

The Fallacy of Trade Ratios

By Satoshi Kuwahara

Pointing to the low ratio of manufactures imports or the low intra-industry trade index, some people have contended that this proves the Japanese market is closed. However, this argument does not stand up to economic scrutiny. A low ratio of manufactures imports is not in itself proof of a closed market. Rather, the Japanese and American ratios are different because Japan and the United States have different trade structures and different trade dependencies.

The Japanese ratio is low because of the fact that Japan is highly dependent on overseas sources of food and energy resources. Rephrased, Japan's intra-industry trade index is low because its economy is structured so as to import food and other resources and to export manufactured goods, especially machinery and electronics. Even so, the Japanese industrial structure has changed radically over the last two decades and there has been a sharp increase in intra-industry trade, including more imports of manufactures, with the yen's appreciation.

Savings and investment

The United States and some other industrial countries have been vociferously complaining about the Japanese trade surplus for years now. Even though it has now finally been realized that the current account imbalance is a reflection of savings and investment differentials, there are still some people who argue that Japan is running a massive surplus because its markets are closed.

Complementing this argument, others have recently pointed to the low ratio of manufactures to total imports and the low index of intra-industry trade, and said that these are proof that the Japanese market is closed. Massachusetts Institute of Technology (MIT) Professor Rudiger Dornbusch, for example, has contended that the low ratio of manufactures imports to GDP and the low index of intra-

industry trade are clear manifestations of a closed Japanese market.

Yet these arguments are neither sound economics nor even useful issues in discussing the shape of the Japan-U.S. relationship in the years ahead. In fact, in that such simplistic arguments so readily strike a sympathetic chord among those who want to say that the Japanese market is closed, they may even be a hindrance to efforts for smoother cooperation between Japan and the United States.

Obviously, the manufactures imports ratio is the ratio of manufactures imports to a country's total imports—manufactures typically being defined as sections 5 through 9 in the Standard International Trade Classification (see Table 2).

Table 1 gives the manufactures imports ratios for some of the leading industrial countries over the last three decades. For 1990, Japan had a manufactures imports ratio of 50.3%, much less than the U.S. or EC figures. Yet even the United States' manufactures imports ratio was under 60% in the years before 1964 and from 1974 to 1981. Who would claim that the U.S. market was closed in these years?

Although the United States manufactures imports ratio is high now, there are, if anything, more trade restrictions in

place now than there were before. Not only does the U.S. market restrict access for steel, machine tools and a wide range of other products, the use and abuse of antidumping regulations also works as a de facto trade barrier.

Because a country's manufactures imports ratio so clearly depends on its domestic industrial structure and what it does or does not have to import, it is incredible that a low manufactures imports ratio should be taken as indicative of a closed market.

Manufactures are manufactured items as opposed to primary commodities, so that the manufactures imports ratio is derived by subtracting primary commodities from the country's total imports. The manufactures imports ratio is the inverse of the primary commodities imports ratio. Thus a country that is able to produce and procure large volumes of primary commodities domestically and does not have to import these goods will inevitably have a low primary commodities imports ratio and a high manufactures imports ratio.

Conversely, it is impossible to expect a country (Japan) that is only 48% self-sufficient in foodstuffs (1989) and only 13% self-sufficient in energy resources (1990)

Table 1 Manufactured Goods as Percentage of Total Imports

(%)

	Japan	United States	EC	EC (excluding intra-EC trade)
1960	22.1	45.9	46.3	34.5
1965	22.7	56	53.8	38.7
1970	30.3	68	61.6	46.8
1975	20.3	55.8	56	41.2
1980	22.8	56.8	58.2	43.5
1985	31	76.5	61	48.6
1990	50.3	78.5	75.3	—

