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Trends in the International Competitiveness of Industrial Countries

It has become fashionable in recent times to describe the state of the Western European economies with the word "eurosclerosis". Is the international competitiveness of these economies really as ailing as this word implies? The following article attempts to answer this question using various methods of measuring international competitiveness.

World trade is still dominated by the Western industrial countries. In 1986, these countries' share of world exports was 70%, which is almost the same level as in 1973 (71%). More than three-fourths of this trade takes place within the Western world. Accordingly, exports by Western industrial countries to other members of this country group account for more than half of total world exports (54% in 1986). This is again the same proportion as in 1973 (cf. Table 1).

Western preeminence in world trade is even more distinct if only manufactured products are considered. About 80% of world exports of manufactures originate in Western industrial countries, while nearly 60% is intra-trade between these countries. The latter has been the driving force of world trade during the eighties.

While international trade remains largely the domain of advanced industrial countries within the OECD, competition on international markets has become harder. However, international competition is no longer – has probably never been – an exclusive affair of the competing firms alone, but governments take an active part in it. Problems of international competitiveness are frequently used to justify governmental intervention. This issue gains all the more prominence the deeper countries get involved in the international division of labour. Whereas the benefits of the latter to all participants are undisputed, the distribution of the benefits among countries is a permanent bone of contention. The struggle for international competitiveness is basically a struggle for a bigger

share of the cake. But the cake may shrink as governments try to increase the national share. In the final analysis, government efforts to cope with problems of international competitiveness, i.e. to shift the balance of benefits, may prove to be self-defeating.

International competitiveness is currently often discussed against the background of external imbalances. For example, the huge (and lasting) US trade deficit is widely regarded as evidence of declining American competitiveness. Conversely, massive German and Japanese surpluses tend to be read as signs of competitive strength.

In fact, the external balance is a misleading indicator of competitiveness. It shows, first of all, a country's propensity to save, consume and invest, as well as intercountry differences in rates of return on capital assets. If a country attracts foreign investment through high profit rates and consequently runs a trade deficit, it certainly does not qualify as "uncompetitive". If, on the other hand, a country exports capital on a large scale because profitable investment opportunities at home are lacking, this would hardly reveal competitive strength. It is true that capital imports may just serve to increase domestic consumption (as has largely been the case in the United States in recent years), while capital exports may reflect high saving – as measured by international standards – not low investment (the Japanese case). In the former case, the resulting trade deficits would be an early indicator of competitive problems; in the latter case, the surpluses would show competitive superiority. However, the point is just that a

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straight link between the balance of payments and international competitiveness does not exist.

The key to international competitiveness is real income gains. A country is competitive if it derives a "normal" gain from the international division of labour; it improves its competitiveness by increasing its gains at a higher rate than competitors, and vice versa.

The real-income concept of competitiveness, simple as it appears in theory, is difficult to implement empirically. It is virtually impossible to measure those real income gains which are exclusively due to foreign trade. Moreover, the gains from trade do not rise automatically with rising trade, i.e. growing specialization, but are also determined, at a given rate of specialization, by the terms of trade which a country is able to realize. The gains from trade also depend on the commodity structure of trade. For example, if a country is able to concentrate its exports on goods where high profit margins are realized, it will gain more than a country whose exports focus on bread-and-butter products.

Export Market Share

A rough indicator of international competitiveness is the export market share. It shows directly the ability of a country to sell on international markets. Indirectly, it is supposed that by attracting a growing share of international demand the real incomes of the factors employed in a country's international sector increase relative to the respective real incomes of its trading partners. It is of course not sufficient just to increase the quantity of exports overproportionately. If this was achieved, for example, by cutting prices without parallel increases in productivity, the country would not gain, but "export" real income. It is value, not volume, that counts.

Table 2 shows a fairly close (positive) correlation between changing export market shares and GNP/GDP growth rates (total and per head) which may serve as a

proxy for real income growth. Gains on export markets went hand in hand with high growth rates, and vice versa, during the fifties and sixties and again from 1980 to 1985. During the seventies the link was weaker. By and large the findings suggest that the export market share is not only an indicator of the ability to sell but also of international competitiveness as defined above.

