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## comercio internacional

# **W** weak links between exports and economic growth in Latin America and the Caribbean

Nanno Mulder



NACIONES UNIDAS



Division of International Trade and Integration

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This document has been prepared by Nanno Mulder, Economic Affairs Officer of the Unit of International Trade, Division of International Trade and Integration, ECLAC.

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## Abstract

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Export growth in Latin America and the Caribbean over the past 20 years (9% per year in volume terms) has enabled the region to regain part of the share of global trade that it had lost during the three preceding decades. This reversal in trend is due mainly to developments in Mexico, although in the last few years Brazil and several South American countries on the Pacific have been the most dynamic. However, this more dynamic performance does not seem to have had much effect on the pace of overall economic growth. This is in contrast to the experience of other countries—especially those of East Asia—, where exports played a major role in boosting economic growth.

This paper analyses the characteristics of the region's export development over the past two decades and the reasons why spillovers to structural change and economic growth have remained limited. In particular, exports have had few externalities because of their small – albeit growing – aggregate contribution to economic growth, a process of product diversification largely based on export processing with little value added, few generated knowledge and technological externalities from trade and foreign direct investment, and weak competition in several countries.



## Introduction

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Over the last twenty five years, Latin American exports have grown faster than in previous decades and above the rate of world exports. This has allowed the region to recover part of its loss of market share in world trade. However, this more dynamic performance does not seem to have had much effect on the pace of overall economic growth. This is in contrast to the experience of other countries —especially those of East Asia—, where exports played a major role in boosting economic growth. Several reasons may explain this heterogeneous impact of exports on growth, including the differential technological and quality contents, degree of diversification, presence of scale economies, insertion in global production networks and value chains, link between exports and foreign direct investment, and local capabilities.

Export development is different from trade liberalization. The latter involves a lowering of import barriers, either by eliminating nontariff barriers, or by reducing tariffs<sup>1</sup>. While the positive effects of exports on economic growth seem to be uncontroversial, as noted in the previous section, the repercussions of trade liberalization are much more uncertain and depend on a set of factors that include historical and geographical context, the speed with which the policy is implemented, its scope (sector or global), complementarity and linkages with other reforms (e.g., capital account liberalization), restructuring capacity in certain sectors, the existence of mechanisms to compensate losing sectors, and flexibility in the financial sector and labour market.

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<sup>1</sup> Naturally, export growth leads to an increase in and consequent liberalization of imports. The difference with respect to general tariff reduction is that the latter initially generates a larger increase in imports and only later in exports. As shown by the Asian experience, the effects on the productive structure of lowering import barriers may be completely different from those caused by an increase in exports.

This paper analyses the characteristics of the region's export development over the past two decades and the channels through which exports may contribute to structural change and economic growth. Most channels through which exports can potentially boost economic growth have been rather weak in the case of Latin America and the Caribbean. One way of illustrating this is by looking at how much value added is generated by foreign trade. A comparison of the sectoral structures of exports and GDP for nine countries in the region shows that in particular in the cases of low, medium and high technological products, increases in export shares from the early 1990s to the early 2000s were not matched by significant increases in the generation of value-added. This reflects in part the type of production based on maquila with intensive use of imports, or types of production with few linkages to the rest of the production system (ECLAC, 2008).

The paper is organized as follows. The next section looks at the macroeconomic contribution of exports to economic growth, as it is a component of final demand and a stabilizer of economic growth. Section 3 deals with the diversification of exports (by products, destination and both) as a source of growth through its reduction of terms-of-trade variability and its cushion on the effects of real external crises. Moreover, export diversification promotes changes in production structures which tend to enhance knowledge incorporation, and the creation of new comparative advantages. Section 4 looks at the technological content of exports, which determines in part the generation of knowledge linkages with the production structure. Moreover, the technological content of the goods and services affects the potential of vertical differentiation based on product quality. Section 5 considers other technological externalities associated with trade and foreign direct investment (FDI). In particular, it looks at the extent to which Latin America participates in world value chains as a mechanism to facilitate different types of learning through trade (learning through imports, learning through exports and learning by doing). Also, this section looks at different factors that determine the technology and knowledge transfers to local firms of FDI. Section 6 discusses how weak competitive pressures at home or in destination markets reduce the volume of exports and their benefits for economic growth, as well as the benefits of FDI for growth. Moreover, it discusses advances in the region concerning the introduction and enforcement of competition policy, both internally and as part of trade agreements. Section 7 discusses how public policies can enhance the benefits of exports, and production in general, for economic growth.

## **I. The “macro” contributions of exports introduction**

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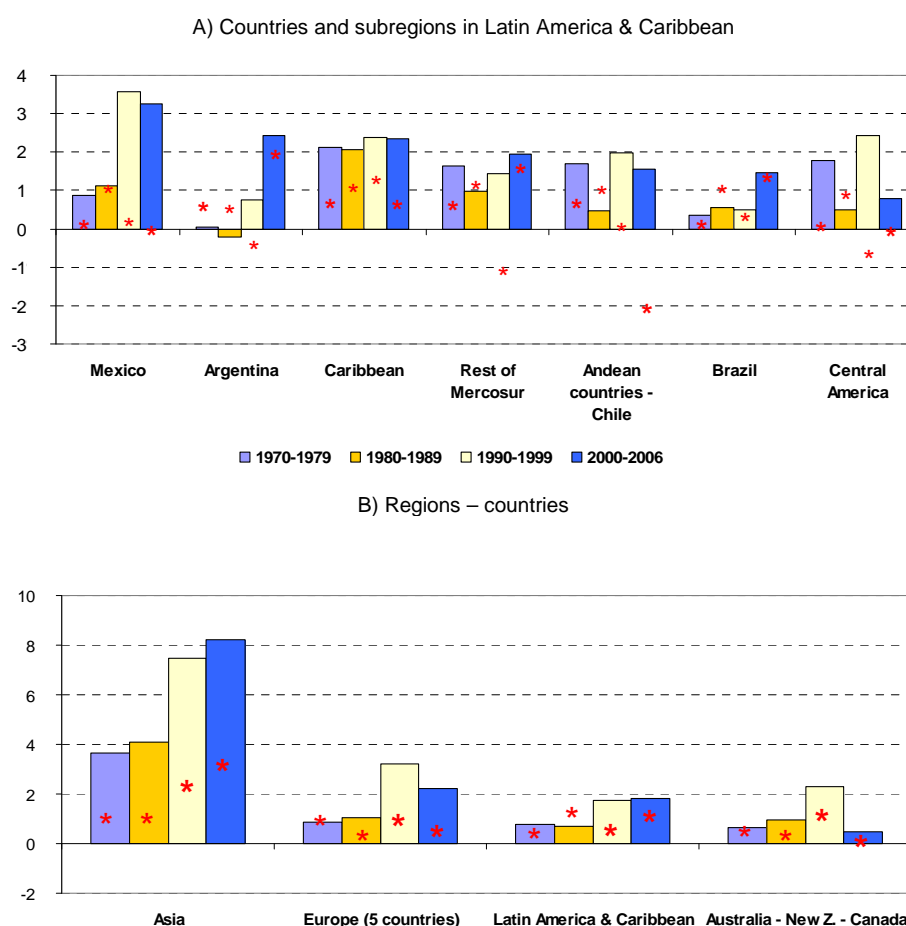
In Latin America and the Caribbean, the direct contribution of exports to economic growth and macroeconomic stability has been limited for the past three decades; although this seems to have changed in recent years. Being part of final demand, exports raise economic growth directly. Moreover, exports are the main and most stable source of foreign currency needed to pay for imports of capital goods and intermediate inputs, which in turn raise productivity and competitiveness (ECLAC, 1995). Moreover, the volume and diversification of exports contribute to reduce the volatility of economic growth, as they reduce a country's vulnerability against external financial shocks and fluctuations of export prices of goods and services.

First, the contribution of exports to economic growth in the region doubled in the 1990s and 2000s compared to the previous two decades, although never surpassed the 2 percentage points level (Figure 1). This contribution increased most in Mexico, Argentina and Brazil. However, the net contribution (exports minus imports) was much smaller and reached a maximum of 1 percentage points in 2000 to 2006. Within the region, the major net contributions were in Argentina, the rest of Mercosur and Brazil, whereas the net contribution was negative in Mexico.

Compared to other regions in the world, gross and net contributions of the region were similar in Europe and countries with abundant natural resources. But in East Asia the contributions were much higher, with gross and net exports contributing 8 and 3 percentage points, respectively, to economic growth from 2000 to 2006.

A country's export growth depends in part on the international demand for its products. Box 1 shows that while Latin American exports still mainly consist of goods whose world trade share has declined, in recent decades the region has significantly increased its share of trade in the most dynamic goods. This largely reflects Mexico's larger volume of exports of products with very buoyant markets, whereas the Andean countries and Chile have lost their share of world trade in goods for which demand is growing most strongly. The situation of Chile is atypical in this subgroup, because it has greatly increased its presence in markets for products whose world trade share has decreased (falling stars). Lastly, although the region as a whole saw its exports of the least buoyant goods decline, in Central America the opposite occurred, since its share of world trade in this type of goods increased in both periods.

**FIGURE 1**  
**CONTRIBUTION OF GROSS AND NET EXPORTS TO ECONOMIC GROWTH, 1970-2006\***  
*(Percentage points, average per decade)*



Source: UN-DESA, National Accounts Database.

Notes: Latin America and the Caribbean – all countries; Asia: Philippines, Malaysia, Republic of Korea, Singapore, Thailand and Viet Nam; Natural resource intensive economies: Australia, Canada, New Zealand; Europe: Czech Republic, Finland, Ireland, Spain and Sweden.

The bars indicate the contributions of gross exports to GDP growth, whereas the \* indicate the net contribution to economic growth.

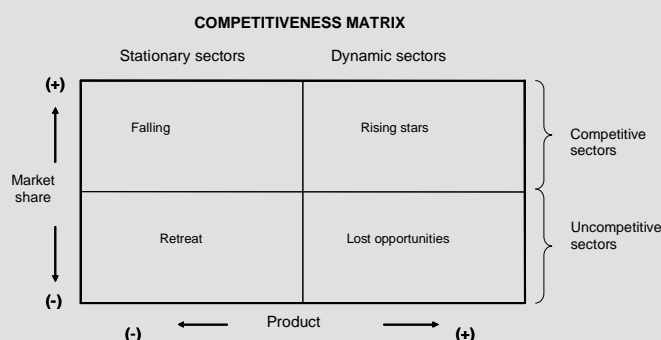
\* Shows net contribution of exports.

## BOX 1

## COMPETITIVENESS OF LATIN AMERICAN EXPORTS

A country's export competitiveness is measured in two stages. Firstly, world trade is divided into two groups: products whose growth was more robust than the average and those whose growth was weaker. Secondly, the exports of a given country in the initial year are also divided into two groups depending on whether or not the country increased its share of global trade in a given product between the initial and final years. From the standpoint of its export growth, the ideal for a country is to increase its presence in markets for products for which demand is growing faster than the world trade average.

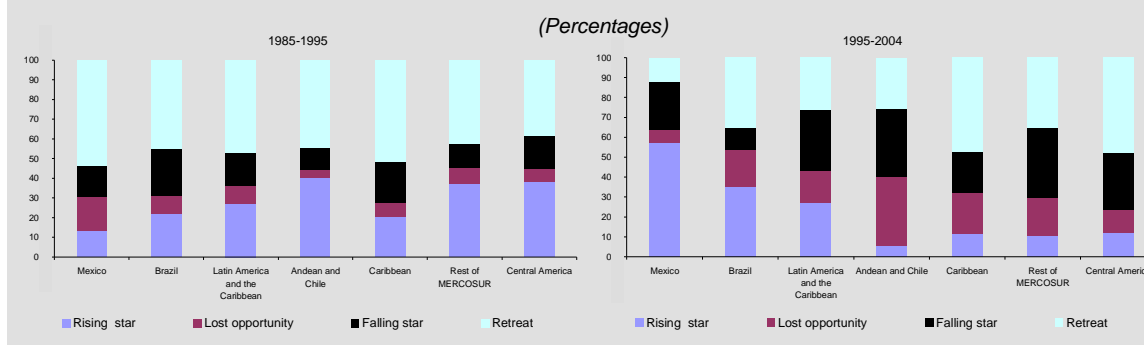
The two aspects together make it possible to distinguish four types of product in the competitiveness matrix. The best case corresponds to "rising stars", i.e. dynamic products subject to increasing global demand, in which the country's competitiveness has enabled it to increase its market share. This group is followed by "lost opportunities" i.e. dynamic products in terms of global demand, in which the country is not sufficiently competitive with the rest of the world, so its market share declines. The third corresponds to "falling stars", or products that are declining on the world market (stagnant demand), but for which the trade share of the country in question is increasing. For a small or medium-sized country, positioning in this type of goods could be a profitable strategy in the short and medium terms, but not so much in the long term. The fourth and worst situation is that of "retreat", corresponding to products that are stagnant on the world market and in which the country's trade share is declining.



