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## INTERNATIONAL TRADE

# The International Competitiveness of Europe, the USA and Japan

by Dietmar Keller, Hamburg\*

**The growing importance of Japan on the world market has brought with it changes in the international division of labour and a shift in the focus of the expansion in world trade away from the EC and the USA. What factors determine the shares of the EC, the USA and Japan in international trade? How dependent are these three economic powers on the world market? What conclusions can be drawn regarding their relative competitive strength?**

The development of the world economy is determined primarily by economic forces in three main regions: Europe, North America and South East Asia including Japan; these in turn are dominated by their respective leading economies: Europe by the members of the EC, North America by the USA and the South East Asian region by Japan.

These leading countries' significance for the world economy is frequently measured by their share in world trade. However, just as the leading countries help shape the world economy, they are also dependent upon it. This dependence can be shown in terms of a country's intensity of foreign trade, i.e. the ratio of exports and imports to gross domestic product.

Both an individual economy's influence on the world economy and its dependence on it will vary over time. Both are, in particular, determined by the economy's competitiveness, i.e. its ability to make use of the productivity advantages of the international division of labour. If the economy is highly competitive this will show up in its increasing integration into the world economy, in rises in both its share of world trade and its foreign trade intensity.

Nevertheless, it should be noted that any economy's share of world trade or its foreign trade intensity are not simply a function of its competitive strength, but also of its geographical situation, its natural resource endowment, history and level of development. In the following we examine which factors determine the respective economies' established places in the international division of labour and hence also the level of, and trend in, their share of world trade and foreign trade intensities. We also ask what conclusions can be

drawn for the competitive strengths of the EC, the USA and Japan.

An examination of the share of world trade taken up by exports from the leading economies shows that the highest levels were achieved by the EC, but that its share has been slipping, particularly in Japan's favour (cf. Table 1). Can one conclude from these figures that, although the EC is dominant in world trade, it has been losing in competitiveness compared to the USA and Japan and has thus also been losing its influence over the world economy?

A look at foreign trade intensities shows that the EC's export and import ratios are not only the highest, but have also increased more markedly than those of the USA and Japan. Does this imply that the EC has made greater use of the advantages of the international division of labour than the USA and Japan, and thus made itself more dependent upon the world economy?

Firstly, it must be noted that the EC's overall export figures include trade between individual community members. A number of factors (increased integration within the EC, the members' generally similar level of development, the customs union, relatively small physical distances) have brought about a situation where the EC has gradually become one large domestic market. Thus part of the reason for the EC's large share of world trade and its members' high foreign trade intensities is that a proportion of business is classed as foreign trade in Europe whereas the same business in the USA and Japan would be lost amid other domestic transactions. It therefore seems appropriate to also treat intra-EC trade flows as domestic transactions – equivalent to trade between states in the USA – and to omit them from aggregations of EC exports and imports.

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**Table 1**  
**Involvement of the EC, USA and Japan**  
**in Foreign Trade**

	1966	1972	1981
Exports in % of world trade			
EC	38.4	40.9	33.9
USA	17.2	14.0	14.1
Japan	5.5	7.8	8.9
excluding trade between EC members			
EC	25.6	25.4	21.2
USA	20.8	17.7	16.8
Japan	6.7	9.9	10.1
Exports and imports in % of gross domestic product			
EC			
Exports (incl. intra-EC trade)	16.1	18.6	26.9
Imports (incl. intra-EC trade)	16.5	18.2	26.7
Exports (excl. intra-EC trade)	8.9	9.1	13.6
Imports (excl. intra-EC trade)	9.3	8.8	14.4
USA			
Exports	4.3	4.6	8.7
Imports	3.4	4.8	9.3
Japan			
Exports	9.9	10.0	14.0
Imports	9.0	7.8	12.5

Sources: HWWA World Trade Matrix; OECD.

The above adjustment almost halves the EC's figures for its share of world trade and its foreign trade intensity. This would imply that its integration into the world economy is in reality much less than is generally assumed. The EC does indeed still have a greater share of world trade than the USA and Japan, but its foreign trade intensity is barely above Japan's while the USA's intensity, instead of being less than the EC's by two thirds, actually lags by only one third.

