

# CEPAL

## Review

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UNITED NATIONS  
ECONOMIC COMMISSION FOR LATIN AMERICA AND THE CARIBBEAN  
SANTIAGO, CHILE, DECEMBER 1991

# CEPAL

## Review

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Santiago, Chile

December 1991

Number 45

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## International competitiveness and specialization

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This paper takes as its starting point the idea that the overall benefits of competition are largely determined by dynamic changes in market patterns. The opportunities in trade depend obviously on how a country can serve the market and more obviously on how competitive it is. Attention will therefore be centered mainly on the interaction between competitiveness and changes in the market structure. This phenomenon is abstracted from conventional factors to explain trade patterns. The approach provides a descriptive and synthetic framework to identify and evaluate recent shifts in the patterns of competition and specialization of developed, developing and centrally planned economies in the OECD market.

A single-equation model is used to reveal a country's competitiveness in international markets against the background of the evolution of the market. The model measures the global share of a country in OECD imports as a function of structural and competitive factors and combines elements of constant-market-share analysis and portfolio planning in business management. The model is part of the "C.A.N." concept: a data bank application programme with methodological and analytical components.

Evidence is given that market growth determines an important proportion of the directions of competitiveness and specialization. The ability to direct competitiveness towards the evolution of the market explains much of the paradigm of international trade. This approach promises advances in the strategic orientation of trade policies.

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The ideas set forth in this paper owe much to discussions with Fernando Fajnzylber, Joseph Mullen, Carlotta Pérez, Wilson Pérez and Armin Schwidrowski.

## Introduction

If competitiveness is a country's major concern in international trade, then it should also be concerned about the attractiveness of the sectors in which it is competitive. In a "no-free-trade" world, trade policies should concentrate on those sectors considered most attractive. This is the conclusion of the advocates of the new thinking about trade theory as advanced by Brander and Spencer (1985) and Krugman (1984). This interest is shared, although from a different perspective, by the constant market share analysis school (Holden, Nairn and Swales, 1989), which explains how structural and non-structural changes affect the position of nations in international trade. Other approaches in economic literature that associate changing market patterns with economic performance, mainly in developing countries, focus on studies of export performance (Singer and Gray, 1988) and export instability (Love, 1985). Business economics literature on portfolio planning has developed various descriptive and analytic tools to link the competitive position of firms to market attractiveness (Gluck, 1985). However, the competitiveness of nations with regard to changing market patterns has received little attention in the literature. This may mean overlooking significant aspects of the importance of structural and competitive changes that affect the position of countries in international markets.

The present paper provides a summary descriptive framework for identifying changes in the patterns of competition and specialization in international trade. The analysis is considered to be a starting point for further case studies. A simple single-equation model derived from constant-market-share analysis (CMSA) and portfolio planning in business economics is presented to reveal and compare major recent changes in the competitive position of Eastern European, Latin American, OECD, and Southeast Asian countries. In contrast to traditional CMSA, the model describes how nations may direct their competitiveness in line with changing market structures. Evidence is presented that an important proportion of the patterns of competition and specialization is determined by market growth.

## I

## Competitiveness, specialization and market growth

This paper supposes that each country, regardless of its present trade orientation, has a strong interest in the OECD market. It is also assumed that countries will try to maximize their global share and that their individual success will reflect their capacity to be internationally competitive. Disregarding the nature of competition and pricing, it is assumed that global competitive performance depends upon the interaction of market shares and market attractiveness. Competitiveness is not regarded as an ambition *per se*, but as a consciously directed effort to win selected markets. This approach may be symbolized by Condliffe's (1958) comment on Baldwin (1958): "Those countries which cling too long to declining trades lose out in world markets. Those which are flexible enough to move with the times and keep abreast of the developing new demands maintain and improve their share of world trade".

Market attractiveness is associated with the concept of portfolio planning in business management<sup>1</sup>. It refers here to structural shifts induced either by demand or by supply in the pattern of total OECD imports. Differences in the evolution of sectors are considered to provide different prospects for growth for a given com-

modity and are therefore of different degrees of interest for a country. Market growth is assumed to be a major criterion for classifying commodities, for reviewing the allocation of resources, and for determining competitive strategies. The descriptive tools of portfolio planning –the transfer of the analytical interpretations and business strategy deductions of portfolio planning to the country level is not considered to be feasible– will be extended to associated variations in market shares with market growth.

Specialization is rooted in the broad principles of comparative advantage. It is considered here in order to compare changes in a country's composition of trade relative to the market structure. For each individual country, specialization refers to the importance of a given sector relative to its global competitive position and/or relative to the market structure. The latter reflects a country's market adaptability and its allocation of sectoral trade as a function of market growth. Market adaptability expresses the relation between the directions of competitiveness and market evolution. It is considered to be a prerequisite for sustained global competitiveness.

## II

## The model

The underlying model is part of the "C.A.N." concept: a data bank application programme with methodological and analytical components<sup>2</sup>. The

<sup>1</sup> It should be recalled that the major assumptions and the generic strategic assignments of portfolio planning have repeatedly been criticized and called into question.

<sup>2</sup> C.A.N. (Competitive Analysis of Nations) is a personal-computer-based data bank application programme, prepared by the author, containing trade data for over 70 countries from 1963-1989. All the following calculations are based on C.A.N. and may be obtained in detail from the author.

study uses total import flows of the OECD<sup>3</sup> from 1978 to 1989 at the group level of the Standard International Trade Classification, Rev. 2 (SITC/2)<sup>4</sup>. The analysis is built on a simple single-equation model that derives from CMSA<sup>5</sup>, reduced to a two-

<sup>3</sup> The OECD corresponds to one aggregated market composed of its 24 member States.

<sup>4</sup> SITC/2 detects 239 sector groups (3-digit classification).

<sup>5</sup> A brief description of CMSA may be found in Magee (1975).

dimensional approach. CMSA is normally broken down into four components that affect the evolution of the global market share: growth of world trade, differential product growth, differential market growth, and a residual or competitive effect. A CMSA approach detects the contribution of each of these four factors to a change in the global market share. C.A.N. refers only to the differential product growth, as referred here to market evolution, and the residual effect, as referred to competitiveness, both being treated as independent vectors. C.A.N. does not explain structural and non-structural effects on global market shares. It describes the way in which patterns of competition and specialization change against the background of market evolution.

The limitations of CMSA<sup>6</sup> apply partially to the present analysis in its treatment of the level of sectoral disaggregation, the base period, and the reference market. The first consideration is part of any aggregation problem and must be treated as such. Although the second is simply an index-number problem, the underlying model is particularly sensitive to it. The marketplace selected was the OECD, because of its importance in world trade. It must be underscored that an evaluation based on market shares does reveal competitiveness but does not offer any explanation for it<sup>7</sup>. Market shares provide an illustration of ex-post performances by reducing the interaction of the different factors employed in the process of competition to one single constant.