Source: Economic Commission for Latin America and the Caribbean (CEPAL), CAN2000: User guide [online] [www.eclac.org/softwareCAN2000.pdf](http://www.eclac.org/softwareCAN2000.pdf).

The analysis covers two periods: 1985-1995 and 1995-2004. The following figures show the world trade growth dynamic of each country's or subregion's export basket in the initial year. In the decade 1985-1995, 60% of products exported from the region lost importance in world trade. This uncompetitive position tended to improve between 1995 and 2004, as the market share of a larger proportion of strong-growing products increased. This largely reflected results recorded in Mexico and Brazil between the two periods studied. Almost 60% of products in the Mexican export basket in 1995 increased their share of world trade, while the country's share in the corresponding markets increased. Secondly, in 1995-2004, over half of all exports from Mexico and Brazil were dynamic on the world market. Moreover, Mexico and Brazil (albeit to a lesser extent) increased their share in these markets (rising stars). In contrast, Central America, the rest of MERCOSUR and the Caribbean display an unfavourable specialization pattern in terms of the evolution of the structure of world trade, since their share in stagnant markets has increased.

## GROWTH OF LATIN AMERICAN AND CARIBBEAN EXPORTS



Source: Economic Commission for Latin America and the Caribbean (ECLAC), Competitive Analysis of Nations (CAN) software.

Second, exports contribute to economic growth as they generate foreign exchange that can pay for imports of capital goods and intermediate products that raise productivity and competitiveness, as well as enable the purchase of consumption goods. Although there are other sources to finance imports, such as inward capital flows, FDI and remittances, exports is the most stable source of funding. From 1971 to 1999, the variations in inward capital movements were much bigger than those in terms of trade (Machinea, 2003)<sup>2</sup>. For Central America and Mexico, workers' remittances are another important and relatively stable source of foreign finance. However, it is likely that the magnitude of remittance will diminish over time. Within the region, Argentina, Brazil, Chile and other Andean countries are those where exports increased most in relation to imports.

Third, exports improve the resistance against financial and exchange rate shocks. A higher export to GDP ratio increases the solvency of a country and reduces adjustment costs of sudden changes in net capital flow entries or major fluctuations of real exchange rates (Calvo et al., 2004; Cavallo, 2007)<sup>3</sup>. This stabilizing role is important because after the 1970s fluctuations in capital movements increased much more than variations in terms of trade. In the 1970s, terms of trade shocks were bigger than variations in capital flows. In the period 1990-2004, the opposite was true when four fifths of the countries in Latin America and the Caribbean had a higher volatility of capital flows than terms of trade (Machinea y Monte, 2005).

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<sup>2</sup> The author found that the number of years in which terms of trade variations bigger than 20% was much smaller than the number of years in which the variation of capital movements was bigger than 20%.

<sup>3</sup> Adjustment costs for countries with high export to GDP ratios are lower in part because they attract more rapidly new capital flows after outflows (Cavallo, 2007).

## II. Export diversification

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Before analysing the region's export diversification, it is worth pausing to consider the significance and relevance of this phenomenon for growth. Why might it be preferable to diversify exports instead of specialising in activities where there are static comparative advantages stemming from the country's endowment of production factors, natural resources and capacities?

Firstly, export diversification is beneficial in itself, since it helps to reduce terms-of-trade variability and it also cushions the effects of real external crises<sup>4</sup>. Secondly, export diversification is usually closely related to changes in production structures which tend to promote knowledge incorporation. Lastly, export diversification can help create new comparative advantages. International data show that in many cases these are obtained by entering new fields of activity, based on a learning process stemming from direct production experience, investment in physical and human capital and institutional development. In addition, the pace of change in comparative advantages has increased thanks to globalization and the acceleration of technological change and its dissemination. This means that to prevent either their natural or acquired advantages from being eroded, countries must invest in production and export diversification to capture the benefits of entering new products and markets, before others do so (CAF, 2006)<sup>5</sup>.

Three aspects of export diversification are considered below:

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<sup>4</sup> This means that diversification should involve an expansion of the export basket in terms of goods and markets that are imperfectly and negatively related among each other, or for which international prices vary less.

<sup>5</sup> The concept of competitive advantage relates to the exceptional gains that a country can obtain, thanks, among other things, to its privileged position —e.g., geographic— with regard to world markets, earlier progress than others on the learning curve or on the cost curve of an industry with dynamic scale economies, and constant introduction of factors that differentiate it from other producers.

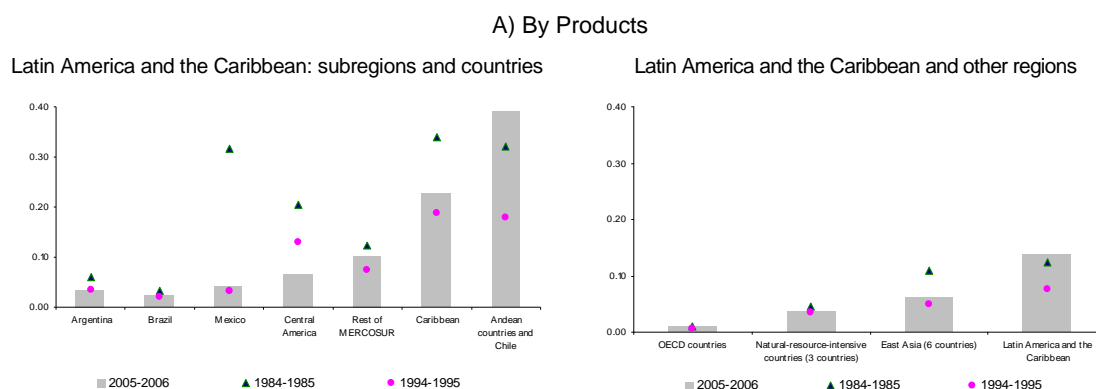
diversification by products, markets and a combination of the two. The region still has major potential for deepening its export diversification; and the introduction of new destination markets and products is a major source of export growth, particularly in the long term.

## A. Diversification of products

As figure 2 shows, although the region diversified its export basket between the mid-1980s and the start of this century, the process has gone into reverse over the last few years<sup>6</sup>. This reflects the rise in commodity prices and consequent increase in the weight of commodities in the export basket. The trend is confirmed, particularly in the Andean countries and Chile, where the rise in mineral and oil prices as from 2003 has eroded the export diversification that had occurred up to 2002<sup>7</sup>. A similar, albeit less intensive, situation can be seen in Paraguay and Uruguay. Mexico and Central America, and to some extent the Caribbean, significantly diversified their export basket, with an increasing share of medium- and high-technology products and an ever smaller share of commodities. Consequently, the level of export concentration in these countries did not vary much as a result of the commodity price boom. In the larger countries, such as Argentina, Brazil and Mexico, which have more complex production structures, their export diversification was greater. Nonetheless, their export prices improved by much less than those of the Andean countries.

Having said that, the region's exports are generally less diversified than those of other countries, mainly because they are more concentrated on commodities and natural-resource-based manufactures. When commodities are excluded (see part (b) of figure 2), the concentration index is cut by half, and is even below that of other parts of the world.

**FIGURE 2**  
**EXPORT CONCENTRATION MEASURED BY THE HERFINDAHL-HIRSCHMAN INDEX,**  
**1984-1985 TO 2005-2006**

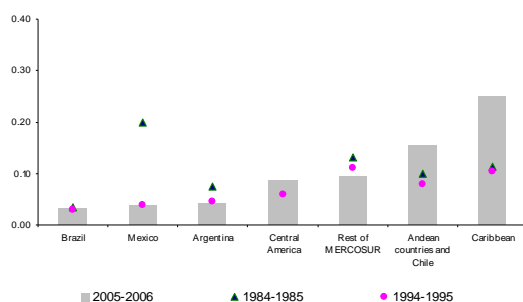


<sup>6</sup> The Herfindahl-Hirschman index measures export concentration in nominal rather than real values. Consequently, when commodity prices rise, the index shows less diversification in countries that export this type of product.

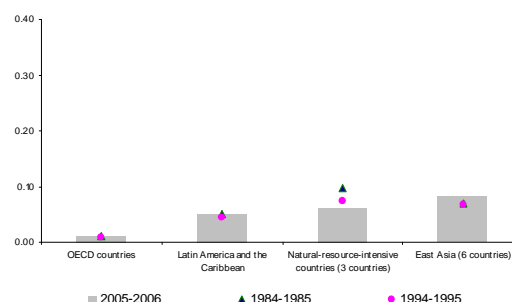
<sup>7</sup> Between 2002 and 2006, the highest export concentrations were registered in the Bolivarian Republic of Venezuela, Ecuador and Chile, while concentration was least in Bolivia. The concentration index rose from 0.61 to 0.81 in the Bolivarian Republic of Venezuela; from 0.20 to 0.35 in Ecuador; and from 0.08 to 0.18 in Chile.

### B) Excluding commodities and natural-resource-based manufactures

Latin America and the Caribbean: subregions and countries

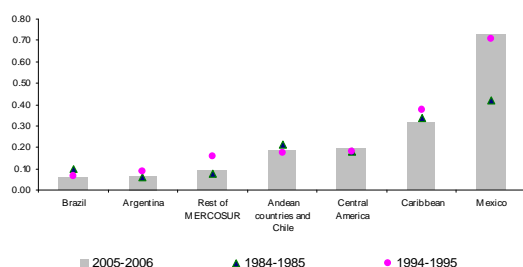


Latin America and the Caribbean and other regions

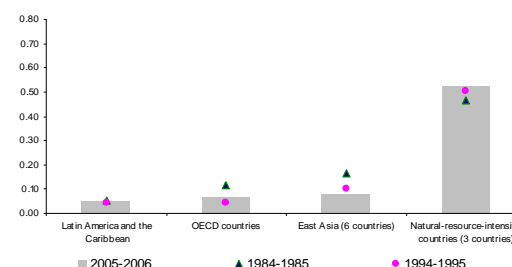


### C) By Destinations

Latin America and the Caribbean: subregions and countries



Latin America and the Caribbean and other regions



Source: United Nations Commodity Trade Database (COMTRADE), on the basis of the Standard International Trade Classification, Revision 2 (SITC, Rev. 2), except in the cases of Mexico and Central America, which use Revision 1.

## B. Diversification of destination markets

Another aspect of export diversification is an increase in the number of geographic or market destinations. Geographic diversification also entails portfolio advantages, since it helps to offset the risk of fluctuations in a specific market. Moreover, the fact of exporting to different markets generates externalities related to the preferences and demands of consumers from different countries. As shown in figure 2c, levels of concentration by destination largely depend on the country's distance from its trade partners and their economic size (gravitational forces), which have not varied much. South America displays very deep geographic diversification, in fact more than other regions of the world. In contrast, the geographic proximity of the United States market has a major influence on trade concentration in the cases of Mexico, the Caribbean and Central America. Latin America and the Caribbean is the world's most diversified region in terms of markets, even surpassing OECD countries.

## C. The combination of products and destinations

To maximize the effects on growth and changes in production patterns, export diversification should include a simultaneous expansion of the product basket and an increase in the number of destination markets. The two facets are complementary for several reasons. Firstly, the combination maximizes the portfolio effects that help reduce the volatility of export earnings. Secondly, the simultaneous diversification of products and destinations helps firms to exploit the interdependences between their businesses and achieve scope economies. The capacity of a given firm to diversify its products also

serves to deepen its international engagement, and vice versa (Stephan, 2002; Nachum, 2004). In the case of natural-resource exporters, however, the benefits of diversifying destination markets are less, since this type of product is already being traded, mostly on organized global markets.

Few countries and subregions of Latin America and the Caribbean have achieved a high degree of combined product and destination diversification (ECLAC, 2004)<sup>8</sup>. Although Mexico, the Central American nations and some Caribbean countries have significantly diversified their export products, their destination markets have become even more geographically concentrated (United States). Their internationalization largely features vertical integration in manufacturing chains, in which maquila activities play a major role<sup>9</sup>. The opposite is happening in the South American countries: exports remain concentrated in a few natural resource-based products, but are highly diversified in terms of destination markets. In this subregion, a distinction needs to be made between the Andean countries and the MERCOSUR bloc, since the Andean export basket is much more concentrated in terms of both destinations and products<sup>10</sup>. Exports from the third group, which consists of several Caribbean countries and Panama, are relatively concentrated in both product and destination terms<sup>11</sup>.

