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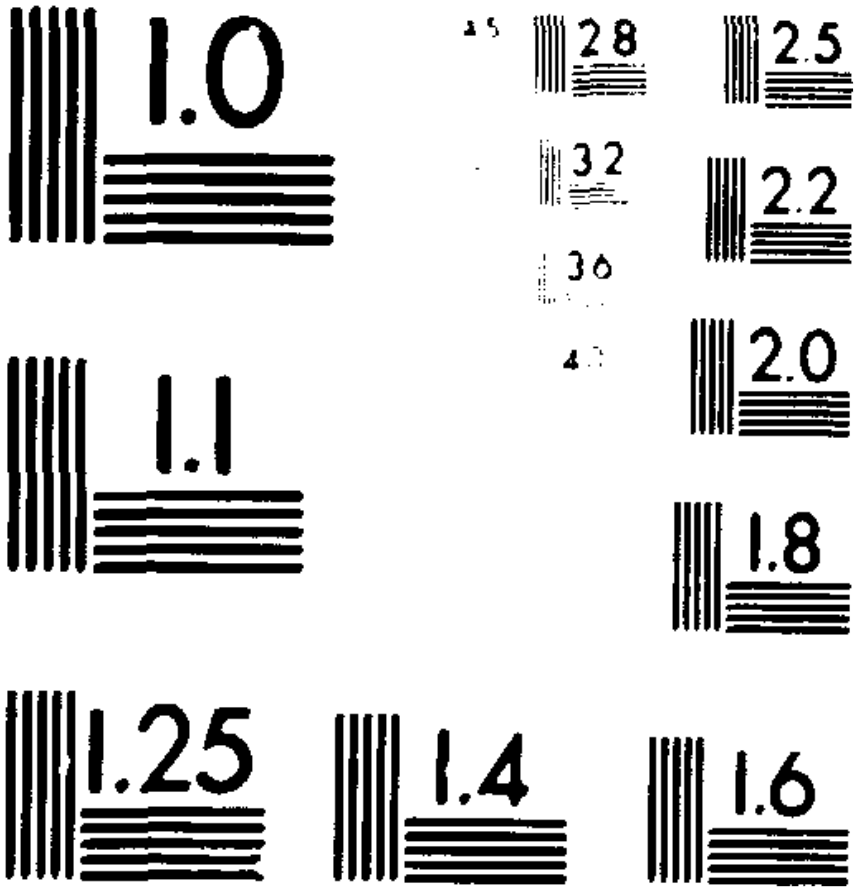

Distr.
LIMITED

UNIDO/IS.494
12 November 1984

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

ENGLISH

14116

RE-INDUSTRIALIZATION IN THE ADVANCED COUNTRIES AND ITS EFFECTS ON THE DEVELOPING COUNTRIES, IN PARTICULAR IN LATIN AMERICA*

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V.84-93107

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This paper was originally prepared for a Seminar on the Perspectives for the Industrialization in Latin America, held in Mexico, in 1984.

I. THE ISSUE

The subject of this paper given by the organizers to be the re-industrialization in the advanced countries, entails a number of explicit or implicit assumptions some of which would call for special attention and more detailed elaboration than the framework of this paper would permit. A brief review of some of the most apparent assumptions may in any case be warranted before we focus on some selected issues.

Re-industrialization implies that in the advanced countries - by which we mean here the industrialized countries with emphasis on OECD member countries - have been subject to a period of de-industrialization and that that period now is proving to have been temporary in nature being followed by a period of increases in industrial capacities and/or growth in output. This would entail either a cyclical development in these economies from a decreasing share of manufacturing to an increasing share or a break in the long-term trends of structural changes.

There could be several approaches for testing this hypothesis. First, it could be argued that de-industrialization in developed countries took place in the 1960s and 1970s through the redeployment or transfer of industrial production capacities to developing countries. The question would be if in itself such redeployment of industries would necessarily entail de-industrialization of the developed countries versus the developing countries. Another question would then be if a break of this trend now occurred with a re-transfer of production back to the developed countries.

A process of redeployment of industries from developed to developing countries has indeed taken place over the last decades. This process, however, seems to be still taking place, albeit at a slower pace, than in the 1970s.

The redeployment process should be understood to form part of a restructuring of the industrial sector. This means that less competitive industries - or more accurately industrial activities - are redeployed and replaced by more competitive lines of production. Such combined process of redeployment and

upgrading of production in industry or in a particular subsector could a priori imply that the manufacturing value-added in the country remains "more or less" at the previous level.

In highly aggregated terms the global process of industrial restructuring has moved at very modest rates: The share of developing countries in total world manufacturing value added increased from 10% in 1975 to 11% in 1980 (see table 1). In these relative terms one might call this a degree of "de-industrialization" of the developed

Table 1: Estimated shares in world MVA, by economic groupings and subgroup, selected year

				%		
Economic grouping	1963	1970	1973	1975	1978	1980
	(Based on constant (1975) prices)					
Developed market economies	77.3	73.4	72.0	67.5	66.8	65.2
Centrally planned economies	14.6	17.8	18.7	22.5	22.9	23.8
Developing countries	8.1	8.8	9.3	10.0	10.3	11.0

Source: UNIDO, Industry in a Changing World, 1983

countries. However, de-industrialization would imply a declining share of MVA in GDP in each of these countries. Such evidence is, however, inconclusive. This process is very gradual and there is little evidence of a drastic break of the process at this stage. From the available data at this aggregate level it can therefore hardly be deduced that a major long-term re-industrialization of the developed countries is under way.

On the other hand, the statistical concept of industrial subsectors and the further disaggregation of subsectors are crucial for assessing the extent for restructuring. More disaggregated data (see table 2), show that some subsectors in the developed countries have undergone a sizeable net decrease. The developed countries' textiles and clothing industry for instance has been significantly reduced in terms of value added shares. The question could now be raised if a re-redeployment or re-industrialization of this industry can be observed. A detailed analysis of emerging trends and underlying forces would be required to ascertain this possible development including an examination of applications of new technologies in various

activities of this subsector and the effects on the competitiveness of developed countries. On this basis, it may be possible to estimate the extent at which a transfer of these activities back to the developed coutnries could be expected in the year to come.

