</sup>

B. The demand side. There are two aspects on the demand side -- cyclical and structural. The cyclical aspect is concerned with the short-term transmission of Japan's business fluctuations to supplier countries. The structural aspect is concerned with long-term imbalances in trade with Japan's trade partners. What follows concentrates on the structural aspect.

The structural imbalances originate in Japan's trade structure of importing raw materials and exporting manufactured goods. Japan's exports are sold more to industrial countries and Japan's imports are purchased more from resource suppliers. Thus, even if merchandise trade is in balance as a whole, Japan's bilateral trade balance tends to be in surplus with industrial countries and in deficit with resource suppliers. This structure makes trade frictions inevitable because frictions are bilateral in nature. When Japan's global trade balance is in a huge surplus as it was in the

1980s, Japan tends to maintain trade surpluses with almost all trade partners. In particular, Japan's bilateral trade surplus has been the largest with the U.S.. While the U.S. remains the largest importer of Japanese goods, its exports to Japan are dominated by primary goods.<sup>19</sup> Since Japan's primary imports have been sluggish, Japan's trade surplus with the U.S. continued to rise through the 1980s despite the high value of the yen in the late 1980s. It is therefore obvious why trade frictions escalated between the U.S. and Japan in the late 1980s.

As Japan's trade surplus expanded globally, a new dimension was added in international tension in the sphere of Japan's overseas investment. As the current-account surplus was invested in foreign assets, Japan became the largest net creditor in the world in the late 1980s while the U.S. became the largest net debtor.

In this scheme, the terms of trade, that is, the relative prices of resources imported, play a key role. As the international prices of resource goods fell substantially in the late 1980s, Japan needed to pay less for imports at any given exchange rate. In a balance-of-payments equilibrium, net exports (exports less imports) are equated to net capital outflows. Imagine that capital flows are insensitive to the exchange rate. Then, when imports become cheaper, the yen has to appreciate in order to reduce net exports to the given level of net capital outflows. The appreciation of the yen makes imports even cheaper (in yen). As the input prices are thus lowered, the upward pressure on export prices is reduced. The reduction in Japan's exports is thereby checked. Trade frictions tend to be exacerbated when primary prices become

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lower. Thus the recent rise in trade frictions, especially with the U.S., can be attributed in large measure to the cheapening of primary goods.

To de-escalate trade frictions, it is essential to alter Japan's trade structure in a fundamental manner, especially bringing in a shift from resource imports to imports of manufactured goods. Would such a shift be possible? We examine this critical issue in the last section.

4. Possibility of structural change. As is well-known, the trade structure is significantly different in Japan from that elsewhere. This feature is made clear in Table 4 which shows the proportion of trade in primary goods (SITC 0-4) in total trade for exports and imports for the G7 countries. Primary goods are almost nil in Japan's exports while the proportion ranges between 10 and 35% in the exports of the other six countries. On the import side, primary goods account for as much as 60% in Japan, far above the proportion found for the other six countries. Not only do manufactured goods constitute a small fraction of Japan's imports but they are also mostly resource-based goods. This lopsided trade structure was not of much international concern while Japan was a small country. Now that Japan is a large country, it matters a good deal.

A basic change is clearly evident in Japan's import structure, marking the first oil crisis as the turning point. The change manifests itself in substantial reductions in the income elasticity of demand for crude materials and for mineral fuels<sup>20</sup> as reported in Table 5. As for the former, it can be explained by a shift from unprocessed to semi-processed products (which are included in manufactured goods in Table 5). This shift,

however, is not likely to have altered Japan's bilateral trade balances with primary-exporting countries because it is they who shift production more toward semi-processed forms. To make a difference in this regard then, it is essential to effect a shift in Japan's imports toward finished manufactured goods.

