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**INTRAINDUSTRY TRADE: A COMPARISON BETWEEN LATIN  
AMERICA AND SOME INDUSTRIAL COUNTRIES**

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## I. INTRODUCTION

Economic theory - and hence the basis from which to derive economic policy recommendations - often lags behind facts. The history of economic thought is full of examples of passive reaction to new, unpredicted circumstances.

International trade theory is no exception to this generic rule. The basic, underlying rationale that shapes most analyses, and which has orientated the design of the international institutional framework that set the rules for bilateral exchanges has been increasingly challenged by new facts, mainly in the last two decades. The need to define more clearly the rules for trade in services is one of the most evident examples.

Another recent feature that has also contributed to show the limited capacity of the available analytical tools with regard to trade follows from the increasing complexities of the processes of production and international exchange. Several phenomena that are new for conventional reasoning are in fact indirect consequences of these new structures. The evidence of simultaneous exports and imports - by a same country - of products classified as one same category has become important enough so as not to be dismissed as a statistical curiosity. As a matter of fact, intraindustrial exchanges have become an undisputable characteristic of the external trade of most industrialized countries in recent years.

This very fact brings about a number of consequences that are often disregarded. To start with, this makes it more difficult to identify what causes trade itself: while factors determining comparative advantage explain inter-industry specialization, a variety of factors contribute to intra-industry specialization, such as product differentiation, offshore assembly, regional trade agreements, similarities in income per capita, capital ownership of the producing and trading firms, and others.

Furthermore, it might be argued <sup>1/</sup> that most of the world's trade rules - and most trade policies - are based on concepts derived from a model in which national enterprises produce and exchange national goods. In such a model, the comparative advantages of the exporting country (and

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<sup>1/</sup> As recalled, for instance, by G. Feketekuty, USTR Policy Advisor, in IMF Survey, July 15, 1991.

the disadvantages of the importing one) are identifiable (if not well defined) and are considered with the interests of national firms. The target market - and hence the focus of competition - is the importing country's market.

Such assumptions look increasingly inadequate, given the relative importance of integrated processes of production and trade: trade is often based on products assembled from components and services produced in many different countries, what makes it more difficult to determine the comparative advantages of a given country. Besides, competition is not only focused on the market of the importing country, but also extends to the exporting country and to third countries. As a corollary, the commercial interests of a country do not necessarily coincide with the interests of specific firms.

It has become a commonplace in the analyses of the international scenario of recent years to stress the fact that geographical proximity might be a determining factor for some trade flows, given the multiplication of regional free trade agreements. References to the formation of economic blocs are frequent. Whatever the reasons for each of these experiences, one might recall that these trade agreements are to some extent indications that governments have realized the need to catch up with the economic reality of more integrated sectoral approaches, addressing competitive problems of individual industries.

These points - and several other that could be presented - are all good reasons to stress the need for better knowledge of the new features of international trade. The definition of trade policies, the strategy for negotiating bilateral agreements, the design of industrial policies, might all be affected if the external trade of a given country has a significant component of intraindustrial exchanges.

This work aims at contributing to that knowledge via the appraisal of the indicators of intraindustry trade for some Latin American countries, in comparison with the corresponding indicators for countries elsewhere. Next Section presents some available evidence for six major Latin American economies, in their individual trade with specific regions. In Section Three the indicators for six industrialized countries are discussed. Section Four relates the sectoral structure of

intraindustry indexes obtained for the two sets of countries to the characteristics of the process of production, and the last Section summarizes the main findings.

## II. THE AVAILABLE BASIC EVIDENCE FOR SOME LATIN AMERICAN COUNTRIES

There is a good deal of evidence indicating that in recent years the process of export diversification - with particular emphasis in industrialized products - coupled to the geographical concentration of the markets of destination for regional products <sup>1/</sup>, and presumably also to trade and production strategies of firms in specific sectors, have led to significant levels of intraindustry trade <sup>2/</sup> in several trade flows between some Latin American countries and their main trade partners. Figures indicating that this kind of trade accounts for high (20%, 30% or more) and increasing shares of sectoral trade even at its most aggregate levels (1-digit sectoral classification) suggest that this has become a new feature of Latin American trade, and one which might have consequences for trade policy as well as for several other domestic variables.

The following presentation of recent estimatives of IIT indexes for some Latin American countries takes into account the already referred diversification of experiences -- and hence individual country indexes are presented in respect with each bilateral trade flows with specific regions -- as well as the relevance of two-way trade in each of these trade flows, so that the analysis throughout this

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<sup>1/</sup> See, for instance, UN/ECLAC (1990).

<sup>2/</sup> We shall not deal in this work with the discussion about the more appropriate way of measuring intra-industry trade. In what follows the indexes of intra-industry trade refer to Grubel-Lloyd indexes, as proposed in H. Grubel, P. Lloyd (1975). This index in its total trade-weighted average version is described as:

$$IIT = \frac{\sum_i \sum_j \sum_k [ (X_{ijk} + M_{ijk}) - |X_{ijk} - M_{ijk}| ]}{\sum_i \sum_j \sum_k [X_{ijk} + M_{ijk}]} \times 100$$

where  $X_{ijk}$  = exports of product  $i$  by country  $j$  to country  $k$  and  $M_{ijk}$  = imports of product  $i$  by country  $j$  from country  $k$ . This index is equal to one (i.e., trade is totally of the intra-industry type) in the limit case where  $X_{ijk} = M_{ijk}$  for every  $i, j$  and  $k$ , and equals zero (no intra-industry trade) at the opposite situation of no similarity between exports and imports of each product ( $X_{ijk} \neq M_{ijk}$ ).

work is limited to those sectors where a significant share of each bilateral trade flow is of the intra-industry type. We have arbitrarily set the level of significance at 50% of total bilateral trade.

The main objective is to identify, from the indexes of intra-industry trade, some indications of a structure of specialization in bilateral trade, for each of the trade flows considered.

Available theory is not much helpful for the appraisal of IIT indexes in a multi-industry framework. Furthermore, as our sample comprises only sectors where intra-industry trade correspond to more than half of the trade value in each bilateral trade flow, it turns out that all the sectors presented here are considered to have significant two-way trade, so it does not make much sense to try to rank them by, say, the magnitude of the estimated indexes.

Instead, the methodological approach adopted to identify a structure of specialization stresses the double perspective of stability and frequency of the indexes as indicative of such structure. It is assumed that in those industries where IIT indexes remain high over time (i.e., over 50%) in bilateral trade one would expect either a relatively stable complementarity between the producers in the two countries, and/or, from the demand side, specific conditions of product differentiation and consumer behaviour that are maintained through different periods of time. Furthermore, it is also considered that the incidence of high IIT indexes should by itself be indicative of those sectors where the occurrence of intraindustry trade is more intense.

The outcome of this reasoning is that the analysis puts emphasis on those product groups with high incidence of IIT indexes at the beginning and by the end of the last decade, as well as on the sectoral distribution of these indexes in 1988, the last year for which the data required for calculation were available when the present estimates were made.

Table 1 summarizes the basic statistics with regard to the number of sectors with  $IIT > 0.5$  in 1980 and in 1988, at a 3-digit product groups classification. Last column of Table 1 shows that the number of industries with high IIT indexes in both years is rather small, reflecting a mutant structure of specialization in trade.

If such an indicator were to show a pattern of sectoral specialization, it turns out that -- not surprisingly -- it is in the intraregional trade and (even more) in the trade flows between each of these countries and North America where the incidence of high IIT in both years is more significant. The more expressive figures refer to trade between Brazil, Mexico and Argentina with North America, and to trade between Brazil and Argentina and other Latin American countries.

The increasing sectoral and geographical diversification of Latin American trade structure in recent years as well as sector-specific strategies of producers and trading firms - especially in those sectors with significant participation of foreign capital certainly lie behind the relatively low figures of Table 1. Be that as it may, it remains to identify those sectors for which there actually are indications of systematic significant two-way trade.

In order to make it easier to identify those sectors the figures are presented as grouped into 2-digit classification. Table 2 shows the product divisions for which at least one (3-digit) product group presented  $IIT > 0.5$  in those two years.

TABLE 1 - NUMBER OF SITC 3-DIGIT PRODUCT GROUPS WITH IIT>0.5 OF TOTAL BILATERAL SECTORAL TRADE IN 1980 AND 1988				
		NUMBER OF SECTORS WITH IIT>0.5		
TRADE BETWEEN	AND	1980	1988	BOTH YEARS
Argentina	Latin America	11	32	5
	North America	14	24	6
	Western Europe	6	14	1
	Southeast Asia	6	10	-
Brazil <sup>*/</sup>	Latin America	16	30	7
	North America	27	40	12
	Western Europe	10	8	1
	Southeast Asia	8	8	1
Mexico <sup>*/</sup>	Latin America	10	6	1
	North America	21	41	8
	Western Europe	5	4	-
	Southeast Asia	6	9	1
Chile	Latin America	6	6	-
	North America	8	14	1
	Western Europe	4	2	-
	Southeast Asia	1	3	-
Colombia	Latin America	16	6	1
	North America	16	12	5
	Western Europe	3	3	-
	Southeast Asia	2	1	-
Uruguay	Latin America	19	17	4
	North America	3	9	2
	Western Europe	4	4	-
	Southeast Asia	2	-	-

Source: Estimates based on primary data from UN/COMTRADE Database.

<sup>\*/</sup> 1980 and 1987.



**TABLE 2 - INTRA-INDUSTRY TRADE: SECTORAL DIVISIONS  
(SITC 2-DIGITS) WITH IIT>0.5 IN BOTH  
1980 AND 1988 IN TOTAL BILATERAL  
SECTORAL TRADE**

TRADE BETWEEN	AND	SITC	DIVISION
Argentina	Latin America	12	Tobacco and tobacco manufactures
		59	Chemical materials and products
		88	Photographic apparatus, equipment and optical goods
	North America	11	Beverages
		51	Organic chemicals
		52	Inorganic chemicals
		69	Manufactures of metal, n.e.s.
	Western Europe	55	Essential oils and perfume
Brazil <sup>a/</sup>	Latin America	05	Vegetables and fruit (preserved)
		51	Organic chemicals
		66	Non-metallic mineral manufactures
		77	Electrical machinery
		85	Footwear
		87	Professional, scientific instruments
		88	Photographic apparatus
	North America	63	Cork & Wood manufactures
		65	Textile yarn, fabrics
		66	Non-metallic mineral manufactures
		71	Power generating machinery
		76	Telecommunications equipment
		77	Electrical machinery
		78	Road vehicles
		79	Other transport equipment
		89	Miscellaneous manufactures
	Western Europe	55	Essential oils and perfume
	Southeast Asia	77	Electrical machinery

TABLE 2 (Cont.)			
TRADE BETWEEN	AND	SITC	DIVISION
Mexico <sup>b/</sup>	Latin America	72	Machinery for specialized industries
	North America	33	Petroleum (products)
		53	Dyeing, tanning materials
		55	Essential oils and perfume
		65	Textile yarn, fabrics
		72	Machinery for specialized industries
		82	Furniture
		84	Apparel and clothing
		89	Miscellaneous manufactures
	South Asia	59	Chemical materials, n.e.s.
Chile	North America	64	Paper, paperboard
Colombia	Latin America	67	Iron and Steel
	North America	66	Non-metallic mineral
		84	Apparel and clothing
		89	Miscellaneous manufactures
Uruguay	Latin America	11	Beverages
		12	Tobacco and tobacco manufactures
		69	Manufactures of metal, n.e.s.
	North America	65	Textile yarn, fabrics
		82	Furniture

Source: Estimates based on primary data from UN/COMTRADE Database.

<sup>1/</sup> 1980 and 1987.

<sup>2/</sup> 1980 and 1987 SITC Rev. 1.