Table 2: Share of selected industrial branches in world MVA, at constant prices, by economic grouping, 1963, 1973 and 1980

(Percentage)

Branch	ISIC	Developing countries			Centrally planned economies			Developed market economies		
		1963	1973	1980	1963	1973	1980	1963	1970	1980
Food products	311	13.6	13.8	15.1	22.7	26.2	26.9	63.7	60.0	58.1
Beverages	313	12.2	13.7	18.6	21.3	21.1	23.8	66.5	65.2	57.5
Tobacco	314	23.6	27.4	30.7	14.1	15.6	16.8	61.3	57.0	52.5
Textiles	321	17.4	17.5	18.7	23.3	26.7	32.4	59.3	55.8	48.9
Wearing apparel	322	8.0	9.0	10.2[a]	24.0	30.5	38.3[a]	68.0	60.5	51.5[a]
Leather and fur products	323	10.3	10.8	12.7[a]	24.5	31.0	36.0[a]	65.3	58.2	51.3[a]
Footwear	324	8.9	10.5	11.1	27.7	37.7	44.3	61.4	51.8	44.6
Wood and cork products	331	9.0	9.4	12.0	18.8	19.4	22.7	72.2	71.2	65.3
Furniture and fixtures, excluding metal	332	6.8	6.0	7.5[a]	13.9	16.3	21.3[a]	79.3	77.7	71.2[a]
Paper	341	6.1	6.9	8.2	6.4	7.5	8.7	87.5	85.6	83.1
Printing and publishing	342	5.9	6.6	6.1	4.3	6.3	6.9	89.8	87.1	86.9
Industrial chemicals	351	6.2	6.9	7.7	19.6	22.2	28.0	74.2	71.0	64.3
Other chemicals	352	13.7	16.2	18.0	5.2	6.8	7.5	81.1	77.0	74.5
Petroleum refineries	353	45.9	39.1	41.8	7.0	12.4	16.6	47.1	48.4	41.6
Miscellaneous products of petroleum and coal	354	4.8	12.6	14.6	35.5	36.8	41.5	59.6	50.6	43.9
Rubber products	355	9.8	11.6	14.2	14.2	17.4	21.6	76.0	71.0	64.2
Plastic products	356	11.3	8.4	10.2[a]	7.6	8.6	11.1[a]	81.1	83.0	78.7[a]
Pottery, china and earthenware	361	12.6	12.6	13.1	22.9	31.1	40.5	64.5	56.3	46.4
Glass	362	7.4	9.4	9.9	15.2	20.8	27.9	77.4	69.8	62.2
Other non-metallic mineral products	369	7.1	8.9	12.1	26.4	31.5	34.6	66.5	59.6	53.3
Iron and steel	371	5.4	6.7	10.3	19.8	19.7	24.2	74.8	73.6	65.5
Non-ferrous metals	372	8.3	8.2	10.4[a]	23.0	29.2	34.5[a]	68.7	62.6	55.1[a]
Metal products, excluding machinery	381[b]	5.1	6.0	7.3	14.6	21.0	30.4	80.3	73.0	62.4
Non-electrical machinery	382[b]	2.4	4.6	5.0	14.9	19.4	26.7	82.7	76.0	68.3
Electrical machinery	383[b]	4.1	5.2	6.6	16.4	19.8	26.3	79.5	75.0	67.2
Transport equipment	384[b]	4.6	6.6	7.5	12.4	18.1	27.3	83.0	75.3	65.2
Professional and scientific equipment, photographic and optical goods	385[b]	1.3	1.7	2.1[a]	39.9	49.3	55.5[a]	58.8	49.0	42.4[a]
Other manufacturing	390	8.4	7.1	8.4[a]	19.3	30.0	40.8[a]	72.3	62.9	50.8[a]

Source: UNIDO, Industry in a Changing World , 1983

A second - related - dimension which could be used in the analysis of a possible de- and re-industrialization process is the ratio of growth between the manufacturing and the services sector. Various studies on the relative decline of the manufacturing industry versus the services sector suggest that indeed a long-term de-industrialization process is taking place. Services in the developed market economy countries increased from around 54% (in GDP) in the 60s and 70s to some 57% in 1980 (in North America from 60% to 63%). The growth propensity *) of this sector was 1.2 in the period 1973-80. Employment in the servicessector has reached over 60% in total labour force in most of these countries (USA 67.8% in 1978). (Source: UNIDO, Industry in a changing world, 1983, tables IV. 2 & 3). The same process -

*) Ratio of the growth rate for output of the servicessector to the growth of GDP (constant prices).

and with the same growth propersity of the service sector - can be observed in the developing countries, although the services reach a share of only 44.3% (1980) on the average.

If this gradual process of structural change in the developed market economies is used as an expression of de-industrialization, then the question would arise if this trend in the developed countries is being reversed. There seems to be no evidence for such a reversal. On the contrary, services continued to grow. Moreover, "services" are statistically also to a large and increasing extent embodied in the manufacturing sector through a growing service content in activities of industrial corporations. These services are thus registered as manufacturing and not as services.

A third dimension of the possible de-industrialization and re-industrialization process could be provided by the recent work undertaken (by Freeman and others) on long waves of industrial growth. Some of these studies suggest that a new secular upswing for major economies in the industrialized world can be anticipated due to or connected with the breakthrough of new applications in the electronics field. However, whereas several cyclical movements could be observed between innovation and industrial growth, data do not seem to provide fully evidence for a dominating long cycle of de- and re-industrialization or of a current turn of such a cycle.

Finally, the question of advanced countries' de- and re-industrialization could be seen against the recent economic recession. What could be asked is whether the real or expected recovery in the developed countries is the beginning of a period of re-industrialization with a distinct pattern.

Macro-economic indicators in the industrialized countries show on the whole improving economic conditions in economies in 1983 and 1984 as compared to the years 1980-82. The estimated average 2.3 increase in GDP last year is expected to increase sligthly further in 1984 with about one percentage point thereby approaching the average rate in the 1970s.* In respect of longer-term growth prospects, differences

* OECD, Economic Outlook, 34, December 1983.

among the industrialized countries and the nature of the recovering process, however, one can note uncertainties and irregularities. Whereas in the USA and Japan the recovery seems to proceed, European economies show lower growth, more uncertain prospects and continued high, rising unemployment rates (11.5%).

