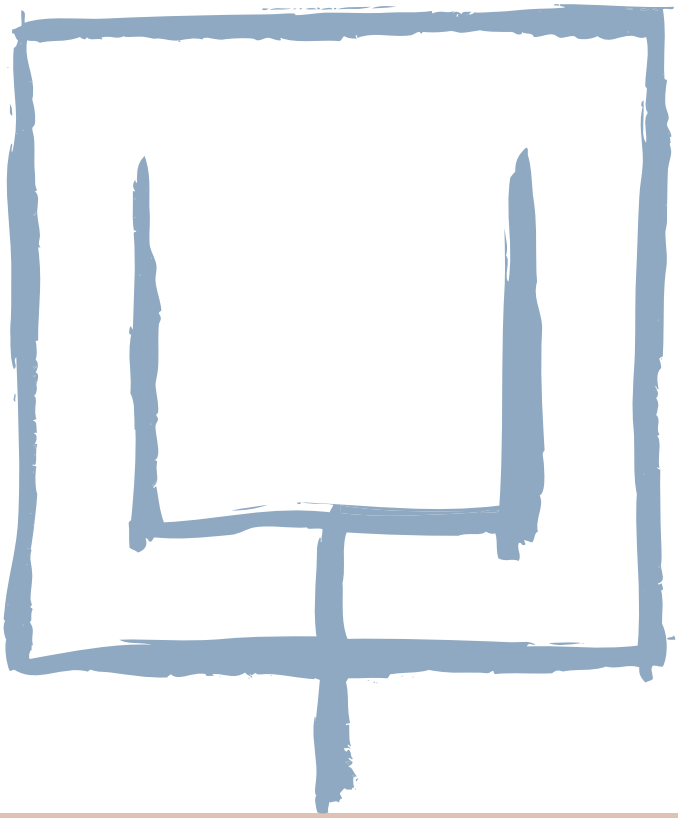
2009



Foreign Direct Investment
in Latin America and the Caribbean

UNITED NATIONS

ECLAC

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The information used in this report has been drawn from a number of international organizations, including the International Monetary Fund (IMF), the United Nations Conference on Trade and Development (UNCTAD) and the Organisation for Economic Co-operation and Development (OECD), as well as from a host of national institutions, in particular central banks and investment promotion agencies in Latin America and the Caribbean, and the specialized press.

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Notes and explanations of symbols
Three dots (...) indicate that data are missing, are not available or are not separately reported.
Two dashes and a full stop (-.-) indicate that the sample size is too small to be used as a basis for estimating the corresponding values with acceptable reliability and precision.
A dash (-) indicates that the amount is nil or negligible.
A blank space in a table indicates that the concept under consideration is not applicable or not comparable.
A minus sign (-) indicates a deficit or decrease, except where otherwise specified.
The use of a hyphen (-) between years (e.g., 1990-1998) indicates reference to the complete number of calendar years involved, including the beginning and end years.
A slash (/) between years (e.g., 2003/2005) indicates that the information given corresponds to one of these two years.
The world "dollars" refers to United States dollars, unless otherwise specified.
Individual figures and percentages in tables may not always add up to the corresponding total because of rounding.

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A. An overview of foreign direct investment in Latin America and the Caribbean

1. FDI inflows and the activities of transnational corporations

In 2009, the global economy experienced the fallout from the worst economic crisis since the Great Depression of the 1930s. Given the decline in output and in international trade in the world's largest economies, sharply lower foreign direct investment (FDI) flows were to be expected, as was the subsequent toll on the installation of new production capacity and on the technological modernization of existing plant and equipment. In evaluating the consequences of these processes on inward and outward investment in the countries of Latin America and the Caribbean, this report focuses on three areas: a regional overview of FDI in 2009 and case studies of the automobile and iron and steel industries. These two industries are chosen for their strong linkages with each other and the rest of the economy, their great sensitivity to the business cycle and the strong presence of transnational and trans-Latin companies. In both cases, the analysis brings together considerations on national and business strategies being implemented in the largest economies of the region. Owing to the unique characteristics of each sector, the study on the automobile industry looks at strategies at the national level, while the analysis of the iron and steel sector focuses on corporate strategies.[1]

[1] In the 12 years during which this report on FDI in Latin America and the Caribbean has been published, the automobile industry has been examined on three occasions (1998, 2004 and 2010); the activities of trans-Latin companies in the iron and steel sector have been reviewed twice (2005 and 2010).

In each of the three areas of the report, it was found that the crisis —despite the cushion provided by the economic boom that lasted more than five years in much of the region— has had an adverse impact and that public policy has played a key role in mitigating the most damaging consequences of the economic slowdown, particularly in activities that are highly sensitive to the variables that drive investment (the iron and steel industry) or disposable income (the automobile industry). Both short-term countercyclical policies and long-term industrial-policy strategies influenced the performance of these industries, leading each of them to follow different paths of productive specialization and global market integration.

The international crisis led to a sharp reduction in FDI in every region of the world. According to preliminary estimates, in 2009 global FDI declined for the second consecutive year, falling to US$ 1.04 trillion, or 39% below the figure for the preceding year. Whereas in 2008 FDI contracted only in developed countries, in 2009 the global crisis eroded investment flows to the developing world as well. Latin America and the Caribbean was no exception. FDI flows into the region fell to US$ 76.68 billion, down 42% from the record high posted in 2008.[2]

FDI fell sharply in both subregions of Latin America and the Caribbean, despite their different productive specialization (see figure 1). FDI flows to South America declined by 40%, to US$ 54.454 billion. All the countries that normally receive a large share of these flows saw sharp falls: Argentina (50%), Brazil (42%), Chile (16%), Colombia (32%) and Peru (31%). FDI in the Bolivarian Republic of Venezuela went from US$ 349 million in 2008 to a negative inflow of US$ 3.105 billion in 2009, mainly as a result of nationalizations during the year.

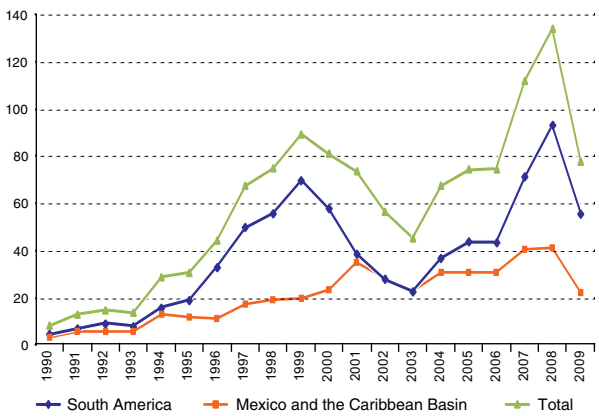
Mexico and the Caribbean Basin saw FDI flows fall by 46%, to US$ 22.227 billion.[3] The economic recession in the United States, the leading investor in Mexico and the Central American countries and their largest export market, severely debilitated FDI flows to these countries in 2009, in particular investment in export platforms. FDI in Mexico fell for the second year running (down 51% on 2008), which pushed the country, for the first time in the decade, down to third place among the recipients of FDI in the region, behind Brazil and Chile. FDI in Central America diminished by 32%, to US$ 5.026 billion. The largest recipients were Costa Rica, Guatemala and Panama. Flows to El Salvador and Honduras fell more steeply than both the global and regional averages (45% and 44%, respectively).

The Caribbean also saw a decline in FDI inflows —by 42%, to US$ 5.7 billion— mainly because of a drop in flows to three of the subregion's largest recipients: Trinidad and Tobago (the largest recipient in the Caribbean in 2008, where FDI plummeted by 82%), the Dominican Republic and Jamaica. The overall decline is a reflection, however, of unusually strong FDI inflows in 2008 rather than a drop in relation to amounts received in recent years.[4] FDI flows to the Dominican Republic, the largest recipient of FDI in the Caribbean in 2009, fell by 27% from the year before. Nevertheless, the amount received —over US$ 2.0 billion— was considerable, especially in light of the impact of economic conditions on the tourism industry that year.

A combination of factors explains the lower FDI in the region, most notably: (i) difficulties in obtaining credit and the widespread uncertainty in 2009; (ii) the slump in commodity prices in late 2008 and their slow recovery, resulting in a contraction of commodity-seeking investments; (iii) the recession in the United States, which discouraged investment in export platforms; and (iv) more sluggish growth in several countries of the region, which acted as a disincentive to local-market-seeking FDI.

Services continued to be the largest FDI recipient sector in Latin America and the Caribbean. The most notable change was the reduction in the primary sector's share of total FDI, following a sharp increase in 2008 driven by the rise in commodity prices in the first eight months of the year. The manufacturing sector thus regained its position as the second largest recipient (see figure 2). Regarding the source of FDI flows into the region in 2009, the United States continued to be the largest investor, followed by Spain and Canada.

Figure 1
LATIN AMERICA AND THE CARIBBEAN: FOREIGN DIRECT INVESTMENT INFLOWS BY SUBREGION, 2000-2009 [a]
(Billions of dollars)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), estimates on the basis of official figures as at 28 April 2010.

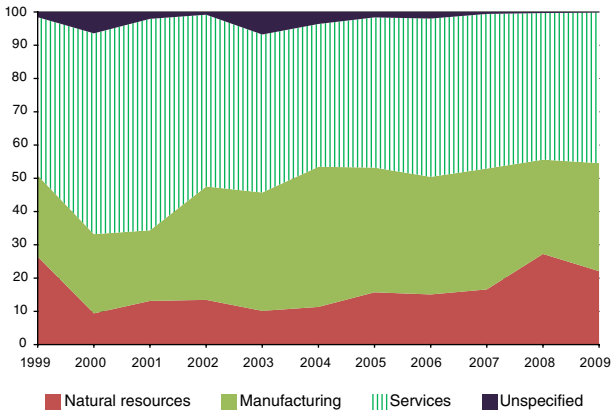
[a] Excludes investment received by the main financial centres. The data shown may dif fer from those presented in *Economic Survey of Latin America and the Caribbean* and *Preliminary Overview of the Economies of Latin America and the Caribbean*, in August and December 2009, respectively. The reason for this difference is that these studies show the net balance of foreign investment, that is, direct investment in the reporting economy (FDI) minus outward foreign direct investment (OFDI).

[2] This decline is within the range projected by ECLAC in May 2009 (ECLAC, 2009).

[3] The Caribbean Basin comprises Central America and the countries and territories of the Caribbean. This study does not include financial centres.

[4] In 2008, the Royal Bank of Canada acquired the financial group RBTT Financial Holdings for more than US$ 2.0 billion, significantly raising the FDI to Jamaica that year.

Figure 2
LATIN AMERICA AND THE CARIBBEAN: DESTINATION SECTORS OF FOREIGN DIRECT INVESTMENT, 1999-2009
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), estimates on the basis of official figures as at 28 April 2010.

Despite the drop, total FDI in 2009 was the fifth largest amount ever. After investment restrictions began to be lifted in the early 1990s, FDI —despite fluctuations— has trended consistently upward. The analysis here shows, however, that although investment inflows in manufacturing have been substantial, most of them continue to target sectors with low and medium-low technology intensity. The amount of FDI in research and development (R&D) projects, although rising, remains low. This underscores the region's ongoing difficulties not only in attracting investments in high technology or R&D, but also in entering the high-value-added segments of global production chains.

FDI has undoubtedly brought benefits in the form of knowledge and technology transfer, but the evidence thus far shows that these have been more limited than economic theory would indicate. FDI appears to have a stronger impact as a source of financing than as a transmitter of knowledge and technology or a catalyst of structural change in the economies of the region, which suggests that other conditions are needed to maximize its benefits, and that FDI should be treated as part of a more comprehensive development strategy, with an emphasis on technological capability-building. Strengthening the region's education and innovation systems is one essential condition.

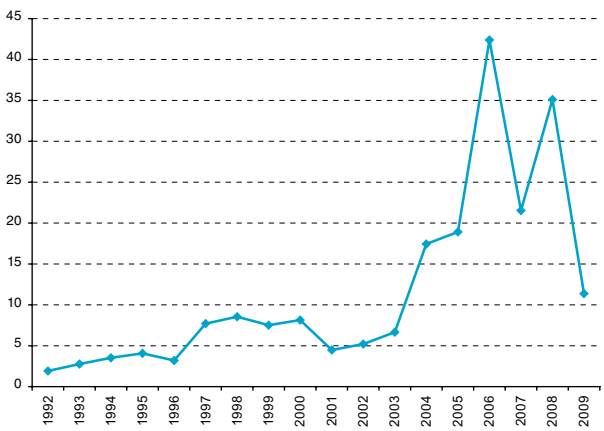
Despite the prevailing uncertainty, based on the growth outlook for the region, the long-term trend of FDI in Latin America and the Caribbean and recent announcements of mergers, acquisitions and new investments, ECLAC estimates that FDI inflows into Latin America and the Caribbean could increase by between 40% and 50% in 2010, which would bring FDI back up above US$ 100 billion.

2. Outward foreign direct investment and the trans-Latins

Outward foreign direct investment (OFDI) by Latin American and Caribbean countries was sharply down in 2009 —69% lower than in 2008— and totalled US$ 11.38 billion (see figure 3). This decline is chiefly attributable to net foreign disinvestment equivalent to US$ 10 billion by Brazil, reflecting the large amounts of intra-company loans Brazilian firms recalled from their overseas subsidiaries to inject funds into parent companies amid great financial uncertainty. This response to the economic downturn, which was also seen in developed countries that are sources of FDI, leads to an underestimation of the activity of Brazilian trans-Latins abroad, whose foreign equity holdings rose by US$ 4.5 billion.

The OFDI flows of the region's five other leading investor countries rose. Chile, which two decades ago might have been considered an unlikely investor, became the largest investor in both absolute and GDP terms. By amount invested, the other main investor countries were Mexico, Colombia, the Bolivarian Republic of Venezuela and Argentina (see figure 4).[5]

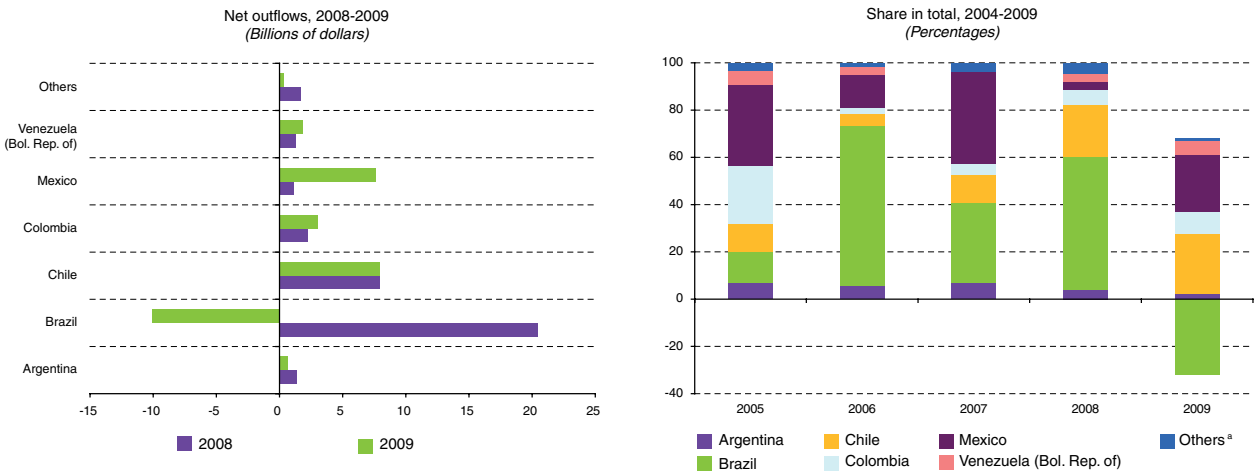
Figure 3
LATIN AMERICA AND THE CARIBBEAN: OUTWARD FOREIGN DIRECT INVESTMENT, 1992-2009
(Billions of dollars)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), estimates on the basis of official figures as at 28 April 2010.

[5] Chile registered the largest amount of OFDI as a share of GDP in 2009 (5%), followed by Colombia (1.3%), Mexico (0.9%), the Bolivarian Republic of Venezuela (0.4%), Argentina (0.2%) and Brazil (-0.6%). The weighted average figure for other countries that invested abroad was 0.1%.

Figure 4
LATIN AMERICA AND THE CARIBBEAN: OUTWARD FOREIGN DIRECT INVESTMENT, MAIN INVESTOR COUNTRIES



Source: Economic Commission for Latin America and the Caribbean (ECLAC), estimates on the basis of official figures as at 28 April 2010.
[a] Barbados, Belize, Costa Rica, El Salvador, Guatemala, Honduras, Paraguay, Peru, Plurinational State of Bolivia and Uruguay.

In 2009, Chile invested a total of US$ 7.983 billion abroad, maintaining the same level as 2008. Of that total, 59% went to other countries of the Americas, the largest recipients being the United States, Brazil and Peru. By sector, most went to electricity, gas and water (16%); financial establishments, insurance, real estate and services (28%); and manufacturing industries (17%).

Mexico was the second largest investor in the region, with US$ 7.598 billion, which represented more than a five-fold increase over 2008. This jump reflects the low level of OFDI in 2008, which was 86% down on 2007. Colombia's investments abroad increased by 34% to reach US$ 3.025 billion, with 83% of the total going to mining. Outward investment flows from the Bolivarian Republic of Venezuela rose by 44% to US$ 1.8 billion, of which 98% went to the petroleum sector, mainly reflecting activities by Petróleos de Venezuela, S.A (PDVSA).

Despite the contraction in Brazilian OFDI flows in 2009, ECLAC expects the region's OFDI to expand in 2010, given the activities of Brazilian trans-Latins in early 2010 and the continued buoyancy of trans-Latins based in other countries.

B. The automobile industry and the crisis: corporate strategies in Brazil and Mexico

The automobile industry is a key sector for most of the world's large economies —both developed and developing— and for more than a century it has been the source of innovations that have radically transformed many manufacturing processes. The sector currently puts out more than 70 million vehicles per year and provides 10 million jobs directly (5% of global manufacturing employment) and another 50 million indirectly in related manufacturing activities and services. Vehicle manufacturing requires goods from a broad range of industries (including steel, aluminium, glass, plastics, rubber, electronic components and textiles), and therefore articulates a complex production chain. The automobile sector has thus played a pivotal role in many countries' industrialization processes. Given its importance, the sector has always received preferential attention from industrial policy, as part of which long-term targeted strategies have been designed with a broad range of incentives and support instruments. In many countries automobile sector policy "is" industrial policy. Moreover, after the introduction of free-market reforms, even countries that claim not to have industrial policies have always shown special consideration for the auto industry.

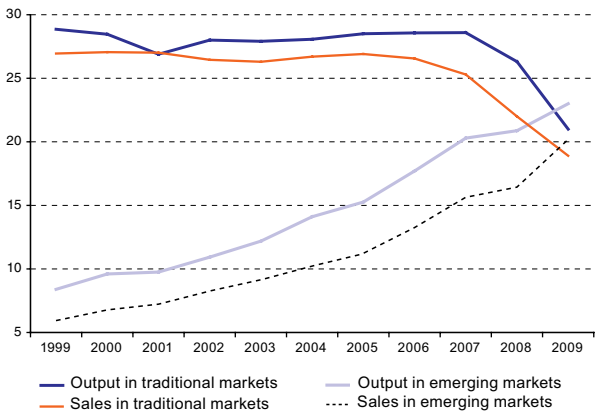
The automobile industry has been no bystander in the globalization process and, accordingly, some of its key patterns have changed. First, production has been rapidly offshored from the leading industrialized countries to a select group of emerging economies that offer access to large domestic markets along with lower production costs and proximity to important export markets (see figure 5). Some Asian economies, following Japan's lead, have succeeded in quickly moving up the ladder in the global markets. The Republic of Korea and, more recently, China and India have stood out in this regard. The BRIC countries (Brazil, Russian Federation, India and China), along with Mexico, the Republic of Korea and some new members of the European Union (the Czech Republic, Poland and Slovakia), have begun to emerge as the new poles of production in the auto industry (see figure 6). Second, corporate concentration has intensified: a dozen large manufacturers with a global presence dominate the global marketplace. Third, leading manufacturers have begun to compete more intensively on the basis of branding, innovation and financing, and the supremacy of European and United States auto-makers has been challenged by firms from Japan, the Republic of Korea and, recently, China.

FDI and the international expansion of transnational firms have played a crucial role, and some emerging economies have become major offshoring centres for the international systems of integrated production (ISIP) of the world's dominant automobile manufacturers. Nevertheless, a handful of companies, especially in Asia, have secured FDI, technology and training and have strengthened their supply chains, thereby developing solid local firms that are beginning to expand their international presence.

The paths taken by the two leading Latin American producers, Brazil and Mexico, stand in contrast to those of some Asian countries such as India and the Republic of Korea or, especially, China. In less than a decade, after beginning in 2000 with production levels similar to those of Brazil and Mexico, China became the world's largest vehicle manufacturer, and its local firms have increased their global presence following the lead of manufacturers in Japan and the Republic of Korea. Although the production bases built in Mexico and Brazil under the import-substitution industrialization (ISI) model were quickly and thoroughly modernized, these countries' automobile industries have not significantly raised their profile in the ISIPs of the leading transnational firms. Moreover, Latin American vehicle manufacturers have yet to produce own-brand vehicles.

Latin America's two main production platforms have followed different models, although with common features. In both Brazil and Mexico, transnational companies continue to be the main players and, even when economic policy has been opposed to any type of sectoral or vertical intervention, governments have continued to provide strong support for the automobile industry and have made it a cornerstone of their strategies for international market integration. Mexico has thus become an export platform thanks to the North American Free Trade Agreement (NAFTA), while Brazil, whose complementary production and trade ties with Argentina were further strengthened in the 1990s with the establishment of the Southern Common Market (MERCOSUR), has strengthened its industrial base for serving the domestic and subregional markets.

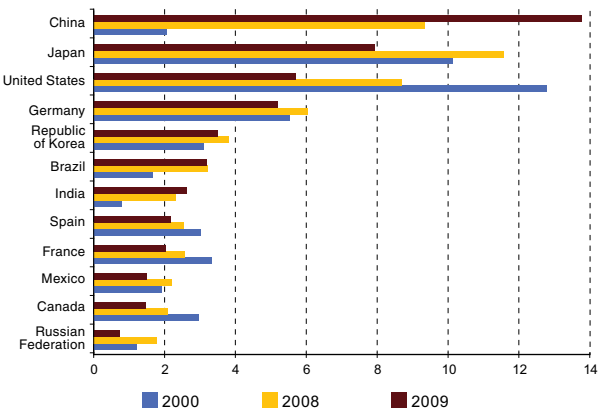
Figure 5
TOTAL OUTPUT AND SALES IN THE DOMESTIC MARKETS OF TRADITIONAL AND EMERGING VEHICLE PRODUCING COUNTRIES, 1999-2009 [a]
(Millions of vehicles)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information provided by the International Organization of Motor Vehicle Manufacturers (OICA) [online] http://www.oica.net and the National Association of Motor Vehicle Manufacturers of Brazil (ANFAVEA), *Anuário da indústria automobilística brasileira*, São Paulo, 2009 [online] http://www.anfavea.com.br.

[a] The main traditional markets are Germany, Japan and the United States. The largest emerging markets are Brazil, China, India, Mexico and the Republic of Korea.

Figure 6
MAIN VEHICLE PRODUCING COUNTRIES, 2000-2009
(Millions of vehicles)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information provided by International Organization of Motor Vehicle Manufacturers (OICA) [online] http://www.oica.net.

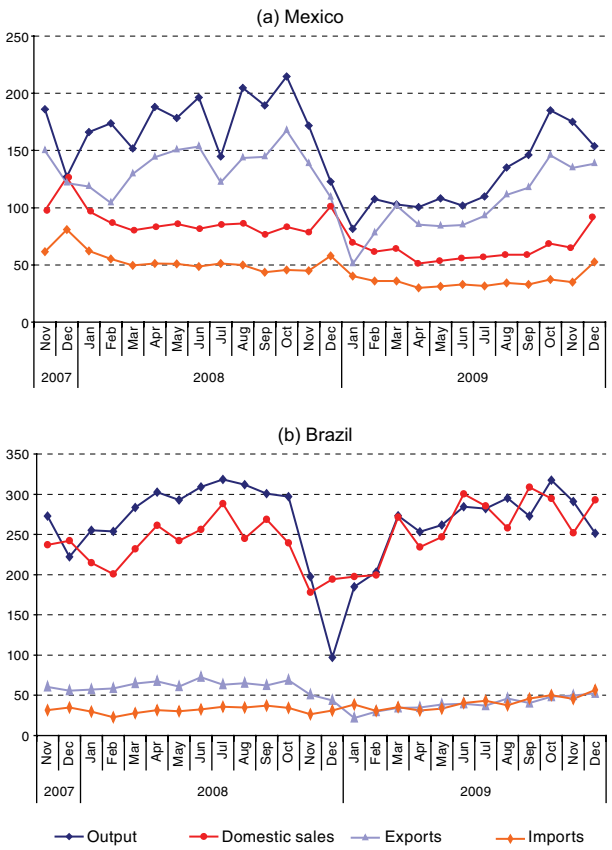
Structural problems that have arisen in recent years point to the need for a thoroughgoing reorganization of the automobile industry. Manufacturers began to buckle under the pressure of rising prices for fossil fuels and other raw materials, such as steel, and more stringent requirements to reduce pollutants emissions. The global financial crisis that broke out in late 2008 hit the sector hard, as demand for new vehicles plunged and sources of financing, both for potential buyers and for auto-makers, froze. Vehicle manufacturers were unable to finance their bulky and mounting current expenditures (wages and other labour commitments) or to cover the cost of developing models and finding technological solutions in line with new demands.

The collapse of the "Big Three" auto-makers in the United States (General Motors, Chrysler and Ford) was the most eloquent expression of the industry's structural woes and of how the financial crisis made them drastically worse. Nevertheless, the difficulties quickly spread to European and Asian companies, as well. The extent and the magnitude of the problems once again underscored the importance of the automobile industry, which was the beneficiary of widespread, far-reaching support and bailout plans implemented by the governments of the main manufacturers' home countries and those where their subsidiaries are located.

Two very different situations emerged in Latin America as some structural problems grew worse and incipient capabilities were strengthened. The sudden, drastic contraction in the United States market and the problems of the large Detroit auto-makers —two of which sought protection under Chapter 11 of United States bankruptcy law— revealed the weaknesses of the Mexican model. Most notably, the Mexican auto industry is highly dependent on the United States market and has found it difficult to export to alternative markets, production is highly skewed in favour of larger models for export, whose sales have recently plunged. In addition, the domestic market is fragmented and sluggish and there is little quality regulation (physico-mechanical norms and pollution and safety standards). Hence, the domestic market has not provided a solid, reliable outlet for production and local demand is met mostly by imports. Hence, output and exports fell sharply in late 2008 and have recovered only very slowly since (see figure 7a). Amid a severe domestic recession, sales and imports did not recover appreciably in 2009, either.

By contrast, Brazil's automobile industry competes on the basis of its specialization in compact vehicles with flex-fuel engines, on robust domestic demand and on production and trade complementarity with Argentina in the framework of the MERCOSUR subregional integration process. Vehicle exports represent a much smaller portion of total GDP in Brazil than in Mexico. In addition, the federal government, several state governments and other government institutions, such as the National Bank for Economic and Social Development (BNDES), have introduced instruments to support and promote the sector. The financial crisis was contained very quickly by means of effective policy instruments (such as tax cuts and support for the credit market) aimed at spurring domestic demand. Indeed, by late 2009, output had returned to record levels and the leading auto-makers had announced sizeable investments to be undertaken in the short term (see figure 7b).

Figure 7
BRAZIL AND MEXICO: AUTOMOBILE INDUSTRY OUTPUT, DOMESTIC SALES, IMPORTS AND EXPORTS, 2007-2009
(Thousands of vehicles)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from the National Association of Motor Vehicle Manufacturers of Brazil (ANFAVEA) [online] http://www.anfavea.com.br, and the Mexican Automotive Industry Association (AMIA).

In the two years leading up to the crisis, Mexico's and Brazil's automobile industries were operating at near-full capacity, and were thus candidates for new investments as a result of the global process of production offshoring that was expected to open the door for a new round of investments by auto-makers and their suppliers. Now,

however, the region risks failing to capture a significant portion of those investments.

Despite the buoyancy of Brazil's auto sector and the importance of Mexico for NAFTA, the region accounts for little more than 8% of global output, and much of recent growth in global vehicle production has taken place in fast-growing markets such as China and India. In addition, owing to its exchange-rate revaluation, Brazil has become less attractive as a location for cutting costs and enhancing the competitiveness of the largest vehicle manufacturers' ISIPs. To counteract this trend, one option would be to increase economies of scale by establishing single global production platforms for some models —a system now being used by some companies in Mexico.

Developing the auto industry will require more than increased production capacity: it will also need to boost technological and innovation capabilities by harnessing existing automobile-engineering capacity in Brazil and Mexico. This, in turn, will require higher domestic spending on R&D and the local creation of new vehicle designs. Greater capacity to develop technology will be a key for enhancing the long-term competitiveness of the regional production base and bringing it quickly into line with new technological solutions in order to make the region's industry more efficient in economic, energy and environmental terms (for example, by using electric, hybrid or hydrogen-cell engines).

C. Corporate strategies in the iron and steel sector: consolidation, expansion and crisis

The iron and steel industry is the quintessential basic industry because its products are indispensable inputs in infrastructure building and in a large number of other industries. All the governments in the region have thus given iron and steel, like the automobile industry, a key role in their industrialization strategies. During much of the twentieth century, this meant that iron and steel companies were State-owned (both in Latin America and in other regions) or that private companies were protected and supported within the framework of an import-substitution strategy. This policy changed in the 1990s, when nearly all State-owned iron and steel companies in Latin America and the rest of the world were privatized and the industry was opened up to international competition. Privatization led to greater concentration, through mergers and acquisitions, and to increased foreign investment in the region both by companies from outside the region and by Latin American firms. Even in this new setting, the iron and steel industry remains a special sector that few governments are willing to stop supporting, whether directly or indirectly.

The iron and steel industry's reliance on construction and heavy industry means that it is highly sensitive to economic trends. Indeed, the industry has been among the sectors hardest hit by the recent economic crisis, as consumption of its products has dropped by 24% in the region, forcing all companies to revise their growth plans. This contraction interrupted a period of rapid expansion, as the global industry had grown by 8% per year from 2000 to 2007, with much of the higher demand driven by strong industrial and infrastructure investment in developing countries and transition economies. Growth of the industry in China was particularly spectacular, at 22% per year, and this country is now the world's largest producer and exporter. In Latin America, output rose by 4.4% annually during this period, a much lower rate than that seen in Asia but well above that of most developed countries.

Iron and steel —a capital-intensive industry— is characterized by large economies of scale, especially in the steel blast-furnace phase of production. These traits, along with the strong reliance on natural resources (coal and iron ore), mean that production is distributed unevenly among countries and tends to be concentrated in those with large markets, especially those with coal and iron ore deposits. Thus, Brazil, the world's largest producers of iron ore, accounts for more than half of the iron and steel production in Latin America, followed by Mexico, with 27%. The other countries of the region with industries of a certain size are Argentina, the Bolivarian Republic of Venezuela, Chile, Peru, Colombia and Trinidad and Tobago, in order of production.

Latin America's steel industry is divided into local firms that have expanded internationally (trans-Latins), which account for 52% of all output in the region; subsidiaries of foreign (European or Asian) companies, which account for 31%; and local firms that have not expanded internationally, which account for 17%. Of the

14 firms that represent 90% of the industry's output, 12 have internationalized to a greater or lesser degree (see table 1). Whereas nearly all the foreign subsidiaries came to the region in the first half of the twentieth century, the trans-Latins did not begin to expand internationally until the 1990s.

Table 1
LATIN AMERICA: TYPES OF INTERNATIONALIZATION IN THE IRON AND STEEL INDUSTRY

		Degree of internationalization	
		Low	High
Geographic range	Regional	ThyssenKrupp (Germany) Nippon Steel (Japan) POSCO (Republic of Korea) Usiminas (Brazil) Votorantim (Brazil)	Ternium (Argentina)
	Biregional	CSN (Brazil)	Vallourec (France/ Germany) Gerdau (Brazil) Industrias CH – Grupo Simec (Mexico)
	Global		ArcelorMittal (Luxemburg) Tenaris (Argentina)

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

FDI in iron and steel has been driven by a market-seeking rationale, which draws companies to countries that have a large industrial base and prospects for infrastructure development, and by the search for raw materials, especially iron ore. Iron and steel companies have always invested in mining (nearly all firms in this industry own mines), but their interest has intensified in recent years as metal and mineral prices have risen. This has been a very important factor for attracting investors to the region, especially Asian firms.

Many large firms have only a handful of integrated plants —because of the size of the investment required— usually located in their home countries, and limit their FDI to certain phases of the production chain. A considerable number of the world's largest steel and iron producers thus possess few assets abroad and many others make all of their foreign investments in a single region.

One noteworthy exception is the Luxembourg-based ArcelorMittal, the world's largest steelmaker. ArcelorMittal is the only truly global steelmaker, with a major presence in every region of the world, including Latin America, where it leads the industry. The company is also unique in that it operates in all three main market segments: flat-rolled steel, long-rolled steel and tubular products.

Flat-rolled steel is produced mainly in integrated plants that require large investments, and it is used especially in the transport equipment industry and machinery production, as well as in certain types of infrastructure. Firms in this segment are generally larger and have a limited international presence. This is the case of Nippon Steel (Japan) and POSCO (Republic of Korea), which are the world's second and fourth largest steel manufacturers, despite producing almost no steel outside their home countries. The centrepiece of these companies' FDI strategies is the rolling phase, which takes places downstream from the production process, requires a smaller capital investment and is normally carried out in strategic partnership with local firms. Like all Asian firms, these two have made their home region the hub of their international expansion. Most of their Latin American investments are in iron mining.

The Brazilian firms CSN and Usiminas, which also specialize in long-rolled steel, have followed a similar strategy, limiting their foreign investments to steel rolling and processing. The other large trans-Latin in this segment, Ternium (of the Techint Group), is highly internationalized thanks to an aggressive acquisition strategy.

Brazil's cost advantage in the production of semi-finished steel (slabs) may, however, be changing this internationalization pattern. This advantage recently prompted the German-based ThyssenKrupp to invest in a large integrated plant in Brazil, from which it plans to export semi-finished products for processing at other plants owned by the group in Europe and the United States. This is the first time that the firm will produce steel outside Germany.

Long-rolled steel is used mostly in construction and made primarily in smaller plants, which encourages the geographic dispersion of companies that specialize in this segment. The largest of these companies in the region, the Brazilian-based Gerdau, has operations in many Latin American countries and the United States. Industrias CH-Grupo Simec of Mexico makes most of its steel in the United States. Because of its close ties to the autoparts industry, it has been badly hit by the crisis. The third firm in this segment, Votorantim, has few investments outside its home country, Brazil, given that it only recently began to internationalize.

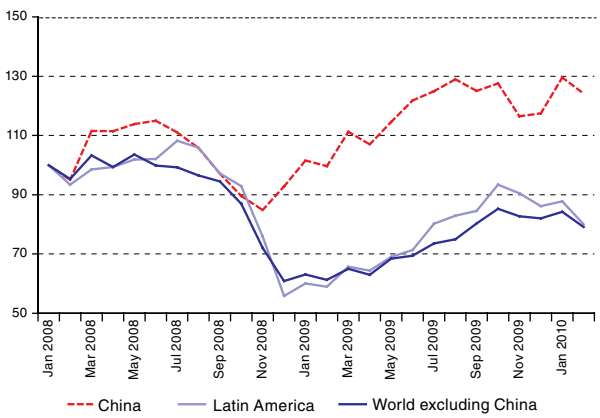
Lastly, two steel tube manufacturers, the Argentina-based Tenaris (also of the Techint Group) and the French-German Vallourec, have investments in many countries. Two factors have contributed to their higher degree of internationalization: the smaller size of their plants, and the fact that they sell mainly to the gas and oil industry. Many companies in this segment have adopted forward vertical integration.

In mid-2008, all these companies were considering major expansion projects. but nearly all of them recoiled in response to the slump in demand caused by the crisis, put projects not under way on hold, slowed the building of those that had already begun and ceased asset dealings.

The only new investments that went ahead were those that had passed the point of no return. Firms sought to hold on to their liquid assets and preferred projects that optimized existing structures, rather than building new plants. Nevertheless, it is noteworthy that there was no downsizing of installed capacity in Latin America.

Although the crisis has had a profound impact, the recovery came more quickly than had been expected at the beginning of 2009. Public policy played a key role in rekindling demand, and this had countercyclical effects on many activities, in particular construction and the automobile industry, which fuelled demand for iron and steel. Although output fell sharply in the second half of 2008, in 2009 there was a noticeable, albeit partial, recovery. In January 2010, output in Latin America remained 12% below the level reached two years before, and the trend in other regions was similar, with the noteworthy exception of China, where the crisis was very short-lived and less severe. Thus, output in China has continued to rise in the last two years, although at a more sedate pace than previously (see figure 8).

Figure 8
MONTHLY OUTPUT OF CRUDE STEEL, 2008-2010
(January 2008=100)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information provided by the World Steel Association (WSA).

Projects that had been postponed in Latin America are unlikely to be resumed until demand for steel picks up more strongly and steadily, which, in turn, will depend on how quickly the economy overall bounces back, and on how sustainable the recovery is. It is thus reasonable to assume that some projects will not come to fruition. This may be the longest-lasting consequence of the global crisis on Latin America's iron and steel industry.

Notwithstanding the short-term setbacks, the global iron and steel industry will continue to shift from developed countries to emerging economies, attracted by the prospects for demand growth in the latter. In addition, in Latin America, the objective of controlling natural-resource assets will weigh heavily in business strategies. To avoid being locked into the role of exporting unprocessed raw materials, the countries of the region must move forward in developing their industrial base and infrastructure, which are the foundation of the iron and steel market. To complement their abundant natural resources, they must also develop their domestic capacities in the iron and steel sector and related industries.

In conclusion, the crisis was found to have had an impact in all three areas examined (the region overall, the automobile industry and iron and steel), although prior economic growth, as well as public policy action, cushioned its worst effects. Despite declining sharply, FDI flows into the region remained higher than in the recent past, and ECLAC expects a solid upturn of between 40% and 50% in 2010. Although two of the industries most sensitive to downturns —automobile making and iron and steel— found their growth curtailed, production capacity was not destroyed, although the recovery took very different forms from one country to the next. Here, again, the role of public policy in influencing short-term demand and in strengthening the different models of production specialization and foreign trade was very apparent. Outward foreign investment from Latin America also suffered, basically owing to net disinvestment by Brazil, but may be expected to rally strongly in 2010 thanks to the expansion of activities by trans-Latin firms.

Chapter I

Regional overview of foreign direct investment

A. Introduction

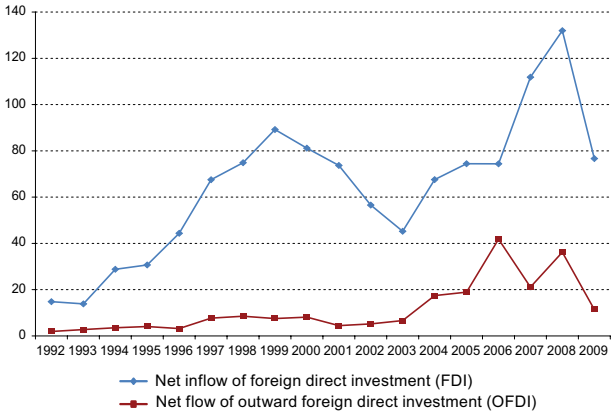
In 2009, foreign direct investment (FDI) was hit hard in every region of the world by the global economic crisis. According to some preliminary estimates, global FDI fell for the second consecutive year to US$ 1.04 trillion, a drop of 39% over the previous year.

Unlike in 2008, when FDI shrank in developed countries only, in 2009 the global crisis dampened investment flows to developing regions as well, and Latin America and the Caribbean were no exception. The uncertainty that reigned throughout the year, the fluctuation in commodity prices, the difficulties in accessing credit and the economic slowdown prevailing in most of the region's economies and in its main export markets (especially the United States) reduced FDI flows to Latin America and the Caribbean to US$ 77.675 billion. This figure represents a 41% decline compared to the record high in 2008 (see figure I.1).

In South America, FDI fell by 40% to US$ 54.454 billion, with Brazil, Chile and Colombia as the largest recipients. In Mexico, FDI fell for the second consecutive year to US$ 12.522 billion, or 47% less than in 2008, making the country, for the first time in this decade, the third largest recipient in the region after Brazil and Chile. In Central America, FDI shrank by 33% to US$ 5.026 billion, with Costa Rica, Guatemala and Panama as the largest recipients. The Caribbean also experienced a drop in FDI, with flows contracting by 43% to US$ 5.662 billion. The Dominican Republic was the largest recipient of FDI in the subregion, attracting 38% of the flows in 2009. Although the countries of Central America and the Caribbean receive small amounts of FDI in absolute terms, they receive the most as a percentage of gross domestic product (GDP).

Despite the widespread drop in FDI throughout the region in 2009, the level achieved is the fifth highest in history. FDI has trended upwards for the past two decades, and the post-crisis dynamics would tend to indicate a recovery process. The main structural characteristics of FDI have held steady and an analysis of mergers and acquisitions and new investment announcements shows that most activity is concentrated in commodities and low and medium-low technology manufacturing, with very few asset-seeking investment projects that generate research and development (R&D). This represents a major opportunity for the region if it wishes to use FDI as a mechanism for transitioning to activities with increased technological content, which also entails strengthening the countries' absorption capacity.

Figure I.1
LATIN AMERICA AND THE CARIBBEAN: INWARD FOREIGN DIRECT INVESTMENT AND OUTWARD FOREIGN DIRECT INVESTMENT, 1992-2009 [a] [b]
(Billions of dollars)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), estimates made on the basis of official figures as at 24 May 2010.

[a] FDI figures indicate inflows of foreign direct investment, minus disinvestments (repatriation of capital) by foreign investors. OFDI figures indicate outflows of direct investment by residents, minus disinvestments abroad by those investors. The FDI figures do not include the flows received by the main financial centres of the Caribbean. The OFDI figures do not include the flows originating in these financial centres.

[b] These figures differ from those contained in the editions of the *Economic Survey of Latin America and the Caribbean* and the *Preliminary Overview of the Economies of Latin America and the Caribbean* published in July and December 2009, respectively, as the latter show the net balance of foreign investment, that is, direct investment in the reporting economy (FDI) minus outward foreign direct investment (OFDI).

Outward FDI originating in the region's countries was US$ 11.387 billion or 69% less than in 2008. This drop can basically be attributed to Brazil, which was the largest investor in 2008 but had a negative net FDI position of -US$ 10 billion in 2009. Meanwhile, Colombia and Mexico saw increases in outward FDI.

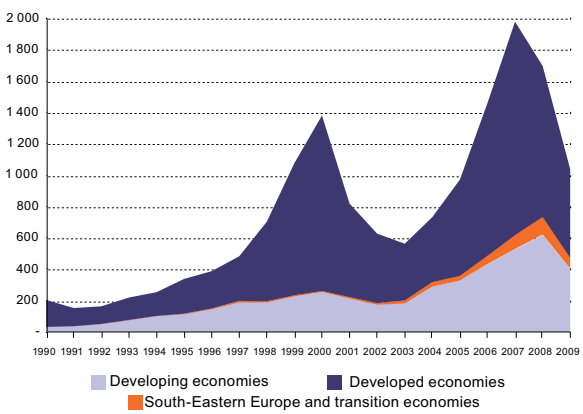
Section B of this chapter presents an overview of FDI worldwide. Section C is divided into four parts: the first part analyses FDI behaviour in Latin America and the Caribbean based on balance-of-payment statistics and identifies its sectoral distribution and its origin; the second part identifies the transnational corporations that were able, despite the economic and financial crisis, to continue expanding in the commodities, manufacturing and services sectors; the third part reviews the technology intensiveness of investments by transnational corporations in the region's manufacturing sector in the period 2003-2009; and the fourth part identifies FDI projects in R&D in Latin America and the Caribbean in the period 2003-2009. Section D examines the performance of the region's countries as foreign investors, and section E presents final considerations. This analysis is based on official balance-of-payment statistics, databases of announcements of foreign direct investment and mergers and acquisitions and corporate information.

B. An overview of foreign direct investment worldwide

Worldwide FDI fell for the second consecutive year as a result of the global economic crisis (see figure I.2). According to some preliminary estimates, global FDI fell for the second consecutive year to US$ 1.04 trillion, a drop of 39% over the previous year.

Unlike in 2008, when FDI flows declined in developed countries only, in 2009 flows to developing and transition economies also shrank (by 35% and 39%, respectively). This was the result of the gradual spread of the economic crisis from the developed economies to the rest of the world, which worsened global economic conditions and thus eroded investment incentives and capacity. The negative growth rates in the developed countries and the marked slowdown in the developing economies (see table I.1), as well as increased perceived risk and reduced access to the (domestic and foreign) financial resources needed to support investment, were the main causes of this widespread drop in FDI (ECLAC, 2009b; UNCTAD, 2009).

Figure I.2
GLOBAL FLOWS OF FOREIGN DIRECT INVESTMENT, BY GROUP OF ECONOMIES, 1990-2009
(Billions of dollars)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures; United Nations Conference on Trade and Development (UNCTAD), *World Investment Report, 2009. Transnational Corporations, Agricultural Production and Development*, Geneva, 2009. United Nations publication, Sales No. E.09.II.D.15; and ECLAC projections for 2009.