The model is based on the assumptions that every sector considered has an atomistic market structure and that no sector is important enough to influence the total import pattern. The analysis measures the global share of a country in OECD imports as a function of structural and competitive factors. These can be summarized and exemplified by sectoral competitiveness, market adaptability, and comparative advantage. To simplify the evaluation, comparative advantage is regarded as a competitive factor and therefore

identified with competitiveness. The global share  $S_j$  is thus at any point of time, for a country's market shares  $s_{ij}$  and the group shares  $s_i$ , the weighted product of:

$$(1) \quad S_j = \sum_{i=1}^n \frac{M_{ij} M_i}{M_i M} = \sum_{i=1}^n s_{ij} s_i,$$

where  $i$  is one product or sector group, referred to as group, and  $j$  one country in total OECD imports  $M$ . Changes in  $S_j$  over time, using the average of the years 1978, 1979 and 1980 for the starting period and 1987, 1988 and 1989 for the ending period, are then determined to reveal the directions of competitiveness relative to changing market patterns. Constant market shares are thus given by  $\Delta S_j = 0$  and differential group evolution or market attractiveness by variations of  $s_i$ . An increase in global market share therefore requires  $\sum \Delta s_{ij} > \sum \Delta s_i^{-1}$ . From equation (1) it can be seen that variations in  $s_i$  have a direct impact on  $S_j$ . The evaluation is based on a 2x2 competitive matrix (see figure 1), which is obtained from equation (1). The horizontal axis shows the evolution of a group share by  $\Delta s_i \geq 0$  or  $\Delta s_i < 0$  and the vertical axis the evolution of a country's share by  $\Delta s_{ij} \geq 0$  or  $\Delta s_{ij} < 0$ , i.e.  $\Delta s_i \geq 0$  for an increasing group,  $s_i \text{ inc}$ ; and  $\Delta s_{ij} \geq 0$ , for a group in which the country is competitive,  $s_i \text{ comp } j$ . Each quadrant of the matrix exemplifies a country-specific combination of competitive position and market attractiveness:

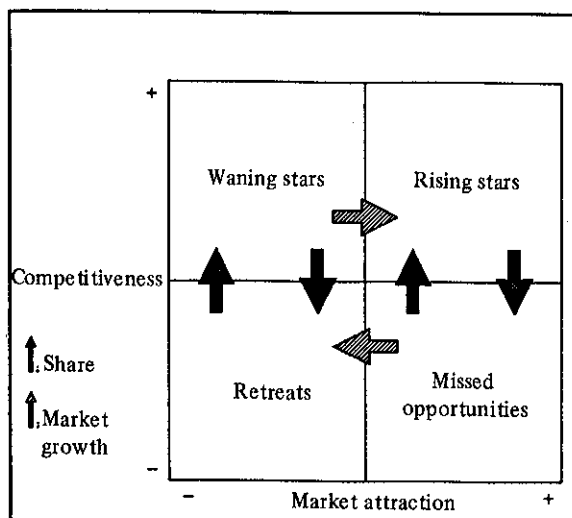
- "Retreats" represent declining groups in which the country is losing its market share.
- "Waning Stars" represent declining groups in which a country gains in market share.
- "Missed Opportunities" represent increasing groups in which a country is losing its market share.
- "Rising Stars" represent increasing groups in which a country gains in market share\*.

<sup>6</sup>See Richardson (1971) for a discussion on the restrictions of CMSA.

<sup>7</sup>Chesnais (OECD, 1981) provides a detailed discussion on the use of market shares to measure competitiveness.

\* These terms correspond respectively to the following ones used by Fajzylber (1991): situation of retreat; situation of vulnerability; situation of missed opportunities; and optimum situation.

Figure 1  
COMPETITIVENESS MATRIX



Source: Based on the share/growth matrix of the Boston Consulting Group (Gluck, 1985).

The relative importance of each competitive position within the matrix is expressed through the country's trade pattern, i.e., the contribution of each group  $c_{ij}$ , where  $c_{ij} = M_{ij} / M_j$ . Diversification in the trade pattern is thus given by  $\Delta c_{ij} \geq 0$  or  $\Delta c_{ij} < 0$ .

Market specialization relates the evolution of the relative importance of a commodity group for a country to the evolution of the OECD import pattern. The ratio between a country's trade pattern and market pattern is expressed by  $k$ , where  $k_{ij} = c_{ij} / s_i$  and  $k_{ij} \geq 1$  for groups in which the country is specialized and where  $k_{ij}$  also derives from  $s_{ij} / S_j$ .<sup>8</sup> Differences in the evolution of  $c_{ij}$  and  $s_i$  refer to either an approach to market pattern  $\Delta k_{ij} \geq 0$  or a departure  $\Delta k_{ij} < 0$ :

<sup>8</sup>  $k$  follows the revealed comparative advantage index by B. Balassa (1965).

$$k = \frac{M_{ij}}{M_j} : \frac{M_i}{M} = \frac{M_{ij}}{M_j} \frac{M}{M_i}$$

Exchanging the denominator gives

$$k = \frac{M_{ij}}{M_i} \frac{M}{M_j} = \frac{s_{ij}}{S_j}$$

$$(2) \quad \Delta c_{ij} \begin{matrix} > \\ < \end{matrix} \Delta s_i \begin{matrix} > \\ < \end{matrix} \Delta k_{ij} \begin{matrix} > \\ < \end{matrix} 0.$$

$\Delta k$  thus reveals the interaction of changes in a country's trade pattern, for  $k_{inc}$  in increasing groups and  $k_{dec}$  in decreasing groups, relative to the market pattern or the sectoral competitive performance corresponding to the country's global performance.

Figure 2 shows one possible constellation of  $\Delta c_{ij}$ ,  $\Delta s_i$ , and  $\Delta k_{ij}$  over time, based on equation (2), where  $c_i$  is a country's trade,  $s_i$  a group share and  $t$  stands for time. A country is considered to approach the market pattern when the slope of  $c_i$  is steeper, given the same sign as the slope of  $s_i$ . It departs from the market pattern when the slope of  $c_i$  is flatter, given the same sign as  $s_i$  or inverse to it.

The curves indicate the direction and magnitude of  $k$  as the ratio of  $c_{ij}$  and  $s_i$ . However, large absolute differences between  $c_{ij}$  and  $s_i$  when approaching 1 make it unlikely that both parameters will grow at the same rate. A high  $k$  beyond unity will probably not increase much more if  $c_{ij}$  greatly exceeds  $s_i$ , except in the case of total specialization. A very high  $c_{ij}$  may then lead to a suboptimal growth path. In contrast, a low  $k$  beyond unity may continue to rise if  $c_{ij}$  is sufficiently small.