There is a broad consensus among observers of current international developments in industrial production and trade that global industrial restructuring is undergoing drastic changes and increasing uncertainty in terms of the underlying causes and resulting trends. Widespread use of broad ranges of Government policies and measures, rapid technological developments, changing corporate strategies in the North,unsolved problems in the international finance system, price-uncertainties have created an international environment in which OECD- countries primarily seek solutions for their own national industries and in which the developing countries are most severely affected.

Extrapolations of the growth patterns in the economies and in industry are increasingly unsuitable for realistic assessments of prospects and directions of developments. There is no consensus if there has been or is still a crisis, a recession, a period of transition. Is the observed break in the long-term productivity growth trend part of a transitory phenomenon?

Seeing the economic recession and the recent signs of recovery in a wider perspective, further uncertainties arise which can only partly be explained by existing statistical data. Firstly, the role and relationship of key variables for the growth process seem to have undergone fundamental changes in the past few years. Secondly, interpretations of these changes of their driving forces and of the required policies are still under debate.

II. SOME CURRENT AND PROSPECTIVE INDUSTRIAL TRENDS AND POLICIES IN DEVELOPED COUNTRIES AND THEIR POSSIBLE IMPACT ON DEVELOPING COUNTRIES

Observations of the recent trends show that it would be problematic and probably even counter-productive to base the analysis of current international developments in industry on traditional concepts or new terms and categories of development patterns. There seems to be no clear trend indicating a dominant sustained development pattern, a clear shift from de-industrialization to re-industrialization in the advanced countries nor a clear commonality in the instruments used in the industrialized countries. On the basis of actual data and empirical trend observations it is hardly possible to discern a coherent picture and a consistent message of the challenges and prospects for the developing countries' continued industrialization as arising from developments in the advanced countries.

It is suggested that from the increasingly blurred and changing picture of current developments and underlying forces at any given point of time only fragments can be identified and that continuous monitoring of pertinent developments is required in order to evolve a message for policy making in the developing countries. The time horizon for all actors in the international restructuring process is very short. While monitoring this process, developing countries cannot wait for a coherent picture to emerge. Rather, glimpses can be made and an iterative approach should be applied.

In general, industrial production in developed countries is expected to be characterized by a further rationalization of existing production capacities and the creation of new capacities on the basis of newly developed process and product technology. Intra-OECD competition is likely to be increasingly hard especially in industries based on higher-level technologies. Another feature will be the increasing service content of the manufacturing sector and the increasing services sector per se in terms of supporting activities for industry. Corporate strategies vary. Whereas many industries in the 1970s pursued a

strategy of increasing scales of production for growing shares of markets for mature products, new strategies now emerge with far-reaching rationalizations, concentration on new, selective product groups, focussed marketing and selective acquisition of other companies - domestic and foreign.

After the years of very low or negative growth of the manufacturing sector, industry in many OECD countries seems now to have undergone a transition to new structures which have far greater competitive strength than before, greater flexibility in terms of production response to market changes and possibly less redeployment propensity to developing countries.

More specifically some emerging features in developed countries' recent industrial development can be singled out in terms of technology developments and policies, investment strategies and industrial policies.

(i) Technology developments and policies

Innovation is increasingly seen by all actors as the major vehicle for regaining the competitiveness and pace of industrial development.

Company strategies and Government innovation policies are intensifying in respect of new product and process technologies. Targets in terms of product groups are very similar in the various countries but the policies and approaches used differ slightly. There is a move towards shifting intra-OECD competition to product groups of higher levels of sophistication and to try to make a good "place in the race".

Through a wide range of policies, interventions and institutional support such as science parks and laboratories, Governments in the developed countries attempt to encourage and speed up innovation. This concerns both "old" and "new" industries. Two examples may usefully illustrate these tendencies.

The first example refers to the technological upgrading of the textile and clothing industry in the developed countries. After a significant redeployment of this industry to developing countries in the 1960s and 1970s the producers and the Governments in the developed countries are now increasing their efforts to maintain a viable industry on the basis of process innovations. This concerns primarily the textile industry where significant advances are being made in the spinning and weaving processes and where dyeing is already fully automatic. Growing attention is also given to the possible automation in the clothing industry. Thus, in several countries computer run cloth cutters are being installed. (e.g. in the UK already 21 have been installed.) Whereas, the European Economic Communities plan to spend some US$ 26 million to support this industry's technological upgrading, with industry providing the same amount, Japan has already invested US$ 60 million in order to reduce labour costs in the clothing industry.

The indications of technological upgrading in the advanced countries suggest that developing countries may be encountering increased competition in the developed country markets for a range of products. But it is also obvious that these indications are too sketchy and tentative to permit drawing a full picture of future trends in production and trade.

The second example is to show the growing attention and support by Governments in some of the advanced countries to the development of the informatics industry as a key high-tech sector. The following brief observations *) may illustrate this and the differences in approaches.

In the USA the rapid development of the electronics industry was from the outset resting on the large role of the military and space programmes. Given the size of these programmes, the industry had in the past and has now a very substantial and secure basis for advancement. The yearly average of US$38 billion of the current defence budget for electronics corresponds to a significant part of the entire world commercial market. As a special programme the Department for Defense is sponsoring the development of the Very High Speed Integrated Circuit (VHSIC).

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*) See a forthcoming UNIDO document entitled "Summary Review of Government Policies on Information Technology".

Technology policies seem indeed be characterized by support through the defence system rather than to industry directly. Nevertheless, increases in R & D expenses by industry are also supported by tax credits.

In contrast, Japan's innovation policy is dominated by targeted direct support to the R & D efforts of specially selected industrial corporations. The Japanese Ministry of Trade and Industry (MITI) takes a leading role in this process. On the basis of a longer term development perspective and rationalization of industry through specialization, R & D is channelled towards future "niches" of activity. The R & D efforts form a consistent programme with an institutional infrastructure of specialized laboratories, research councils etc., financial support and appropriate trade policies. Government procurement policies and foreign investment policies are also designed to serve the programme which, however, also foresees fierce competition among producers.

In the Federal Republic of Germany the Ministry of Research and Technology provides strong support to develop domestic electronics industries in special niches. Financial support amounting to DM3 billion in 1984-88, systematic use of procurement policies and an informal network with industrial corporations are the key elements of speeding up technology developments for an informatics industry.