Table I.1
GROSS DOMESTIC PRODUCT GROWTH AND GROWTH PROSPECTS IN THE WORLD AND BY TYPE OF COUNTRY, 2007-2011
(Percentages)

	2007	2008	2009	2010	2011
International Monetary Fund					
World	5.2	3.0	-0.8	4.2	4.3
Advanced economies	2.7	0.5	-3.2	2.3	2.4
Emerging and developing economies	8.3	6.1	2.1	6.3	6.5
World Bank					
World	3.9	1.7	-2.2	2.7	3.2
High-income countries	2.6	0.4	-3.3	1.8	2.3
Developing countries	8.1	5.6	1.2	5.2	5.8
United Nations					
World	3.9	1.9	-2.2	2.4	-
Developed economies	2.6	0.5	-3.5	1.3	-
Developing economies	7.6	5.4	1.9	5.3	-
Economies in transition	8.4	5.5	-6.5	1.6	-

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of International Monetary Fund (IMF), *World Economic Outlook. Rebalancing Growth*, Washington, D.C., 2010; United Nations, *World Economic Situation and Prospects, 2010*, New York, January 2010. United Nations publication, Sales No. E.10.II.C.2; World Bank, *Global Economic Prospects, 2010. Crisis, Finance, and Growth*, Washington, D.C., January 2010.

The economic crisis struck most forcefully at its epicentre: the developed countries. In 2009, FDI in these economies fell by 41% with respect to 2008 and by 58% with respect to 2007. In the case of the developing and transition economies, after reaching its historic high in 2008, FDI dropped by 35% and 39%, respectively, in 2009. As a result, the developed countries' share of global FDI flows declined from 69% in 2007 to 57% in 2008 and to 54% in 2009. By contrast, the share of developing and transition countries has climbed significantly from 32% in 2007 to 44% in 2008 and to 46% in 2009 (see table I.2). This trend will likely continue in 2010 inasmuch as the prospects for economic recovery are better in the emerging countries than in the developed countries. In 2009 the largest FDI recipients among the developed countries were the United States, France, the Netherlands, Germany and Belgium. Among the developing countries, they were China, Hong Kong (Special Administrative Region of China), the Russian Federation, India and Brazil.

As a percentage of GDP, FDI flows are largest in the developing and transition countries, which indicates the relative importance of these capital flows in these economies (see figure I.3).[1] In fact, FDI has been the largest and most stable of the capital flows that developing and transition countries have received in the past two decades, including during crisis periods (ECLAC, 2009b). In the developing world, Africa has had the highest FDI/GDP ratio in recent years, following by South-Eastern Europe and the Commonwealth of Independent States, developing Asia and Oceania and Latin America and the Caribbean. Nevertheless, based on preliminary figures, all regions show sharp declines in this indicator as a result of the significant contraction of FDI and positive, albeit slower, growth.

Cross-border mergers and acquisitions, one of the most common ways that transnational companies penetrate foreign markets, are a useful indicator of global FDI behavior. These two variables show similar behavior over time (see figure I.4) and maintain a high degree of correlation (see box I.1). As a result of global economic conditions and reduced access to financing, the value of mergers and acquisitions has plummeted since 2008 and continuing into 2009. In this last year, the value of cross-border transactions fell by 66% over the previous year. This decline may reflect two things: (a) fewer mega-deals in 2009; and (b) a decrease in share prices of corporations, which lowered their purchase value.

Table I.2
FLOW, GROWTH AND DISTRIBUTION OF NET FDI INFLOWS IN THE WORLD, BY GROUPS OF RECIPIENT COUNTRIES, 2007-2009

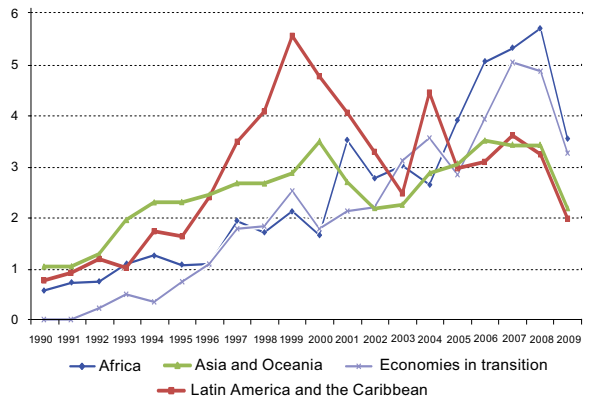
	Foreign direct investment flows (billions of dollars)			Annual growth rate (percentages)		Share (percentages of total)		
	2007	2008	2009 [a]	2008	2009 [a]	2007	2008	2009 [a]
World	1 979	1 697	1 040	-14	-39	100	100	100
Developed economies	1 359	962	566	-29	-41	69	57	54
Developing economies	529	621	406	17	-35	27	37	39
Latin America and the Caribbean [b]	127	144	86	13	-41	6	9	8
Africa	69	88	56	27	-36	3	5	5
Developing Asia and Oceania	333	389	264	17	-32	17	23	25
South-Eastern Europe and the Commonwealth of Independent States	91	114	69	26	-39	5	7	7

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures; United Nations Conference on Trade and Development (UNCTAD), *World Investment Report, 2009. Transnational Corporations, Agricultural Production and Development*, Geneva, 2009. United Nations publication, Sales No. E.09.II.D.15.

[a] Preliminary figures.
[b] Includes financial centres.

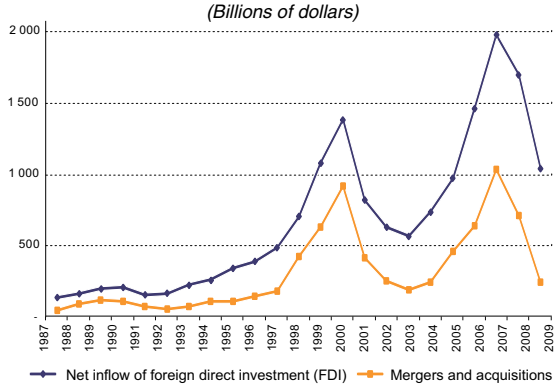
[1] The FDI/GDP indicator normalizes FDI figures according to the size of the economy. However, it has several flaws. Given that GDP is measured in current prices, inflation or exchange-rate fluctuations can have strong effects on the size of the ratio, which makes it hard to use in comparisons between periods or regions.

Figure I.3
DEVELOPING REGIONS: INFLOWS OF FOREIGN DIRECT INVESTMENT AS A PROPORTION OF GDP, 1990-2009
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures; United Nations Conference on Trade and Development (UNCTAD), *World Investment Report, 2009. Transnational Corporations, Agricultural Production and Development,* Geneva, 2009. United Nations publication, Sales No. E.09.II.D.15; International Monetary Fund (IMF), *World Economic Outlook. Financial Stress, Downturns, and Recoveries*, Washington, D.C., October 2008.

Figure I.4
MERGERS AND ACQUISITIONS WORLDWIDE, 1987-2009 [a]
(Billions of dollars)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures; United Nations Conference on Trade and Development (UNCTAD), *World Investment Report, 2009. Transnational Corporations, Agricultural Production and Development,* Geneva, 2009. United Nations publication, Sales No. E.09.II.D.15; UNCTAD, "Global and regional FDI trends in 2009", *Global Investment Trends Monitor,* No. 2, Geneva [online] www.unctad.org/en/docs/webdiaeia20101_en.pdf, 2010.

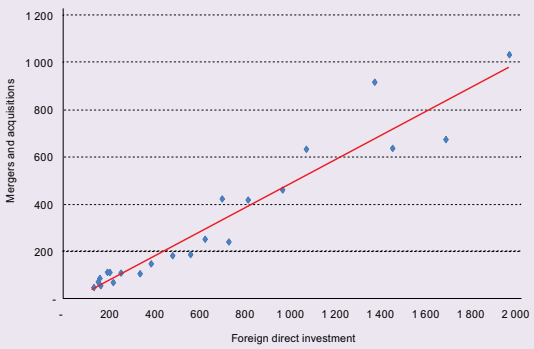
[a] The calculations of FDI and mergers and acquisitions volumes were based on various sources and are not necessarily compatible. Therefore, it is important to note that the difference between the two levels does not indicate foreign investment amounts from greenfield investments.

Box I.1
MERGERS AND ACQUISITIONS AS LEADING INDICATORS OF GLOBAL FOREIGN DIRECT INVESTMENT

The volume of cross-border mergers and acquisitions has paralleled global FDI flows (see figure I.4). This relationship can be summarized in a correlative ratio of 94% for the period 1987-2009. Although the degree of correlation was less in the period 2000-2009 (90%) than in the period 1987-1999 (98%), the ratio continues to be very high, which demonstrates the important role that mergers and acquisitions play in global FDI.

The scatter diagram illustrates the close positive relationship between FDI flows and the volume of cross-border mergers and acquisitions, so this variable could be considered a leading indicator of global FDI flows.

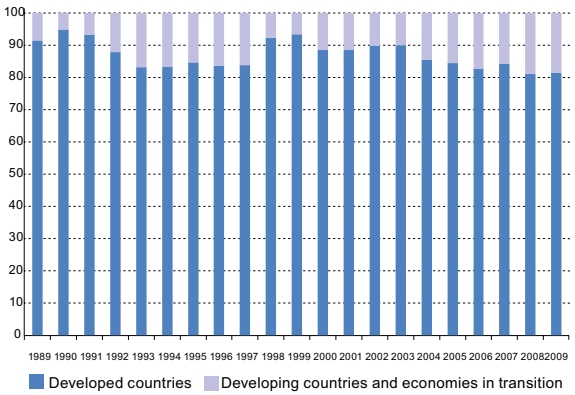
DIRECT FOREIGN INVESTMENT AND MERGERS AND ACQUISITIONS, 1987-2008
(Billions of dollars)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures; United Nations Conference on Trade and Development (UNCTAD), *World Investment Report, 2009. Transnational Corporations, Agricultural Production and Development,* Geneva, 2009. United Nations publication, Sales No. E.09.II.D.15; UNCTAD, "Global and regional FDI trends in 2009", *Global Investment Trends Monitor,* No. 2, Geneva [online] www.unctad.org/en/docs/webdiaeia20101_en.pdf, 2010.

The main sources of FDI continue to be the developed countries. However, the developing and transition countries have clearly made headway in the past decade, increasing their share of outward FDI from 11% in 2000 to nearly 20% in 2008 and 2009 (see figure I.5). Despite the economic crisis, some corporations from developing countries, especially in Asia, executed or announced multimillion-dollar projects in 2009. These included investments by the Indian corporation Tata in China, the Netherlands and Kenya in the information and communications technologies (ICT), energy and communications sectors, respectively; by China Metallurgical Group Corporation in Australia; and by China National Petroleum Corporation (CNPC) in Chad, Myanmar and the Islamic Republic of Iran. The level of FDI flowing out of emerging economies, even in a period of crisis, confirms the trend that corporations in these countries continue to gain ground as global investors.

Figure I.5
DEVELOPED AND DEVELOPING COUNTRIES AND ECONOMIES IN TRANSITION: SHARE IN OUTWARD FOREIGN DIRECT INVESTMENT, 1991-2009
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures; United Nations Conference on Trade and Development (UNCTAD), *World Investment Report, 2009. Transnational Corporations, Agricultural Production and Development*, Geneva, 2009. United Nations publication, Sales No. E.09.II.D.15; UNCTAD, "Global and regional FDI trends in 2009", *Global Investment Trends Monitor*, No. 2, Geneva [online] www.unctad.org/en/docs/webdiaeia20101_en.pdf, 2010.

In summary, the economic crisis triggered a 39% decline in global FDI flows with respect to 2008. The developed countries were the hardest hit, with FDI falling for the second consecutive year. The developing and transition countries also saw declines in their FDI flows, which shrank by more than 30% after reaching historic highs in 2008. Based on preliminary figures, Latin America and the Caribbean is the developing region that saw the largest contraction of FDI flows, although it remains the second largest recipient of FDI in the developing world. The next sections assess the region's performance as a recipient of investments and an investor.

Despite the sharp contraction in global FDI flows, the annual volume of flows received is at the fifth highest level in two decades, and FDI will very likely resume an upward trend to the extent that global economic conditions improve in 2010.

C. FDI inflows and transnational corporations in Latin America and the Caribbean

1. Trends and characteristics of FDI flows to Latin America and the Caribbean in 2009

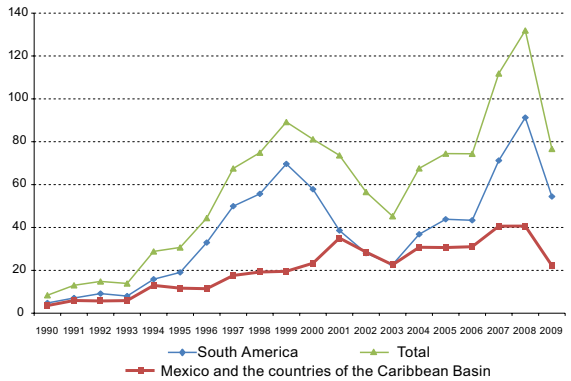
In 2009, the global crisis reversed the upward trend of FDI flows to Latin America and the Caribbean. Excluding the main financial centres, the region received US$ 77.665 billion in FDI, or 41% less than the US$ 132.450 billion record reached in 2008 (see figure I.6).[2] Despite this sharp contraction, FDI volumes remained above the annual average for the decade and were the fifth highest received in that period. This section analyses FDI trends in the region, the relative importance of FDI in each country, its origin and its sectoral distribution.

The reduction in FDI was evident in every subregion of Latin America and the Caribbean, despite the different sectoral specialization of each. FDI flows to South America fell by 40% to US$ 54.454 billion, whereas flows to Mexico and the Caribbean Basin dropped by 43% to US$ 23.211 billion (see table I.3).[3] These declines are due to a combination of factors, including: (a) difficulties in gaining access to credit and the high levels of uncertainty prevailing in 2009; (b) the sudden drop in commodity prices in late 2008 and their slow recovery, which triggered a downturn in natural-resource-seeking investment; (c) the recession in North America, which deterred investment in export platforms; and (d) the recession in several of the region's countries, which led to a decline in market-seeking investment. The effect of these factors on trends in FDI by subregion is analysed below.

[2] The main financial centres include Bermuda, the British Virgin Islands, the Cayman Islands and the United States Virgin Islands.

[3] The Caribbean Basin includes the countries of Central America and the countries and territories of the Caribbean.

Figure I.6
LATIN AMERICA AND THE CARIBBEAN: INWARD FOREIGN DIRECT INVESTMENT BY SUBREGION, 1990-2009 [a]
(Billions of dollars)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), estimates on the basis of official figures as at 24 May 2010.

[a] Excludes investment received by the main financial centres. These FDI figures differ from those published by ECLAC in the *Economic Survey of Latin America and the Caribbean* and the *Preliminary Overview of the Economies of Latin America and the Caribbean*, published in August and December 2008, respectively, because those studies show the net balance of foreign investment, in other words, direct investment in the reporting economy (FDI) minus outward foreign direct investment (OFDI).

(a) South America

In 2009 South America received 70% of the FDI flows to Latin America and the Caribbean. Brazil, Chile and Colombia were the largest recipients, attracting 84% of the flows. Although FDI dropped in all of the South American countries except Paraguay, the dynamics varied from one country to the next. The following paragraphs analyse the most important characteristics of the FDI that went to the main recipients.

Both in absolute and relative terms, the steepest decline in the subregion occurred in Brazil, where FDI flows fell by 42% from the historic high of 2008 to US$ 25.949 billion, equivalent to 34% of the FDI received in Latin America and the Caribbean. This decline is largely due to a contraction in FDI flows to the primary and services sectors (of 75% and 39%, respectively).[4] As a result of this drastic reduction in flows, the primary sector's share of total FDI received fell from 29.2% in 2008 to 13.1% in 2009. The pronounced slowdown in the Brazilian economy, where growth slipped from 5.1% in 2008 to -0.2% in 2009 (ECLAC, 2009a and 2009a), discouraged market-seeking FDI and hit investment in the services sector particularly hard, with investment in financial services, construction and real estate activity tumbling by more than 50%.

Chile, which became the region's second largest recipient of FDI in 2009, attracted US$ 12.702 billion that year, or 16% less than in 2008. Despite the decline, this is the second largest flow of FDI that the country has received, a good outcome considering the prevailing economic conditions and uncertainty in 2009. Although Chile has only partial statistics on the origin of FDI and its sectoral distribution, based on these and other information sources, it is estimated that most of the FDI went to the services sector, notably for the acquisition of the Chilean supermarket chain Distribución y Servicio, S.A. (D&S) by the United States corporation Wal-Mart for some US$ 2 billion. FDI in mining, one of the principal recipient sectors, dropped significantly by 57% owing to low copper prices for much of 2009.[5] Even so, some corporations strived to maintain a part of their investment in preparation for a future improvement in economic conditions.[6] It should be noted that the number of FDI projects announced in the alternative and renewable energies sector has continued to rise, from 7 in 2008 to 11 in 2009. This process was led by large corporations such as Enel (Italy), Endesa (Spain) and GDF Suez (France).

In Colombia, FDI flows dropped by 32% with respect to 2008. Unlike what happened in the Southern Cone countries, FDI in the primary sector, which represented 51% of total flows to the country in 2008, rose, by 10%. FDI in the petroleum sector fell by 22%, but this decline was offset by a 72% increase in the mining sector, which attracted US$ 3.094 billion thanks to reinvested earnings in that sector and the investments received mainly in the coal-mining sector.[7] Flows to the primary sector therefore ended up accounting for 80% of the FDI received by Colombia in 2009. The country's high percentage of unexplored territory —geological surveys have been conducted in only 15% to 20% of the country, while about 80% has not yet been explored in detail (Rodríguez and Salgado, 2009)— continued to spur investment in the sector by large transnational corporations.[8] The sectors that were hit the hardest in terms of FDI were manufacturing and transport, storage and communications, which experienced drops of 69% and 60%, respectively, with respect to 2008.

[4] The primary sector includes farm, livestock and mining activities.

[5] These figures correspond only to the FDI received in Chile pursuant to the provisions of Decree 600, not to all FDI. The source for the figure is not the Central Bank of Chile, but rather the Foreign Investment Committee.

[6] For example, the British corporations Antofagasta and Anglo American, as well as the Swiss corporation Xstrata, continued to invest in copper projects in northern Chile. The Mitsubishi Group acquired a larger share in the mining and steel corporation Compañía de Acero del Pacífico (CAP), for US$ 171 million.

[7] Colombia is among the 10 largest hard coal producers in the world (see [online] www.worldcoal.org/coal/coal-mining), which makes it attractive to mining and steel corporations seeking vertical integration. The country has become a strategic point for corporations such as the Brazilian steel corporation Gerdau and the Brazilian giant Vale, which acquired the coal assets of the Colombian corporation Argos for US$ 305.9 million (IMC, 2009b) (IMC, 2009a).

[8] AngloGold Ashanti (South Africa), Drummond (United States), Xstrata (Switzerland), Medoro Resources (Canada) and EBX (Brazil), among others.

Table I.3
LATIN AMERICA AND THE CARIBBEAN: FOREIGN DIRECT INVESTMENT INCOME BY RECEIVING COUNTRY AND TERRITORY, 2000-2009
(Millions of dollars and percentages)

Country	2000-2005 [a]	2006	2007	2008	2009	Absolute difference 2008-2009	Relative difference 2008-2009 (percentages)
South America	**37 974.0**	**43 369.6**	**71 226.9**	**91 278.5**	**54 454.1**	**-36 824.4**	**-40.3**
Brazil	19 197.2	18 782.0	34 584.9	45 058.2	25 948.6	-19 109.6	-42.4
Chile	5 012.3	7 298.4	12 533.6	15 181.0	12 702.0	-2 479.0	-16.3
Colombia	3 683.4	6 656.0	9 048.7	10 583.2	7 201.2	-3 382.0	-31.9
Argentina	4 295.9	5 537.0	6 473.0	9 725.6	4 894.5	-4 831.0	-49.6
Peru	1 603.8	3 466.5	5 491.0	6 923.7	4 759.7	-2 164.0	-31.2
Uruguay	393.4	1 493.5	1 329.5	1 840.7	1 138.8	-701.9	-38.1
Ecuador	839.2	271.4	194.2	1 000.5	311.7	-688.9	-68.8
Paraguay	52.8	95.0	201.8	109.1	184.2	75.0	68.7
Bolivia (Plurinational State of)	349.7	277.8	362.3	507.6	418.4	-89.1	-18.0
Venezuela (Bolivarian Republic of)	2 546.3	-508.0	1 008.0	349.0	-3 105.0	-3 454.0	-990
Mexico	**22 374.9**	**19 996.3**	**27 440.1**	**23 682.5**	**12 522.2**	**-11 752.7**	**-50.7**
Central America	**2 548.7**	**5 755.5**	**7 235.2**	**7 487.0**	**5 026.5**	**-2 460.5**	**-32.8**
Panama	655.8	2 497.9	1 776.5	2 401.7	1 772.8	-628.9	-26.1
Costa Rica	596.9	1 469.0	1 896.0	2 021.0	1 322.6	-698.4	-34.5
Guatemala	333.5	591.6	745.1	753.8	565.9	-187.9	-24.9
Honduras [b]	418.4	669.1	927.5	900.2	500.4	-399.8	-44.4
Nicaragua	218.8	286.8	381.7	626.1	434.2	-191.9	-30.6
El Salvador	325.3	241.1	1 508.4	784.2	430.6	-353.6	-45.0
Caribbean	**3 521.2**	**5 889.5**	**6 071.5**	**10 002.1**	**5 783.3**	**-4 218.8**	**-42.1**
Dominican Republic	932.3	1 528.0	1 562.9	2 970.8	2 158.1	-812.7	-27.3
Jamaica	594.7	882.2	751.5	1 360.7	801.0	-559.7	-41.1
Bahamas	383.0	706.4	746.2	838.9	775.2	-63.7	-7.5
Trinidad and Tobago	842.4	883.0	830.0	2 800.8	510.7	-2 290.1	-81.7
Suriname [b]	142.7	322.7	315.7	345.6	333.7	-11.9	-3.4
Guyana [c]	49.9	102.4	110.3	179.1	221.9	42.8	23.8
Saint Lucia	75.5	237.7	271.9	172.4	166.6	-5.8	-3.3
Antigua and Barbuda	127.2	359.2	338.2	173.4	139.2	-34.2	-19.7
Saint Kitts and Nevis	84.3	114.6	134.5	177.9	138.7	-39.2	-22.0
Saint Vincent and the Grenadines	42.5	109.8	130.5	159.2	125.5	-33.7	-21.1
Barbados [c]	27.2	104.8	337.8	286.1	104.2	-181.9	-63.5
Belize	56.2	108.8	143.1	190.7	95.4	-95.3	-49.9
Grenada	64.6	95.6	151.6	144.1	78.9	-65.2	-45.2
Anguilla	60.1	143.2	118.9	98.7	61.5	-37.2	-37.7
Dominica	25.5	28.9	47.3	56.5	46.5	-10.1	-17.8
Haiti [c]	11.5	160.0	74.5	34.4	19.2	-15.2	-44.1
Montserrat	1.6	2.2	6.5	12.6	6.9	-5.7	-45.4
Total	**66 370.4**	**74 794.0**	**111 844.4**	**131 937.7**	**76 681.3**	**-55 256.4**	**-41.8**

Source: Economic Commission for Latin America and the Caribbean (ECLAC), estimates on the basis of preliminary official figures as at 24 May 2010.
[a] Annual averages.
[b] ECLAC estimate based on historical data.
[c] Estimate based on data as at the third quarter of 2009.

In 2009 FDI flows to Argentina fell by 50% with respect to 2008, to US$ 4.895 billion. Some investment and mergers and acquisitions announcements indicate, based on the number of projects announced, that the sectors attracting the most investment were services, especially retail, with investments by Wal-Mart (United States), Carrefour (France) and Falabella (Chile), and business services (contact centres, technical assistance and sales offices, etc.). Meanwhile, the number of projects announced in the manufacturing sector fell compared to 2008, reflecting the economic slowdown and the contraction in Argentina's export sector. The primary sector saw announcements in 2009 by the Canadian mining corporations Barrick Gold, Yamana Gold and Silver Standard and by the Australian corporations Troy Resources and Orocobre, as well as the acquisition of Cementos Avellaneda by the Votorantim group (Brazil) and Cementos Molins (Spain).

FDI flows to Peru decreased by 31% in 2009 to US$ 4.76 billion. The largest component of FDI was reinvested earnings, which represented 87% of the total investment received during the year. Much of this investment activity was in mining, as indicated by information from the Peruvian Private Investment Promotion Agency (ProInversión) and announcements of mergers and acquisitions and new investments during the year. In 2009 there were 18 mergers and acquisitions in the mining sector, which shows the considerable investment activity that occurred in that sector during the year. Most of these operations were associated with gold and silver mining, although there were also operations in copper, uranium, radium and vanadium mining.[9]

In Uruguay, FDI shrank by 38% with respect to 2008 but remained above the US$ 1 billion mark that the country has been surpassing since 2006. Despite the absence of official data on the characteristics of FDI in the country, some announcements of investments or mergers and acquisitions indicate that the pulp and paper industry was one of the most dynamic sectors, with investments from the Finnish corporation Stora Enso and the Chilean corporation Arauco.

The Bolivarian Republic of Venezuela, whose development model does not emphasize FDI, had a balance of -US$ 3.105 billion. Although the country announced major investment projects, chiefly in the petroleum sector, these were not enough to offset outflows resulting from, among other variables, nationalizations, such as that of the Argentine steel corporation Ternium Sidor, the local affiliate of Banco Santander, two Japanese steel corporations and the Mexican corporation Tubos de Acero de México, S.A. (*El País*, 2009; *El Universal*, 2009).[10] Based on the country's current development model, nationalizations are likely to continue. In January 2010 the government announced the nationalization of the Colombian-French superstore chain Éxito, as well as some urban properties in Caracas (*El Universal*, 2010).

In Ecuador, FDI was down by 69% on 2008. Investment in mining and quarrying, which accounted for 25% of FDI in the country in 2008, plummeted 103%, thereby registering a negative net balance at the end of 2009. Investment in business services and in transport, storage and communications fell by almost US$ 300 million. The fall in the latter sector may be attributed to the high levels received in 2008, owing to investments by América Móvil of Mexico. The only sectors to show upturns —albeit too small to offset the falls in others sectors— were agriculture, hunting and forestry, and community, social and personal services.

FDI in the Plurinational State of Bolivia declined by 18%. Preliminary estimates as of the third quarter of 2009 suggest that mining, which accounted for 50% of FDI in 2008, was the worst hit sector. According to the central bank, this drop may be explained by the conclusion of the investment plan of San Cristóbal, a mining company. The hydrocarbon sector also saw a fall in FDI, albeit much smaller than that in mining, thanks to investments announced in 2009 by firms such as Petróleos de Venezuela, S.A. (PDVSA) and Repsol-YPF of Spain.

Paraguay was the only country in the entire Latin American and Caribbean region to see an increase in investment flows in 2009. The country received US$ 184 million, mostly from the United States. These flows went mainly to commerce (37%), oil manufacturing (32%), financial intermediation (23%) and transport (17%). With the exception of financial intermediation, all these activities showed large increases in FDI with respect to 2008.

(b) Mexico and Central America

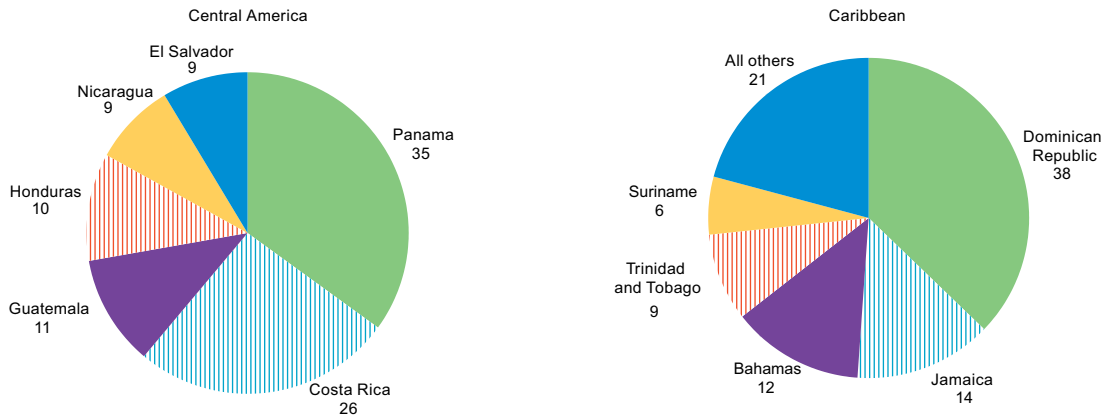
The economic recession in the United States, the principal investor and export market for the economies of Mexico and Central America, had a major dampening effect on FDI flows to these countries in 2009, especially investment in export platforms. FDI in Mexico fell to

[9] Information from the Thomson Reuters database.

[10] Of the 10 principal FDI projects announced in 2009, five are in the petroleum sector. The rest are to build railroads, a hydroelectric plant and a mobile telephone plant, and to create a Russian-Venezuelan binational bank for financing joint projects in the mining, metals, electricity, petrochemical, infrastructure and other sectors. Investors in these projects include China, Spain and the Russian Federation (information provided by the Venezuelan Council for Investment Promotion (CONAPRI) (see [online] www.conapri.org)).

US$ 12.522 billion, 47% less than in 2008, while Central America attracted US$ 5.026 billion, 33% less than in the previous year. In Central America, the principal recipients were Costa Rica and Panama (see figure I.7), while El Salvador and Honduras saw precipitous declines (45% and 44%, respectively) compared to the global and regional contraction. Guatemala was least affected, with a decline in FDI of 25%.

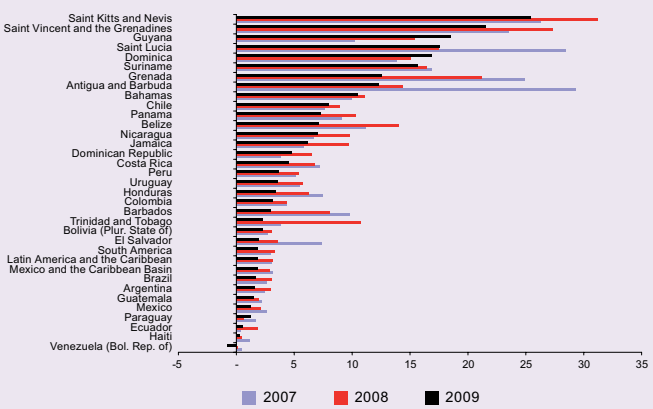
Figure I.7
CENTRAL AMERICA AND THE CARIBBEAN: SHARE OF FOREIGN DIRECT INVESTMENT FLOWS, 2009
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), estimates on the basis of official figures as at 24 May 2010.

Box I.2
FOREIGN DIRECT INVESTMENT AS A PERCENTAGE OF GDP IN LATIN AMERICA AND THE CARIBBEAN, 2007-2009 [a]

An analysis of FDI as a percentage of GDP reveals the importance of FDI as a source of financing for the Caribbean countries, whose FDI/GDP ratios set them apart from the other economies. Among the region's main recipients of FDI in volume terms, Chile stands above the rest, with an FDI/GDP ratio of nearly 8%, followed by Peru and Colombia. In contrast, two of the largest recipients in the region, Brazil and Mexico, have FDI/GDP ratios of 1.7% and 1.3%, respectively.



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures as at 28 April 2010 and ECLAC statistics.

[a] The FDI/GDP indicator normalizes FDI figures according to the size of the economy. However, it has several flaws. Given that GDP is calculated at current prices, domestic inflation or exchange-rate fluctuations can have strong effects on the size of the ratio, which makes it hard to use in comparisons between periods or countries.

FDI flows to Mexico shrank for the second consecutive year, causing the country to fall from second to third place among the region's largest investment recipients. The decline was particularly steep in intra-company loans, which plunged by 49% over the previous year and saw their share of total FDI erode from 32% in 2008 to just 31% in 2009. FDI in the form of reinvested earnings and new investments also fell by 45% and 47%, respectivly. At the sector level, manufacturing and services continued to receive the most FDI. The manufacturing industry attracted 42% of total FDI, with the metal products, machinery and equipment industries receiving 60% of all flows to the manufacturing sector.[11] The services sector attracted 49% of the FDI. The main recipients, in terms of their share in the sector total, were the financial services (22%), trade (10%) and

[11] Despite the crisis, the automotive industry benefited from the opening of a Ford diesel motor production plant involving a US$ 838 million investment, a General Motors transmission factory and contact centre, as well as a Daimler AG assembly plant and a steel rolling mill for the Korean corporation Posco. In the non-automotive

other services (16%) segments. Extraction activities saw a sharp contraction of FDI, and this sector's share of total flows dropped from 18% in 2008 to 4% in 2009. Despite the crisis situation in its own economy, the United States remained the principal source of FDI to Mexico in 2009, accounting for more than 51% of the total, followed by the Netherlands with 13%.

Panama was the main recipient of FDI in Central America, attracting US$ 1.773 billion. Although there are no official data on the sectoral distribution of this investment, based on the mergers and acquisitions and new investments announced in 2009, it can be inferred that most FDI went to the services sector, with notable investments in real estate and construction, as well as in telecommunications and tourism.[12]

Costa Rica remained one of the top FDI destinations in Central America, receiving US$ 1.323 billion, or 35% less than in 2008 (see figure I.7). Investments in new projects in the services sector were buoyant, with notable investments being made in contact centres by the United States corporations StarTek and Motif and the French corporation Teleperformance. In addition, Costa Rica continued to attract investments in high-technology manufacturing and medical equipment, and the principal operations of 2009 included the entry of Merrill's Packaging and reinvestments by Boston Scientific, Hologic, Hospira and Allergan, all from the United States.[13]

El Salvador received FDI totaling US$ 431 million in 2009, which reflected a 45% decline over 2008 and accounted for 91% of the investments made in Central America. The magnitude of this decline with respect to the previous two years can be explained by the fact that the country attracted the largest flows of FDI in its history in 2007 and 2008. The main FDI destination industries were: financial services (32%), maquila (24%) and industry (19%). Large investments were made by the United States' Apparel Production Services and Darlintong Fabrics and Colombia's Supertex (PROESA, 2009).

Guatemala received US$ 566 million in FDI, or 25% less than in 2008. Because this was the smallest contraction reported among the Central American economies, the country's share of total investment in the region rose from 10% in 2008 to 11% in 2009. Among the largest investments were those by the Mexican milk processor Lala, the Colombian confectionery company Colombina, and the United States' NCO Group in the call centre industry.[14] A US$ 700 million investment project by the Chinese-United States company Jaguar Energy had to be postponed owing to financing problems stemming from the financial crisis (*CentralAmericaData*, 2009).

In Honduras, investment flows dropped significantly, largely owing to the unstable political situation. FDI in the country fell by US$ 500 million, or by 44% compared with 2008. FDI consisted mostly of reinvested earnings, with little investment in new projects (*El Heraldo*, 2009). Companies in the telecommunications sector, particularly the cellular telephone companies Tigo, Claro and Digicel, were the most active in investment terms.

Nicaragua received US$ 434 million in FDI, or 31% less than in 2008. The most buoyant sectors were: energy and mining (due to a government policy to modify the power generation matrix); telecommunications (due to the expansion of the national telephony network); and tourism. (Central Bank of Nicaragua, 2009a, 2009b and 2009c). Accordingly, the energy sector captured 51% of FDI in Nicaragua, while telecommunications secured 14%.

FDI flows to the Caribbean fell by 42% with respect to 2008 to US$ 5.783 billion (see table I.3). This decline was chiefly due to the reduction in flows to three of the subregion's main recipients: Jamaica, the Dominican Republic and Trinidad and Tobago. In Trinidad and Tobago, which was the largest recipient of FDI in the Caribbean in 2008, FDI flows are estimated to have fallen by about 82%. However, this decline is more the result of a high or unusual level of FDI in 2008 than a slowdown in the flows received in recent years.[15] FDI flows to the Dominican Republic dropped by 27% but did surpass US$ 2 billion, which was a very good performance, especially considering the prevailing economic conditions in 2009. The sectors that were hit hardest in the country were tourism (-21%), trade and industry (-79%) and real estate (-24%). FDI in the mining sector continued to climb, nearly doubling in 2008 thanks to the Barrick Gold project.[16]

Belize attracted US$ 96 million in FDI, a drop of 50% with respect to 2008. Around 90% of flows went to services, mainly real estate and financial intermediation services.

manufacturing industry, there was an investment by the Chinese copper tube manufacturer Golden Dragon (the largest Chinese investment ever in Mexico), the construction of a razor blade factory by Procter & Gamble and the expansion of Cadbury's confectionery factory.

12 Among the large transnational corporations that announced investments in these sectors were Telefónica (Spain), Trump (United States), Hilton Hotels (United States) and Via Tertia (Spain).

13 Information provided by the Costa Rican Investment Promotion Agency (CINDE) (see [online] www.cinde.org/).

14 Information provided by the Guatemalan Investment Promotion Agency (see [online] www.investinguatemala.org/).

15 In 2008 the Royal Bank of Canada acquiried the corporation RBTT Financial Holdings Limited for over US$ 2 billion, which significantly pushed up the FDI total for that year.

16 Of the 10 largest projects in 2009 reported by the Dominican Republic Export and Investment Centre (CEI-RD) (see [online] www.cei-rd.gov.do/), three were investments in the tourism sector and four were in the construction and real estate sector. The rest of the projects were related to the installation of the Swedish store IKEA, the Barrick Gold project and the energy plant of Abu Dhabi's International Petroleum Investment Company (IPIC).

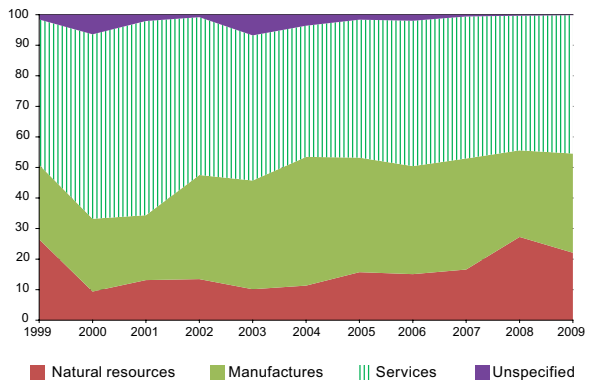
In the other Caribbean countries (except the Bahamas and Suriname), in which the tourism sector is one of the main sources of FDI, flows fell as a result of the effects of the economic crisis on that sector, which triggered a widespread contraction in FDI.

With respect to the sectoral distribution of FDI in Latin America and the Caribbean, the services sector remained the largest recipient. The biggest change was the drop in the primary sector's share of total FDI, which had risen significantly in 2008 on the high commodity prices during the first eight months of the year. As a result of this decline, the manufacturing sector reclaimed its place as the second largest recipient of FDI (see figure I.8).

With respect to the origin of FDI in the region in 2009, the United States continued to be the top investor, followed by Spain and Canada (see figure I.9).

Mergers and acquisitions are also an indicator of global FDI activity. However, the correlation between FDI and mergers and acquisitions in Latin America and the Caribbean is not as strong as in the world as a whole (see box I.3). At any rate, operations were down by 128% with respect to 2008, which demonstrates a slowdown in the activity of transnational corporations in the region. For a list of the largest transactions in Latin America and the Caribbean in 2009 by sector, see section 2.

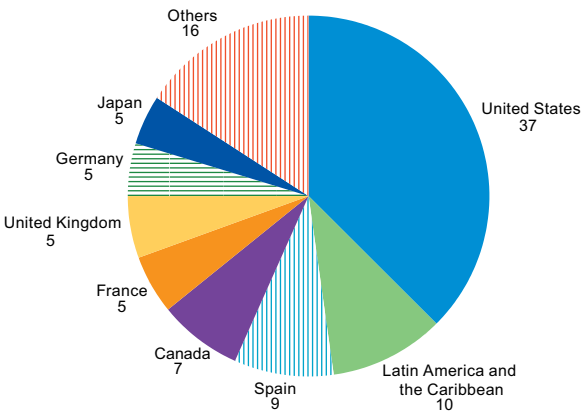
Figure I.8
LATIN AMERICA AND THE CARIBBEAN: SECTORAL DISTRIBUTION OF FOREIGN DIRECT INVESTMENT, 1999-2009 [a]
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures as at 24 May 2010.

[a] For the list of countries on which information is provided in this figure, see annex I.A-2. The data on the Plurinational State of Bolivia represent net flows since there is no information on which sectors were subject to the divestments recorded by the central bank.

Figure I.9
LATIN AMERICA AND THE CARIBBEAN: ORIGIN OF FOREIGN DIRECT INVESTMENT, 1998-2008 [a]
(Percentages)

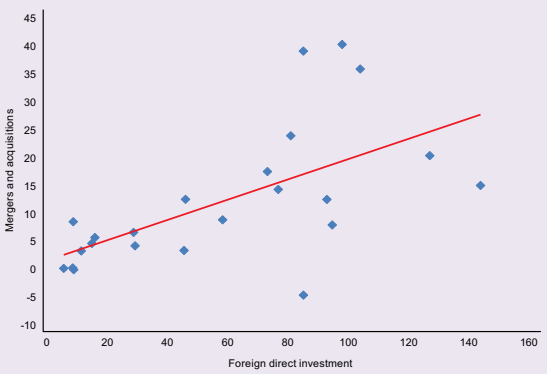


Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures as at 28 April 2010 and ECLAC statistics.

[a] For the list of countries on which information is provided in this figure, see annex I.A-2.

Box I.3
FOREIGN DIRECT INVESTMENT AND MERGERS AND ACQUISITIONS IN LATIN AMERICA AND THE CARIBBEAN

The relationship between FDI flows and the volume of mergers and acquisitions in is not as close Latin America and the Caribbean as it is at the global level (see box I.1). The correlation ratio during the period 1987-2009 was 0.61 in the region versus 0.94 worldwide. This suggests that, in Latin America and the Caribbean, mergers and acquisitions represent a smaller proportion of FDI flows than they do in the world as a whole. It could therefore be argued that new investments or reinvestments make up a larger share of FDI flows in Latin America and the Caribbean than they do of FDI flows worldwide.



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures; United Nations Conference on Trade and Development (UNCTAD), *World Investment Report, 2009. Transnational Corporations, Agricultural Production and Development*, Geneva, 2009. United Nations publication, Sales No. E.09.II.D.15; UNCTAD, "Global and regional FDI trends in 2009", *Global Investment Trends Monitor*, No. 2, Geneva [online] www.unctad.org/en/docs/webdiaeia20101_en.pdf, 2010.

2. Transnational corporations and foreign direct investment in a crisis year

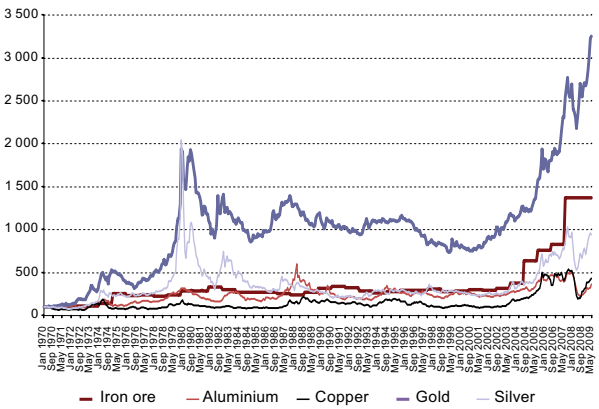
The year 2009 was a difficult period for the main FDI stakeholders: transnational corporations. Many of these firms saw their incentives eroded and their capacity to invest diminished by the economic crisis. Incentives for companies to direct their market-seeking FDI towards products or services geared to domestic or regional markets were weakened by the contraction or slowdown in the economies of the region. Shrinking markets in the developed countries deterred companies from creating or expanding their export platforms in the region (efficiency-seeking FDI). The instability of commodity prices undermined the profitability of some investment projects and led to their postponement. Nevertheless, in general, the contraction of the markets resulted in smaller profits for many companies, which significantly diminished their capacity to finance new projects or take over other businesses.

All of these factors resulted in fewer investments by transnational corporations in the region, with a resulting reduction in mergers and acquisitions, in the number and value of projects being announced and in the rate of FDI flows in 2009. Nevertheless, notwithstanding the crisis, some companies had the capacity to pursue their investments amid the economic turmoil and to expand their operations through new projects or mergers and acquisitions. This section examines the main FDI projects implemented or announced by transnational corporations in 2009 by target sector: natural resources, manufacturing and services.[17] This division is important inasmuch as the potential benefits or adverse effects of FDI for the development of the destination country and, consequently, the relevant policies vary depending on the target sector (ECLAC, 2005). The analysis presented also reveals the mode of entry into the market: mergers and acquisitions or greenfield investments, since while the former may involve the transfer of technology and knowledge, the latter also imply additions to gross fixed capital formation in the destination country.[18] Lastly, the main stakeholders are identified by company and home country, together with the main sectors targeted by FDI in Latin America and the Caribbean.

(a) Transnationals in the natural resources sector

The contraction in demand for, and the slump in the prices of, most commodities in the second half of 2008 (see figure I.10) account for the fall in investments in the natural resources sector, although in the metals segment, the reaction of the transnational corporations varied according to the type of metal involved. In addition, the lengthy maturation period required by investment projects in this sector meant that some firms with sufficient financial capacity kept their sights on the long-term and the eventual upturn in prices and continued to invest.

Figure I.10
VARIATION IN THE PRICE INDEX OF SELECTED METALS AND MINERALS, 1970-2009 [a]
(Price index: base 1970=100)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of United Nations Conference on Trade and Development (UNCTAD), "Commodity Price Statistics" [online database] http://www.unctad.org/templates/Page.asp?intItemID=1889&lang=1.