One generic observation to make from Table 2 is that by and large the product groups with systematically high IIT index are manufactures (i.e., products classified as SITC 5-8), with the only exceptions of tobacco manufactures and beverages in Argentina, preserved vegetables and fruits in Brazil and beverages and tobacco manufactures in Uruguay, which are often considered as semimanufactures.

A second broad observation is that most of the industries listed in Table 2 are classified in sections 6 and 8 of SITC, which means that they are producers of manufactured goods classified chiefly by material or producers of miscellaneous manufactured articles. Furthermore, it is worth noting that only in Brazil the producers of machinery and transport equipment (SITC section 7) presented high IIT indexes in the two years. Indeed, it is the section with the highest number of references for that country. This is particularly surprising, because as it is known (UN/ECLAC (1991)) Mexico was in 1987 not only the second biggest exporter of capital goods in Latin America, but had the most intense trade (imports and exports) in those products with one single partner, the United States. This is indicative that the intensification of two-way trade in capital goods between Mexico and North America is a relatively recent phenomenon, although an important one.

This suggests a given structure of sectoral specialization, and the number of high IIT indexes in bilateral trade with North America in comparison with the corresponding number of indexes for trade with Latin America calls for qualifications of the hypotheses that put emphasis in geographical proximity as one major explanatory variable of intra-industry trade. Other factors do matter.

At a sectoral level, more disaggregated figures at a 3-digit classification (not shown here <sup>1/</sup>) reveal that the highest concentration of significant IIT indexes for Latin American countries are to be found in the trade of textile products, paper products, metallic manufactures, apparel and shoes, toys and photographic articles, followed by electric and non-electric machinery, road vehicles, essential oil and perfumes, as well as organic and inorganic chemicals.

This sectoral concentration of IIT indexes is suggestive of a number of aspects that could be explored in more detailed analysis, like the sectoral trade/output ratios, specific policies that might have contributed to these high indexes, capital ownership of the main producing and trading firms in each sector, and so on. This would allow for a better knowledge of the domestic determinants of two-way trade in the recent Latin American experience.

Another set of related variables has to do with the external environment in which these high indexes obtain. Selective, sectoral protectionism may perhaps be found to contribute to these specific

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<sup>1/</sup> See R. Baumann (1991).

specific sectoral intensities, in the same way as new productive processes might stimulate this type of trade, as illustrated, for instance, by the automobile industry - autoparts produced in different countries are often used in one same model, produced in identical versions in more than one country.

These topics require specific, product-level analyses that would follow the precise identification of the several items to explore. At the present stage it is understood that yet another set of considerations is needed, before one goes into more detailed appraisal.

It remains to consider the available indicators of sectoral intraindustry trade for some Latin American countries in comparison with the corresponding indexes for other countries. This is what the next Section aims at.

### III. INTRAINDUSTRY TRADE IN INDUSTRIALIZED COUNTRIES

The evidence of increasingly high and sectorally concentrated IIT indexes for Latin America briefly presented in the previous Section calls for the need of closer comparison with the corresponding indicators of the main international markets.

Theory would suggest that the ratio of intra-industry trade in total trade between two countries (regions) should ("coeteris paribus") be higher: a) the smaller the difference in per capita income between the two countries (regions); b) the smaller the difference in factor endowment in the two countries (regions); c) the lower the trade barriers and transportation costs; d) the more differentiated the commodities in each industry; e) the greater the economies of scale in the tradeables sector; f) the greater the potential of technological or vertical differentiation, among other determining factors.

The high indexes of intra-industry trade obtained do suggest that (at least some) Latin American countries have achieved sectoral-specific competitiveness. This might be an outcome of the diversification of the structure of production of these economies, or of the type of economic agents in each sector (foreign-owned firms might have contributed significantly to it), specific bilateral trade agreements or other reasons.

Be that as it may, this broad picturing of two-way trade for some Latin American countries calls for a generic pattern to compare with, so as to allow for a preliminary identification of region-specific features.

Natural candidates to be used as reference are the sectoral indicators of intraindustry trade in the main international markets. For the present purposes these basic characteristics of the international markets are assumed to be implicit in the sectoral indicators of intraindustry trade for the six largest capitalist economies, which are also the main traders.

When considered in comparison to its counterparts for other economies - which account here for "the world market" - the sectoral concentration of IIT indexes for Latin American countries might lead to (at least) two outcomes.

One possibility is that the sectoral concentration of IIT indexes for Latin America might turn out to be quite different from the corresponding sectoral structure of the main international markets. In this case - and taking it for granted that high IIT indexes mirror competitiveness - it might be argued that specific regional comparative advantages play a major role in determining the sectoral specialization.

Alternatively, similar features between the Latin American and the international structures of sectoral concentration of IIT indexes would be indicative that in some industries the basic trade patterns have become actually more integrated, involving a good deal of two-way trade. Hence, the evidence of an increasing trend in the IIT indexes for Latin America in recent years would reflect an "approximation" of regional producers and traders to actual global patterns of trade.

The economies used here as reflecting the basic features of the international markets are those of the USA, West Germany, Japan, the United Kingdom, France and Italy, and the analysis is based on data for 1988, the most recent year for which all the data required for analysis were available.

The analysis was meant to provide patterns of reference, for the analysis of the indicators for Latin America. It concentrates therefore on those industries for which we had previously obtained

IIT indexes higher than 0.5 in 1988, for Latin American countries. This means a set of 108 industries, out of a total of 140 industrial product groupings, from SITC Revision 2, 3-digit classification. Estimates for the six industrialized countries refer to those 108 sectors. As shown in Table A.1 in the Annex, these industries accounted for half or more of the total trade value of those countries in 1988.

Table 3 summarizes the number of industries with high IIT indexes in those industrialized countries.

TABLE 3 - NUMBER OF INDUSTRIES <sup>a/</sup> WITH IIT>0.5 IN 1988 IN THE TOTAL TRADE OF SIX INDUSTRIALIZED COUNTRIES			
COUNTRY	NUMBER OF INDUSTRIES WITH IIT>0.5	NUMBER OF INDUSTRIES WITH IIT<0.5	TOTAL
USA	68	40	108
West Germany	86	22	108
United Kingdom	89	28	108
France	94	14	108
Italy	80	28	108
Japan	36	72	108

Source: Estimates based on primary data from UN/COMTRADE Database.

<sup>a/</sup> Number of SITC Rev. 2 3-digit product grouping classification, out of a total of 108 industries.

It is interesting to notice that - as far as one can tell from the figures in Table 3 - complementarity in production is predominantly a characteristic of the European countries. The number of industries with high IIT indexes in 1988 is systematically higher in the four European countries considered than in USA or Japan.

It is also quite remarkable that the corresponding figure for Japan is relatively low, in comparison to the other countries in Table 3. One possible reason for that may be that the Japanese

trade structure is different from those of the other countries, in that it concentrates its exports on those (technology-intensive) products on which it has clear comparative advantages, whilst importing mainly the (natural resources-intensive) products it needs. This leads to low complementarity between exported and imported items and hence to a limited range of significant IIT indexes, as distinct from the case of a typical European economy that exports and imports a broad range of industrialized products.

There are also differences to be found in the geographical concentration of the more significant IIT indexes for each of these industrialized countries.

In order to help visualize those differences in geographical concentration we have built what could be called an Index of Intensity of Geographical Concentration of Intraindustry Trade Indexes (IGC).

This index (IGC) is defined in relation to a hypothetical situation where every bilateral trade flow considered here between each industrialized country and each region would be predominantly of the intraindustry type. In other words, a situation where - according to our criteria - for each bilateral flow one would have estimated  $IIT > 0.5$ . In such case, the limit number of industries for which one could obtain high IIT indexes would equal - for each of the six industrialized countries - the number of 3-digit industries considered multiplied by the number of countries in each region. We would obtain a base case of 100% of high IIT, that can be used as a reference.

The IGC used here is simply the ratio between the number of cases for which  $IIT > 0.5$  were obtained in each bilateral flow and the previously defined reference base. This can be expressed as:

$$IGC_{ir} = \frac{A_{ir}}{Nr.S} \times 100 \quad , \quad 0 \leq IGC \leq 1$$

where

$IGC_{ir}$  = index of intensity of regional concentration of IIT indexes for trade between industrial country  $i$  and region  $r$ .

- $A_{ir}$  = number of industries for which  $IIT > 0.5$  was actually obtained in the trade flows between country  $i$  and region  $r$ .  
 $Nr$  = number of countries that form region  $r$ .  
 $S$  = number of SITC 3-digit industries considered ( $S = 108$ ).

In the present exercise,  $Nr$  equals 11 for LAIA, 5 for CACM, 24 for the CARIBBEAN, 18 for WESTERN EUROPE and 10 for SOUTHEAST ASIA.

The estimates for the IGC indicators for trade flows between these regions and the six industrial countries considered in 1988 are shown in Table 4.

Figures in Table 4 by and large confirm the previous affirmative with regard to intraindustry trade being mostly a European phenomenon. The number of industries with high IIT indexes is quite impressive not only for trade by European countries, but the highest figures for USA and Japan also refer to trade with that region, both in terms of number of industries (figures in parenthesis) and in the relative intensity of intraindustry trade in total bilateral trade flows.

As far as Latin America is concerned, figures in Table 4 indicate that for LAIA and CACM members, as well as for the Caribbean countries two-way trade is more significant with the USA, both in number of industries and in its relative intensity in total bilateral trade. An expressive number of industries with  $IIT > 0.5$  is also found in trade with the European countries, but the corresponding IGCs indicate that bilateral trade flows are quite diversified and with relatively low degree of complementarity. Certainly the predominance of primary exports from Latin America to Europe explains a good deal of these results.

Figures in Table 4 relative to LAIA members compare rather favourably to those for the Caribbean and CACM countries, with the only exception of the IGCs for trade between the Caribbean countries and the USA and the United Kingdom: in the two cases the number of industries with high IIT indexes is smaller for the Caribbean countries than for LAIA countries, but these is slightly more complementarity in terms of intensity of intraindustry trade.



Table 4 also tells us that intraindustry trade between each of these six industrial countries and Southeast Asia ranks second to figures for trade with Western Europe, both in number of industries and in relative intensity. It is worth noting, however, that the figures for trade between the USA and Southeast Asia are quite close to those obtained for trade between the USA and LAIA countries, again in terms of both the number of industries and the indicator of regional intensity. If the figures for LAIA and CACM members, and the Caribbean countries were put together, the indicators for Latin America as a whole would surpass those for Asia, yet still falling far behind the figures for Western Europe.

<b>TABLE 4 - INDICATORS OF REGIONAL CONCENTRATION <sup>a/</sup> OF INTRAINDUSTRY TRADE INDEXES OF SELECTED INDUSTRIAL COUNTRIES IN 1988</b> <b>(Number of 3-digit industries with IIT &gt; 0.5 in bilateral trade flows in parenthesis)</b>					
	LAIA	CARIBBEAN	CACM	W. EUROPE	S.E. ASIA
USA	17.5 (208)	23.5 (127)	1.9 (50)	37.4 (728)	20.6 (223)
W. GERMANY	10.5 (125)	6.3 (34)	0.6 (16)	38.5 (749)	18.4 (199)
UNITED KINGDOM	8.5 (101)	13.3 (72)	0.4 (11)	45.6 (886)	19.3 (209)
FRANCE	8.3 (99)	4.3 (23)	0.0 (5)	43.3 (841)	15.0 (162)
ITALY	8.5 (101)	4.4 (24)	0.0 (7)	33.3 (648)	18.1 (196)
JAPAN	5.0 (59)	0.9 (5)	0.0 (5)	23.5 (456)	11.9 (129)

Source: Table A.1 in the Annex.