France. The new French "filière éléctronique" programme is aimed at a total government effort of FF 140 billion over a period of five years. The objectives are making the country to become the world's third electronic power (after the US and Japan), to obtain a positive balance of payments at the end of the five-year programme, to create 80,000 new jobs in the electronic sector, and finally to increase annual production by 9 per cent. The French programme is still subject to considerable debate and to revisions from both inside and outside the Government. This may imply that a clear picture of its final form, objectives and priorities has not yet emerged in many areas. This is also explained by the fact that the programme covers a wide range of fields and thus can be regarded as far more comprehensive than other European programmes. The fact that key companies were nationalized in 1982 has led also to changes in management, and relations with the Government and between companies.

Different task forces have been defined in specific areas to develop the guidelines for national programmes. They range from Computer Aided Design for integrated circuits to Computer Assisted Translation. In terms of more specific industrial policy, it is determined (i) to avoid abandoning any electronic sector but to pursue a more selective policy within them; (ii) to reinforce industrial policy to support the current strength of the French industry in telecommunications, telematics and professional electronics; (iii) to consolidate the current position in components; (iv) to develop the service and software industry; (v) to ensure a French presence in medical electronics; (vi) to continue the development of the space industry in the context of European programmes.

The French programme tries to tie together supply and demand by putting special emphasis on applications and on users of technology.

United Kingdom. The Government policy in the United Kingdom is based on supporting the existing industry, specialized training, and the creation of an entirely new company, Inmos, by the Government Technology Group. The main objectives are to support the UK user industries, to improve competitiveness of the micro-electronics industry itself and to protect national security where access to local technology is vital.

The Microprocessor Application Project (MAP) funded with about 55 million pounds sterling aims at encouraging the use of microelectronics beyond the borders of the electronics industry. This programme has recently been extended for another 3 years (up to 1985) with another 50 million pounds sterling for support. The programme operates by encouraging companies to look at microelectronic applications by paying US$ 4,000 towards the cost of hiring a consultant, and by a grant of 25% of development costs of any products involving microelectronic applications.

Further aspects of public policy are similar to those of other countries, namely, discriminating purchasing policies and R & D support, particularly through academic institutions. An ambitious programme to provide schools with micro-computers is also under way.

The UK is the only advanced country to have a Ministry of Information Technology in charge of coordinating all state efforts in the field. Due to its rather limited power it concentrates mainly on information technology education and awareness promotion. The Ministry of Industry, the different policy bodies and the Technology Group, are the most important instruments of public industry policy.

Spain's programme covers the period up to 1987 and intends to increase considerably the demand and consumption of electronic and informatic products with special emphasis on those which have the greatest multiplier effect on the rest of the economy and to increase substantially national production in order to supply the national market with a growing number of locally produced goods. Moreover, exports are to be increased rapidly although this implies that imports cannot be substantially restricted and the level of technological dependence by developing national capabilities is to be enhanced.

In quantitative terms the programme is:

- To increase apparent consumption from Ptas. 439,000 million in 1982, to Ptas. 728,000 million in 1987. This means an annual cumulative increase of nearly 11 per cent in constant money.

- To increase national production of equipment and systems from Ptas. 227,000 million in 1982 to Ptas. 545,000 million in 1987. This would be an annual cumulative growth of over 19 per cent.

- To increase exports from Ptas. 55,000 million in 1982 to Ptas. 229,000 million in 1987. This would be an annual cumulative growth of 33 per cent.

The programme outlines specific measures in consumer electronics, components, telecommunications, informatics, defense, industrial and medical electronics. The general measures cover financial incentives, public procurement, standardization, development of national technological capacity, and links with foreign companies and centres of excellence.

(ii) Investment strategies

Some selected aspects of current policies of companies and Governments in the developed market economies in respect of industrial investment may indicate the changing and varied nature of capital investments. These policies aim at securing resources and markets within the OECD countries.

Some countries have thus introduced special measures to attract investment capital from other developed countries. By actively pursuing policies to "pick foreign winners" and to induce them to invest in the country, it is expected that these be converted into "domestic winners" and that thereby growth stimulants can be acquired in terms of technology advances and component production.

On the other hand, European companies are showing growing interest to invest - mainly by take-overs - in the USA with the objective to obtain direct access to the - possibly increasingly protected - large and expanding market as well as to capture the technology and skills available. The French stock of direct investment in the USA, for instance, is estimated to now exceed US$ 6 billion.

In some industrial subsectors developed country based companies show an increasing interest to merge in order to pool research and development resources and thereby be able to jointly make a leap forward in the international innovation race. While new technologies seem to emerge which would enable a reduction in the production series and thus in the minimum plant size, the generation and adaptation of new technologies for products requires in many cases a large R & D capacity and large minimum firm size. Systematic attempts are also being made by large companies to identify and eventually take-over

small, knowledge-intensive firms as a nucleus for future growth industries. Substantial interest is shown from Governments to support small promising companies with finance, skill development and technological information. Science parks and specialized research institutes are new preferred forms of support.

In contrast, some "mature" industries with non-expanding markets and no apparent prospects for major technology advancement seem to follow another line. Some OECD-based companies are seen to attempt to secure these markets by systematic acquistion of competing companies so as to become market dominators rather than leaders in product/process innovation - led growth. Recent developments in the refrigerator and related industry in Europe seem to illustrate these tendencies.

As a result of these developments an increasingly tight net of OECD-based companies emerge. The international network of the automobile industry is one illustration of these mergers. The food industry is another.

(iii) Industrial policies

Industrial policies in developed countries appear to continue to be more characterized by an ad-hoc complex range of measures rather than forming part of a consistent set of forward-looking and international-oriented policies. A brief review of some US policies towards the steel, petrochemical and electronics industry and the arising implications for Latin America may serve as an illustration of the issue. *)

Given the level of interdependence in the global economy United States monetary and budget financing policies, trade policies and policies influencing the development and transfer of technology have a large impact on the industrialization of Latin American countries.

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*) Excerpts from UNIDO Study: "The changing international position of US manufacturing and US industrial policy: implications for Latin American industrialization", Peter EVANS

While East Asian Newly Industrializing Countries (NICs) have played a more crucial role in the increased United States consumption of manufacturers from developing countries, economic ties between the United States and Latin America are more intimate and complex, first of all because of the greater role of United States TNCs in Latin American manufacturing and, secondly, because of greater inter-connection of the Latin American and United States labour markets (via immigration). In order to build viable and competitive industrial structures and utilize technical innovations in upgrading production, Latin America would need to monitor relevant policies and technology developments in the United States.