Yet even when intra-EC trade is eliminated from the statistics, the shares of world trade and foreign trade intensities are still only suitable to a limited extent for assessing a country's significance for the world economy and vice versa. Another reason for an economy to be highly involved in foreign trade can be its close geographical proximity to other trading partners with a similar level of development. This is a circumstance from which the EC benefits, having close economic relations with a whole series of non-member countries. Japan, being a group of islands, is without immediate neighbours, and the only neighbour with which the USA has an intensive trading relationship is Canada.

Another factor influencing the level of, and changes in, any country's share of world trade and its foreign trade intensity is its dependence on imported raw materials. A country poorly endowed with raw materials of its own is compelled to import them, and to pay for this it must raise the necessary funds via exports. Thus, in a poorly endowed country increased expenditure on raw

materials leads to an increase in foreign trade, whereas in a richly endowed country it produces an increase in domestic economic activity. The rise in the value of exports from the poorly endowed country cannot be attributed to improved competitiveness if it results from increases in the cost of raw materials rather than from advances in productivity. An example of such an advance might be for a country to move factors of production out of mining and transfer them to the industrial sector in order to increase its specialisation on the production of industrial goods in which it has a comparative advantage over other countries.

If the three leading industrial centres are compared, Japan shows the highest dependence on raw materials imports (see Table 2). In 1981, raw materials imports represented 5.6 % of Japan's gross domestic product. In the same year, the proportion in the EC was 4.7 % and in the USA 2.4 %. These figures clearly reflect the limited availability of natural resources, particularly energy resources, within the Japanese economy.

Undoubtedly, the great importance of raw materials imports is a part of the explanation for Japan's level of involvement in foreign trade. However, it is hardly a sufficient explanation for the rise in Japan's overall share of world trade. For although as a result of the two oil price shocks in the 1970s the share of raw materials imports in Japan's total imports has shown a marked increase since 1972, the share in the EC and in the USA has risen almost equally sharply during the same time period. Moreover, the relative importance of agricultural produce in Japan's imports has declined more markedly than it has in the EC or in the USA. This suggests that reasons other than increasing dependence on raw materials are responsible for the rise in Japan's share of world trade.

As well as geographical situation and dependence on raw materials a third determinant of a country's share in world trade and its foreign trade intensity is its international competitive strength. The definition of competitiveness applied here takes account of the fact that foreign trade is conducted with the intention of earning income. A country can therefore be described as competitive if it is especially successful in deriving income gains by participating in foreign trade. The source of these gains is the ability of one country to show greater productivity than its competitors, and the origin of the superior productivity lies in differences between countries' levels of development. To illustrate, industrialised countries are relatively better endowed with the factor of production technical knowledge and qualified labour (human capital), whereas the developing countries have a greater endowment of

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unskilled labour. This means the industrialised countries derive advantages from specialising in exporting high quality industrial products involving the input of a large amount of know-how and qualified labour.

The gains from higher productivity will be all the greater if specialisation allows the use of the advantages of mass production methods (economies of scale). An acknowledged characteristic of trade between countries with different levels of development is inter-industrial specialisation, i.e. the goods exchanged originate from different branches of industry. In cases where industrialised and developing countries exchange goods from the same branch of industry, the developing country generally supplies standard products and the industrialised country high quality products.

When, on the other hand, goods are traded between industrialised countries with little significant difference between their factor endowments, the main hallmarks are intra-industrial specialisation and product differentiation. Exports and imports do not differ greatly in the branches of industry they represent. In this

instance, productivity advantages are derived from the exploitation of economies of scale.

Whether its integration into the world economy is largely intra-industrial or inter-industrial is by no means a matter of indifference to an industrialised country. The prime source of welfare gains is inter-industrial specialisation. When a country only needs to produce those goods which are the most cost-effective for it in the light of its factor endowment and with which economies of scale can also be achieved, this inter-industrial specialisation produces substantial advances in productivity and real income gains for all the trading countries involved.

In the case of intra-industrial trade, however, productivity is essentially only increased due to the advantages of mass production. One must presume that these productivity gains due to mass production advantages are not as high as those attributable to differences in factor endowments. This applies all the more as a marked product differentiation leads to a lower unit volume per production run, meaning that the advantages of mass production can no longer be realised to their full extent.