<sup>a/</sup> The countries that form each region are listed in the Annex.

It remains to evaluate the extent to which the high IIT indexes for those industrial economies match with the corresponding sectoral indicators previously obtained for Latin America.

One should start by an overview of the data.

The group of reference which was assumed to represent the basic features of the "world market" is formed by the total trade figures (that is, all the exported and imported products to all trade partners) of these six industrial economies, for the 108 industries considered in this work.

The hypothesis to test refers to the similarities between the sectoral concentration of IIT indexes in Latin America and in "world markets". A first approximation of such correspondence may be obtained by simply comparing the number of industries for which one obtains indicators of significant intraindustry trade.

If one recalls the figures in Table 3, it turns out that - Japanese figures apart - there are indications of a quite significant approximation between the Latin American sectoral pattern of intraindustry trade and the basic features of "world markets": most of the international trade involving products classified in the 108 products groups considered here was - in 1988 - done on a two-way basis in the main industrialized countries.

According to previous reasoning, these results - coupled to the indications of an increasing importance of IIT indexes for Latin America in the last decade - might be interpreted as evidence of a more intense adaptation of Latin American producers and traders to the producing processes and trading practices that are predominant in international markets.

The identification of the sectors in which these new features are more intensely found is more easily obtained if the analysis concentrates on a higher level of sectoral aggregation. In order to achieve more generic indicators, we have computed the frequency of those product groups (3-digit classification) with  $IIT > 0.5$  in each trade flow and isolated the five product divisions (2-digit classification) with the highest frequencies. It turned out that each of these sets of five product divisions selected in this way concentrated a significant share (1/3 or more) of the total number of (3-digit) product groups with high IIT in each trade flow. This means that the analysis of these sets might give a good picturing of the overall sectoral concentration.

Table 5 illustrates these findings. Figures in that Table may be read either vertically - which would show the sectoral concentration of intraindustry trade for each region - or horizontally, indicating the sectoral patterns for each of these industrialized countries.

A horizontal reading of Table 5 suggests that for each of these industrialized countries intraindustry trade is concentrated in a number of sectors which is quite similar in all the cases, ranging from a minimum of 10 for the USA, and a maximum of 14 for Italy. There is a good deal of similarity among these indicators for the six countries.

The analysis of the columns of Table 5 shows - not surprisingly - a varied degree of differences among regions. Whilst the last column identifies nine industries which concentrate most cases of intense intraindustry trade in Asia, the corresponding figures for CACM are twice as high, at the same time that for LAIA and Western Europe there are references to 10 industries (13 for the Caribbean).

These differences do not affect, however, the most significant finding from Table 5: independently of whether one computes these sectoral frequencies for each country or for each region, the most frequent references in every trade flow are concentrated in five product divisions, namely, SITC Division Codes 65 - textile yarns and fabrics, 66 - non-metallic mineral manufactures, 69 - manufactures of metal, 84 - articles of apparel and clothing and 89 - miscellaneous manufactured articles.

This means that there is a good deal of evidence indicating that a significant share of the international trade of the products classified in these five product divisions is of the intraindustry type, and hence the high indexes obtained for intraindustry trade for Latin American countries in these industries by and large reflect the adaptation to the main trends of these specific markets.

But previous estimates (see Table 2) have shown that for six of the largest economies of Latin America - Argentina, Brazil, Chile, Colombia, Mexico and Uruguay - these five industries present high intraindustry trade indexes mainly in the bilateral trade between each of these countries and North America (USA and Canada), whereas trade between them and other regions (Western Europe, Southeast Asia and other Latin American countries) lead to indicators of high IIT indexes in other product divisions. This would signal that - at least for these large economies of the region - there are regional-specific determining factors that allow for significant two-way trade, even though this is not a universal characteristic of trade in these sectors.

**TABLE 5 - INDUSTRIES <sup>a/</sup> WITH THE HIGHEST FREQUENCY OF IIT>0.5 IN TRADE BETWEEN 6 INDUSTRIALIZED COUNTRIES AND 5 REGIONS IN 1988**

	LAIA	CARIBBEAN	CACM	EUROPE	ASIA
USA	65	11	04	65	65
	66	65	65	69	66
	69	77	66	72	69
	84	84	84	77	74
	89	89	89	89	89
GERMANY	52	11	09	65	65
	65	65	63	66	66
	66	76	65	67	69
	67	84	84	69	71
	84	89	89	84	89
UK	52	11	51	65	65
	65	69	55	69	66
	69	71	65	71	69
	77	87	72	84	77
	89	89	77	89	89
FRANCE	51	05	63	65	65
	65	79	69	66	66
	66	84	72	69	69
	72	88	87	84	88
	84	89	89	89	89
ITALY	52	05	63	65	65
	65	11	65	66	66
	66	77	76	69	69
	84	84	85	72	88
	89	87	89	89	89
JAPAN	65	09	54	65	65
	66	64	76	66	66
	67	84	78	69	67
	69	89	82	74	69
	89	-	89	89	89

Source: Tables A.2 to A.7 in the Annex.

<sup>a/</sup> SITC Rev. 2, 2-digit classification; see division headings in Annex 2.

One way to identify those sectors is to select those (3-digit) industries in relation to which low (less than 0.5) intraindustry trade indexes were obtained in 1988 for the total trade of the six industrialized countries, out of the 108 selected industries. Using the same reasoning as before, this would indicate those sectors for which Latin American indexes show a good deal of two-way trade, whilst for the industrial economies trade would be of a traditional kind.

Table A.8 in the Annex shows the product groups with  $IIT < 0.5$  for each industrialized country. If we aggregate these indicators into a 2-digit classification using the same procedure as before, it turns out that the product divisions for which intraindustry trade seems to be more intense in Latin America than elsewhere comprise some specific products classified in the same previously referred SITC Divisions 65, 66, 69 and (more than any other) Division 84, as well as products from Divisions 67 - Iron and Steel and 72 - Machinery specialized for particular industries. Figures in Table 2 would suggest furthermore that we add to this list also a number of Chemical products (SITC Section 5), for which significant intraindustry indexes were obtained, specially in the trade relations of Argentina, Brazil and Mexico with Western Europe and other Latin American countries.

Allowing for the previous hypothesis (of high IIT indexes as indicators of competitiveness) to hold, it would follow from the analysis presented above that the high indexes obtained for Latin America are only partially explained by universal characteristics of trade procedures; there are some subsectors in the Textile industry, in Apparel, in Metallurgy and Non-Metallic products for which significant two-way trade is a regional characteristic, for which there is no correspondence in the main markets. Furthermore, there would be indications of regional competitiveness in trade of some Machines, some Chemical products (mainly Inorganic Products, Tanning material, Disinfectants, Insecticides and others) and in Transportation Equipment, mainly the Automobile industry. For all these industries the available evidence suggests that intraindustry trade is far more significant for Latin American countries than elsewhere.

It is beyond our purposes to go deeper into the sectoral analysis of the determinants of such differences. However, some complementary indicators could be instrumental to help identify whether there is any peculiar regional characteristic in terms of production processes that could explain this specific pattern. In other words, it remains to make an appraisal of the same correspondence between Latin American and "international" indicators in terms of the relative intensity of the use

of factors of production and in terms of the technology content of those industries that concentrate most of the intraindustry cases. This is the main subject of the following Section.

#### IV. INTRAINDUSTRY TRADE, FACTOR INTENSITY AND THE TECHNOLOGICAL CONTENT OF PRODUCTION

As mentioned previously, intraindustry trade might take place between two countries (or regions) in a number of situations. A recent, growing number of theoretical models, as well as a good deal of empirical evidence point to several possible scenarios where two-way trade is likely to be significant.

As Greenaway/Milner (1986) show, it is possible to derive favourable conditions to this type of trade in either competitive or oligopolistic markets, and with different assumptions with regard to the nature of product differentiation (vertically or horizontally), the initial distribution of income and technological conditions (which might affect the likeliness of scale economies that stem from the spreading of fixed costs). Furthermore, empirical evidence suggests that a high incidence of two-way trade is to be found in those sectors where many firms produce more than one variety of a given product (multiproduct firms) and/or when production and/or distribution facilities are located in more than one country (multinational firms).

A sector-specific test of the determinants of the IIT indexes obtained in this work is beyond the present purposes. A more modest - and easily feasible - set of inferences might follow from the evaluation of the available sectoral indicators of factor intensity and the technological content of production in those sectors for which high IIT indexes were obtained, for Latin America and other regions.

In doing so it is obviously assumed that production functions vary across sectors but are similar for each industry in different countries, and we use as reference the classification of (SITC 3-digit) industries proposed by Pereira (1991).

Such classification is built upon the UNIDO and OECD sectoral classification for trade, taking into account basic attributes like the participation of natural resources costs in total production

value per sector, relative labour and capital factor intensities, the comparative position of each industry in terms of the production cycle, the share of expenditures with R & D in total production value for each industry, as well as other attributes. Taking into consideration these several attributes it was possible to built a sectoral classification of all the SITC 3-digit product groupings, according to SITC, Revision 1, and based upon the direct input requirements of production for each sector.

For the purposes of the present work we have adapted that sectoral classification to a corresponding classification based on SITC, Revision 2, for the 108 industries for which high IIT indexes were obtained for Latin American countries. This is presented in Annex 3.

For each country or group of countries considered here the sectors for which we obtained  $IIT > 0.5$  were isolated for each individual bilateral flow. By this it is meant that for trade between, say, Japan and Western Europe we have considered all the cases where  $IIT > 0.5$  obtained for trade between Japan and each one of the 17 countries, and not (as before) aggregate figures for trade with the whole European bloc. The industries with such significant indexes were then grouped into the previously referred sectoral classification in accordance to factor intensities and technological content, and this allowed us to identify the percentage distribution of the number of industries in each of the relevant categories.

Table 6 shows distribution for the six major industrial countries.

It is worth noting in Table 6, firstly, that for every country the largest number of sectors with high intraindustry cases are mature, labour-intensive, low technological content industries (mostly textiles and clothing). This seems to be indicative that product differentiation might be powerful as a variable explaining this type of trade.

Second in importance in Table 6 is the group of industries classified as new, labour-intensive, with medium technological content, which comprise mainly series-built capital goods. This might be also an outcome of the influence of product differentiation as well as could reflect the international verticalization of production processes. More definitive conclusions would require specific analysis at a product level.

TABLE 6 - PERCENTAGE DISTRIBUTION OF INDUSTRIES WITH IIT>0.5 IN TRADE BETWEEN 6 SELECTED INDUSTRIAL COUNTRIES AND 5 REGIONS OR COUNTRY GROUPINGS, IN ACCORDANCE WITH SECTORAL FACTOR INTENSITIES AND TECHNOLOGICAL CONTENT IN 1983							
	USA	W.GERMANY	UK	FRANCE	ITALY	JAPAN	
Natural-Resources Intensive Industries							
1. Labour-intensive, based on agricultural products	10.1	9.4	7.8	9.2	9.4	9.0	
2. Capital-intensive, based on agricultural products	1.8	2.2	1.8	1.6	2.2	1.4	
3. Based on Mineral Products	4.7	6.0	4.6	5.8	5.5	7.0	
4. Based on Energetic Products	0.6	0.4	1.0	1.1	0.8	0.3	
Labour-Intensive Mature Industries							
1. Low Technological Content	28.6	30.0	25.8	26.3	26.1	34.9	
2. Medium Technological Content	0.8	1.1	1.1	1.1	0.8	0.9	
Capital-Intensive Mature Industries							
1. Low Technological Content	6.0	8.3	7.7	7.1	7.6	8.1	
2. Medium Technological Content	1.9	1.9	2.1	1.9	2.5	1.1	
Labour-Intensive New Industries							
1. Low Technological Content	5.9	6.0	6.5	6.5	4.4	8.5	
2. Medium Technological Content	16.9	13.5	18.6	15.5	16.3	12.8	
3. High Technological Content	8.1	6.6	8.0	7.4	8.0	2.9	
Capital-Intensive New Industries							
1. Low Technological Content	3.6	2.8	4.0	3.7	2.6	3.0	
2. Medium Technological Content	7.0	7.1	6.0	7.6	7.4	4.6	
3. High Technological Content	4.0	4.7	5.0	5.2	6.4	5.5	
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	

Source: Table A.9 in the Annex.