The global specialization and competitiveness relative to market evolution express the country's total market adaptability  $K_j$ :

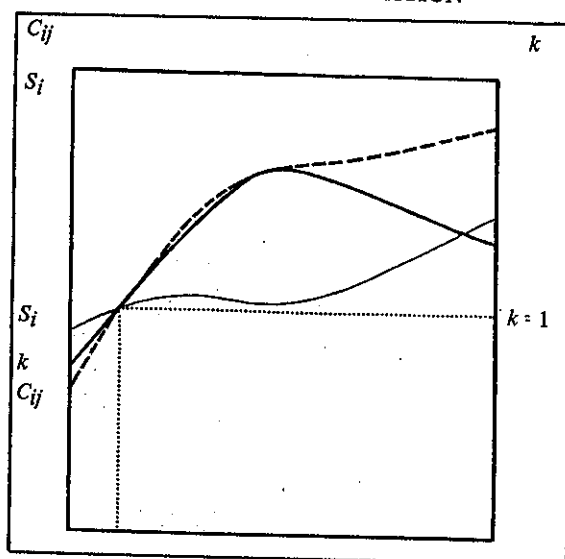
$$(3) \quad K_j = \frac{k_{iincj}}{k_{idecj}}$$

$K_j$  admits two interpretative approaches<sup>9</sup>. The first contrasts the shares in increasing and declining groups, where an index beyond unity means a greater absolute competitive performance in increasing than in declining groups. The second combines the market orientation of increasing and

<sup>9</sup> This derives from

$$\left( \frac{M_{iincj}}{M_j} \right) : \left( \frac{M_{idecj}}{M_j} \right) = \frac{M_{iincj}}{M_{iinc}} : \frac{M_{idecj}}{M_{idec}} = \frac{S_{iincj}}{S_{idecj}}$$

Figure 2  
MARKET SPECIALIZATION



decreasing groups. An index below unity denotes a relatively higher specialization in declining than in increasing groups.

Variations in  $K_j$ , where  $\Delta K_j = K_{j1} / K_{j0}$  for period 0 to 1, refer thus to either a reallocation of competitiveness with regard to market evolution or to changes in the specialization pattern relative to market growth. This reveals the weight of increasing and decreasing sectoral groups within a nation's trade pattern and describes how nations compete and specialize globally with regard to market evolution.

The study examines data for five individual countries and four regions comprising 24 countries. The regions are calculated by simply adding together and weighing the individual performances of the countries in them. The countries were selected for their representativeness. The analysis is limited to the two summary approaches of the competitive matrix and the evolution of market adaptability. The first approach refers to an evaluation based on increasing groups and reflects the horizontal movement in the matrix. The second reflects an evaluation built on competitive groups reproducing the vertical movement. The adaptability index opposes the right half to the left half of the matrix.

### III

## Findings

The following tables represent the structural and competitive parameters mentioned above for the average year 1987-89, referred to as 1988, and their evolution with regard to the average year 1978-80, referred to as  $\Delta 1979$ .

Table 1 reports the composition of total OECD imports associated with market growth, mean group share size, and its standard deviation. Total imports in constant 1985 US dollars increased in the reference period by 11.4%: 57.2%

more for increasing groups and 33.3% less for decreasing groups. Increasing (decreasing) groups represent 69.6% (30.4%) of OECD imports. This corresponds to a rise of 42.3% (-40.1%) within the OECD import pattern (see appendix 2 for details on group shares).

Table 2 shows the global shares in total OECD imports for the countries and regions considered, referred to as areas, and their variations with regard to the starting period. Global shares and their evolution

Table 1

#### GROUP SHARES $s_i$ IN OECD IMPORTS

Group	1988%	$\Delta 1979\%$	Mean 1988%	Std. Deviation
Increasing	69.62	41.15	0.51	0.66
Decreasing	30.38	-40.06	0.30	0.60

indicate the absolute competitive performance and the level of international penetration. In 1988, the non-OECD areas accounted for 9.8% of total OECD imports and increased by 8.3%. This increase was largely due to the performance of Southeast Asia, including Korea, referred to as All Southeast Asia, which accounted for 41.3% of the total share of the non-OECD countries in that year (compared with 28.0% in 1979). Eastern Europe and the Soviet Union, referred to as All Eastern Europe, and Latin America including Brazil and Mexico, referred to as All Latin America, recorded declining shares within the non-OECD countries, falling by 33.3% and 7.3% respectively. The Group of Seven (G7) increased its share relative to the non-OECD areas by 1.0%.

Intraregional variations are high within the non-OECD areas. Korea's relative share within All Southeast Asia increased by 84.0%. Brazil and

Mexico increased 51.3 and 74.2 points more than Latin America, while the Soviet Union decreased 7.3 points in relation to Eastern Europe. Absolute intraregional share differences are low and indicate the importance of the countries selected within their regions. Clearly, interregional differences may signify different historic trade orientations with regard to the OECD market: for example, All Latin America and All Eastern Europe long pursued inward looking policies that made the OECD market a target of less importance. However, different global shares may reflect unequal opportunities for changing the competitive position, and small areas will probably show more variation. The proportion of shares between the non-OECD and OECD areas has remained stable, whereas the pattern of shares between the non-OECD areas changed significantly.

Table 2

## GLOBAL SHARE IN TOTAL IMPORTS OF OECD

Country	1988%	$\Delta 1979\%$	Mean 1988%	Std.Deviation
Brazil	1.18	20.14	1.35	3.33
Mexico	1.48	43.07	1.11	2.14
South Korea	2.10	127.79	1.80	3.28
Soviet Union	1.12	-30.37	0.86	2.17
Latin America <sup>a</sup>	1.44	-31.12	1.23	2.70
Southeast Asia <sup>b</sup>	2.29	24.76	2.45	6.00
Eastern Europe <sup>c</sup>	1.02	-23.08	1.39	2.28
Group of Seven <sup>d</sup>	52.33	14.95	49.85	19.79
<b>Total</b>	<b>62.96</b>	<b>13.75</b>		

<sup>a</sup> Argentina, Chile, Colombia, Costa Rica, Ecuador, Peru, Venezuela.

<sup>b</sup> Malaysia, Philippines, Singapore, Thailand.

<sup>c</sup> Bulgaria, Czechoslovakia, German Democratic Republic, Hungary, Poland, Romania.

<sup>d</sup> Canada, France, Germany (Federal Republic), Italy, Japan, United Kingdom, United States of America.

Table 3 indicates share performance, contribution and specialization for the groups that increased their shares in OECD imports. The data suggest the different impacts these groups exert within the areas' patterns of competition, contribution, and specialization. The figures refer to overall performance in increasing groups relative to global performance.

The findings reveal great differences in the performance in increasing groups (see table 3). Korea and the G7 each carry on over 80% of their trade in increasing groups, in contrast with the Soviet Union, where the figure is only 15.5%. Within these groups, the best performance is that of Korea,

which shows the highest specialization by registering a 1.3 times higher market share in increasing groups than in its global share, although it still grows faster globally than in increasing groups (as indicated by its negative  $\Delta k$ ). This departure from market pattern is subject to a decrease of  $\Delta c_{i inc j}$  relative to  $\Delta s_{i inc}$ , where high contribution levels cannot increase at the same rate as increases in group share, thus approaching a saturation point. In contrast with the G7, Korea remains highly specialized in increasing groups combined with great competitiveness. The figure for the G7 becomes even worse when Japan is excluded, giving  $\Delta s_{i inc j} = -10.6\%$ .