One might, however, argue that export market shares get distorted by exchange rate fluctuations. This is frequently true in the short run. For example, the sharp devaluation of the US dollar in 1986 – the effective exchange rate of the dollar fell by 18 percent from 1985 to 1986¹ – caused the US share of the industrial countries' manufactured exports to decline from 15.2 to 12.9%.² Assuming that prices (in national currency units) and quantities do not change in the short run, the decline of the US market share (in dollar terms) is merely technical, i.e. the result of revaluing foreign (non-US) export flows. However, after a lag, prices and quantities respond to the new exchange rates. Depending on a variety of parameters, in particular the price elasticities of international demand, export market shares may rise or decline.

Empirically, the significance of currency movements in the present context can be assessed by regressions of changes in market shares on changes in real effective exchange rates.³ To account for lags, the exchange rates of the current as well as the preceding period are used. Regressions were run across 14 countries (the same countries as in Table 2) and, for each country, across 11 years with the period under consideration extending from 1976 to 1986. Moreover, separate

¹ Cf. OECD Economic Outlook, No. 42, December 1987, p. 194.

² For the data base, cf. UN: Monthly Bulletin of Statistics, Vol. 41, No. 9, September 1987, p. 271.

³ Real effective exchange rates as used here are a trade-weighted average (over 16 countries in each case) of nominal exchange rates adjusted for intercountry differences in wholesale prices.

Table 1
Export Shares of Western Industrial Countries
(percent of total world exports)

	1955	1963	1973	1980	1981	1982	1983	1984	1985	1986
Total exports										
All commodities	64	67	71	63	63	64	64	65	66	70
Manufactures	83	81	83	82	81	80	79	78	79	–
Intra-exports ¹										
All commodities	43	50	54	45	43	44	46	47	50	54
Manufactures	49	57	64	57	54	54	55	57	58	–

¹ Exports to other Western industrial countries only.

Sources: GATT; authors' calculations.

Table 2
Changes in Export Market Shares and
GNP/GDP Growth¹
(total and per head)

	Total	Per head
1950-60	0.92	0.92
1960-70	0.87	0.86
1970-80	0.30	0.40
1980-85	0.79	0.63

¹ Correlations over 14 industrial countries (Austria, Belgium, Canada, Denmark, Federal Republic of Germany, France, Italy, Japan, Netherlands, Norway, Sweden, Switzerland, United Kingdom, United States).

Sources: IMF; authors' calculations.

calculations were made for years with rising exchange rates and those years in which the rates declined.

As would be expected, the results vary considerably from country to country. However, the overall picture is fairly clear: with rising real exchange rates export market shares increase in the current year but fall in the following year. The opposite is true for a real devaluation. In both cases the second-round effect is smaller than the initial impact. Real exchange rate gains are therefore, on balance, associated with a strong export performance, whereas currency losses correspond with falling market shares. This result supports the use of export market shares as an indicator of international competitiveness, since movements of real exchange rates do, for their part, reflect changing relative income positions among countries (with revaluating countries gaining at the expense of devaluating ones).

Up to this point the whole goods-producing sector of the industrial countries has been taken as reference for

the analysis of export market shares. The following considerations will concentrate on manufacturing industry and deal with possible causes of divergent market share developments in this sector. Given the considerable extent of protectionism in agriculture as well as the complementary nature of trade in raw materials and the limited tradability of services (combined with tight regulation of tradable services), manufacturing industry is more exposed to international competition than the remaining constituents of the Western economies' international sectors.

Manufacturing Industry

Table 3 shows the development of export market shares for major industrial countries since the early seventies. First of all, the figures show that the United States consistently has lower export market shares in manufactures than in tradable goods as a whole, whereas the opposite is true for the EEC and Japan. The differences are primarily due to the different weight of agricultural goods in the countries' total exports, it being relatively high in the United States but comparatively low in the EEC, while negligible in Japan.

If the development of market positions over time is considered, it shows that the American export market share in manufactures has remained largely stable, at about 15%. This stability continued into the eighties. Both these facts are in remarkable contrast to the development of the overall export market share which was pushed in the seventies by an agricultural export boom but declined in the current decade when agricultural exports collapsed.