According to figures in Table 6, these two groups of industries, plus those classified as based on agricultural products, with labour-intensive production processes (mainly processed food and wood products) comprised half or more of the cases where significant intraindustry trade obtained in the six industrial countries, in 1988.

It is also worth noting, in Table 6, that on the whole intraindustry trade is more often found in labour-intensive than in capital-intensive industries, and that this holds true for each of these six countries and all the sectoral classifications.

Very similar results are obtained if the same type of analysis is made for the five groups of countries, as in Table 7. The most significant figures correspond to mature industries, with low technological content. For some groups of countries, as the Caribbean ones, the percentage is as high as 48%, what apparently gives support to the hypothesis that trade of the intraindustry type is more likely to obtain in sectors with standard, well-known productive processes, ranking low in the product cycle hierarchy, and hence with a good margin for trade due to product differentiation.

The identification of the second most important group in Table 7 is not as immediate as in Table 6. Whilst for LAIA and European countries that second group is - as in the previous Table - formed by those new, labour-intensive industries with medium technological content, for the other three country groups - CACM, the Caribbean and Southeast Asia - the corresponding percentage is also significant but smaller than the figures for the industries based on natural resources. This might be interpreted as a reaffirmation of the relative importance of natural resources in the external trade of the countries of Central America and the Caribbean, but is a rather unexpected outcome for Southeast Asia. A more detailed analysis of the data indicates that this latter result is mainly due to trade in Paper Articles and Food Preparations (mostly with the USA and West Germany), whilst the indicators for Central America and the Caribbean have to do with processed food and beverages in the trade with the USA and the UK.

The literature on intraindustry trade makes frequent reference to the Transportation Equipment industry - mainly Automobiles - as an example of a sector where this type of trade is likely to be found.

TABLE 7 - PERCENTAGE DISTRIBUTION OF INDUSTRIES WITH IIT>0.5 IN TRADE BETWEEN 5 REGIONS OR COUNTRY GROUPINGS AND 6 INDUSTRIAL COUNTRIES, IN ACCORDANCE WITH SECTORAL FACTOR INTENSITIES AND TECHNOLOGICAL CONTENT IN 1988						
	LAIA	CACM	CARIBBEAN	W.EUROPE	S.E. ASIA	
Natural-Resources Intensive Industries						
1. Labour-intensive, based on agricultural products	8.1	15.2	15.8	8.1	11.5	
2. Capital-intensive, based on agricultural products	1.7	1.7	1.0	1.9	1.8	
3. Based on Mineral Products	8.7	2.8	2.1	5.4	4.5	
4. Based on Energetic Products	0.9	0.3	-	0.9	0.6	
Labour-Intensive Mature Industries						
1. Low Technological Content	34.9	30.8	48.4	25.9	29.8	
2. Medium Technological Content	0.1	0.7	-	1.2	0.8	
Capital-Intensive Mature Industries						
1. Low Technological Content	7.1	5.9	-	7.8	7.4	
2. Medium Technological Content	1.6	0.7	1.0	1.9	2.6	
Labour-Intensive New Industries						
1. Low Technological Content	8.4	5.9	3.2	5.7	7.3	
2. Medium Technological Content	10.5	11.4	7.4	18.7	10.1	
3. High Technological Content	5.5	8.7	9.5	7.4	7.0	
Capital-Intensive New Industries						
1. Low Technological Content	2.2	2.4	2.1	3.4	4.2	
2. Medium Technological Content	7.0	8.7	4.2	6.5	7.1	
3. High Technological Content	3.3	4.8	5.3	5.2	5.3	
TOTAL	100.00	100.00	100.00	100.00	100.00	

Source: Table A.9 in the Annex.

Indeed, this sector often presents everywhere most of the factors that are associated with intraindustry trade, such as product differentiation, verticalization of production and specific characteristics of the producing and distributing firms. Yet it is worth noting that the evidence presented here indicates that this type of trade seems to be more often found in other sectors, and Table A.8 in the Annex even shows that in 1988 the IIT indexes for trade in Passenger Motor Cars and Road Motor Vehicles (SITC 781 and 783) are lower than 50% in the USA, W. Germany, the UK and Japan. This means that the significant IIT indexes previously obtained (see Baumann (1991)) for this industry in some Latin American countries are more probably associated to regional-specific firms strategies - or bilateral trade concessions - than to universal sectoral trade patterns.

Be that it may, another relevant point to keep in mind is that the Latin American experience is far from homogeneous. The previous Tables have illustrated the different indicators obtained for LAIA member countries, in comparison with CACM members and the Caribbean countries. In each case it was possible to identify common, universal patterns, and specific characteristics. This is even more true for the indicators corresponding to individual countries.

As a last set of evidence, thus, Tables 8 to 12 illustrate the same sectoral distribution of industries with  $IIT > 0.5$  in trade between five major Latin American economies (Argentina, Brazil, Mexico, Chile and Colombia) and four regions, according to sectoral factor intensity and technology content.

The indicators show a rather varied set of outcomes, ranging from the Brazilian sectoral distribution where the most significant IIT indexes are to be found mainly in (both labour- and capital-intensive) mature industries with low technological content, but where there are also indications of significant intraindustry trade in most other categories - a pattern similar to those obtained for the industrial countries - to a concentrated sectoral distribution like the one for Colombia, where this type of trade is found basically in Textiles, Clothing and Non-Metallic products, in relation to which the previous Tables have shown that two-way trade is a universal characteristic.

TABLE 8 - PERCENTAGE DISTRIBUTION OF INDUSTRIES WITH IIT>0.5 IN TRADE BETWEEN ARGENTINA AND 4 REGIONS, IN ACCORDANCE WITH SECTORAL FACTOR INTENSITIES AND TECHNOLOGY CONTENT IN 1988

	LATIN AMERICA	NORTH AMERICA	WESTERN EUROPE	SOUTHEAST ASIA
Natural-Resources Intensive Industries				
1. Labour-intensive, based on agricultural products	13.1	8.3	13.8	11.1
2. Capital-intensive, based on agricultural products	1.9	-	5.3	-
3. Based on Mineral Products	11.2	11.1	10.6	11.1
4. Based on Energetic Products	1.9	-	-	3.7
Labour-Intensive Mature Industries				
1. Low Technological Content	18.7	19.4	28.7	18.6
2. Medium Technological Content	0.9	-	-	-
Capital-Intensive Mature Industries				
1. Low Technological Content	7.5	8.3	4.3	3.7
2. Medium Technological Content	-	2.8	1.1	3.7
Labour-Intensive New Industries				
1. Low Technological Content	4.7	5.6	5.3	11.1
2. Medium Technological Content	10.3	16.7	10.6	7.4
3. High Technological Content	4.7	2.8	6.4	7.4
Capital-Intensive New Industries				
1. Low Technological Content	4.7	8.3	4.3	14.8
2. Medium Technological Content	14.0	11.1	7.4	3.7
3. High Technological Content	6.4	5.6	2.2	3.7
TOTAL	100.00	100.00	100.00	100.00

Source: Estimates based on primary data from UN/COMTRADE Database.

TABLE 9 - PERCENTAGE DISTRIBUTION OF INDUSTRIES WITH IIT>0.5 IN TRADE BETWEEN BRAZIL AND 4 REGIONS, IN ACCORDANCE WITH SECTORAL FACTOR INTENSITIES AND TECHNOLOGY CONTENT IN 1987

	LATIN AMERICA	NORTH AMERICA	WESTERN EUROPE	SOUTHEAST ASIA
Natural-Resources Intensive Industries				
1. Labour-intensive, based on agricultural products	2.2	8.7	2.1	8.0
2. Capital-intensive, based on agricultural products	4.3	8.7	3.1	4.0
3. Based on Mineral Products	15.2	13.0	9.3	8.0
4. Based on Energetic Products	-	-	-	-
Labour-Intensive Mature Industries				
1. Low Technological Content	34.8	17.5	27.8	32.0
2. Medium Technological Content	-	4.3	2.1	-
Capital-Intensive Mature Industries				
1. Low Technological Content	17.5	17.5	21.6	16.0
2. Medium Technological Content	-	-	-	-
Labour-Intensive New Industries				
1. Low Technological Content	6.5	8.7	12.4	8.0
2. Medium Technological Content	2.2	4.3	4.1	4.0
3. High Technological Content	4.3	4.3	7.2	8.0
Capital-Intensive New Industries				
1. Low Technological Content	4.3	8.7	5.1	4.0
2. Medium Technological Content	6.5	4.3	3.1	4.0
3. High Technological Content	2.2	-	2.1	4.0
TOTAL	100.00	100.00	100.00	100.00

Source: Estimates based on primary data from UN/COMTRADE Database.

TABLE 10 - PERCENTAGE DISTRIBUTION OF INDUSTRIES WITH IIT>0.5 IN TRADE BETWEEN MEXICO <sup>a/</sup> AND 4 REGIONS, IN ACCORDANCE WITH SECTORAL FACTOR INTENSITIES AND TECHNOLOGY CONTENT IN 1988					
	LATIN AMERICA	NORTH AMERICA	WESTERN EUROPE	SOUTHEAST ASIA	
Natural-Resources Intensive Industries					
1. Labour-intensive, based on agricultural products	4.5	5.3	14.6	5.4	
2. Capital-intensive, based on agricultural products	-	1.7	-	-	
3. Based on Mineral Products	2.3	7.0	6.5	7.1	
4. Based on Energetic Products	4.5	1.7	3.3	1.8	
Labour-Intensive Mature Industries					
1. Low Technological Content	22.7	19.3	24.4	26.8	
2. Medium Technological Content	2.3	-	1.6	-	
Capital-Intensive Mature Industries					
1. Low Technological Content	11.4	12.3	8.9	3.6	
2. Medium Technological Content	2.3	7.0	5.7	5.4	
Labour-Intensive New Industries					
1. Low Technological Content	6.8	3.5	2.5	7.1	
2. Medium Technological Content	13.6	7.0	7.3	17.8	
3. High Technological Content	4.5	12.3	7.3	8.9	
Capital-Intensive New Industries					
1. Low Technological Content	2.3	5.3	1.6	5.4	
2. Medium Technological Content	13.6	12.3	13.0	3.6	
3. High Technological Content	9.2	5.3	3.3	7.1	
TOTAL	100.00	100.00	100.00	100.00	

Source: Table A.9 in the Annex.  
<sup>a/</sup> Based on SITC, Rev. 1 sectoral classification.

TABLE 11 - PERCENTAGE DISTRIBUTION OF INDUSTRIES WITH IIT>0.5 IN TRADE BETWEEN CHILE AND 4 REGIONS, IN ACCORDANCE WITH SECTORAL FACTOR INTENSITIES AND TECHNOLOGY CONTENT IN 1988

	LATIN AMERICA	NORTH AMERICA	WESTERN EUROPE	SOUTHEAST ASIA
Natural-Resources Intensive Industries				
1. Labour-intensive, based on agricultural products	7.7	9.2	21.7	25.0
2. Capital-intensive, based on agricultural products	7.7	4.5	-	-
3. Based on Mineral Products	15.4	9.2	-	-
4. Based on Energetic Products	-	-	-	-
Labour-Intensive Mature Industries				
1. Low Technological Content	27.0	54.5	39.1	50.0
2. Medium Technological Content	7.7	-	-	-
Capital-Intensive Mature Industries				
1. Low Technological Content	7.7	13.6	4.4	-
2. Medium Technological Content	-	-	-	-
Labour-Intensive New Industries				
1. Low Technological Content	15.4	4.5	21.7	12.5
2. Medium Technological Content	3.8	-	8.7	12.5
3. High Technological Content	-	-	-	-
Capital-Intensive New Industries				
1. Low Technological Content	3.8	4.5	4.4	-
2. Medium Technological Content	-	-	-	-
3. High Technological Content	3.8	-	-	-
TOTAL	100.00	100.00	100.00	100.00

Source: Estimates based on primary data from UN/COMTRADE Database.