[a] Indices based on the price of iron ore Brazil-Europe, 64.5% of Fe content; high-grade aluminium, London Metal Exchange (LME); copper, grade A, electrolytic bars of wire/cathodes, LME; gold, 99.5% pure; silver, 99.9%, Handy and Harman.

The decline in mergers and acquisitions in the primary sector points to a slowdown in the activity of transnational corporations in that sector. While mergers and acquisitions concluded in 2008 were estimated at US$ 15.2 billion, the figure for 2009 stood at just US$ 4.9 billion.[19] The most significant operations in 2009 (see table I.4) include the acquisition of Prodeco (in Colombia), which belonged to the Swiss company Glencore, through its compatriot Xstrata; of the

[17] The classification was made on the basis of the International Standard Industrial Classification of All Economic Activities (ISIC).

[18] In developing countries, transfer of ownership from a national company to one with foreign capital may, even in the absence of technology transfer, result in the transfer of knowledge and administrative practices that enhance the company's productivity (Burstein and Monge-Naranjo, 2009).

[19] Estimate based on information from the database of Thompson Reuters for transactions of known value.

Peruvian oil company Petro-Tech by the State-owned companies Korea National Oil Corporation (KNOC) and the Colombian company Ecopetrol; and shares in Río Tinto's coal-mining operation in Argentina by the Brazilian entity Vale. These three transactions account for approximately 75% of the reported amounts. The operations concluded and announced in 2009 include investments in petroleum, iron ore and gold.

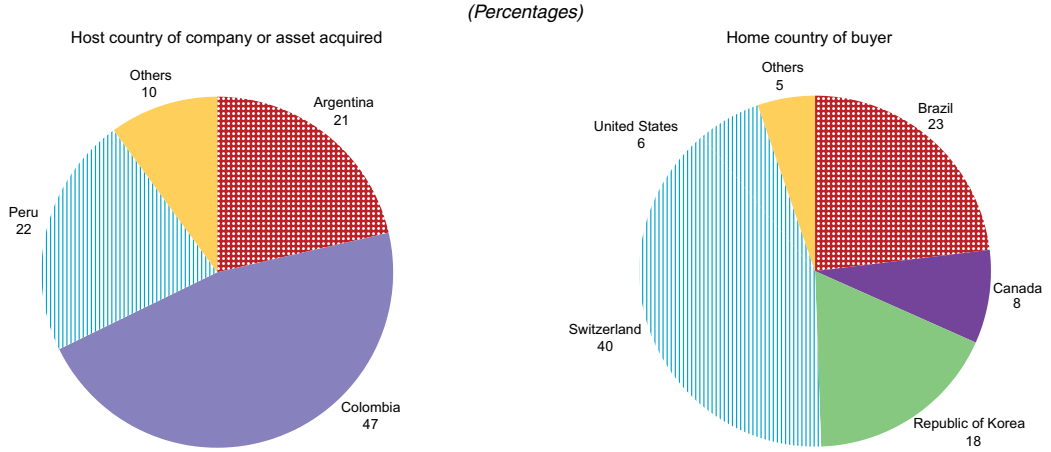
As far as reported operations relating to the primary sector are concerned, the main buyers were companies from Switzerland, Brazil, the Republic of Korea, Canada and the United States, which together accounted for approximately 95% of the total. In terms of the locations of the acquired companies, the main host countries were Colombia, Peru and Argentina, which accounted for 90% of the transaction totals (see figure I.11).

Table I.4
LATIN AMERICA AND THE CARIBBEAN: CROSS-BORDER ACQUISITIONS OF ASSETS OR COMPANIES FOR OVER US$ 100 MILLION IN THE PRIMARY SECTOR, 2009
(Millions of dollars)

Company or asset acquired	Sector	Country	Buyer	Country	Value
Operations completed in 2009					
Glencore - Prodeco Bus	Bituminous coal and lignite	Colombia	Xstrata	Switzerland	1 962
Petro-Tech Peruana SA	Crude oil and natural gas	Peru	Korea National Oil Corporation & Ecopetrol	Republic of Korea - Colombia	892
Río Tinto-potash assets	Potash and caustic soda	Argentina	Vale	Brazil	850
El Hatillo coal mine, Cerro Largo coal deposit and assets of the consortium Fenoco	Bituminous coal and lignite	Colombia	Vale	Brazil	305
El Tejar Ltd.	Livestock	Argentina	Capital International	United States	150
Teck Resources- Morelos project	Gold mines	Mexico	Gleichen Resources	Canada	150
Pampa de Pongo	Iron mines	Peru	Zibo Hongda Mining	China	100
Operations announced in 2009					
MMX Mineração	Iron mines	Brazil	Wuhan Iron & Steel	China	400
Assets of gas operations of Talisman Energy Inc.	Crude oil and natural gas	Trinidad and Tobago	China Petrochemical Corporation and China National Oil Corporation	China	315
Tartagal and Morillo	Crude oil and natural gas	Argentina	New Times Group Holdings	Hong Kong (Special Administrative Region of China)	270
Yamana Gold Inc. (two gold mines)	Gold mines	Brazil	Aura Minerals	Canada	240
Barúa-Motatán	Crude oil and natural gas	Venezuela (Bolivarian Republic of)	Repsol YPF S.A.	Spain	203
Canadian Superior Energy Inc.-B	Crude oil and natural gas	Trinidad and Tobago	BG International	United Kingdom	142
LS-Nikko Copper Inc.	Copper mines	Panama	Korea Resources Corporation y LS-Nikko Copper Inc.	Republic of Korea	125

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of figures from Thomson Reuters.

Figure I.11
SHARE IN TOTAL ANNOUNCED MERGERS AND ACQUISITIONS IN THE PRIMARY SECTOR, 2009 [a]
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of figures from Thomson Reuters.
[a] The share of each country is calculated according to the total value of known mergers.

Greenfield primary-sector investments announced in 2009 totalled US$ 11.2 billion and were concentrated basically in extractive, mining and hydrocarbon operations. The main operations announced were those of the United Kingdom mining companies Anglo American and Antofagasta and the French company Perenco (see table I.5).

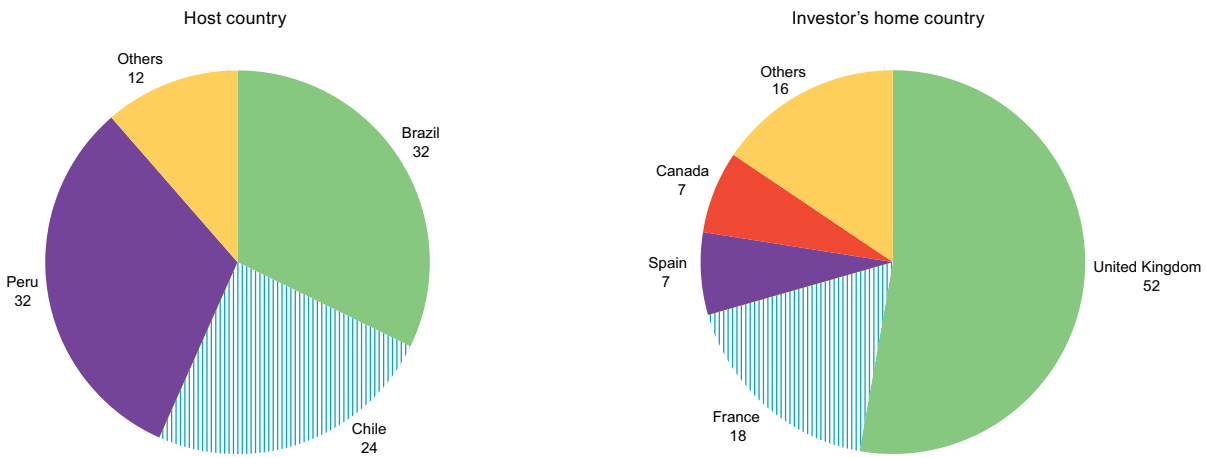
The main recipients of these investments were Brazil, Chile and Peru, which accounted for 86% of total announcements and the main investors were the United Kingdom, France, Spain and Canada, which accounted for 85% of these amounts (see figure I.12).

Table I.5
LATIN AMERICA AND THE CARIBBEAN: CROSS-BORDER GREENFIELD INVESTMENTS IN THE PRIMARY SECTOR FOR OVER US$ 100 MILLION, 2009
(Millions of dollars)

Home country	Company	Host country	Sector	Investment
United Kingdom	Anglo American	Brazil	Mining	3 627
United Kingdom	Antofagasta	Chile	Mining	2 300
France	Perenco	Peru	Oil and natural gas	2 000
Spain	Repsol YPF	Bolivia (Plurinational State of)	Oil and natural gas	600
Mexico	Grupo México	Peru	Mining	600
India	Reliance Industries	Peru	Oil and natural gas	500
Switzerland	Xstrata PLC	Chile	Mining	293
Spain	Inveravante	Colombia	Oil and natural gas	200
Japan	Nittetsu Mining	Chile	Mining	156
Canada	Genco Resources	Mexico	Mining	149
Canada	Sulliden Exploration	Peru	Mining	120
Australia	Troy Resources	Argentina	Mining	100
Australia	Orocobre	Argentina	Mining	100

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of "fDi Markets", *Financial Times*.

Figure I.12
SHARE IN TOTAL GREENFIELD INVESTMENTS ANNOUNCED IN THE PRIMARY SECTOR, 2009
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of "fDi Markets", *Financial Times*.

(b) Transnationals in the manufacturing sector

Since 2008, the global economic and financial crisis has had a significant impact on the activity of transnational corporations in the manufacturing sector in the region. An important indicator is the amount of mergers and acquisitions in Latin America and the Caribbean, which fell from US$ 15.9 billion in 2007 to US$ 6.3 billion in 2008 and US$ 8.6 billion in 2009. Although the transaction amounts were higher in 2009 than in 2008, they were 46% lower than in 2007.

The main operations in 2009 were geared to manufacturing or the processing of natural resources: the take-over of the pulp and paper factory from the Finnish

company Metsa-Botnia in Uruguay by its compatriot UPM-Kymmene, the acquisition of the sugar-cane processor Santelisa Vale by the French company Louis Dreyfus and the purchase of assets in the French cement company Lafarge in Peru by the Peruvian group Grupo Brescia, among others. Table I.6 lists the main mergers and acquisitions in the sector.

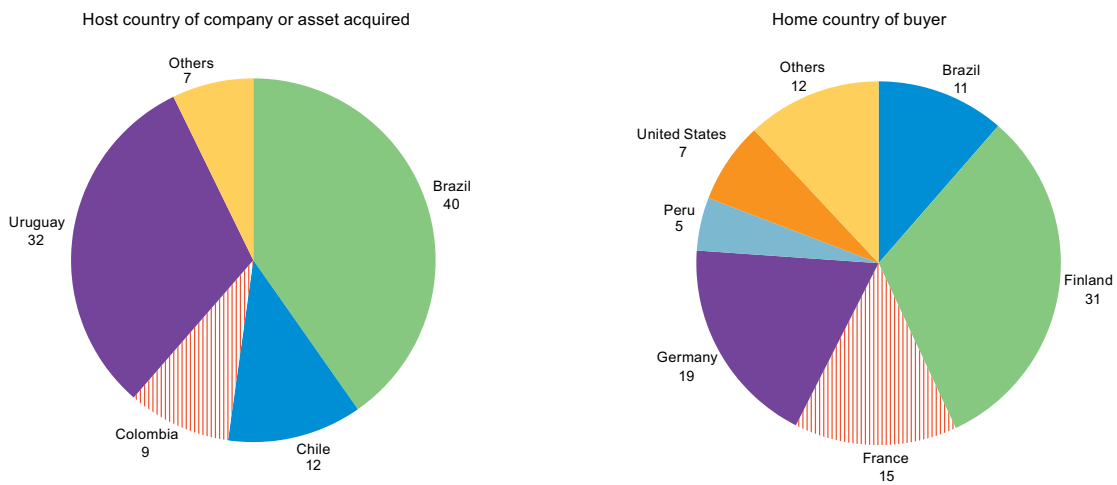
The completed operations were concentrated primarily in Brazil, Uruguay, Chile and Colombia, and the major investors were from Finland, Germany and France (see figure I.13).

Table I.6
LATIN AMERICA AND THE CARIBBEAN: CROSS-BORDER ACQUISITIONS OF ASSETS OR COMPANIES FOR OVER US$ 100 MILLION IN THE MANUFACTURING SECTOR, 2009
(Millions of dollars)

Companyacquired	Sector	Country	Buyer	Country	Value
Operations completed in 2009					
Metsa-Botnia- Uruguay	Pulp and paper plant	Uruguay	UPM-Kymmene	Finland	2 404
Volkswagen Caminhões e Ônibus	Body work of trucks and buses	Brazil	MAN SE	Germany	1 612
Santelisa Vale Bioenergia	Sugar cane, except refinery	Brazil	Louis Dreyfus SAS	France	1 270
Lafarge Chile S.A.	Premixed concrete	Chile	Inversiones Brescia	Peru	404
Esso Chile Petrolera	Oil refineries	Chile	Petrobras	Brazil	400
Cementos Argos SA-Coal Mine	Hydraulic cement	Colombia	Vale	Brazil	373
Grupo Empresarial ENCE	Pulp and paper plant	Uruguay	Stora-Enso, Arauco	Finland/Chile	344
Tafisa Brasil SA	Reconstituted wood products	Brazil	Arauco	Chile	226
Cementos Avellaneda SA	Hydraulic cement	Argentina	Votorantim	Brazil	202
Globe Metais Industria	Non-ferrous primary metals, except copper and aluminium	Brazil	Dow Corning	United States	175
CAP SA	Steel sheeting	Chile	Mitsubishi	Japan	171
Holcim -Panama & Caribbean	Hydraulic cement	Panama	Cementos Argos	Colombia	157
Hiter Industria e Comercio	Industrial valves	Brazil	Tyco Flow Control	United States	105
Operations announced in 2009					
Aracruz Cellulose SA-Guaiba	Cellulose plant	Brazil	CMPC	Chile	1 429
Moema Group Mills, Brazil	Sugar cane, except refinery	Brazil	Bunge	United States	1 427
Usina Moema Açucar e Alcool	Sugar cane, except refinery	Brazil	Bunge	United States	932
Medley Pharmaceuticals	Pharmaceutical preparations	Brazil	Sanofi-Aventis	France	689
Productora Tabacalera	Cigarettes	Colombia	Philip Morris	United States	452
Vale do Ivai SA	Sugar cane, except refinery	Brazil	Shree Renuka Sugars	India	239
Cia Melhoramentos de São Paulo	Sanitary paper products	Brazil	CMPC	Chile	202

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of figures from Thomson Reuters.

Figure I.13
SHARE IN TOTAL ANNOUNCED MERGERS AND ACQUISITIONS IN THE MANUFACTURING SECTOR, 2009 [a]
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of figures from Thomson Reuters.

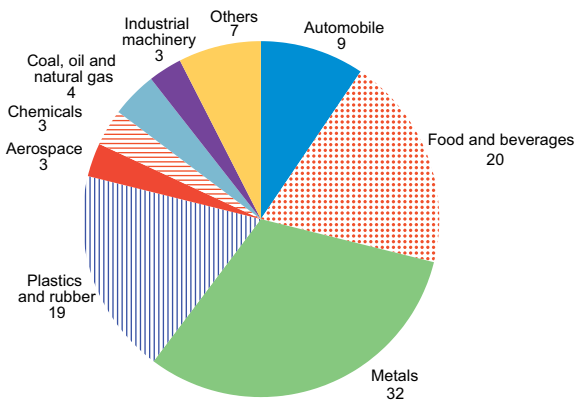
[a] The share of each country is calculated according to the total known value of mergers.

The new projects announced in the manufacturing sector reached a cumulative amount of US$ 32.2 billion and were geared towards the manufacture of metal products (31%), plastic and rubber products and food and beverages (19% each) and products for the automobile industry (10%) (see figure I.14).

The principal investments announced in 2009 (see table I.7) were those of: Coca-Cola in Brazil and Mexico; of ArcelorMittal and Wuhan Iron and Steel Co., Ltd. in metallurgical operations in Brazil; of the Brazilian petrochemical company Braskem in Mexico and Peru; and of the oil company China National Petroleum Corporation (CNPC) in Costa Rica.

The main destinations for the new investment announced were Brazil (44%), Mexico (35%) and Peru (12%); while their origins were mainly the United States (28%), China (18%), Brazil (17%) and Luxembourg (16%) (see figure I.15).

Figure I.14
PRINCIPAL TARGET INDUSTRIES BY ANNOUNCED VOLUME OF NEW INVESTMENTS, 2009
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of "fDi Markets", *Financial Times*.

Table I.7
LATIN AMERICA AND THE CARIBBEAN: ANNOUNCEMENTS OF NEW CROSS-BORDER INVESTMENTS FOR AMOUNTS IN EXCESS OF US$ 500 MILLION IN THE MANUFACTURING SECTOR, 2009
(Millions of dollars)

Home country	Company	Host country	Sector	Investment
United States	Coca-Cola	Mexico	Food and beverages	5 000
Luxembourg	ArcelorMittal	Brazil	Metals	5 000
China	Wuhan Iron and Steel Co., Ltd. (Wisco)	Brazil	Metals	4 000
Brazil	Braskem	Peru	Plastics	2 500
Brazil	Braskem	Mexico	Plastics	2 500
United States	General Motors (GM)	Brazil	Automobile	1 000
China	China National Petroleum Corporation (CNPC)	Costa Rica	Coal, oil and natural gas	1 000
United States	Coca-Cola	Brazil	Food and beverages	764
China	SAIC Chery Automobile	Brazil	Automobile	700
Chile	Sigdo Koppers Group	Peru	Chemicals	650
Netherlands	European Aeronautic Defence and Space Company (EADS)	Mexico	Aerospace	550
France	Renault	Brazil	Automobile	550
Brazil	Votorantim	Peru	Metals	500

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of "fDi Markets", *Financial Times*.

(c) Transnationals in the services sector

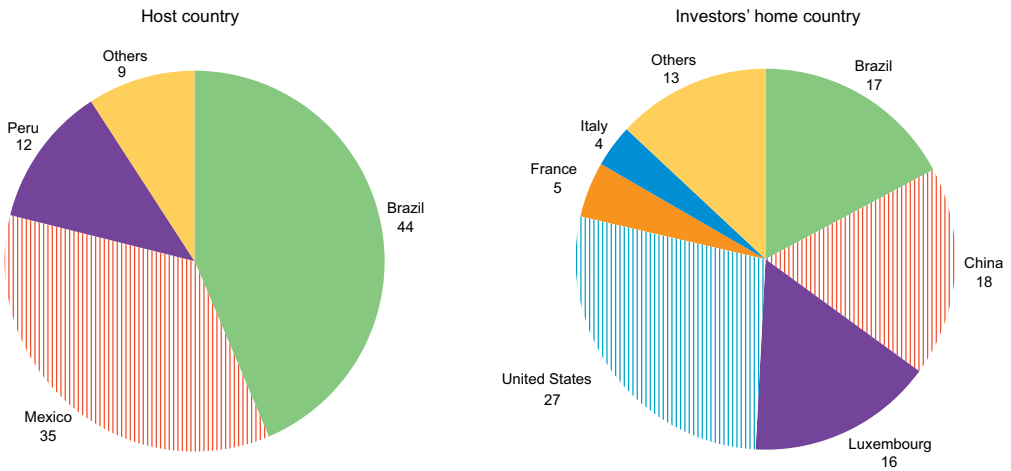
The services sector is the principal recipient of FDI flows into Latin America and the Caribbean (see section C.1) and, thus, the sector which has attracted the most transnational activity, at least during the past decade. It should be noted that much of the FDI that reaches this sector is geared towards products or services for the local or regional market (market-seeking FDI), which makes it highly sensitive to the economic performance of the destination country or region.

The sharp slowdown in economic growth in the region (from 4.1% in 2008 to -1.9% in 2009), together with the credit crunch, deterred transnational corporations from investing in the sector.[20] This is reflected in less activity in cross-border mergers and acquisitions in services in the region. Operations concluded in 2008 reached US$ 19.7 billion, but fell by 50% to US$ 9.9 billion in 2009.

Those companies which did expand through mergers and acquisitions in 2009 include the French company Vivendi, which purchased the Brazilian GVT, and Wal-Mart, which took over the Chilean retailer D&S (see table I.8). These two operations account for approximately 40% of total investments in the services sector in 2009.

[20] For data on regional and national GDP growth rates, see ECLAC, 2010a and 2010b.

Figure I.15
SHARE IN TOTAL NEW INVESTMENTS ANNOUNCED FOR THE MANUFACTURING SECTOR, 2009
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of "fDi Markets, *Financial Times*.

Table I.8
LATIN AMERICA AND THE CARIBBEAN: THE 10 LARGEST CROSS-BORDER ACQUISITIONS OF FIRMS OR ASSETS IN THE SERVICES SECTOR, 2009
(Millions of dollars)

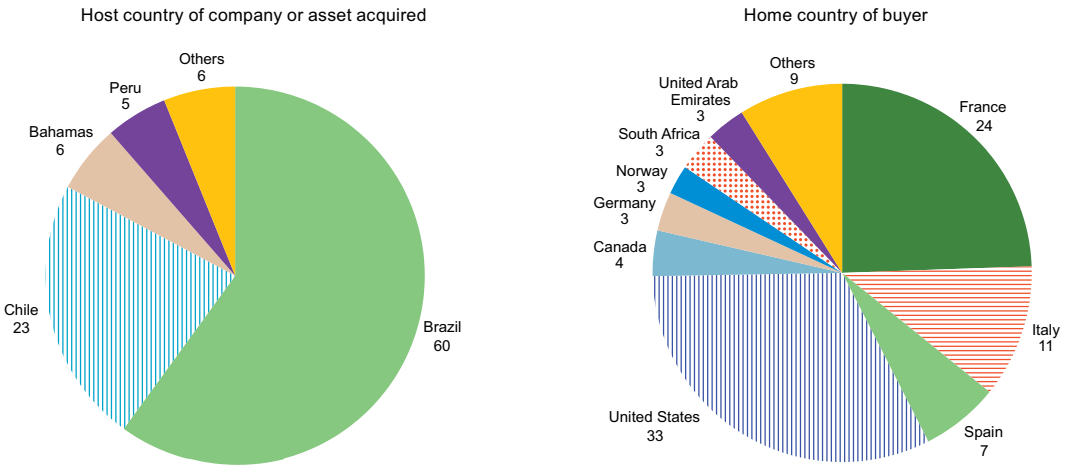
Company acquired	Sector	Country	Buyer	Country	Value
Operations completed in 2009					
GVT (57.5%)	Telecommunications	Brazil	Vivendi	France	2 403
Distribución y Servicio S.A.	Commerce	Chile	Wal-Mart	United States	1 983
CVC Brasil Operadora e Agencia	Tourist operators	Brazil	Carlyle Group	United States	401
Edegel	Electricity	Peru	Endesa	Chile	380
Holdco Participações	Telecommunications	Brazil	TIM	Italy	377
Company SA	Real estate	Brazil	Brascan Residential Properties	Canada	372
BuscaPe.com	Business services	Brazil	Naspers	South Africa	342
Grand Bahama Power	Electricity	Bahamas	TAQA	United Arab Emirates	320
Ayrton Senna & Carvalho Pinto	Highways	Brazil	Ecopistas- Impregilo	Italy	304
Real Tokio Marine Vida	Insurance	Brazil	ABN-AMRO-Santander	Spain	284
Operations announced in 2009					
GVT	Telecommunications	Brazil	Vivendi SA	France	1 777
Gas Natural-México	Natural gas	Mexico	MT Falcon	Japan	1 465
Wal-Mart Centroamérica (49%)	Commerce	Guatemala	Wal-Mart de México	United States	1 347
Telemig Celular Participações	Telecommunications	Brazil	Vivo Participações	Portugal	455
Sul Americana de Metais	Investment company	Brazil	Honbridge Holdings	Hong Kong (Special Administrative Region of China)	430
Cintra Concesiones	Construction	Chile	Interconexión Eléctrica	Colombia	300
Kannenberg & Cia	Commerce	Brazil	Japan Tobacco Inc	Japan	230
Bluewater	Investment company	Barbados	Shimmer Win	China	188
Telemig Celular S.A.	Telecommunications	Brazil	Telemig Celular Participacões	Portugal	182
Codelco-Electric Generation As	Electricity	Chile	GDF Suez S-Electric Generation	France	172

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of figures from Thomson Reuters.

Note: The numbers in parentheses refer to the percentage of shares acquired.

Brazil, the largest market in the region, was the main destination for mergers and acquisitions, accounting for 60% of the total value of operations in the services sector in 2009, followed by Chile with 23%. In terms of the nationality of the buyers, the European firms account for approximately 50% of the transaction amounts: France has a 25% share, Italy an 11% share and Spain a 7% share. The United States continues to be the leading buyer with its corporations accounting for 32% of the volume of operations (see figure I.16).

Figure I.16
SHARE IN TOTAL VALUE OF MERGERS AND ACQUISITION ANNOUNCED AND COMPLETED IN THE SERVICES SECTOR, 2009 [a]
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of figures from Thomson Reuters.

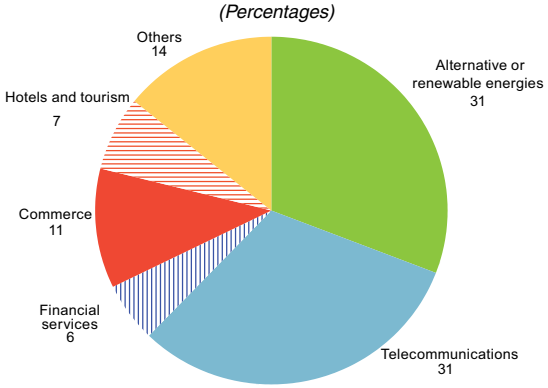
[a] The share of each country is calculated according to the total of mergers of a known amount.

Greenfield investments announced in 2009 amounted to US$ 19.7 billion and the principal target sectors were telecommunications (31%), alternative and renewable energies (31%) and commerce (11%) (see figure I.17).

The main investments announced in the services sector in 2009 included that of Telecom Italia in Brazil and the opening of a centre for innovation and strategic development in Mexico by the German firm Rhode & Schwarz. Other noteworthy investments were three wind farm projects: the Grupo Guascor farm in Argentina, the strategic alliance for Mainstream Renewable Power with Andes Energy in Chile and that of the Spanish company Enhol, also in Chile. In commerce, two investments should be mentioned: the expansion of Wal-Mart's operations in Brazil and the investment by the Spanish bank BBVA in Mexico.

On the basis of the amounts announced, the main recipient countries of the new investments in the services sector were Brazil (31%), Mexico (21%), Argentina (17%) and Chile (17%). The leading investor was Spain with 35%, followed by Italy and the United States with 22% and 17%, respectively (see figure I.18).

Figure I.17
SHARE IN TOTAL NEW INVESTMENTS ANNOUNCED IN THE SERVICES SECTOR BY SEGMENT, 2009
(Percentages)



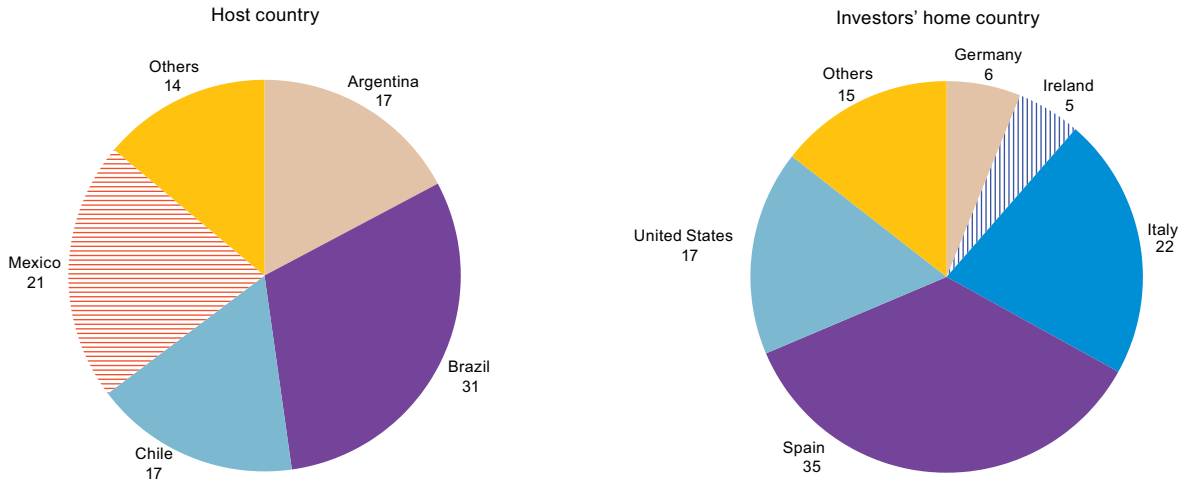
Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of "fDi Markets", *Financial Times*.

Table I.9
LATIN AMERICA AND THE CARIBBEAN: ANNOUNCEMENTS OF NEW CROSS-BORDER INVESTMENTS IN THE SERVICES SECTOR FOR AMOUNTS IN EXCESS OF US$ 500 MILLION, 2009
(Millions of dollars)

Home country	Company	Host country	Sector	Investment
Italy	Telecom Italia	Brazil	Telecommunications	4 260
Spain	Grupo Guascor	Argentina	Alternative or renewable energies	2 400
United States	Wal-Mart	Brazil	Commerce	1 200
Ireland	Mainstream Renewable Power	Chile	Alternative or renewable energies	1 000
Spain	Enhol	Chile	Alternative or renewable energies	1 000
Spain	Banco Bilbao Vizcaya Argentaria (BBVA)	Mexico	Financial services	908
Germany	Rohde & Schwarz	Mexico	Telecommunications	800
United Kingdom	InterContinental Hotels Group (IHG)	Mexico	Hotels and tourism	600
Spain	Acciona	Mexico	Alternative or renewable energies	550
Spain	Telefónica	Argentina	Telecommunications	550

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of "fDi Markets", *Financial Times*.

Figure I.18
SHARE IN TOTAL NEW INVESTMENTS ANNOUNCED FOR THE SERVICES SECTOR, 2009
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of "fDi Markets", *Financial Times*.

3. Technology intensity of transnational activity in the region

FDI is one of the main channels for the dissemination of technology and knowledge throughout the world (Keller, 2004). Transnational corporations tend to have a higher technological level and greater know-how than developing countries; their presence can therefore give rise to positive externalities for the rest of domestic industry. These spillovers, to the extent that other economic agents are capable of taking advantage of them, could enhance productivity at the corporate level and, if a certain relative scale is attained, the host country's overall productivity as well. Such externalities operate through four channels, which can be interrelated: vertical linkages with suppliers or purchasers in the host country, horizontal linkages with competing or complementary firms in the same industry, migration of skilled labour and internationalization of R&D.[21] Nevertheless ensuring that these benefits of FDI materialize is not easy: activities designed to attract FDI must be complemented by active policies, especially in the areas of innovation and technological development. The experiences of different economies show better outcomes when such efforts are integrated with development strategies that give due priority to local capacity-building (Cimoli, Dosi and Stiglitz, 2009).

However, although economic theory extols the benefits of FDI, the empirical evidence does not show any consistent relationship between the presence of transnational corporations and positive externalities in productivity, especially in the case of horizontal externalities, that is within the same industry.[22] In the case of vertical linkages (with suppliers or clients), the empirical evidence seems more in agreement with the idea that the effects on productivity are observed in the industries linked to the target sector (Javorcik, 2004; Alfaro and others, 2004; Kugler, 2006). In short, there is no single response and the impact of transnational corporations on productivity varies according to the country, the context and the sector (Moran, Graham and Blomström, 2005).

Such positive effects as do spill over onto the productivity of the local industry may, conceivably, begreater in high-tech industries, as suggested in a recent study on industry in the United States (Keller and Yeaple, 2009). This section considers the technology intensity of FDI projects announced in Latin America and the

[21] For a review of these mechanisms and of the potential benefits and adverse effects of FDI, see OECD, 2002.

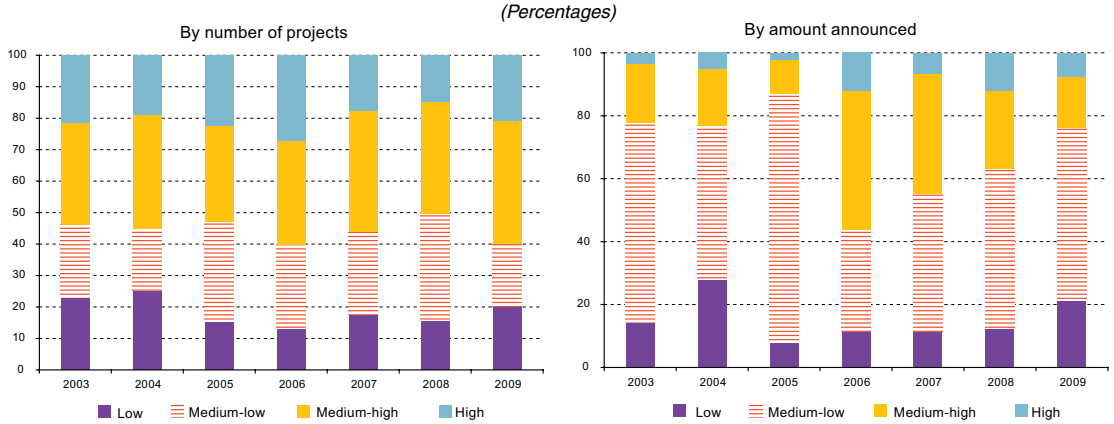
[22] In the case of horizontal linkages, some studies do not find any evidence that FDI enhances the productivity of local businesses in developing countries (Aitken and Harrison, 1999), although others observe such benefits in developed countries, such as the United States (Keller and Yeaple, 2009) and the United Kingdom (Haskel, Pereira and Slaughter, 2007).

Caribbean in the period 2003-2009, but especially in 2009.[23] The most active manufacturing sectors in terms of FDI are identified by technology intensity as well as the main destination countries and the nationality of the investing companies. For the purposes of this analysis, manufacturing industries have been grouped according to whether their technology use is high, medium-high, medium-low or low.[24] A list of the industries included in each classification is given in table I.A-1.

On the basis of information relating to new investment projects in the period 2003-2009 (see figure I.19), the amounts announced in the manufacturing industry in Latin America and the Caribbean have been concentrated in the medium-low-tech industries, which have accounted for 53% on average of the total amounts invested during the period. These industries attained their maximum share in 2005 (78%) and the minimum in 2006 (32%). It is important to note that they are also resource-intensive (for example, based on petroleum or metal products).

The medium-high-tech industries are the second category by order of magnitude with an average share of 24% of the total of investment volumes announced in the period under consideration. This category includes investments intended for the automobile industry and the manufacture of machinery and equipment, which have been sizeable, especially in Brazil and Mexico.

Figure I.19
LATIN AMERICA AND THE CARIBBEAN: DISTRIBUTION OF NEW FOREIGN DIRECT INVESTMENT PROJECTS ANNOUNCED BY TECHNOLOGY INTENSITY, 2003-2009
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of "fDi Markets", *Financial Times*.

The high- and low-tech categories have accounted for a small share of the amounts of new FDI announced. Low-tech segments have had, on average, a 15% share in the amounts of investment and include for the most part labour-intensive activities (the textile and leather industry, wood, cork and paper manufactures) and resource-intensive manufacturing activities (the food and beverage industry and tobacco and paper production). These have traditionally been associated with the use of less-skilled labour and standard technologies.

Lastly, the group of high-tech industries is the one that attracts the smallest amounts of investment (on average 7% of the total in the period under consideration). The activities in question are associated with heavy spending on R&D and thus make a significant contribution to technical progress. These industries call for workers with a certain degree of specialization, and the ability to attract this type of investment depends on the availability of such workers.

The economic crisis adversely affected the amounts of FDI announcements for the manufacturing sector in 2009, but did not significantly alter the technological composition of investment projects in that sector. The most obvious change in 2009 was that the share of the low-technology activities increased by an average of between 15% and 21% in the FDI projects announced in manufacturing to the tune of US$ 32.2 billion. This increase occurred at the expense of the medium-high-tech industries, which received only 16% of investments, down from 24% (see figure I.20).

With respect to the geographical destination of the manufacturing projects announced in 2009, Mexico stands out as the leading destination in terms of amounts announced for high-tech industries (72%) and low-tech industries (82%), while Brazil is the principal destination for medium-low- (55%) and medium-high-tech (52%) industries (see figure I.21). It should be noted that Costa

[23] This analysis considers only specific FDI investments in greenfield projects for amounts announced during the period 2003-2009, as indicated in the database "fDI markets" (see [online] http://www.fdimarkets.com/).

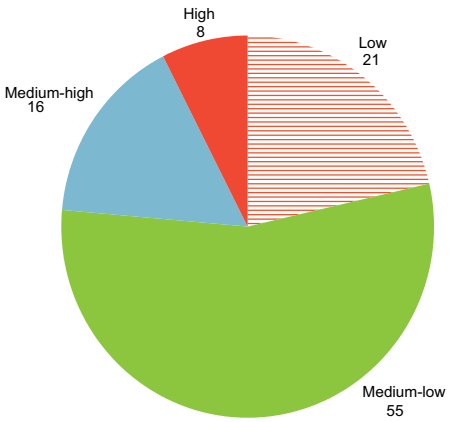
[24] This classification is based on expenditure on R&D by industry as a percentage of the value added or as a proportion of production for 12 OECD member countries for the period 1991-1999 (OECD, 2009a).

Rica, notwithstanding the small size of its economy compared with other countries in the region, ranks third as a destination for investments in high-tech projects in Latin America and the Caribbean.

The United States remains the main country of origin of the FDI projects announced in 2009, except for medium-low-tech industries, for which Brazil, Luxembourg and China are the main investors (see figure I.22).

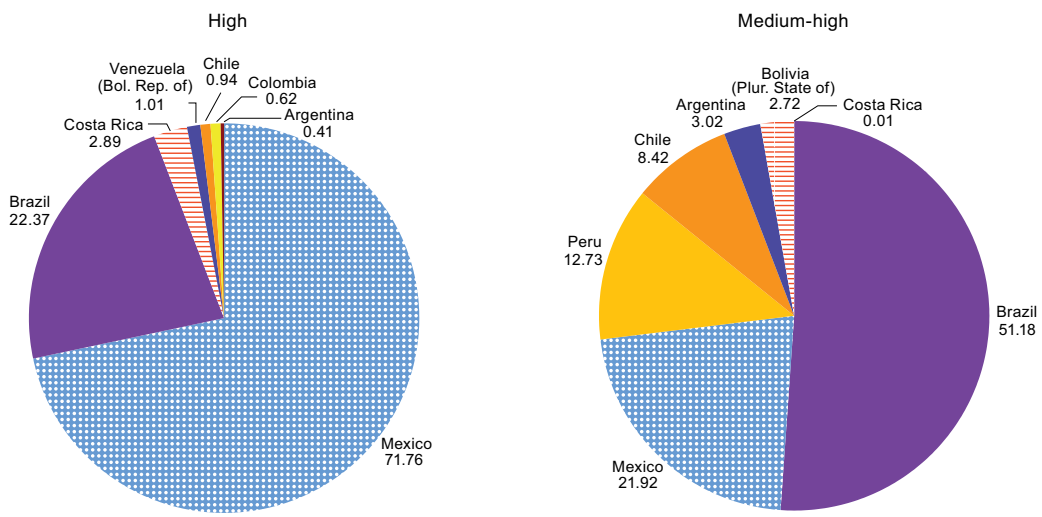
In short, FDI projects announced for manufacturing in the past seven years have been concentrated in the medium-low- and medium-high-tech sectors; the high-tech projects came last. As was to be expected, the larger economies in the region (Brazil, Mexico and Argentina) received the largest share of the investments announced. Although at first glance, Colombia is notable by its absence, this is because almost 50% of the FDI it receives goes to the natural resources sectors (see section C.1). The United States continues to be the leading country of origin for FDI, except in the medium-low-tech sectors. As for high-tech manufacturing, this remains a sector towards which Latin America and the Caribbean should still make a greater effort to attract FDI, since projects in this segment represent a small fraction of the total; moreover, a substantial proportion of those that actually materialize target activities with little value added.[25] While FDI in high-tech manufacturing has a large potential as a source of knowledge transfer, experience suggests that this kind of investment is not sufficient in itself; indeed, it must be part of a comprehensive development strategy for the manufacturing sector, if the flows received are to contribute to technology transfer and to building local absorptive capacities, which in turn can attract more FDI to these industries.

Figure I.20
LATIN AMERICA AND THE CARIBBEAN: DISTRIBUTION OF THE AMOUNTS OF NEW FOREIGN DIRECT INVESTMENT PROJECTS ANNOUNCED BY TECHNOLOGY INTENSITY, 2009
(Percentages)



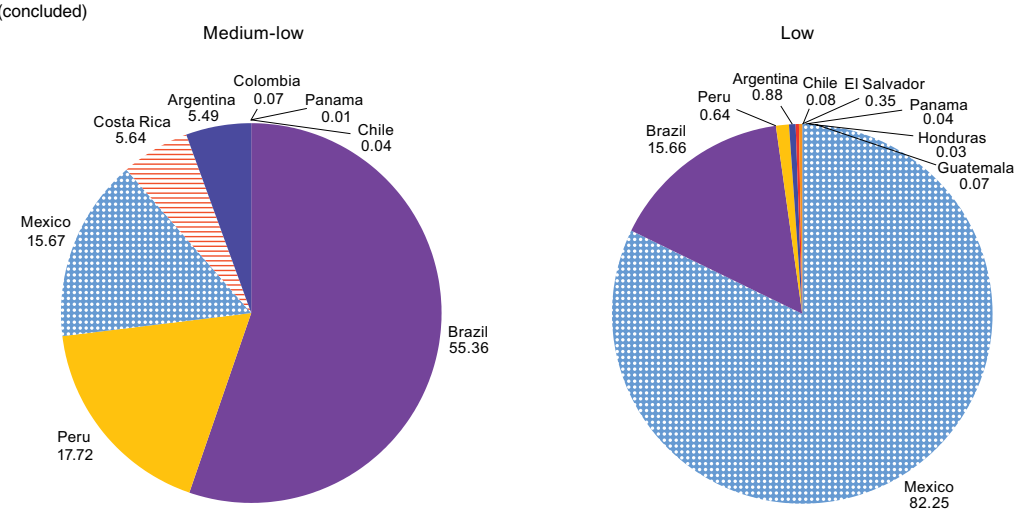
Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of "fDi Markets", *Financial Times*.

Figure I.21
LATIN AMERICA AND THE CARIBBEAN: PRINCIPAL DESTINATION COUNTRIES FOR FOREIGN DIRECT INVESTMENT IN MANUFACTURING BY TECHNOLOGY INTENSITY, 2009
(Percentages)



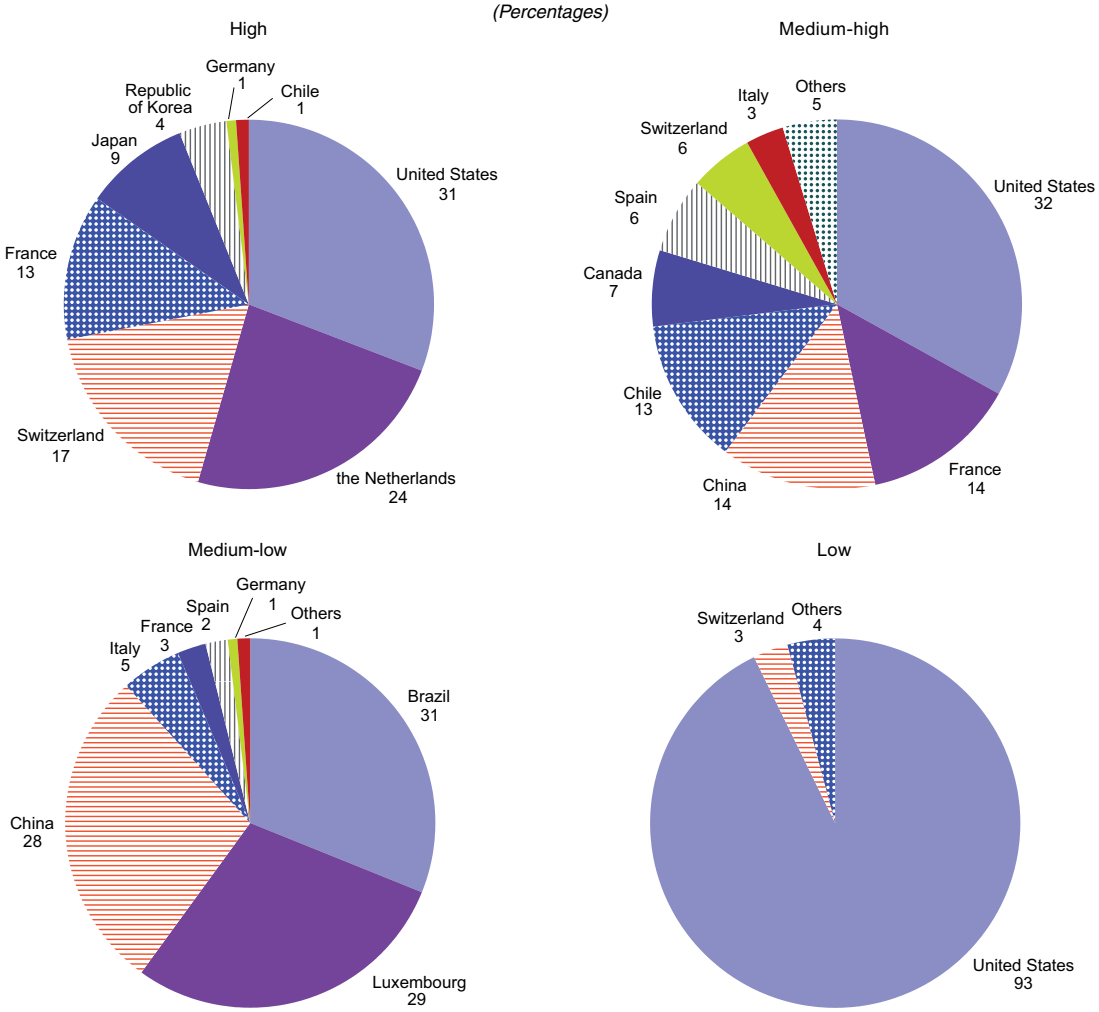
[25] See, for example, the case of the hardware industry for information and communications technologies in Latin America and the Caribbean (ECLAC, 2008).