By contrast, the European market position deteriorated dramatically in the eighties, if only

Table 3
Export Market Shares of Industrial Countries¹

	All goods-producing industries				Manufacturing				Growth industries ²			
	1966	1972	1980	1985	1966	1972	1980	1985	1966	1972	1980	1985
United States	21.7	16.9	18.2	16.4	18.9	14.9	14.6	15.3	22.1	17.1	15.9	17.4
Canada	7.0	6.9	5.5	6.8	5.6	5.8	4.3	6.0	3.6	4.9	3.2	5.5
Japan	7.2	10.0	11.2	14.2	8.1	11.1	12.9	16.0	8.1	12.0	14.5	18.6
EEC ³	50.8	52.8	55.3	48.7	54.2	55.1	59.1	49.8	57.1	55.9	59.1	48.0
FR Germany	14.6	15.7	15.9	14.5	16.3	17.0	17.8	15.7	19.7	19.3	19.0	16.1
France	7.9	8.8	9.3	7.8	8.2	8.9	10.0	8.1	7.8	8.4	9.6	7.4
Italy	5.7	6.2	6.4	6.2	6.1	6.7	7.3	6.8	7.1	7.3	7.4	6.6
Netherlands	4.9	6.0	6.2	5.4	5.1	5.8	5.5	5.1	4.5	5.1	5.8	4.6
United Kingdom	10.2	8.3	9.6	8.1	11.0	9.0	9.5	7.2	12.8	9.8	10.4	7.6
Sweden	3.1	3.0	—	2.4	3.2	3.0	—	2.7	2.5	2.6	—	2.3

¹ Share of total industrial countries' exports.

² For definition cf. text.

³ Excluding Portugal and Spain.

Sources: UN; OECD; authors' calculations.

manufacturing industry is considered. The less dramatic decline of the EEC's overall export market share is largely explained by comparatively high growth rates of – highly subsidised – agricultural exports.

Within the Community Italy has performed best. Italy's export market share in manufacturing has declined only little during the first half of the eighties, after a considerable increase in the preceding decade. The opposite holds true for the United Kingdom. The UK is also the only EEC member country which lost ground on manufacturing export markets even before the first oil shock. The main EEC exporters of manufactures, i.e. the Federal Republic of Germany and France, show a medium performance (by Community standards).

As regards Japan, export performance in manufacturing runs closely parallel to overall export performance (i.e. strong growth of market shares during the sixties, modest rise in the seventies, and renewed expansion in the first half of the current decade), reflecting the insignificance of primary goods for Japan's exports.

Taking together the changes of export market shares for all the Western industrial countries, these show that the differences in manufacturing export performance have grown considerably in recent years. The standard deviation increased from 0.9 in the period 1972-79 to 2.1 in the period 1979-85.⁴

Productivity Growth

A major cause of diverging export market shares in manufacturing has presumably been differences in productivity growth among countries. If a country is unable to increase manufacturing productivity at the same rate as its trading partners, its relative prices will rise.⁵ Given a price-elastic demand as well as substitutability between foreign and domestic goods, the country will lose market shares both at home and abroad. The reverse will happen with a country performing above average in manufacturing productivity. Correlations between manufacturing

⁴ In the period 1966-72 the standard deviation has also been substantial (1.9) though somewhat lower than in the period 1979-85.

⁵ Relative prices will also rise if a country lags behind with regard to changes in the quality of products provided that quality changes are accounted for in constructing price indices.

⁶ Total factor productivity (TFP) is defined as output per unit of labour and capital input. It is thus a measure of productive efficiency. TFP growth rates are taken from the December 1987 issue of the OECD Economic Outlook (p. 42), where TFP growth is calculated as the weighted sum of the growth in labour and capital productivity, with 1985 factor shares as weights. For the labour productivity figures used in this article, cf. Arthur Neefs: International trends in productivity and unit labor costs in manufacturing, in: Monthly Labor Review, December 1986, pp. 12-17.

Table 4
Productivity Growth and Changes of Export Market Shares in Manufacturing¹

	1973-85	1973-79	1979-85
Labour productivity	0.42	0.60	-0.13
Total factor productivity	0.56	0.72	0.09

¹ Correlations over nine countries (United States, Canada, Japan, Federal Republic of Germany, France, Italy, Netherlands, United Kingdom, Sweden). For definition of concepts cf. text.