## D. The introduction of new products and destinations

Diversification achieved by introducing new products and gaining destinations has had a major influence on export growth, particularly in the long term (1985-2004), whereas its effects over shorter periods (1995-2004) have been relatively modest. Brenton and Newfarmer (2007) showed that three quarters of the growth of exports from Latin America and the Caribbean between 1995 and 2004 correspond to “intensive margins”, i.e. an increase in exports of old products to old markets. They also found that entering new geographic markets contributed more to export growth than introducing new products. In a similar exercise for the period 1995-2005, Amurgo-Pacheco and Pierola (2008) confirmed this result for Latin America and the Caribbean and other regions of the world. In the case of “extensive margins”, i.e. exports of new products and access to new markets, the diversification of geographic markets has been much more important than the introduction of new products, not only in Latin America and the Caribbean, but also in other emerging regions. Lastly, new mining products represent a third of this margin, and agricultural products almost a quarter<sup>12</sup>.

As shown in Box 2, diversification has been much more important for the region over the long term (1985-1986 to 2005-2006). More than one third of export growth in this period corresponds to product diversification, and only one quarter to new destination markets<sup>13</sup>. Much of the region’s product diversification is accounted for by Mexico. In fact, when the export figures for this country are excluded, geographic diversification becomes more important (41%) and the contribution made by product variety decreases.

## E. Export diversification and volatility of economic growth

Export diversification may reduce the volatility of economic growth. This occurs when exports are a substantial share of GDP and they are sufficiently diversified by products and destination markets. In this

<sup>8</sup> These patterns are not exclusive; this study refers to what has predominated over the last 20 years.

<sup>9</sup> Vertical integration, also called vertical specialization, refers to the fragmentation of a sector’s production determined between different countries and implies the import of intermediate goods for processing, sometimes only partial, and subsequent export to other countries.

<sup>10</sup> Chile is a notable case in this context, since its exports are relatively concentrated in product terms, but are among the most diversified in terms of destinations.

<sup>11</sup> These countries’ foreign sales are dominated by tourism, financial and transport services.

<sup>12</sup> It should be noted that these authors’ analyses were performed at a relatively disaggregated level: five digits of the Standard International Trade Classification (SITC). Consequently, these studies underestimate the emergence of new products within each five-digit “line”.

<sup>13</sup> The joint contribution of product and destination diversification is greater than the total extensive margin, because it double counts the category of new products exported to new destinations. For a discussion of the reasons for this double counting, see Amurgo-Pacheco and Pierola (2008).

context, variations in demand and prices are dampened and, in turn, the volatility of GDP growth. For a large group of emerging economies, Agosin (2007) demonstrated this link and emphasized its importance to explain differences in the link between exports and economic growth between Latin America and East Asia. Machinea y Monte (2005) showed that the increase in the exports to GDP ratio, in combination with a reduction in its volatility thanks to a diversified product basket during the past couple of decades, reduced the growth volatility of GDP in Latin America. Cavallo (2007) also proved a negative link between export diversification and the terms of trade volatility for a large group of countries.

For Latin America and the Caribbean and other emerging regions, there seems to be a link between (i) the rise in exports to GDP ratio and increase in diversification by geographical markets and products, and (ii) export diversification and volatility of export prices. Parts (a) and (b) of Figure 3 show that almost all countries increased simultaneously their exports relative to income and diversification by product, although not necessarily by destination<sup>14</sup>. In part (c), the positive relationship between the concentration ratio of products (horizontal axis) and increase in the volatility of export prices (vertical axis) is illustrated. Finally, part (d) suggests no clear relationship between the concentration ratio of export destinations (horizontal axis) and volatility of export prices (vertical axis).

## BOX 2

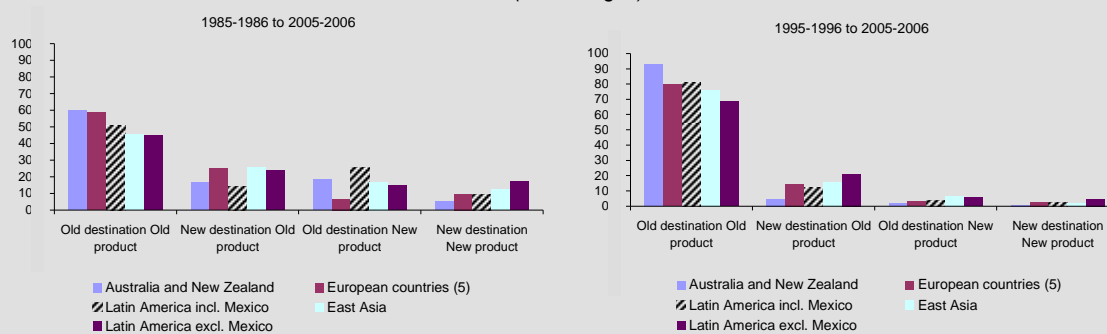
### INTRODUCTION OF NEW PRODUCTS AND EXPORT DESTINATIONS IN THE MEDIUM- AND LONG-TERMS

To compare the importance of incorporating new export products and destinations over longer timeframes than those considered by Brenton and Newfarmer (2007) and Amurgo-Pacheco and Pierola (2008), this analysis was repeated for a longer period. Using a similar methodology, export growth was broken down (five digits of SITC) classified in four groups: old products and new ones (or “discoveries”), and old destinations and new ones. The criteria used to separate products and markets were as follows: new products were defined as those whose export value was less than US\$1 million in the base year and above that in the final year. Old products were those of higher value in the base year, several of which grew, but some of which disappeared. The criterion for separating new and old markets was somewhat different, based on Amurgo-Pacheco and Pierola (2008), who argued that the discovery of new markets is a process that occurs at the sector rather than the country level. For example, if Peru exports copper to Germany, but at a given point in time adds broccoli to its export basket to that destination, this would represent a geographic discovery for the horticulture sector.

Using this classification, four types of diversification can be distinguished: (i) old products being exported to old destinations (OPOD); (ii) old products being exported to new destinations (OPND); (iii) new products to old destinations (NPOD) and (iv) new products to new destinations (NPND). Product diversification is equivalent to the sum of the NPOD and NPND categories, while destination diversification corresponds to the sum of OPND and NPND.

#### BREAKDOWN OF EXPORT GROWTH AS A PROPORTION OF THE TOTAL

(Percentages)



Source: United Nations Commodity Trade Data Base (COMTRADE).

The results confirm that product and destination diversification has been greater over a 20-year horizon than during a single decade. In Latin America and the Caribbean as a whole, the introduction of new products and destination markets accounted for

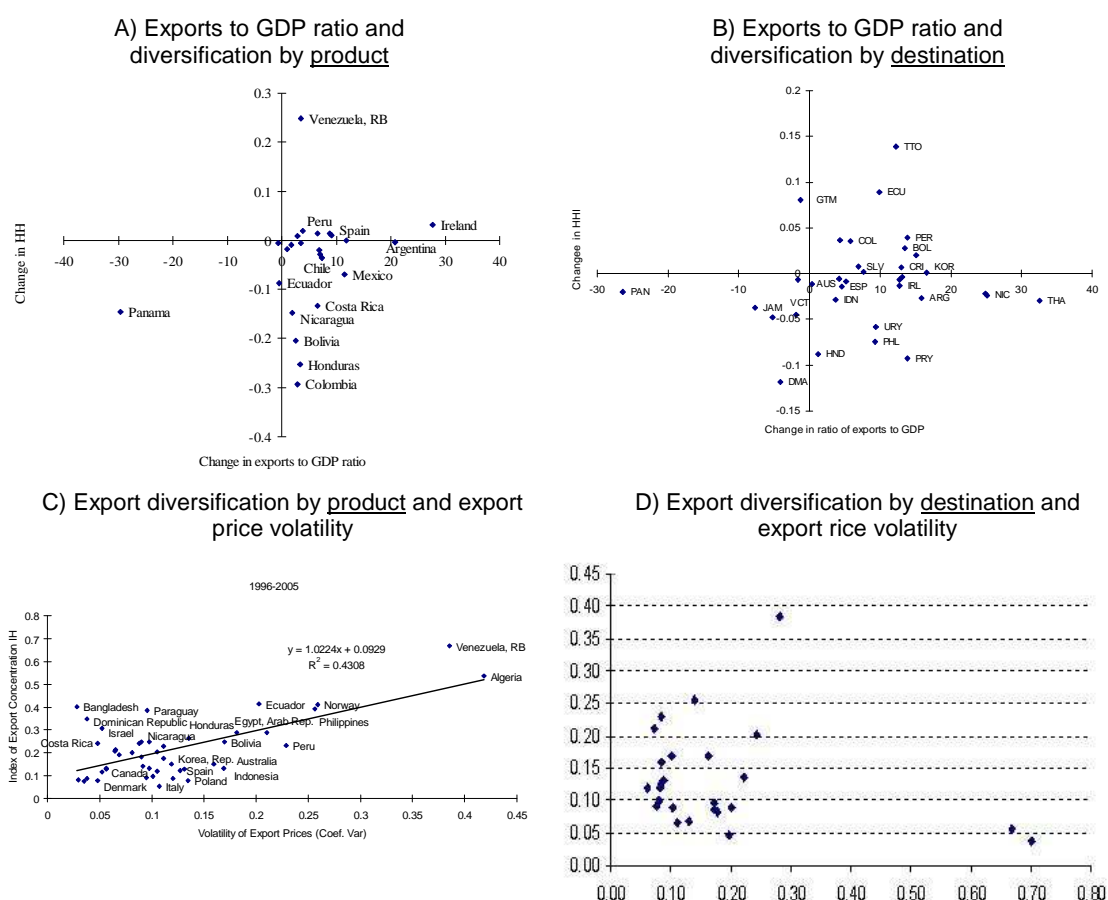
<sup>14</sup> From 2003 to 2007, a reverse trend took place in countries with abundant natural resources: whereas the exports to GDP ratio increased due to rising commodity prices, the commodity basket became more concentrated.

half of all export growth between 1985-1986 and 2005-2006, compared to just 20% in the period 1995-1996 to 2005-2006. When Mexico is excluded, diversification becomes even more important. In the period 1985-1986 to 2005-2006, exports of old products to new markets were the most important source of diversification for Latin America and the Caribbean. In contrast, when Mexico is included, the most important source is new products exported to old markets. Nonetheless, entry into new markets with new products accounts for 17% (10%) of regional export growth without (with) Mexico. In the "short" period, exports of old products to new markets were also more important in terms of the extensive margin.

In general, the importance of new products and geographic markets for the region's export growth varies greatly across countries. For example, in Argentina and Uruguay, new products and destination markets were more important than the regional average in the internationalization process; whereas other countries such as Chile and Peru increased their exports particularly in the intensive margin. Brazil and Mexico occupy an intermediate position.

Source: Economic Commission for Latin America and the Caribbean (ECLAC).

**FIGURE 3**  
**EXPORTS: INTENSITY, DIVERSIFICATION AND PRICE VOLATILITY, 1996-2005**



Sources: Author's calculation based on World Bank, *World Development Indicators*.