**Table 2**  
**EC, US and Japanese Trade Links with Industrialised and Developing Countries**

	Non-manufactured goods			Manufactured goods		
	Total	Raw materials	Agricultural products	Total	Industrial goods imported from developing countries	industrialised countries
	Ratio of imports to gross domestic product (in %)					
EC						
1966	3.94	1.60	2.02	5.38	1.60	3.32
1972	3.39	1.87	1.29	5.41	1.43	3.53
1981	6.08	4.65	1.12	8.32	2.29	5.31
USA						
1966	0.95	0.30	0.38	2.46	0.57	1.86
1972	0.99	0.33	0.30	3.81	0.83	2.96
1981	3.14	2.44	0.32	6.16	1.94	4.10
Japan						
1966	5.35	2.43	2.87	3.65	1.00	2.33
1972	4.34	2.45	1.79	3.46	1.04	2.22
1981	7.25	5.63	1.50	5.25	2.26	2.66
	Ratio of exports to gross domestic product (in %)					
EC						
1966	0.65	0.06	0.20	8.25	3.31	4.37
1972	0.61	0.23	1.73	8.49	3.26	4.55
1981	1.36	0.48	0.29	12.24	6.04	5.39
USA						
1966	1.10	0.13	0.75	3.20	1.21	1.98
1972	0.95	0.13	0.65	3.65	1.15	2.48
1981	2.21	0.35	1.04	6.49	2.49	3.90
Japan						
1966	0.55	0.01	0.13	9.36	4.64	4.02
1972	0.42	0.01	0.08	9.58	4.29	4.73
1981	0.24	0.04	0.04	13.76	7.55	6.15

Sources: HWWA World Trade Matrix; OECD.

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In order to quantify the current levels of, and trends in, the intensity of the division of labour in the industrial goods market both among the three industrial centres and between developing and industrialised countries, foreign trade generated by differences in natural resource endowments must first be eliminated. As all three centres nowadays need a proportion of their industrial exports to pay for their net imports of natural resources, the intensity of the division of labour for industrial products is most simply determined with reference to their imports. On this basis, the EC, where imports of industrial goods are equivalent to 8.3 % of gross domestic product, not only has the highest intensity, but also the one which has risen fastest in recent years. The USA occupies second place with 6.2 % followed by Japan with only 5.3 % (see Table 2).

Looking at the division of labour with developing countries, this always has been at a rather higher level in the EC than in the other two centres, even though the latter are geographically close to developing countries whose economies have a relatively large output. In more recent times, the part played by imports of industrial products from the developing world has largely evened out in the three major centres. Whilst the clear increase in import intensities indicates an enhanced division of labour, the main determinant of export intensities is the current levels and trends in imports of natural resources. Overall, then, one can conclude that the degree of division of labour between

the developing countries and the three centres in the industrial products field is relatively uniform, and hence that the productivity advantages of the division of labour are utilised to a similar extent. The fact that the three centres are nevertheless of differing significance to developing countries as markets for, and suppliers of, industrial products is a function partly of the different sizes of their economies and partly of their imports of natural resources.

The more telling differences lie in the extent and development of the division of labour among the industrialised countries. Measured, again, in terms of the ratio of imports to gross domestic product this aspect of the division of labour is most pronounced in the EC, with the USA fairly close behind. Both of these centres import more than twice as much from other industrialised nations as they do from developing countries. Japan, on the other hand, makes little use of the division of labour among industrialised countries by way of importing industrial products. Nor has the importance of such imports into Japan risen to any great extent: they are little more than those from developing countries. However, a look at integration into world trade in terms of exports presents a different picture. Not only did Japan's exports expand at the highest rate, it has also displaced the EC from its leading position. Although the EC's export intensity remains well above that of the USA, there has nevertheless been a considerable narrowing of the gap.