Sources: OECD; UN; Arthur Neefs: International trends in productivity and unit labor costs in manufacturing, in: Monthly Labor Review, December 1986, pp. 12-17.

productivity growth and changing export market shares in manufacturing over countries reveal a predominantly positive relation between the two. There is a relatively strong correlation in the whole period considered (1973-1985) and especially in the sub-period 1973-1979. In the sub-period 1979-1985, on the other hand, there seems to be no significant relation. In 1973-1985 and 1973-1979 the correlation is stronger with total factor productivity⁶ than with labour productivity (cf. Table 4).

The bad result in 1979-1985 is exclusively due to two countries, namely the United Kingdom and Canada. Canada has the lowest (total factor as well as labour) productivity growth but the highest gain of export share. The United Kingdom conversely has a good productivity record but one of the highest losses of market share. These two countries excluded, correlation coefficients rise to 0.58 (labour productivity) and 0.93 (total factor productivity), respectively.

Deviation in the performance of the two countries is easily explained. Canada has overproportionately benefitted (compared with European countries) from the import surge of the USA (as has Japan), without needing to improve productivity. The United Kingdom, on the other hand, is the "Dutch disease" case, its booming oil sector driving the exchange rate up and thereby at the same time stimulating efficiency in manufacturing and reducing the price competitiveness of manufactured exports.

While a positive overall relation between productivity and market shares clearly exists, the cases of Canada and the United Kingdom show that productivity growth is neither sufficient nor necessary for a good export performance (at least in the short run). This becomes all the more clear if other individual cases are considered.

Over the whole period from the early seventies to the mid-eighties Japan excels among the Western industrial countries with regard to productivity growth in manufacturing. The annual growth rate of output per

hour in Japan's manufacturing industry comes close to 6%, compared to less than 4% for the Western industrial countries as a whole. Japan's outstanding productivity performance is paralleled (in accordance with the assumed relation) by a sharply rising export market share of its manufactured products. The United Kingdom, the Federal Republic of Germany and Sweden, too, fit into the picture: they display slow productivity growth combined with market share losses. The harmony gets disturbed if the United States, Canada and Italy are taken into account. Disregarding low productivity growth rates,⁷ these countries maintained or even slightly increased their manufactured export market shares. On the other hand, two countries with a comparatively strong productivity performance in manufacturing – France and the Netherlands – have not been able to increase their export market share during the period considered, but even recorded a decline.

If the whole period under consideration is divided into two sub-periods (1973-1979 and 1979-1985), it shows that in the case of the Federal Republic and France as well as the Netherlands the substantial loss of export market shares which the manufacturing industries of these countries experienced in the first half of the eighties has its counterpart in a significant deterioration of productivity growth. In marked contrast to this, manufacturing productivity growth in the United States and Japan accelerated from the seventies to the eighties, while export market shares shot up (in the case of Japan) or improved slightly (the American case). All this is in line with the assumed positive relation between productivity and shares. Not in line, as already explained, is the performance of the United Kingdom and Canada, and, in addition, that of Italy and Sweden.

Exchange Rate Mechanism

How can the diversity of the results be explained? Various forces are at work to offset the impact of productivity differences on international trade. Most important in this context is the exchange rate mechanism. Rising (falling) prices of domestic manufactures in relation to foreign ones do, for their part, cause the value of the domestic currency to decline (increase), which is supposed to restore the external balance.

Do productivity changes thus not matter at all for international competitiveness? If so, that would make

explaining the facts even harder. But surely productivity matters. Firstly, the exchange rate mechanism may not come to bear. For example, a poor productivity record in manufacturing may be offset by high productivity growth rates in other tradable goods (or services) industries. In this case, the exchange rate will not change at all leaving manufacturing industry exposed to unfettered international competition.⁸

Secondly, the working of the exchange rate mechanism may be disturbed. Trade volumes need time to adjust to the price changes caused by a currency realignment. The slow response of US export and import quantities of manufactures to the massive dollar devaluation since February 1985 demonstrates how long the time-lag may be. Empirical results even suggest that quantity changes may in some instances not at all compensate for price changes (elasticity pessimism), a revaluation thus raising export values and possibly also (value) shares instead of lowering them.