Table 3

## INCREASING GROUPS IN OECD IMPORTS

Country $j$	Share performance $s_{i inc j}$		Contribution $c_{i inc j} \%$		Specialization index $k_{i inc j}$	
	1988	$\Delta 1979$	1988	$\Delta 1979$	1988	$\Delta 1979$
Brazil	0.84	50.40	49.65	76.73	0.71	24.19
Mexico	1.37	63.55	64.52	61.38	0.93	14.31
South Korea	2.69	80.45	89.01	11.83	1.28	-20.78
Soviet Union	0.25	-16.81	15.50	68.67	0.22	19.48
Latin America	0.42	8.04	20.61	121.89	0.30	57.17
Southeast Asia	2.21	63.66	67.58	85.75	0.97	31.58
Eastern Europe	0.79	-34.17	53.65	20.88	0.77	-14.37
Group of Seven	60.40	-3.91	80.36	18.01	1.15	-16.41
<b>Total</b>	<b>68.97</b>	<b>-2.02</b>				

All the remaining areas share the feature of not being specialized in increasing groups, but except for Eastern Europe they try to make their trade patterns approach the market structure. The differences in  $k$  over a range of 0.7 points between Southeast Asia and Latin America illustrate the different starting levels. Positive variations of  $k_{i inc j}$  reveal that these areas increase their competitiveness more in increasing groups than globally, and high contributions by such increases reflect the areas' effort to diversify towards these groups. In contrast, Eastern Europe has declined the most of all areas considered, although the relatively high level of contribution (38.2 points more than for the Soviet Union, which shows the lowest commitment) indicates that increasing groups are important in Eastern Europe trade. Eastern Europe shows a higher absolute share performance than Latin America. The departure from market pattern (from a  $k$  beyond unity) indicates divergence of All Eastern Europe trade with respect to the OECD market pattern.

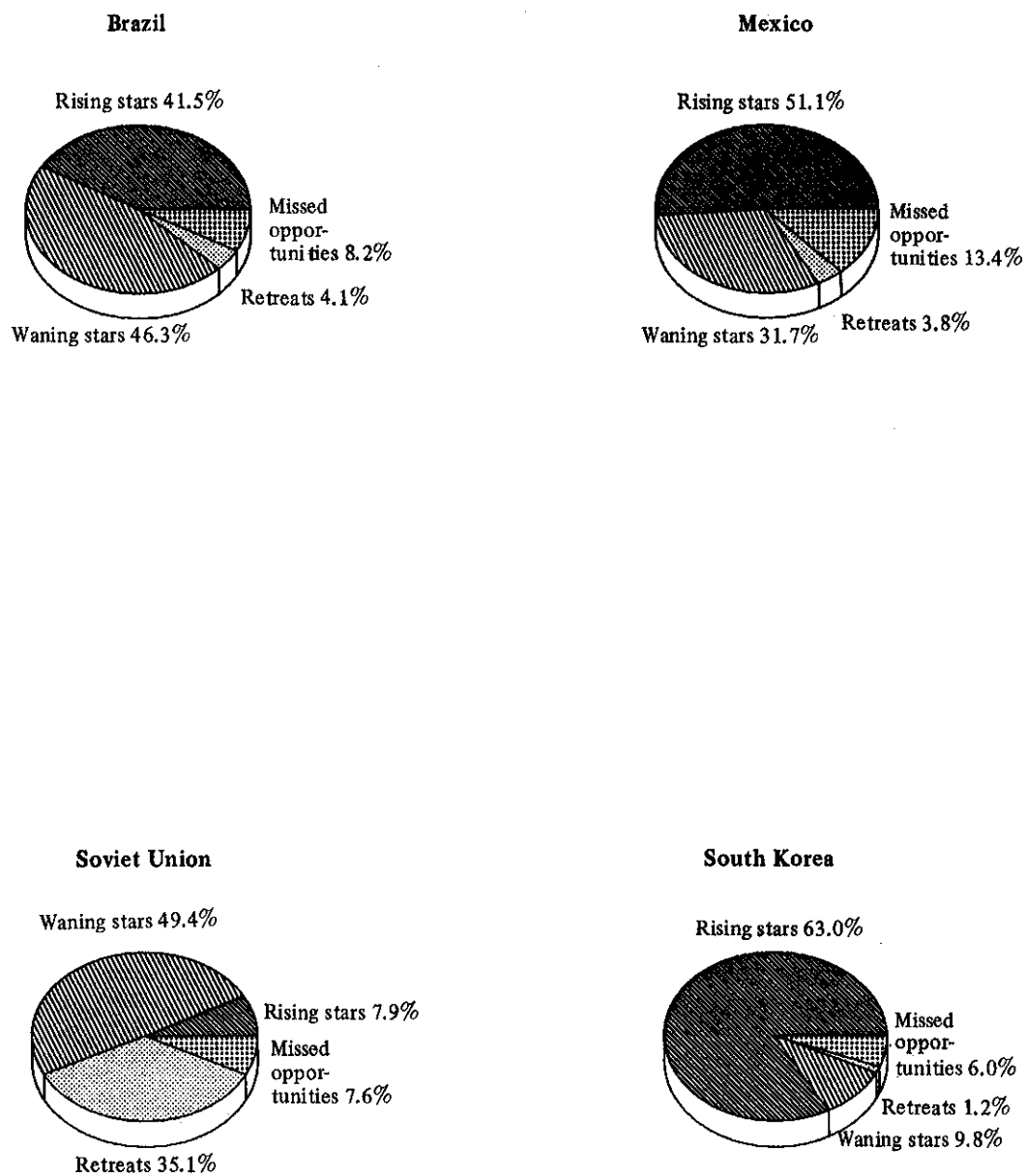
The evaluation based on market growth revealed increases in share performance in groups that increased their shares in the OECD import structure. These were attained only by the non-OECD areas considered (except All Eastern Europe), although the G7 remains the dominant competitor in absolute terms. Variations in specialization patterns indicate that the non-OECD areas (except All Eastern Europe) penetrate more into rising groups, thus directing their trade pattern more and more towards those groups that have long been the absolute domain of the OECD.

Table 4 shows the share performance, contribution and specialization indices for groups in which the countries considered are competitive, regardless of market evolution, and confirms the findings above. Except for Brazil, Korea, and Southeast Asia, all the remaining areas register competitiveness in generally declining sectors, as indicated by  $\Delta c_{i comp j} < \Delta k_{i comp j}$  from equation (2). Competitiveness accompanies high specialization indices for all non-OECD areas, in contrast with the G7. The competitiveness of the G7 deviates towards declining groups, in keeping with the above findings. In contrast, Brazil, Mexico and Korea carry on over 80% of their trade in groups in which they are competitive. Contribution patterns indicate the importance of competitive groups within the non-OECD areas' trade pattern, with a range of 56.2 points between the contribution figures for Korea and Eastern Europe, in comparison with a  $c_{i comp j}$  of only 20.7% for the G7.

The above findings are summarized in figure 3, which represents the competitive matrices for the areas considered, in pie-chart format.