Steel is one example of declining United States competitiveness in basic manufacturing. United States steel companies have enjoyed a dominance of the world's largest domestic market. However, the failure to adjust to technological change, changes in international raw material prices relative to United States prices, and heavy investments in the industry by the Japanese, European and developing countries made the United States steel industry unable to compete internationally and also vulnerable to international competition in its domestic market.

The growth of steel capacity in Latin America has been seen as a threat to the USA, despite the fact that Latin America imports about three times the amount of steel from the United States that it exports to the United States, and despite the fact that the growth of Latin American capacity has presented an important potential market for United States capital goods. Brazil in particular has suffered from the ad hoc protectionism of current United States policy. With large domestic reserves of very high quality iron ore, Brazil can legitimately claim to have a long-run comparative advantage in the production of steel. Between 1979 and 1981 it tried to exploit this comparative advantage and solve its own problems of falling domestic demand by increasing exports of charbon steel plate, stainless wire rod and stainless steel bar to the United States. Although Brazil never accounted for more than five per cent of United States domestic consumption, even in those products in which it was most successful, its exports came under legal challenge as being "subsidized" and therefore as potentially subject to countervailing duties.

In petrochemicals the competitive position of the United States has remained very strong in the technologically more sophisticated downstream products, but in basic petrochemical products United States competitive advantage has been undercut first by the dramatic change in relative raw materials prices which gave energy-rich developing countries a substantial advantage over the United States. In the case of Mexico, for example, feedstock costs may be a quarter of United States costs. Furthermore, the differential capital costs of constructing plants outside the United States is narrowing.

The profitability of existing United States naphtha crackers and other basic installed capacity could be shielded by raising the tariff barriers of those commodity petrochemicals that are easily transportable. The immediate negative effects of such a move from a Latin American point of view would be negligible. In the longer run, however, Mexico (and potentially Venezuela) would be deprived of what could otherwise be a crucial market, a market that could facilitate the development of an important vertically integrated basic industry. The protectionist option would also, as in the case of steel, have negative effects on the international competitiveness of United States industries for which basic petrochemical products are important inputs (e.g. textiles).

The alternative possibility would be to assume gradual replacement of a proportion of existing basic capacity by imports, and to focus on product and process innovations in technologically more sophisticated downstream products, (e.g. fine chemicals, agricultural chemicals). Increased United States openness with regard to basic commodity petrochemicals would significantly increase the options available not only to countries with a long-term comparative advantage in petrochemicals, like Mexico, but also to countries whose petrochemical development strategies focus on the domestic market, like Brazil. However, advanced Latin American producers would still need to also pursue developments towards more sophisticated downstream products. Competition may then be increasing also in these fields.

In electronics United States TNCs have developed a variety of different strategies depending on the subsector of the industry in which they are involved. In consumer electronics, relocating production to lower wage bill areas has been the general trend. The United States is an importer rather than an exporter, and in some products (e.g. black and white televisions) domestic production has virtually ceased. In semi-conductors both United States imports and exports are large. Capital-intensive parts are fabricated domestically, labour-intensive assembly is done in developing countries and the assembled components are re-imported for insertion into final products, such as computers. The computer industry itself remains geographically centralized. United States imports are still relatively small, production by developing countries is almost non-existent, and United States exports amount to about 25 per cent of domestic production. The varying degree of international division of labour in these subsectors opens up certain opportunities for Latin American countries while at the same time places important limits on the possibilities for industrial development.

TNC strategies focussed on the geographic dispersion of the production process in electronics have facilitated significant expansion of Latin American exports in the industry, as well as stimulated the growth of labour-absorbing manufacturing activities. These developments are most significant in the case of Mexico, which now supplies almost a third of all television parts and apparatus imported by the United States, and is an important supplier of electronic components in general.

One of the benefits enjoyed by these manufactured exports is that they are likely not to confront protectionist barriers precisely because they are so intimately linked to transnational corporations' strategies. Over 95 per cent of Mexico's exports of electrical machinery are "related party imports"; that is, they are produced by subsidiaries of United States firms (or other kinds of "related parties"). This industry may thus count on domestic pressure to maintain open access to the United States market.

However, exports of the United States tariff items 806.3/807 covering duty-free re-entry of goods partially processed abroad by United States-based firms, almost by definition have few forward or backward linkages inside the country in which they are produced. Even in the case of a relatively industrialized economy like that of Mexico, electronics assembly operations are not a promising base for integrated industrial development and in smaller, less developed countries (e.g., Central America and the Caribbean) the prospects would be even less certain. Any attempt to move in the direction of constructing a more vertically integrated industry internal to a country like Mexico would run counter to the most efficient geographic division of labour as defined from a corporate point of view - an often decisive factor given the extent of direct investment in the industry by TNCs.

Some emerging issues

Past developments show that depending on the specific industrial sub-sectors, Latin American companies' penetration of the United States market independently of channels provided by TNCs can be very problematic even if the prices are competitive.

On the other hand, there are obviously fundamental differences between the way in which Latin Americans define the international division of labour and the way in which it is defined by TNCs. Problems critical to Latin American industrialization such as "de-packaging" of technology currently controlled by TNCs or the effects of large TNC market shares on domestic industrial structures are therefore likely to remain elements of the Latin American policies.

An important aspect of potential United States policies is the extent to which they might be expected to induce responses on the part of Latin American Governments. Systematic US protectionism, for example, would force a fundamental re-evaluation of the current externally oriented industrialization policies of most Latin American countries. It would not only make resolution of balance-of-payments problems through the expansion of manufactured exports manifestly more difficult and force Latin Americans to curtail their consumption of manufactured imports, it may also lessen the interest in co-operation with United States TNCs.

Among Latin American countries Mexico and Brazil not only dominate both the manufactured production and manufactured exports of Latin America, they also account for two-thirds of United States direct investment in Latin America and the largest share of United States trade in manufactured goods. For United States TNCs in sectors like machinery, electrical and electronic equipment and transportation equipment, Mexico and Brazil in combination represent between 80 and 90 per cent of their stake in Latin America. Consequently, it is the policy responses of Mexico and Brazil that are most important to United States TNCs.