Source: OECD statistics

Table 2 Intra-industry Trade Indices

SITC section	Description	Japan				United States				Germany				EC			
		1970	1981	1984	1989	1970	1981	1984	1989	1970	1981	1984	1989	1970	1981	1984	1989
0	Food and live animals chiefly for food	36.7	19	15.6	10.2	25.4	32.7	29.6	46.8	33.7	57.2	15.2	66.2	45.1	51.9	56.9	52
1	Beverages and tobacco	29.3	33	30.4	9.3	19.4	29.8	26.4	26.2	42.8	74	85.9	81.7	62.6	42.8	29.1	32.9
2	Inedible raw materials except fuels	9.4	13.5	13.2	11.6	73.4	60.7	67.7	76.4	35.9	46.5	48.5	53.8	24	32.2	30.9	34.5
3	Mineral fuels	2.4	1.6	1.6	4.3	24.3	9.4	14.4	18	27.8	23.7	23.8	26.2	35.2	29.7	28.5	31.3
4	Animal and vegetable oils and fats	49.4	46.8	42.7	36.3	48.9	4.8	54.5	73.5	74.1	82.7	83.3	90.8	28.7	57.7	78.6	88.1
5	Chemicals and related products	61.8	75.1	72.4	75.1	54.1	59.5	77.3	74.4	62.7	71.4	71.6	72.6	64.2	62.4	63.6	70.7
6	Manufactured goods classified chiefly by material	28.1	31	38.6	56.8	75	68	48.4	59	77.1	82.6	83.5	85	59.3	65.2	66.6	75.7
7	Machinery and transport equipment	42.8	17.2	16.6	25.3	76.9	64.6	68.2	72.7	52.4	57.5	59	62.9	56	59.4	62.5	79
8	Miscellaneous manufactured articles	39.4	45.3	46.5	53.9	55.6	55.3	37.6	49	64.3	71.1	69.5	71.5	70.9	78.5	76.8	84.6
9	Others	74.3	90	81	73.1	92.9	97.7	87.6	62.2	76.7	96	94.4	69.2	87.7	91.6	77.3	90.8
	Total	29.9	20.1	21.9	32.2	63.1	50.3	52.8	61.2	56.4	61.1	63	66.9	52.1	54	55.9	67.4

Note: Figures are weighted averages under the double-digit SITC division (section 9 being the single-digit division). Although there have been some changes in the composition of section 7, these do not materially affect the results.

Source: OECD customs statistics

to have the same manufactures imports ratio as a country (the United States) that is 127% self-sufficient in foodstuffs and 84% self-sufficient in energy resources. With different domestic resource capabilities, the two countries naturally have different trade structures.

At the risk of sounding facetious, if Japan's low manufactures imports ratio is proof that the Japanese market is closed to manufactures, what does the low ratio of primary commodity imports to total U.S. imports say about the U.S. market for primary commodities? Is it extremely closed? There are few people who would argue that it is. Rather, it is acknowledged that the United States has a comparative advantage in agricultural products and other primary commodities.

Intra-industry trade

The intra-industry trade figure is a measure of the two-way trade within the same industrial classification. For example, if Japanese import U.S. personal computers and export Japanese laptops to the United States, this trade is intra-industry trade. Such intra-industry trade

is particularly prevalent among the leading industrial countries.

There are a number of reasons for the existence of such intra-industry trade, among them the idea of advantages of scale and the fact that different products appeal to different consumers. As national incomes rise and consumers seek a wider variety of goods and services, the need develops for flexible manufacturing of small lots of greater variety. Yet manufacturing the wide range of products to serve all of these niche markets means foregoing the advantages of scale.

In contrast, engaging in intra-industry trade makes it possible to meet this broad demand for a wide diversity of products in all of the countries concerned. It means that each manufacturer can attain the advantages of scale and that production can be more efficient. As a result, there is two-way trade in highly differentiated products even among countries where the factors of production are similar.

Given the traditional economies-of-scale argument, it is generally assumed that there will be more intra-industry trade the higher a country's national income is, and there are thus some U.S.

economists who point to the fact that Japan's intra-industry trade index is lower than those for the other leading industrial countries and who then say that this is *prima facie* evidence that the Japanese market is closed. Specifically, these economists argue that the low Japanese intra-industry trade index in automobile parts means that the Japanese auto-parts market is closed to imports.