Table 6 shows changes in the commodity composition of Japan's imports.  $M_1$  covers food, fuels, and crude materials including semi-processed goods such as chemicals, metals, and textiles,  $M_2$  finished manufactured goods, and  $M_3$  goods not elsewhere classified. A significant change came about in the late 1980s.  $M_1$  declined substantially and  $M_2$  increased considerably as a fraction of total imports. The increase in  $M_2$  is particularly notable with respect to consumer goods. The capital goods imported are those that Japan is ill-adapted to produce, and in this respect they are like the crude material and chemicals that Japan has to import. They are complements to home production. Thus, if Japan's imports of finished manufactured goods are to be expanded, they must concentrate on consumer goods.

At the moment, consumer good imports are divided equally between nondurable and durable goods. Two-thirds of imported nondurable consumer goods are textile products, mainly supplied by developing countries. Of durable consumer goods imported into Japan in 1988, 25% were passenger cars, 12% toys and musical instruments, 9% home electronics, and 4% home appliances. Those goods are supplied mostly by industrial countries. The fairly rapid expansion of imports of consumer goods, both durable and nondurable, since 1985 is often alleged to be *prima facie*

evidence that Japan's home markets have finally been made open. This interpretation, however, is false. Japan's import demand is price inelastic in general except for consumer goods. When the terms of trade turned against primary goods, Japan's import bill became smaller (relative to its gross domestic product). As the yen appreciated, imported consumer goods became cheaper; as the demand for them was price elastic,<sup>21</sup> imports of consumer goods did not decline as much as imports of other goods. This is the main reason why imports of consumer goods expanded their share of total imports in the late 1980s. The expansion is thus the result of the price effect rather than the evidence of improved market access.

It is true that the income elasticity of import demand is quite high for both capital goods and consumer goods.<sup>22</sup> Therefore, given enough time, imports of finished manufactured goods will be expanded in relation to domestic output. But the process seems to be quite slow. Efforts to restructure Japan's imports have to be redoubled. There are, however, two serious impediments in this regard.

First, increases in consumer good imports may be unevenly distributed over suppliers. Nondurable consumer goods like textiles are low-class goods originating in developing countries (very often produced by Japanese subsidiaries therein). Durable consumer goods are high-class goods supplied mainly from industrial countries. For the latter, Japanese tastes prefer more elegant European goods than plebeian American goods. The U.S. performs poorly as an exporter of finished consumer goods to Japan.

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Second, insofar as Japan must continue to export manufactured goods, a certain

quantity of imports must be in the form of crude materials or semi-processed goods. Further, foods and petroleum, whether in raw or semi-processed forms, must continue to be imported in a substantial amount. These import requirements impose an upper bound on the quantity of finished manufactured goods Japan will import.

We have seen that Japan's high dependence on resource imports has given rise to international friction as Japan's economic size continues to grow vis-a-vis that of other countries. This dependence is not to disappear even when a structural change is effected. How to integrate Japan into the world's economic community under these circumstances is a challenge not only to Japan but also to the world. The protectionist solution of containing Japan is not a solution as it reduces the world's total economic welfare.