Mexico is particularly important, because of its extensive trade relations with the United States and because of the extent to which United States direct investment in Mexico is linkedto United States/ Mexican trade. A development towards liberalized trade would be particularly advantageous to United States firms operating in Mexico. By the same token, the kind of rupture that would occur in the event that the United States adopted a more stringently protectionist strategy and Mexico replied in kind would be most traumatic, despite the fact that the Mexican economy, more than any other in Latin America except Brazil, enjoys the scale and degree of differentiation necessary to make a more autarkic strategy viable.

The situation with respect to the countries of the Southern Cone (Argentina, Uruguay, Chile and Paraguay) provides the best contrast to the Mexican case. These countries have relatively little trade with the United States and United States TNCs have shown only limited interest in recent years in participating in the development of their manufacturing sectors. The relatively more distant connections between manufacturing in these countries and United States industrial policy is perhaps best indicated by the fact that they have virtually no representation among 806.3/807 exports to the United States. The expected economic benefits for these countries from preserving hospitable economic climates are relatively minor compared to those in the Mexican case. Likewise the costs to the United States of the adoption of more nationalist policies by these countries would be less.

At the same time, the restricted scope of local manufacturing capacity would make it harder for these countries to adopt a more nationalist set of policies, even in the face of increased United States protectionism.

In the Brazilian case United States direct investment is much less oriented toward the United States market than is the case in Mexico and the participation in TNC-constructed trade links with the United States is much smaller. The possibility of Brazil responding to international changes by pursuing a more nationalist course may therefore be greater, especially in view of the scale and diversity of its economy.

This heightened awareness on the part of both the United States and Latin America of their industrial strategies and constraints requires a greater transparency in policy formulation and more extensive consideration of the long-term benefits which are possible to achieve within an increasingly "internationalist" industrial policy-making framework.

III. PROSPECTS IN SOME INDUSTRIAL SUBSECTORS

Developing countries have in the recent worldwide crisis experienced a severe set-back of their industrialization and drastic changes in their previous perception of the international industrial restructuring process. Whereas a general uncertainty prevails regarding developing countries' further industrial growth prospects, some broad directions of likely developments and required policies could be outlined in respect of a few industrial subsectors. *)

The first case is the capital goods industry. In the course of their further industrialization, developing countries have little choice but to build up an increasingly integrated capital goods industry. The larger of the developing countries obviously have a broader scope to pursue this development, whereas the smaller countries would need to have a highly selective strategy and to rely to a large extent on international markets. The issue for developing countries is not whether to build up a national capital goods industry, but what type of capital goods should be produced. Developing countries may for instance be able to establish particular types of capital goods for the expanding third-world markets, including new small-scale plants and other relevant applications of new technologies.

A build-up of capital goods production in the developing countries will, however, come up against major obstacles. Firstly, there will be fierce competition from established OECD-based companies supported by policies in terms of export credits, marketing services, etc. Second, a bias may continue to prevail in the developing countries for traditional sources of supply of capital goods from companies based in the OECD countries. Third, there are serious internal constraints on capital goods production in the developing countries, such as the lack of skills in engineering, design and research and development capacities. The skills, the institutional support, the market information and the technology information as well as the capacity for technology generation and application need to be built-up systematically. Development of the capital goods industry also calls for a built-in monitoring of company performance and international development so as to be able to produce efficient and up-to-date capital goods.

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*) See UNIDO, World Industrial Restructuring and Redeployment, 1984.

Developing countries could hardly be expected to rely exclusively on market-induced redeployment of capital goods industries from developed to developing countries. Rather, systematic government policies and negotiation will be required to develop the capital goods industry. While pursuing these endeavours developing countries should be aware of the fact that this industry will continue to be dependent also on foreign inputs and foreign markets. Components and technological, managerial and other specialized industrial services will to a large extent need to be imported from the advanced countries.

In the electronics industry the international diffusion of computer-based automation systems from the industrialized countries is likely to expand further, although still at a relatively slow pace and with expansion restricted to a few growth poles in the developing countries.

Changes in the international location pattern are assumed to take place in terms of locational shifts among major OECD countries, i.e. mainly between Japan, the United States of America and a few production centres in Western Europe and in general from the centre to the periphery of the OECD region. Also established exporters in the developing countries may move to new locations. Indeed, relocations within the Third World are bound to become increasingly important.

The application of micro-electronics to industrial products and processes is already changing industrial production and consumption. The key issue, both for individual and grouped developing countries, is to identify areas of application that would strengthen their long-term industrial development potential. This requires a highly selective approach, which would endeavour to link applications to the strategic sectors of the national economy concerned. Developing countries can not afford to lag behind in the introduction of micro-electronics.

A transition to more viable patterns of electronics manufacturing is unlikely to succeed if developing countries pursue passive and unselective world market integration. An active company strategy and Government supporting policies are required to upgrade current production to a more integrated national electronics industry. Indeed, only countries

which, in addition to their export-oriented chip assembly plants, already have a more established network of capital goods industries could in any way qualify for an integrated electronics industry. For other developing countries, a more selective approach is called for.

With regard to electronic components, developing countries have to decide whether to buy components and assemble them into systems (e.g. mini-computers or control devices). In order to do so, they would need an integrated informatics strategy and, more important, rapid and absolutely accurate marketing information. This would entail:

- projections of likely changes in demand structure (identification of priority application areas);
- a systematic assessment of available resources (tangible and intangible; strategic versus secondary resources);
- an assessment of trends in specific regional and world markets and an evaluation of the scope for improving international competitiveness (on a subsector and firm-specific level);
- changes in organizational patterns (work-place, product-flows, interfirm subcontracting networks, integration into intra-sectoral and intersectoral linkages;
- an assessment of the likely implications for the economics of production (barriers to entry, local value added);
- an assessment of the implications for regional development;
- an assessment of the implications for job generation, skill formation and labour conditions; and
- identification of the scope for policies to integrate export-oriented production lines into an integrated electronics industry subordinated to the country's or region's needs.

Any strategy of applying micro-electronics in developing countries to agriculture, industry or the exploration, exploitation and use of natural resources required a strong capacity to develop, operate and maintain software, particularly applications software. A strong capacity in applications software is indeed a prerequisite not only for selective delinking from the application patterns prevailing in industrialized countries but also for effective integration of the application of micro-electronics to the overall concept of development. What matters is that there is secured access to the knowledge needed to run, adapt and maintain information processing and communication systems and industrial electronic equipment (for instance numerical control), and to subordinate their use to the requirements of development strategies.