Yet they are less than convincing. The intra-industry trade index for a given industry is usually calculated as:

$$\text{Intra-industry trade index for a given industry} = \left\{ 1 - \frac{|\text{Exports} - \text{Imports}|}{(\text{Exports} + \text{Imports})} \right\} \times 100$$

If a country imports and exports roughly equal amounts of the product, the intra-industry trade index is high; and if it is mainly one-way trade, the index is low. Because the numerator on the right-hand side is the absolute value of exports minus the absolute value of imports, the index is always a positive number. Whether a country imports far more than it exports of a given product or whether the reverse is true, the intra-industry

trade index will be a positive number.

What would it mean if a country's intra-industry trade index were nearly zero for a given industry? From this alone, we could not tell whether the country's market was open or closed. We would not know if the industry was running a trade surplus or a trade deficit. Just as there would be the possibility that the country was importing a lot because its market was very open and its industry internationally uncompetitive, it would also be possible that the country was imposing harsh import restrictions to protect an internationally uncompetitive domestic industry. In fact, it would even be possible that the domestic industry was very competitive internationally and was able to produce a wide range of differentiated products, in which case it might have massive exports and very few imports. In this case, too, the domestic market could be either open or closed.

There are a number of industries in Japan with low intra-industry trade indices. In aviation equipment, for example, the

index is nearly zero. Yet it would be wrong to conclude from this that the Japanese market for aviation equipment is closed. Rather, Japan is a major importer of aircraft and aircraft parts.

What of automobile parts? Again, the low intra-industry trade index alone is insufficient demonstration that the market is closed. Vis-à-vis Germany, the Japanese intra-industry trade index in automobile parts is a very high 82. This has happened because Japan imports slightly more automobile parts from Germany than it exports to Germany.

But because Japanese exports to the U.S. are far greater than imports from the U.S., the intra-industry trade index in automobile parts with the United States is only 8. One would have to go through considerable contortions to say that these numbers prove that the Japanese auto-parts market is open to Germany yet closed to the United States.

Taking this one step further, the Japanese intra-industry trade index in equipment and machinery was about the same

as Germany's before the oil crises. If the Japanese market was not closed at that time, how can it be more closed now after tariff rates have been slashed, standards internationally harmonized, and certification procedures dramatically simplified in the years since then?

Need for historical perspective

As mentioned above, Japan's industrial structure is one of importing foods and other resources and exporting manufactured goods. This structure leads to low intra-industry trade indices in foodstuffs and animal and vegetable oils where imports far outstrip exports and to low intra-industry trade indices in transport and other machinery where exports outpace imports, and these in turn pull down the overall Japanese intra-industry trade index (Table 2) and show up in the low ratio of manufactures imports to total imports.

Burned by the two oil crises, Japanese industry moved determinedly to shift its manufacturing to electronics and other non-energy-sensitive industries in the 1970s, and the increase in exports of these manufactures combined with the increase in imports of primary commodities as commodity prices soared to push the overall Japanese intra-industry trade index down.

Since then, with the rapid decline in primary commodity prices and the import expansion induced by the yen's appreciation, the ratio of manufactures to total imports and the intra-industry trade index have both gone up. This historical perspective on the Japanese trade structure is needed in any analysis of the Japanese intra-industry trade index. Once this perspective is there, it will be clear that the ratio of manufactures to total imports and the intra-industry trade index cannot support arguments that the Japanese market is closed.

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Photo: Yomiuri Shimbun

A GM car displayed in the lobby of Narita airport in special consideration of the visit of President Bush, who was accompanied by leading U.S. businessmen including the bosses of the "Big Three" automakers. Japan's low intra-industry trade index for trade in automobile parts with the U.S. does not necessarily mean the market is closed.



Photo: Nihon Keizai Shimbun

Japan's industrial structure historically is one of importing foods and other resources and exporting manufactured goods.