TABLE 12 - PERCENTAGE DISTRIBUTION OF INDUSTRIES WITH IIT>0.5 IN TRADE BETWEEN COLOMBIA AND 4 REGIONS, IN ACCORDANCE WITH SECTORAL FACTOR INTENSITIES AND TECHNOLOGY CONTENT IN 1988					
	LATIN AMERICA	NORTH AMERICA	WESTERN EUROPE	SOUTHEAST ASIA	
Natural-Resources Intensive Industries					
1. Labour-intensive, based on agricultural products	4.5	20.0	9.1	20.0	
2. Capital-intensive, based on agricultural products	-	-	-	-	
3. Based on Mineral Products	4.5	-	-	-	
4. Based on Energetic Products	-	-	-	-	
Labour-Intensive Mature Industries					
1. Low Technological Content	40.9	66.6	63.6	60.0	
2. Medium Technological Content	4.5	-	-	-	
Capital-Intensive Mature Industries					
1. Low Technological Content	9.2	-	-	-	
2. Medium Technological Content	-	-	-	-	
Labour-Intensive New Industries					
1. Low Technological Content	13.7	-	27.3	20.0	
2. Medium Technological Content	22.7	-	-	-	
3. High Technological Content	-	-	-	-	
Capital-Intensive New Industries					
1. Low Technological Content	-	-	-	-	
2. Medium Technological Content	-	6.7	-	-	
3. High Technological Content	-	6.7	-	-	
TOTAL	100.00	100.00	100.00	100.00	

Source: Estimates based on primary data from UN/COMTRADE Database.



In other countries - like Chile and Argentina - one also finds indication of intraindustry trade in natural resources-intensive industries in trade with all the regions.<sup>1/</sup>

On the whole, the indicators shown in Tables 8 to 12 confirm the previous generic findings that intraindustry trade tends to be more concentrated in labour-intensive than in capital-intensive industries, and also that trade of this type is more often found in mature, rather than new industries.

The other remarkable point to stress in those Tables are the indications - for Argentina and Mexico - of significant intraindustry trade in a considerable number of industries that are classified as new, capital-intensive, and with medium to high technological content. These indicators are found in trade flows between these two countries and Latin America, Western Europe and North America, and comprise mainly Photo and Cinema Supplies and Medicinal Products in the case of Mexico, and Starches and Albuminoidal Substances, Passenger Cars, Road Motor Vehicles and Photographic and Cinematographic Equipment and Supplies, in the case of Argentina.

In the other three countries there are only scant indications of intraindustry trade in the so-called new industries, with the only exception of trade between Brazil and Europe: there are indications of expressive incidence of two-way trade in Household Equipment of Base Metal (labour-intensive, low technological content) and of Textile Machinery (labour-intensive, high technological content).

## V. SUMMARY AND CONCLUSIONS

In this paper we evaluate some available evidence with regard to intraindustry trade in Latin America, in comparison with six industrialized countries.

It was shown that - as different from OECD countries, for which the indications point to a stable pattern of this type of trade - in Latin America this is an increasingly important feature, with rising indexes and more diversified sectoral incidence in 1988 than at the beginning of the decade.

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<sup>1/</sup> Figures for Colombian trade with North America and S.E. Asia are also significant.

It was also shown that this type of trade is more often associated with manufactures than in semi-processed products, and tend to occur more intensely in mature, labour-intensive industries, with medium to low technological content.

Geographically, the incidence of intraindustry trade is more concentrated in Western Europe than elsewhere, and not only in intraregional trade. This certainly has to do with the very sectoral diversification of trade in those countries, which compares favourably with the relatively more concentrated exports from other regions. Latin America ranks second among the regions considered here, in terms of the incidence of industries with high shares of intraindustry exchanges, in trade with the major industrial economies.

For similar reasons, it is quite remarkable that the pattern of the trade in Southeast Asian countries comprise a comparatively low number of industries with high share of two-way trade. Given the trade performance of each of these groups of countries, it certainly follows that the identification of the links between this type of trade, the capacity of market penetration and sectoral competitiveness remain as a topic demanding further, specific research.

As far as the sectoral concentration of high indexes of intraindustry trade is concerned, it was found that those industries for which high indexes obtain for Latin American countries tend by and large to present high indexes also in industrialized countries, suggesting universal sector-specific tendencies. These comprise mainly textile products, non-metallic mineral manufactures, manufactures of metal, apparel and clothing and miscellaneous manufactures. The Latin American figures in these sectors can therefore be interpreted as indicative of a regional adaptation to the new international patterns of production and trade.

But there are other industries, like the production of iron and steel products and the producers of machinery specialized for particular industries, where the Latin American indicators of significant intraindustry are unmatched by evidence for other regions, suggesting some regional sector-specific peculiarities. This reinforces the need for closer sectoral investigation.

Linking these indicators to the characteristics of the production processes it follows that for all the 66 countries that have been considered the probability of finding intense two-way trade would

be highest in mature, labour-intensive industries with low technological content (like in textiles and clothing), followed by new, labour-intensive industries with medium technological content (like in series-built capital goods), and by those industries based on agricultural products, and which employ labour intensively (like processed food and wood products). Most of the evidence of high intraindustry trade corresponds to these characteristics.

It is understood that the indicators presented in this paper contain a number of topics that call for further investigation. But whatever the perspective adopted for the analysis of the regional experience, it should be kept in mind that the indicators for individual Latin American countries do vary significantly. Homogeneous treatment of Latin American trade figures might be quite misleading.

Listing all the areas that could be affected - in terms of economic policy prescription - if the evidence of high shares of intraindustry trade is taken into account is hardly a rewarding (nor even a feasible) task. Regional free trade agreements, industrial policy, foreign investment regulation are only some of the most obvious areas to experiment the consequences of it.

The evidence presented in this work shows intraindustry exchanges to be an increasingly important characteristic of trade by Latin American countries, as well as allows for a broad mapping of its sectoral incidence, individual countries peculiarities and inter-country comparisons, in a systematic and hopefully persuasive support to the demand for more serious consideration of the implications of these new issues.

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**A N N E X E S**

**ANNEX 1 - COUNTRIES CONSIDERED IN EACH REGION OR COUNTRY GROUPINGS**

- LAIA** Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Paraguay, Peru, Uruguay, Venezuela.
- CACM** Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua.
- CARIBBEAN** Antigua/Barbuda, Bahamas, Barbados, British Virgin Islands, Cayman Islands, Cuba, Dominica, Dominican Republic, Grenada, Guadeloupe, Haiti, Jamaica, Martinique, Montserrat, Netherland Antilles, St. Kitts Nev., Anguilla, St. Lucia, St. Vincent, Trinidad/Tobago, Turks/Caicos, US Virgin Islands.
- WESTERN EUROPE** Belgium/Luxembourg, Denmark, France, West Germany, Greece, Ireland, Italy, Netherlands, Portugal, Spain, United Kingdom, Austria, Finland, Iceland, Norway, Sweden, Switzerland.
- SOUTHEAST ASIA** Japan, Hong-Kong, India, Indonesia, Korea, Malaysia, Pakistan, Philippines, Singapore, Thailand.

TABLE A.1 - INTRA-INDUSTRY TRADE INDEXES FOR SELECTED INDUSTRIALIZED COUNTRIES - 1988

SITC	USA		W.GERMANY		ITALY		UK		FRANCE		JAPAN	
	(X+M) (US\$ million)	INDEX	(X+M) (US\$ million)	INDEX	(X+M) (US\$ million)	INDEX	(X+M) (US\$ million)	INDEX	(X+M) (US\$ million)	INDEX	(X+M) (US\$ million)	INDEX
037	1020	36.8	464	79.7	268	35.7	671	25.3	621	25.8	1316	53.8
048	717	66.8	1672	89.4	969	61.6	1076	82.4	1614	99.2	550	46.0
058	2146	53.3	1840	54.6	666	56.9	930	22.8	816	47.1	593	4.9
073	432	61.8	858	94.8	319	76.2	634	90.9	597	83.0	227	5.3
098	1259	73.1	989	90.5	318	86.0	745	70.4	663	87.0	411	65.5
111	302	56.1	273	99.0	57	97.9	163	60.5	480	52.6	167	15.0
112	3995	15.5	2525	69.9	1817	58.0	4774	84.5	5058	26.9	909	12.0
122	3005	7.0	1016	44.7	708	1.5	1059	36.6	860	21.7	811	13.7
266	363	79.4	987	57.6	950	67.6	301	26.6	390	77.7	603	19.8
334	15712	35.0	7281	43.4	5133	76.8	5092	97.1	5093	64.2	7387	7.7
431	137	64.4	488	79.4	91	98.3	172	53.1	152	45.7	79	70.3
511	3975	76.1	2828	99.5	1073	79.8	1542	83.8	4271	46.4	1485	88.5
512	2048	98.4	2199	59.3	778	58.3	1312	92.1	851	70.1	1264	56.9
513	2407	58.5	2439	69.4	893	70.8	1181	34.9	991	64.1	1309	66.2
522	2899	84.2	2417	70.2	757	69.9	920	99.8	1836	67.7	1346	94.8
523	2223	66.9	1819	58.8	558	58.5	1194	89.6	663	52.9	773	96.8
532	56	31.5	155	29.6	119	82.1	48	76.7	49	77.5	33	33.9
541	7324	88.3	7167	69.9	3273	77.4	4651	67.1	4282	78.6	3376	42.5
551	752	99.1	556	95.1	191	57.1	513	85.2	749	74.2	247	75.8
591	2158	56.9	1497	48.7	431	90.4	1165	49.7	1528	88.9	417	78.5
592	839	80.7	1032	82.5	401	45.6	455	55.8	810	69.8	495	53.6
613	132	30.8	417	62.4	380	33.4	240	60.2	131	57.8	57	27.7
621	327	66.3	1012	81.7	543	52.4	512	93.3	540	97.7	319	30.3
628	1662	85.9	1266	85.0	451	69.9	463	96.2	661	87.8	672	26.6
633	59	30.1	95	53.8	49	37.2	35	30.5	141	19.2	18	5.2
635	1381	40.4	1227	89.5	567	48.8	630	53.7	699	85.5	439	23.7
641	10697	54.4	9856	96.9	3033	83.1	7169	41.1	5683	76.1	2312	92.7
642	1917	99.5	2967	58.3	763	82.0	1375	71.0	1926	94.9	454	43.3
651	1532	81.2	5418	85.3	4022	92.0	2684	81.2	3024	97.9	2658	86.3
652	1321	43.2	2221	71.3	1577	92.2	1341	44.8	1593	99.6	1299	76.4
653	1642	76.6	3415	72.8	2234	51.2	1818	31.8	1773	98.6	2507	19.3
654	806	30.0	1582	82.8	2227	32.6	852	71.3	782	89.4	1016	45.7
655	126	75.8	948	71.1	482	48.4	306	98.9	523	70.5	315	48.4
656	298	95.9	452	97.6	290	55.1	226	75.7	418	59.9	209	97.1
657	1552	96.8	2285	69.9	1066	80.2	1076	95.8	1270	82.8	917	64.6
658	1592	42.0	1208	79.9	477	83.3	643	68.3	700	58.5	424	26.0
659	1064	68.8	2040	55.0	293	54.1	1125	62.5	744	36.7	544	21.7
661	1339	10.4	946	71.7	1574	16.3	435	41.3	614	97.2	769	36.7
662	832	55.7	1729	85.6	2051	19.9	508	82.7	1159	77.4	295	30.7
663	1366	94.8	2152	69.8	731	83.1	899	94.8	1117	89.8	1058	28.9
664	1545	93.0	1982	74.9	990	99.6	954	62.0	1202	93.8	1210	51.1
665	1133	35.9	1383	70.9	765	74.5	608	82.9	1539	61.4	322	84.9
666	1499	7.7	811	81.3	525	90.0	612	67.8	370	71.3	649	34.6
672	941	7.4	3652	73.0	1992	30.9	1573	85.9	2380	86.3	2806	97.4
673	2390	16.4	3977	92.2	2082	76.2	1658	87.9	2656	99.9	2193	36.4
674	5452	30.8	8609	77.0	2710	76.0	3010	87.9	5206	81.3	8470	23.0
675	331	63.8	na	na	na	na	na	na	na	na	na	na
678	3149	40.3	4418	51.7	2037	47.3	1392	96.3	1912	81.4	4481	13.0
679	128	60.3	435	70.1	178	66.1	239	81.4	351	75.6	92	73.3
692	585	96.3	918	57.8	357	54.3	589	96.6	552	90.7	124	61.9
693	855	22.3	693	62.0	397	52.5	341	78.2	449	88.7	277	15.2
694	1862	31.8	1415	75.4	631	46.2	559	64.3	684	75.0	810	22.2
695	2118	73.3	3141	68.5	960	96.4	1178	89.8	1225	77.6	1453	35.7
696	639	26.6	616	72.4	213	93.3	268	89.7	274	88.0	416	52.2
697	1492	39.0	1025	98.2	1014	39.9	510	59.3	746	88.3	417	98.5
699	5314	62.7	5293	59.0	2478	57.5	2213	81.8	2731	89.3	1743	55.4