In terms of industrial restructuring policies, minimum requirements include the building up of domestic capacities; selective international subcontracting for software reconversion and application packages; and strengthening of the capacity to develop, operate and maintain applications packages, both in the national context (scope for decentralization) and as part of arrangements for technical co-operation among developing countries.

In the developing countries, there was a significant increase of petrochemical production capacities from 1970 up to 1981. The number of developing countries involved in this industry is still fairly limited: less than 15 developing countries have or are developing a petrochemical production capacity. Since feedstock costs in 1979 accounted for about 70 per cent of the total cost of producing basic petrochemicals, developing countries with oil and gas resources are expected to have a potential competitive advantage in this industry. Table 3 shows the UNIDO projections of the developing countries' share in world production capacities for main petrochemicals up to 1984 and 1990 (as estimated in June 1981).

It must be stressed that the chances of realizing these new investments and their potential comparative advantage seem to be rather bleak. Many of the projects are suffering excessively from the inflated costs of equipment and financing, cost overruns etc.

Table 3. Actual and projected share of the developing countries in total world production of selected petrochemical products (Percentage)

Petrochemical product	Developing countries' share				
	1975	1979	1984	1990 Case 1 a/	1990 Case 2 b/
Basic petrochemicals					
Ethylene	4.7	7.2	12.4	19.8	19.6
Propylene	3.7	6.0	9.5	12.1	12.1
Butadiene	5.8	7.9	14.4	19.3	19.3
Benzene	6.0	6.9	11.4	15.7	16.2
Xylenes	4.2	10.8	19.7	23.8	25.3
Methanol	3.3	10.3	15.3	12.9	12.9
Thermoplastics	16.1	17.9	23.4	29.5	33.6
Synthetic fibres	16.1	17.9	23.4	29.5	33.6
Synthetic rubbers	6.9	7.8	11.2	14.9	19.9

Source: UNIDO, "Second world-wide study on the petrochemical industry: process of restructuring" (ID/WG.336/3), p. 68 (June 1981).

a/ In which assumed imports of developing countries in 1990 are at the same level as in 1984.

b/ In which assumed developing countries' production in 1990 is sufficient to meet demand.

Major projects previously considered in some 30 developing countries are currently being shelved or postponed and only smaller projects remain. The estimated capacity share for 1984 may not be realized until 1987 at the earliest.

Since the market in most developed countries is highly integrated, dominated by a limited number of producers and therefore difficult to penetrate, the implementation of export-oriented projects depends on the negotiation of long-term arrangements for the volume of exports, their prices, marketing channels, the cost of feedstock etc. The experience of a number of developing countries, for example, Qatar, Brazil, and the Republic of Korea, has shown that if the efforts to penetrate the market are energetic enough, the chances of success are enhanced.

Unless they were constructed specifically to supply domestic markets, petrochemical facilities in major oil-producing developing countries will only remain viable if large export outlets can be opened up. These countries must therefore overcome trade barriers and obstacles to marketing their products in a highly integrated world market. Negotiations on long-term marketing arrangements are to a large extent a pre-condition for the implementation of projects for which the raw materials are available in developing countries with oil and gas resources. The future process of world restructuring in this industry will therefore largely depend on trade negotiations between developing and developed countries and between the developing countries themselves.

Until around 1979, export-oriented textile and clothing production was largely the preserve of a small number of developing countries, particularly in South-East Asia. This seems to indicate that even in times of high growth of production and international trade, export-oriented textile and clothing production could hardly act as a catalyst for an accelerated industrial transformation in the majority of the developing countries. For countries that yet have to emerge as exporters of manufactured goods, however, reliance on the textile and clothing industries is expected to increase, and they will attempt to take over the production of low-priced labour-intensive products from the present leading producers. In the major developed countries, both firms and Governments can be expected to rely increasingly on protectionism and improving competitiveness through technological upgrading.

Under these circumstances, the possibility for developing countries to obtain more assured outlets seems to be fairly limited, even if the developed countries do pursue "positive structural adjustment". On the other hand, the prospects for domestic demand in the developing countries - primarily the larger ones - are very good, but in many cases these have not so far been followed up systematically. The industry could be substantially expanded through price and income policies and rationalization programmes. This selective application of new process technologies and

new organizational forms of production is likely to foster growth in the industry. Structural adjustment programmes in the developing countries and increased reliance on the internal dynamics of individual developing countries or groups of countries may thus complement their endeavours to increase access to developed country markets for some product groups through consultations.

IV. CONCLUDING OBSERVATIONS

The apparently renewed pace of industrial production and economic growth in a number of industrialized countries is taking place along significantly different paths and with different modes than in the previous periods of rapid industrial growth. The growth rate and pattern and policy approaches are highly differentiated between the industrialized countries and it is increasingly difficult to assess the long-term effects of these developments. Most developing countries are still in an economic industrial and "conceptual" crisis with resource constraints, international uncertainties and lack of an internal consistent vision or perception of a long-term industrialization process, inhibiting a start of such a process.

In this situation a series of development "gaps" can be observed in Latin America versus the industrialized countries, gaps which seem to be widening and which need to be encountered effectively and systematically. These - interrelated - gaps can be listed as follows:

1. The financial gap is currently the most dramatic one with pending or recurrent debt crises and an international "crowding out" on financial markets due to the dominating capital absorption of some advanced economies, in a time when Latin American countries need large investments to upgrade and expand their industrial sector. The scarcity and high costs of foreign capital is obviously recognized by the Latin American policy-makers as being a major stumbling-block for their industrialization. What is called for are new initiatives by Latin America to finance investments and trade expansion through joint, innovative approaches.

2. The structural adjustment gap emerging in Latin American industry is substantial. Industrialized countries have in the recent past upgraded and are currently further modernizing their production capacities so as to enable them to regain and strengthen their competitiveness in a wide range of industrial activities. The Latin American countries need to become more aware of these developments and conceive programmes and policies in order

to adjust products, process and organizational structures of industry on the basis of a monitoring of international trends. A closer intra-Latin American exchange of information on the adjustment processes would need to be established.