Figure I.21 (concluded)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of "fDi Markets", *Financial Times*.

Figure I.22
LATIN AMERICA AND THE CARIBBEAN: ORIGIN OF FOREIGN DIRECT INVESTMENT PROJECTS ANNOUNCED FOR THE MANUFACTURING INDUSTRY BY TECHNOLOGY INTENSITY, 2009
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of "fDi Markets", *Financial Times*.

4. Transnationals in R&D in the region

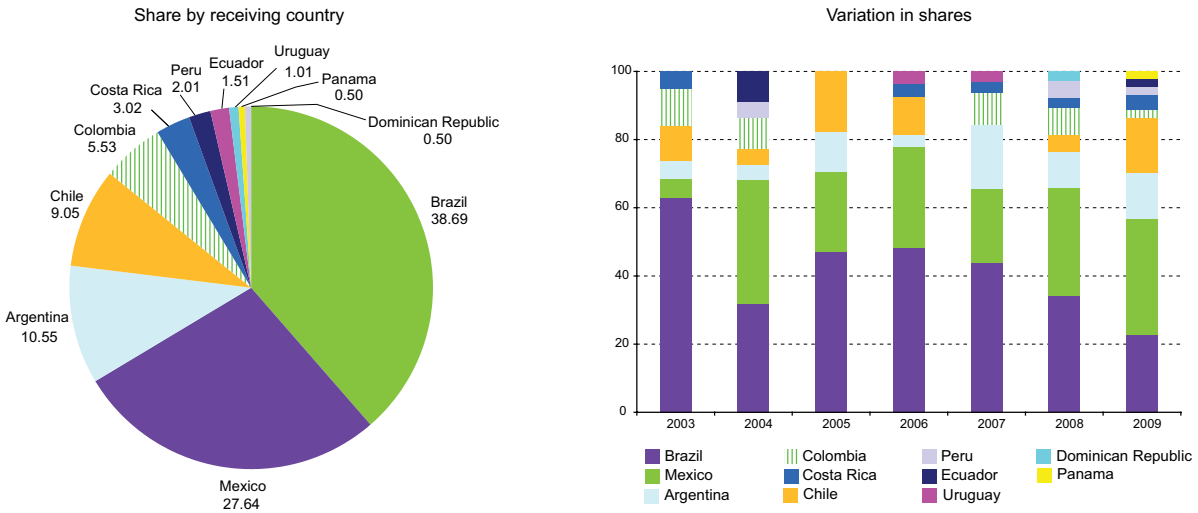
FDI in R&D activities can help to build absorptive capacities in destination economies (Griffith, Redding and Van Reenen, 2004) and has an important role in generating technical progress, in increasing productivity and, thus, in generating economic growth (ECLAC, 2007; Romer, 1990; Griliches, 1998). This type of FDI is scarce in Latin America and the Caribbean, however.[26] In fact, only 3.5% of all FDI projects announced for the period 2003-2009 involve R&D (0.8% of the overall amounts).

During the period 2003-2009, investments were made in 197 R&D projects in 10 economies in the region, principally Brazil and Mexico, which received 39% and 28%, respectively, followed by Argentina (11%), Chile (9%), Colombia (6%) and Costa Rica (3%) (see figure I.23). Once again, Costa Rica, despite its small size, stands out as one of the main destinations for this type of FDI.

More than 50% of the projects announced came from the United States, followed by the European countries with 35%, Asia with 10% and, lastly, Latin America with 2% (see figure I.24).[27]

In sectoral terms, the projects were concentrated in the software and information technologies sectors (44%) and in telecommunications (10%). The pharmaceutical, automobile and semi-conductor sectors accounted for 20% of projects (see figure I.25).

Figure I.23
LATIN AMERICA AND THE CARIBBEAN: DESTINATION OF FOREIGN DIRECT INVESTMENT R&D PROJECTS, 2003-2009
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of "fDi Markets", *Financial Times*.

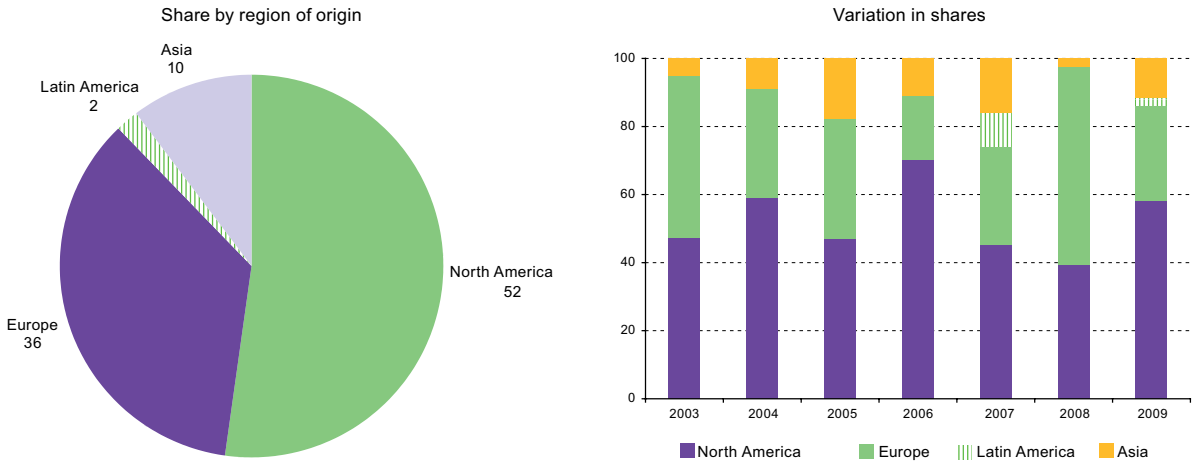
In 2009, 44 FDI projects in R&D in the region were announced, with Argentina, Brazil, Chile and Mexico accounting for 87% of these. A total of 87% of these projects originated in the following countries: Germany, Spain, the United States and India. As regards their sectoral distribution, most of the projects were in software and information technologies (39%), followed by telecommunications (16%) and the automobile, semi-conductors and pharmaceutical industries (7% each).

In short, although there were few FDI projects in R&D in the period 2003-2009, they have been increasing slowly and steadily. More than 90% of these investments were concentrated in just five countries of the region, which may be interpreted as a recognition by foreign investors that these countries have the capacity to produce goods with a higher knowledge content. The challenge for all the countries in the region is to attract more of this type of FDI.

[26] In the analysis of this section, investments in design, development and testing activities are also considered as R&D.

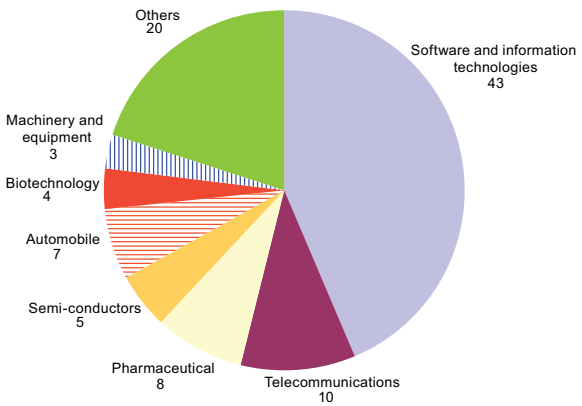
[27] The share of Latin America and the Caribbean in this sector corresponds to four projects in the area of software development: two in Brazil, one in Mexico and another in the Bolivarian Republic of Venezuela.

Figure I.24
LATIN AMERICA AND THE CARIBBEAN: ORIGIN OF FOREIGN DIRECT INVESTMENT IN R&D, 2003-2009
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of "fDi Markets", *Financial Times*.

Figure I.25
LATIN AMERICA AND THE CARIBBEAN: DISTRIBUTION OF FOREIGN DIRECT INVESTMENT R&D PROJECTS BY SECTOR, 2003-2009
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of "fDi Markets.com", *Financial Times*.

5. Conclusions

The recent economic and financial crisis had a significant impact on FDI in Latin America and the Caribbean, which dropped 41% in 2009. The economic slowdown in the countries of the region discouraged market-seeking FDI, while the recession in the main export markets, especially the United States, depressed FDI aimed at creating export platforms. Similarly, fluctuations in commodity prices led to a marked contraction in natural-resource-seeking FDI. Furthermore, difficulties in obtaining credit restricted investors' room for manoeuvre, except in the case of companies that had built up capital during the boom years of the economic cycle. The economic crisis did not greatly alter the composition of the main investors in the region, which continue to be led by the United States. With regard to the effects of the crisis on the sectoral distribution of investment, services continued to receive the most FDI, followed by manufacturing, given the contraction in investments in natural resources.

Despite the drop, total FDI in 2009 was the fifth largest amount ever. Since restrictions on investment began to be lifted in the early 1990s, FDI has fluctuated, although, in general, it has always trended upward. The analysis here also shows, however, that although inflows have been substantial, most of them continue to target natural resources, manufacturing sectors with low and medium technology intensity, and services. The amount of FDI in R&D projects, although rising, remains low. This underscores the region's ongoing difficulties not only in attracting investments in high technology or R&D, but also in entering the high-value-added segments of global production chains.

FDI has undoubtedly brought benefits in the form of knowledge and technology transfer, but the evidence thus far shows that these have been more limited than economic theory would indicate. FDI appears to have a stronger impact as a source of financing than as a transmitter of knowledge and technology or a catalyst of structural change in the economies of the region, which suggests that other conditions are needed to maximize its benefits, and that FDI should be treated as part of a more comprehensive development strategy, with an emphasis on technological capacity-building. Strengthening the region's education and innovation systems is one essential condition.

A certain degree of uncertainty remains as to how quickly the economies of the region will overcome the crisis and investors will regain their confidence. Despite that uncertainty, based on the growth outlook for the region, the long-term trend of FDI in Latin America and the Caribbean and recent announcements of mergers, acquisitions and new investments, ECLAC estimates that FDI inflows into Latin America and the Caribbean could increase by between 40% and 50% in 2010, which would bring FDI back up above US$ 100 billion.

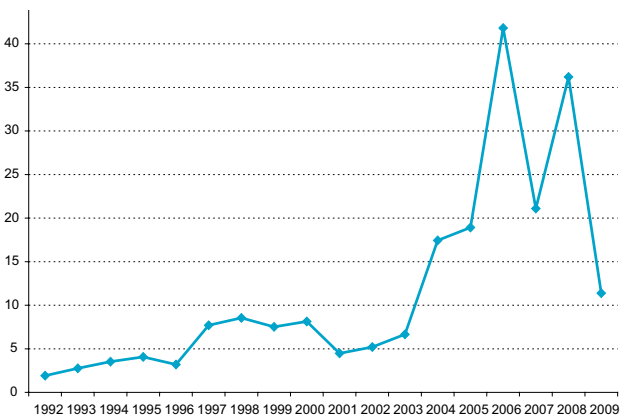
D. Outward foreign direct investment and the trans-Latins

1. Outward foreign direct investment flows

Outward foreign direct investment (OFDI) by Latin American and Caribbean countries was sharply down in 2009 —69% lower than in 2008— and totalled US$ 11.387 billion (see figure I.26). This decline is chiefly attributable to net foreign disinvestment equivalent to US$ 10 billion by Brazil. On the other hand, the OFDI flows of the Bolivarian Republic of Venezuela, Colombia and Mexico rose (see figure I.27). The statistical series of OFDI for Latin America and the Caribbean is contained in annex I.A.4.

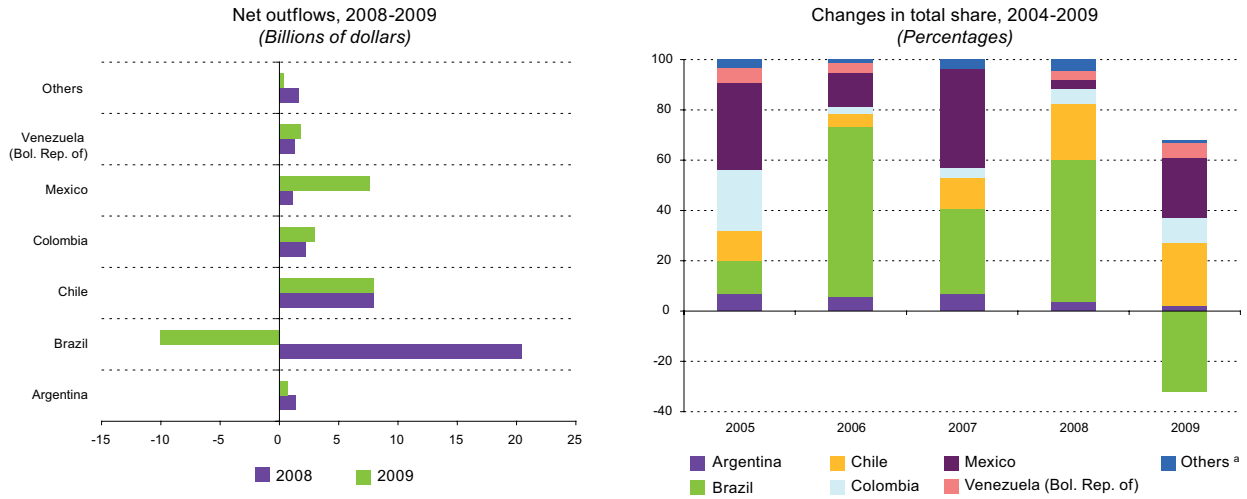
In 2009, Chile became the leading Latin American investor for the first time, with an outward investment of US$ 7.983 billion, maintaining the same level as 2008. Of that total, 59% went to other countries in the Americas, with the leading recipients being the United States, Brazil and Peru. The region's investments in Europe and Asia represented 7% and 2% of the total, respectively, while net reinvestments constituted 32%; however, there is no official information on the geographical and sectoral distribution of these particular

Figure I.26
LATIN AMERICA AND THE CARIBBEAN: NET FLOWS OF OUTWARD FOREIGN DIRECT INVESTMENT, 1992-2009
(Billions of dollars)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), estimates on the basis of official figures as at 28 April 2010.

Figure I.27
LATIN AMERICA AND THE CARIBBEAN: OUTWARD FOREIGN DIRECT INVESTMENT, LEADING INVESTOR COUNTRIES



Source: Economic Commission for Latin America and the Caribbean (ECLAC), estimates on the basis of official figures as at 28 April 2010.
[a] Barbados, Belize, Costa Rica, El Salvador, Guatemala, Honduras, Paraguay, Peru, Plurinational State of Bolivia and Uruguay.

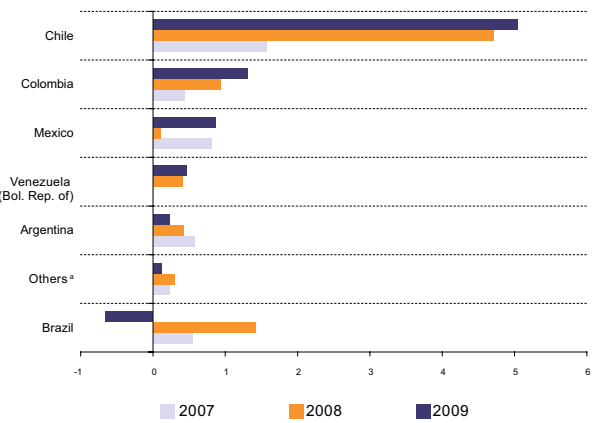
amounts. Regarding the sectoral distribution of Chile's OFDI, most went to electricity, gas and water (16%); financial establishments, insurance, real estate and services (28%); and manufacturing industries (17%). The most significant transnational activity included announcements by the Chilean paper companies, Arauco and Compañía Manufacturera de Papeles y Cartones S.A. (CMPC), regarding acquisitions in Uruguay and Brazil, respectively, the purchase of Easy supermarkets in Colombia by Cencosud and investments in the Peru's commerce sector by Falabella and Ripley.

Mexico was the second largest investor in the region in 2009 with OFDI of US$ 7.598 billion, which represented a five-fold increase over 2008. This jump reflects the low level of OFDI in 2008, which was 86% down on 2007. Although official statistics do not provide a sectoral or geographical breakdown of this investment, the acquisition of a baked goods company, Dunedin, in the United States by Grupo Bimbo for US$ 2.5 billion stands out as one of the main operations by a Mexican firm.

Colombia's investments abroad increased by 34% to reach US$ 3.025 billion, with 83% of the total going to mining and quarrying industries and the remaining 17% distributed between financial establishments, insurance and real estate, transport and storage, manufacturing industries and community and social services. The most significant Colombian operations include the acquisition of Petro-Tech (Peru) by Ecopetrol in partnership with KNOC of the Republic of Korea for over US$ 800 million and the purchase of the Swiss cement company Holcim's Panama operations by Cementos Argos for US$ 157 million.

Outward investment flows from the Bolivarian Republic of Venezuela rose by 44% to US$ 1.8 billion, of which 98% went to the petroleum sector, mainly reflecting the activities of the State-owned oil giant Petróleos de Venezuela, S.A (PDVSA), whose investments of US$ 277 million in the Plurinational State of Bolivia and US$ 95 million in Nicaragua were among the largest of the year.

Figure I.28
LATIN AMERICA (SELECTED COUNTRIES): NET FLOWS OF OUTWARD FOREIGN DIRECT INVESTMENT IN RELATION TO GDP, 2007-2009
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures and ECLAC growth estimates as at 28 April 2006.
[a] Barbados, Belize, Costa Rica, El Salvador, Guatemala, Honduras, Paraguay, Peru, Plurinational State of Bolivia and Uruguay.

Brazil, usually one of the region's leading investors, saw a sharp US$ 10 billion downturn in net direct investment (see figure I.27). The equity investments of Brazilian companies abroad actually amounted to US$ 4.5 billion, however, and the negative balance reflected the large amount —over US$ 14.5 billion— received in loans and amortization payments from their overseas subsidiaries. As shown below, Brazilian firms carried on their overseas activities in 2009. Tables I.10 and I.11 present a list of the main mergers and acquisitions and new investments, announced or concluded, in 2009.

As shown in table I.10, Brazilian firms were very active abroad in 2009, but the negative foreign investment figure in the balance of payments induces underestimation of the real extent of their external transactions. The largest new FDI projects, in terms of the amounts announced, come from Brazil and Mexico, followed by Chile and the Bolivarian Republic of Venezuela. See table I.12 for a list of the largest firms and groups from Latin America.

Lastly, as a proportion of GDP, Chile registered the largest amount of OFDI in 2009 (5%), followed by Colombia (1.3%), Mexico (0.9%), the Bolivarian Republic of Venezuela (0.5%), Argentina (0.2%), and Brazil (-0.6%). The figure for the other countries that invested abroad was 0.1%.

Table I.10
MAIN CROSS-BORDER ACQUISITIONS BY LATIN AMERICAN FIRMS, 2009
(Millions of dollars)

Company acquired	Sector	Country	Acquired by	Country of origin of acquiring company	Value
Dunedin	Baked goods	United States	Grupo Bimbo SAB de CV	Mexico	2 500
Petro-Tech Peruana SA	Crude oil and natural gas	Peru	Korea National Oil Corporation & Ecopetrol	Republic of Korea - Colombia	892
Río Tinto-Potash assets	Potash and caustic soda	Argentina	Vale	Brazil	850
Banco Itau Europa	Financial services	Portugal	Banco Itau Holding Financeira	Brazil	498
Lafarge Chile SA	Premixed concrete	Chile	Inversiones Brescia	Peru	404
Esso Chile Petrolera	Oil refineries	Chile	Petrobras	Brazil	400
Cementos Argos SA-Coal Mine	Hydraulic cement	Colombia	Vale	Brazil	373
El Hatillo coal mine, Cerro Largo coal deposit and a shareholding in the Fenoco consortium	Bituminous coal and lignite	Colombia	Vale	Brazil	305
Cementos Avellaneda S.A.	Hydraulic cement	Argentina	Votorantim	Brazil	202
Holcim – Panama & Caribbean	Hydraulic cement	Panama	Cementos Argos	Colombia	157
Inter National Bank, McAllen, TX	Financial services	United States	Grupo Financiero Banorte SAB	Mexico	147
Banco Espirito Santo S.A.	Financial services	Portugal	Banco Bradesco SA	Brazil	132
The New York Times Co.	Media	United States	Inmobiliaria Carso SA de CV	Mexico	101

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of figures from Thomson Reuters.

Table I.11
ANNOUNCEMENTS OF NEW CROSS-BORDER INVESTMENTS BY TRANS-LATINS FOR AMOUNTS IN EXCESS OF US$ 100 MILLION, 2009
(Millions of dollars)

Home country	Company	Host country	Sector	Investment
Brazil	Braskem	Mexico	Plastics	2 500
Brazil	Braskem	Peru	Plastics	2 500
Chile	Sigdo Koppers Group	Peru	Chemicals	650
Mexico	Grupo México	Peru	Mining	600
Mexico	Cemex	Poland	Construction and construction materials	514
Brazil	Votorantim Group	Peru	Metals	500
Chile	Falabella	Peru	Commerce	350
Brazil	Petrobras	Turkey	Oil, coal and natural gas	300
Venezuela (Bolivarian Republic of)	Cisneros Group of Companies	Colombia	Leisure and entertainment	250
Brazil	JBS	Russian Federation	Food and tobacco	119
Venezuela (Bolivarian Republic of)	Farmatodo	Colombia	Pharmaceuticals	100

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from "fDi Markets", *Financial Times*.

Table I.12
LARGEST FIRMS AND GROUPS FROM LATIN AMERICA AND THE CARIBBEAN, WITH SALES, INVESTMENTS AND EMPLOYMENT ABROAD, 2009

Firm	Country	Sales 2009 (millions of dollars)	External sales (percentage)	Investment abroad (percentage)	Workers abroad (percentage)	Sector
Petrobras	Brazil	101 948	29	34	10	Oil/Gas
PDVSA	Venezuela (Bolivarian Republic of)	68 000	94	5	6	Oil/Gas
Itaú - Unibanco	Brazil	44 242	11	3	10	Banking
América Móvil	Mexico	30 209	64	32	69	Telecommunications
Vale	Brazil	27 852	35	47	20	Mining
Grupo JBS (FRIBOI)	Brazil	20 548	85	85	77	Agri-business
Gerdau	Brazil	15 242	53	58	46	Iron and steel/Metallurgy
Cemex	Mexico	15 139	80	64	64	Cement
Femsa	Mexico	15 080	41	19	33	Beverages/Liquors
Cencosud	Chile	10 518	56	50	44	Commerce
Telmex	Mexico	9 115	67	51	70	Telecommunications
Grupo Bimbo	Mexico	8 915	55	58	51	Foods
Grupo Alfa	Mexico	8 850	52	70	51	Multisector
Tenaris	Argentina	8 149	83	84	73	Iron and steel/Metallurgy
Grupo Camargo Corrêa	Brazil	6 950	22	47	28	Construction/Engineering
Embraer	Brazil	6 812	86	45	13	Aerospace
Falabella	Chile	6 713	37	40	38	Commerce
Compañía Siderúrgica Nacional	Brazil	6 305	23	13	6	Iron and steel/Metallurgy
Grupo Modelo	Mexico	6 265	41	14	3	Beverages
Tam	Brazil	5 780	31	5	6	Airlines
Sadia	Brazil	5 577	47	10	80	Foods
Marfrig	Brazil	5 317	39	40	35	Agri-business
Constructora Norberto Odebrecht	Brazil	4 800	69	56	49	Construction
Andrade Gutierrez	Brazil	4 500	15	10	5	Construction/Engineering
Grupo Televisa	Mexico	4 007	15	22	11	Media
Lan	Chile	3 656	73	70	41	Transport/Logistics
Grupo Elektra	Mexico	3 275	15	29	21	Retail commerce
Empresas CMPC	Chile	3 248	70	27	31	Pulp/Paper
Votorantim	Brazil	3 110	36	48	35	Cement
Compañía Sudamericana de Vapores	Chile	3 032	90	36	68	Transport/Logistics

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of *América Economía* No. 48, April 2010.

2. Conclusions

Direct investment outflows from Latin America and the Caribbean contracted by 69% in 2009, which may be attributed to the net balance of Brazil's OFDI, which stood at -US$ 10 billion. This negative figure under-represents the buoyancy of Brazilian companies abroad, however, and reflects the large amounts received in loans and amortization payments from Brazilian subsidiaries abroad.

In comparison, Chile, which might have been considered an unlikely investor country two decades ago, became the leading investor both in absolute terms and as a proportion of GDP. By order of the amount invested, the other major investor countries were Mexico, Colombia, the Bolivarian Republic of Venezuela and Argentina.

Despite the decline in OFDI, the vitality of the trans-Latins during the crisis period attests to their strength and suggests that they will continue to expand in 2010.

E. Final remarks

As a result of the wave of trade and foreign investment liberalization that swept the world two decades ago, FDI flows have increased significantly, both globally and regionally. Despite the recent economic and financial crisis, FDI continues to be the main source of capital for developing countries and economies in transition. Any decline in these investment flows is therefore bad news. In 2009, the economic crisis seriously dented FDI flows worldwide and the Latin American and Caribbean countries were no exception: all experienced a downturn in FDI.

It should be recalled, however, that FDI is not an end in itself, but a way to boost economic growth. In fact, one of the main reasons why governments invest resources in attracting FDI is because of its capacity for instigating technology and knowledge transfer and generating production linkages, which can lead to economic growth. Many governments and researchers seem to accept these attributes of FDI as self-evident, although the empirical evidence is inconclusive in this regard. Various studies show that no direct link exists between FDI and recipient economies' growth and productivity. Technology transfer and positive externalities are not an automatic consequence of FDI (Blomstrom and Kokko, 2003). The effects of FDI on productivity and growth depend on many factors, including human capital (Borensztein, De Gregorio and Lee, 1998), the depth of local financial markets (Alfaro and others, 2010; Alfaro, Kalemli-Ozcan and Sayek, 2009), and the strength and development of the private sector, competition and infrastructure (Moran, Graham and Blomström, 2005).

Two decades on from the liberalization of FDI flows, the production structure of Latin America and the Caribbean is still characterized by limited knowledge generation and dissemination (ECLAC, 2007). The evidence on mergers and acquisitions and new projects indicates that most FDI received in manufacturing goes to low- and medium-tech industries.[28] Although the number of investment projects involving R&D is increasing, they continue to represent a small proportion of total investment in the services sector.

FDI is not in itself a panacea that can transfer technology and change the production structure of the region. It is becoming increasingly clear that FDI strategy must be treated as part of a broader development policy that targets specific sectors for development or consolidation. It must also be accompanied by policies that build up the absorptive capacity of local economies by improving education, strengthening institutions and upgrading physical, scientific and technological infrastructure. This is the only way that the potential advantages of FDI can be realized.

Only by emphasizing the development of absorptive capacity will economies be able to maximize the benefits of FDI. The best way of promoting a country's knowledge-intensive sectors is not through leaflets or magazines, but by strengthening their capacity to learn, adapt and implement new knowledge and technologies. Designing and implementing these policies certainly represents a major task, but the size of the effort required is no reason not to take action. Indeed, the great risk is to be trapped in "that indolent but agreeable condition of doing nothing".

[28] Even where FDI has gone to activities that are theoretically high-tech, the production processes involved correspond, in many cases, to low-value-added links in the production chain, as is the case in the hardware industry (see chapter II, ECLAC, 2008).

Annex

Table I.A-1
CLASSIFICATION OF MANUFACTURING INDUSTRIES BY TECHNOLOGY INTENSITY

Technological intensity	Industry	ISIC Rev.3
High	Pharmaceuticals	2423
	Manufacture of office, accounting and computing machinery	30
	Manufacture of radio, television and communication equipment and apparatus	32
	Manufacture of medical, optical and precision instruments and watches	33
Medium-high	Manufacture of chemicals and chemical products (except pharmaceuticals)	24 except 2 423
	Manufacture of machinery and equipment n.e.c.	29
	Manufacture of electrical machinery and apparatus n.e.c.	31
	Manufacture of motor vehicles, trailers and semi-trailers	34
	Manufacture of railway and tramway locomotives and rolling stock, and other transport equipment n.e.c.	352 and 359
Medium-low	Manufacture of coke, refined petroleum products and nuclear fuel	23
	Manufacture of rubber and plastics products	25
	Manufacture of other non-metallic mineral products	26
	Manufacture of basic metals and fabricated metal products, except machinery and equipment	27 and 28
	Building and repairing of ships and boats	351
Low	Manufacture of food products, beverages and tobacco products	15 - 16
	Manufacture of textiles, wearing apparel; dressing and dyeing of fur, tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear	17 - 19
	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	20
	Manufacture of paper and paper products, and publishing, printing and reproduction of recorded media	21 - 22
	Manufacture of furniture; manufacturing n.e.c. and recycling	36 - 37

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of Organisation for Economic Co-operation and Development (OECD), *OECD Science, Technology and Industry Scoreboard 2009*, Paris, 2009.
Note: n.e.c. – not elsewhere classified.

Table I.A-2
LATIN AMERICA AND THE CARIBBEAN: NET FOREIGN DIRECT INVESTMENT INFLOWS BY COUNTRY AND TERRITORY, 1999-2009
(Millions of dollars)

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Anguilla	38	43	35	38	34	92	117	142	119	99	62
Antigua and Barbuda	52	67	112	80	179	95	221	359	338	173	139
Argentina	23 988	10 418	2 166	2 149	1 652	4 125	5 265	5 537	6 473	9 726	4 895
Bahamas	149	250	192	209	642	443	563	706	746	839	654
Barbados [a]	17	19	19	65	122	24	128	245	338	286	104
Belize	54	23	61	25	-11	111	127	117	148	189	106
Bolivia (Plurinational State of)	1 011	734	703	674	195	83	-291	278	362	508	418
Brazil	28 576	32 779	22 457	16 590	10 144	18 146	15 067	18 782	34 585	45 058	25 949
Chile	8 761	4 860	4 200	2 550	4 307	7 173	6 984	7 298	12 534	15 181	12 702
Colombia	1 508	2 436	2 542	2 134	1 720	3 016	10 252	6 656	9 049	10 583	7 201
Costa Rica	619	409	460	659	575	617	861	1 469	1 896	2 021	1 323
Dominica	18	20	21	21	32	27	19	26	47	57	46
Ecuador	648	720	1 330	783	872	837	493	271	194	1 001	312
El Salvador	216	173	279	470	142	376	511	241	1 508	784	431
Grenada	42	39	61	57	91	66	70	90	152	144	79
Guatemala	155	230	499	205	263	296	508	592	745	754	566
Guyana [a]	46	67	56	44	26	30	77	102	110	179	222
Haiti [a]	30	13	4	6	14	6	26	160	75	34	19
Honduras [a]	237	382	304	275	403	547	600	669	928	900	500
Jamaica	524	468	525	405	604	542	582	797	752	1 361	801
Mexico	13 869	18 098	29 774	23 636	16 579	23 811	22 374	19 946	27 440	23 683	12 522
Montserrat	8	2	1	1	2	3	1	3	7	13	7
Nicaragua	337	267	150	204	201	250	241	287	382	626	434
Panama	864	624	467	99	771	1 012	962	2 498	1 777	2 402	1 773
Paraguay [a]	95	104	84	10	27	38	35	95	202	109	184
Peru	1 940	810	1 144	2 156	1 335	1 599	2 579	3 467	5 491	6 924	4 760
Dominican Republic	1 338	953	1 079	917	613	909	1 123	1 085	1 563	2 971	2 158
Saint Kitts and Nevis	58	99	90	81	78	53	93	110	134	178	139
Saint Vincent and the Grenadines	57	38	21	34	55	66	40	109	131	159	125
Saint Lucia	83	58	63	57	112	81	78	234	272	172	167
Suriname [a]	-62	-148	-27	146	201	286	399	323	316	346	334
Trinidad and Tobago	643	680	835	791	808	1 001	940	883	830	2 801	511
Uruguay	235	273	297	194	416	332	847	1 493	1 329	1 841	1 139
Venezuela (Bolivarian Republic of)	2 890	4 701	3 683	782	2 040	1 483	2 589	-508	1 008	349	-3 105

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures as at 24 May 2010.
[a] ECLAC estimates for 2009.

Table I.A-3
LATIN AMERICA AND THE CARIBBEAN: NET FOREIGN DIRECT INVESTMENT INFLOWS BY TARGET SECTOR, 1999-2009
(Millions of dollars)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Anguilla											
Tourism	...	35	19	16	7	21	60	72	78	56	...
Manufactures	...	0	0	0	0	0	0	0	0	0	...
Petroleum	...	0	0	0	0	0	0	0	0	0	...
Agriculture	...	0	0	0	0	0	0	0	0	0	...
Others	...	0	4	3	0	0	31	0	0	0	...
Antigua and Barbuda											
Tourism	...	7	20	10	4	15	75	259	245	212	...
Petroleum	...	0	0	0	0	0	0	0	0	0	...
Commercial	...	12	2	0	0	0	0	0	0	0	...
Financial	...	0	1	3	0	0	0	0	0	0	...
Construction	...	0	0	0	22	0	0	0	0	0	...
Sporting	...	0	0	0	0	0	0	0	0	0	...
Banking and insurance	...	1	0	0	0	0	0	0	0	0	...
Agriculture	...	0	0	0	0	0	0	0	0	0	...
Medical	...	0	1	1	0	0	0	0	0	0	...
Others	...	29	66	53	113	29	100	29	27	5	...
Argentina											
Natural resources	17 845	2 736	898	1 133	-278	2 265	1 961	3 045	2 025	1 162	...
Manufactures	1 950	1 487	49	988	1 145	1 221	2 582	2 798	3 307	5 172	...
Services	3 153	4 750	1 260	-461	539	123	2 123	1 841	2 332	3 212	...
Others	1 038	1 445	-42	489	246	665	...	...	...	...	...
Belize											
Natural resources	0	0	0	0	2	4	8	12	9	37	2
Manufactures	12	3	0	0	0	0	0	0	0	0	0
Services	33	12	43	16	-26	81	57	39	54	79	75
Tourism	7	9	15	5	10	25	57	44	47	59	10
Others	2	-1	4	5	4	2	5	14	34	16	9
Bolivia (Plurinational State of) [a]											
Natural resources	472	441	566	721	356	168	288	390	370	734	252
Manufactures	152	93	87	91	62	90	58	52	143	102	35
Services	386	299	224	187	149	126	58	140	328	346	172
Brazil											
Natural resources	423	649	1 494	638	1 487	1 073	2 194	1 542	4 751	12 995	4 581
Manufactures	7 002	5 070	7 001	7 555	4 506	10 708	6 527	8 462	13 481	14 013	13 465
Services	20 147	24 157	12 547	10 585	6 909	8 485	12 915	12 702	16 073	17 449	13 634
Chile											
Natural resources	1 374	354	1 153	2 006	403	350	595	1 140	434	2 461	1 040
Manufactures	833	253	809	218	234	430	199	91	69	192	458
Services	7 023	2 432	3 058	1 157	649	3 856	1 003	1 938	867	2 590	3 584
Colombia											
Natural resources	-16	122	1 057	910	913	1 745	3 288	3 786	4 474	5 231	5 742
Manufactures	505	556	261	308	289	188	5 513	803	1 867	1 748	536
Services	1 019	1 758	1 224	915	518	1 083	1 451	2 067	2 709	3 605	924

Table I.A-3 (continued)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Costa Rica											
Natural resources	50	-11	1	-9	-36	51	37	66	-10	426	76
Manufactures	366	308	237	486	395	456	375	432	722	553	343
Services	200	126	223	182	211	284	450	967	1 181	1 001	893
Others	3	-14	0	0	6	4	-1	4	4	41	10
Dominica											
Tourism	…	4	6	5	4	3	4	0	7	7	…
Manufactures	…	0	0	1	2	0	0	0	0	0	…
Agri-business	…	2	1	2	1	0	0	0	0	0	…
Construction	…	0	0	0	0	0	0	0	2	2	…
Petroleum	…	0	0	0	0	0	0	0	0	0	…
Others	…	0	2	1	12	7	12	24	43	42	…
Dominican Republic											
Natural resources	0	0	7	23	78	60	31	100	76	414	758
Industry/Commerce	183	154	167	223	103	321	199	259	188	583	120
Services	1 067	673	796	600	326	448	718	1 039	1 245	1 929	1 216
Others (including free zones)	88	126	110	71	107	81	175	131	70	45	64
Ecuador											
Natural resources	605	682	1 139	503	198	458	222	-69	-77	262	45
Manufactures	8	10	59	67	79	115	75	90	99	206	123
Services	36	29	132	214	594	264	196	250	173	533	144
El Salvador											
Natural resources	-16	-11	30	9	-2	22	0	29	10	5	1
Manufactures	18	32	65	47	48	41	317	17	21	28	56
Services	210	133	159	143	12	313	191	182	1 315	480	165
Others (maquila)	3	19	26	10	71	31	4	0	101	26	72
Grenada											
Tourism	…	15	16	27	39	28	37	48	117	86	…
Manufactures	…	2	5	0	0	0	1	0	4	3	…
Transport	…	0	0	0	0	0	0	0	0	0	…
Sporting	…	0	0	0	0	0	0	0	0	0	…
Petroleum	…	0	0	0	0	0	0	0	0	0	…
Education	…	0	0	0	6	0	0	0	0	0	…
Others	…	2	11	7	19	8	9	19	31	23	…
Honduras [a b]											
Natural resources	113	56	40	30	59	58	53	44	11	5	9
Manufactures	47	218	133	94	177	282	270	227	384	215	143
Services	78	82	123	122	144	166	263	359	515	681	348
Mexico											
Natural resources	329	262	76	354	151	216	233	414	1 883	4 373	464
Manufactures	9 157	9 996	5 899	8 789	7 735	13 175	11 007	9 923	12 125	6 384	4 831
Services	4 358	7 770	23 827	14 579	8 589	10 268	10 683	8 980	13 270	11 193	6 122

Table I.A-3 (continued)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Montserrat											
Tourism	…	0	0	0	0	0	0	0	0	0	…
Manufactures	…	0	0	0	0	0	0	0	0	0	…
Technology	…	0	0	0	0	0	0	0	0	0	…
Petroleum	…	0	0	0	0	0	0	0	0	0	…
Agriculture	…	0	0	0	0	0	0	0	0	0	…
Others	…	0	0	0	0	0	1	0	0	0	…
Nicaragua											
Natural resources	25	12	15	10	4	1	0	15	11	38	12
Manufactures	32	68	46	60	45	33	87	63	121	96	101
Services	243	175	89	134	151	206	155	109	250	460	321
Panama											
Natural resources	0	0	0	0	0	0	0	…	…	…	…
Manufactures	34	0	316	-76	3	41	-62	…	…	…	…
Services	632	396	217	98	566	1 092	1 693	…	…	…	…
Others	5	228	-66	76	166	-32	-696	…	…	…	…
Paraguay											
Natural resources	…	…	…	…	…	…	-2	-36	-2	0	1
Manufactures	…	…	…	…	…	…	-16	61	8	20	56
Services	…	…	…	…	…	…	53	70	196	88	127
Peru											
Natural resources	336	37	65	53	1	244	283	735	96	605	443
Manufactures	133	70	162	713	25	-82	-78	433	11	101	1
Services	935	2 563	558	245	29	-280	-272	345	214	1 532	329
Saint Kitts and Nevis											
Tourism	…	52	63	68	40	8	1	0	33	39	…
Manufactures	…	1	0	0	0	0	0	0	0	0	…
Commerce	…	0	0	0	0	0	0	0	0	0	…
Banking	…	0	0	0	0	0	0	0	0	0	…
Construction	…	0	0	0	0	0	0	0	0	0	…
Others	…	30	7	1	12	10	40	24	10	9	…
Saint Lucia											
Tourism	…	27	0	14	23	28	27	174	156	97	…
Manufactures	…	0	0	0	0	0	0	0	0	0	…
Petroleum	…	0	0	0	0	0	0	0	0	0	…
Agriculture	…	0	0	0	0	0	0	0	0	0	…
Others	…	11	41	26	62	20	28	1	2	16	…
Saint Vincent and the Grenadines											
Tourism	…	46	3	9	20	85	31	130	160	90	…
Manufactures	…	0	0	0	0	0	0	0	0	0	…
Agriculture	…	0	0	0	0	11	7	0	0	0	…
Others	…	0	0	20	61	4	3	10	6	10	…
Trinidad and Tobago											
Natural resources	449	614	787	695	710	867	813	736	711	…	…
Manufactures	7	-38	-13	13	12	17	15	16	21	…	…
Services	18	2	30	43	30	49	47	62	56	…	…
Others	169	102	31	40	56	65	65	69	43	…	…

Table I.A-3 (concluded)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Uruguay											
Natural resources	…	…	-15	48	198	142	264	….	….	….	….
Manufactures	…	…	12	54	40	23	26	….	….	….	….
Services	…	…	281	145	149	145	248	….	….	….	….
Others	…	…	18	-53	29	22	310	….	….	….	….
Venezuela (Bolivarian Republic of)											
Petroleum	….	1 206	2 016	532	-25	-529	1 021	-1 958	-180	-230	0
Finance	….	590	403	526	197	646	492	369	673	469	-354
Others	…	2 905	1 264	-276	1 868	1 366	1 076	999	153	110	-2 751

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures as at 24 May 2010 from the following sources: Argentina (Banco Central de la República de Argentina; net inflows); Bolivia (Banco Central; gross inflows); Brazil (Banco Central; gross inflows), Chile (Foreign Investment Committee; investments implemented); Colombia (Banco de la República; net inflows); Ecuador (Banco Central; net inflows); El Salvador (Banco Central de Reserva; net inflows); Honduras (Banco Central; net inflows); Mexico (Secretariat of the Economy; net inflows); Nicaragua (Banco Central; net inflows); Panama (Office of the Comptroller General of the Republic; net inflows); Paraguay (Banco Central; net inflows); Perú (Proinversión; net inflows); Uruguay (Banco Central; net inflows); Bolivarian Republic of Venezuela (Banco Central; net inflows); Dominican Republic (Banco Central; net inflows) and Trinidad and Tobago (Banco Central; net inflows). Anguilla, Antigua and Barbuda, Dominica, Grenada, Montserrat, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines (Eastern Caribbean Central Bank; net inflows). The data may not match those reported in the balance of payments.

[a] ECLAC estimates for 2009.

[b] Includes maquila as from 2004.