TABLE A.1 - INTRA-INDUSTRY TRADE INDEXES FOR SELECTED INDUSTRIALIZED COUNTRIES - 1988 (cont.)

SITC	USA		W.GERMANY		ITALY		UK		FRANCE		JAPAN	
	(X+M) (US\$ million)	INDEX	(X+M) (US\$ million)	INDEX	(X+M) (US\$ million)	INDEX	(X+M) (US\$ million)	INDEX	(X+M) (US\$ million)	INDEX	(X+M) (US\$ million)	INDEX
711	368	57.1	232	38.3	54	53.3	132	29.7	81	44.8	241	5.0
713	13140	79.0	7775	67.4	1980	99.9	3877	93.5	3922	74.8	6012	6.3
714	8921	69.6	2206	88.4	948	90.4	6685	87.7	3096	88.3	1246	39.8
716	2947	86.8	2780	67.5	1053	97.1	1314	78.4	1363	76.5	2338	30.4
718	539	79.7	698	60.4	92	88.7	228	91.5	183	79.9	243	52.6
721	1974	91.5	1668	52.2	850	54.3	870	81.3	1495	64.2	417	47.1
723	6064	83.8	2200	53.2	1021	97.0	2016	89.0	2043	84.9	2543	9.7
724	3005	55.5	5592	28.6	3313	66.5	1354	97.2	1458	97.7	3612	24.9
726	2007	85.1	3473	31.1	956	85.5	1992	76.2	1054	75.2	1102	48.1
727	720	93.2	976	38.5	589	39.9	535	89.2	384	94.3	195	79.0
728	8458	92.9	8016	39.3	4461	38.7	2932	85.5	2716	84.3	4783	29.8
736	4082	68.9	6290	53.2	2441	70.6	2034	96.4	1837	62.3	4226	22.5
737	1334	84.3	1272	49.2	657	49.3	735	95.6	621	83.3	1085	19.8
742	2316	95.9	3001	44.1	1205	82.9	1090	96.0	1274	85.9	1304	25.3
743	4535	88.5	4170	60.5	2020	69.3	2115	80.2	2012	98.9	3156	23.7
744	3732	89.4	4651	46.1	1522	73.4	2691	95.8	2584	91.3	2751	13.2
745	3210	94.2	4358	38.6	1964	45.6	1580	86.7	1677	59.0	1362	45.2
751	3355	34.9	1977	89.0	831	70.4	1675	93.1	1152	63.8	4049	9.4
761	1980	45.1	2757	96.1	1377	50.4	1361	77.7	1327	43.9	1905	13.2
764	16174	68.8	6692	93.7	2423	80.8	5240	79.3	3655	91.2	16410	15.6
773	4352	74.3	2320	87.7	629	66.5	1143	85.3	1148	99.1	1281	25.4
774	3687	93.2	1853	50.2	375	68.5	550	90.3	634	95.3	1408	49.4
775	4210	54.0	4860	70.2	3187	37.6	2396	51.4	2883	70.8	1934	34.6
778	10093	78.0	7999	76.9	27.19	90.8	4432	94.8	3832	90.3	7325	27.3
781	57446	30.6	43670	47.7	12302	65.7	15498	46.5	18225	92.7	41709	14.6
783	1141	83.0	1386	17.8	500	82.0	459	20.6	1115	57.2	713	3.1
785	1592	31.9	1048	68.3	952	52.2	534	49.2	926	73.3	3150	11.7
786	316	72.3	1455	43.0	269	63.3	452	93.6	753	99.4	265	25.1
791	762	81.7	634	22.8	144	68.4	241	77.5	565	22.7	406	12.4
792	25541	43.4	10961	92.9	2722	87.6	--	--	7224	73.8	2337	25.7
812	1259	54.9	2153	82.5	1372	41.1	807	66.6	1259	96.2	311	90.8
821	6319	35.3	6702	85.7	4643	17.4	2519	56.9	3904	64.0	1508	56.6
831	2172	6.0	934	54.9	1066	31.5	525	29.8	994	94.9	838	14.4
842	3546	17.4	3335	56.0	1822	49.2	1482	52.7	1439	46.5	1107	18.2
843	7136	7.4	6190	67.0	2260	38.4	1940	67.7	2482	93.4	1318	19.5
844	1970	11.2	1031	44.3	337	88.1	597	41.6	489	46.2	415	7.4
846	3773	15.4	2152	48.8	875	43.0	891	50.6	1182	66.6	940	9.2
847	683	21.8	769	63.9	945	19.6	408	71.0	572	75.3	549	71.1
848	3197	18.0	1922	46.8	847	54.7	553	59.6	736	60.7	1105	10.8
851	8713	6.4	3625	39.0	5556	17.2	1891	37.0	2425	58.8	1145	6.5
872	2409	85.2	1932	75.1	765	68.5	1015	84.5	1045	87.3	1295	67.1
873	249	39.7	403	38.1	110	58.9	214	70.5	151	79.5	268	11.6
874	10970	67.8	8653	65.6	2841	67.2	6442	89.8	4174	94.1	5077	71.4
881	2080	67.9	1503	92.6	393	71.6	797	56.4	556	37.0	3003	17.0
882	3078	96.7	2642	97.2	911	56.6	2320	94.6	1698	82.8	3143	36.3
884	1792	47.4	1040	89.6	552	58.8	345	51.7	560	69.6	1156	24.9
885	2081	12.0	1488	96.6	752	39.6	742	39.3	1031	94.5	2989	41.7
892	3595	93.3	3650	53.3	1118	54.2	3110	91.0	2750	86.5	927	95.3
893	5271	64.2	6259	71.3	2609	62.7	3164	78.4	3491	80.3	1395	84.7
894	8282	30.0	2417	81.3	1417	98.0	2158	79.2	1989	64.6	2347	89.6
895	673	69.3	940	58.6	434	92.3	545	85.9	583	97.9	797	25.1
899	2363	53.9	1854	96.2	820	99.2	842	81.1	1185	85.7	1387	86.4
TOTAL 108 INDUSTRIES												
	392459.0		328670		143218.2		166107		184883		218071	
% OF TOTAL TRADE												
	51.0		57.3		53.7		49.6		54.5		48.2	

Source: Estimates based on primary data from UN COMTRADE Database.



TABLE A.2 - INTRAINDUSTRY TRADE INDEXES FOR SELECTED INDUSTRIES BETWEEN  
USA AND SELECTED REGIONS - 1988 (number of 3-digit industries with  
IIT > 0.5 in each bilateral trade flow)

SITC	LAIA	CARIBBEAN	CACM	W.EUROPE	S.E.ASIA
03	1	1	1	2	3
04	1	1	2	2	4
05		1	1	8	3
07	2	1	-	1	1
09	2	4	1	10	5
11	4	7	2	5	8
12	-	-	-	2	2
26	-	-	-	4	2
33	3	1	-	2	2
43	2	1	-	5	1
51	8	1	1	17	4
52	7	1	-	13	3
53	2	1	1	2	2
54	1	-	-	11	2
55	3	2	-	6	2
59	5	2	1	13	-
61	-	-	-	6	-
62	1	1	-	16	5
63	2	1	1	14	3
64	6	2	2	21	8
65	20	9	4	66	23
66	17	4	5	34	21
67	8	2	-	16	8
69	20	6	2	56	17
71	9	1	-	37	8
72	7	5	1	53	7
73	2	1	1	16	2
74	7	2	-	36	11
75	1	-	-	10	-
76	1	4	1	16	2
77	7	11	2	42	10
78	1	2	-	15	3
79	1	-	-	6	1
81	5	2	1	8	2
82	6	4	1	6	4
83	4	2	-	5	2
84	14	18	11	36	5
85	2	4	-	5	1
87	4	1	2	19	9
88	7	6	6	31	11
89	15	15		55	16
TOTAL	208	127	50	728	223

Source: Estimates based on primary data from UN/COMTRADE Database.

TABLE A.3 - INTRAINDUSTRY TRADE INDEXES FOR SELECTED INDUSTRIES BETWEEN  
W. GERMANY AND SELECTED REGIONS - 1988 (number of 3-digit industries  
with IIT > 0.5 in each bilateral trade flow)

SITC	LAIA	CARIBBEAN	CACM	W.EUROPE	S.E.ASIA
03	1	-	-	5	2
04	1	-	-	11	1
05	-	-	-	7	2
07	1	-	-	9	-
09	3	-	1	8	3
11	2	3	-	7	2
12	2	-	-	3	-
26	1	-	-	5	1
33	1	-	-	4	-
43	2	1	1	7	2
51	6	1	-	22	4
52	7	-	-	18	2
53	4	-	-	5	-
54	1	-	-	11	-
55	2	1	-	5	-
59	2	-	-	9	2
61	-	-	-	7	1
62	1	-	1	19	5
63	2	-	2	11	5
64	2	1	-	16	4
65	12	3	2	75	26
66	12	1	1	50	12
67	8	1	-	43	5
69	3	1	-	49	24
71	6	-	-	38	9
72	1	1	-	29	5
73	-	-	1	16	2
74	1	1	-	26	4
75	1	-	-	3	1
76	2	2	-	15	3
77	2	2	-	33	9
78	4	2	1	14	9
79	-	-	-	12	4
81	-	-	-	11	4
82	3	1	-	8	4
83	5	1	-	6	2
84	9	5	2	46	4
85	3	-	1	6	2
87	-	1	1	18	6
88	5	1	-	19	9
89	7	4	2	43	19
TOTAL	125	34	16	749	199

Source: Estimates based on primary data from UN/COMTRADE Database.