**Table 3**  
**Classes of Goods Traded by the EC, USA and Japan<sup>1</sup>**

	Trade with industrialised countries				Trade with developing countries			
	1966		1981		1966		1981	
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
<b>EC</b>								
Primary products	14.1	16.4	13.8	13.8	11.4	5.7	12.6	6.2
Capital goods and consumer durables	22.6	10.8	16.9	16.2	18.8	0.3	23.7	2.7
Consumer goods	8.8	3.9	6.1	4.6	4.3	3.7	4.2	4.3
Foodstuffs	3.6	4.6	2.7	2.3	2.7	7.5	3.9	2.7
<b>USA</b>								
Primary products	13.7	18.2	12.6	14.5	6.9	7.8	7.0	7.7
Capital goods and consumer durables	24.9	21.3	25.8	23.3	16.3	0.5	16.5	5.1
Consumer goods	3.9	9.6	3.5	3.8	1.8	3.8	2.5	5.8
Foodstuffs	3.6	5.7	2.9	2.5	3.1	4.7	2.7	2.4
<b>Japan</b>								
Primary products	9.3	11.4	7.1	9.8	13.3	6.0	12.4	12.7
Capital goods and consumer durables	16.9	8.5	33.5	6.4	21.6	0.3	30.9	1.0
Consumer goods	12.4	2.1	3.1	1.9	11.1	0.9	4.0	2.3
Foodstuffs	2.1	3.9	0.3	3.2	0.9	3.9	0.8	2.1

<sup>1</sup> Percentage share of total exports/imports.  
Source: HWWA World Trade Matrix.

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One particular reason for the discrepancies between the three centres is the EC's growing trade deficit with Japan. It would not have arisen if the EC had been able to gain a similar hold in the Japanese market to the one Japan has established in Europe. Had this been the case, trends in both export and import intensities would have been largely parallel in the three centres, and the intensification of the division of labour among industrialised countries would have been broadly equivalent to the changes vis-à-vis the developing countries. The growing deficit in EC-Japanese trade is a result of Japan's great competitive strength. Though this meant it was successful in marketing its products, Japan did not derive any matching benefit in the form of cheap goods supplied by the EC. Conversely, the EC was able to take advantage of attractively priced goods from Japan, but paid the price for this income advantage with a reduction of its own sales. This imbalance meant that the intensified division of labour between industrialised countries yielded less stimulus to the world economy and a lower gain in real incomes than might otherwise have been the case.

Trends in the division of labour both among the industrialised countries and between industrialised and developing countries become more clearly apparent on examination of export and import structures where different types of goods are concerned (see Table 3). A prominent feature is that the product structure of Japan's exports to industrialised countries differs

substantially from the structure of its imports from them: it supplies far more capital goods and consumer durables than it receives. By way of contrast, the EC's and USA's export and import structures in industrialised country trade are very similar to one another. This suggests that EC and US trade with other industrialised nations is predominantly intra-industrial, whereas Japan's tends to be inter-industrial.

In their trade with developing countries, all three centres make use of their productivity advantages in the production of capital goods and consumer durables while the developing countries do the same by producing semi-finished goods and other consumer goods. Again, this tendency is more marked in Japan's case than it is for the other two industrial centres.

The greater degree of inter-industrial specialisation by Japan may serve to explain why it continues to make faster progress in productivity than the USA or the EC. The cause of this does not lie in any difference between factor endowments. Rather, it is that Japanese companies apply themselves with more determination than others to the task of capturing market shares and utilising the benefits of mass production.

The division of goods into four categories does not allow us to take sufficient account of possible differences in the intensity of technology inherent in the goods being traded. A product can be regarded as technology-intensive if a large amount of qualified labour (human capital) and technical know-how is

**Table 4**  
**Trade in Technology-intensive Industrial Goods as a Proportion of Total Exports/Imports**

	Exports				Imports			
	Technology-intensive goods	High technology	Advanced technology	Low technology	Technology-intensive goods	High technology	Advanced technology	Low technology
Developing countries								
EC								
1966	4.1	1.7	2.4	33.1	0.4	0.3	0.1	16.8
1981	5.6	2.5	3.1	38.8	1.9	1.3	0.6	14.0
USA								
1966	4.1	2.3	1.8	24.0	0.5	0.3	0.2	16.3
1981	6.8	4.8	2.0	21.8	2.8	1.3	1.5	18.1
Japan								
1966	4.6	0.4	4.2	42.3	0.0	0.0	0.0	11.1
1981	5.1	1.3	4.8	43.0	0.7	0.4	0.3	17.4
Industrialised countries								
EC								
1966	5.5	2.2	3.3	43.6	4.2	2.2	2.0	31.5
1981	4.9	2.3	2.6	34.7	6.5	3.9	2.6	30.4
USA								
1966	8.5	4.7	3.8	37.5	5.4	2.1	3.3	49.4
1981	10.9	8.2	2.7	33.8	5.6	2.7	2.9	38.5
Japan								
1966	6.1	0.8	5.3	34.5	4.0	2.6	1.4	21.9
1981	6.0	2.0	6.0	38.0	3.7	2.7	1.0	17.6

Source: HWWA World Trade Matrix.

involved in manufacturing it. The highly developed economies have specialisation advantages in the manufacture of technology-intensive products not only with regard to trade with less developed countries. This is a field where companies in one country can also develop a competitive edge over those in other highly developed countries.