Table I.A-4
LATIN AMERICA AND THE CARIBBEAN: NET FOREIGN DIRECT INVESTMENT INFLOWS BY HOME COUNTRY, 1999-2009
(Millions of dollars)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Anguilla											
United States	...	24	0	8	7	21	62	68	68	46	...
United Kingdom	...	0	0	0	0	0	0	0	0	0	...
Italy	...	0	0	0	0	0	0	0	0	0	...
Germany	...	0	0	0	0	0	0	0	0	0	...
France	...	0	0	0	0	0	0	0	0	0	...
The Caribbean	...	0	0	0	0	0	0	0	0	0	...
Others	...	12	0	11	0	0	30	4	10	10	...
Antigua and Barbuda											
United Kingdom	...	11	0	4	1	3	0	0	0	0	...
United States	...	6	18	9	19	0	19	0	0	0	...
Italy	...	0	0	0	0	3	27	0	0	0	...
Malaysia	...	0	0	0	0	0	0	0	0	0	...
Dominican Republic	...	0	0	0	0	0	0	0	0	0	...
France	...	0	0	0	0	0	0	0	0	0	...
The Caribbean	...	4	2	0	0	12	10	0	0	0	...
Others	...	28	69	55	119	25	118	288	272	217	...
Argentina											
The Netherlands	424	378	1 302	-436	-170	983	1 057	107	576	808	...
United States	1 307	947	533	342	-251	618	1 249	860	837	1 616	...
France	1 536	656	521	-624	-185	389	220	-83	571	-26	...
Germany	272	69	-100	381	112	336	69	268	490	411	...
Chile	201	96	-245	22	24	171	611	508	469	824	...
Others	20 244	8 273	155	2 464	2 121	1 777	3 459	6 025	4 720	5 913	...
Bolivia (Plurinational State of)											
United States	339	368	351	289	189	131	...	...	...	...	...
The Netherlands	106	47	58	12	5	53	...	...	...	...	...
Spain	10	46	59	268	63	40	...	...	...	...	...
United Kingdom	21	25	56	50	63	27	...	...	...	...	...
Colombia	2	0	3	3	4	26	...	...	...	...	...
Others	532	344	349	377	242	86	...	...	...	...	...
Brazil											
United States	8 088	5 399	4 465	2 615	2 383	3 978	4 644	4 434	6 039	7 047	4 902
Luxembourg	290	1 027	285	1 013	239	747	139	745	2 855	5 937	537
The Netherlands	2 042	2 228	1 892	3 372	1 445	7 705	3 208	3 495	8 116	4 639	6 515
Japan	5 702	9 593	827	504	1 368	243	779	648	465	4 099	1 673
Spain	2 115	2 035	2 767	587	710	1 055	1 220	1 514	2 164	3 851	3 424
Others	...	...	10 807	10 687	6 757	6 538	11 531	11 396	14 066	18 884	14 629
Chile											
Canada	518	744	142	913	188	368	84	1 833	334	2 190	88
United States	1 389	788	1 808	551	373	123	-15	337	266	550	2 848
Spain	4 620	643	386	248	160	3 742	207	75	107	627	43
Japan	251	55	145	58	31	18	47	51	33	386	258
Mexico	72	2	14	3	16	150	605	47	55	247	87
Others	2 380	807	2 525	1 608	518	235	870	825	578	1 243	1 759

Table I.A-4 (continued)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Colombia											
United States	545	120	223	784	274	874	1 410	1 524	1 389	1 745	2 314
Panama	180	259	129	40	135	10	208	240	477	760	203
Spain	154	479	161	107	155	136	599	492	289	564	-327
Mexico	6	23	12	21	19	16	1 063	31	340	412	337
United Kingdom	18	1	14	-11	35	16	3 747	17	35	200	386
Others	1 427	2 384	1 134	739	581	914	1 112	870	1 364	1 650	-243
Costa Rica											
United States	...	280	257	328	354	557	532	695	940	1 218	747
Mexico	...	29	33	31	38	29	37	31	64	112	73
Spain	...	22	26	0	7	7	14	10	54	76	50
Germany	...	10	3	1	58	16	7	25	59	60	39
El Salvador	...	15	16	23	25	14	21	33	41	54	35
Others	...	53	125	275	92	171	250	674	738	501	378
Dominica											
United Kingdom	…	0	0	0	0	0	0	0	0	0	…
United States	…	3	0	0	0	0	0	0	0	0	…
Italy	…	0	0	0	0	0	0	0	0	0	…
Canada	…	1	0	0	0	0	0	0	0	0	…
Germany	…	0	0	0	0	0	0	0	0	0	…
Taiwan Province of China	…	0	0	0	0	0	0	0	2	2	…
The Caribbean	…	0	0	0	0	0	0	0	0	0	…
Others	…	1	9	8	19	10	16	24	51	50	…
Dominican Republic											
United Kingdom	76	17	2	0	-25	21	95	66	77	598	-3
Canada	95	133	10	18	-23	274	111	141	151	384	770
United States	181	202	433	382	462	177	457	715	291	192	589
Spain	457	190	193	35	-13	127	215	253	586	59	172
The Netherlands	62	36	245	119	25	5	41	33	26	57	73
Others	468	375	195	362	188	306	204	320	448	1 064	558
Ecuador											
Mexico	…	…	…	0	6	0	7	43	-40	303	39
Spain	…	…	…	1	3	1	3	7	85	128	68
Panama	…	…	…	39	85	94	76	67	77	73	118
China	…	…	…	16	20	-8	-20	12	85	46	56
Canada	…	…	…	0	19	274	29	-252	49	44	52
Others	…	…	…	727	739	477	398	395	-61	407	-21
El Salvador											
Panama	…	…	6	15	-1	2	42	68	841	321	80
United States	…	…	196	57	63	-5	332	13	499	129	74
Italy	…	…	0	27	0	0	0	47	0	32	0
Nicaragua	…	…	4	8	-13	0	1	7	8	10	16
Brazil	…	…	0	0	0	0	0	4	9	9	1
Others	…	…	73	101	80	409	137	87	90	39	123

Table I.A-4 (continued)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Grenada											
United Kingdom	…	0	0	0	0	3	4	0	0	0	…
United States	…	0	11	24	45	2	0	0	0	0	…
Italy	…	0	0	0	0	0	0	0	0	0	…
Germany	…	0	0	0	0	10	0	0	0	0	…
France	…	0	0	0	0	0	0	0	0	0	…
The Caribbean	…	4	5	0	13	8	13	0	0	0	…
Others	…	15	16	10	6	13	30	67	152	112	…
Honduras [a b]											
United States	112	100	98	171	195	192	303	339	460	339	281
Ireland	...	0	0	0	0	0	0	0	0	214	19
United Kingdom	3	16	11	1	-3	61	48	49	103	71	-37
Guatemala	4	11	6	10	3	9	25	17	15	40	19
Canada	52	18	19	22	22	79	17	107	139	37	23
Others	...	237	171	72	186	206	206	162	212	93	195
Mexico											
United States	7 485	12 920	21 411	13 013	9 190	8 619	11 638	12 431	11 577	8 938	5 811
Spain	1 042	2 113	2 887	4 960	2 885	7 854	1 190	1 592	5 200	4 322	630
Canada	693	670	1 031	233	303	551	450	539	659	2 361	1 034
United Kingdom	-188	283	126	1 254	1 074	274	1 310	1 261	565	1 387	428
The Netherlands	1 087	2 721	2 653	1 557	715	3 341	2 437	2 742	4 363	1 158	1 461
Others	3 725	-678	1 694	2 706	2 309	3 020	4 897	750	4 913	3 785	2 054
Montserrat											
United Kingdom	…	0	0	0	0	0	0	0	0	0	…
United States	…	0	0	0	0	0	0	0	0	0	…
Italy	…	0	0	0	0	0	0	0	0	0	…
Germany	…	0	0	0	0	0	0	0	0	0	…
France	…	0	0	0	0	0	0	0	0	0	…
The Caribbean	…	0	0	0	0	0	0	0	0	0	…
Others	…	0	0	0	0	0	1	0	0	0	…
Nicaragua											
Mexico	...	0	9	8	4	72	36	53	128	164	48
Canada	...	4	3	0	0	0	43	14	32	69	51
United States	...	37	31	31	76	-16	51	53	84	52	60
Venezuela (Bolivarian Republic of)	...	0	0	0	0	0	0	0	47	132	147
Guatemala	...	4	17	38	0	3	9	22	0	75	29
Others	...	222	91	127	122	191	103	145	91	133	98
Panama											
Argentina	4	2	-5	0	0	5	19	…	…	…	…
Colombia	-19	-49	30	361	26	12	-283	…	…	…	…
Costa Rica	-8	3	11	13	-1	-6	13	…	…	…	…
Ecuador	-36	-12	-2	-15	0	4	3	…	…	…	…
Mexico	138	173	-70	-19	29	-9	-28	…	…	…	…
Others	1 217	535	684	90	28	739	1 185	…	…	…	…

Table I.A-4 (continued)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Paraguay											
United States	...	...	...	...	...	...	20	84	107	145	196
The Netherlands	...	...	...	...	...	...	14	2	-30	20	-32
United Kingdom	...	...	...	...	...	...	-7	-1	1	0	3
Japan	...	...	...	...	...	...	4	-6	-13	-45	-7
Uruguay	...	...	...	...	...	...	1	5	2	4	1
Others	...	...	...	...	...	...	4	11	136	-15	22
Peru											
Chile	...	...	106	15	1	-125	-82	62	32	591	181
Italy	...	...	202	124	-216	103	-504	65	-22	414	0
South Africa	...	...	49	603	3	0	268	467	0	405	0
Norway	...	...	117	0	0	25	5	15	0	276	0
France	...	...	3	29	18	0	0	0	-30	148	4
Others	...	...	308	240	249	-120	247	904	341	311	588
Saint Kitts and Nevis											
United Kingdom	...	0	0	0	0	0	0	0	0	21	...
United States	...	40	4	19	5	10	15	0	0	0	...
Canada	...	41	57	46	34	0	0	0	0	19	...
Germany	...	0	0	0	0	0	0	0	0	0	...
France	...	0	0	0	0	0	0	0	0	0	...
The Caribbean	...	0	1	2	9	4	2	0	0	0	...
Others	...	2	7	2	3	4	26	24	43	9	...
Saint Lucia											
United Kingdom	...	1	3	17	29	7	6	51	24	0	...
United States	...	27	0	9	7	1	0	0	0	0	...
Italy	...	0	0	0	0	0	0	4	0	0	...
Saudi Arabia	...	0	0	0	0	0	0	0	0	0	...
France	...	0	0	0	0	0	0	0	0	0	...
The Caribbean	...	0	0	11	4	0	0	15	22	0	...
Others	...	10	38	3	44	41	49	105	112	113	...
Saint Vincent and the Grenadines											
United Kingdom	....	0	0	21	38	0	38	135	140	98	....
United States	....	9	0	8	20	4	0	0	0	0	....
France	....	0	0	0	0	0	0	0	0	0	....
Germany	....	0	0	0	0	0	0	0	0	0	....
Italy	....	37	2	0	20	85	0	0	0	0	....
The Caribbean	....	0	0	0	3	0	0	0	0	0	....
Others	....	0	1	1	0	11	2	5	3	2	....
Trinidad and Tobago											
United States	275	316	372	353	376	698	694	627	574	....	....
United Kingdom	232	255	307	291	297	170	165	150	159	....	....
Germany	8	14	37	35	36	43	41	38	43	....	....
India	57	11	21	20	20	24	16	27	21	....	....
Canada	9	2	7	7	12	3	1	3	3	....	....
Others	63	82	91	85	68	61	22	39	29	....	....

Table I.A-4 (concluded)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Uruguay											
Argentina	...	...	14	-28	270	182	397	...	...	...	...
Brazil	...	...	-6	40	0	38	203	...	...	...	...
Panama	...	...	103	37	31	28	106	...	...	...	...
Paraguay	...	...	77	14	-3	2	35	...	...	...	...
Bahamas	...	...	20	29	8	0	29	...	...	...	...
Others	...	...	90	101	110	82	78	...	...	...	...
Venezuela (Bolivarian Republic of)											
Spain	...	478	214	89	83	84	40	274	295	237	...
The Netherlands	...	-10	78	117	56	304	53	-74	203	84	...
Panama	...	42	44	20	23	29	38	29	53	29	...
Colombia	...	-38	3	5	-8	1	2	9	22	3	...
Others	....	4 227	3 338	561	1 893	1 087	2 474	-832	76	1 363	....

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures as at 24 May 2010 from the following sources: Argentina (Banco Central de la República de Argentina; 2000-2004; net inflows); Bolivia (Banco Central; gross inflows); Brasil (Banco Central; gross inflows), Chile (Foreign Investment Committee; investments implemented); Colombia (Banco de la República; net inflows); Ecuador (Banco Central; net inflows); El Salvador (Banco Central de Reserva; net inflows); Honduras (Banco Central; net inflows); Mexico (Secretariat of the Economy; net inflows); Nicaragua (Banco Central; net inflows); Panama (Office of the Comptroller General of Panama; net inflows); Paraguay (Banco Central; net inflows); Peru (Proinversión; net inflows); Uruguay (Banco Central; net inflows); Bolivarian Republic of Venezuela (Banco Central; net inflows); Dominican Republic (Banco Central; net inflows) and Trinidad and Tobago (Central Bank; net inflows). Anguilla, Antigua and Barbuda, Dominica, Grenada, Montserrat, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines (Eastern Caribbean Central Bank; net inflows). The data may not match those reported in the balance of payments.

[a] ECLAC estimates for 2009.

[b] Includes maquila as from 2004.

Table I.A-5

LATIN AMERICA AND THE CARIBBEAN: NET FOREIGN DIRECT INVESTMENT FLOWS BY COUNTRY, OFFICIAL FIGURES, 1999-2009

(Millions of dollars)

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Argentina	1 730	901	161	-627	774	676	1 311	2 439	1 504	1 391	679
Belize	1	1	1	0	1	4	9	44	82	63	n.a.
Bolivia (Plurinational State of) [a]	3	3	0	0	0	0	0	3	4	5	-4
Brazil	1 690	2 282	-2 258	2 482	249	9 807	2 517	28 202	7 067	20 457	-10 084
Chile	2 558	3 987	1 610	343	1 606	1 563	2 183	2 171	2 573	7 988	7 983
Colombia	116	325	16	857	938	142	4 662	1 098	913	2 254	3 025
Costa Rica	5	8	10	34	27	61	-43	98	263	6	7
El Salvador	54	-5	-10	-26	19	-3	113	-26	100	65	-131
Guatemala			10	22	46	41	38	40	25	16	23
Honduras [a]	0	7	3	7	12	-6	1	1	1	-1	1
Jamaica	95	74	89	74	116	52	101	85	115	80	n.a.
Mexico			4 404	891	1 253	4 432	6 474	5 758	8 256	1 157	7 598
Paraguay	6	6	6	-2	6	6	6	4	8	8	n.a.
Peru	...	...	...	...	...	...	...	...	66	736	396
Trinidad and Tobago	264	25	150	106	225	29	341	370	0	700	0
Uruguay	-3	-1	6	14	15	18	36	-1	89	1	13
Venezuela (Bolivarian Republic of)	872	521	204	1 026	1 318	619	1 167	1 524	30	1 273	1 834

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures as at 24 May 2010.
Note: n.a.: Not available.
[a] ECLAC estimates for 2009.

Chapter II

The automotive industry and the crisis: business strategies in Brazil and Mexico

A. Introduction

The automotive industry is a key sector in many large economies around the world. In the United States, it generates nearly 4% of gross domestic product, 10% of the value of industrial output and 1 in 10 jobs, while in the European Union, it is the main industrial contributor to foreign trade and the source of about one third of manufacturing jobs (Cooney, 2008; European Parliament, 2009). Given its importance, it has always been favoured by industrial policies, including long-term sector-specific strategies and a diverse array of stimulus and support instruments. In many countries, policy for the automotive sector has been the industrial policy par excellence. Even in countries that claim not to pursue these kinds of policies, special considerations are always made for this industry.

In some recently industrialized economies, such as China and the Republic of Korea, the strategy for the automotive sector has not been limited to making the country an attractive destination for the integrated international production systems of the transnational automakers that dominate global production. In addition to obtaining foreign direct investment (FDI), technology and training for local human resources and strengthening their production chains, these countries have built strong domestic companies that often have a global presence. Where does Latin America fit in within this scenario?

For much of the second half of the twentieth century, several Latin American economies that pursued an import-substitution industrialization model gave a firm boost to this sector. Under that scenario, the industry was dominated by foreign companies that built plants tailored to the supplying the relatively small domestic market, especially through local production and trade

protection regimes. Nevertheless, despite sector growth, the technology gap failed to close, and in some cases it widened. Then, in the framework of the economic reforms of the second half of the 1980s, the sector began to assume its present shape. Production came to be concentrated, in terms of both number of companies and number of models, in the largest countries, and the vast majority of the economies in the region began to rely exclusively on imports.

Against that backdrop, the installed capacity achieved through import substitution industrialization underwent rapid modernization in the 1990s, and enormous investments were made to establish an export platform and industrial base for supplying the domestic market, as in the case of Mexico, or the subregional market, as in the case of Brazil. The transnational companies remained the principal agents in this process, and despite the prevalence of economic policies that rejected sectoral or vertical interventions, the government authorities continued to support and transform the sector as a central component of their strategies for entering the global market, as was the case with Mexico's incorporation into the North America Free Trade Agreement (NAFTA) and the creation of the Southern Common Market (MERCOSUR), with strong production and trade complementarity between Brazil and Argentina. At present, the automotive industry generates 5.4% and 3.8% of the GDP of the two largest economies in Latin America, respectively, and employs more than one million people in each of these countries (Salerno, 2009; Sarti and Hiratuka, 2009; Carrillo and García, 2009).

In the 2000s, after a long period of growth, the global automotive industry began to experience structural problems that demonstrated the need for a major reorganization. One of the first steps taken by the large manufacturers was to step up efforts to move production to places with relatively lower costs in emerging economies as a way to improve their global competitiveness. However, the rising price of fossil fuels and other commodities, such as steel, along with stricter emissions standards, increased the pressure on automakers. With profit margins rapidly shrinking, they were unable to adapt their product portfolios to the new demands and move decisively towards alternative fuel technologies.

The onset of the global financial crisis in late 2008 therefore hit the sector hard, triggering a precipitous decline in demand for new vehicles and causing financing sources to dry up, for potential buyers and automakers alike. Auto manufacturers had great difficulty financing their hefty and growing current expenditures —wages and other labour compensation— and paying to develop technology models and solutions consistent with the new demands. The collapse of the large automakers in the United States —General Motors, Chrysler and Ford— was the most eloquent example of the industry's structural problems and how the financial crisis made them so much worse. However, the problems were not limited to manufacturers in the United States, but also affected manufacturers in Europe, Japan and the Republic of Korea, even though companies from the latter two countries had achieved widespread acceptance among consumers around the world thanks to their advances in quality and design. The scope and magnitude of these problems highlighted, once more, the importance of the automotive industry, which was subject to comprehensive support and bailout plans implemented by the governments of the countries of origin of the main manufacturers and of the countries hosting their subsidiaries.

The automotive industry's two main production platforms in Latin America —Brazil and Mexico— underwent very different situations, which revealed both structural problems and little-known capacities. This chapter reviews the situation of the global automotive industry in the late 2000s and shows how the financial crisis has accelerated a necessary and overdue process of global restructuring. Based on this overview, the chapter evaluates the present state of the industry in Brazil and Mexico and identifies its characteristics, problems and strengths vis-à-vis the changes under way.

B. Global overview: a radical restructuring intensified by the financial crisis

During the past few decades, the global automotive industry expanded continuously in response to rising global demand, with major changes taking place in the production chain, the main stakeholders and the production and technology paradigms. In recent years, the industry started to present complex structural problems (such as excess installed capacity, mismatches between supply and demand, inadequate product portfolios and saturation in some markets), which were exacerbated by the financial crisis in late 2008.

1. An industry that is constantly evolving

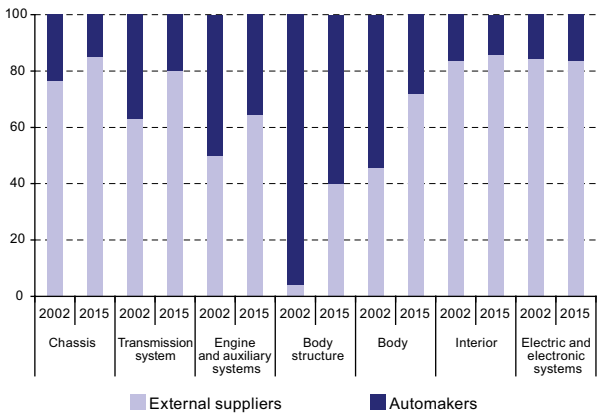
In addition to playing a key role in the industrialization of many countries, during much of the twentieth century, the automotive sector originated innovations that have radically changed how manufacturing processes are organized. In fact, it was the first industry to adopt serial production (Ford's assembly line). Later, it introduced flexible multi-specialization of the labour force, product differentiation and defect prevention —the Toyota Production System— and in more recent years, modular assembly (ECLAC, 1998; ECLAC, 2004).[1] In time, many of these innovations were adopted by rival companies and incorporated into other manufacturing activities. In a capital-intensive industry reliant on mass production, these changes gave considerable advantages to the innovators. Nevertheless, not all actors were able to adopt them with the requisite speed.

Recently, Japanese companies, followed by companies from the Republic of Korea, succeeded in significantly scaling up their presence in the global markets by adopting Toyota's production system, which enabled them to lower their costs and readily adapt production to meet changes in consumer demand.

Although their reaction was somewhat delayed, United States and European automakers took advantage of the experience of electronics corporations: they increased their degree of specialization and use of outsourcing and created modular production networks. In so doing, they sought to make vehicle design and manufacture more profitable by using common platforms that allowed for greater coordination and multiple use of parts, while maintaining the ability to adapt vehicle models to the preferences and needs of the various markets they supplied. In these assembly plants, workers began to handle modules that had been pre-assembled by the suppliers, mounting them directly onto the vehicles as they moved down the assembly line. With some variations, this model has been gradually adopted by the vast majority of automakers.

At present, much of a vehicle's value corresponds to a small number of modules acquired from external suppliers: suspension; doors; headliners; heating, ventilation and air conditioning units; seats; dashboards; and the drive train (engine, transmission and axles).[2] The creation of global production platforms has meant establishing global supplier bases and modifying the stratification of producers and their main suppliers.[3] Thus, suppliers have significantly increased the importance of their role in the production chain. In fact, automakers have demanded that their suppliers invest and develop products, acquire specialized equipment, improve their logistics and products and even provide consumer guarantees and oversee lower-tier suppliers. This trend is likely to intensify in the coming years (see figure II.1). In addition, because it is more expensive and difficult to transport large modules, many suppliers have moved their operations to be near the vehicle assembly plants.

Figure II.1
STRUCTURE OF THE VALUE CHAIN, 2002-2015
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of Mercer Management Consulting, Fraunhofer Institut IMP and IPA, *Future Automotive Industry Structure (FAST) 2015*, Frankfurt, 2004.

1 Originally known as just-in-time production, this system is based on an integrated concept of the production process, viewed as a medium- and long-term commitment between the terminal industry and its employees, suppliers and distributors to generate value added throughout the production chain. This commitment emphasizes teamwork and limits the importance of hierarchies within the production line. The collective effort makes it possible to detect and eliminate quickly potential sources of inefficiencies in all stages of production. The core elements of Toyota's production system are: (i) the flexible organization of production; (ii) emphasis on "zero defects" to eliminate unnecessary costs; and (iii) better long-term relations between producers, suppliers and distributors (ECLAC, 2004).

2 External suppliers provide components and systems that make up about 70% of a vehicle's value (Korth, 2009).

3 Suppliers are grouped into different tiers based on whom they sell their products to. First-tier suppliers are generally the largest and directly supply automakers and purchase inputs from second- and third-tier suppliers. Suppliers in lower-level tiers sell raw materials and basic components. Despite this classification, the lines separating the different tiers are blurred, and many lower-tier suppliers sell their products directly to vehicle manufacturers or companies in other tiers. Likewise, many first-tier supplies sell to other first-tier companies.

Accordingly, in recent years companies like General Motors (GM) and Ford Motor, which historically have been strongly vertically integrated, have significantly stepped up outsourcing and the use of external suppliers and converted some of their subsidiaries into independent companies as a way to lower costs. In 1999 GM split from its subsidiary Delphi, and one year later Ford followed suit with Visteon. In both cases, the companies continued to be major suppliers for Detroit's largest manufacturers.

At present, in view of the negative effect of carbon dioxide (CO2) emissions on climate change, the volatility in the price of oil and predictions of the future scarcity of fossil fuels, international organizations, national authorities, civil society and corporations have begun to take steps to adapt production platforms. In recent years, manufacturers and their suppliers have invested considerable resources in building more fuel-efficient engines, while also developing vehicles that run on hybrid, electric or fuel cell technology.[4] Many of the improvements made in conventional engines have been accepted by consumers, but alternative traction systems have made only very small inroads into the market.

The transition is not easy and presents one of the greatest dilemmas facing the industry. In the vehicle assembly plants, the cost of production equipment —designed to manufacture steel-body vehicles with internal combustion engines— creates high entry barriers for new technologies not easily adapted to the mass production paradigm of the conventional automotive industry (Andrews, Nieuwenhuis and Ewing, 2006).[5] For decades, these high barriers have prevented the introduction of alternative solutions to conventional combustion engines that run on fossil fuels (Orsato and Wells, 2007). Nevertheless, if progress is not made in this direction, it is extremely likely that several manufacturers will disappear from the market in the near future. At present, the existing prototypes are more expensive than their traditional counterparts and performance is still very inferior, but the urgency of environmental issues has made national laws more stringent and given rise to incentives for adopting new technologies. These are still insufficient, however, for aligning the objectives of government authorities, consumers and automakers, especially in the developing countries.

In summary, regardless of specific circumstances, the automotive industry has undergone a continual process of transformation. It is now facing new challenges that could bring about substantial changes in its structure, inasmuch as explicit energy efficiency and environmental sustainability criteria may have to be taken into account in addition to traditional economic efficiency considerations.

2. Globalization of the industry: the triad leans to the East

The sophistication of the automotive production chain and market liberalization have intensified the globalization of the industry, driven by the robust growth of the new markets and the relocation of the production base by automakers to lower costs and raise efficiency. This process can be seen in a new distribution in production, an increase in global trade and expanding FDI flows. All of these elements lead to changes in the global corporate strategies of the industry's primary agents, including both automakers and suppliers of modules, systems, components and raw materials.

From 2000 to 2009, worldwide production of vehicles grew at an average annual rate of 0.5%, reaching a record high of 73 million units in 2007, followed by a heavy contraction in the wake of the international financial crisis. Vehicle production is concentrated in three major regions: North America, Asia and Oceania, and Europe. However, in the past decade, this triad has experienced radical changes. At the beginning of the 2000s, the three regions had equal shares, at about 30%, of global production, but nine years later, Asia and Oceania's share had climbed to 54%, chiefly due to the attractiveness of China and India, while production had plummeted in North America (14%) and in the 15 countries of the European Union (19%) (see figure II.2).

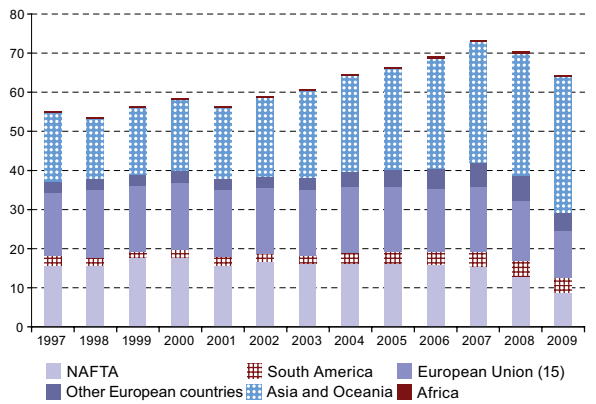
Against a backdrop of moderate growth in global production, these changes hide two opposing realities: on the one hand, there has been stagnant and in some cases declining production in the main traditional producer countries. A case in point is the systematic decline in production in the United States —influenced by the negative performance of the domestic economy and its largest companies (General Motors, Ford and Chrysler)— which was replaced as the top global producer by Japan in 2006 and relegated

[4] A fuel cell is a device similar to a conventional battery that generates electricity and allows for the continuous regeneration of the reactants consumed, the most common of which are hydrogen and oxygen.

[5] The conventional combustion engine and steel body are closely interrelated: because the structure and body of the vehicle are heavy, a powerful propulsion system is needed to meet consumer demands in terms of power and acceleration. In this model, the conventional combustion engine is perfect —not because it is efficient, since it is, in fact, exactly the opposite— only if cheap high-energy fossil fuels are available (Åhman, 2001).

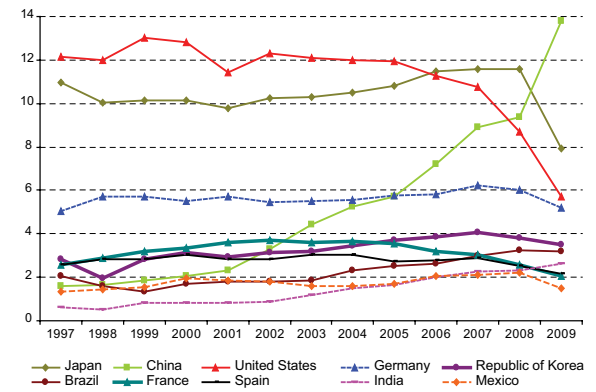
to third place by China two years later (see figure II.3).[6] The large producers in the European Union —Germany, France, Spain, the United Kingdom and Italy— have also scaled down production. However, it is also true that in an attempt to lower their costs and protect their own market against the arrival of the Japanese companies, United States manufacturers shifted production to their neighbours —Canada and Mexico— and the European manufacturers moved production to the new members of the European Union —the Czech Republic, Poland and Slovakia.

Figure II.2
GLOBAL VEHICLE PRODUCTION BY REGION, 1997-2009
(Millions of units)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information provided by International Organization of Motor Vehicle Manufacturers (OICA) [online] http://www.oica.net.

Figure II.3
MAJOR VEHICLE-PRODUCING COUNTRIES, 1997-2009
(Millions of units)



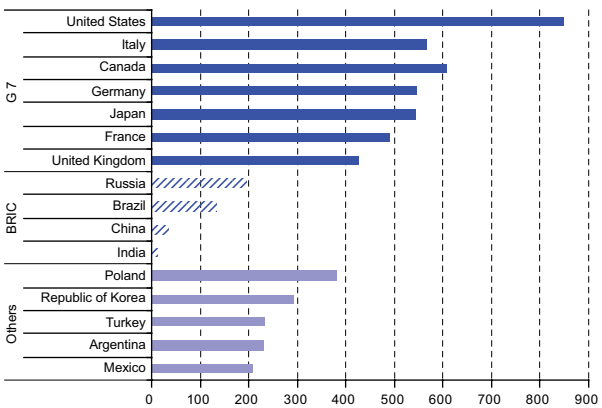
Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information provided by International Organization of Motor Vehicle Manufacturers (OICA) [online] http://www.oica.net.

[6] Chrysler has changed ownership several times in recent years. From 1998 to 2007, it was a subsidiary of the German company Daimler AG, and then 81% of the company was acquired by the United States investment fund Cerberus Capital Management, L.P. In 2009 it filed for protection under Chapter 11 of the United States bankruptcy law and announced a plan to partner with the Italian company Fiat, which currently owns 20% of the new Chrysler and is responsible for running the company. Given these changes and for the purposes of this chapter, Chrysler is considered a United States company.

On the other hand, there has been sustained growth in production in some emerging countries, particularly Brazil, China, India and the Republic of Korea (see figure II.3). In fact, China became the largest producer in the world in 2009, turning out nearly 13.8 million units —48% more than in 2008 (*China Daily*, 12 January 2010). This shows the clear shift in production from industrialized countries to a small group of emerging economies, especially those in Asia.

These patterns show that, in addition to the need among manufacturers to lower costs and become more competitive, the renewed vigour in worldwide demand for vehicles has in part driven the global production trend. As demand has stagnated or fallen in industrialized countries with mature automotive sectors —an average of about 600 vehicles per 1,000 people in the Group of Seven (G-7) countries (Germany, Canada, the United States, France, Italy, Japan and the United Kingdom)— some large emerging economies, with low automobile penetration rates and sustained increases in disposable household income, have become more attractive (see figure II.4).[7]

Figure II.4
SELECTED COUNTRIES: VEHICLES PER CAPITA, 2009
(Vehicles per 1,000 people)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from NationMaster, "Motor vehicles statistics" [online] http://www.nationmaster.com/graph/tra_mot_veh-transportation-motor-vehicles.

The development potential is considerable, above all in Asia's fast-growing economies —especially China and India— and in other large developing and transition economies, such as Brazil and the Russian Federation, i.e., the so-called BRIC countries. Before the crisis (from 2000 to 2007), China led this group in average annual growth (23%), followed by India (13%) and Brazil (8%). During that period, China was responsible for about 80% of the increase in demand of the 16 largest

[7] From 2000 to 2008, domestic sales fell sharply in some of the major consumer markets, such as the United States, Japan and Germany, which had average annual growth rates of -3%, -2% and -1%, respectively. The 2008-2009 crisis exacerbated this decline.

global markets. At present, China has some 35 vehicles per 1,000 people. After annual growth of nearly 10% for the past 20 years —with per capita GDP of US$ 3,600 in 2009— the country is approaching a level of growth that would generally give rise to a long period of rapid growth in auto sales.[8] In 2009, with more than 13.6 million units sold —46% more than in 2008— China became the largest auto market in the world, surpassing the United States, where 10.4 million units were sold, the lowest level since 1982 (*China Daily*, 12 January 2010) (see box II.1).

Box II.1
CHINA'S AUTOMOTIVE INDUSTRY: MANY HIGHLIGHTS, SOME LOW POINTS

In China, the automotive industry has experienced one of the most spectacular processes in history. Since the creation of the first company —First Automobile Works (FAW)— and the subsequent economic reforms of the 1980s, the Chinese authorities have given the automotive sector a central role in the country's industrial development. The country's foreign investment, import substitution and consumer stimulus policies gave the sector two decades to restructure and consolidate itself and acquire the skills that would allow it to compete globally.

In 1992 China's production capacity had surpassed one million vehicles for the first time and by 2000 the Asian giant was producing two million vehicles. After 2001, with the country's accession to the World Trade Organization (WTO), the Chinese auto market experienced vertiginous growth: from 2002 to 2007 it grew at an average annual rate of 21%, which represents an increase of one million vehicles per year. In late 2009, China became the world's largest auto market and producer of vehicles. According to forecasts for the coming years, the sector will continue to see strong, sustained growth. Indeed, the Chinese market could expand tenfold from 2005 to 2030, based on its enormous domestic market and rapidly rising per capita income.

Foreign direct investment has played a key role in this trend. In the early 1980s, the country received the first transnational auto companies, which were permitted to own a maximum share of 49% of companies created in partnership with local manufacturers. In 1983, Beijing Jeep was created, a joint venture between American Motors (subsequently acquired by Chrysler) and Beijing Automotive Industry Holding Corporation. Subsequently, a number of partnerships were established between China's largest automotive groups and some of the top manufacturers in the world. Shanghai Automotive Industry Corporation (SAIC) joined forces with General Motors and Volkswagen; FAW with Volkswagen and Toyota; Dongfeng Motor Corporation with PSA Peugeot-Citroën, Nissan, Honda and Hyundai-Kia; Chang'an Motors with Suzuki, Ford and Mazda; Guangzhou Automobile Industry Group with Honda, Isuzu and Toyota; and Beijing Automotive Industry with Hyundai. In 2009, Volkswagen was the market leader, producing about 1.4 million vehicles, followed by General Motors, Hyundai and Nissan.

However, the Chinese phenomenon has not spelled the end of the supremacy of the global manufacturers. A small number of local auto companies have taken advantage of State support and interaction with the global leaders to develop own technologies, particularly engines and transmission systems. In so doing, they have created their own brands, which have begun to sell successfully in the global marketplace. Truck manufacturers were the first to do this, followed by automobile manufacturers, including Geely, Chery, Great Wall Motor and BYD. However, not all developments have been positive. First, rapid growth in the domestic market has not helped to reverse the national auto industry's high degree of fragmentation: 80 vehicle manufacturers and 7,000 suppliers. Most companies lack the scale and resources needed for product development, depend on foreign technology transfer and compete mainly on price, which erodes the sector's profitability. This is undoubtedly the main weakness of China's auto industry. Second, as they have attempted to gain access to foreign markets, several Chinese companies have faced allegations of intellectual property infringements and have had to deal with distribution and post-sales problems in foreign markets and a product portfolio with limited flexibility for adapting to more sophisticated markets.

In 2009, in order to compensate for some of these weaknesses, government authorities and top manufacturers made a number of very important decisions. The government implemented a plan to restructure and revitalize the auto industry by reducing the number of automakers to about a dozen, with only two or three having the scale to produce over two million vehicles per year and four or five able to produce over one million. In addition, it set aside 40% of China's market for domestic automakers so they could develop own brands and products, created instruments to stimulate consumption and adopted measures to support suppliers and the development of alternative technology vehicles. Meanwhile, the companies have managed to save time and skip steps by seeking cheap assets among compromised United States companies. General Motors sold Saab to Beijing Automotive Industry Holding Co. (BAIC) and attempted to sell Hummer to Sichuan Tengzhong Heavy Industrial Machinery (an operation that failed in February 2010), while Ford sold Volvo to Geely (*Financial Times*, 28 March 2010).

This last operation represents the first time that a Chinese firm has taken control of a world-renowned vehicle manufacturer. This acquisition will help Geely to lower both manufacturing and product development costs. In fact, the firm plans to open a Volvo plant in China. It will also help the firm to improve its international position as regards marketing strategies and vehicle manufacturing outside China.

To summarize, in less than 60 years, China has become the most important actor in the global automotive industry. However, its rapid growth has resulted in a fragmented sector with multiple inefficiencies. Along the way, the Chinese government has played a key role, providing the resources and instruments needed to protect and develop the industry. At present, precise diagnostics are available, so the next few years will tell whether this phenomenon is a flash in the pan or Chinese companies are really beginning to dominate a sector that has been the pride of the industrialization of many countries in the West.

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

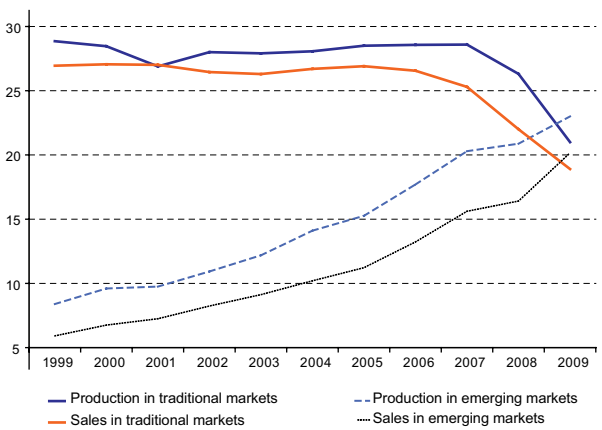
[8] In the case of the Republic of Korea, from 1980 to the mid-1990s, auto sales grew at an annual rate of 27%, outpacing growth in per capita income by nearly four times, until per capita income reached US$ 10,000 (*Global Auto Report*, 29 December 2009).

This metamorphosis is shifting the global automotive industry's centre of gravity and substantially increasing Asia's importance (see figure II.5). In addition to being the home of some of the most successful manufacturers in recent years, such as the Japanese companies Toyota, Honda and Nissan and the companies of the Republic of Korea, Hyundai and Kia, Asia has markets with high potential demand and very favourable conditions for vehicle manufacturing, including low costs, a skilled workforce and increasing economic, legal and political security.

Moreover, a more demand-driven production and the recent relocation of auto assembly plants and suppliers to new production centres has had the effect of boosting global trade in vehicles and auto parts. This dynamic, supported by the proliferation and consolidation of free trade and economic integration agreements, has built a strong intraregional bias into trade in auto products, chiefly in North America (due to NAFTA) and the European Union. In Asia, because much of the production base is still located in the markets of origin of the companies, the destinations of exports are much more diversified (see figure II.6).

From 2000 to 2008, global exports of automotive products grew at an average annual rate of 10%, totalling US$ 1.2 billion in 2008 (WTO, 2009), a year in which the top exporters were Germany, Japan, the United States, France, Canada, Spain, the Republic of Korea, Belgium and Mexico, while the top importers were the United States, Germany, France, the United Kingdom, Canada, Italy, Belgium and Spain (see figure II.7).[9] As an example, the automotive products imported by the United States, Canada and Mexico mostly came from within NAFTA itself, at a rate of 42%, 77% and 60%, respectively, while the European Union received 85% of its imports from within the region (see figure II.8). These figures help to understand the intraregional bias of trade in the auto industry and the pattern of specialization in some of the world's largest markets. For example, the United States market is characterized by demand far in excess of domestic production, which must be met by imports, especially from its neighbours —Canada and Mexico. As mentioned earlier, this was the model adopted by the major automakers in the United States to deal with the strong entry of the Asian companies into the domestic market.

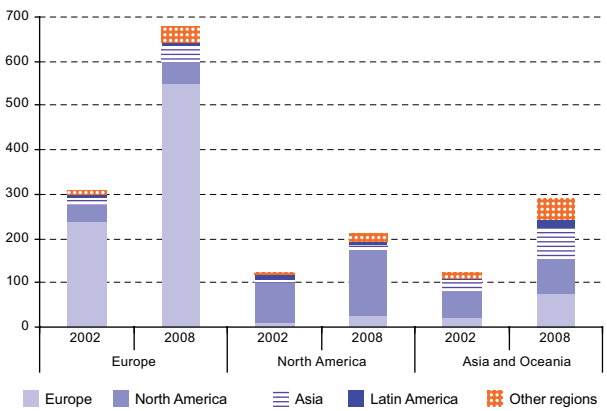
Figure II.5
TRADITIONAL AND EMERGING PRODUCER COUNTRIES: TOTAL PRODUCTION AND SALES IN THE DOMESTIC MARKET, 1999-2009 [a]
(Millions of units)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information provided by International Organization of Motor Vehicle Manufacturers (OICA) [online] http://www.oica.net and National Association of Motor Vehicle Manufacturers of Brazil (ANFAVEA), *Anuário da indústria automobilística brasileira,* São Paulo, 2009 [online] http://www.anfavea.com.br.

[a] The main traditional markets are the United States, Japan and Germany, while the major emerging markets are China, India, Brazil, the Republic of Korea and Mexico.

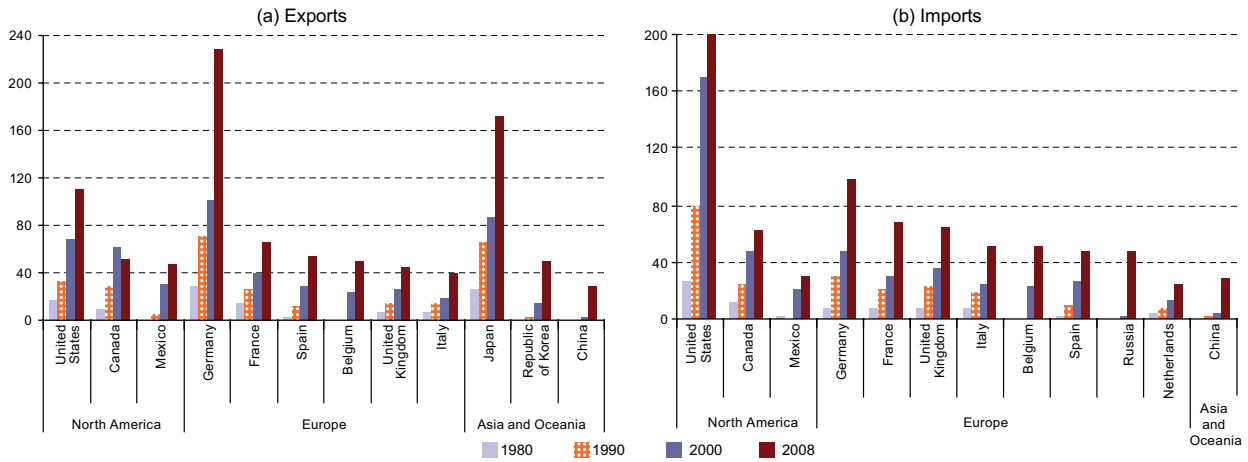
Figure II.6
SELECTED REGIONS: EXPORTS OF AUTOMOTIVE PRODUCTS, BY DESTINATION, 2002-2008
(Billions of dollars)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of figures from the World Trade Organization (WTO).

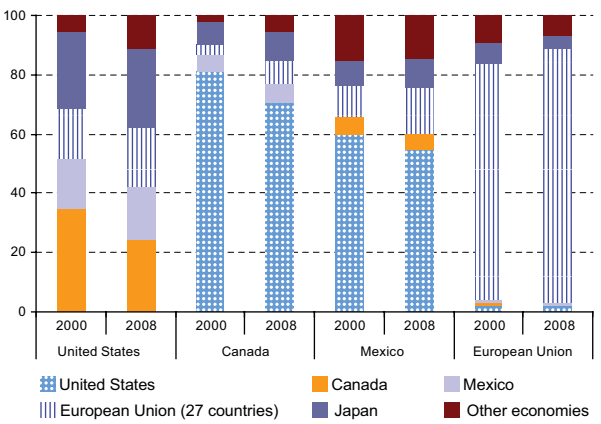
[9] In 2007 33 million units were expected, mainly from Japan, Germany, France and the Republic of Korea. The main import markets were the United States and the largest economies of the European Union: the United Kingdom, Italy, Spain and France.

Figure II.7
MAIN EXPORTING AND IMPORTING COUNTRIES FOR AUTOMOTIVE PRODUCTS, BY REGION, 1980-2008
(Billions of dollars)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of figures from the World Trade Organization (WTO).

Figure II.8
IMPORTS OF AUTOMOTIVE PRODUCTS IN SELECTED ECONOMIES, BY ORIGIN, 2000-2008
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of figures from the World Trade Organization (WTO).

These data confirm that the automotive industry has undergone major changes in the geographic distribution of production in the global market: traditional manufacturers have lost ground to emerging ones. Moreover, in the principal emerging markets —Brazil, the Russian Federation, India and China— production has grown proportionally to domestic demand, on the back of import substitution strategies. Consequently, these countries tend not to be major importers, but rather net exporters, depending on the level of investment —including FDI flows— and the extent of their production capacity. Accordingly, robust growth in domestic demand has become the main factor in attracting new investments, but an increasing export-orientation will be needed to expand the scale of operations and help new investments mature more rapidly.

All these changes have exacerbated one of the major problems in the industry, especially in North America, Europe and Japan: excess installed capacity in a context of coexisting facilities of varying ages and degrees of modernization. This is a key factor in the industry's profitability and its possible restructuring —through mergers, acquisitions and divestments— in the next few years. Excess production capacity in the triad countries is very high: between 25% and 35% (KPMG, 2009b).[10]

From a historical viewpoint, production in the automotive industry has been less globalized than in other sectors. However, in the past few decades, this trend has begun to change, with the pace of change accelerating in recent years. In 2007, the automotive industry was responsible for about 4% of the total stock of FDI in the world (UNCTAD, 2009). Despite the shift in global production, FDI is still highly concentrated in the developed countries, where 86% of total FDI in the automotive sector is clustered. Recent FDI flows suggest that this trend is beginning to change: developing countries and economies in transition accounted for 30% of cumulative flows between 2005 and 2007 (UNCTAD, 2009).