## ENDNOTES

1. In 1988, the ratios were 9.3% for exports (fob) and 6.6% for imports (cif) International Monetary Fund (IMF), International Financial Statistics Yearbook, 1989 (Washington, D.C.: IMF, 1989).
2. In 1988, the ratios for the U.S. were 6.6% (exports) and 9.4% (imports). For the other five countries of the G7, the ratios ranged from 15 to 27% on the export side and from 17 to 24% on the import side (IMF, op. cit.).
3. Based on Management and Coordination Agency, Japan Statistical Yearbook, 1989 (Tokyo: Japan Statistical Association, 1989).
4. For an economic analysis of Japan's exports and imports of manufactured goods, see Kazuo Sato, "Increasing Returns and International Trade: the Case of Japan," Journal of Asian Economics, I (March 1990), pp. 87-114.
5. On tariffs and quotas on agricultural products, see Bela Balassa and Marcus Noland, Japan in the World Economy (Washington, D.C.: The Institute for International Economics, 1988), chapter 3.
6. Annual rice consumption per household fell from 444 kilograms in 1960 to 134 kilograms in 1988 as reported in the Family Income and Expenditure Survey. (Note, however, that the average family size declined from 4.5 to 3.6 persons.) The expenditure on rice fell from 10.4% in 1960 to 1.8% in 1988 of total consumption expenditure of the average urban household.
7. An interesting question is how much the liberalization of rice would contribute to expanding American exports to Japan. In 1988, the retail price of rice was ¥4773 per 10 kilograms in Tokyo and ¥1490 in New York (at ¥130/\$) according to the annual international price survey conducted by the Sumitomo Shoji Co. (See Toyo Keizai, Keizai Tokei Nenkan Economic Statistics Yearbook, 1989, (Tokyo: Toyo Keizai, 1989), p. 407.) The price ratio was 3.2 to 1. If rice trade is liberalized, Japan's rice price would fall to, say, one-third of the present level (assuming no change in the exchange rate; this is an overestimate because the international price of rice would rise under the effect of a demand increase). If rice consumption is price elastic, the quantity of rice consumed would increase. Some American estimates are based on this assumption and therefore predict a sizable increase in Japan's rice consumption and, hence, imports (fourfold according to an estimate quoted in Balassa and Noland, op. cit., p. 51). Rice has been an inferior good in Japan, however, as the real income level rose, rice consumption has fallen. Given the ongoing fundamental change in Japanese dietary habits and the limited capacity of the stomach, the price-induced increase in rice

consumption is likely to be small. In fact, the latest projection by the Japanese Ministry of Agriculture is a 10% decrease in rice consumption in the year 2000 over 1988 (Yomiuri Shimbun, October 14, 1989).

8. Of farm products still on import quotas, beef and citrus are two major items which are scheduled to be liberalized by April 1991. Import quotas are to be replaced by very high tariffs (on beef, 70% in 1991 and on oranges, 40% when they are in season. In 1988, the beef price was 2.5 times as high in Tokyo as in New York and Sydney (in 1987, 60% of beef imports came from Australia and 40% came from the U.S.). Annual beef consumption was 6 kilograms per capita for Japan and 44 kilograms per capita for the U.S. (Balassa and Noland, op. cit., pp. 51-52). A U.S. projection is a twelvefold increase in beef imports. Japan's Ministry of Agriculture, however, predicts a 50% increase in beef consumption in the year 2000 over 1988. This implies sixfold increase in imports assuming that the domestic production of beef is completely phased out. Thus, there is a considerable divergence of opinion on the prospects of Japan's food imports. (On Japan's beef and citrus markets, see Japan Economic Institute, JEI Report, No. 42A, November 4, 1988.)

9. While tariffs on log imports are nil, there are high tariffs on wood products.

10. Based on Japan, Agency of Natural Resources and Energy, General Energy Statistics as published in Management and Coordination Agency, Japan Statistical Yearbook.

11. Here, "world" refers to world market economy. To cite those with a more than 30% share in a descending order, we have the following: 60.2% for SITC 247 (other wood, rough, squared), 40.4% for 246 (pulpwood, chips, woodwaste), 40.1% for 045 (cereals not elsewhere specified, unmilled), 39.0% for 036 (shellfish, fresh, frozen), 36.5% for 281 (iron ore, concentrates), and 31.1% for 322 (coal, lignite, and peat).

12. Japan was Number Two importer with a market share of 15.4%. The U.S., Number One importer, had a share of 23.6%. Together, nearly 40% of world imports of crude petroleum went to these two countries.

13. Yomiuri Shimbun, March 8, 1990. An international ban was placed on ivory trade in October 1989 in accordance with the Convention on International Trade in Endangered Species.

14. Even when trade is perfectly legal, a peculiar taste of the Japanese may have a resource-depleting effect. This is the case of chopsticks. Fresh chopsticks are served in eating places. An estimate is that 21 billion pairs are used a year equivalent to 870,000 trees, and 45% of the wood needed is imported. Another notorious case, though not involving imports, is whale fishing. Whale meat is considered a culinary delicacy in

Japan, and Japan has been putting up a strong resistance to the international restriction on whale fishing.