After all that it is not surprising that empirically a positive overall relation between productivity and export shares exists but that there are also a number of deviations. It should further be noted that lasting exchange rate changes will change the composition of a country's manufactured exports and imports. For example, a devaluating advanced industrial country will tend to export more (and import less) of those goods which are suited to the abilities of low-paid workers while withdrawing from the more sophisticated goods produced by a higher salaried labour force. The exchange rate mechanism may thus help to restore equilibrium in the balance of payments, but it leaves the economy with a lower (relative) wage level or standard of living, as well as with the high adjustment costs, in particular the losses of skills and equipment, involved in the structural change towards "wage" goods described above. It does not restore "true" international competitiveness after a productivity shortfall.

Constant Market Share Analysis

The observed changes in manufacturing export market shares reflect to some degree intercountry differences of export structures at the beginning of each period considered. A useful tool to assess the pros and cons of a country's initial export structure is the Constant Market Share Analysis (CMSA). CMSA

⁷ Productivity growth rates have been particularly low in the United States and Canada, while somewhat higher though low by comparison in Italy.

⁸ The same is true with overcompensating exchange rate movements caused by developments in the financial (as opposed to the real) sphere of the economy which, however, are closely related.

⁹ For details on CMSA cf. Hans-Hagen Härtel, Christian Langer: Internationale Wettbewerbsfähigkeit und strukturelle Anpassungserfordernisse, Hamburg 1984.

decomposes the global export market into individual regional and commodity markets. These markets are more or less connected with each other, but they show quite different growth rates. As a consequence, a country's overall export market share will rise if its export structure at a given point in time, by accident or in wise anticipation of demand trends, is biased in favour of those markets which grow overproportionately, and vice versa. In CMSA terms these are the commodity structure and regional structure effects. Both are calculated on the assumption that the individual export market shares of the country are maintained constant over time. In reality, of course, individual shares change. In CMSA this is accounted for by the "competitiveness" effect. In this case it is assumed that the regional and commodity structure of global exports remain unchanged. Together with the "joint effect" of different growth rates and changing individual shares the three effects described above add up to the change of the overall export market share.⁹

Table 5 shows the relative contribution of the CMSA's commodity structure, regional structure and "competitiveness" effects to the change in overall manufacturing market shares of major industrial countries for various periods. Conspicuously, the remarkable Japanese successes on international markets in recent years have largely been supported by a favourable commodity and, in particular, regional structure of the country's manufactured exports. Positive structural effects are also accounted for by the United States. By contrast, the EEC countries' exports of manufactures have suffered from considerable structural disadvantages. The "competitiveness" effect, too, has a negative sign in the EEC case, in particular as

regards German and French exports, whereas it is positive by a wide margin for the United States and Japan.

However, the meaning of competitiveness in CMSA differs considerably from the concept used in this article. Contrary to CMSA, gains in market shares arising from a favourable initial export structure are regarded here as an increase in competitiveness for they are supposedly associated with real income gains. What is more, CMSA does not explicitly take account of a country's ability to adjust its export structure to changing structures in international demand. A high structural adjustment capability of this kind can be seen as a major source of income gains. Of course, the limits set by comparative advantages must be observed, if inefficiencies are to be avoided. But comparative advantages are increasingly man-made and basic factor endowments are largely similar among advanced industrial countries. It should, therefore, pay for a country to expand where demand is expanding.

A statistical measure of a country's adjustment flexibility as described above is the coefficient of correlation between changes in its export market share in individual industries and the corresponding growth rates of exports for the industrial countries as a whole. As can be seen from Table 5, correlation coefficients for the period 1979-85 are positive for – in descending order – Japan, the United States, Canada and Sweden, whereas the figures for the EEC countries and Switzerland are negative, with France and the Federal Republic displaying a particularly poor adjustment capability. For the Federal Republic (but not for France) this is also true for the preceding periods, i.e. 1972-79 and 1966-72.

Table 5
Constant Market Share and Adjustment Analysis of Manufacturing Exports for Major Industrial Countries, 1966-72, 1972-79 and 1979-85