## F. Export and import product variety and growth

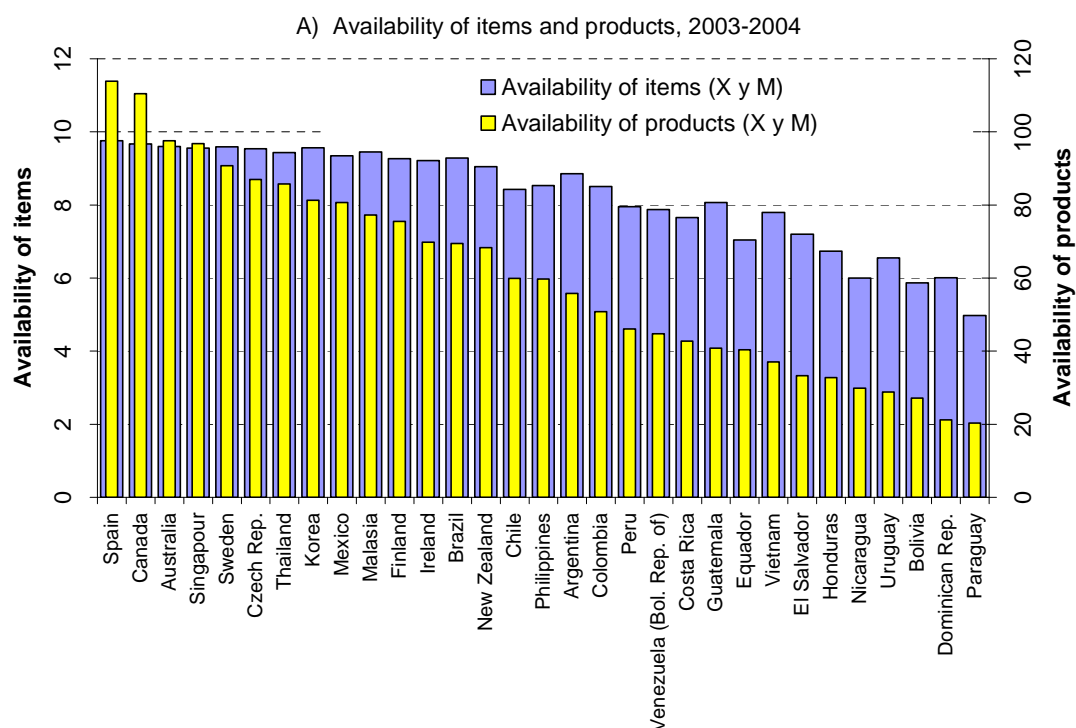
To promote growth, not only exports but also imports need to be diversified, in terms of both product and origin<sup>15</sup>. As highlighted in the new growth and international trade theories, the variety of intermediate inputs and capital goods available in a given economy is closely related to the productive diversification process, level of productivity and per capita income (Romer, 1990; Addison, 2003). Variety is defined as the sum of imports of different products from different origins plus exports of different products sold to different countries. This is a two-way relation: variety affects productive diversification and productivity, and vice versa. Moreover, it is more important for developing countries than for advanced ones, since the range available in the latter is already close to the international frontier. A larger variety of imported inputs has similar effects to capital deepening or technological progress, since it reflects division of labour or a more complex production structure, which in turn entails product and process innovation. Various panel regressions show that, in conjunction with the rate of investment in physical capital, the variety of products available in a given country is a key variable for explaining differences in per capita income (CEPE, 2004).

The main ways to increase the variety of intermediate inputs and capital goods available in a given country are imitation, innovation and openness to trade. Countries that are far from the international frontier of varieties need to make significant imitation efforts, whereas countries that are closer need a high level of research and development to introduce new products. A number of econometric studies have shown that skills are a key factor for success in imitation. A country's skill base can be increased mainly through education, but also through the international mobility of skilled workers and FDI. In many cases, transnational firms hire a larger number of skilled workers and invest more in training than their local counterparts (CEPE, 2004). Moreover, a gradual process of trade liberalization, in conjunction with other production policies, can also help increase varieties by reducing import duties and non-tariff barriers. It should be noted, however, that rapid liberalization, such as occurred in the MERCOSUR countries in the 1990s and in Chile in the 1970s, can produce a contrary effect by destroying domestic capacity.

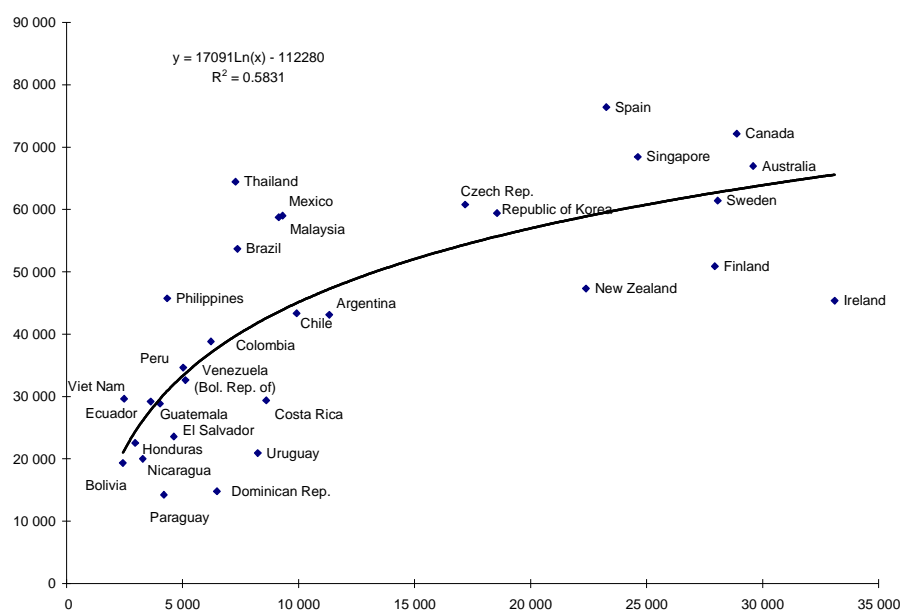
The availability of items and products in Latin America is below that in Asia and Western Europe. Available item variety is the number of exported and imported items in terms of 6 digit tariff lines of the Harmonised System (HS). Available product variety equals the item variety times the number of destination countries for exports and number of origin countries for imports. In 2003-2004, European and Asian countries had a larger product variety than countries in Latin America (Figure 4a). This may reflect the inferior complexity and growth potential of the latter's production structure. Within the region, Mexico is the country with the largest availability of products. There is a highly significant relationship between the availability of capital goods and intermediate inputs, on the one hand, and income per capita as a proxy of productivity levels, on the other. It is also notable that in most Latin American countries, apart from Brazil and Mexico, the variety of imports and capital goods is below the projected relation, whereas it is above the projection in several Asian countries (Figure 4b).

<sup>15</sup> In other words, external trade variety refers to the number of different products that a given country exports or imports, measured according to a detailed trade classification such as SITC or the Harmonized Commodity Description and Coding System (HS). Diversification refers more to the distribution of trade by different categories, which means that a country with a wide variety of exports or imports may not have diversified trade. Some analysts also consider the origin of imports as a source of variety for the country.

**FIGURE 4**  
**PRODUCT AND ITEM AVAILABILITY AND THEIR RELATIONSHIP TO DEVELOPMENT**



B) Variety of capital goods and intermediate inputs and GDP per capita



Source: United Nations Economic Commission for Europe (CEPE), "The benefits from product differentiation in modern economies", Economic Survey of Europe, No. 1, Geneva, 2004.

### **III. The technological content of exports**

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The effect of exports on economic growth also depends on the value-added content of exported goods and the generation of linkages in the production structure. In turn, an increase in the proportion of value-added is sensitive to the technological content of the goods and services in question and the extent of vertical differentiation based on product quality<sup>16</sup>.

#### **A. Goods**

Generally speaking, compared to products of low technological content or those based on natural resources, the production and export of medium- or high-technology goods requires a higher level of physical and human capital and involves more innovation-intensive activities. Moreover, under current world production arrangements, products of this type are exported in the context of greater participation in global production networks, which offers the potential benefit of participating in more dynamic trade segments and exploiting the scale economies that characterize the sector's production. To judge by the trend of world trade, products of higher technological content have been the most dynamic, because the demand for them is expanding faster than trade overall. Under appropriate conditions, the production and export of more technology-intensive goods increases the possibility of revitalizing the domestic production structure. All of this means that the production and export of medium- and high-technology goods should be associated with higher rates of economic growth (Lall, 2000).

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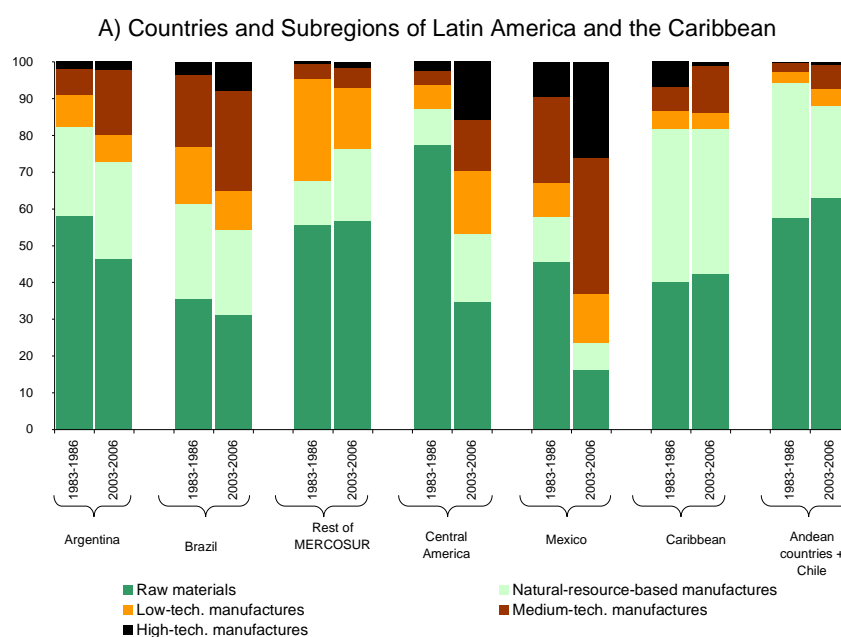
<sup>16</sup> Several characteristics of production processes, such as their environmental impact, have also become steadily more important in determining the cost of products.

Over the last two decades, the region's success in incorporating technology into its exports has been highly varied. Mexico, and to a lesser extent Central America, have achieved a radical transformation from commodities to medium- and high-technology manufactured products, thanks to special import regimes and export-oriented manufacturing. In contrast, in the Caribbean, the rest of MERCOSUR, the Andean countries (especially Ecuador and the Bolivarian Republic of Venezuela) and Chile, the technological content of their exports has stagnated. This is largely explained by the boom in commodity prices exported by these countries, which increased the weight of such goods in the export basket. In between are Argentina and Brazil, whose commodity exports have declined relatively, while medium-technology products have gained a larger share.

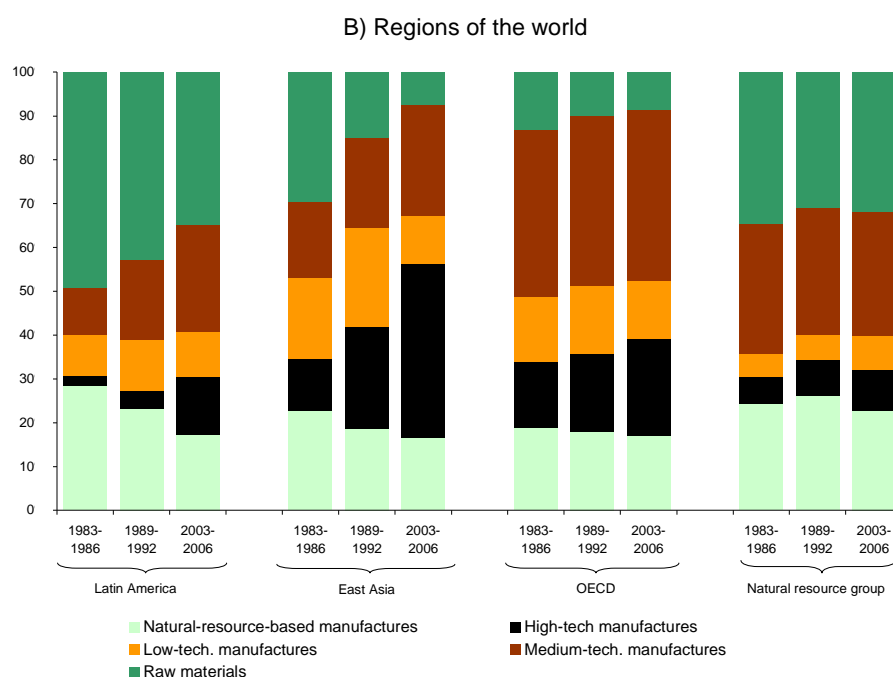
As shown in figure 5, between the 1970s and the decade of 2000, the Latin American and Caribbean export structure has varied from natural resources to manufactured products of medium and high technological content. This change has been even more pronounced in East Asia, however. Except for Mexico, and to a lesser extent Central America and Brazil, exports from the other Latin American and Caribbean countries remain concentrated in natural resources and related manufactures. In fact, apart from Mexico, such goods account for over 50% of the total volume exported by the region's countries. These product categories not only tend to incorporate less technology than manufactured goods, but, until recently, were the least dynamic segments of world trade and are the least integrated into global production networks.

The Latin American countries that have succeeded in diversifying their exports to include medium- and high-technology goods have not enjoyed faster economic growth<sup>17</sup>. The likely explanation for this is that they have not increased the value-added of these goods to the same extent (see the analysis of section B), which means that these activities have not become sufficiently integrated into the domestic economy. As production processes are increasingly distributed across different parts of the world, a developing country that exports a high-technology product may simply be the final link in the production chain, without having the knowledge needed to produce the good itself (UNCTAD, 2002).

**FIGURE 5**  
**COMPOSITION OF EXPORTS BY TECHNOLOGICAL CONTENT, 1980-2000**  
(Percentages of the total)



<sup>17</sup> In addition, the Latin American countries that grew most over the last decade were not always those whose export structure changed in this direction (Machinea and Vera, 2007).