15. One significant exception is the unilateral soybean embargo which the U.S. imposed on its exports in the spring of 1973. The event is still remembered by the Japanese for its psychological shock effect.

16. The best example is the petrochemical development that the Mitsui group undertook in Iran. After many years of struggle through the Iranian Revolution and then the Iran-Iraq War, it was finally abandoned in 1989.

17. Of Japan's direct investment balance, resources (agriculture, forestry, fisheries, and mining) accounted for 50% in 1960, 40% in 1970, 24% in 1980, and 9% in 1988 according to Ministry of Finance data.

18. The price elasticity that is assumed to be common between the two subperiods is -0.35.

19. In 1988, 44% of U.S. exports to Japan were primary goods (SITC 0-4).

20. Petroleum accounted for two-thirds of mineral fuels imported (1988).

21. This property is verified by breaking up imports of manufactured goods into semi-processed goods, capital goods, and consumer goods. Price elasticities were close to 0 for the former two categories and about -2 for the last category. See Sato, op. cit., Table 14.

22. The income elasticities are 1.8 for capital goods and 1.5 for consumer goods (Sato, op. cit.).

Table 1. Self-sufficiency ratios for selected primary commodities, 1960-88 (percentage)

YEAR	AGRIC. + FISHERIES	OF WHICH								
		RICE	WHEAT	PULSE	VEGS.	FRUITS	MEAT	MILK + DAIRY	FISH + SHELL FISH	SUGAR
1960	93	102	39	44	100	100	93	89	110	13
1965	85	95	28	25	100	90	92	86	109	19
1970	81	104	9	13	99	84	89	89	108	15
1975	78	110	4	9	99	84	76	82	102	16
1980	70	87	10	9	97	81	80	86	104	29
1985	75	107	14	8	95	77	81	85	96	33
1986	74	106	14	8	95	74	78	82	101	34
1987	71	100	14	9	94	75	76	78	97	34
1988	70	100	17	8	91	67	73	76	97	34

  

YEAR	OILS + FATS	LUMBER	CRUDE PETROLEUM	COAL	IRON ORE	COPPER ORE	LEAD ORE	ZINC ORE	TUNGSTEN ORE
1960	42	91	1.9	80	7.9	16	48	59	22
1965	31	75	0.9	79	2.8	16	45	37	28
1970	22	97	0.4	46	0.8	19	32	39	16
1975	23	38	0.3	23	0.4	10	29	35	40
1980	29	33	0.2	21	0.4	6	22	37	35
1985	32	37	0.3	16	0.3	5	20	37	41
1986	32	35	0.4	16	0.3	4	17	34	52
1987	30	31	0.4	--	0.2	3	12	26	18
1988	33	31	0.4	--	0.1	2	10	22	14

Sources: Japan Management and Coordination Agency, Japan Statistical Yearbook, various issues; Toyo Keizai, Keizai Tokei Nenkan, (Economic Statistics Yearbook), various issues.

Note: Self-sufficiency ratios are computed as follows:  
Domestic output ÷ total supply (=domestic output + imports - exports)

Table 2. The ratio of Japan's imports to world imports, SITC 0-4, 1960-88 (percentage)

SITC Year	0+1	of which 041-045	2+4	of which					3
				22	26	27	28	4	
1960	2.3	---	8.7	---	---	---	---	---	4.2
1965	3.9	10.4	10.1	17.6	12.7	5.6	14.0	2.9	7.3
1970	5.1	12.7	15.4	20.0	14.3	7.6	24.7	3.1	11.1
1975	7.1	11.1	13.3	19.6	12.8	6.6	21.2	2.6	14.2
1980	6.3	9.6	14.2	16.7	11.2	6.1	20.5	2.5	13.6
1985	7.6	10.9	12.7	19.4	11.0	7.4	18.6	2.4	13.4
1986	8.2	11.0	12.6	16.6	10.2	7.0	19.1	2.2	11.5
1987	8.7	9.8	13.2	14.7	11.8	7.7	18.9	2.5	12.2
1988	9.6	9.8	12.6	17.9	12.5	8.8	20.2	2.8	13.2

Source: Collected from UN, Monthly Bulletin of Statistics, May 1990 and earlier issues.