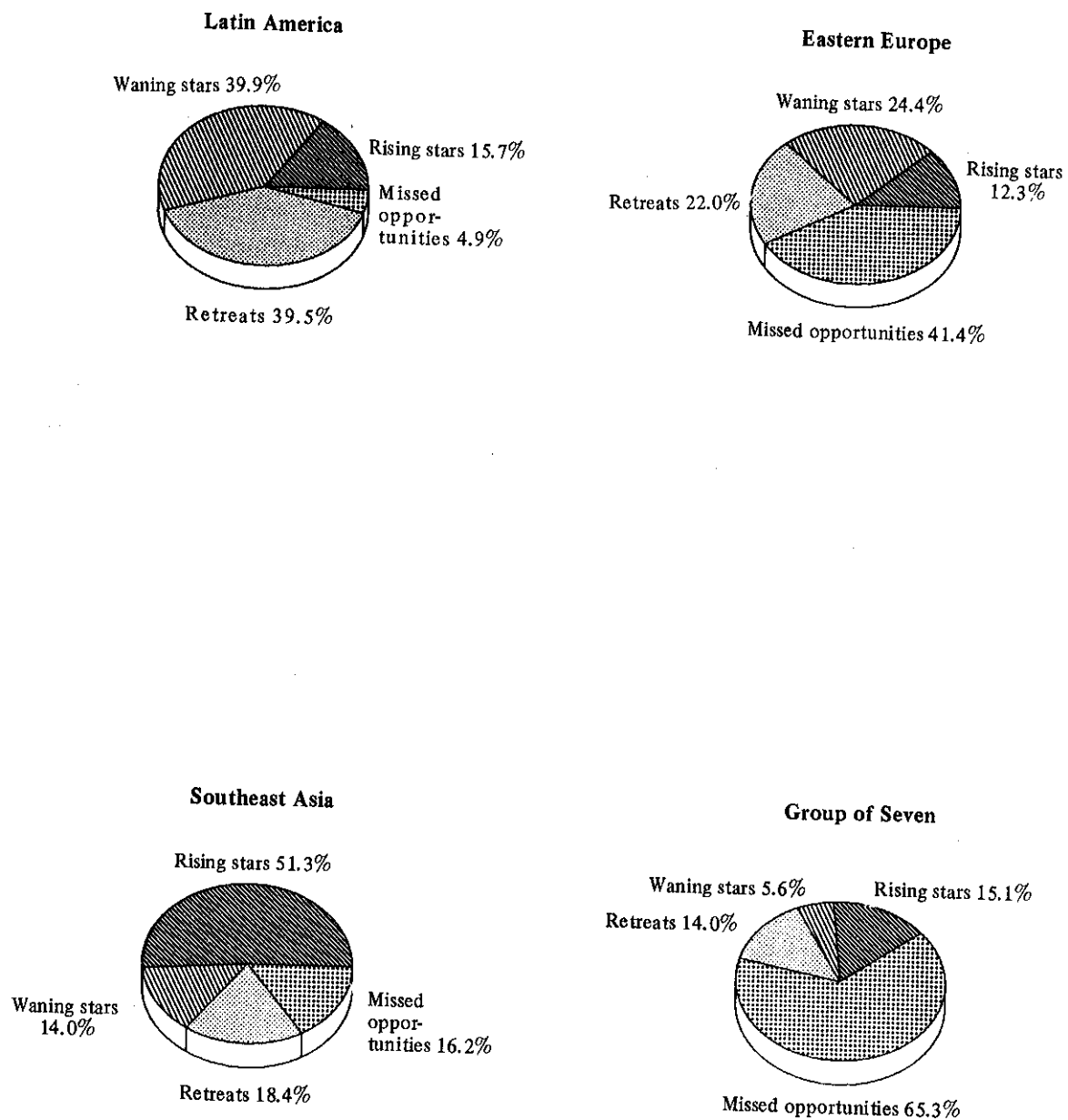
The charts indicate the proportions of competitive and increasing groups in the country's trade pattern for the end of the base period 1988. Stripes represent groups in which the country is competitive and dots indicate groups in which the country is not competitive. Fat stripes and fat dots represent increasing groups and light stripes and light dots represent decreasing groups (see appendix 1 for details on the composition of the matrix).

Figure 3  
COMPETITIVENESS MATRIX: PERCENTAGE SHARES, 1988



Source: "CAN".

Figure 3 (conclusion)



Source: "CAN".

Table 4

## COMPETITIVE GROUPS IN OECD IMPORTS

Country $j$	Share performance $s_{i \text{ comp } j}$		Contribution $c_{i \text{ comp } j} \%$		Specialization index $k_{i \text{ comp } j}$	
	1988	$\Delta 1979$	1988	$\Delta 1979$	1988	$\Delta 1979$
Brazil	1.52	27.78	87.73	15.25	1.29	6.37
Mexico	1.63	85.02	82.78	24.72	1.10	29.32
South Korea	2.21	171.75	92.82	20.95	1.05	19.30
Soviet Union	1.59	12.99	57.32	32.94	1.42	62.28
Latin America	1.57	7.10	55.61	41.10	1.10	55.81
Southeast Asia	2.07	108.04	65.35	102.58	0.91	67.26
Eastern Europe	1.22	47.09	36.66	32.21	1.19	91.33
Group of Seven	44.26	76.79	20.69	9.10	0.85	53.80

The biggest contrast in the findings is between Korea and the G7, which display almost opposite contribution patterns with regard to the proportion of Rising Stars and Missed Opportunities. The non-OECD areas (except Korea) are characterized by many Retreats and Waning Stars, showing that they carry on a high proportion of their trade in declining groups. Consistently with Table 4, they are competitive (except for Korea, Mexico and Southeast Asia) mainly in declining groups, as indicated by the proportion of Rising and Waning Stars.

The matrix offers different interpretative approaches for evaluating the trade pattern of a nation. The crucial question is: what are the factors that make a country have a Rising or Waning Star? Why is group  $x$  a Rising Star for one area and a Missed Opportunity for another area? The matrix offers a simplified view of how countries direct their competitiveness with regard to market evolution. In that sense, if market evolution has an important impact on a country's gains from trade, Korea poses a case for thought.

Competitive and specialization patterns are further summarized by the adaptability index  $K$ , as shown in Table 5.  $K$  indicates global performance, contrasting increasing with declining groups. The index reveals the proportion of increasing relative to declining groups in a nation's trade pattern. The non-OECD areas (without Korea) have a weighted average adaptability index of 0.6. Those areas either register their greatest share performance or are more specialized in declining than in increasing groups. Southeast Asia ranks highest, followed by

All Latin America with 0.5 and All Eastern Europe with 0.3. Intraregional differences are high. Latin America reaches only 58.1% of Brazil's and 31.7% of Mexico's adaptability performance, while the Soviet Union ranks lowest of all, scoring only 16.0% of Eastern Europe's index.

Table 5

ADAPTABILITY  $K_j$  IN TOTAL IMPORTS OF OECD

Country $j$	1988	$\Delta 1979 \%$
Brazil	0.43	6.55
Mexico	0.79	15.80
South Korea	3.56	-11.66
Soviet Union	0.08	-25.44
Latin America	0.25	-0.24
Southeast Asia	0.91	54.36
Eastern Europe	0.50	-38.49
Group of 7	1.77	-19.23

These figures suggest four possible classifications different from those presented by Fajnzylber (1991) with regard to competitive and market adaptability performance:

- Countries with an adaptability index greater than unity and increasing  $\Delta K$ . There were no such cases in this sample. Nonetheless, it should be noted that Singapore would have conformed to this classification if it had not been included in the Southeast Asia reference group. This classification represents countries improving their absolute specialization in increasing rather than decreasing groups.