When goods are broken down into four groups as mentioned above, the statistics do take account of technology intensity in as far as there is a natural tendency for it to differ between individual categories. One would normally expect, for example, that capital goods and consumer durables involve more technology in their production than consumer goods, foodstuffs and raw materials. However, what the figures do not reflect is the variation in technology intensity which can occur within a given category. This can lead to trade flows being classed as intra-industrial because they take place within one category, whereas in truth they are inter-industrial if we apply the criterion of technology intensity. In the investigation described below, traded goods were classified according to the following three groups: low technology, advanced technology and high technology.<sup>1</sup>

If export and import structures are analysed in terms of these technology categories, the USA proves to have been most successful in exploiting the advantages of specialisation in its trade with developing countries. It has concentrated more strongly than the EC and Japan on technology-intensive products in its exports to the developing countries, and imported a relatively greater amount of low technology goods from them (cf. Table 4). It is striking that high technology goods predominate in the USA's exports to the developing countries whereas the EC and Japan supply primarily advanced technology. If anything, the USA's advantages from specialisation in its developing country trade have grown still stronger in the period under review. On the export side the proportion of technology items increased and on the import side the significance of low technology goods from developing countries grew.

In each of the three industrial centres' trade with industrialised countries the distinction between export and import structures is less strong than it is in trade with the developing countries, because in this instance there is a much more strongly pronounced intra-industrial dimension. Even so, there are clear differences of degree between the three centres. The USA exports a greater proportion of technology goods to industrialised

countries than the EC or Japan, and imports from them a greater proportion of lower technology goods.

A comparison of the three centres' export and import structures indicates competitive advantages for the USA in high technology, for Japan in advanced and low-level technology and for the Europeans in low-level technology.

The above supports the view that the technology gap between the USA and the EC persists. As for Japan, it has a lead over the EC by virtue of its ability to bring high quality products on to the market in large numbers.

The analysis of foreign trade specialisation in the three centres has shown that Japan has been most successful in raising productivity by way of integration into the international division of labour. It has achieved this by trading manufactured products with both industrialised and developing countries. The Japanese strategy of boosting market share in order to utilise the advantages of mass production has been especially effectual in capital goods and consumer durables. The Japanese realise income growth from foreign trade almost exclusively by raising export sales and not via the importing of goods.

The USA is able to benefit from its endowment with technical knowledge; accordingly, it utilises productivity advantages by exporting technology-intensive goods. The availability of technical know-how pays dividends not only in trade with developing countries but also with industrialised countries. This serves to underline the USA's leading position from a technological point of view. However, in contrast to Japan's case, the USA's productivity advantages from foreign trade only occur in one small sphere of the country's overall foreign trade. In 1981, high technology products accounted for just on 12 % of total American exports, meaning that the USA's advantages from specialisation are ultimately lower than those of Japan.

The Europeans have been placed on the defensive by the USA's lead in technology-intensive products and the Japanese supply of high quality mass-produced articles at attractive prices. A prime reason for this is that, compared with Japan, the EC countries have shown relatively little ability to free themselves from outmoded industrial structures. It is possible that the marked fragmentation in Europe also poses an obstacle to the exploitation of economies of scale. At present, the shortcomings on the Europeans' part are being concealed by the strong export demand generated by the US upswing. Nevertheless, it is still reflected in the unfavourable employment trend compared with the USA and the unfavourable productivity trend compared with Japan.

<sup>1</sup> On the definition of the technology categories and associated problems of method, cf. D. Keller and C. Langer: Internationale Wettbewerbsfähigkeit bei technologieintensiven Gütern, in: WIRTSCHAFTSDIENST, Vol. 64, No. 10, Oct. 1984, pp. 485 f.