TABLE A.4 - INTRAINDUSTRY TRADE INDEXES FOR SELECTED INDUSTRIES BETWEEN  
UK AND SELECTED REGIONS - 1988 (number of 3-digit industries with  
IIT > 0.5 in each bilateral trade flow)

SITC	LAIA	CARIBBEAN	CACM	W.EUROPE	S.E.ASIA
03	-	-	-	6	2
04	-	-	-	11	2
05	-	2	-	3	2
07	-	-	-	5	-
09	1	1	-	6	5
11	-	5	-	7	4
12	-	-	-	3	-
26	-	-	-	3	1
33	-	-	-	11	1
43	-	-	-	8	3
51	4	-	1	18	2
52	6	-	-	17	6
53	-	-	-	6	1
54	-	1	-	11	-
55	1	-	2	6	2
59	-	1	-	9	3
61	-	-	-	6	1
62	3	2	-	21	5
63	1	1	-	11	4
64	3	3	-	19	4
65	12	-	1	75	19
66	5	1	-	50	15
67	3	2	-	46	4
69	9	6	-	67	24
71	4	9	-	52	11
72	3	1	1	51	3
73	1	3	-	22	1
74	3	5	-	41	6
75	2	-	-	8	2
76	2	1	1	17	8
77	6	2	2	40	13
78	-	3	-	16	6
79	1	-	-	6	-
81	2	-	1	9	4
82	3	2	-	9	5
83	3	1	-	11	3
84	4	3	1	58	4
85	2	-	-	8	-
87	3	7	-	31	10
88	6	3	-	22	9
89	8	7	1	60	14
TOTAL	101	72	11	886	209

Source: Estimates based on primary data from UN/COMTRADE Database.

**TABLE A.5 - INTRAINDUSTRY TRADE INDEXES FOR SELECTED INDUSTRIES BETWEEN FRANCE AND SELECTED REGIONS - 1988 (number of 3-digit industries with IIT > 0.5 in each bilateral trade flow)**

SITC	LAIA	CARIBBEAN	CACM	W.EUROPE	S.E.ASIA
03	-	-	-	3	2
04	-	-	-	8	3
05	-	1	-	8	1
07	1	-	-	6	1
09	2	-	-	11	4
11	3	1	-	6	4
12	-	-	-	2	-
26	1	-	-	8	1
33	1	-	-	8	3
43	-	-	-	4	1
51	5	1	-	23	3
52	4	1	-	18	2
53	2	-	-	5	-
54	2	-	-	11	1
55	3	1	-	6	2
59	2	-	-	11	4
61	-	-	-	2	1
62	1	-	-	21	3
63	1	1	1	13	6
64	2	-	-	21	4
65	10	1	-	81	14
66	10	-	-	47	10
67	2	1	-	39	6
69	4	1	1	64	19
71	3	-	-	35	2
72	6	-	1	43	3
73	-	-	-	17	3
74	-	-	-	40	2
75	1	-	-	9	-
76	-	-	-	15	3
77	5	-	-	43	7
78	1	1	-	25	4
79	1	2	-	14	1
81	3	-	-	12	3
82	3	1	-	7	4
83	4	-	-	6	2
84	8	3	-	45	3
85	1	-	-	3	2
87	-	-	1	26	6
88	2	2	-	24	10
89	5	5	2	51	12
TOTAL	99	23	6	841	162

Source: Estimates based on primary data from UN/COMTRADE Database.

TABLE A.6 - INTRAINDUSTRY TRADE INDEXES FOR SELECTED INDUSTRIES BETWEEN ITALY AND SELECTED REGIONS - 1988 (number of 3-digit industries with IIT > 0.5 in each bilateral trade flow)

SITC	LAIA	CARIBBEAN	CACM	W.EUROPE	S.E.ASIA
03	-	-	-	5	1
04	-	-	-	7	1
05	1	1	-	5	1
07	-	-	-	3	-
09	-	-	-	6	4
11	4	5	-	11	1
12	-	1	-	2	-
26	-	-	-	4	2
33	-	-	-	8	-
43	-	-	-	5	1
51	1	1	-	19	4
52	5	1	-	9	7
53	2	-	-	5	1
54	3	-	-	8	2
55	2	-	-	3	5
59	-	-	-	13	1
61	-	-	-	6	-
62	1	1	-	17	-
63	4	-	1	11	4
64	1	1	-	21	4
65	15	1	2	57	26
66	10	1	-	40	14
67	3	-	-	33	5
69	5	1	-	41	17
71	2	-	-	32	6
72	-	-	-	40	5
73	-	-	-	16	1
74	1	-	-	31	6
75	2	-	-	7	2
76	2	1	2	15	4
77	4	2	-	27	9
78	2	1	-	20	2
79	2	-	-	16	3
81	1	-	-	3	1
82	1	-	-	-	4
83	2	-	-	1	3
84	11	2	-	15	8
85	2	1	1	1	-
87	3	2	-	21	9
88	3	-	-	24	10
89	6	1	1	40	22
TOTAL	101	24	7	648	196

Source: Estimates based on primary data from UN/COMTRADE Database.

TABLE A.7 - INTRAINDUSTRY TRADE INDEXES FOR SELECTED INDUSTRIES BETWEEN  
JAPAN AND SELECTED REGIONS - 1988 (number of 3-digit industries with  
IIT > 0.5 in each bilateral trade flow)

SITC	LAIA	CARIBBEAN	CACM	W.EUROPE	S.E.ASIA
03	1	-	-	3	1
04	1	-	-	5	1
05	-	-	-	3	1
07	-	-	-	-	-
09	1	1	-	5	4
11	1	-	-	5	3
12	-	-	-	-	1
26	-	-	-	1	-
33	1	-	-	-	1
43	-	-	-	-	2
51	3	-	-	19	5
52	2	-	-	16	-
53	-	-	-	-	-
54	2	-	1	5	2
55	2	-	-	2	1
59	1	-	-	6	1
61	-	-	-	-	2
62	-	-	-	9	2
63	2	-	-	8	4
64	2	1	-	9	1
65	11	-	-	49	19
66	4	-	-	37	10
67	4	-	-	20	9
69	4	-	-	42	11
71	-	-	-	17	-
72	-	-	-	26	-
73	-	-	-	7	-
74	1	-	-	27	-
75	-	-	-	-	-
76	-	-	1	-	1
77	-	-	-	14	3
78	1	-	1	8	2
79	-	-	-	2	2
81	-	-	-	9	4
82	3	-	1	4	1
83	3	-	-	8	2
84	3	1	-	23	5
85	1	-	-	4	1
87	-	-	-	20	2
88	1	-	-	5	6
89	4	2	1	38	19
TOTAL	59	5	5	456	129

Source: Estimates based on primary data from UN/COMTRADE Database.

TABLE A.8 - SECTORS WITH IIT < 0.5 IN THE TOTAL TRADE OF  
SELECTED INDUSTRIALIZED COUNTRIES IN 1988

USA	W. GERMANY	ITALY	UK	FRANCE	JAPAN
037	122	037	037	037	048 723
112	334	122	058	058	058 724
122	532	592	122	112	073 726
334	591	613	266	122	111 728
532	711	633	513	431	112 736
613	724	635	591	511	122 737
633	726	654	633	633	266 742
635	727	655	641	659	334 743
652	728	661	652	711	532 744
654	737	662	653	761	541 745
658	742	672	661	791	613 751
661	744	678	711	842	621 761
665	745	694	781	844	628 764
666	781	697	783	881	633 773
672	783	727	785		635 774
673	786	728	831		642 775
674	791	737	844		653 778
678	844	745	851		654 781
693	846	775	885		655 783
694	848	812			658 785
696	851	821			659 786
697	873	831			661 791
751		842			662 792
761		843			663 831
781		846			666 842
785		847			673 843
792		851			674 844
821		885			678 846
831					693 848
842					694 851
843					695 873
844					711 881
846					713 882
847					714 884
848					716 885
851					721 895
873					
884					
885					
894					

Source: Estimates based on primary data from UN/COMTRADE Database.

ANNEX 2 - CLASSIFICATION SCHEME OF THE SITC, REV. 2	
Division code	Section and division headings
00	Live animals chiefly for food
01	Meat and meat preparations
02	Dairy products and birds' eggs
03	Fish, crustaceans and molluscs, and preparations thereof
04	Cereals and cereal preparations
05	Vegetables and fruit
06	Sugar, sugar preparations and honey
07	Coffee, tea, cocoa, spices, and manufactures thereof
08	Feeding stuff for animals (not including unmilled cereals)
09	Miscellaneous edible products and preparations
11	Beverages
12	Tobacco and tobacco manufactures
21	Hides, skins and furskins, raw
22	Oil seeds and oleaginous fruit
23	Crude rubber (including synthetic and reclaimed)
24	Cork and wood
25	Pulp and waste paper
26	Textile fibres (other than wool tops) and their wastes (not manufactured into yarn or fabric)
27	Crude fertilizers and crude minerals (excluding coal, petroleum and precious stones)
28	Metalliferous ores and metal scrap
29	Crude animal and vegetable materials, n.e.s.
32	Coal, coke and briquettes
33	Petroleum, petroleum products and related materials
34	Gas, natural and manufactured
35	Electric current
41	Animal oils and fats



ANNEX 2 (cont.)	
Division code	Section and division headings
42	Fixed vegetable oils and fats
43	Animal and vegetable oils and fats, processed, and waxes of animal or vegetable origin
51	Organic chemicals
52	Inorganic chemicals
53	Dyeing, tanning and colouring materials
54	Medicinal and pharmaceutical products
55	Essential oils and perfume materials; toilet, polishing and cleansing preparations
56	Fertilizers, manufactured
57	Explosives and pyrotechnic products
58	Artificial resins and plastic materials, and cellulose esters and ethers
59	Chemical materials and products, n.e.s.
61	Leather, leather manufactures, n.e.s. and dressed furskins
62	Rubber manufactures, n.e.s.
63	Cork and wood manufactures (excluding furniture)
64	Paper, paperboard, and articles of paper pulp, of paper or of paperboard
65	Textile yarn, fabrics, made-up articles, n.e.s., and related products
66	Non-metallic mineral manufactures, n.e.s.
67	Iron and steel
68	Non-ferrous metals
69	Manufactures of metal, n.e.s.
71	Power generating machinery and equipment
72	Machinery specialized for particular industries
73	Metalworking machinery
74	General industrial machinery and equipment, n.e.s. and machine parts, n.e.s.
75	Office machines and automatic data processing equipment

ANNEX 2 (cont.)	
Division code	Section and division headings
76	Telēcommunications and sound recording and reproducing apparatus and equipment
77	Electrical machinery, apparatus and appliances, n.e.s., and electrical parts thereof (including non-electrical counterparts, n.e.s., of electrical household type equipment)
78	Road vehicles (including air cushion vehicles)
79	Other transport equipment
81	Sanitary, plumbing, heating and lighting fixtures and fittings, n.e.s.
82	Furniture and parts thereof
83	Travel goods, handbags and similar containers
84	Articles of apparel and clothing accessories
85	Footwear
87	Professional, scientific and controlling instruments and apparatus, n.e.s.
88	Photographic apparatus, equipment and supplies and optical goods, n.e.s.; watches and clocks
89	Miscellaneous manufactured articles, n.e.s.