- Countries with an adaptability index greater than unity and falling  $\Delta K$  (Korea and the G7). This classification indicates that shares for increasing groups are greater than those for decreasing groups, and that there is greater specialization in increasing rather than decreasing groups. Nonetheless, a diminishing  $K$  signifies that decreasing groups become relatively more important in the competitive and structural trade patterns. Korea displays the highest ability to adapt its trade pattern to recent market evolution.
- Countries with an adaptability index below unity and rising  $\Delta K$  include Brazil, Mexico, and Southeast Asia. This classification approaches the market pattern while still being more specialized and more competitive in absolute terms in declining rather than in increasing groups. These areas diversify to a substantial extent towards rising groups, registering higher growth rates in increasing than in decreasing groups. This cluster demonstrates a significant move away from the traditional trade pattern that may largely be identified with declining groups within OECD market evolution.
- Countries with an adaptability index below unity and falling  $\Delta K$  include Latin America, Eastern Europe and the Soviet Union. This grouping includes the main departures from the OECD market pattern: Latin America and the Soviet Union have not improved their low adaptability performance, maintaining a high specialization

level in decreasing groups. The competitive decline of Eastern Europe is most noteworthy. It shows an absolute  $K$  performance somewhat above that of Brazil, although it started with an adaptability index at the beginning of the base period higher than that of Southeast Asia.

The adaptability indices outline the evolution of the patterns of competition and specialization of the non-OECD and OECD areas. The non-OECD areas (except Latin America, Eastern Europe and the Soviet Union) approach the market pattern, thus reducing the differences in the allocation of shares related to market growth between the non-OECD and OECD countries. Absolute differences in the adaptability performance reveal that the non-OECD countries (except Korea) continue to specialize mainly in declining groups. However, increases in adaptability by the non-OECD areas and decreases by the G7 indicate important changes with regard to competitiveness and specialization between non-OECD and OECD areas. This reversal shows that important departures from conventional patterns of competitiveness and specialization are occurring in these areas. The competitive matrix is, in that sense, an open concept that does not impose any strategic recommendations. It is, of course, not reasonable to create a portfolio of all but Rising Stars, but it is a useful way of identifying trade strategies and competitors and revising existing trade orientations.

## IV

### Conclusions

The competitive and specialization patterns of the countries and regions considered in OECD imports were studied with regard to market growth and a simple single-equation model was presented to describe the directions of competitiveness against the background of changing market patterns. The reference to market growth was motivated by the idea that competition and specialization efforts yield different benefits according to market evolution. The approach provides a transparent framework and terminology for analysis of competitiveness as related to market growth.

The findings reveal that there are important shifts in the patterns of competitiveness and specialization between OECD and non-OECD countries and regions and that these are related to changes in the market structure. The ability to direct competitiveness towards the evolution of the market explains much of the paradigm of international trade. This approach could represent the starting point for further case studies on sectors and countries. It also promises advances in defining the strategic orientations of trade policies.

## Appendix 1

## COMPETITIVE MATRIX, 1979-1988

## A. Countries

BRAZIL					MEXICO				
<i>Rising Stars</i>					<i>Rising Stars</i>				
058	Fruit, preserved	5.6	19.7	16.6	713	Piston engines	4.7	6.0	4.1
851	Footwear	5.4	6.5	5.5	773	Equip. distrib. electr.	4.4	16.8	11.4
684	Aluminium	3.0	3.4	2.9	781	Pass. motor cars	4.2	1.0	0.7
<i>Waning Stars</i>					<i>Waning Stars</i>				
071	Coffee	9.1	20.3	17.2	333	Petroleum oils, crude	21.8	6.0	4.1
281	Iron ore	8.1	27.7	23.4	071	Coffee	1.8	5.0	3.4
081	Feeding stuffs	6.8	14.7	12.4	334	Petroleum prods., refined	6.8	14.7	12.4
<i>Missed Opportunities</i>					<i>Missed Opportunities</i>				
713	Piston engines	2.8	2.9	2.5	764	Telecom. equipment	3.3	3.2	2.2
651	Textile yarn	1.2	2.0	1.7	054	Vegetables, fresh	2.2	5.5	3.8
036	Crustaceans, fresh	0.6	1.5	1.2	036	Crustaceans, fresh	1.3	3.8	2.6
<i>Retreats</i>					<i>Retreats</i>				
072	Cocoa	1.4	8.7	7.4	681	Silver	1.5	7.0	4.7
248	Wood, simply worked	0.9	1.4	1.2	278	Other crude minerals	0.6	3.8	2.6
061	Sugar and honey	0.5	2.6	2.2	341	Gas, natural	0.3	0.4	0.3
KOREA					SOVIET UNION				
<i>Rising Stars</i>					<i>Rising Stars</i>				
851	Footwear	7.8	16.4	7.8	683	Nickel	2.4	15.2	13.5
781	Pass. motor cars	5.6	1.9	0.9	251	Pulp and waste paper	1.0	1.6	1.4
848	Art. of apparel	5.0	25.7	12.2	034	Fish, fresh	0.6	1.2	1.1
<i>Waning Stars</i>					<i>Waning Stars</i>				
674	Flat-rolled prods.	1.7	3.5	1.7	333	Petr. oils, crude	22.3	4.7	4.2
653	Fabrics, man-made textile	1.3	6.5	3.1	341	Gas, natural	10.4	11.0	9.7
678	Tubes and pipes of iron	1.0	4.9	2.3	247	Wood, rough	3.1	11.3	10.1
<i>Missed Opportunities</i>					<i>Missed Opportunities</i>				
034	Fish, fresh	1.7	6.4	3.0	781	Pass. motor cars	1.7	0.3	0.3
844	Undergarments	1.6	13.4	6.4	684	Aluminium	1.3	1.4	1.3
651	Textile yarn	1.0	2.8	1.4	522	Inorg. chem. elements	1.1	3.4	3.0
<i>Retreats</i>					<i>Retreats</i>				
654	Other text. fabrics	0.5	4.8	2.3	334	Petr. prods., refined	21.4	9.6	8.5
121	Tobacco, unmanuf.	0.2	2.3	1.1	248	Wood, simply worked	3.3	5.10	4.4
248	Wood, simply worked	0.1	0.4	0.2	667	Pearls, prec. stones	2.4	2.7	2.4