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of United Nations Commodity Trade Database (COMTRADE).

Note: Data for the period 1983-1986 correspond to the Standard International Trade Classification (SITC), Rev. 1.

Accordingly, a classification of export products by technological intensity should be complemented with a measure to distinguish between countries that export high-technology goods as the final links in vertically fragmented chains, and countries that export such goods in less fragmented chains and therefore possess the knowledge needed to produce the whole good. One way to consider this issue is to note that, in the first case, the final stages of the production process are generally located in medium and low per-capita-income countries, for cost-advantage reasons. In the second case, production processes are located (completely) in high-income countries, for reasons associated with local technological capacities.

For each exported product, Lall, Weiss and Zhang (2005) propose calculating an indicator of the weighted average income of the countries that export it. Thus, high-technology goods whose production processes are fragmented and whose final stages are located in low-income countries will obtain a low value for this indicator, whereas high-technology goods processed entirely in high-income countries will obtain a high value. Box 3 explains the methodology in greater detail, and comments on results for a number of countries. Although it is only an approximation, this measure of export “sophistication” sheds light on the varied performance in terms of innovation effort, research and development, productivity and growth of the main exporters of high-technology goods, e.g. the United States and Israel, compared to Mexico and China.

A complementary way of studying exports is via the specialization produced in terms of vertical quality scales for a given product. This analysis reflects the fact that a country’s relative factor endowment not only affects specialization by product type, whether natural resources or manufactured products of varying technological content, but it also influences certain quality segments within the same category. Considering the importance of the innovation component in product quality.

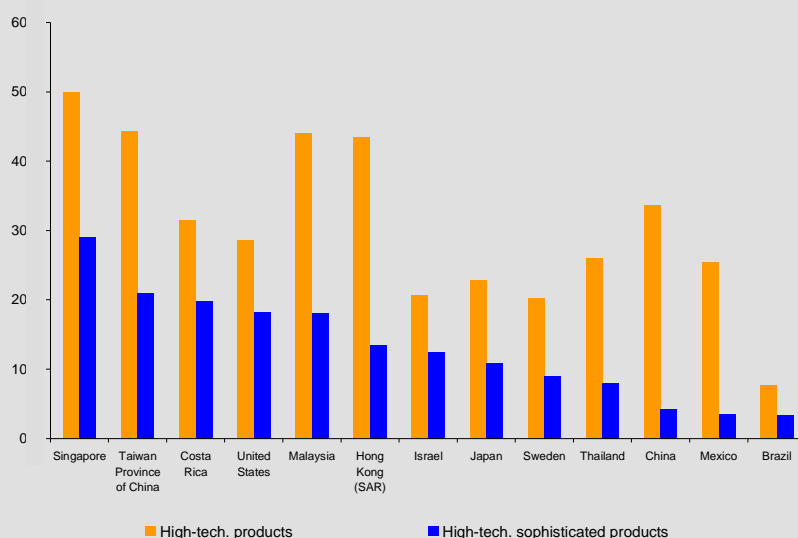
**BOX 3****EXPORT SOPHISTICATION**

Export sophistication can be measured using a methodology proposed by Lall, Weiss and Zhang (2005), which is described in four steps. Firstly, all countries of the world are ranked by their level of per capita income in PPP terms for 2006, and they are then put into 10 groups of equal number. Secondly, for each export category (defined by SITC Rev 2 at the three-digit level, 237 categories in all), the weighted average income of countries that export the product in question is calculated, by multiplying the average income of each group by each group's global share of exports of that product. Thirdly, the values obtained for the 237 categories are ranked and normalized to construct a "sophistication" index between 0 and 100, with 0 corresponding to the lowest value and 100 to the highest. Fourthly, three sophistication segments are constructed with this index: high, medium and low, each segment containing one third of the 237 categories. As a result, the high sophistication segment consists of categories mostly exported by higher-income countries, the middle sophistication category is exported by middle-income countries, and segments of low sophistication tend to be exported by low-income countries.

This classification of product lines by sophistication segment is used to calculate the percentage of a country's high technology exports that are also in the high sophistication category. For example, one third and one quarter of exports from China and Mexico, respectively, are high-technology products; yet only a small proportion of them are considered sophisticated. In fact no more than 4% and 3% of Chinese and Mexican exports, respectively, are both high-technology and sophisticated products. In the case of China, high-technology exports are concentrated in computers and other data processing equipment. In Mexico, the main product among its high-technology exports is "TV receivers", for which the production process is often vertically fragmented. These items are usually exported from middle- or low-income countries. In Brazil, in contrast, high-technology exports account for just 8% of the total, but almost half of them are in the high sophistication segment. The main product lines in this case are aircraft, related equipment and spare parts. These products, as claimed by Lall, Weiss and Zhang (2005), generally have a less fragmentable production process and so tend to be exported mostly from high-income countries. In fact, the percentage of sophisticated high-technology products is almost the same in Brazil as in Mexico. Costa Rica is the country in the region with the highest proportion (1/5) of such sophisticated products, as an exporter of transistors and semiconductors —product lines that are mainly exported from high-income countries.

**HIGH-TECHNOLOGY PRODUCTS AND SOPHISTICATED HIGH-TECHNOLOGY PRODUCTS, 2006**

(Percentages of total exports)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of United Nations Commodity Trade Database (COMTRADE).

**B. Services**

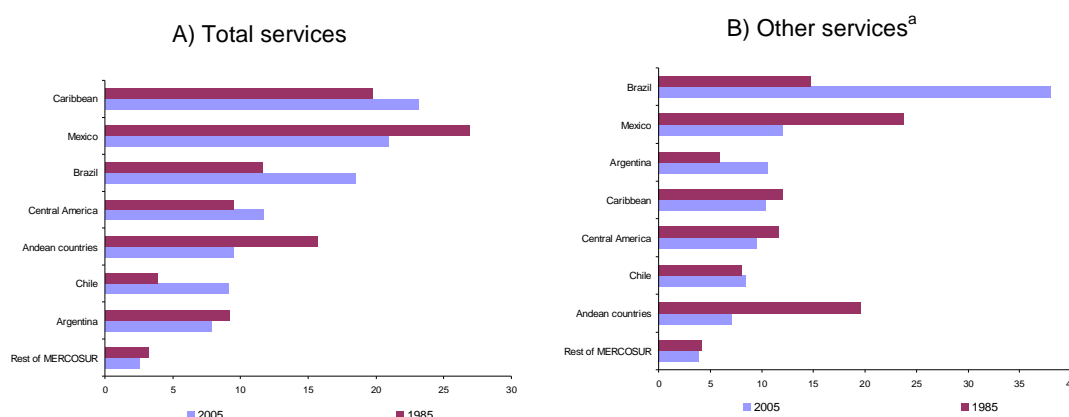
The level of technology and knowledge incorporated into services varies significantly. Depending on the content of these two elements, services can be classified as either "traditional", which include transport and travel, especially tourism; or "modern", or more knowledge- and technology-intensive services, such as information technology, engineering, research and development and telecommunications. The latter

category has been the fastest growing service segment since 1995, the first year for which relatively more complete data on this type of trade exist.

An analysis of trends over the last two decades shows that between 1985 and 2005, the Latin American and Caribbean share of world trade in modern services shrank from 2.1% to 1.8%, in contrast to the progress made by other emerging countries, particularly China and India. The result, however, conceals major heterogeneity between the different subsectors (ECLAC, 2007)<sup>18</sup>.

The regional average conceals great variety in terms of position and dynamism across subregions and countries between 1985 and 2005 (see figure 6). The countries in which total exports increased most were Brazil and Chile, the latter largely due to the vigorous expansion of transport services, a sector in which it is currently the regional leader. Meanwhile, in the same period, Brazil, Argentina, Honduras and Costa Rica recorded the highest growth rates in modern services. Intraregional heterogeneity to some extent affected the country and subregional shares in the total trade in services. In the case of Brazil, its share of Latin American exports of this type of services increased from 15% to 38%, while the Andean Community and Mexico posted the steepest fall in this segment. On the other hand, the latter succeeded in maintaining its position as the region's leading exporter of services, thanks to tourism.

**FIGURE 6**  
**EXPORTS OF SERVICES FROM LATIN AMERICA AND THE CARIBBEAN: COUNTRY AND SUBREGIONAL SHARES, 1985 AND 2005**



Source: International Monetary Fund (IMF), "Balance of Payments Statistics (BOP) database" [on line] <http://www.imfstatistics.org/bop/>.

<sup>a</sup> The "Other services" category encompasses all services apart from transport and travel.

In the case of "modern" services, the fastest-growing subcategories in Brazil over the last few years have been professional services and the execution of technical projects —activities that are mostly related to engineering and architecture, account for a third of all services exported and constitute one of the country's main comparative advantages. In addition, Brazil, Argentina, Costa Rica and Uruguay rapidly increased their exports of computer programs; and, over the last few years, several computer manufacturers have successfully morphed into software-related service providers, such as IBM in Argentina (ECLAC, 2007a).

<sup>18</sup> The Latin American and Caribbean share has declined sharply, especially in global trade in communications and insurance. The only category in which the region's share partly increased was "Other business services".



## **IV. Other technological externalities**

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The innovation process in the developing countries consists to a large extent in adopting and adapting goods and technologies, including organizational and marketing methods and logistics used in the developed world. In this context, trade and foreign investment emerge as mechanisms that can be used to speed up technological progress.

International trade helps developing countries exploit advanced-country technologies, both by directly acquiring intermediate and capital goods and by purchasing licenses. They can also learn from exports to advanced countries, by interacting with customers who generally demand better product quality.

Another way of acquiring technologies is through FDI. Nonetheless, to successfully absorb the technologies embedded in the capital goods, intermediate inputs or production processes related to FDI, the country or sector in question needs to satisfy certain requirements in terms of worker training, innovation and an environment that stimulates learning, supported by a regulatory framework that promotes technology transfer. Fulfillment of these conditions is not automatic and requires private initiatives and coordinated public policies.

### **A. Trade-related externalities**

There are three channels whereby technology can be transferred through trade: learning through imports, learning through exports and learning by doing. Apart from these aspects, this paper also considers participation in world value chains as a mechanism to facilitate the different types of learning.

The first channel is learning by importing, whereby local producers obtain an international stock of knowledge that enables them to increase their productivity. This channel has been very important in the rapid growth of the Asian countries, which, by importing and imitating the high-technology goods of advanced countries (i.e. “reverse engineering”), became leaders of the technological segment. This achievement was only possible thanks to a set of complementary policies that promoted innovation, gross capital formation and investment in human capital.