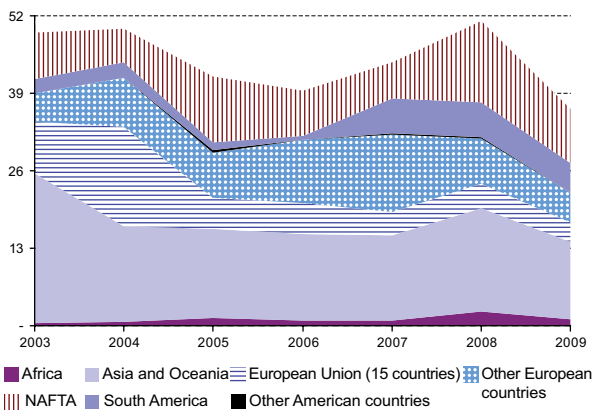
Despite the fact that the top transnational automakers continue to invest in their countries or regions of origin, cross-border investments are becoming increasingly important due to strong competitive pressures and the need to serve high-growth emerging markets. As mentioned, a select group of developing countries and economies in transition have been targeted in these operations.

From 2003 to 2009, Asia became the top destination for automakers —regardless of origin— and the beneficiary

[10] Due to the decline in demand, the industry's excess capacity increased significantly and, above all, quickly, from between 11% and 20% in 2007 to between 32% and 59% in 2008 (KPMG, 2008).

of about 40% of the investments announced. Over 53% of projects announced for that continent were in China, followed by India (20%), Thailand (7%) and Indonesia (2%). In addition, the other BRIC countries (Brazil and the Russian Federation) have become the focal points of automotive investment. Each of the regions adjacent to the major traditional markets of the United States and the 15 countries of the European Union, i.e., Canada and Mexico and the economies in transition in Europe (Poland, the Czech Republic and Slovakia) have attracted nearly 20% of announced cross-border investments and have remained relevant in the new architecture of the global automotive chain. United States companies have continued to strengthen their production base within NAFTA, as have European firms within the new members of the European Union (27 countries). In addition to continuing to strengthen their production base in companies from Asia, Japan and the Republic of Korea have continued to expand their global production system, especially in North America and Eastern Europe (see figures II.9 and II.10).

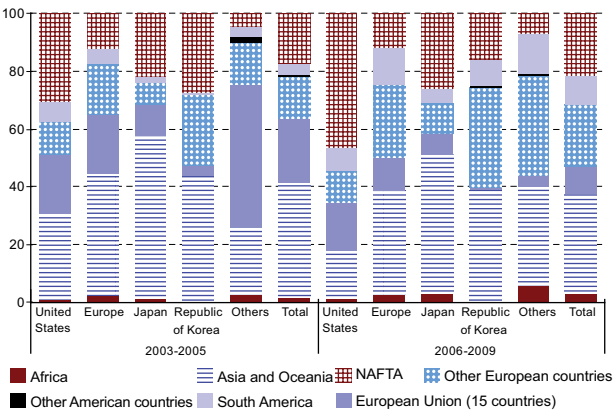
Figure II.9
CROSS-BORDER INVESTMENT PROJECTS ANNOUNCED BY AUTOMAKERS, BY REGION OF DESTINATION, 2003-2009
(Billions of dollars)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of figures from fDiMarkets CrossBorder Investment Monitor, Financial Times, Ltd., 20 April 2010.

These trends add weight to the argument in favour of streamlining and relocating automotive plants. Sectoral investments to expand capacity have not been very significant owing to the fact that production was expanded by calling upon high idle capacity. In addition, they suggest that the streamlining and closure of plants, especially in the developed countries, has been accompanied by greenfield investments, which are increasingly made on the European periphery and in South and Southeast Asia. Lastly, the production growth in new markets (China, India, the Russian Federation and the Republic of Korea) was largely based on investments by domestic companies, which reduced the share of FDI in total investment in the automotive sector. The largest countries in South America, particularly Brazil, have also taken part in this process. Thus, automotive companies are depending on the performance of the emerging markets to continue increasing their production capacity and achieve higher growth in earnings (KPMG, 2009b).

Figure II.10
CROSS-BORDER INVESTMENT PROJECT ANNOUNCEMENTS, BY ORIGIN OF AUTOMAKER AND REGION OF DESTINATION, 2003-2009
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of figures from fDiMarkets CrossBorder Investment Monitor, Financial Times, Ltd., 20 April 2010.

Other changes have occurred alongside these alterations in the geography of automotive production. First, the industry has lost relevance in the production structure of the developed countries. In this group of countries, the sector's participation in total industrial value added fell from 7.8% in 1995 to 7.1% in 2005, whereas in the developing economies it climbed from 4.2% to 4.3%. In addition, the developed countries' share of the global automotive chain's value added dropped. From 1995 to 2005, the industrialized economies' share fell from 86% to 81%, whereas the developing countries increased their relative importance from 12% to 17% and the economies in transition more than doubled their share from 1.3% to 2.8% (Sarti and Hiratuka, 2009). Despite this performance, progress continues to be modest, inasmuch as the more knowledge —and technology— intensive activities show sustained resistance to moving to the emerging economies.

In summary, recent growth in global vehicle production has been concentrated in emerging countries and some economies in transition. These regions have had to scale up production of automotive parts and components, which has made them attractive destinations for new investments in the sector. This dynamic has

two elements: access to large, high-growth markets and the cost-efficiency of global production platforms. This global restructuring of production is occurring in a context of greater international competition and high idle capacity, which entails two strategies: plant closures in developed economies and new investments in emerging markets. Thus, activities to streamline production in the developed countries and increase production capacity in some emerging countries are also associated with strategies to lower costs and boost competitiveness. Moreover, the systematic search for lower costs has driven the reorganization of global and regional supplier and production networks, as well as the development of new products.

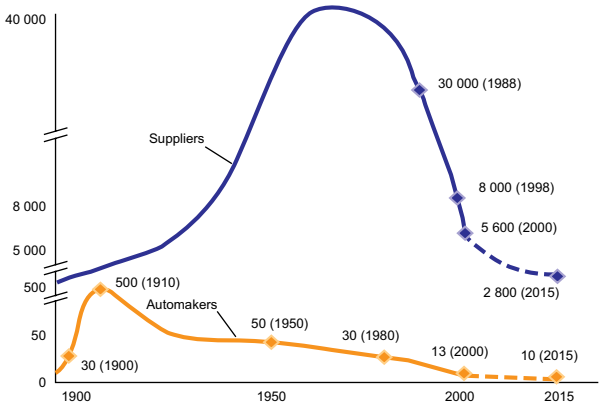
3. Concentration in the industry: towards a few global companies

In general, the top automakers are present in the main global markets, which has greatly increased competition in the industry. This has caused profit margins to plunge and forced companies to find new formulas for reconciling economies of scale with the diversification and segmentation of production, in order to serve an increasingly diverse and demanding consumer base. In addition, with excess capacity ranging from 25% to 35% and market saturation in the developed countries, it is increasingly difficult to achieve significant savings. Transferring production capacity to large emerging economies allows companies to lower costs and serve markets with high growth potential.

In this scenario, the number of global competitors in the industry rapidly plummeted —from 30 in 1980 to 13 in 2000— with about 10 expected to be remaining in 2015 (Dannenberg and Kleinhans, 2007) (see figure II.11). Mergers and acquisitions have played an important role in this process, although not as important as in the pharmaceutical and media industries. Companies have used this mechanism to expand and strengthen their market share, improve coverage, gain access to new distribution channels and achieve economies of scale, synergies and new production and technology capacity, as well as diversify their product offerings in an increasingly segmented market (Donnelly, Mellahi and Morris, 2002).

The late 1990s saw some major mergers, acquisitions and partnerships —in some cases involving a change of ownership— between the top automotive groups. The most prominent of these were the mergers between the French companies Peugeot and Citroën in 1976 (PSA Peugeot-Citroën) and between Germany's Daimler-Benz and the United States' Chrysler in 1998 (Daimler Chrysler); the strategic partnership between the France's Renault and Japan's Nissan in 1999; and the numerous acquisitions by mass market companies seeking to improve their product portfolio, especially in the luxury vehicle segment.[11] This was the case with the acquisitions of Audi, Bentley Motors, Lamborghini, Bugatti and Porsche by Volkswagen; Volvo, Jaguar, Aston Martin and Land Rover by Ford; and Saab and Hummer by General Motors (see table II.1).

Figure II.11
NUMBER OF AUTOMOTIVE COMPANIES: AUTOMAKERS AND SUPPLIERS, 1900-2015



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of Jan Dannenberg and Christian Kleinhans, "The coming age of collaboration in the automotive industry", *Mercer Management Journal*, No. 17, Munich, 2007 [online] http://www.oliverwyman.com/fr/pdf_files/MMJ17-AutoIndustryCollab.pdf.

[11] Between 1999 and 2002, Renault acquired just under half of Nissan Motors in two operations for nearly US$ 6.7 billion, and in 2002 Nissan acquired a 16% share in Renault for US$ 1.66 billion (see figure II.1). The partnership is based on the principle that each firm maintains its own identity while sharing resources: Renault supports Nissan in Europe and South America, and Nissan supports Renault in North America and Asia.

Table II.1
AUTOMAKERS: PRINCIPAL MERGERS AND ACQUISITIONS, 1987-2010
(Millions of dollars and percentages)

Date	Acquired company	Country	Acquiring company	Country	Share	Amount
2009	General Motors	United States	Vehicle Acq. Holdings LLC [a]	United States	100.0	55 280
1998	Chrysler Corp.	United States	Daimler-Benz AG	Germany	100.0	40 466
2007	Chrysler Group	United States	Cerberus Capital Management L.P.	United States	80.1	7 400
1999	Volvo AB	Sweden	Ford Motor Co.	United States	100.0	6 450
2009	Porsche AG	Germany	Volkswagen AG	Germany	49.9	5 572
1999	Nissan Motor Co.	Japan	Renault SA	France	36.8	4 911
2008	Scania AB [b]	Sweden	Volkswagen AG	Germany	16.8	4 378
1990	Renault SA [c]	France	Volvo AB	Sweden	20.0	3 598
2002	Daewoo Motor Co.	Republic of Korea	General Motors	United States	100.0	2 755
2000	Land Rover (BMW)	United Kingdom	Ford Motor Co.	United States	100.0	2 716
1990	Volvo AB	Sweden	Renault SA	France	10.0	2 662
1994	Rover Group Holdings PLC	United Kingdom	BMW AG	Germany	100.0	2 563
2010	Suzuki Motor Corp.	Japan	Volkswagen AG	Germany	19.9	2 527
2009	Chrysler LLC	United States	New CarCo Acquisition LLC [d]	United States	100.0	2 500
2000	Fiat S.p.A	Italy	General Motors Corp.	United States	20.0	2 400
1989	Jaguar PLC	United Kingdom	Ford Motor Co.	United States	86.8	2 395
2000	Scania AB [b]	Sweden	Volvo AB	Sweden	32.7	2 335
2008	Jaguar/Land Rover	United Kingdom	Tata Motors Ltd.	India	100.0	2 300
1991	Saab-Scania AB	Sweden	Patricia AB	Sweden	59.2	2 264
1987	American Motors	United States	Chrysler Corp.	United States	100.0	1 928
2000	Mitsubishi Motors	Japan	DaimlerChrysler AG	Germany	34.0	1 926
2010	Volvo	Sweden	Zhejiang Geely	China	100.0	1 800
2002	Nissan Motor Co.	Japan	Renault SA	France	11.9	1 769
2002	Renault SA	France	Nissan Motor Co.	Japan	15.8	1 662
2000	Scania AB [b]	Sweden	Volkswagen AG	Germany	18.7	1 621
2009	Volkswagen Caminhões e Ônibus	Brazil	MAN SE	Germany	100.0	1 612
2006	Scania AB [b]	Sweden	MAN SE	Germany	11.5	1 480
1998	SsangYong Motor	Republic of Korea	Daewoo Group	Republic of Korea	52.0	1 436
2007	Volkswagen AG	Germany	Porsche AG	Germany	3.6	1 386
2008	OAO Avtovaz	Russian Federation	Renault SA	France	25.0	1 166

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of figures from Thomson Reuters, Thomson ONE database and press information.

[a] Vehicle Acquisition Holdings LLC is a company that was created by the Department of the Treasury of the United States, the Governments of Canada and Ontario and the new autoworkers union to acquire certain assets held by General Motors during the bankruptcy proceedings initiated under chapter 11 of the United States bankruptcy law. Now that the operation has concluded, the principal owners of General Motors are the Department of the Treasury of the United States (60.8%), the autoworkers union (17.5%) and the Governments of Canada and Ontario (11.7%).

[b] At present, the German company Volkswagen (VW) is the majority shareholder in Scania AB, with nearly 71% of its voting stock. In 2000, VW purchased Volvo's share of Scania after a failed attempt to acquire the company and then continued to acquire more shares. Since 2008, Scania AB is part of the Volkswagen group. In addition, since 2007, VW owns 30% of the German truck maker MAN SE, which, in turn, holds 17% of the voting stock of Scania AB.

[c] New CarCo Acquisition LLC is a new company created by the Department of the Treasury of the United States, the Government of Canada, the Italian company Fiat and the health benefits fund of the United Auto Workers union (*Voluntary Employees' Beneficiary Association, VEBA*) to acquire Chrysler's assets during the bankruptcy proceedings initiated under chapter 11 of the United States bankruptcy law. The new Chrysler is owned by VEBA (55%), Fiat (35%), the Department of the Treasury of the United States (8%) and the Government of Canada (2%). Fiat has the option to increase its share to 51%.

[d] New CarCo Acquisition LLC is a new company established by the United States Treasury Department, the Government of Canada, the Italian car company Fiat and the Voluntary Employees Beneficiary Association (VEBA) of the United Auto Workers union to acquire the assets of Chrysler during the Chapter 11 bankruptcy process. Ownership of the new Chrysler is distributed as follows: VEBA (55%), Fiat (35%), the United States Treasury Department (8%) and the Government of Canada (2%). Fiat has an option to increase its participation to up to 51%.

Through successive mergers, acquisitions and partnerships, most of the top companies have succeeded in strengthening their position in the global market, which has made the industry more highly concentrated: in 2008, the 10 largest firms accounted for about 70% of global production, with the top 5 responsible for just under 50% (see table II.2). However, the strong arrival of the Chinese manufacturers could be reversing this trend, since the global market share of the top 10 automakers slid from 76% in 2000 to 70% in 2008.

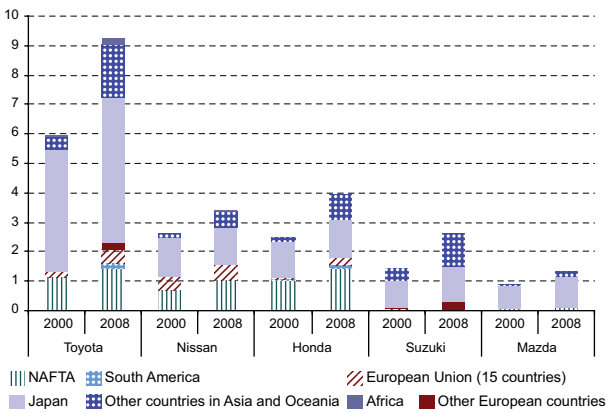
Evidently, the Japanese companies, and to a lesser extent those of the Republic of Korea, have had the greatest success, achieving a sizeable increase in production. Toyota, Honda, Nissan, Suzuki and Mazda, thanks to their solid production base in Japan, have scaled up their operations in Asia and expanded with excellent results into the NAFTA markets —especially the United States— and Europe. Unlike firms in the United States and Europe, which bought existing plants, the top Japanese automakers —Toyota and Honda— invested first and foremost in new plants.

Table II.2
MAJOR AUTOMAKERS, PRODUCTION BY REGION, 2000-2008
(Thousands of units and percentages)

Company		Production		Country of origin	Production by region					
		2000	2008		NAFTA	European Union (15 countries)	Other European countries	Asia and Oceania	South America	Africa
Toyota	Japan	5 955	9 238	53.2	15.7	7.5	-	73.2	1.7	1.9
General Motors	United States	8 133	8 283	12.4	41.6	16.0	5.8	28.0	8.6	-
Volkswagen	Germany	5 107	6 437	36.1	7.0	48.9	16.2	13.5	13.0	1.4
Ford	United States	7 323	5 407	29.6	41.0	39.6	5.0	6.8	7.6	-
DaimlerChrysler	Germany	4 667	-	57.2	18.9	66.1	0.7	8.7	3.4	2.1
Honda	Japan	2 505	3 913	32.3	36.3	5.9	1.3	53.1	3.4	-
Nissan	Japan	2 629	3 395	38.1	29.3	16.0	-	53.7	0.2	0.8
PSA Peugeot-Citroën	France	2 879	3 325	40.6	-	62.4	14.1	15.2	8.0	0.3
Hyundai	Republic of Korea	2 488	2 777	60.3	8.5	-	3.3	88.1	-	-
Suzuki	Japan	1 457	2 624	46.4	0.5	0.1	10.7	88.7	-	-
Fiat	Italy	2 641	2 524	34.9	-	39.8	27.0	2.6	30.7	-
Renault	France	2 444	2 417	29.7	0.4	44.3	33.1	10.9	9.9	1.5
Daimler AG	Germany	-	2 174	57.2	11.9	69.2	0.9	9.7	5.8	2.5
Chrysler	United States	-	1 893	58.4	98.5	1.5	-	-	-	-
BMW	Germany	835	1 440	62.6	11.9	84.8	-	-	-	3.3
Kia	Republic of Korea	-	1 395	75.6	-	-	14.4	85.6	-	-
Mazda	Japan	926	1 349	79.9	6.7	-	-	91.8	1.0	0.5
Mitsubishi	Japan	1 827	1 321	64.6	4.5	4.7	-	87.6	3.0	0.4
World total		**58 374**	**70 527**	**-**	**18.4**	**21.5**	**9.4**	**44.3**	**5.6**	**0.8**

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information provided by International Organization of Motor Vehicle Manufacturers (OICA) [online] http://www.oica.net.

Figure II.12
PRODUCTION OF JAPANESE COMPANIES, BY REGION, 2000-2008
(Millions of units)

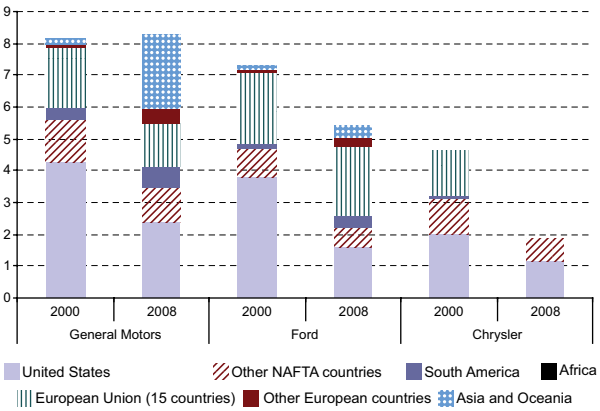


Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information provided by International Organization of Motor Vehicle Manufacturers (OICA) [online] http://www.oica.net.

In order to counteract the Asian companies' strong entry into their market and reverse the serious competitiveness problems they are facing at home, automakers in the United States have strengthened their production base outside NAFTA: General Motors has invested in Asia, mainly in China and the Republic of Korea, and in South America —in Brazil— while Ford has invested in Europe, although this could change following the recent sale of Volvo (see figure II.13). Lastly, based on a strongly regional market orientation, European automakers have concentrated their production base in their countries of origin and in other economies in the European Union, particularly Spain, the Czech Republic, Slovakia, Romania and Poland. South America and Asia have been other important markets for the European firms. Notably, these firms have a strong presence in MERCOSUR, and Volkswagen is a leader in China's domestic market. However, this trend could reverse itself quickly as a result of the recent strategic partnerships of Fiat, Volkswagen and PSA Peugeot-Citroën with manufacturers in Asia and the United States.

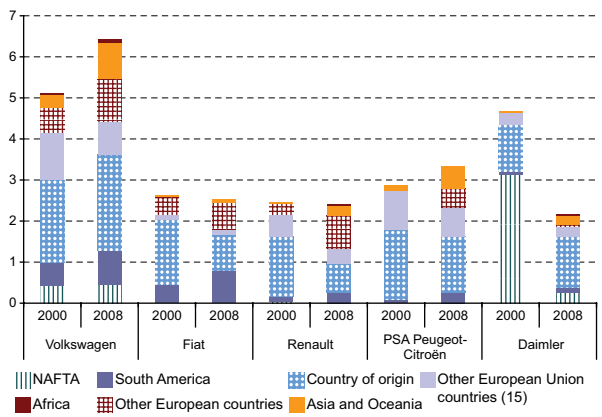
In these circumstances, the United States firms have seen their global market share systematically contract. Conversely, the Japanese firms —particularly Toyota and Honda— have expanded their global presence. Among the European companies, Volkswagen stands out for its strength, having turned around its poor performance, and has emerged as one of the best-positioned companies for the coming decade (see figure II.15). In addition, several small manufacturers have taken clear, quick steps to close their production gaps.

Figure II.13
PRODUCTION OF UNITED STATES COMPANIES, BY REGION, 2000-2008
(Millions of units)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information provided by International Organization of Motor Vehicle Manufacturers (OICA) [online] http://www.oica.net.

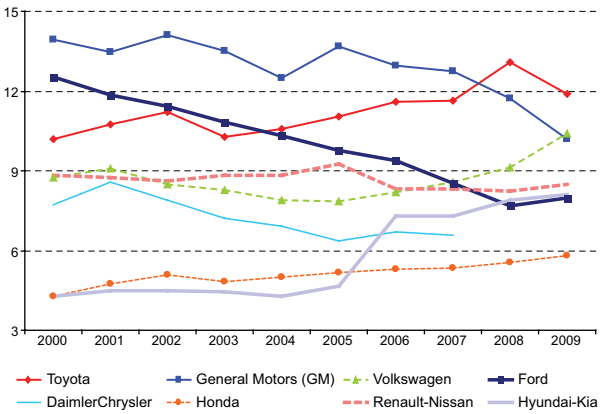
Figure II.14
PRODUCTION OF EUROPEAN COMPANIES, BY REGION, 2000-2008
(Millions of units)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information provided by International Organization of Motor Vehicle Manufacturers (OICA) [online] http://www.oica.net.

Suppliers are experiencing a dynamic similar to that of the automakers. The number of suppliers in the industry plummeted from about 30,000 in 1988 to some 5,600 in 2000, a figure that is expected to fall by half again by 2015 (Dannenberg and Kleinhans, 2007) (see figure II.11). In the case of the first-tier suppliers, a rapid consolidation process is under way that will lead to the emergence of global suppliers responsible for satisfying much of the automakers' provisioning needs and supervising the performance of lower-tier suppliers (Ribes, 2009). Accordingly, many first-tier suppliers have deepened their vertical integration and expanded their geographical coverage to respond effectively to the needs of automakers with a global presence.

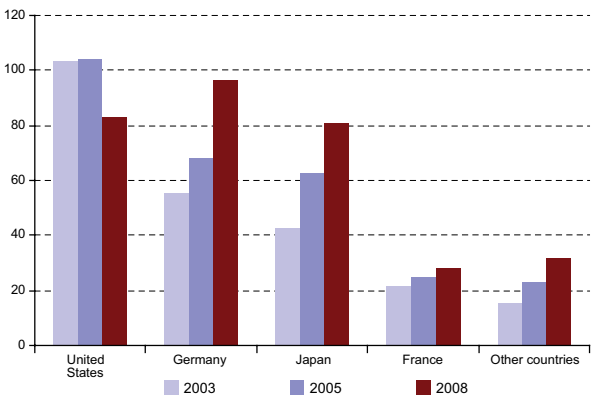
Figure II.15
TOP AUTOMAKERS: SHARE OF GLOBAL MARKET, 2000-2009
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information provided by International Organization of Motor Vehicle Manufacturers (OICA) [online] http://www.oica.net.

In the early 2000s, most suppliers of modular systems were United States firms, particularly after Ford and General Motors split from their components divisions: Visteon and Delphi, respectively (ECLAC, 2004). However, given the industry's problems in North America, German and Japanese companies began to displace their United States counterparts (see figure II.16). The top first-tier suppliers include the German firms Robert Bosch GmbH, Continental AG and ZF Friedrichshafen AG; the Japanese firms Denso Corp. and Aisin Seiki Co. Ltd.; and the United States firms Delphi Corp., Johnson Controls Inc., Lear Corp. and Visteon Corp. (see table II.3).

Figure II.16
CUMULATIVE SALES OF THE TOP 20 GLOBAL AUTOPARTS SUPPLIERS, BY COUNTRY OF ORIGIN, 2003-2008
(Billions of dollars)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of figures from Automotive News, *Top 100 Global Suppliers*, various editions.

In summary, against a backdrop of strong competition, an accelerated consolidation process and excess production capacity, every company in the automotive chain has pursued economies of scale and

synergies that would allow them to develop platforms for diverse global markets. This has allowed several manufacturers to move successfully towards closing their production gaps. In a relatively brief period, the number of major companies in the automotive sector has fallen drastically, a trend that was accelerated by the financial crisis of late 2008 and its harsh consequences for the automotive industry in 2009.

Table II.3
TOP GLOBAL SUPPLIERS TO AUTOMAKERS, BY SALES, 2008
(Millions of dollars and percentages)

Company	Origin	Sales	Sales by region			
			North America	Europe	Asia	Rest of the world
Robert Bosch GmbH	Germany	33 901	13	62	20	5
Denso Corp.	Japan	27 762	12	12	76	-
Continental AG	Germany	25 012	17	67	10	6
Magna International Inc.	Canada	23 295	49	48	-	3
Aisin Seiki Co. Ltd.	Japan	20 796	16	8	75	1
Johnson Controls Inc.	United States	19 100	37	54	-	9
Delphi Corp.	United States	18 060	42	40	11	7
Faurecia	France	17 656	15	74	6	5
ZF Friedrichshafen AG	Germany	16 891	10	69	15	6
TRW Automotive Inc.	United States	15 000	30	56	9	5
Lear Corp.	United States	13 600	36	49	8	7
Toyota Boshoku Corp.	Japan	12 338	19	4	77	-
ThyssenKrupp Technologies AG	Germany	11 297	31	51	12	6
Yazaki Corp.	Japan	11 180	23			
Valeo SA	France	10 326	12	66	15	7
Benteler Automobiltechnik GmbH	Germany	9 309	28	65	7	-
Sumitomo Electric Industries Ltd.	Japan	9 250	20	14	56	10
Visteon Corp.	United States	9 100	24	41	30	5
Hyundai Mobis	Republic of Korea	8 845	15	9	76	-
Dana Holding Corp.	United States	8 095	48	30	8	14

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of figures from Automotive News, *Top 100 Global Suppliers*, 1 June 2009.

4. The collapse of Detroit: the Big Bang of the automobile industry crisis?

The automobile industry is extremely competitive and has low profit margins. When vehicle sales fall, high fixed costs and tight margins can send companies into the red and force them to seek large amounts of capital and quick financing (European Parliament, 2009). The crisis of late 2008 was unprecedented in that the sharp and simultaneous collapse of sales of companies throughout the world hit most economic agents linked to the global auto industry. The situation was particularly dire after world capital markets shut down.[12]

Although the most difficult moments for the auto industry —including vehicle manufacturers, suppliers and dealers— came during the international financial crisis in late 2008, this is but one of the factors that explain the sector's performance in recent months. The crisis struck a severe blow to the industry in the United States and, by extension, to that of Canada and Mexico, countries with whose auto sectors the United States is tightly integrated through NAFTA and the Automotive Products Trade Agreement (APTA), or Auto Pact, between Canada and the United States. The industry's troubles quickly spread and automakers in Europe and Asia began to suffer the consequences of the crisis, especially because of the unprecedented speed and magnitude of the decline in demand.

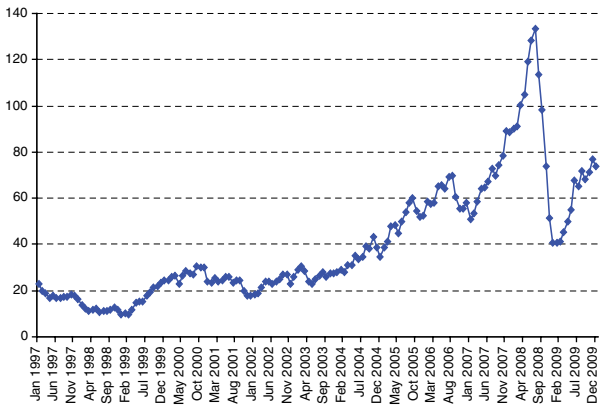
Numerous countries responded to the crisis by introducing economic-aid packages intended to preserve jobs, support vehicle manufacturers and auto-parts suppliers and promote the development of cleaner, more fuel-efficient models. In most cases, the governments of the most severely affected countries granted several billion dollars in assistance through loans, loan guarantees, subsidies and other measures to spur automobile demand —most notably, incentives for purchasing new vehicles. In exchange, many governments are demanding that automakers produce more energy-efficient vehicles. Stimulus packages have generally attempted to encourage incremental innovation in the industry, rather than revolutionary, disruptive changes based on a whole new set of technologies (OECD, 2009).

[12] Because credit is vital for the auto industry, the global financial crisis took a toll on nearly every facet of financing in the sector. Credit conditions determine the industry's ability to invest and dealers' ability to finance their inventories and to sell vehicles to end consumers (Cooney, 2008). In addition, given the high price of purchasing a new vehicle in comparison with an average family's monthly income, the ability to borrow is a fundamental element in a typical acquisition process.

The global economic crisis has taken an expectedly large toll on the global automobile market. Although demand always contracts during economic downturns as consumers delay or cancel their decisions to purchase durable goods, the virtual disappearance of credit and the worsening conditions in the labour market exacerbated the problem (OECD, 2009). The consequences were even worse than they normally are in a recession, as the crisis exposed the automobile industry's structural problems, particularly in the United States.

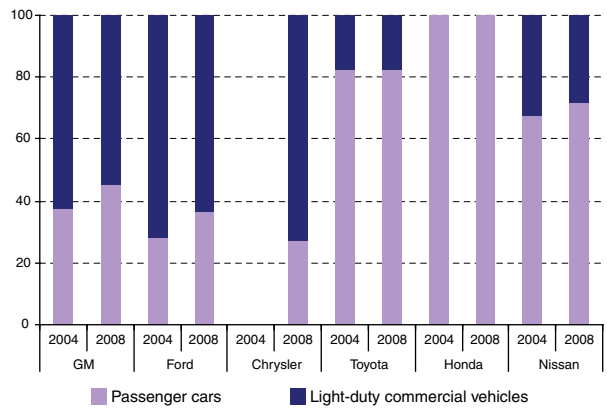
The steep rise in fuel prices (see figure II.17) starting in 2004 exposed the automobile industry's serious problems in deciding on a product line-up. Consumers who wanted more fuel-efficient vehicles stopped buying the flagship products of the three leading United States automakers: sport utility vehicles (SUVs), light all-terrain vehicles, light trucks and minivans.[13] The rigidity of United States automakers could be seen in the fact that light-duty commercial vehicles continued to account for a considerable share of their output in the NAFTA area, whereas foreign automakers reduced production of these vehicles to 20% or less of their overall output (see figure II.18). United States manufacturers had focused on this type of vehicles owing to their broad popularity and relatively high profit margins, which allowed them to partially offset another serious structural problem that had overwhelmed industry in the United States: high labour costs, especially legacy costs, associated with pensions and retiree health plans.[14] Indeed, the automakers' concessions to their unions led to an increasingly uncompetitive cost structure.[15] Labour costs —including retirements and medical benefits— of United States automakers are estimated at nearly US$ 70/hour, or almost US$ 30/hour higher than those of their Asian counterparts in the United States (*Los Angeles Times*, 4 December 2008). United States auto assemblers have negotiated several times with their unions in recent years in a bid to lower costs.[16]

Figure II.17
PETROLEUM PRICES, MONTHLY AVERAGE, 1997-2009 [a]
(Dollars per barrel)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of figures from the United States Energy Information Administration (EIA).
[a] Weekly spot price charged by the members of the Organization of Petroleum Exporting Countries (OPEC), FOB weighted by estimated export volume.

Figure II.18
NORTH AMERICA: VEHICLE PRODUCTION BY SEGMENT AND MANUFACTURER, 2004-2008
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information provided by International Organization of Motor Vehicle Manufacturers (OICA) [online] http://www.oica.net.

[13] In 2001, SUV and family minivan sales exceeded —for the first time in the United States market— sales of passenger cars, and this advantage continued to grow until 2005. However, in 2004 and 2005, hurricanes Ivan, Katrina and Rita led to lower oil output in the Gulf of Mexico and therefore to higher fuel prices. In 2004, gasoline cost about US$ 2 per gallon, as this item began to represent a considerable and growing share of the budget of middle-class families in the United States. Between 2005 and 2006, the price of gasoline rose to US$ 3 per gallon, triggering a sharp decline in sales of large SUVs and family minivans. In 2008, the combination of gasoline at US$ 4 per gallon and widespread recession put a brake —literally— on sales of all types of vehicles. Although gasoline prices fell considerably in 2009, the economy was, by then, in very poor shape, which precluded a rapid recovery of the industry.

[14] When the pension plans were agreed on, the firms committed to provide certain benefits. However, over time, these benefits have proven to be overly onerous because retired workers are living longer than originally expected while companies' revenues have dropped steadily, which has posed serious problems for pension-plan funding.

[15] Because most of the operations of General Motors, Ford and Chrysler are carried out by workers who are unionized (in the United Auto Workers and the Canadian Auto Workers unions), these companies' labour costs —wages, pensions that have accumulated for decades and costly insurance plans— have been higher than their competitors'. By contrast, Asian automakers —Toyota, Honda, Nissan and Hyundai— pay lower wages and provide fewer benefits and less comprehensive medical insurance, and, because they have operated for a shorter amount of time in the United States market, they have a lighter pension burden.

[16] In 2007, Detroit's Big Three negotiated new collective bargaining agreements with the main auto industry union, the United Auto Workers (UAW), which took steps to protect a key benefit: retiree health care. Provision of health care was transferred to a separate, US$ 35 billion trust, partially funded by the automakers. The trust was to take over health insurance management starting in 2010 (*The Wall Street Journal*, 15 May 2009). In addition, the UAW accepted lower wages for new employees (Cooney, 2008).

In addition, United States manufacturers neglected development of passenger cars, especially midsize and compact models, and were somewhat slow to adopt more efficient consumption and emissions technologies. This made it difficult for them to comply with the strict fuel-consumption requirements in effect in the United States, for example, the corporate average fuel economy (CAFE) standards (Cooney, 2008).[17] Consumers very quickly came to perceive that they could acquire higher-quality vehicles from foreign-owned producers —particularly from manufacturers from Japan and the Republic of Korea and, to some extent, Europe— whether those vehicles were imported or assembled in the United States. In fact, Asian automakers considerably expanded their production capacity in the United States. The market share of the Detroit Three plummeted, intensifying these companies' decline: from 72% in 1995 to 65% in 2000 and 44% in 2009 (see figure II.19). Therefore, the companies' entire business model, which includes their collective bargaining agreements, is at serious risk.

Faced with declining sales and lower market share, the Detroit Three began to operate at below capacity. In an attempt to reverse this trend, they resorted to promotional and financing strategies, which further cut into their profits. General Motors, Ford and Chrysler repeatedly posted enormous financial losses, forcing them to close plants, scale back production, spin off manufacturing tasks and drastically downsize their workforce. In 2008, the situation became critical because of the credit squeeze and higher prices for raw materials such as steel (see chapters I and III). Despite lower oil prices (see figure II.17) and the automakers' bold promotional strategies, at year-end consumers were paralysed by the bleak economic outlook, and auto sales continued to wane (Cooney, 2008). From 2005 to 2008, General Motors and Ford accumulated US$ 82 billion and US$ 28 billion in losses, respectively. In a bid to turn the situation around and raise cash, General Motors shed some of its most valuable assets: 51% of its financial arm —General Motors Acceptance Corporation— 17% of Suzuki, 20% of Fuji Heavy Industries (the owner of Subaru) and 8% of Isuzu.[18] The company also shuttered 13 plants with a view to bringing output in line with demand (OECD, 2009). For its part, Ford sold a considerable portion of its European assets: Aston Martin, Jaguar, Land Rover and Volvo.[19] In late 2008, with almost no ability to move products, the main players in the industry appeared doomed to disappear.

In September 2008, the Big Three asked the federal government for US$ 50 billion to meet their social security and employee health insurance obligations and to avoid bankruptcy and the consequent layoffs.[20] In light of the seriousness of the situation, United States authorities proposed a US$ 25 billion bailout plan to provide low-interest loans in order to enable the companies to produce more fuel-efficient vehicles.[21] In addition, the automakers were to submit a long-term economic viability plan. Nevertheless, the companies were not satisfied, because the plan did not address their most pressing need: broad, rapid access to financial resources. Indeed, they were requesting a bridge loan to help them weather the crisis.

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17 Vehicle manufacturers in the United States are required to attain a certain level of average fuel consumption for the new vehicles they sell each year, and they may be fined if the consumption of their annual fleet is too high. In 2009, the government required that Corporate Average Fuel Economy (CAFE) regulations stipulate gas mileage of 27.5 miles per gallon for cars and 23.1 miles per gallon for light trucks, a category that includes SUVs, pickup trucks and minivans. The auto sector will thus incur a high cost to comply with current CAFE regulations. According to estimates, automakers will have to spend an additional US$ 16 billion on vehicle production and US$ 31 billion on light-duty commercial vehicles. Of the total US$ 47 billion, some US$ 30 billion will have to be incurred by General Motors, Ford and Chrysler (Cooney, 2008).

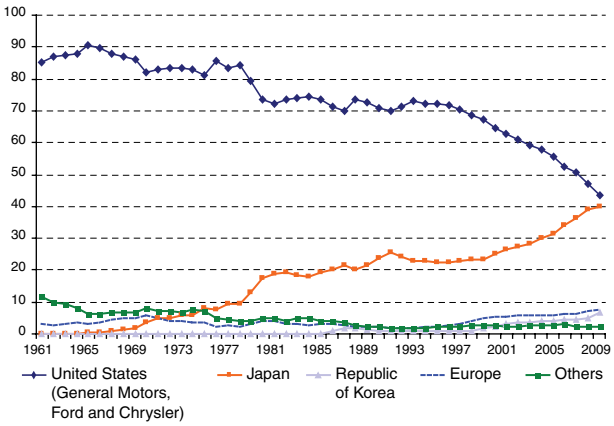
18 In 2005 and 2006, General Motors sold its 20% stake in Fuji Heavy Industries (Toyota bought 8.7% for US$ 315 million, and later increased this stake to 16.5%); disposed of a large part (17%) of its interest in Suzuki, despite committing to maintain some areas of cooperation; transferred 51% of GMAC to a consortium led by Cerberus Capital Management for US$ 14 billion, which later gained a controlling stake in Chrysler; and sold its equity in Isuzu to a consortium of various Japanese companies for US$ 300 million.

19 In an attempt to broaden its range of products, from 1989 to 2000 Ford bought three leading European automakers: Jaguar, Land Rover and Volvo (see table II.1). However, the venture did not prove advantageous, and in 2007 Ford decided to sell its European assets. The same year, it sold Aston Martin to a group of British-Kuwaiti investors for about US$ 850 million. In March 2008, Ford announced the sale of Jaguar and Land Rover to the Indian group Tata Motors for US$ 2.3 billion. A comparison of the amount Ford obtained for the sale of these brands with what it paid for them plus its investments in them shows that the company suffered heavy losses. In March 2010, amid rumours and after several failed attempts, Ford reached an agreement to sell Volvo to the Chinese automaker Geely for US$ 1.8 billion (*Financial Times*, 28 March 2010).

20 Employment is an important factor, given that the automobile industry accounts for 1.6 million jobs in the United States. In late 2008, the largest employers were General Motors (120,000 jobs), Ford (80,000), Chrysler LLC (66,000), auto-parts suppliers (610,000) and 14,000 dealerships (740,000) (*CNN Expansión*, 20 November 2008).

21 The bill called for US$ 7.5 billion to guarantee the US$ 25 billion in low-interest loans granted to General Motors, Ford Motor Co. and Chrysler LLC.

Figure II.19
UNITED STATES: VEHICLE MANUFACTURER MARKET SHARE BY COUNTRY OF ORIGIN, 1961-2009
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from Ward's Automotive Group.

After heated debate in Congress, General Motors and Chrysler did receive the loans, while Ford decided to forego this option.[22] Nevertheless, the possibility of bankruptcy remained, given that both companies acknowledged that they could not survive without government financial support. The possibility thus emerged that the companies would resort to filing for protection under Chapter 11 of the United States Bankruptcy Code, which allowed for reorganization under court supervision.[23] The automakers expressed their consternation with this possibility, given that they —reasonably— feared that if they entered into any type of bankruptcy consumers would abandon them.[24] Government authorities were also concerned by the possibility of bankruptcy, given the potentially enormous political costs of more layoffs and the loss of the financial resources used in the bailout. The government's aversion to allowing automakers to enter bankruptcy proceedings was made clear when it provided US$ 5 billion in assistance for auto-parts suppliers. A large number of United States auto-parts suppliers have declared bankruptcy in recent years, most notably, Delphi, Visteon and Lear, all of which are among the world's largest suppliers (see table II.3).[25] Indeed, the possibility of one or more automakers' entering bankruptcy would have ratcheted up the pressure on the supply base and made it more likely that other suppliers would follow suit, which could have set off a chain reaction and harmed the surviving automakers (Senter and McManus, 2009). Nevertheless, as the months went by, company executives and government authorities showed more willingness to go this route, especially if a way could be found to ensure that the process would be brief, that is, that it would not last more than two months.

In May 2009, as part of an agreement with the Italian automaker Fiat, Chrysler availed itself of Chapter 11 bankruptcy protection, and General Motors followed suit one month later.[26] This was considered the largest industrial bankruptcy in the history of the United States.[27] The governments of the United States and Canada, confident of the success of the reorganization of both companies, provided abundant financial resources. By substantially reducing their debt and by entering into a new collective bargaining agreement with the UAW that cut their labour costs, the companies were expected to become more competitive and be in a better position to face their main rivals, particularly Japanese automakers.

22 In December 2008, President George Bush announced a US$ 17.4 billion rescue package for General Motors and Chrysler. The plan, which was supported by President-elect Barack Obama, called for the two companies to immediately receive US$ 9.4 billion and 4 billion, respectively, and for General Motors to have access to an additional US$ 4 billion in February 2009. The plan kept the same conditions as the bill agreed by the White House and the House of Representatives for providing US$ 14.4 billion to General Motors and Chrysler, but it was blocked by Senate Republicans. The funds were drawn from the US$ 700 billion financial system rescue plan (*The New York Times*, 20 December 2008).

23 Chapter 11 of the United States Bankruptcy Code gives a company a maximum period of time to restructure once it has been released from its creditor-related obligations. During the interim, the company continues its operations while it prepares to move out of bankruptcy. If the company fails to emerge from bankruptcy as provided in Chapter 11, it can then be liquidated under the procedures set forth in Chapter 7.

24 Commercial airlines in the United States have at times continued to operate quite successfully while under Chapter 11. However, automakers face quite a different situation: airline customers merely buy airplane tickets, generally one at a time, whereas automobile buyers worry that a vehicle that they purchase may fall in value if the manufacturer goes bankrupt. They also fear what might happen with their vehicle's warrantee and with any needed repairs if the manufacturer goes out of business. This generates concern among auto executives, who believe that such worries could cause sales to plunge even further (Senter and McManus, 2009).

25 In 2009, after Delphi and Visteon filed for bankruptcy under Chapter 11, General Motors announced that it would use US$ 2.8 billion of government assistance to pay for part of its purchase of a stake in Delphi Corporation. In addition, Ford agreed to provide financial assistance to help Visteon restructure.

26 By August 2007, when investment firm Cerberus purchased 80.1% of Chrysler from the German group DaimlerChrysler for US$ 7.4 billion, Chrysler already had serious problems. As part of the deal, Cerberus agreed to invest more than US$ 7 billion in the company, because, in net terms, it had paid a fire-sale price for it. However, Cerberus apparently made little progress in rejuvenating Chrysler in the short period before the recession (Senter and McManus, 2009). Indeed, Cerberus wanted to sell Chrysler but, given the lack of bids, made a participation proposal to Fiat without committing any additional financial resources.

27 General Motors' bankruptcy is the fourth largest on record in the United States, after those of Lehman Brothers (2008), WorldCom (2002) and Washington Mutual (2008).

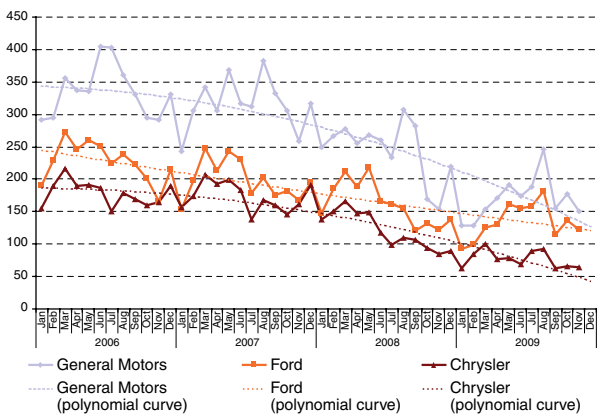
In 2009, after General Motors completed the Chapter 11 process in a record 39 days, the new company that emerged had a leaner, more agile structure. Indeed, General Motors cut its debt from US$ 173 billion to US$ 48 billion and kept only four of its brands —Chevrolet, Cadillac, Buick and GMC— while shedding the least profitable ones: Hummer, Saab, Saturn and Pontiac. It was also expected to downsize from 91,000 to 68,500 employees and reduce its dealerships from 5,900 to 3,600 (*The Wall Street Journal Americas*, 10 July 2009).[28] The new General Motors kept only profit-making assets, while the old company, which was left with the least attractive ones, is expected to remain in bankruptcy for years. The owners of the new General Motors are the United States government (60.8%), the General Motors retiree health care fund (17.5%), the government of Canada and the government of the Province of Ontario (11.7%) and the bondholders of the old General Motors (the remaining 10%). Hence, one of the United States' best-known companies has been transferred to public ownership after the government injected more than US$ 50 billion in it. As if not to be outdone, after only 45 days Chrysler also emerged from Chapter 11, giving birth to Chrysler Group LLC, a new, smaller company, that had a clean balance sheet and that was being backed by Fiat.