	1966-72				1972-79				1979-85			
	CSE	RSE	CE	Adj.	CSE	RSE	CE	Adj.	CSE	RSE	CE	Adj.
United States	0.10	-0.21	-2.54	-0.01	-0.04	0.73	-0.46	0.07	0.19	0.44	1.28	0.28
Canada	-0.45	0.23	0.09	0.39	-0.14	-1.02	-0.83	0.21	-0.07	1.79	0.09	0.25
Japan	0.35	-0.46	2.50	0.32	-0.16	0.74	0.23	0.01	0.52	2.24	1.25	0.52
FR Germany	0.83	0.28	-0.17	-0.40	0.27	-0.47	1.20	-0.46	0.35	-0.97	-1.62	-0.35
France	0.05	-0.10	0.54	0.03	-0.10	0.11	1.07	0.27	-0.01	-0.83	-1.31	-0.42
Italy	0.24	0.08	0.12	-0.04	0.09	0.01	0.82	-0.04	-0.15	-0.36	-0.18	-0.19
Netherlands	-0.21	0.14	0.85	-0.30	0.32	0.02	-0.09	0.08	-0.14	-0.34	-0.66	-0.34
United Kingdom	0.29	-0.30	-1.87	-0.62	0.07	0.17	-0.51	-0.04	0.01	-0.10	-0.93	-0.11
Sweden	-0.09	0.05	-0.21	-0.04	-0.02	-0.09	-0.38	0.25	0.03	-0.15	0.10	0.10
Switzerland	-0.02	0.04	-0.13	-0.37	0.08	-0.01	0.16	-0.14	0.03	-0.04	-0.23	-0.29

Note: CSE (Commodity structure effect), RSE (Regional structure effect), CE (Competitiveness effect) are percentage changes; Adj. (Adjustment) is measured by correlation coefficients. For details cf. text.

Sources: UN; OECD; authors' calculations.

In accordance with the correlation results, the EEC countries' export market shares in growth industries, i.e. those industries with an above-average growth in international demand, declined even sharper than in manufacturing as a whole during the first half of the eighties, as is shown in Table 3. The opposite holds for the United States and Japan.

Conclusions

Most of the growth industries considered above have as a common characteristic an above-average share of technologically advanced goods in their product range. Following the product cycle and technological gap theory of international trade, advanced industrial countries must continually develop, produce and export new sophisticated and differentiated products in order to increase their real income or defend their existing income position against the newly industrializing countries. It is in this kind of product that economically leading countries find the most promising routes for specialization.

This is not to say that each country should try to be ahead in every high-technology field. In this area, too, division of labour and specialization make sense. But relatively low and shrinking export market shares in technology-intensive goods as a whole can be read as a warning with regard to international competitiveness.

Empirically it is not easy to identify the right product groups. Innovativeness is seldom measured directly as output but approximated by an industry's (or economy's) input of research and development (R&D). The product list employed here is also based on R&D expenditures.

It has been used by the HWWA-Institute in its regular reports on structural change. The HWWA list distinguishes between high-technology and intermediate-technology goods with the first sub-group accounting for about 6% and the second for another 7% of the industrial countries' total manufacturing exports.

As is easily seen from Table 6, high-technology trade is still dominated by the United States, followed at a distance by Japan. But Japan has considerably shortened the distance during the eighties. It is now clearly ahead of the Federal Republic, which like the other EEC countries shows a poor export performance. The Federal Republic's export market share in the high-technology sub-group is also substantially lower than in total manufactured products, which suggests distinct comparative disadvantages.

As regards intermediate-technology goods, Japan is now the undisputed leader. Its market share has steeply increased in recent years, mainly at the expense of German suppliers which no longer have clear comparative advantages in this sub-group.

To sum up briefly, the gloomy picture of the European economies which it has become fashionable to draw in recent times ("eurosclerosis") is largely confirmed by the preceding analysis. Quick solutions to the competitiveness problem are not available. The scope for governmental action is limited. Intervention will not produce miracles but, more probably, distortions and related inefficiencies. What is needed is a more stimulating environment, but this is certainly easier said than done.

Table 6
Trade with Technology-intensive Goods¹

		United States	Japan	FR Germany	France	Italy	United Kingdom
High technology	1979	30	11	12	10	5	13
	1981	32	12	10	8	4	11
	1983	34	17	11	7	4	10
	1985	30	18	11	8	4	10
Intermediate technology	1979	13	18	21	7	5	7
	1981	14	23	18	6	4	6
	1983	14	23	18	7	5	6
	1985	12	27	17	7	5	5
Total technology	1979	19	15	18	8	5	9
	1981	21	19	15	7	4	8
	1983	23	20	15	7	5	7
	1985	20	23	14	7	5	8

¹ Share of total exports of industrial countries.

Sources: OECD; authors' calculations.