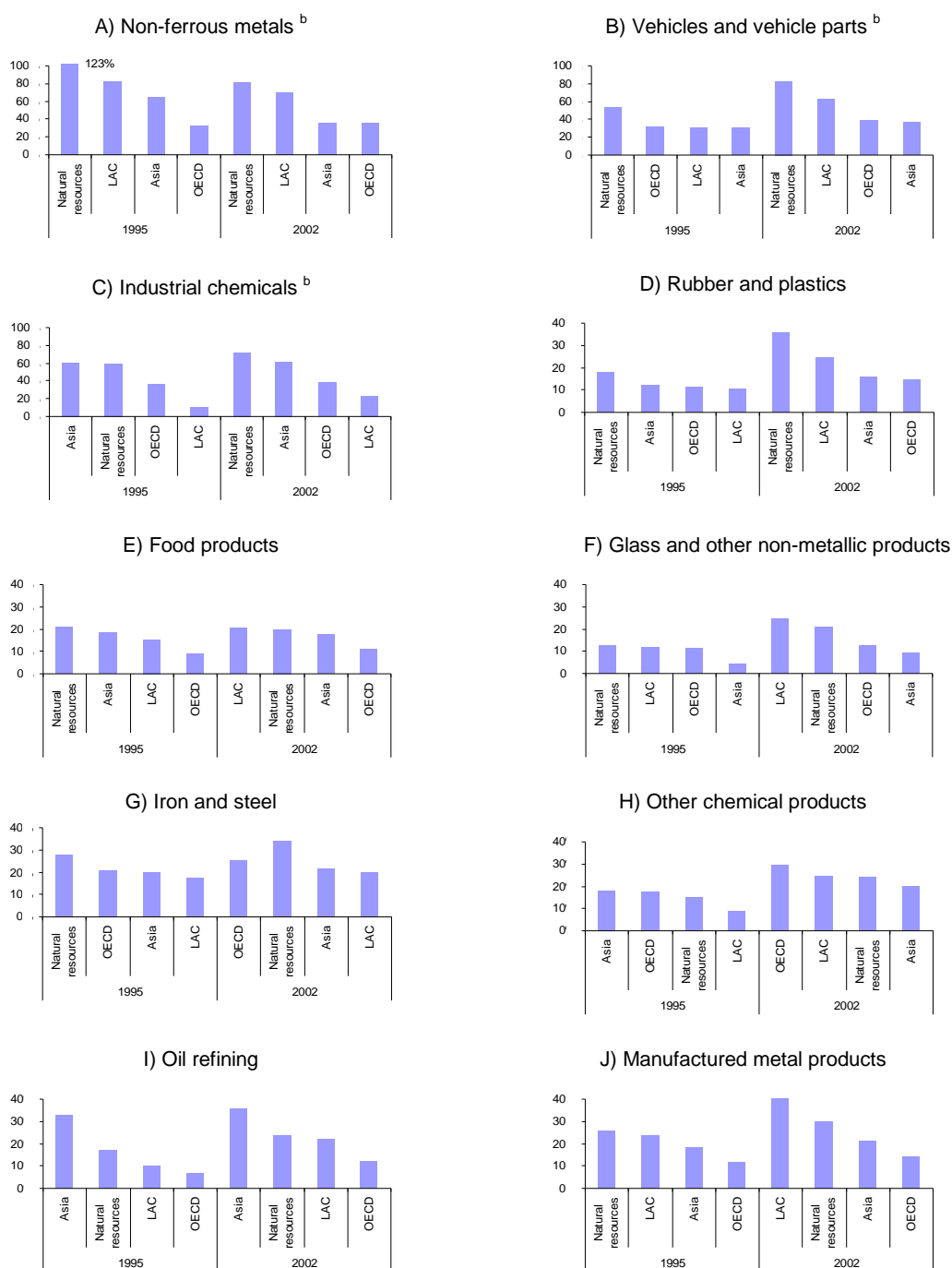
The second channel is learning by exporting, which allows exporters to internalize the standards and requirements of their buyers and foreign competitors. Competition is an incentive for exporters to move towards the knowledge frontier as quickly as possible. Foreign customers can also facilitate the dissemination of technologies to their suppliers. Empirical studies show conclusively that the export sector has a higher level of productivity, although the effects of this on growth are not clear, nor are the causes. At the enterprise level, there is some evidence that TFP is higher after firms start to export. Fernández and Isgut (2005) have documented this type of learning among Colombian firms, particularly in new plants that export to advanced countries. De Negri and Oliveira de Araujo (2007) have studied the close relation between the weight of exports and labour productivity in Brazil. Other studies have shown that productivity is higher when firms also invest in research and development.

A third channel is learning by doing, which highlights the role of experience in raising productivity levels. Import substitution policies stressed this channel (Hounie and others, 1999; Katz, 1987), as firms moved through technological learning processes “building” their production functions and systems of work organization along the way. Enterprises did not content themselves merely with using and copying available technologies, but adapted them to local plants on a smaller scale than those in developed countries and to different work organization models. The trial and error method and internal adaptive engineering efforts were key features of the production organization model in the endogenously directed stage of Latin America’s economic development.

Nonetheless, rapid trade liberalization and the deregulation of production activities in Latin America and the Caribbean partly destroyed the economy’s production and technological capacity, although at the same time new capacities were created, particularly in export sectors. Because of external openness, the product design and process engineering departments of numerous firms targeting the domestic market ceased to fulfil a purpose and were drastically cut. Something similar happened with the development of local suppliers when external supply became cheaper. As a counterpart, during the 1990s new export sectors pioneered a reverse evolutionary process involving the “creation” of new capacities and institutions (see Katz, 2008).

The likelihood of learning is greater in industries subject to economies of scale in a setting of growing exports and increasing specialization. The benefits of specialization and scale economies can be complemented through technological learning externalities. In most of the industries in which scale economies are intensively applied, in 2002 the Latin American and Caribbean region was ranked either first (food, glass and other non-metallic products, and metallic products) or second (non-ferrous metals, vehicles and vehicle parts, rubber and plastics, and other chemical products), in terms of exploiting exports to increase production volume (see figure 7).

**FIGURE 7**  
**RATIO BETWEEN EXPORTS AND PRODUCTION IN ECONOMIES OF SCALE INDUSTRIES, 1995 AND 2002<sup>a, c</sup>**  
*(Percentages)*



Source: World Bank, The World Bank Trade and Production database.

a Industries subject to increasing returns were defined by Pavitt (1984) and Peneder (1999).

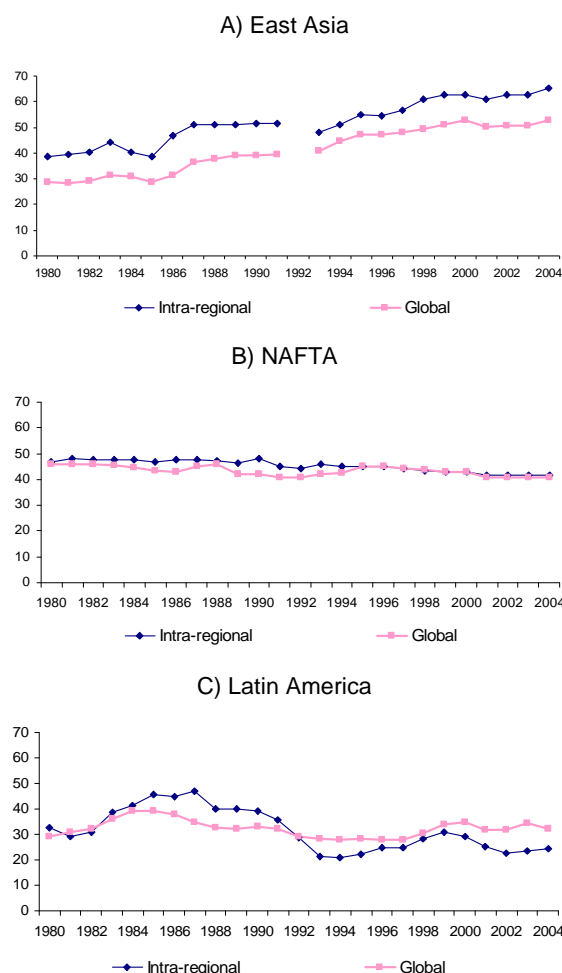
b The vertical scales in these figures range from 0% to 100%.

c LAC = All Latin American and Caribbean countries; Asia = Malaysia, Philippines, Republic of Korea, Singapore, Thailand and Vietnam; OECD = Countries of the Organisation for Economic Co-operation and Development; Natural resources = Australia, Canada and New Zealand.

Compared to Latin America, trade patterns in Asian countries display greater vertical specialization and more intensive participation in international production networks (ECLAC, 2007a), most of which are located in their own region. Labour-intensive processes are concentrated in Thailand and China, whereas the manufacture of engineering-intensive components has been maintained in Japan and the Republic of Korea. Firms from the United States and Europe are also entering production chains in the Asian region; but, Mexico and Central America apart, Latin America and the Caribbean does not participate much in global manufacturing chains.

A review of the proportion of machine parts and components in the sector's global and intraregional exports and imports affords a partial view of the different countries' participation in regional and global production networks. As shown in figure 8, unlike what happened in the countries of the North American Free Trade Agreement (NAFTA) and Latin America, the East Asian countries have considerably increased their exports and imports of machine parts and components.

**FIGURE 8**  
**TRADE IN MACHINE COMPONENTS AND PARTS AS A PERCENTAGE**  
**OF THE SECTOR'S TOTAL TRADE, 1980-2004**  
(Percentages)

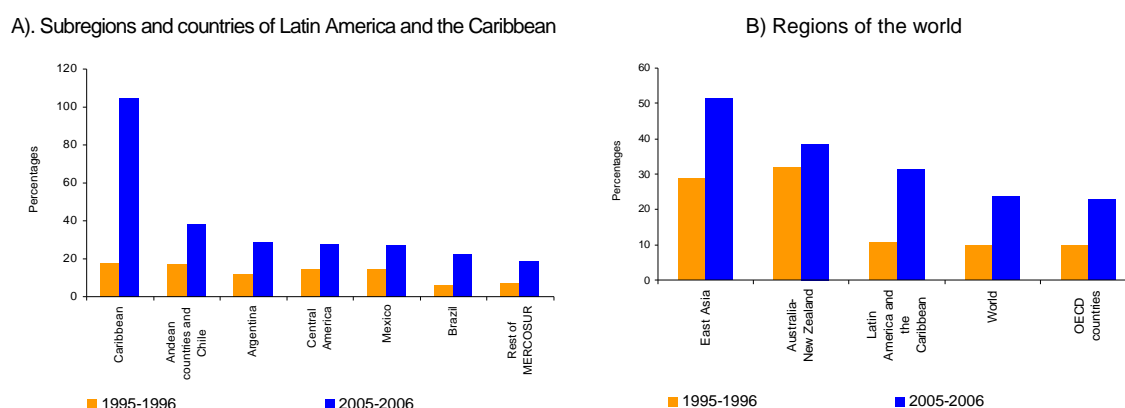


Source: M. Ando, S.W. Arndt and F. Kimura, "Production networks in East Asia: strategic behaviour by Japanese and U.S. firms", paper presented at the seminar "Multinational Firms' Strategies in East Asia: A Comparison of Japanese, U.S., European and Korean Firms", Tokyo, Japan Center for Economic Research, 1 June 2006.

## B. Externalities related to foreign direct investment

Latin America and the Caribbean received a substantial increase in FDI inflows over the last decade (in absolute value terms), tripling the cumulative stock in relation to GDP (see figure 9). The Caribbean and the Andean subregion (including Chile) received the highest amount of FDI as a proportion of GDP. In other parts of the world, the strongest FDI growth in the period 1995-2006 occurred in East Asia.

**FIGURE 9**  
**CUMULATIVE FOREIGN DIRECT INVESTMENT AS A PERCENTAGE OF GDP, 1995-2006**



Source: United Nations Conference on Trade and Development (UNCTAD), Foreign Direct Investment database, November 2007.

Note: The figures do not include the following financial havens: the Cayman Islands and the British Virgin Islands.

Despite the large volume of FDI, technology and knowledge transfer to local firms does not occur spontaneously but depends on the following factors: (i) the strategy of the investing enterprise; (ii) each country's absorption capacity; (iii) the absorption capacity of the sector and firm in question; and (iv) the type of investment (ECLAC, 2003).

The first two factors relate to the development level of the country receiving the FDI. Here it is possible to distinguish four stages that are equivalent to the different phases of domestic knowledge accumulation and potential for technological spillovers (see table 1). The first of these is the pre-convergence stage, encompassing countries of lowest per capita income and little technological capacity. FDI inflows are relatively small and they are motivated by the search for raw materials. Externalities are few, because the investments are focused on a single activity in an enclave setting.

The second evolutionary phase corresponds to countries that are converging towards a higher level of economic development, but whose knowledge-absorption capacity is insufficient. These countries have a critical mass of physical, financial and institutional infrastructure but often lack skilled labour and a clear innovation effort. At this stage, which encompasses most of the region's countries (Argentina, Brazil, Chile, Colombia, Costa Rica and Mexico, among others), investors seek not only natural resources but also access to cheap labour (efficiency-seeking) and participation in a local market of greater purchasing power. This type of investment generally has relatively weak technological externalities and linkages.

**TABLE 1**  
**THE ECONOMIC DEVELOPMENT PROCESS AND FDI STRATEGIES**

	Pre-convergence stage	Convergence stage	Stage prior to shared frontier	Shared frontier stage
Technological and absorption capacities	Exports of natural- resource-based products. Low technological capacity, scant infrastructure and underdeveloped institutions. Few local firms with adequate technological capacity. Low levels of inward FDI and no FDI outflows.	Exports of final products of low value-added, made with imported components or inputs (maquila). Increasing capacity to imitate. Basic infrastructure. Growing FDI inflows, but little FDI abroad	Integration in global production networks. Growing knowledge infrastructure. Solid domestic industry, development of own brands. Increasing use of networks. Significant FDI inflows and large outflow of FDI abroad	Technological opportunities depend on long-term collaboration. Removal of knowledge barriers. Major R&D activity (in networks) by domestic and transnational firms. Increasing FDI inflow and outflow abroad, including outsourcing in countries which are at earlier stages
Economic structure	Primary sector	Declining Growing	Industrial sector Declining	
		Services sector	Growing	
FDI strategy	Pursuit of raw materials	Pursuit of raw materials and efficiency related to the presence of unskilled workers and infrastructure. Increasing pursuit of markets.	Pursuit of markets and also increasing pursuit of efficiency based on skilled labour.	Pursuit of efficiency, markets, and technological assets.
Examples	Bolivia, Paraguay and Vietnam	Pursuit of markets <i>Automotive</i> : MERCOSUR; <i>Food and beverages</i> : Argentina, Brazil, Mexico; <i>Banking</i> : Argentina, Brazil, Chile, Colombia, Mexico, Peru, Venezuela (Bol. Rep.) <i>Telecom</i> : Argentina, Brazil, Chile, Peru, Venezuela (Bol. Rep.); <i>Retail trade</i> : Argentina, Brazil, Chile, Mexico; <i>Electricity</i> : Argentina, Brazil, Chile, Colombia, Central America.  Pursuit of efficiency: <i>Automotive</i> : Mexico; <i>Electronics</i> : Mexico and the Caribbean basin; <i>Apparel</i> : Caribbean basin and Mexico, Central America.	Republic of Korea, Spain, Czech Republic.	Australia, Canada, Finland, Ireland, New Zealand, Singapore, Sweden.