## B. Areas

LATIN AMERICA				SOUTHEAST ASIA			
<i>Rising Stars</i>				<i>Rising Stars</i>			
684	Aluminium	c% 2.6	s% 3.6	k 2.5	752	Aut. data proc. mach	c% 5.1 s% 4.9 k 2.2
036	Crustaceans, fresh	2.4	6.8	4.7	759	Parts for 751, 752	5.0 7.3 3.2
034	Fish, fresh	1.8	4.6	3.2	762	Radio-broadc. receivs.	2.8 13.4 5.9
<i>Waning Stars</i>				<i>Waning Stars</i>			
333	Petr. oils, crude	17.6	4.7	3.3	247	Other wood, rough	4.0 25.7 11.3
057	Fruit, fresh	8.3	15.1	10.5	341	Gas, natural	1.8 4.8 2.1
081	Feeding stuffs	3.9	10.1	7.1	667	Pearls., prec. stones	1.2 2.7 1.2
<i>Missed Opportunities</i>				<i>Missed Opportunities</i>			
611	Leather	1.3	7.1	5.0	776	Thermionic tubes	11.0 16.7 7.3
651	Textile yarn	0.6	1.1	0.8	054	Vegetables, fresh	1.8 6.8 3.0
848	Art. of apparel	0.3	0.9	0.6	058	Fruits, preserved	1.1 7.3 3.2
<i>Retreats</i>				<i>Retreats</i>			
334	Petr. prods., refined	12.4	7.1	4.9	232	Natural rubber	3.7 57.8 25.4
071	Coffee	8.4	22.7	15.8	334	Petro. prod., refined	3.6 3.3 1.4
682	Copper	7.9	16.2	11.3	248	Wood, simply worked	2.5 7.7 3.4
EASTERN EUROPE				GROUP OF SEVEN			
<i>Rising Stars</i>				<i>Rising Stars</i>			
684	Aluminium	c% 1.9	s% 1.8	k 1.8	792	Aircraft	c% 2.1 s% 84.0 k 1.6
583	Polymerization prods.	1.7	1.3	1.3	764	Telecom. equip.	1.8 63.1 1.2
034	Fish, fresh	0.7	1.3	1.3	776	Thermionic tubes	1.7 58.7 1.1
<i>Waning Stars</i>				<i>Waning Stars</i>			
334	Petro. prod. refined	9.7	4.0	3.9	333	Petro. oils, crude	1.2 11.3 0.2
674	Flat-rolled prods.	3.1	3.1	3.0	248	Wood, simply worked	0.7 48.8 0.9
673	Iron bars	2.0	3.8	3.8	011	Meat, fresh	0.6 33.4 0.6
<i>Missed Opportunities</i>				<i>Missed Opportunities</i>			
821	Furniture	4.4	4.3	4.2	781	Pass. motor cars	9.5 81.4 1.6
843	Outer garments, women	2.8	3.8	2.7	784	Parts for motor vehicles	4.2 81.3 1.6
842	Outer garments, men	2.3	3.7	3.6	752	Auto data proc. mach.	3.2 69.8 1.3
<i>Retreats</i>				<i>Retreats</i>			
322	Coal and lignite	3.5	5.7	5.6	674	Flat-rolled prods.	1.0 50.1 1.0
011	Meat, fresh	3.2	3.3	3.3	334	Petro. prods., refined	0.9 17.7 0.3
248	Wood, simply worked	1.8	2.4	2.4	723	Civil eng. equipt.	0.7 74.7 1.4

Appendix 2  
A. INCREASING GROUPS *s<sub>inc</sub>* IN OECD IMPORTS

SITC	Description	1988%	Δ1979%*	SITC	Description	1988%	Δ1979%*
022	Milk and cream	0.22	29.41	672	Ingots	0.49	28.95
024	Cheese and curd	0.28	0.00	679	Iron and steel castings	0.04	33.33
034	Fish, fresh	0.57	39.02	683	Nickel	0.18	5.88
035	Fish, dried	0.07	0.00	684	Aluminium	1.05	40.00
036	Crustaceans and moll., fresh	0.50	42.36	686	Zinc	0.11	22.22
037	Crustaceans and moll., prep.	0.22	37.50	688	Uranium depleted in U235	0.00	0.00
046	Meal and flour of wheat	0.01	0.00	691	Structures of iron	0.22	22.22
048	Cereal preparations	0.24	41.18	692	Metal containers	0.12	20.00
054	Vegetables, fresh	0.59	11.32	693	Wire products	0.11	0.00
058	Fruit, preserved	0.34	21.43	694	Nails, screws, nuts, bolts	0.24	9.09
073	Chocolate	0.14	0.00	695	Tools	0.37	8.82
075	Spices	0.05	25.00	696	Cutlery	0.09	12.50
098	Edible prods. n.e.s.	0.20	53.85	699	Manuf. base metals	0.74	17.46
111	Non-alcoholic beverages	0.06	100.00	713	Intern. combust. eng.	1.14	39.02
112	Alcoholic beverages	0.63	0.00	714	Engines and motors, non-elec.	0.63	75.00
122	Tobacco, manufactured	0.17	30.77	716	Rotating elec. plant	0.34	25.93
251	Pulp and waste paper	0.68	9.68	718	Oth. power gen. mach.	0.10	11.11
273	Stone, sand and gravel	0.10	0.00	724	Tex., leather mach.	0.44	15.79
288	Non-ferrous base metal waste	0.29	7.41	725	Paper mill mach.	0.18	63.64
292	Crude vegetable materials	0.40	11.11	726	Printing mach.	0.34	70.00
351	Electric current	0.13	44.44	727	Food-process. mach.	0.11	37.50
512	Alcohols, phenols	0.28	21.74	728	Other machinery	0.87	47.46
513	Carboxylic acids	0.29	20.83	736	Machine-tools	0.59	15.69
514	Nitrogen-function compounds	0.53	55.88	737	Metalworking mach.	0.15	15.38
515	Organo-inorgan. compounds	0.42	20.00	741	Heating, cooling equip.	0.50	42.86
516	Other organic chemicals	0.22	29.41	742	Pumps for liquids	0.30	20.00
522	Inorganic chemical elem.	0.36	2.86	743	Pumps not for liquids	0.53	35.90
523	Other inorganic chemicals	0.26	8.33	744	Mechan. handl. equip.	0.59	31.11
531	Synthetic organic dyestuffs	0.20	17.65	745	Other non-elec. mach.	0.45	32.35
532	Dyeing and tanning extracts	0.01	0.00	749	Non-electric parts	1.00	19.05
533	Pigments, paints	0.30	50.00	751	Office machines	0.42	2.44
541	Medicinal, pharmaceut. prod.	1.02	43.66	752	Aut.data proc.mach.	2.37	196.25
551	Essential oils	0.10	11.11	759	Parts for 751, 752	1.57	214.00
553	Perfumery, cosmetics	0.24	84.62	761	Television receivers	0.42	44.83
554	Soap, cleansing preps.	0.17	21.43	762	Radio-broadc. receiv.	0.48	23.08
572	Explosives, pyrotec. prod.	0.03	50.00	763	Sound and video rec. equipt.	0.55	83.33
582	Condensation, polycondens. prods.	0.53	29.27	764	Telecommun. equip.	1.49	81.71
583	Polymerization prods.	1.28	36.17	771	Electric power mach.	0.27	92.86
591	Disinfectants, insecticides	0.18	12.50	772	Elec. app. for mak.circ.	0.92	53.33
592	Starches, inulin	0.16	45.45	773	Equip.for distr. elec.	0.38	111.11
598	Miscell. chemical products n.e.s.	0.61	27.08	774	Elec. app. for med. purposes	0.22	57.14
611	Leather	0.26	13.04	776	Thermionic, cold cathode tubes	1.51	93.59
612	Manufactures of leather	0.09	50.00	778	Elec. mach. n.e.s.	1.17	50.00
621	Materials of rubber	0.12	20.00	781	Pass. motor cars	6.09	50.00
625	Rubber tyres and tubes	0.53	20.45	782	Mot. veh. for goods transport	1.20	51.90
628	Articles of rubber n.e.s.	0.16	45.45	783	Road mot. veh. n.e.s.	0.20	42.86
633	Cork manufactures	0.02	0.00	784	Parts f. 722, 781-83	2.69	25.70
635	Wood manufactures	0.24	20.00	786	Trailers	0.14	0.00
641	Paper and paperboard	1.67	32.54	792	Aircraft	1.32	32.00
642	Paper and paperboard, cut	0.39	39.29	812	Sanitary fixtures	0.28	40.00
651	Textile yarn and fibres	0.74	2.78	821	Furniture	1.03	49.28
656	Tulle, lace, embroidery	0.07	16.67	831	Travel goods	0.29	52.63
657	Special textile fabrics	0.29	16.00	842	Outer garments, men	0.64	28.00
658	Made-up articles of textiles	0.26	23.81	843	Outer garments, wom.	1.01	57.81
661	Lime, cement	0.22	46.67	844	Under garments not knitted	0.25	31.58
663	Mineral manufactures n.e.s.	0.24	20.00	845	Outer garments	0.93	60.34
664	Glass	0.29	26.09	846	Undergarments, knitted	0.45	40.63
665	Glassware	0.20	11.11	847	Clothing accessories	0.16	33.33
666	Pottery	0.17	0.00	848	Art. of apparel	0.41	32.26