For its part, Ford —the only of the Detroit Three not to enter bankruptcy or receive government financial assistance— got a head start, recognizing three years before its competitors that the situation of vulnerability required a thorough restructuring. In 2006, with UAW backing, Ford began to consolidate its operations in the NAFTA area and to reduce the heavy burden of its retiree health care costs. To survive the recession in the United States, Ford decided to accumulate reserves by issuing debt and convertible bonds and resorting to credit lines, for which it put up nearly all of its assets as collateral, including its famous blue oval logo. The company thus raised its capitalization to US$ 23 billion. In 2007, after reporting US$ 12.7 billion in losses, the company also decided to dispose of its luxury brands in Europe and, shortly afterwards, it sold part of its stake in Mazda.[29] The aim of the restructuring plan, called "The Way Forward," is to modernize the company's plants and incorporate more flexible platforms in order to manufacture various models on a single assembly line. The effort to pare back costs and debt has begun to bear fruit: in early 2010, Ford announced US$ 2.7 billion in earnings for 2009 —its first year in the black since 2005— and the company's management is now optimistic and predicts robust earnings starting in 2011 (*Reuters*, 28 January 2010).

The bleak outlook for the industry led the United States government to implement an incentives programme, called the Car Allowance Rebate System, or "Cash for Clunkers", to boost domestic auto demand. The US$ 3 billion appropriated to finance the programme was quickly exhausted in July and August 2009. The plan provided a rebate of up to US$ 4,500 to car purchasers who traded in an older vehicle for a more fuel-efficient new one. Unites States automakers garnered the largest share of the sales (45%) followed by Japanese manufacturers (36.5%). In terms of individual companies, the largest beneficiaries were General Motors (18.7%) and Toyota (17.9%). As a result of the programme, auto sales reached an 11-month high in monetary terms (*The Wall Street Journal Americas*, 4 August 2009).

Thus, sales by the Detroit Three recovered slightly in 2009. In the first half of the year, consumers severely punished General Motors and Chrysler, particularly because of the uncertainty surrounding the bankruptcy process, while Ford, because of the positive results of its early restructuring and because of its avoidance of bankruptcy, was able to recover its share of the United States market more quickly than its weakened rivals. In addition, the "Cash for Clunkers" programme provided a strong —albeit temporary— boon to sales (see figure II.20).

Figure II.20
UNITED STATES: MONTHLY SALES BY GENERAL MOTORS, FORD, AND CHRYSLER, 2006-2009
(Thousands of vehicles)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from Ward's Automotive Group.

[28] The smaller GM brands incurred huge losses. From 2003 to 2007, Saturn, Saab and Hummer together accounted for pre-tax losses of US$ 1.1 billion on average (*The Wall Street Journal Americas*, 2 June 2009). In 2009 GM tried to sell Hummer to the Chinese company Sichuan Tengzhong Heavy Industrial Machinery (the deal ended up falling through in February 2010), and Saab to the Dutch firm Spyker. GM also decided to shut down Saturn after the failed attempt to sell the brand to Penske Automotive.

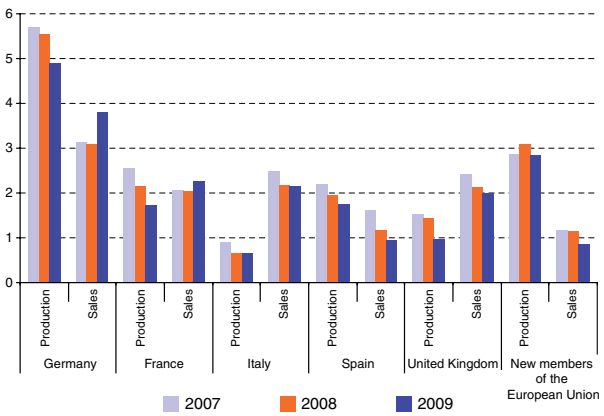
[29] In late 2008, Ford sold 20.4% of Mazda Motors to Japanese investors for some US$ 540 million (*Europapress*, 18 November 2008). Still, Ford and Mazda have continued to work together, sharing vehicle engines and platforms, and Ford continues to be Mazda's largest shareholder, with a 13% stake.

5. Global contagion of the automotive crisis

In 2008, the adverse conditions affecting United States companies began to spread as a result of the credit crunch and the commodity price hike (see chapters I and II). In early 2009, the situation grew even worse as the global economy slowed. Auto-makers around the world began to implement creative marketing strategies and offer sizeable discounts on most of their products and models as a way to draw consumers and reverse the sharp decline in sales.

Due to the financial crisis and early decline in exports to the weakened United States market, production plummeted in the top vehicle-producing countries in the European Union —Germany, France, Italy, Spain and the United Kingdom— in the period 2007-2009 (see figure II.21). Also, given that the European market responds to substitution demand, the slowdown in the European economy, the increase in uncertainty and the credit crunch led consumers to put off new vehicle purchases. Consequently, sales fell significantly for 14 consecutive months from early 2008 to mid-2009, when they rebounded slightly.

Figure II.21
EUROPEAN UNION: PRODUCTION AND SALES OF PASSENGER VEHICLES IN THE TOP DOMESTIC MARKETS, 2007-2009
(Millions of units)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from the European Automobile Manufacturers' Association (ACEA) [online] http://www.acea.be.

As in North America, the crisis also had a severe impact on autoparts suppliers. Many of these firms are now experiencing major financial problems due to the ongoing production cuts and closures of vehicle assembly plants. As a result, many are facing possible bankruptcy, seriously endangering Europe's automotive production chain. In general, Europe's auto-makers have listened to the suppliers' concerns and are helping them in their restructuring processes (European Parliament, 2009).

In response to this difficult situation, in early 2009 government authorities in several countries implemented support programmes for the automotive industry, which were designed to spur consumer demand and support emissions-reduction policies. Most programmes consisted of replacing old vehicles —generally 10 years old or more— with new, less-polluting ones, similar to the "cash-for-clunkers" scheme in the United States. Germany's plan, in the form of a €2,500 per vehicle incentive, was particularly successful. Not only did sales stop falling, but in 2009 they rose by 23%, the highest rate in the European Union (ACEA, 2010). In addition, the German government, like the French government,[30] provided financial support to companies with liquidity problems so they could continue to operate while undergoing restructuring, government.

These programmes seem to have spurred demand for automobiles in the short term; however, there are doubts about their long-term effect. Because the majority of the plans are temporary, consumers may have brought forward spending decisions in order to benefit from these schemes, which would suggest that sales will fall again once they have ended. Nor is it clear how the industry's profitability will be affected by incentive programmes, which mainly encourage consumers to buy small, cheap vehicles (OECD, 2009).

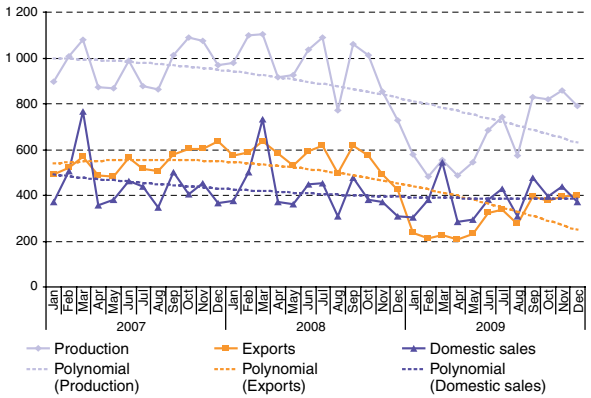
Asia, Japan and the Republic of Korea were also hit hard by the automotive crisis: exports fell sharply in late 2008 and early 2009 as the main buyer markets contracted (see figure II.22). In 2009, Japan posted record falls in production (-31%) and exports (-46%). Moreover, companies such as Toyota and Honda, standard-bearers of success in Japanese industry, turned in a historically negative performance (see box II.2). The Republic of Korea also experienced sharp declines in production (-8%) and exports (-20%), although its largest companies —Hyundai

30 The Government of France provided Renault and PSA Peugeot-Citroën with a total of €6 billion in low-interest loans. In exchange for €3 billion, Renault promised not to close any of its plants for five years or to engage in mass layoffs in France for one year. This support package has sparked accusations of protectionism by neighbouring countries and complicated the strategy of moving production of compact vehicles to countries in Eastern Europe. In the short term, these loans have helped the two French companies, which will have to find ways to cut costs without breaking their promises to not close plants (*The Wall Street Journal*, 20 March 2009).

and Kia— performed quite well given the circumstances.[31] Nevertheless, domestic sales in the two countries did not fare as poorly, thanks to incentives by the respective governments. Japan introduced a series of green tax schemes, and the Republic of Korea granted tax incentives similar to those in the cash-for-clunkers programme, prompting domestic sales to rise by 21% in 2009.

In contrast to conditions in the developed countries, some large emerging markets —also supported by various programmes to stimulate domestic demand— have performed very well. Indeed, as mentioned earlier, the top automakers have focused their attention on these high-growth economies, especially the BRIC group, as a way to offset declining sales in the United States and Europe. Moreover, production operations in several of these countries have recently become the most profitable for their parent companies.

Figure II.22
JAPAN: MONTHLY PRODUCTION, EXPORTS AND SALES OF VEHICLES, 2007-2009
(Thousands of units)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from the Japan Automobile Manufacturers Association Inc [online] http://www.jama.org.

Box II.2
TOYOTA: A GIANT WITH CLAY FEET?

The current leader in the global automotive industry —Toyota— could face two horrendous years in a row as a result of the crisis. In 2008, for the first time in its 70-year history, the Japanese automaker posted huge losses, a situation that may have repeated itself in 2009. In 2008 —fiscal year ending 31 March 2009— Toyota reported over US$ 4.86 billion in losses, and greater losses are expected in 2009.

Until very recently, Toyota seemed unbeatable. However, just as it was displacing General Motors as the global leader, the Japanese automaker entered a spiral of problems that are seriously jeopardizing its future. In the 2000s, Toyota shed its traditional caution and embarked on a bold plan to expand its production capacity in the United States and Europe, which allowed it to rise to the top of the elite world of automakers (see figure II.15). Along the way, however, the firm encountered the same problems that led its United States competitors to the brink of extinction: excess capacity, a wide range of models, extensive plant and equipment and quality control issues.

In 2008, Toyota tried to take advantage of the extreme vulnerability of its competitors in the United States by implementing an audacious programme of incentives to encourage consumers to buy its vehicles. But the sudden drop in sales in the United States and Europe, the weak global economy, the revaluation of the yen —which erodes foreign earnings as they are repatriated— and the sudden rise in fuel and commodity prices hit the Japanese firm extremely hard. In the last quarter of 2008, Toyota's sales fell by 31% in the United States and by 34% in Europe. In 2009, the situation did not improve and Toyota was forced to ask the Japanese government for financial support. In order to offset its poor performance, the company scaled back production and attempted to match it to demand —although it did not close any plants— cut executive salaries and offered early retirement packages to thousands of employees in the United States.[a]

In early 2010, Toyota's problems worsened and could compromise the company's prestige for many years to come. In an apparent attempt to dominate the market and become more profitable, Toyota has neglected the quality of its products and its concern for the customer—two pillars of its earlier success. In some of its best-selling models in the United States, defects were detected in late 2009 that could cause vehicles to accelerate involuntarily. In response to these discoveries, Toyota ordered its dealers in the United States and Canada to recall eight models from the market, including the popular Camry and Corolla. In addition, it announced that as of 1 February 2010 those models would no longer be made in its North American plants. Furthermore, the company conducted a massive review of its vehicles in the United States market, which it extended a few days later to Europe, Japan, China and much of the world.

Toyota recalled over 8 million vehicles globally in the first quarter of 2010. The immediate impact of the recall for repairs and the suspension of sales and production —which halted 60% of its North American production capacity— could cost the Japanese automaker nearly US$ 1.1 billion, and the long-term damage could be far worse. In April 2010, the Government of the United States fined the company an amount that could reach US$ 16.4 million, the largest civil sanction a highway safety regulator has ever imposed on an automaker in the United States, for violating obligations and for having delayed reporting safety problems (sticking accelerator pedal) for at least four months in some of its models (*Financial Times*, 6 April 2010). In order to repair the damage inflicted on its reputation by recent events, in addition to investing enormous financial resources, Toyota will have to take specific action to woo customers back to its products.

Source: Economic Commission for Latin America and the Caribbean (ECLAC).
[a] For Toyota, this performance was mainly due to lacklustre sales of its pickup truck, the Tundra, as well as the limited capacity to offer low-consumption vehicles such as the Prius, Corolla and Yaris. Accordingly, the company has announced plans to scale back its production of pickups and bring production at other plants in line with demand.

[31] In general, automakers in the Republic of Korea have been much more profitable than their counterparts in the United States and Japan, with strong growth even in depressed markets such as the United States. Despite the global economic slowdown, the successful management of Hyundai-Kia has made it the fifth largest automaker in the world (see figure II.15). From the fourth quarter of 2008 to the first quarter of 2009 —the height of the automotive crisis— the extreme weakness of the won (the currency of the Republic of Korea), particularly against the dollar and the Japanese yen, significantly boosted the price competitiveness of Korean exports in key markets.

In China, government action helped to offset the decline in exports by lowering taxes on less-polluting compact cars and helping farmers buy work vehicles. The Government of China has confirmed that the programme will continue into 2010, and production and domestic sales are expected to continue to grow for the next three years, which would secure the country's position as a leader in the global automotive industry. However, faster growth will largely depend on performance in the coastal areas, which are the primary vehicle markets in China. The decline in global demand for Chinese exports will continue to dampen economic activity in these areas, which could stymie growth in demand for automobiles for some time (OECD, 2009). Nevertheless, in 2009 domestic sales were up by 33% and in November, for the first time, surpassed one million units per month (*The China Post*, 9 December 2009).

The Government of India has introduced incentives for new vehicle purchases by lowering taxes and has encouraged commercial banks to lower their interest rates, and these factors have boosted domestic vehicle sales (*The Wall Street Journal*, 1 January 2010). In 2009, production rose by almost 13% and local sales by nearly 19%, with a year-on-year rate of 40% in December.

The Government of Brazil has adopted several measures to stimulate domestic demand, including lowering taxes on compact vehicles and injecting liquidity into the financial system, which brought renewed vigour to the automobile loan market. In 2009, production totaled 3,180,000 units —just 1% below the previous year's historic high— and a total of 3,140,000 new vehicles were sold, or 11% more than in 2008, which was also a historic record (ANFAVEA, 2010).

In the BRIC group, the worst-performing country was the Russian Federation: in 2009, its domestic sales were down by almost 60% on the record set in 2008, scotching the possibilities of the country becoming Europe's largest market. Underlying this poor performance are stagnation in consumers' disposable income and lack of access to credit. The Government of the Russian Federation announced a subsidized consumer loan for purchases of Russian-made vehicles, in an effort to redress this situation.

6. After the crisis, a second round of consolidation

The sharp contraction of the industry in the United States, the virtual disappearance of two of its flagship companies, the excess capacity and the new technical challenges facing the sector are perhaps paving the way for a new and more extensive restructuring of the global automotive industry. The first signs of such a process emerged in 2009 when, with GM and Chrysler facing the prospect of bankruptcy, many automakers evinced interest in the assets of the United States giants. This was accompanied by a wave of announcements of strategic alliances and technology agreements for sharing facilities among different automakers so as to round out or improve their array of products or their geographic coverage.

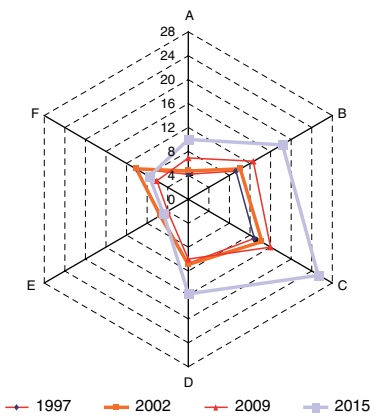
In this new scenario, having emerged from Chapter 11 proceedings under United States bankruptcy law, General Motors and Ford are cutting back their operations in the United States and Europe; foreign automakers, including some new players such as Fiat, are making inroads in North America, and several companies from China and India are speeding their expansion and are breaking out of their domestic market by acquiring some of the assets sold by United States companies. In fact, in the very depth of the crisis, Chinese and Indian carmakers were aggressive in pursuing companies of interest to them: this should allow them to leap forward several decades in the development of more sophisticated automobiles, including luxury models, and thereby achieve greater profit margins than they could hope to gain from the assembly of low-priced compact vehicles. In this new setting there will be significant changes in the structure of production and there will be a great expansion in the output of compact vehicles, which are the most sought-after items in swiftly growing emerging markets (see figure II.23).

In 2009 and the first months of 2010 there was a flurry of negotiations, which in the end went nowhere. These included Renault's talks with the concessionaires of the Saturn trademark (GM property) and with Samsung Motors of the Republic of Korea; Fiat's attempts to take over Saab and a portion of Opal; the discussions between PSA Peugeot Citroen and Mitsubishi Motors; and the courtship between Daimler and BMW. Nevertheless, in the wake of the Fiat-Chrysler alliance, it became an urgent matter to cement these alliances, or run the risk of being left out of the market.

In mid-2009 the finishing touches were put on the alliance between the new Chrysler Group LLC and the Italian Fiat SPA Group, as part of a process that allowed the Detroit-based company to emerge from bankruptcy.

As a first stroke, and without any cash outlay, Fiat acquired 20% (a share that could increase to 35%) and took over management of Chrysler Group LLC.[32] Under that contract, the Italian company will make available its technology and expertise in making small and mid-sized cars, as well as its distribution network in Europe and Latin America. For its part, Chrysler will contribute its production facilities and a broad dealership network in North America, along with its expertise in larger vehicles —SUVs, all-terrain vehicles (ATVs) and vans. In 2010 the first tangible product of the partnership will begin manufacture in the United States: a four-cylinder engine with low fuel and emission ratings, which will be mounted in an overhauled Fiat 500 —a small urban runabout that saw great success in the 1960s and 1970s— to be assembled in Chrysler's plant at Toluca, Mexico.

Figure II.23
GLOBAL AUTOMOBILE PRODUCTION, BY SEGMENTS, 1997-2015 [a]



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from CSM Worldwide Inc., Automotive Market Foresight (online) www.csauto.com.

[a] The automotive industry is divided into the following six segments:
A= Small city cars seating 4 adults, 3.3 to 3.7 m in length, with engine capacity less than 660 cc.
B= Cars seating 4 adults and 1 child, 4.0o to 4.25 m in length and engine capacity of 1,000 cc to 2000 cc.
C= Cars seating 5 adults and, in some cases, 2 children, 4.3 to 4.5 m in length and engine capacity of 1400 to 2000 cc.
D= Cars seating 5 adults, in some cases up to 7 or 8, 4.50 to 4.85 m in length and engine capacity of 1600 to 3000 cc.
E= Cars seating 5 adults, 4.75 to 4.95 m in length and engine capacity of 2400 to 5000 cc.
F= Cars seating 5 adults, at least 5.0 m in length and greater power, luxury and cost than the other segments.

In late 2009, Volkswagen and Suzuki reached agreement on a strategic partnership, in which each will maintain its independence, with a view to strengthening their presence in emerging markets and developing environmentally friendly compact cars employing hybrid technologies, diesel engines and fuel cells. Under their contract, Suzuki is guaranteed access to Volkswagen technology, while the German partner will be able to draw on Suzuki's vast experience with compact cars and will gain better access to Asian markets, especially India.[33] The partnership was consummated in January 2010 when Volkswagen acquired 19.9% of Suzuki in a transaction valued at US$ 2.53 billion (see table II.1). Suzuki announced that it would invest half of the proceeds in shares of the German firm, and use the rest to retire its borrowings. As a result of this partnership, Suzuki has terminated its long-standing relationship with General Motors and will revise its diesel engine contract with the French groups PSA Peugeot Citroen and Renault.[34] As this partnership moves forward towards deeper integration, the new group could well become the world's biggest automaker. In fact, Volkswagen believes it could overtake Toyota by 2018, especially now that it has successfully wrapped up the first stage of its acquisition of the German sports car maker, Porsche (*Financial Times*, 9 December 2009).[35]

In April 2010 Renault-Nissan and Daimler announced that they had forged a long-term strategic partnership that will see the conglomerates swap shares representing a 3.1% mutual stake.[36] The linkup is intended to strengthen the partners' (and especially Daimler's) position in the

[32] Fiat can increase its share in Chrysler by 15% (three tranches of 5%) as specified objectives are achieved, including robotic engine assembly (FIRE, "Fully Integrated Robotized Engine") in the United States, achievement of a Chrysler vehicle sales target outside the NAFTA zone, and creation of a Chrysler model based on Fiat technology. Once this additional 15% holding is in hand, Fiat will be able to name another member to the Chrysler Board of Directors and will have the option of acquiring a further 16% as of 1 January 2013. In the end, Fiat's interest cannot exceed 49% until the loan granted by the Treasury Department has been repaid in full.

[33] Volkswagen and Suzuki will be able to pool their strengths in emerging markets: the German company has a dominant position in China, while Suzuki is the leader in India, where its Maruti model has captured nearly 50% of the market.

[34] Suzuki and GM maintained a lengthy relationship (from 1981 to 2008) until the United States firm decided to sell its shares in the Japanese company. In 2001, GM owned 20% of Suzuki; in 2006 it disposed of 17% and at the end of 2008 it sold the remaining 3%. However, both companies have continued to pursue joint projects involving hybrid vehicles and fuel cells.

[35] In December 2009, Volkswagen acquired 49.9% of Porsche for US$ 5.6 billion (see table II.1), as the first step towards a planned total takeover of the sports car maker. The merge is expected to be wrapped up in 2011, representing a value of close to €12.4 billion. To finance the purchase, Volkswagen is planning a capital increase estimated at €6 billion to 2014 (*Cars Magazine*, 7 December 2009). The transaction represented the final nail in the coffin of Porsche's attempted takeover of Volkswagen in 2008.

[36] While Renault owns 44% of Nissan, and the Japanese company owns 15% (nonvoting shares) of the French firm, with this alliance Daimler will have a 3.1% stake in each of these companies, and they will have a 1.55% interest in the German of luxury car and truck maker (*BusinessWeek*, 9 April 2010). Daimler's 3.1% stake has been valued at around US$ 1.6 billion (*Diario Financiero*, 8 April 2010).

small and compact cars segment.[37] To this end, they will develop common parts and architecture for a new generation of Renault Twingo and Smart subcompacts, to be rolled out in 2013. They will also supply each other with engines, without altering the identity of each brand. The alliance will help the companies reduce costs in emerging markets and in green technologies.

On the other hand, having emerged from bankruptcy and with glimmers of improvement in some important markets, GM backtracked on its decision to sell its Opel and Vauxhall subsidiaries (the backbone of GM in Europe) to a consortium headed by the Canadian autoparts manufacturer, Magna International. The move was intended to retrieve a portion of the consumer trust GM had lost around the world.[38] In fact, loss of control over Opel sparked concerns within the United States government and in the company itself, but the GM-Opel situation was especially grave. Yet, two months after the agreement was ratified, eyeing a recovery in the German market and recognizing the great blow that loss of Opel would represent for its international standing, GM decided to keep the German subsidiary and restructure it, something to which it has now committed €3 billion (*El Mundo*, 4 November 2009).

In a similar vein, General Motors and its Chinese partner Shanghai Automotive Industry Corp. (SAIC) announced a new tie-up in December 2009 to produce compact cars in India, drawing upon experience accumulated during 12 years of joint activity in China, one of the fastest-growing markets (see table II.1). The 50-50 venture will combine a capital contribution from SAIC with GM's assets in India to produce 225,000 vehicles per year (*Financial Times*, 3 December 2009).

The restructuring now under way will tend to speed the shift of global automotive production toward Asia, where China has consolidated its position as the world's biggest producer and consumer of vehicles. It is estimated, in fact, that China could be turning out 16.8 million vehicles per year by 2014, representing 43% of Asian output and nearly 20% of world production (*Autofacts*, January 2010).

In short, in the wake of the financial crisis, and with the industry facing excess capacity and new technological challenges, recent months have seen a number of technical agreements and arrangements to share platforms, which could help reduce costs and shorten product development times. These operations are creating a complex web of interdependency between the leading automotive groups, and are accelerating concentration in the industry. In fact, many automakers are now focusing their attention on new alliances as a way to finance R&D outlays for emissions-reduction technologies and to produce low-fuel-consumption vehicles, while at the same time improving their positioning in the few markets that are still growing.

In the end, the crisis in the automotive industry has been particularly intense, lengthy and synchronized. The eventual economic recovery is not likely to put an end to the problems that were laid bare by the recent financial upheavals. Excess capacity will be a very complex issue, as the depth of the recession, especially in the United States and Europe, means that demand for vehicles will be lower than anticipated. Moreover, given the fragility of many automakers and their reduced profit margins (which were already tight) there are doubts that they can keep up the necessary investment in research and development to meet the objective of reducing emissions (see box II.3). Thus, the new wave of partnerships could help reverse this shortfall. As well, it is possible that these new standards will lead to higher vehicle prices, which would dampen demand. This is likely to lead to more bankruptcies among suppliers, which will further increase concentration in the autoparts industry. In fact, vehicle manufacturers in sound financial shape have taken over assets crucial to ensuring stability in their supply chain. Lastly, it is likely that automotive FDI flows, particularly in industrialized economies, will be severely constrained for some time, at least until global capacity utilization returns to pre-crisis levels.

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[37] Daimler's star brand, Mercedes, urgently needs to improve its capacity to produce small cars. In the past, Mercedes has not been very successful in this field: its products are sub-scale and over-engineered. In fact, it has suffered huge losses (estimated at US$ 9 billion) with its Smart and Mercedes A- and B-class cars (*The Economist*, 8 April 2010).

[38] In September 2009, GM undertook to sell 55% of Opel to a consortium consisting of Magna, the Russia-based automaker GAZ, and the Russian state bank OAO Sberbank. GM would retain 35% and Opel employees would own the remaining 10%. The German government backed the operation with loan guarantees.

Box II.3
THE POSITIVE SIDE OF THE CRISIS: FASTER PROGRESS TOWARDS ALTERNATIVE PROPULSION TECHNOLOGIES

The crisis in the automotive industry has opened new opportunities. Much of governments' support to automakers is being targeted at speeding the industry's move to less polluting and more fuel-efficient propulsion systems. In fact, there is now real pressure to increase the proportion of alternative propulsion vehicles in the automotive fleet in the coming years.

"Alternative propulsion" refers to drivetrain technologies that do not rely on a standard internal combustion engine powered by fossil fuels such as gasoline or diesel. There are currently three main lines of alternative propulsion at different stages of development: (i) alternative fuels such as bio-ethanol, bio-diesel and hydrogen for use in internal combustion engines; (ii) electric motors, embracing battery-powered, hybrid and fuel-cell vehicles; and (iii) compressed-air vehicles.

Hybrid cars were the first commercial application of alternative systems: they combine a conventional internal combustion engine with an electric motor powered by batteries, which allows such cars to make use of around 30% of the energy they generate, as opposed to only 19% for conventional automobiles.

One of the positive impacts of rising fuel prices in recent years has been to boost demand for hybrid vehicles. Japanese automakers took the lead here, rolling out their models first in Japan and in North America, and later in Europe and the rest of the world. In 1997 Toyota launched the first production-scale hybrid vehicle, the Prius. By 2001 it was being sold worldwide and was enjoying great success in the United States. The Prius was followed by the Camry, the Highlander and several Lexus models. In late 2009 an accelerator defect was detected in the Prius, causing great difficulties for the company. Other manufacturers imitated Toyota and brought out their own hybrid models: Honda (Insight, Civic and Accord), Nissan (Altima) and, in the United States, Ford (Escape, Mercury, Milan and Fusion) and GM (Chevrolet Silverado, Malibu and Tahoe), among others. Consumers did not take to the Detroit's hybrid technology with the same enthusiasm they had shown for Toyota models, however, and the results have been disappointing, largely because of poor driving habits such as sudden acceleration, which consumes more fuel. Over the medium term, a broad range of automakers will be bringing many new models to market and the technology is bound to improve.

Among the most important innovations that manufacturers are now offering are the "plug-in hybrid electric vehicles" (PHEV) and all-electric vehicles. PHEV is essentially a normal hybrid with an extension cord, meaning that it can run on gasoline or on batteries recharged from any electric outlet of 120 to 220 V. In short, it is an electric vehicle with a back-up fuel tank. In December 2008 the Chinese firm BYC began to sell the first mass-production PHEV on the domestic Chinese market, and it plans to ship the model to Europe and the United States starting in 2010. The first conversion kits for hybrid vehicles are now being marketed in the United States. Many automakers, including Toyota, GM, Ford and Volkswagen, are currently developing their own version of the PHEV.

Among the most eagerly anticipated models is General Motors' Volt which, despite problems that surfaced in 2009, is slated to reach the market in late 2010. The Volt operates with a 1400 cc gasoline engine and a 111 kW electric motor. Although it is technically a PHEV, its manufacturer is promoting it as an extended-range electric vehicle (E-REV). In fact, the Volt uses the gasoline engine to charge a lithium-ion battery, meaning that the vehicle is always powered by the electric motor. Meanwhile, Nissan has announced its fully electric Leaf model, which should reach the market in 2012. The Leaf has an 80 kW motor and a lithium-ion battery that can be charged at any standard outlet. It is nearly certain that, with the advances in battery technology, cars of this kind will soon be making massive inroads in the market.

In September 2009 several firms —Honda, Daimler, Ford, GM, Hyundai, Kia, Renault-Nissan and Toyota— signed a letter of understanding on the development and market introduction of fuel-cell-powered electric vehicles, a move that is considered a great advance towards mass production of zero-emission vehicles. The signing manufacturers expect that from 2010 onwards a very significant number of fuel cell vehicles could be commercialized.

There has also been progress with clean diesel engines, such as those in the new BMW, Volkswagen and Mercedes-Benz models that offer exceptional performance and fuel savings while eliminating the vibrations inherent in gasoline engines. In this way, clean diesel engines have become an interesting alternative to hybrid technology.

Despite this progress, the picture is not entirely rosy. In the first place, these vehicles carry a much higher price tag than conventional models. Generally speaking, they offer less in the way of independence, speed and acceleration, characteristics that are prized by the average consumer. Moreover, if they are going to produce these new vehicles in large volume, manufacturers will have to make substantial modifications to their assembly plants and dealer networks. In these circumstances, the political will of the national authorities to promote these new technologies will be a determining factor for giving them a mass-market presence in the near future.

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

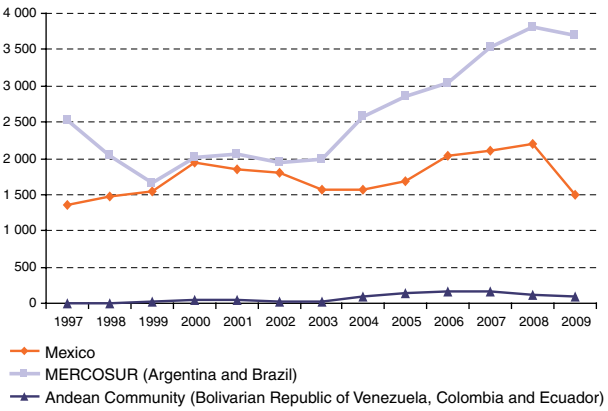
C. Latin America: two different stories

Latin America has not escaped the upheavals in the global automotive industry. During the 1990s, most countries abandoned the protectionist industrialization policies of the import-substitution regime and undertook reforms that opened new prospects for the development of the automotive sector. In addition, sector-specific policies implemented by the larger countries of the region began to attract the major automakers. More generally, the positive outlook for Latin American economies, combined with manufacturers' need to penetrate new markets and to make

their integrated international production systems (IIPS) more efficient, sparked a great increase in automotive investment in the region. Companies that had been installed in Latin America for several decades and were beginning to modernize and expand their operations were now faced with new rivals, and this intensified competition in the industry.

Through strategies that combined efficiency, complementarity and specialization, automakers organized the Latin American industry in three main areas: first, a modern production platform in Mexico for export to the North American market; second, production facilities based on integration regimes and geared to domestic markets in South America, centred in MERCOSUR and especially in Brazil; and finally, the Andean community, including the Bolivarian Republic of Venezuela, Colombia and Ecuador (see figure II.24 and table II.4).

Figure II.24
LATIN AMERICA: VEHICLE PRODUCTION, BY REGION, 1997-2009
(Thousands of units)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from the International Organization of Motor Vehicle Manufacturers (OICA), the Motor Vehicle Manufacturers Association of Argentina (ADEFA), the National Association of Motor Vehicle Manufacturers of Brazil (ANFAVEA) and the Mexican Automotive Industry Association (AMIA).

Table II.4
LATIN AMERICA: VEHICLE PRODUCTION, BY MANUFACTURER AND COUNTRY, 2008
(Units)

			MERCOSUR		Andean Community		
		Mexico	Argentina	Brazil	Colombia	Ecuador	Venezuela (Bolivarian Republic of)
General Motors	United States	509 033	111 286	603 819	...	6 432	55 431
Ford	United States	307 034	83 643	326 090			29 234
Chrysler	United States	279 787					13 262
Toyota	Japan	50 086	64 808	67 246			22 437
Honda	Japan	51 247		132 542			
Nissan	Japan	450 968		6 463			
Mazda	Japan				4 159	8 941	
Mitsubishi	Japan			39 090			
Volkswagen	Germany	450 805	63 152	772 383			
Daimler AG	Germany		29 631	93 068			
PSA Peugeot Citroën	France			133 978			
Renault	France		8 906	128 968	34 168		
Fiat	Italy			738 034			

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from the European Automobiles Manufacturers' Associations (ACEA), the Motor Vehicle Manufacturers Association of Argentina (ADEFA), the National Association of Motor Vehicle Manufacturers of Brazil (ANFAVEA), the Mexican Automotive Industry Association (AMIA), the Association of Automotive Companies of Ecuador (AEADE), and the Chamber of Venezuelan Autoparts Manufacturers (FAVENPA).

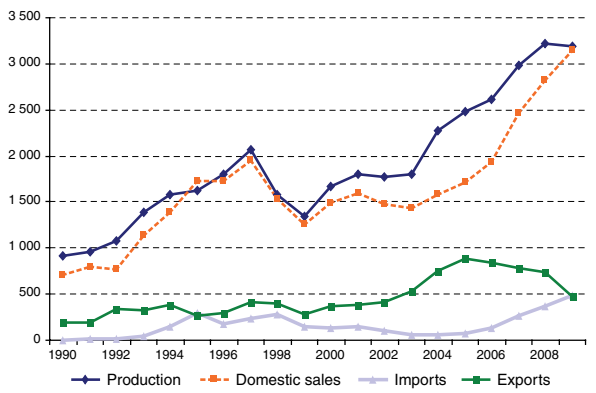
Currently, Brazil and Mexico account for around 90% of Latin American vehicle production. While both countries are host to the same international firms for the most part, there are notable differences in terms of their product specialization and target markets. European automakers dominate the Brazilian industry, specialized in compact vehicles, and are geared to the domestic and subregional (MERCOSUR) markets. In Mexico, on the other hand, production is dominated by United States firms specialized in mid-sized and large vehicles for export, especially to North America. These differences explain why the events that have shaken the international automotive industry have had very different impacts on the two main producing countries in the region.

1. The Brazilian domestic market provides the basis for the industry's growth

Over the last two decades, the Brazilian automotive industry has gone through three phases. The first coincided with trade liberalization and was characterized by strong growth in domestic demand and new investment to expand productive capacity. From 1992 to 1998, production rose sharply, spurred by the incentives offered under the 1995 automotive policy and financial support by the National Bank for Economic and Social Development (BNDES). On the external front, exports were not particularly dynamic, while oil imports accelerated, boosted by greater domestic demand and an appreciating currency.[39] Yet, as investment projects matured, imports dropped considerably (see figures II.25 and II.26).

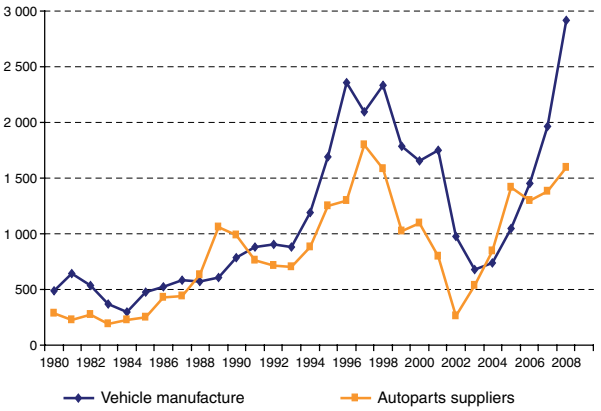
The second phase began with fallout from the Asian crisis —primarily a drying up of financing and a sharp drop in production and sales from 1998 to 2003— which left the industry with a great swathe of idle capacity. During this time, growth was driven mainly by external demand, spurred by a supply shock linked to the investment cycle of the second half of the 1990s, and greater competitiveness.[40] As investment projects came on stream, imports declined further (see figures II.25 and II.26).

Figure II.25
BRAZIL: AUTOMOTIVE PRODUCTION, DOMESTIC SALES, EXPORTS AND IMPORTS, 1990-2009
(Thousands of units)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from the National Association of Motor Vehicle Manufacturers of Brazil (ANFAVEA) [online] http://www.anfavea.com.br.

Figure II.26
BRAZIL: INVESTMENT IN VEHICLE MANUFACTURE AND AUTOPARTS SUPPLIERS, 1980-2009
(Millions of dollars)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from the National Association of Motor Vehicle Manufacturers (ANFAVEA) [online] http://www.anfavea.com.br and the National Union of Automobile Component Industries (SINDIPEÇAS) [online] http://www.sindipecas.org.br.

The third and final phase (2003-2009) saw a sharp increase in production and domestic sales, which in turn sparked vigorous investment growth (see figure II.26). Output benefited initially from the export effort, and was then reinforced by growing domestic demand. From 2003 to 2009 domestic sales rose on average 14% a year. Under the stimulus of domestic and external demand, output recovered until, by 2004, it was back to the record levels of 1997, and thereafter reached successive new records until, in 2008, production stood at 3.2 million units, a figure that declined by only 1% in 2009 (ANFAVEA, 2010). Yet, thanks to an appreciating exchange rate, foreign trade trends underwent a pronounced shift after 2005: exports began to decline, while imports rose to historic heights (see figure II.25).

Sparked by burgeoning domestic sales and production in 2005-2009, investments by automakers and their suppliers grew considerably, reaching levels similar to those recorded in the investment cycle of the latter 1990s. In contrast to the previous cycle, however, the new investments were geared much more to modernizing plant and equipment and the development and launch of new products, and less to increasing output capacity. Notably, during this phase, investment in autoparts has outstripped investment by automobile manufacturers, in contrast to earlier periods of high investment in the Brazilian automotive industry (see figure II.26). This is an important consideration, for a stronger autoparts sector is essential to the competitiveness

[39] The import coefficient rose steadily from 1990 to 1998. In the latter years of that period, significant volumes were brought in both by firms already established in Brazil, rounding out their production lines, and by new arrivals (Honda, Toyota, Renault and PSA) seeking to gain a foothold in the market.

[40] Between 1997 and 2003 automotive production exhibited negative growth (-1.8% a year), and domestic market sales dropped even faster (-4.6% a year). Over that same time, exports rose by 6.3% annually and this cushioned the fall in production.

of the automotive industry as a whole, and to the evolution of the trade balance.

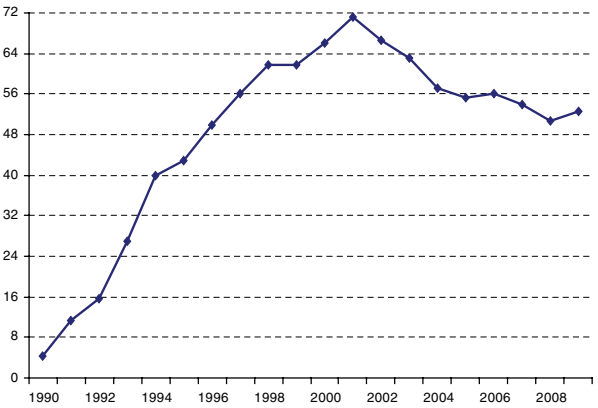
Over the last two years, the Brazilian automotive industry has come very close to the limits of its production capacity, turning out more than 3 million units a year. For this reason, automakers announced new investment projects totalling nearly US$ 25 billion. Although these had to be postponed because of the international financial crisis, most of them were taken up again towards the end of 2009, reflecting the good performance of the Brazilian domestic market. These new investments come on top of the large amounts the automotive industry invested in 1995-2009, which totalled approximately US$ 40 billion (US$ 23.4 billion by automakers and US$ 16.2 billion by autoparts suppliers). Brazil has accordingly consolidated itself as one of the largest producers and most important consumer markets in the world: in 2008 it ranked sixth as a producer and fifth as a consumer market (Sarti and Hiratuka, 2009).

BNDES played a key role in this process, especially through the "automotive regime".[41] The development bank helped finance a great many projects, both by firms with a long history in Brazil and by newcomers. In 2007, BNDES rules were changed to facilitate the financing of product and process engineering costs, and this sparked an explosion of financial support to the industry. In 2008, BNDES granted more than US$ 420 million to finance project development engineering costs. In that same year it provided funding for projects to increase production capacity at several firms (Fiat, Volkswagen and General Motors, among others) as well as engine plants and new product lines.

(a) Specialization: compact cars with flex-fuel engines

The Brazilian industry has concentrated on producing compact vehicles and, within that category, on vehicles with engines of up to 1,000 cc. This segment represented 71% of domestic sales in 2001, dropping to 53% in 2009 (see figure II.27). The focus on compact cars allows companies to produce on a greater scale and thereby lower their costs and increase their competitiveness. Firms also enjoy economies of scope, for they can use the same plant and equipment to produce compact vehicles with different engine sizes (addition to the basic 1,000 cc) and thus tap different market segments.

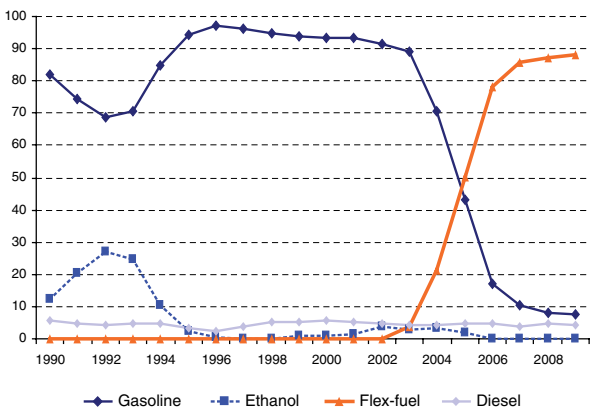
Figure II.27
BRAZIL: SHARE OF COMPACTS (1,000 CC) IN TOTAL DOMESTIC VEHICLE SALES, 1990-2009
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from the National Association of Motor Vehicle Manufacturers (ANFAVEA) [online] http://www.anfavea.com.br.

Although they still dominate domestic sales, the market share of 1,000 cc vehicles has declined since 2001-2002, reflecting changes in the tax on industrialized products (IPI), which reduced the advantage for 1,000 cc engines in comparison to more powerful ones, and the introduction of flex-fuel technology to the Brazilian market in 2003 (see figure II.28). This was initially due to the companies' strategy of incorporating new technology only into cars over 1,000 cc, as a way of boosting sales of higher value-added vehicles (see box II.4).

Figure II.28
BRAZIL: DOMESTIC SALES OF AUTOMOBILES AND LIGHT COMMERCIAL VEHICLES, BY FUEL TYPE, 1990-2009
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from the National Association of Motor Vehicle Manufacturers (ANFAVEA) [online] http://www.anfavea.com.br.

Based on price and energy efficiency criteria, the introduction of flex-fuel cars in Brazil has allowed consumers to use two different fuels —gasoline and alcohol— in the same vehicle, and this has played a

[41] Prior to the 1990s, vehicle makers received no financial support from the BNDES. After the 1988 constitutional reform, as part of the *Plan Real* and the automotive regime, the BNDES began to support the industry financially. Previously, it had provided economic aid to autoparts firms and producers of heavy goods vehicles, which were treated as "capital goods on wheels", provided that at least 60% of their components were made in Brazil.

decisive role in promoting sales. This innovation softened consumer resistance to using alcohol as fuel (resistance that was stiffer when the engine could burn only alcohol), and made users sensitive to sudden changes in the price and availability of the product. The success of this innovation was so immediate and widespread that all Brazilian manufacturers began to offer it. In 2003, the first flex-fuel cars were rolled out. By the following year they accounted for 15% of production, and by 2008, 78%. As a technology adapted to the Brazilian market, its significance in domestic sales is even greater: it increased from 4% in 2003 to 88% in 2009.

Box II.4
A BRAZILIAN CONTRIBUTION TO THE GLOBAL AUTOMOTIVE INDUSTRY: FLEX-FUEL VEHICLES

The launch of the flexible fuel engine in March 2003 revolutionized the Brazilian automotive market. In September 2002, under pressure from automakers, the flex-fuel category was included among the goods subject to the industrialized products tax (IPI). The government reduced the IPI rate from 15% to 13% to encourage the industry to market vehicles of this kind. At first, 1,000 cc vehicles —low-cost or "popular" cars— did not benefit from this two-point reduction, for they paid a single rate of 9%. Thus the first flex-fuel rollouts were concentrated in models with engine capacities of over 1,000 cc.