**ANNEX 3 - SECTORAL CLASSIFICATION ACCORDING TO FACTOR  
CONTENT AND TECHNOLOGY INTENSITY OF SELECTED  
INDUSTRIAL SECTORS - SITC REV. 2 <sup>1/</sup>**

**A - NATURAL-RESOURCES INTENSIVE INDUSTRIES**

**A.1 Labour-intensive, based on Agricultural Products**

- 048 Cereal etc., prepared
- 058 Fruits, preserved
- 073 Chocolate and chocolate products
- 098 Food preparations
- 111 Nonalcoholic preparations
- 431 Processed animal and vegetable oil
- 633 Cork manufactures
- 635 Wood manufactures, n.e.s.
- 642 Paper articles

**A.2 Capital-intensive, based on Agricultural Products**

- 037 Fish, tinned or prepared
- 122 Tobacco manufactures
- 641 Paper, paperboard

**A.3 Based on Mineral Products**

- 266 Synthetic and artificial fibres
- 511 Hydrocarbons, n.e.s.
- 512 Alcohols, phenols
- 513 Carboxylic acids
- 522 Inorganic chemical elements
- 523 Other inorganic chemicals, n.e.s.

**A.4 Based on Energetic Products**

- 334 Petroleum products

**B - OTHER INDUSTRIES, NOT BASED ON NATURAL RESOURCES**

**B.1 Labour-intensive Mature Industries**

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<sup>1/</sup> Adapted from the SITC, Rev. 1 classification presented in J.J. Pereira (1991).

## B.1.1 Low Technological Content

- 613 Fur skins, tanned and dressed
- 651 Textiles and thread
- 652 Cotton fabrics, woven
- 653 Textile fabrics, woven, of man-made fibres
- 654 Textile fabrics, woven noncotton
- 655 Knitted or crocheted fabrics
- 656 Tulle, lace, ribbons
- 657 Special textile fabrics
- 658 Textile products, n.e.s.
- 659 Floor covers, tapestry
- 662 Clay, refractory building products
- 665 Glassware
- 666 Pottery
- 696 Cutlery
- 812 Plumbing, heating lighting equipment
- 831 Travel goods, handbags
- 842 Outer garments, men's and boy's textile fabrics
- 843 Outer garments, women's and girl's textile fabrics
- 844 Under garments of textile fabrics
- 846 Under garments, knitted or crocheted
- 847 Clothing accessories
- 848 Articles of apparel and clothing accessories
- 851 Footwear
- 893 Plastic articles
- 894 Toys, sporting goods
- 899 Manufactured articles, n.e.s.

## B.1.2 Medium Technological Content

- 621 Rubber materials

## B.2 Capital-Intensive Mature Industries

## B.2.1 Low Technological Content

- 661 Cement and other building materials
- 664 Glass
- 672 Iron and steel primary forms
- 673 Iron and steel bars, rods, shapes
- 674 Iron and steel universal plate sheet
- 675 Iron and steel hoop strip
- 678 Iron and steel tubes, pipes
- 679 Iron and steel castings, unworked
- 695 Tools

### B.2.2 Medium Technological Content

- 628 Rubber articles, n.e.s.
- 885 Watches and clocks

## B.3 Labour-Intensive New Industries

### B.3.1 Low Technological Content

- 663 Mineral (nonmetal) manufactures, n.e.s.
- 693 Wire products, nonelectric
- 697 Household equipment of base metal
- 821 Furniture
- 892 Printed matter

### B.3.2 Medium Technological Content

- 551 Essential oils, perfume
- 711 Steam and other vapor generating boilers
- 713 Internal combustion piston engines
- 714 Engines and motors, non-electric
- 716 Rotating electric plant and parts
- 718 Other power generating machinery
- 721 Agricultural machinery
- 723 Civil engineering plant and equipment
- 724 Textile, leather machinery
- 726 Printing, bookbinding machinery
- 727 Food-processing machines
- 728 Other machinery and equipment for particular industries
- 736 Machine-tools for working metal
- 737 Metalworking machinery, n.e.s.
- 742 Pumps for liquids
- 743 Pumps and compressors
- 744 Mechanical handling equipment
- 745 Other nonelectrical machinery, n.e.s.
- 791 Railway vehicles

### B.3.3 High Technological Content

- 751 Office machines
- 761 Television receivers
- 764 Telecommunications equipment
- 773 Electrical distributing machines
- 774 Electromedical X-Ray equipment
- 775 Domestic electrical equipment
- 778 Electrical machinery, n.e.s.

#### B.4 Capital-Intensive New Industries

##### B.4.1 Low Technological Content

- 692 Metal tanks, boxes
- 694 Steel or copper nails, nuts
- 699 Metal manufactures, n.e.s.

##### B.4.2 Medium Technological Content

- 532 Dyes, tanning material
- 591 Disinfectants, insecticides, fungicides
- 592 Starches, albuminoidal substances
- 781 Passenger motor cars
- 783 Road motor vehicles, n.e.s.
- 785 Motorcycles and other cycles
- 786 Road vehicles, nonmotor
- 881 Photographic apparatus and equipment
- 882 Photographic and cinematographic supplies
- 884 Optical goods, n.e.s.

##### B.4.3 High Technological Content

- 541 Medicinal products
- 792 Aircraft
- 872 Medical instruments and appliances
- 873 Meters and counters
- 874 Measuring, checking instruments and apparatus

**TABLE A.9 - NUMBER OF (3-DIGIT) PRODUCT GROUPINGS WITH IIT > 0.5 IN TRADE BETWEEN SIX SELECTED INDUSTRIAL COUNTRIES AND 5 REGIONS OR COUNTRY GROUPS IN ACCORDANCE WITH SECTORAL FACTOR INTENSITY, IN 1988**

	LAIA	CACM	CARIBBEAN	W. EUROPE	S.E. ASIA
Natural-Resources Intensive Products					
1. Labour-intensive, based on agricultural products					
USA	17	18	9	58	31
W. Germany	11	5	4	68	17
UK	3	10	-	62	24
France	9	3	1	67	23
Italy	10	6	1	59	15
Japan	6	2	-	33	16
2. Capital-intensive, based on agricultural products					
USA	3	1	1	12	7
W. Germany	5	-	-	16	4
UK	2	2	-	17	2
France	-	-	-	15	3
Italy	-	2	-	17	2
Japan	2	-	-	5	2
3. Based on Mineral Products					
USA	15	3	1	34	9
W. Germany	14	1	-	45	7
UK	10	-	1	38	9
France	10	2	-	47	6
Italy	6	2	-	32	13
Japan	5	-	-	36	5
4. Based on Energetic Products					
USA	3	1	-	2	2
W. Germany	1	-	-	4	-
UK	-	-	-	11	1
France	1	-	-	8	3
Italy	-	-	-	8	-
Japan	1	-	-	-	1

**TABLE A.9 - NUMBER OF (3-DIGIT) PRODUCT GROUPINGS WITH IIT > 0.5 IN TRADE BETWEEN SIX SELECTED INDUSTRIAL COUNTRIES AND 5 REGIONS OR COUNTRY GROUPS IN ACCORDANCE WITH SECTORAL FACTOR INTENSITY, IN 1988 (cont.)**

	LAIA	CACM	CARIBBEAN	W. EUROPE	S.E. ASIA
<b>Labour-Intensive Mature Industries</b>					
<b>1. Low Technological Content</b>					
USA	69	52	28	177	52
W. Germany	39	13	7	212	61
UK	31	8	4	234	49
France	36	8	2	207	42
Italy	40	6	4	135	67
Japan	25	2	1	142	57
<b>2. Medium Technological Content</b>					
USA	-	-	-	8	2
W. Germany	-	-	-	10	2
UK	1	1	-	10	2
France	-	-	-	10	2
Italy	-	1	-	7	-
Japan	-	-	-	5	1
<b>Capital-Intensive Mature Industries</b>					
<b>1. Low Technological Content</b>					
USA	15	5	-	38	22
W. Germany	12	2	-	66	12
UK	5	5	-	75	12
France	4	1	-	64	11
Italy	8	1	-	53	11
Japan	5	-	-	35	13
<b>2. Medium Technological Content</b>					
USA	4	1	-	14	6
W. Germany	2	-	1	11	7
UK	3	1	-	16	6
France	1	-	-	16	4
Italy	1	-	-	20	3
Japan	-	-	-	4	3



**TABLE A.9 - NUMBER OF (3-DIGIT) PRODUCT GROUPINGS WITH IIT > 0.5 IN TRADE BETWEEN SIX SELECTED INDUSTRIAL COUNTRIES AND 5 REGIONS OR COUNTRY GROUPS IN ACCORDANCE WITH SECTORAL FACTOR INTENSITY, IN 1988 (cont.)**

	LAIA	CACM	CARIBBEAN	W. EUROPE	S.E. ASIA
Labour-Intensive Mature Industries					
1. Low Technological Content					
USA	69	52	28	177	52
W. Germany	39	13	7	212	61
UK	31	8	4	234	49
France	36	8	2	207	42
Italy	40	6	4	135	67
Japan	25	2	1	142	57
2. Medium Technological Content					
USA	-	-	-	8	2
W. Germany	-	-	-	10	2
UK	1	1	-	10	2
France	-	-	-	10	2
Italy	-	1	-	7	-
Japan	-	-	-	5	1
Capital-Intensive Mature Industries					
1. Low Technological Content					
USA	15	5	-	38	22
W. Germany	12	2	-	66	12
UK	5	5	-	75	12
France	4	1	-	64	11
Italy	8	1	-	53	11
Japan	5	-	-	35	13
2. Medium Technological Content					
USA	4	1	-	14	6
W. Germany	2	-	1	11	7
UK	3	1	-	16	6
France	1	-	-	16	4
Italy	1	-	-	20	3
Japan	-	-	-	4	3

**TABLE A.9 - NUMBER OF (3-DIGIT) PRODUCT GROUPINGS WITH IIT > 0.5 IN TRADE BETWEEN SIX SELECTED INDUSTRIAL COUNTRIES AND 5 REGIONS OR COUNTRY GROUPS IN ACCORDANCE WITH SECTORAL FACTOR INTENSITY, IN 1988 (cont.)**

	LAIA	CACM	CARIBBEAN	W. EUROPE	S.E. ASIA
Labour-Intensive New Industries					
1. Low Technological Content					
USA	16	6	1	40	15
W. Germany	9	2	1	42	16
UK	11	6	-	50	15
France	10	2	-	47	14
Italy	5	-	-	25	12
Japan	7	1	1	38	8
2. Medium Technological Content					
USA	29	11	2	151	31
W. Germany	10	3	1	116	20
UK	13	18	3	178	23
France	12	1	1	147	13
Italy	5	-	-	129	23
Japan	3	-	-	79	1
3. High Technological Content					
USA	9	15	3	68	12
W. Germany	5	4	-	51	13
UK	10	3	3	65	23
France	6	-	-	67	10
Italy	8	3	2	49	15
Japan	-	-	1	14	4

**TABLE A.9 - NUMBER OF (3-DIGIT) PRODUCT GROUPINGS WITH IIT > 0.5 IN TRADE BETWEEN SIX SELECTED INDUSTRIAL COUNTRIES AND 5 REGIONS OR COUNTRY GROUPS IN ACCORDANCE WITH SECTORAL FACTOR INTENSITY, IN 1988 (cont.)**

	LAIA	CACM	CARIBB EAN	W. EUROPE	S.E. ASIA
Capital-Intensive New Industries					
1. Low Technological Content					
USA	9	3	1	28	7
W. Germany	1	-	-	19	11
UK	3	3	-	32	12
France	-	1	1	32	7
Italy	2	-	-	17	6
Japan	-	-	-	17	3
2. Medium Technological Content					
USA	12	11	2	55	13
W. Germany	14	3	1	45	16
UK	5	7	-	48	16
France	7	3	-	60	15
Italy	7	1	-	52	11
Japan	3	-	1	19	7
3. High Technological Content					
USA	5	1	2	33	11
W. Germany	1	1	1	39	10
UK	3	8	-	42	10
France	3	2	1	45	7
Italy	8	2	-	38	14
Japan	2	-	1	27	6

Source: Estimates based on primary data from UN/COMTRADE Database.