Source: R. Narula, "Switching from import substitution to the "New Economic Model" in Latin America: A case of not learning from Asia", Research Memorandum Series, N° 2002-32, MERIT-Infonomics, Maastricht (2002); and Economic Commission for Latin America and the Caribbean (ECLAC), Foreign Investment in Latin America and the Caribbean, 2003 (LC/G.2226-P), Santiago, Chile, May 2004. United Nations publication, Sales No. E.04.II.G.54.

Countries in the third stage are increasingly integrated in global production networks and have increasing knowledge infrastructure with a high potential for technological spillovers. Apart from Singapore and the Republic of Korea, the East Asian countries are in this phase; but no Latin American or Caribbean country has yet attained this stage of development. Countries going through phases 1-3 do not make much use in the local economy of externalities produced by transnational enterprises, since the latter's research and development activities mainly take place in their countries of origin.

Countries that are in the final development stage, in which FDI recipients share the technological frontier with foreign firms, have attained a high level of per capita GDP. Their economies are very R&D-intensive and they have highly skilled labour. In this case, FDI largely entails the pursuit of technological assets, i.e. investors take advantage of the local system for their R&D activities.

The third determinant of the technology-transfer effects of FDI is the capacity of the different sectors and enterprises to internalize knowledge created by others and adapt it to their own needs (Narula and Marin, 2005). Several studies show that externalities are greater when the technological gap between the transnational firm and local enterprises in the given product line is not very large. Nonetheless, the ability to absorb not only entails imitating or copying technology, but also undertaking one's own research and development. Hence the key factor in absorption capacity is the availability of skilled labour.

The fourth factor affecting technology transfer is the type of investment. Several studies have shown that there are more chances of spillovers in the case of mixed domestic/foreign-owned enterprises (Nordas, Miroudot and Kowalski, 2006).

Empirical studies on the importance of externalities in Latin America and the Caribbean, which are very recent, conclude that the effects of FDI have only been positive in some cases. In a complete review of studies on the spillover effects of FDI, ECLAC (2003) concluded that the repercussions have very often been neutral and sometimes negative; and that, in the best of cases, the link is uncertain, especially in the case of developing countries. Several recent studies confirm that positive externalities are only occasionally present, whereas in other contexts the outcome is unknown or has been negative (see table 2).

In short, despite the large volume of FDI in Latin America and the Caribbean, externalities are generally limited. This is explained by the predominant corporate strategies, which do not favour technology transfer, and also by the lack of local innovation and human capital capacity, and because the investments in question are not mixed or shared with local enterprises.

A recent FDI-related development in the region is the increasing importance of transnational enterprises of Latin American origin, known as "trans-Latin" firms (see box 4), whose investments have strengthened international integration among local enterprises. Their international activities also have positive repercussions, including direct effects on enterprise growth based on the exploitation of scale economies, greater investment capacity which is applied also to local operations, and better management capacity thanks to exposure to global levels of competition and best practices.

**TABLE 2**  
**SUMMARY OF STUDIES ON THE TECHNOLOGICAL SPILLOVERS OF FDI**  
**IN LATIN AMERICA AND THE CARIBBEAN**

Author and year	Country	Period	Data	Level	Results
Narula and Marin (2005)	Argentina	1992-1996	Cross section	Firm	? <sup>f</sup>
Chudnovsky, Lopez and Rossi (2006)	Argentina	1992-2001	Panel	Firm	? <sup>a</sup>
Laplane, Padovani Gonçalves and Dias de Araújo (2006)	Brazil	1997-2000	Panel	Sector	? <sup>b</sup>
				Firm	?, + and – <sup>c</sup>
Ramirez (2006)	Chile	1960-2000	Co-integration	Macro series	+
Kugler (2001)	Colombia	1974-1998	Panel	Industry	?
Blomstrom and Wolf (1994)	Mexico	1970-1975	Cross section	Industry	+
Kokko (1996)	Mexico	1970	Cross section	Industry	+
Romo (2003)	Mexico	1992-1995	Panel	Industry	- and?
Jordaan (2005)	Mexico	1993	Cross section	Sector	+
Waldkirch (2007)	Mexico	1998 and 2003	Cross section	Sector	+
Kokko and others (1996)	Uruguay	1990	Cross section	Firm	?
Kokko (2001)	Uruguay	1988	Cross section	Firm	?
Bittencourt and Domingo (2004)	Uruguay	1990-2000	Panel	Sector	? <sup>d</sup>
		1990-1996 and 1997-2000	Panel	Firm	- and? <sup>e</sup>
Aitken and Harrison (1999)	Venezuela (Bol. Rep. of)	1976-1989	Panel	Firm	-

Source: Economic Commission for Latin America and the Caribbean (ECLAC), Foreign Investment in Latin America and the Caribbean 2003, (LC/G.2226-P), Santiago, Chile, May 2004. United Nations publication, Sales No. E.04.II.G.54 (updated with empirical studies between 2004 and 2007).

<sup>a</sup> Local firms with high absorption capacity seem to receive positive spillovers.

<sup>b</sup> The evidence on spillovers was inconclusive. The effects are apparently negative, but not significant.

<sup>c</sup> The results suggest a positive spillover depending on the response capacity of the domestic firms. The effects are positive for firms with larger productivity gaps with respect to transnational enterprises. For the most efficient firms (with the smallest productivity gaps) the effects are negative, which suggests that in this case consequences of other types predominate, making the net effect negative. One possible interpretation is the loss of market share.

<sup>d</sup> There is no evidence of spillovers in panels covering the whole period, which could be the result of positive spillovers in the first half of the decade and negative ones in the second.

<sup>e</sup> In some models/periods, there is evidence of negative spillovers, but in others the evidence is inconclusive.

<sup>f</sup> In reality, these refer to the higher value added of local firms.

**BOX 4****TRANS-LATIN ENTERPRISES**

Although trans-Latin enterprises are not a recent phenomenon, they have become increasingly important over the last few years. The leading firms of this type come from four Latin American countries: Argentina, Brazil, Chile and Mexico. Argentina and Brazil were the pioneers, leading the first waves of direct investment abroad, while Mexico and Chile joined the process later and have recently become major players.

The activities of trans-Latin enterprises are concentrated in three sectors: basic industries (hydrocarbons, extractive mining, iron and steel, cement, metal processing, and paper and pulp); beverages and foods; and services (engineering, telecommunications, electric power, retail trade, and most recently banking). These firms' investments depend on the competition patterns prevailing in their respective sectors, and include the need to maintain a position of leadership in the natural-resource sector and the chance to exploit competitive advantages in new markets.

Many of the traditional trans-Latin firms undertake manufacturing activities targeting mass markets, such as non-alcoholic beverages, beer and food products. They operate more in the regional domain than internationally, competing with transnational enterprises in their own domestic or regional markets, in which their main competitive advantage is the distribution system.

Many of the more modern trans-Latin enterprises have operated in the services area: e.g. telecommunications (América Móvil, Telmex); the retail trade (Elektra, Cencosud, Falabella, Ripley, FASA); passenger air transport (LAN, Varig, TAM); and electricity (Enersis, Gener, ISA). In general, these firms have encountered stiff competition from foreign enterprises. Thus, although some successful trans-Latin firms have benefited from the sale of assets belonging to transnational firms whose expectations on entering the Latin American market were not fulfilled (América Móvil, Cencosud, Falabella), in other cases they have had to sell part or all of their assets (Enersis, Gener, Macri, Impsat).

Although much of the outgoing FDI in Latin America has been of an intraregional nature, in recent years trans-Latin firms have started to participate more actively in the internationalization process outside the region. In the last two years, the main promoters of these external investments have been a relatively small group of trans-Latin firms from Brazil and Mexico. The Brazilian group consists of Companhia Vale do Rio Doce (CVRD), which took over the Canadian firm INCO, and Petrobras, Gerdau and Itaú, which have engaged in a wide range of independent operations. The Mexican group consists of América Móvil and Telmex, firms that have made large-scale takeovers in Latin America and the Caribbean; the Alfa group, which grew in the United States, Europe and China; and Cementos Mexicanos (CEMEX), which acquired the Australian Rinker group. Apart from the Brazilian and Mexican trans-Latin enterprises, large-scale investments have also been made by Tenaris of Argentina, which purchased the United States firm Maverick Tube Corp.; and the oil company of the Bolivarian Republic of Venezuela (PDVSA), which is investing in refineries (Argentina, Belize, Brazil, Uruguay) and gas pipelines (Colombia).

Source: Economic Commission for Latin America and the Caribbean (ECLAC), Foreign Investment in Latin America and the Caribbean, Santiago, Chile, various years.



## **V. Weak competition enforcement reduces benefits of exports and inward FDI**

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The volume of exports and their benefits for economic growth, as well as the benefits of FDI for growth described above may be reduced in a context of weak competitive pressures at home or in destination markets. In the absence of effective competition policies, anti-competitive practices of firms may impair exports in at least three ways (WTO, 1998). First, these practices in destination markets may affect the market access for exports. Examples include domestic import cartels, international cartels that allocate national markets among participating enterprises, abuses of a dominant position, the impediment of parallel imports, control over import facilities, and private standards and other anti-competitive practices of industry associations. Second, exports may be affected by practices affecting international markets, where different countries are affected in a similar way. One example is international cartels that determine price and output across multiple destination markets. Third, foreign sales may be affected by anti-competitive practices that have a differential impact across countries. Examples include export cartels and mergers which may be beneficiary in one country but produce detrimental effects in others. Anti-competitive practices may be exercised through either international trade by firms or their foreign affiliates in home or destination markets.

The lack of competitive pressures in a market may have distinct origins. First, some countries protect their market explicitly through tariff or non-tariff import restrictions. The reduction of these trade barriers is a necessary but not a sufficient condition to increase market access and international competition. Second, weak competition may result from the

absence or poorly designed competition law. A third cause may be linked to statutory exemptions or protective regulatory regimes covering the conduct in question. Fourth, even if a law is well designed and no exceptions apply, competition may still be poor if enforcement of the law is weak. Finally, even if domestic competition laws are effective, they cannot prevent anti-competitive practices in international markets. In this context, the international trading system has few rules, standards and disciplines to prevent anti-competitive practices in global trade.

In Latin America and the Caribbean, there are many examples of how anti-competitive behavior by firms or their affiliates has weakened international trade and their benefits for economic growth. Some of these have been notified to the World Trade Organization:

- Ocean shipping conferences: function as cartels that fix rates and conditions of service in international maritime trade. They increase transport costs above competitive levels, in particular for those countries with little access to non-conference shipping lines. The conferences are exempted from the competition laws of many countries, and clearly affect negatively international trade (submission of Dominican Republic to WTO Working Group on the Interaction between Trade and Competition Policy, 1998b).
- Air passenger transport in Central America: Until 1998 this subregion was protected through an intra-regional "open skies" agreement, and dominated by the regional TACA airlines. Although since 1998 new competitors have been allowed to enter this regional market, Grupo TACA has engaged in anti-competitive behaviour trying to prevent other companies from operating in this market (Schatan and Rivera, eds., 2008).
- Monopolistic or oligopolistic structure of the Central American wheat flour market: key players have control over flour imports and distribution, restricting exports of third countries to these markets. Governments in the subregion have undertaken action against this behaviour with some success (Schatan and Rivera, eds., 2008).
- Peruvian beer market: through various acquisitions, a firm called Backus has become Peru's only beer brewer. Backus engaged in anti-competitive behaviour through its "bottle exchange programme", under which buyers receive a credit when they return bottles and buy more. This was perceived as an abuse preventing other breweries to enter the market (OECD, 2007).
- Medical oxygen market in Argentina: between 1997 and 2002 four firms colluded in public procurement procedures with public and private hospitals. They distributed clients among each other and fixed prices at the national level (Petrecolla, 2007).