3. The technology gap is widening due to rapid advances in the developed countries and their research and development capacities supported by public innovation policies. The product cycle tends to become shorter. For Latin America this technological challenge will need to be met by more focussed, targeted innovation, more active corporate strategies in terms of take-overs and specialization, closer industry-Government-academica communication in the innovation process and more attention to upgrading existing skills and already well advanced processes.

4. The market gap is in many Latin American industries a very serious constraint. With increasing intra-OECD competition in many product groups, with national and regional protectionist policies in the developed countries and with the redeployment wave from developed to developing countries being flattened out, the Latin American countries will find themselves more isolated from the large industrialized markets or at least exposed to erratic, unpredictable changes in these markets. Unemployment in many of the developed countries, especially in West Europe is expected to remain high and may contribute to further resistance from these Governments to decelerate protectionism. Latin American countries need to induce their companies to pursue more aggressive and diversified marketing strategies in the North and to better utilize the still prevailing possibilities in a wide range of products (including products falling under the MFA). In view of the increasing role of compensation-trade and other forms of Government involvement in the international trading system, Latin American countries would need to closely monitor these developments and examine the range of approaches which could be used in this field.

Moreover, it appears that some Latin American countries do possess sizeable domestic markets which due to the given unfavourable price/income relations and Government policies are not effecively utilized. They could serve as an important dynamic factor of growth with the help of suitable policy measures.

5. The information gap is another major constraint which will affect Latin American future industrialization. Industrial development in the 1980s and 1990s presupposes rapid access by the decision-makers to up-to-date information on pertinent tendencies in markets, technologies, policies of other Governments and of country groupings, corporation strategies in crucial subsectors, prices of inputs etc. Developed country-based companies clearly are increasing their lead in this field.

Indeed, the centres of information are located in the advanced countries and these centres have in fact better information on the development process in developing countries than the developing countries themselves. The so-called "value-added networks" are selling information to companies and countries where they obtained it. The Latin American countries will need to get more actively involved in the international information business. The traditional institutions set up by several Latin American Governments for providing information do not seem to be able to fulfill this demanding task.

6. The industrial services gap is closely connected with the previously described gaps. The increasing importance of services for supporting, complementing and directing manufacturing activities has been recognized in the advanced countries. Services in general already cover some 20% of world trade and services exports amount to over US$ 350 billion. With this trend and with the delimitation between manufacturing and services becoming increasingly blurred, it is essential for Latin American industrial strategies to incorporate policies for enhancing relevant services. Computer production without full knowledge

of application systems, the required software and the services to potential users will fail.

In conclusion, it can be emphasized that Latin American policy-makers and decision-makers at the company level need to base their strategies on much more systematic monitoring of relevant developments in the developed countries and other developing countries at similar levels of development as their own country. In the past the notion of redeployment of industries from the industrialized countries to developing countries seemed to imply that industrial activities which were structurally weak and declining in the North would be growth industries in the South and that surveillance of these trends occurring in the North would be essentially required for identifying such redeployment potentials.

In the new development pattern emerging for the 1980s and 1990s, the monitoring of developments taking place in the advanced countries has a different connotation. It should be aimed at identifying trends in production, trade and technology, national policies and corporate strategies and the purpose would be to assess the effects on supply and demand factors and thereby enable the Latin American countries to react timely and not to fall behind in the highly competitive world market both in "mature" and new industrial activities. Industrial strategies in Latin America cannot be established in isolation from the international economy and need also to have a built-in dynamic outlook to be able to respond to changing parameters. Given these changes it should be recognized that no one Government or company would be in the position to establish a fixed, detailed development pattern on the basis of ex post analyses and identified "niches". Rather, strategies are to constitute a framework enabling the policy-makers to direct and redirect production and trade with a set of selected policies and institutional measures towards a broad "preferred structure" based on consciously pursued development objectives.

This presupposes on the one hand a long-term development perception and "guiding principle" and on the other hand operational short-term responses on the basis of continuous assessments of national and international constraints. The international division

of labour is obviously a dynamic uncertain process with no assured "niches" or reserved seats for anyone country or producer.

Similarly, other concepts and terms have lost their implied or assumed meaning. This fact should be clearly spelled out and a search for more realistic concepts initiated. A few interrelated examples may illustrate the case.

First, the traditional concept of "comparative advantage" can only serve as an indicator of past performance of aggregated industrial sub-sectors but has very limited use in building up new industrial capacities or adjusting capacities to rapidly changing international conditions. In selecting strategic options in industry developing countries cannot be resting on the notion of the past pattern of revealed comparative advantages.

Second, in the international debate significant emphasis is given to the role of market forces versus Government intervention, ownership, control, planning etc. Recent developments, however, clearly show that it would be futile to pursue this debate on purely ideological grounds. For the advancement of industry the question is not to choose between the "invisible hand" or the "firmly controlling fist" but between the entire range of possible measures to guide and support industry in the hard and pragmatic international restructuring process. A close non-bureaucratic interaction between the industry sector and the national policy-makers and a stable rule of the game in this regard would seem to be a sine qua non for Latin American countries' future as is a close monitoring of relevant national policies of other countries.

Third, the concept of "free trade" is being increasingly eroded. With large intra-company trade, increasing share of counter-trade arrangements, etc. the Latin American countries would need to more thoroughly analyze the forms, restrictions and support schemes in the international trade flows and to more actively respond to major forces and trends.

Fourth, the notion of the term "positive adjustment" used by OECD needs to be judged on the grounds of the real - positive or negative - implications of such adjustments for developing countries. Latin

American countries need to analyze and respond more actively to the actual policies being pursued in the advanced countries, realizing that these may not necessarily be "internationally positive".

Fifth, the delimitation between economic sectors and industrial subsectors is becoming increasingly blurred as can be shown through developments in agro-industry and industrial services. Latin American countries need to approach industrialization with more programmatic and realistic policies and institutional mechanisms to cater for these across-the-board developments.

Finally, it is being argued that the concept "developing countries" is an oversimplification in view of the differences in level of development, size, etc. While this is no doubt true, the key issue is another one: the need for industrialization in the Third World requires joint efforts by developing countries and specifically by countries in the same region. For the Latin American countries as part of this larger group there is an increasingly recognized commonality in the field of economic and industrial development. It can be expected that the utilization of the perceived scope for industrial co-operation among Latin American countries through joint actions along the lines outlined above would constitute a key vehicle for the region's re-industrialization.