Note: "SITC" stands for Standard International Trade Classification

Legend:

0+1	food, beverages, and tobacco
041-045	cereals
2+4	crude materials, oils, and fats
22	oil seeds and oleaginous fruit
26	textile fibers
27	crude fertilizers and minerals
28	metalliferous ores and scrap
4	animal and vegetable oils, fats, and waxes
3	mineral fuels and related materials

**Table 3. Japan as top importer of primary goods (SITC 0-4) at the 3-digit SITC level, 1987**

Japan's Rank	No. of Categories	Japan's Imports Imports of World Market Economy	% of Japan's Primary Imports
		(%)	(%)
1	20	24.3	43.2
2	6	15.1	26.5
3	11	11.0	15.6
Subtotal	37	16.8	86.5
Others	44	5.7	13.5
Total	81	13.4	100.0

Source: UN, International Trade Statistics Yearbook, 1987, (New York: United Nations, 1989), Vol. II

**Table 4. Trade in primary goods (SITC 0-4) as a percentage of total trade (SITC 0-9), 1987**

Country	Exports	Imports
Japan	1.7	56.5
United States	20.7	19.9
Canada	34.4	9.5
West Germany	8.0	22.6
France	21.4	26.1
Italy	10.5	35.6
United Kingdom	20.7	23.3

Source: UN, International Trade Statistics Yearbook, 1987, Vol. I

**Table 5. Income and price elasticities of import demand, 1965-88**

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	<u>Quantum (1974=100)</u>		<u>Income Elasticity</u>		<u>Price Elasticity</u>
	1965	1988	1965-73	1974-88	
Foodstuffs	46	234	1.06	0.92	-0.29
Crude materials <sup>a</sup>	44	114	0.67	0.23	-0.01
Mineral fuels	31	106	1.15	-0.10	-0.12
Manufactured goods <sup>b</sup>	19	318	2.01	2.19	-0.07
GDP	49	179	--	--	--

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Source: The import price and quantum indexes are from Ministry of Finance (Japan), Foreign Trade Statistics; GDP and related data are from Economic Planning Agency (Japan), Annual Report on National Accounts.

<sup>a</sup> Excluding semi-processed goods.

<sup>b</sup> Including semi-processed goods.

**Table 6. Composition of Japan's merchandise imports, by end use, 1965-88, percent**

Year	M <sub>1</sub>	of which			M <sub>2</sub>	of which			M <sub>3</sub>
		1	2	3		4	5	6	
1965	88.9	21.5	47.5	19.9	10.7	8.8	0.6	1.3	0.4
1970	84.5	16.1	47.7	20.7	14.8	11.6	1.3	1.9	0.7
1975	89.1	17.1	27.7	44.3	10.1	6.6	1.7	1.9	0.7
1980	88.6	11.5	27.3	49.8	10.8	6.5	1.9	1.7	1.3
1985	83.1	13.1	26.9	43.1	13.8	8.9	2.6	2.3	3.1
1986	75.2	15.8	29.5	29.9	17.8	10.5	3.7	3.6	7.0
1987	74.5	15.4	32.8	26.3	21.4	10.9	5.6	5.2	4.1
1988	72.1	16.1	35.6	20.4	23.0	11.9	5.7	5.4	4.9

Source: Ministry of Finance (Japan), Foreign Trade Statistics, various issues.

Legend:

- M<sub>1</sub> food, fuels, and crude materials
- (1) food and other direct consumer goods
- (2) crude materials other than fuels (crude materials, chemicals, metals, and textile materials)
- (3) mineral fuels
- M<sub>2</sub> finished industrial goods
- (4) capital goods
- (5) nondurable consumer goods
- (6) durable consumer goods
- M<sub>3</sub> not elsewhere classified