\*A indicates variation with respect to 1979.



851	Footwear	1.00	26.58	894	Baby carriages	0.85	57.41
871	Optical instrum.	0.11	83.33	895	Office supplies	0.13	62.50
872	Medical instrum.	0.29	70.59	896	Works of art	0.41	32.26
873	Meters and counters	0.04	0.00	897	Jewellery	0.40	53.85
874	Measur. instr. n.e.s.	1.13	48.68	898	Musical instruments	0.58	123.08
882	Photographic supplies	0.43	22.86	899	Other miscell. manuf.	0.36	21.14
884	Optical goods n.e.s.	0.18	12.50	911	Postal packages	0.04	0.00
892	Printer matter	0.60	22.45	931	Special transactions	1.41	60.23
893	Art. n.e.s. of div. 58	0.87	70.59	951	Armoured fighting veh.	0.17	88.89

B. DECREASING GROUPS  $s_{dec}$  IN OECD IMPORTS

SITC	Description	1988%	$\Delta 1979\%^a$	SITC	Description	1988%	$\Delta 1979\%^a$
001	Live animals for food	0.27	-12.90	322	Coal, lignite and peat	0.63	-28.41
011	Meat, fresh	0.97	-11.82	323	Briquettes, coke	0.07	-53.33
012	Meat, preserved	0.05	-37.50	333	Petroleum oils, crude	5.34	-66.71
014	Meat, extracts	0.14	-22.22	334	Petroleum prod., refined	2.51	-40.24
023	Butter	0.11	-20.00	335	Residual petr. products	0.21	-19.23
025	Eggs	0.04	-20.00	341	Gas, natural	1.06	-36.14
041	Wheat	0.21	-34.37	411	Animal oils and fats	0.04	-50.00
042	Rice	0.05	-16.67	423	Fixed veg. oils	0.12	-14.29
043	Barley, unmilled	0.06	-50.00	424	Other fixed veg. oils	0.10	-47.37
044	Maize, unmilled	0.22	-53.19	431	Animal and veg. oils, processed	0.05	-28.57
045	Cereals unmilled, other	0.05	-50.00	511	Hydrocarbons	0.46	-11.54
047	Other cereal meals	0.01	-0.00	524	Radioactive materials	-0.27	-30.77
056	Vegetables, prepared	0.16	-20.00	562	Fertilizers, manuf.	0.30	-14.29
057	Fruits and nuts, fresh	0.79	-4.82	584	Regenerated cellulose	0.06	-25.00
061	Sugar and honey	0.22	-51.11	585	Other artif. resins	0.02	-50.00
062	Sugar confectionery	0.06	-0.00	613	Furskins, tanned	0.06	-25.00
071	Coffee	0.53	-52.25	634	Veneers, plywood	0.31	-6.06
072	Cocoa	0.19	-51.28	652	Cotton fabrics	0.37	-11.90
074	Tea and maté	0.05	-37.50	653	Fabrics, woven m.- m. fib.	0.43	-2.27
081	Feeding stuffs for animals	0.55	-15.38	654	Textile fabrics	0.22	-4.35
091	Margarine	0.02	-50.00	655	Knitted fabrics	0.10	-23.08
121	Tobacco, unmanufactured	0.18	-33.33	659	Floor coverings	0.30	-11.76
211	Hides and skins	0.18	-18.18	662	Clay constr. mat.	0.21	-8.70
212	Furskins	0.07	-56.25	667	Pearls, precious stones	1.00	-27.54
222	Oilseeds for soft veg. oils	0.38	-38.71	671	Pig iron	0.29	-6.45
223	Oilseeds for other veg. oils	0.02	-60.00	673	Iron and steel bars	0.53	-20.90
232	Natural rubber latex	0.15	-34.78	674	Universals, plates	1.01	-4.72
233	Synthetic rubber latex	0.15	-6.25	675	Hoop and strip of iron	0.05	-79.17
244	Cork, natural	0.00	-100.00	676	Rails and railway track elements	0.02	-33.33
245	Fuel wood	0.01	-0.00	677	Iron and steel wire	0.09	-18.18
246	Pulpwood	0.09	-25.00	678	Tubes, pipes of iron	0.45	-16.67
247	Other wood, rough	0.35	-43.55	681	Silver	0.31	-44.64
248	Wood simply worked	0.75	-20.21	682	Copper	0.70	-14.63
261	Silk	0.02	-33.33	685	Lead	0.04	-63.64
263	Cotton	0.18	-40.00	687	Tin	0.05	-72.22
264	Jute	0.00	-100.00	689	Miscell. non-fer. metals	0.07	-41.67
265	Vegetable textile fibres	0.02	-33.33	697	Housh. eqp. of base met.	0.07	-41.67
266	Synthetic fibres	0.11	-8.33	711	Steam boilers	0.02	-33.33
267	Other man-made fibres	0.04	-0.00	712	Steam power units	0.03	-40.00
268	Wool and other animal hair	0.25	-10.71	721	Agricul. mach.	0.27	-20.59
269	Old clothing	0.01	-50.00	722	Tractors	0.22	-26.67
271	Fertilizers, crude	0.06	-53.85	723	Civil engineering equipt.	0.47	-4.08
274	Sulphur	0.03	-40.00	785	Motorcycles	0.26	-16.13
277	Natural abrasives	0.04	-33.33	791	Railway vehicles	0.08	-11.11
278	Other crude minerals	0.24	-22.58	793	Ships, boats, warships	0.45	-8.16
281	Iron ore and concentrates	0.34	-46.87	881	Photographic app.	0.25	-10.71
282	Waste and scrap iron and steel	0.17	-22.73	883	Cinematog. film, exposed	0.01	-50.00
286	Ores and conc. of uranium	0.00	-100.00	885	Watches and clocks	0.30	-9.09
287	Ores and conc. of base metals	0.63	-33.68	941	Animals, live	0.01	-0.00
289	Ores and conc. of prec. metals	0.06	-50.00	961	Coin, not legal tender	0.01	-87.50
291	Crude animal materials	0.11	-15.38	971	Gold, non-monetary	0.58	-9.37

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