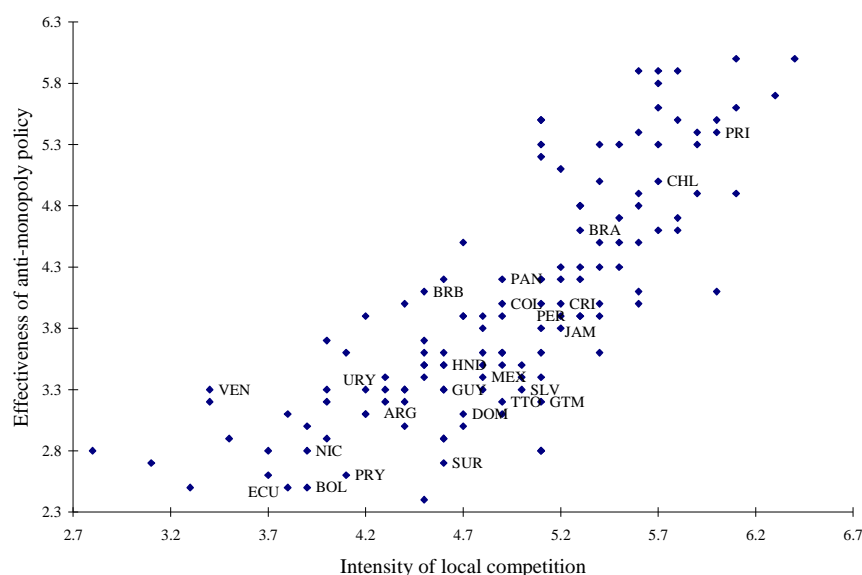
The combat of anti-competitive behavior requires effective competition laws, which nowadays exist in most countries in Latin America and the Caribbean. In 2007, only some low per-capita income countries, representing 10 per cent of GDP of the region, still lacked such legislation (Gutiérrez, 2007). Three phases can be distinguished with the respect to the introduction and application of competition laws. During the first phase (1923-90), Argentina, Brazil, Chile, Colombia and Mexico adopted anti-monopoly laws, but these were not enforced because of the import substitution industrialization model which did not promote competition and a lack of resources to prosecute anti-competitive behavior. In the second phase (1990-2000), competition laws were introduced as part of the structural reforms including trade liberalization, privatization of state enterprises and deregulation in general. Several countries and subregional integration schemes (Andean Community of Nations and Mercosur) adopted a competition law, and the countries of the first wave strengthened their laws and started to enforce them. In the third phase (2000 until today), a split can be observed in the region: while some countries led by Venezuela moved away from enforcing competition in private markets towards a socialist model with an enlarged role of the state, others continue to strengthen existing laws and their application or introduce new legislation.

In order to tackle cross-border anti-competitive practices and to guarantee the potential benefits of liberalization of trade and investment, an increasing number of countries in the region have included competition policies in regional and free trade agreements. Competition provisions in trade agreements

are intended to deal with anti-competitive behavior strengthen national competition agencies and promote cooperation and coordination among them. Commitments among signatories differ widely, from provisions that range from cooperation to settlement of a supranational authority. By end-2006, competition policies were included in NAFTA, three integration agreements (Andean Community, Caribbean Community and MERCOSUR); and about half (23 in total) of the economic complementarity and free trade agreements (Silva, 2006).

The heterogeneity in the adoption of competition laws and their enforcement is reflected in the intensity of competitive pressures in domestic markets. This is illustrated in Figure 10, which shows how the effectiveness of competition law-policy (vertical scale) is positively related to the intensity of competition prevailing in domestic markets (horizontal scale). Both indicators are based on “perception surveys” of opinions of policymakers, businessmen, and officials from the public and private sector (industry and trade associations, academic policy institutions and NGOs). Puerto Rico, Chile and Brazil rank high on both scores, whereas Bolivia, Ecuador and Paraguay rank low.

**FIGURE 10**  
**EFFECTIVENESS OF COMPETITION POLICY AND INTENSITY OF LOCAL MARKET COMPETITION, 2007**

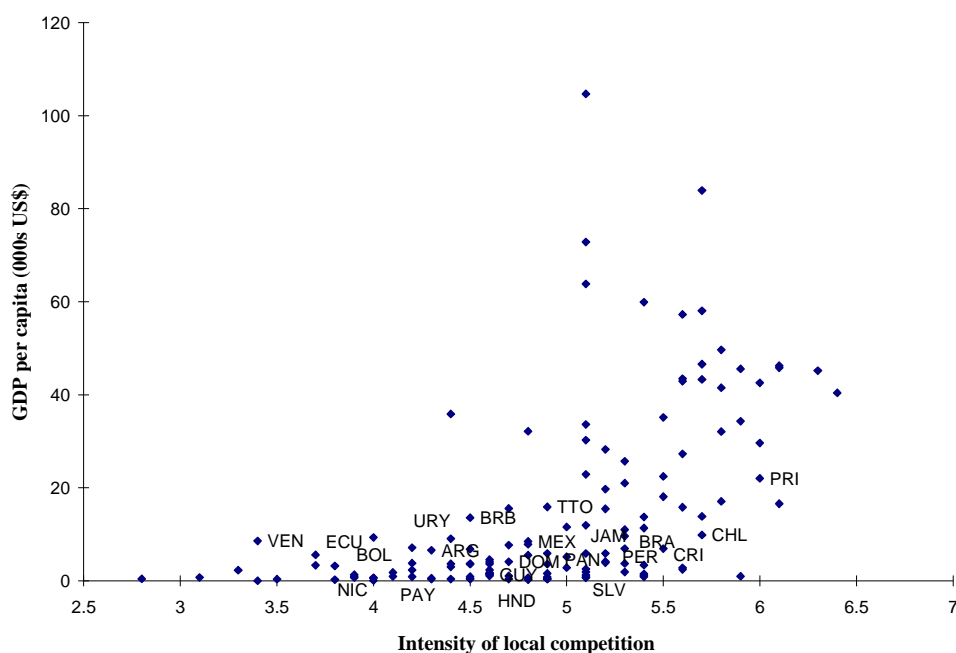


Source: Author's calculation based on World Economic Forum (2008), The Global Competitiveness Report 2008-2009.

In turn, the intensity of local competition affects economic development. This is shown in Figure 11: lower levels of domestic competition seem related to lower levels of per capita income, and vice versa. Countries differ greatly with regard to the intensity in competition and their level of per capita income. For example, Chile's revenue per inhabitant is only slightly above that of Venezuela, but competitive pressures are far bigger in the former country. Together with Puerto Rico, Chile has the best record in the region in terms of the enforcement of the competition law.

While more research is needed to properly take into account and control for several other factors, these figures illustrate the role and importance of competition policy in fostering a competitive environment, which in turn enhances economic growth (Khemani and Carrasco-Martin, 2008).

**FIGURE 11**  
**INTENSITY OF LOCAL MARKETS COMPETITION AND GDP PER CAPITA, 2007**



Source: Author's calculation based on World Economic Forum (2008), The Global Competitiveness Report 2008-2009.

Competition authorities in the region, especially those created recently, face several challenges, which need to be addressed by the following recommendations (Alvarez and Horna, 2008; Moguillansky and Silva, 2004; OECD, 2007; Schatan and Rivera, 2008):

- Due to budget constraints, these authorities in many countries lack competition law experts, who are essential in fairly enforcing the law. In this context, budgets should be increased to allow the hiring and keeping of a sufficient number of qualified professionals to carry out the tasks of the agency.
- Some competition agencies are not independent of their respective national governments, with respect to setting the competition budget and its use. However, the *de facto* independence is more important than the *de jure* independence: what counts most for private sector expectations about the predictability of enforcement is the ability to successfully enforce the law without political interference.
- Given the multiple types of anti-competitive behavior faced by the authorities, they should not focus on one particular type (in particular cartels). Also, new agencies need to do more than just competition advocacy. Instead, the agencies should build expertise in different areas through internal training programmes and technical assistance, and reconsider regularly what are their main priorities.
- Competition enforcement and the resolution of cases in court may be hindered by obstacles deliberately or inadvertently erected by the local judiciary. For the successful application of competition law, the competition authorities should work closely with judges to ensure their cooperation and understanding.

- In general fines imposed on violators of competition law are very low. Competition agencies and national policymakers should consider the appropriateness of existing fines and whether fines need to be supplemented by other sanctions.
- The relationship between competition authorities and sectoral regulators is often poor, as the latter often succeed to be exempted from the specter of competition law, or ignore the recommendations of the competition agency. Working relationships can be improved or an institutional mechanism can be put into place to enhance the role of the competition agency in sectoral regulation, with the aim to reduce distortions to competition.
- Finally, as the behavior of firms may affect competition both at home and abroad, the competition authorities need to strengthen their cooperation with international bodies and agencies in other countries. Cross-border cooperation, for example in the context of regional integration schemes and free trade or economic complementarity agreements, should be reinforced to overcome problems of scale and building expertise. International platforms such as the IADB and OECD may also contribute to learn from other countries' experiences.



## **VI. Increasing links between exports and economic growth**

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This document has documented the relatively weak links between exports and economic growth in Latin America and the Caribbean. Despite high growth rates of exports since the mid- 1980s, their contribution to growth has remained subdued due to various reasons. First, although exports have increased as a share of final demand, their contribution in the first half of the 2000s was still less than one fourth of that in East Asia. Moreover, import growth has also been high in the last two decades in Latin America, which has canceled out most the macroeconomic contribution of exports to GDP growth. Second, the progress made in the diversification of the region's export basket is accounted for in large part by the advances of Mexico and Central America. In turn, the more diversified export baskets of these countries are mostly due to new goods produced by export processing zones which incorporate little value added. Moreover, it is shown that for all Latin American countries, apart from Brazil and Mexico, the available variety of produced and imported capital goods and intermediate inputs is well below the level of a projected relationship for many countries between the availability of these goods and the level of per capita income. Third, a similar finding holds for the substantial technological upgrading of the region's exports over the past two decades, which is largely produced by the export processing zones of Central America and Mexico. Fourth, Latin America has benefited relatively little of its exports as channels for technological learning, because it has limited vertical specialization and its participation in international production networks is relatively small. Finally, externalities from the large volume of FDI inflows in Latin America and the Caribbean have also been generally

small. This is explained by the predominant corporate strategies, which do not favour technology transfer, and the lack of local innovation and human capital capacity, and because the investments in question are not mixed or shared with local enterprises.

This overall relatively pessimistic assessment does not mean that exports are not important for economic growth in Latin America and the Caribbean, but that this role could be strengthened if the right policies would be put into place. Major present benefits of exports include its dampening effect on terms of trade shocks, as a fruit of its diversification, and other external shocks. Also, exports are an important source of scale economies in the region. Another benefit of intra-regional trade is its relatively higher technological content compared to extra-regional trade. Moreover, the region is very heterogeneous in terms of the export to economic growth link, as several countries have successfully penetrated niche markets with substantial technological spillovers (see ECLAC, 2008).

The issue of how public policies can enhance the benefits of exports, and production in general, for economic growth is dealt with in detail in ECLAC's 2008 document *Structural Change and Productivity Growth – 20 Years Later. Old Problems, New Opportunities*. In particular, this document points to the necessity of improving the accumulation of innovation and technological capacities, as these are key to bolster the economic growth externalities from trade and foreign direct investment. In this context, is it more important how a country produces than what it produces. Although a large part of technical change continues to be concentrated in a few sectors, a growing number of opportunities for technical progress are emerging in commodity and services industries. The heterogeneity of learning patterns at the sector and company level must be taken into account when seeking to identify openings for improving competitiveness and productivity. Various industries that are already competitive internationally can be used to branch out into new products with higher value added and greater technological momentum. Four sectors studied from this perspective in ECLAC (2008) are the traditional manufacturing industry and the export-oriented manufacturing industry, the agro-industrial complex, mining and services.

Considering the region's current development phase and the importance of natural resources in its production structure, the public sector needs to play a leading role in national innovation efforts (ECLAC, 2008). Rents associated with persistent higher commodity prices should be able to generate part of the financing needed to accelerate structural change and productivity growth. Public financing of innovation should however not reduce private incentives for technological change and investment. Other challenges are where and how to invest the additional public funds. Corresponding policies must be part of a medium- and long-term strategy underpinned by agreement in the context of a public-private alliance and effective public-sector management. This is evidenced by a number of countries' success stories which show that effective management requires the development of an appropriate institutional structure capable of generating public policies that match a strategy for structural change, productivity growth and integration into the global economy. This strategy must be designed in such a way that it can be evaluated in terms of its established goals while averting or at least substantially reducing the risk of the process being "captured" by the private sector (ECLAC, 2008).

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