In March 2003, Volkswagen became the first firm to offer a dual-fuel car on the Brazilian market. This was the Gol Total Flex 1.6, with a system developed by the Italian parts supplier Magneti Marelli, a Fiat subsidiary. Two months later, General Motors brought out its 1.8 litre Corsa Flexpower model. The German firm responded by launching two other dual fuel models: Paratí and Saveiro. Volkswagen was also the first to offer a 1,000 cc flex-fuel car, the Fox Total Flex 1.0, in October 2003: the 1,000 cc versions were equipped with a powertrain supplied by Magneti Marelli, and the 1.6-litre model incorporated technology from the German supplier Robert Bosch, the world's biggest parts maker. Also in October of that year, General Motors began to offer a dual-fuel minivan, the Montana.

In collaboration with Magneti Marelli, Fiat adopted biofuel technology in November 2003, with the Palio Flex 1.3 model. The strategy was to offer a slightly more powerful car at a lower price than the competing 1.6 and 1.8 litre models in order to exploit an intermediate market niche. GM launched the first dual-fuel minivan, the Meriva Flexpower 1.8, developed by its former subsidiary, Delphi. In late 2003, there were eight models using flex-fuel technology, and they represented 3.7% of all domestic sales of automobiles and light commercial vehicles.

In 2004 Fiat rolled out the flex-fuel Palio Weekend and Siena models, in 1.3 and 1.8 litre versions, while GM launched the Zafira flex-fuel model, the first up-market vehicle to incorporate this type of engine, followed by the 2-litre Astra Flexpower, again the first mid-sized automobile to use the new technology. Ford entered the market in the second half of 2004 with the Fiesta Sedan Flex, using Magneti Marelli technology.

Newer players had trouble adopting the flexible fuel technology. Renault, which already had an engine plant operating in Brazil, launched its flex-fuel vehicle only at the end of 2004, with 1.6 and 1.0 litre engines for the Clio model in its sedan and hatchback versions.

The new technology scored remarkable success in its first year: domestic sales of automobiles and light commercial vehicles rose from 48,178 units in 2004 to 328,379 in 2005, to represent 22% of the total. Sales of flex-fuel vehicles increased even more when this technology was incorporated into 1,000 cc cars. While the years 2003 and 2004 were characterized by the adoption of flexible vehicles with power exceeding 1,000 cc, 2005 was marked by introduction of the new technology in the lower-priced range of cars. As noted earlier, Volkswagen launched the first "popular" flex-fuel car, the Gol Total Flex 1.0. Later, Fiat brought out three biofuel models: Palio, Siena and Uno, GM unveiled the Celta Flexpower 1.0 model, and then the Corsa family. Ford rolled out its flex-fuel model in the 1,000 cc class only in the second half of 2006. The new player in the market, Renault, launched its own Clio in a flex-fuel version in late 2005.

Flex-fuel vehicle sales have climbed exponentially (see figure II.28): domestic sales of automobiles and light commercial vehicles jumped from 812,104 units in 2005 to 2,652,298 in 2009, representing 80% of sales in this, the largest segment of the Brazilian market. Currently, the eight major firms in the Brazilian market have flex-fuel versions in all families of models, regardless of engine size —1.0, 1.3, 1.4, 1.6, 1.8 and 2 .0 litre— and use —car, minivan, sedan, hatchback— including the Japanese companies Toyota and Honda, and the French PSA Peugeot Citroen and Renault. In terms of production, flex-fuel technology has a slightly lower share, as vehicles slated for export have conventional engines. In 2008, 75% of automobile and light commercial vehicle production had flexible fuel engines.

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from T.A.M. Silva, *Tecnologia bi-combustível e seus impactos no setor automobilístico*, Monografia IE-Unicamp, 2007.

(b) Strategy and performance of vehicle manufacturers

Until the investment cycle of the 1990s, automotive production in Brazil was limited to four manufacturers: Fiat, Ford, General Motors and Volkswagen.[42] Since that time, these automakers have been joined in Brazil by Honda (1997), Toyota (1998), Renault (1999), Mercedes-Benz[43] (1999) and PSA Peugeot Citroen (2001) (see figure II.29).[44]

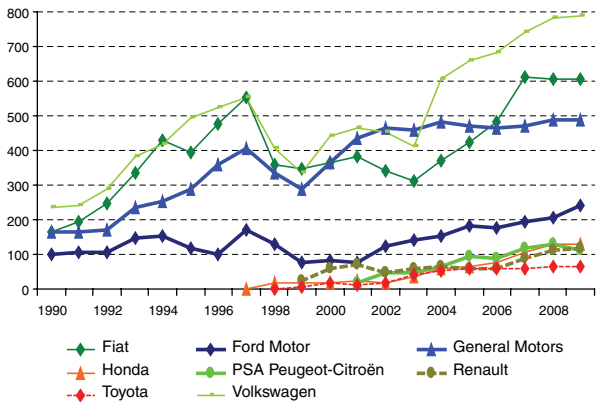
[42] At the end of 2009, Volkswagen celebrated the 50th anniversary of its operations in Brazil. The Anchieta plant in São Paulo was its first outside Germany, and currently produces the Gol, Saveiro, Polo and Kombi models.

[43] In Brazil, Mercedes-Benz produces heavy goods vehicles, buses and utility vehicles. Since 1999 it has been assembling passenger cars, although on a small scale. In 2008 its plant at Juiz de Fora began producing the CLC model, derived from its predecessor, the C-Class Sportcoupé.

[44] Several firms have also entered the light commercial vehicle market; these include the Japanese firms Mitsubishi (1990) and Nissan

Companies that have been operating in Brazil for the past several decades account currently for around 80% of automotive production. In terms of market leadership, Volkswagen has been the biggest producer since 2004 —in that year it surpassed General Motors, which had taken over Fiat's lead in 2000. In 2008, VW accounted for 31% of automobile production, followed by Fiat (24%), GM (19%) and Ford (8%) (ANFAVEA, 2009). During the recent round of expansion (2003-2009) the new players, especially Honda and PSA Peugeot Citroen, achieved a considerable increase in their share of the Brazilian market. Meanwhile, Toyota, now the biggest automotive producer in the world, has seen little change in its share of Brazilian production (see figure II.29).

Figure II.29
BRAZIL: LEADING AUTOMOTIVE MANUFACTURERS, BY OUTPUT, 1990-2008
(Thousands of units)

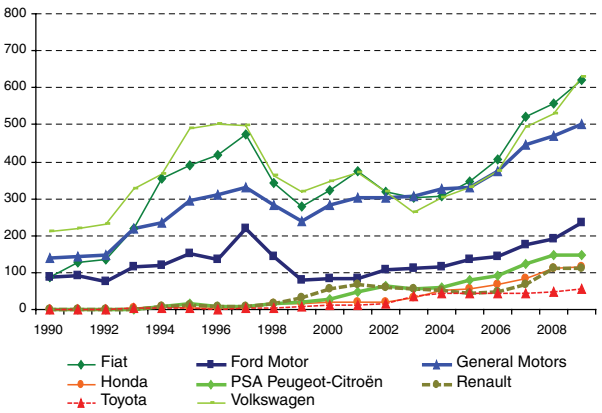


Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from the National Association of Motor Vehicle Manufacturers (ANFAVEA) [online] http://www.anfavea.com.br.

Domestic sales have tracked production closely, although with a few significant differences (see figure II.30): in 2008, the first group of manufacturers dominated the domestic market by a comfortable margin (nearly 80% of sales), although recent years have seen a degree of deconcentration. In fact, leadership is much more hotly disputed in sales than in production, because of the different strategies adopted by the automakers. During this time, Fiat, Volkswagen and General Motors were locked in intense competition for leadership in the Brazilian domestic market (see figure II.30).

In Volkswagen's case, its relatively greater share in production than in sales may be attributed to its bold export strategy, in particular towards subregional markets and Mexico. This reflects the strategy of productive complementarity with the company's other subsidiaries in Latin America. In fact, VW was responsible for nearly 54% of total automotive exports in 2008 (for an export coefficient of 38%: see figure II.31). On the other hand, at 19% in 2008, the firm's share of automotive imports is relatively modest. Despite having adopted a strategy to complement local auto production with imported vehicles, its import coefficient has been consistently lower than that of its United States rivals, GM and Ford.

Figure II.30
BRAZIL: LEADING AUTOMOTIVE MANUFACTURERS, BY DOMESTIC MARKET SALES (DOMESTIC PRODUCTION PLUS IMPORTS), 1990-2008
(Thousands of units)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from the National Association of Motor Vehicle Manufacturers (ANFAVEA) [online] http://www.anfavea.com.br.

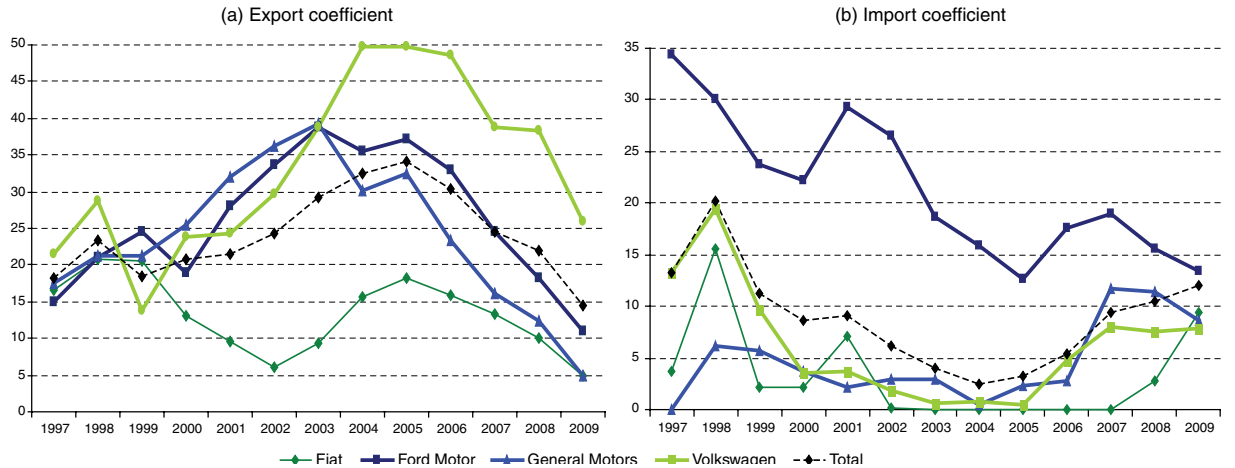
Volkswagen recently declared its hopes of producing a million vehicles in Brazil by 2012, which would represent an increase of nearly 40% compared to its 2008 production level. This goal will require new investment by the company and its suppliers. The VW strategy is to boost the local content index (which averaged 85% in 2009), especially for the new version of the Gol model, and to reduce its dependence on imports and its exposure to exchange-rate fluctuations. To this end, it announced in late 2009 that it would invest some US$ 3.6 billion during the period 2010-2014, over and above the funds —US$ 1.6 billion— that it had committed for 2007-2011. These new funds will be used to modernize and expand its plants, in particular those in São Paulo (*Cars Magazine*, 29 November 2009).

By contrast, General Motors has in recent years pursued a strategy that is quite the opposite of Volkswagen's. Taking into account the financial difficulties of its parent corporation and the postponement of new investments, the company retained its domestic market share through imports. In 2007-2008 it was responsible for around 25% of total automotive imports, and its import

(2002), the latter in partnership with Renault, and the Republic of Korea's Hyundai (2007).

coefficient recorded a sharp jump from 3% in 2006 to 11% in 2008 (see figure II.31). At the same time, GM saw a considerable shrinkage in its share of automotive exports, from 41% in 2003 to 11% in 2008. As a result, its export coefficient dropped from 39% to 13% over the same period (see figure II.31).

Figure II.31
BRAZIL: AUTOMOTIVE EXPORT AND IMPORT COEFFICIENTS OF THE LONGER-ESTABLISHED FIRMS, BY FIRM, 1997-2009
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from the National Association of Motor Vehicle Manufacturers (ANFAVEA) [online] http://www.anfavea.com.br.

In July 2009, in the wake of the international crisis and the firm's bankruptcy proceedings in the United States, GM announced investments amounting to some US$ 1 billion in its Gravataí plant in Rio Grande do Sul, to be financed largely by BNDES. In late October 2009, GM announced that it would raise its investment to US$ 2.5 billion between 2010 and 2014, with a view to renewing its full range of products by 2012 (*Cars Magazine*, 27 October 2009).[45]

In addition to its investment in Gravataí, the company has put money into the Rosario plant in Argentina and the São José dos Campos facility in São Paulo. Both plants are to produce the new Viva models developed by the Brazilian subsidiary. GM has begun to assemble the Chevrolet Agile in Argentina, and will export it to Brazil. The Brazilian subsidiary has also announced plans for a new engine plant in Joinville, Santa Catarina.

Despite these investments, General Motors do Brasil and General Motors Argentina could become relatively less important within the global GM family because in its post-crisis restructuring. The parent corporation has effectively divided its activities into two regions: North America and international operations. Thus, all activities outside North America are now controlled by the Chinese subsidiary. International operations account for 65% of GM's worldwide sales. The strategy would be to reduce the European platforms and expand the Asian ones, taking the Republic of Korea as the product development centre. Except for the Celta and Meriva models, developed by the Brazilian subsidiary, the others would be developed by Opel, the European arm of GM. Nevertheless, with the reversal of plans to sell Opel to the Canadian group Magna, this strategy might undergo a further revision. In any case, the Brazilian subsidiary has recently become the most profitable member of the GM international family.

The growing weight of China in the global strategy of GM could, however, compromise some aspects of operations in Brazil. The corporate objective is to double sales in the Chinese market to 2 million vehicles over the next five years, and this will require new investments. At the same time, the Brazilian subsidiary is supposed to work with the parent company on the development of ethanol-powered engines, which would be sold worldwide, including in the United States.

The second of the United States "Big Three" with production facilities in Brazil is Ford, which has had the poorest performance among the major automakers in the country. From 1997 to 2008 Ford saw a steady drop in its share of domestic sales (from 14% to 9%) and production (from 10% to 8%: see figures II.29 and II.30). The company has always had import and export coefficients

[45] General Motors is planning to increase its annual production capacity from 250,000 to 380,000 vehicles by 2012. The Gravataí plant, which came on stream in 2000, completed an expansion in 2006. The company hopes to launch a new model every three months from the end of 2009 until 2012. It recently rolled out the Agile model and expects, by mid-2010, to be marketing a second model derived from the Viva platform (the first was the Agile), which would also be made in Brazil. Another product that GM would produce in Brazil is the regional version of the new Chevrolet Spark, along with a mid-sized van that would replace the current S10 (*Cars Magazine*, 27 October 2009). The project has received tax and financial advantages from the state and federal governments, including a 20-year cut in the goods and services tax (ICMS).

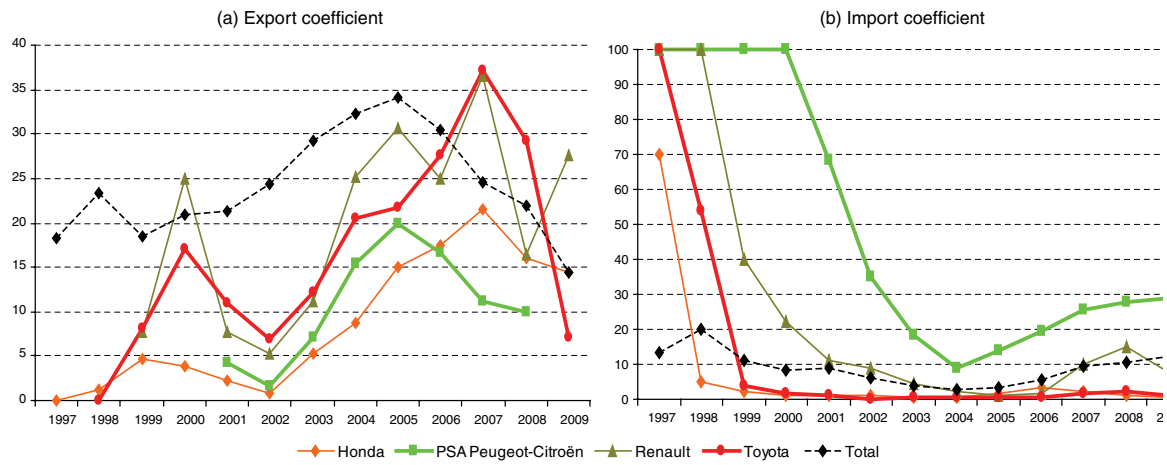
higher than the industry average and has used regional integration and trade agreements (especially the one signed with Mexico) as a strong strategy for complementarity. During the growth phase of 2003-2008 Ford reduced its export coefficient drastically, from 39% to 18%, in order to maintain market share. At the same time its import coefficient experienced a significant drop, from 29% in 2001 to 16% in 2008, as investments in the Camaçari plant in Bahia came on stream (see figure II.31).

In November 2009, Ford announced that it would invest some US$ 2.3 billion in Brazil between 2011 and 2015. That investment would be concentrated in the Camaçari plant, Ford's biggest and most modern facility in Latin America, expanding its production capacity to 300,000 units per year from the current level of 250,000.[46] Brazil is Ford's third largest market, after the United States and the United Kingdom. The Brazilian subsidiary has recently invested US$ 350 million in its engine plant in São Paulo, and US$ 220 million in its truck plant in São Bernardo do Campo (also in São Paulo). The new investments were facilitated by incentives and tax benefits granted until 2015 to firms moving into the North, Northeast and Centre-West regions of Brazil, including an import tax exemption of 100% for machinery and equipment and 90% for autoparts.

In the case of Fiat, its Brazilian affiliate is its largest subsidiary of all, although the situation may change with the Italian manufacturer's interest in Chrysler. The Brazilian operation has accounted for around 30% of Fiat's total production. Between 1997 and 2003 the subsidiary saw its share of Brazilian production and sales decline, but with a growing domestic market it was able to keep output constant, and since 2005 it has been the sales leader (see figure II.30). Fiat's strategy has been to concentrate on the domestic market, reducing its export share and cutting imports almost to nil until 2008 when, with the appreciation of the real, Fiat began to import vehicles from Argentina to complement its Brazilian product line. The company's export coefficient has been consistently below the industry median, even when domestic demand was stagnant (see figure II.31).

As noted above, the new players have in recent years seen their market share rise considerably, from 1% of domestic sales in 1997 to 19% in 2008 (see figure II.30). It is significant that the strategy adopted by these firms has focused primarily on domestic sales and production, keeping imports and exports to low levels. In fact, the investments by these firms have targeted market development. In general, the new players have had relatively small export and import shares, at 13% and 20% respectively. The exception is PSA Peugeot Citroen, which relied on imports (primarily from Argentina) to diversify its offerings and increase its domestic market share. This firm alone accounted for 18% of total automotive imports in 2008 and its import coefficient jumped to 28% in that year, from 9% in 2004 (see figure II.32).

Figure II.32
BRAZIL: AUTOMOTIVE EXPORT AND IMPORT COEFFICIENTS OF THE NEWLY-ESTABLISHED FIRMS, BY FIRM, 1997-2009
(Percentages)



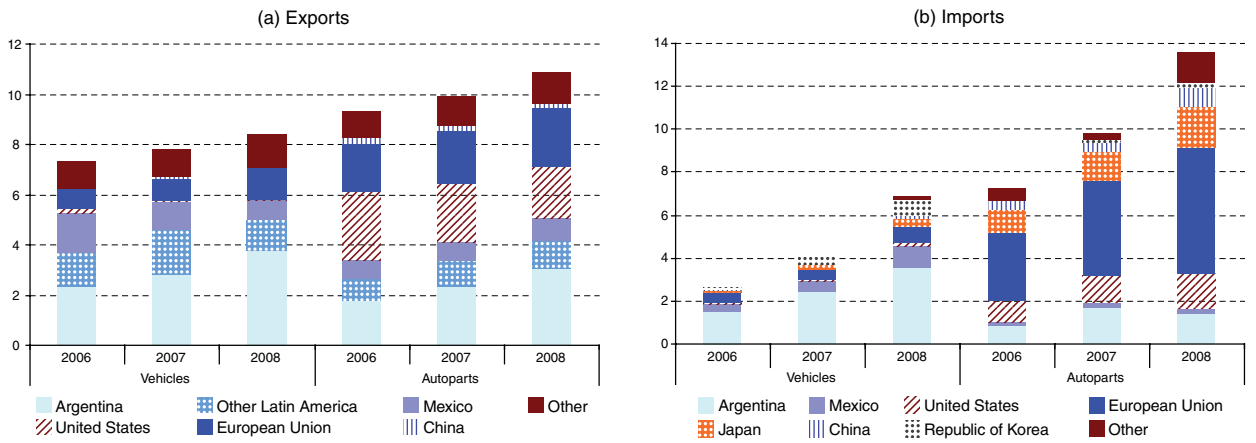
Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from the National Association of Motor Vehicle Manufacturers (ANFAVEA) [online] http://www.anfavea.com.br.

46 According to that announcement, around US$ 1.6 billion would be invested over five years to expand output capacity at Camaçari, while the remaining US$ 700 million would be used to modernize the factory belonging to Troller, a Brazilian ATV manufacturer located in Ceará, which Ford acquired in early 2007 (*Cars Magazine*, 23 November 2009).

PSA Peugeot Citroen recently invested US$ 50 million to build its first engine machining unit in Brazil.[47] The company opted to invest in Brazil rather than to expand its plant in Argentina, where it was the market leader (22%), producing 132,000 vehicles in 2008. The cast-iron blocks and aluminium cylinder heads for the 1.6-litre Citroën C3 and Xsara Picasso and Peugeot 207 will be made at the Porto Real plant in Rio de Janeiro and will be exported to Argentina. The new line has the capacity to produce 100,000 engine blocks and 80,000 cylinder heads per year, in three shifts. This expansion of activities in Brazil is part of a broader strategy to boost growth outside Europe.

In December 2009, Renault announced its intention to invest US$ 580 million in Brazil between 2010 and 2013, an amount equivalent to all its investments since it arrived in the country (see table II.5). In 2011 Renault will roll out new versions of its Logan and Sandero models, and a new SUV called the Duster.

Figure II.33
BRAZIL: AUTOMOTIVE EXPORTS AND IMPORTS, BY COUNTRY OF DESTINATION AND ORIGIN, 2006-2008
(Bollions of dollars)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from the National Association of Motor Vehicle Manufacturers (ANFAVEA) [online] http://www.anfavea.com.br.

Table II.5
BRAZIL: ANNOUNCED PROJECTS, BY FIRM, 2003-2009
(Millions of dollars)

	2003	2004	2005	2006	2007	2008	2009	Total
Volkswagen	4				106	577	708	1 395
Fiat	169	14	585	43	3 336	290	111	4 548
General Motors	240	240	190		100	200	1 378	2 348
Ford	445	10				357	657	1 469
PSA Peugeot Citroen	55	50					191	296
Renault	273	61				43	643	1 020
Toyota		7	3	70	0	1 000		1 080
Honda	25	42	136	34	70	273		580
Hyundai Motor		117				600		717
Daimler AG	84	500		273		928	124	1 909
Total	1 295	1 040	913	420	3 612	4 269	3 811	15 360

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from fDiMarkets CrossBorder Investment Monitor, Financial Times, Ltd., 9 February 2010.

Among those companies with a small-scale, luxury-market production presence in Brazil is Hyundai, of the Republic of Korea, which has taken advantage of strong demand and an appreciating local currency to make its way into the Brazilian market. It is not yet clear whether this strategy will include investment in local automotive production.

The competitiveness of the automotive industry is directly linked to its capacity to innovate in products, processes and organizational aspects. Developing product designs in the country helps to strengthen and intensify the supply chain by involving local suppliers more closely. In this sense, the existence of an advanced and competitive product engineering capability is essential

[47] The Engine Machining Unit produces components —cast iron blocks and aluminium cylinder heads— for the 1.6-litre flex-fuel and gasoline engines fitted on Citroën's C3 and Xsara Picasso and Peugeot's 207, 207 SW and 207 Passion models, all manufactured at Porto Real. These powerplants are also exported to Argentina for mounting on the Peugeot 307 and 307 Sedan and the Citroën C4 and C4 Pallas. (PSA Peugeot Citroen – News, 2 September 2009).

for the future of the autoparts industry in Brazil. The involvement of the Brazilian subsidiaries of transnational manufacturers —such as Fox (Volkswagen), Palio (Fiat), Fiesta and EcoSport (Ford) and Celta (General Motors)— in the development of some products has boosted the domestic automotive engineering capacity, and with it the autoparts industry. Similarly, participation by local subsidiaries and suppliers in development of flex-fuel engines demonstrates the technical progress that the Brazilian automotive sector has made.

Productive capacity will now have to be increased in order to consolidate the Brazilian autoparts industry as a platform for production and export to regional and selected global markets, but this will not be sufficient in itself. The importance of Brazilian subsidiaries within their global corporations can only be increased by enhancing their capacity to generate and disseminate innovations and by ensuring that the spillover effects favour the domestic suppliers that constitute the base of the pyramid (see box II.5).

Box II.5

RESTRUCTURING THE NETWORK OF SUPPLIERS TO VEHICLE MANUFACTURERS IN BRAZIL

Over the past decade, the Brazilian autoparts sector has undergone a profound restructuring, with a hierarchical structure of suppliers emerging in line with international tendencies. This restructuring took place in the midst of increased internationalization of production and trade and in turn it fostered greater technical and economic concentration and "de-nationalization" of the Brazilian production base. In general, there was a sharp increase in competitive, technological and organizational capacity, as reflected in rising exports and imports, automotive engineering advances, local product development, and process innovations. These competitive advantages of course differ widely between segments and firms, and tend to be concentrated in the upper stratum of the supply pyramid, which is comprised for the most part by subsidiaries of foreign companies.

The presence of systems producers at the top of the supply structure has sparked a considerable drop in the number of direct suppliers to automakers. On average, there are 150 first-tier suppliers, compared to 500 in the previous industrial model, and this group is dominated by foreign companies. In the second tier, characterized by much greater competitive heterogeneity and broader participation by domestic firms with few international linkages, are the suppliers of parts, pieces and components made by forging, casting, stamping or machining. The third tier, dominated by domestic firms, covers providers of raw materials to suppliers at the other two levels.

With these new investments, vehicle makers and tier-one suppliers have increased their imports and obliged local suppliers to adapt to international quality and price standards. Second- and third-tier suppliers are less competitive, have higher production and financing costs, face difficulties in accessing financing lines, operate on smaller scales and are not eligible for benefits under the automotive incentives regime (which has been geared to producers for export), and consequently have been unable to keep pace and derive the same advantages from the industry's growth.

The recent strength in vehicle production and sales in Brazil has been a boon to output and sales in the autoparts sector, and this in turn is reflected in better profitability and investment indicators. Yet the relationship between the performance of the automakers and that of their suppliers is not always direct. Despite the surge in investment and the increased production by automakers in the second half of the 1990s, autoparts sales declined over that same period. Consequently, to consolidate a broad base for production and export, it will be essential to pay more attention to the future performance of the parts industry and its ability to take advantage of the current surge in automobile manufacturing.

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

(c) The financial crisis and its impact on the Brazilian automotive industry

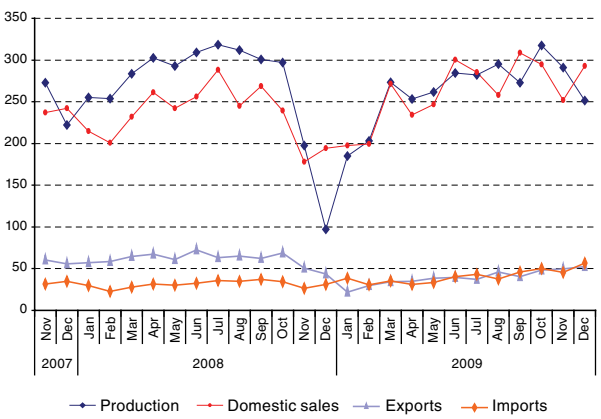
As it did all over the world, the financial crisis of late 2008 had many adverse effects on the Brazilian automotive industry. Nevertheless, domestic sales staged an early recovery, placing the country in a select group —including Germany, China and India— that saw rising sales in 2009. The scale of the impact can be measured by the drop in production in November and December 2008. In October, production stood at 297,230 units, but it fell to 197,340 in November and to 97,050 in December, contracting at a pace of close to 100,000 units a month (see figure II.34).

The countercyclical policies adopted by the government —cutting the IPI tax rate on vehicles and increasing public bank lending for automobile purchases— helped to soften the effects of the crisis, particularly on passenger car sales, after the beginning of 2009.

Figure II.34

BRAZIL: MONTHLY PRODUCTION, DOMESTIC SALES, EXPORTS AND IMPORTS OF THE AUTOMOTIVE INDUSTRY, 2007-2009

(Thousands of units)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from the National Association of Motor Vehicle Manufacturers (ANFAVEA) [online] http://www.anfavea.com.br.

For lower-powered vehicles —up to 1,000 cc— the IPI rate was reduced to zero, while for those with engine capacity between 1,000 cc and 2000 cc, the rate was cut by half, and even further for flex-fuel vehicles (to 5.5%). With the vigorous recovery of vehicle sales during this time, the exemptions were extended in March 2009 for another three months. However, the extension was conditional on maintaining employment levels, which had dropped significantly. From November 2008 to March 2009, automakers shed nearly 10,000 jobs. In June 2009 the term was extended by three months and a new no-layoffs commitment was reached. As of October 2009, the IPI was to begin a staged increase that would bring it back to the pre-crisis level. Lastly, in November 2009, the government announced a new extension of the IPI break for flex-fuel cars, in order to foster production and sales of more economical and environmentally-friendly vehicles.

Another measure adopted by the federal government was to expand lending by the Bank of Brazil for new car purchases. The availability of more credit at lower interest rates helped to boost vehicle sales. In fact, around half of new-car sales were financed on credit. Direct consumer credit and leasing accounted for 53% of sales in the first half of 2009. Auto loans rose from US$ 82 billion in December 2008 to US$ 90 billion in September 2009, representing 34% of all loans to individuals. At the same time there was a significant lowering (by Brazilian yardsticks) of the interest rate, from 37.7% in November 2008 to 24.9% in September 2009. Although this interest rate was still high by international standards, it was far below that charged on other personal credit transactions.

With the cut in the IPI and a return to normal lending, auto sales recovered in January 2009 from their sharp drop in November and December 2008, although they remained below those for January 2008. In February and March 2009, however, sales surpassed those for the same period of the previous year, a pattern that was repeated in nearly every subsequent month of 2009 (see figure II.34). Despite a mixed performance in the first half of the year, production recovered at an accelerating pace during 2009, coming close to the record set in 2008 (see figure II.25). This was due in large part to higher vehicle imports and a sharp drop in exports, in the context of growing domestic credit and a return to exchange rate appreciation, which had been temporarily reversed during the crisis.

The effects of the crisis and the recovery capacity of the automotive manufacturers differed substantially among producers. In 2009, the best performers were Ford and Volkswagen, followed by Fiat, Toyota and General Motors. Volkswagen in fact became the market leader, displacing Fiat. During the first half of the year in particular, GM seems to have suffered negative fallout from the crisis in the parent corporation. Nevertheless, it hung onto its third-ranking market position, with close to 21% of automobile sales. The French firms PSA Peugeot Citroen and Renault did less well, with growth rates that while positive were modest (ANFAVEA, 2010).

In general, the smaller and more recently arrived firms demonstrated less ability to respond to recovery in the domestic market, because their products had less national content and were more dependent on imported inputs. They were slower to rebuild their inventories than were the larger firms such as Volkswagen, General Motors, Ford and Fiat, which had a stronger network of domestic suppliers.

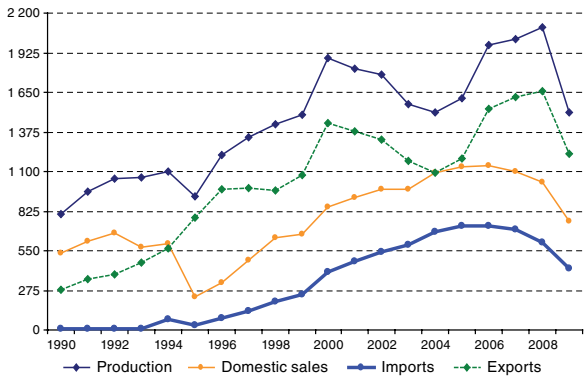
Lastly, investment can be expected to resume as production recovers. BNDES (a major source of financing for automotive investments) reports that credits amounting to US$ 5 billion were disbursed from January to September 2009, compared to US$ 3.2 billion during the same period of 2008. The cumulative amount of lending during those nine months also exceeded the average of disbursements during the industry's growth phase 2003-2008.

When it comes to external sources of funding, a trend towards greater investment is also apparent. In 2007 and 2008, automakers operating in Brazil recorded profit and dividend remittances well in excess of new investments. The profitable operations of the Brazilian subsidiaries in effect helped to finance liquidity shortfalls in the parent corporations. Automotive remittances abroad exceeded US$ 8.3 billion in 2007-2008, and represented around 20% of total remittance outflows. On the other side of the coin, less than US$ 1.9 billion entered the country as direct foreign investment in the sector. This trend was reversed in 2009, when FDI inflows to the industry surpassed remittances abroad. In 2009, US$ 2.2 billion was invested in Brazil, compared to US$ 900 million in 2008. Profit and dividend remittances rose to US$ 2.73 billion which, while high, was far below the US$ 5.61 billion remitted abroad in 2008 during the worst of the international financial crisis.

2. Mexico: dependence on the North American market

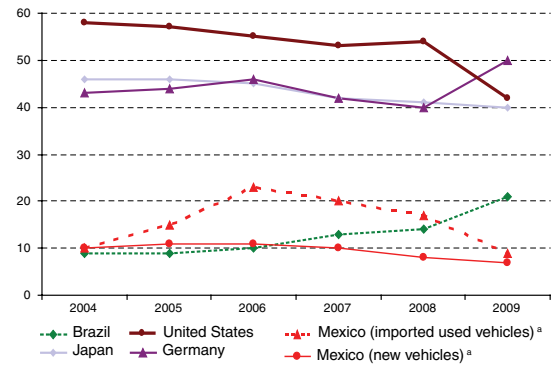
Since the 1985 trade liberalization and, above all, with the advent of the North American Free Trade Agreement (NAFTA) in 1994, the Mexican automotive industry has been highly dependent on the North American market, especially that of the United States. In fact, the behaviour of automotive production and of exports in particular has been tied directly to the health of the United States economy (see figure II.35). When that economy was booming, the Mexican industry enjoyed excellent returns, while during downturns the repercussions on the industry were especially severe. As noted earlier, the United States market has lost momentum, given the already high rate of automobile ownership (see figure II.4) and the damage done to the replacement market by the crisis (see figure II.36).

Figure II.35
MEXICO: AUTOMOTIVE PRODUCTION, DOMESTIC SALES, EXPORTS AND IMPORTS, 1990-2009
(Thousands of units)



Source: Economic Commission for Latin America and the Caribbean (ECLAC) on the basis of information from the Mexican Automotive Industry Association (AMIA).

Figure II.36
SELECTED COUNTRIES: NEW VEHICLES PER CAPITA, 2004-2009
(Vehicles per thousand inhabitants)



Source: Economic Commission for Latin America and the Caribbean (ECLAC) on the basis of information from the Mexican Automotive Industry Association (AMIA).
[a] In Mexico's case, new-vehicle sales are added to imported used-vehicle sales, a phenomenon that was of considerable importance from 2005 to 2008.

The automotive industry in Mexico has enjoyed considerable advantages. In the first place, since the 1995 devaluation of the Mexican peso, wages have been barely one tenth those paid in the United States and Canada. Second, there is the factor of geographic proximity to what has been (at least until the recent financial crisis) the world's biggest automotive market. Third, Mexico has enjoyed preferential access to the North American market, even before the signature of NAFTA. Lastly, Mexico has a large and attractive domestic market for new and used vehicles.

While production costs are the main factor behind the dynamism of the Mexican automotive industry, there are other elements associated with competitiveness that have been and remain key determinants of growth and of possible future recovery. The first has been the steady increase in local value added as a result of technical progress and the strengthening of the production chain, with a growing corps of engineers and wider use of skilled labour. Second has been a more flexible response to shifts in demand —to compact cars, to light commercial vehicles and, once again, to compact cars— and third has been a string of fruitful innovations, geared essentially to producing new models (Banamex, 2009).

During the past decade vehicle production in Mexico followed a cyclical path (see figure II.35): in 2000 it was on the verge of producing 2 million units per year but, with the United States recession, output dropped to 1.5 million units in 2003-2004, recovering subsequently in 2006 before falling off again with the sharp contraction in the United States economy after 2007. Since the crisis of December 1994, when the domestic market slid into a deep depression, automotive sales in Mexico have been somewhat more stable: they rose from 854,000 units in 2000 to 1,140,000 in 2006, when a decline set in (see figure II.35).

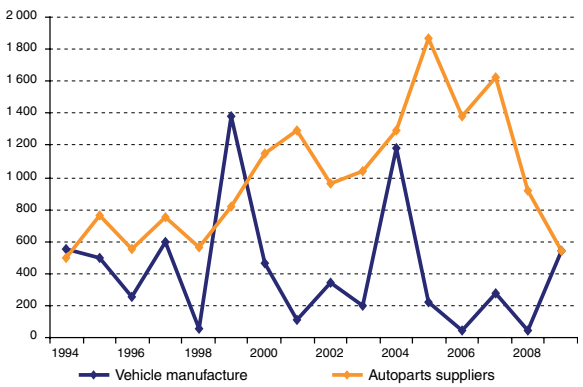
Until the recent crisis, the external market served to offset downturns in the domestic market, but on the other hand the domestic market has so far done little to cushion the collapse of foreign sales. In the previous United States recession, vehicle exports dropped from 1,383,000 units in 2001 to 1,095,000 in 2004 and then recovered until 2008.

Automotive imports have been rising steadily since the mid-1990s, when Mexico began the massive importation of new cars. Imports have increased their market share from 15% in 1995 to around 60% in 2009, reflecting the misalignment of Mexican output with domestic market dynamics, a situation aggravated by imports of used vehicles from the United States beginning in 2005.

Beginning in the 1980s major investments were made to modernize ageing factories constructed during

the import-substitution-based industrialization era, and new and modern plants were built, initially in northern Mexico, to service the North American market (Carrillo, 1993).[48] The advent of NAFTA gave a great boost to FDI in the automotive industry, with large amounts of capital flowing in from the United States as well as from Japan and Europe. Between 1994 and 2009 the Mexican automotive industry accumulated around US$ 23 billion in foreign direct investment (see figure II.37). The pattern of FDI in the industry has changed radically. During the second half of the 1990s, manufacturers and suppliers invested similar amounts, thus laying the basis for the new productive structure based on the assembly of vehicles for export. By contrast, since the year 2000 suppliers have been investing nearly four times as much as the automakers, thereby deepening and broadening the industry's productive chain. As a result, production exceeded 2 million units in 2008, and two thirds of this output was earmarked for export (see figure II.35). While new investments in North America have given rise to excess capacity across the NAFTA area, the most modern plants in the region are in fact in Mexico (for example, Ford at Hermosillo, Sonora, and General Motors at Silao, Guanajuato).

Figure II.37
MEXICO: FOREIGN DIRECT INVESTMENT IN VEHICLE MANUFACTURING AND AUTOPARTS SUPPLIERS, 1994-2009
(Millions of dollars)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of figures provided by the Secretariat of Economic Affairs, General Directorate of Foreign Investment [online] http://www.economia.gob.mx/?P=1164.

Today, the Mexican automotive industry includes 20 vehicle assembly plants, around 2,000 parts and components factories, and a network of more than 1,400 dealers. As of December 2008 it was directly responsible for almost 1 million formal jobs —13.5% of industrial employment in that year— and represented 4% of total GDP and 16% of manufacturing GDP. It was also the only manufacturing activity to grow at double-digit rates, and it accounted for a fifth of the country's manufacturing exports (Bananex, 2009). In 2008 Mexico overtook Canada as the second vehicle producer in NAFTA; it is also the second in Latin America, behind Brazil, and the tenth in the world (see figure II.3).

(a) The specialization model: producing for export and importing for the domestic market

Mexico was quick to consolidate its position as an export platform: exports have become the most important component of production, moving from 28% in 1990 to 80% in 2009 (see figure II.35). Yet the Mexican automotive industry has not been able to offset problems in the North American market by diversifying its export pattern, and this has left it in a vulnerable position (see figure II.38).

Mexican production has been dominated by the big three United States automakers —General Motors, Ford and Chrysler— and this fact has defined its principal characteristics. Until the current crisis, mid-sized and big cars were the favoured market segment along with, to a growing extent, light utility and commercial vehicles —SUVs, minivans, ATVs, pickup trucks and so forth— for export almost exclusively to the United States. From 2002 to 2005, light utility vehicles achieved their greatest weight in Mexican exports, averaging 44% (see figure II.39).

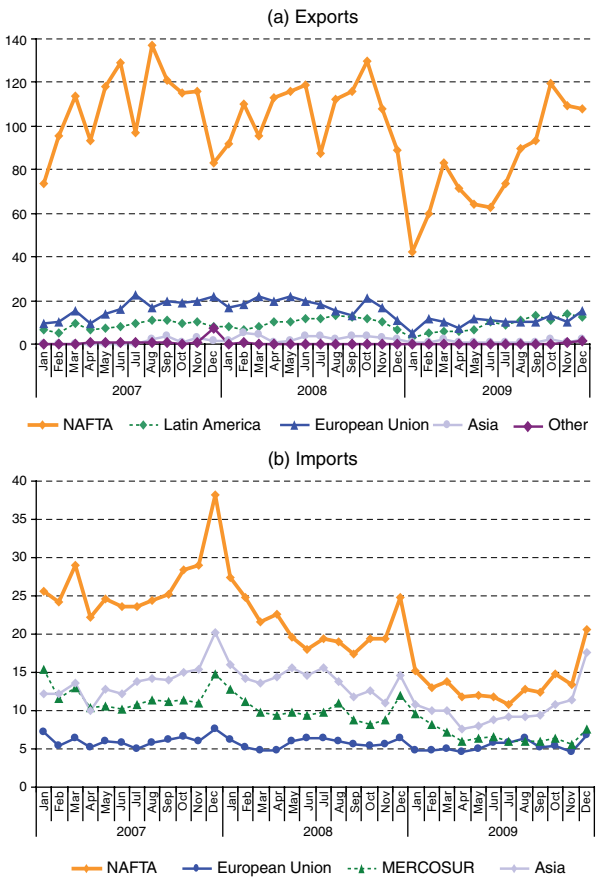
As with most of the country's export manufacturing industry, the export-oriented strategy of the Mexican automotive sector went hand-in-hand with a considerable increase in imports. The market has seen voluminous new imports from various places, notably MERCOSUR and in particular Brazil. In 2000, imported vehicles accounted for 47% of total domestic sales, rising thereafter to nearly 60% (see figure II.40). Currently Mexico is one of the most competitive and open automotive markets in the world, offering 37 vehicle brand names and more than 340 models (Ornelas, 2009).

This characteristic of the Mexican automotive market —producing for export and importing for the domestic market— makes it unique. This business model makes sense, in that it involves exporting automobiles with a unit value of around US$ 30,000 and importing compact cars that cost perhaps US$ 10,000: the goal is to acquire compact, low-priced cars from Europe and South America (Brazil in particular) and to sell larger, pricier vehicles to North America, as part of the complementary production strategies of transnational firms (IIPS). In 2007, 80% of imported units came from MERCOSUR,

[48] The Ford complex as Cuautitlán, built in the 1960s, is a good example of this process: completely overhauled following the mid-1980s, it continues to receive heavy injections of capital and occupies a key position in the company's strategy for the North American market. At the same time Ford established highly automated plants, using the world's best organizational practices, to assemble vehicles and to produce engines for export.

although that situation has now changed with the sharp appreciation of the Brazilian real (see figure II.38). At the present time South American imports are starting to be replaced by Asian products, coming mainly from China. In fact, United States vehicle manufacturers have taken advantage of their alliances with Chinese firms to bring to Mexico vehicles produced by their Asian partners and marketed under their brand names, which have won the recognition and loyalty of local consumers.

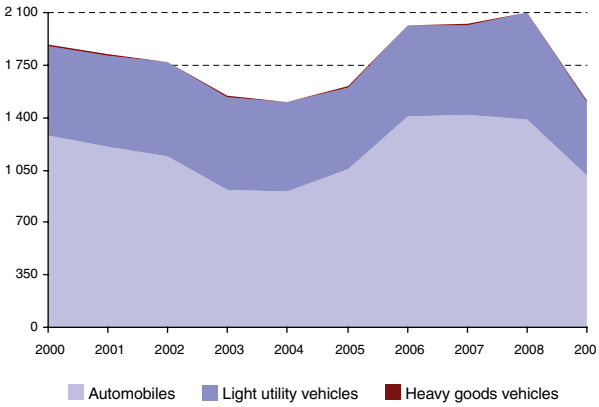
Figure II.38
MEXICO: MONTHLY EXPORTS AND IMPORTS OF VEHICLES, BY ORIGIN, 2007-2009
(Thousands of units)



Source: Economic Commission for Latin America and the Caribbean (ECLAC) on the basis of information from the Mexican Automotive Industry Association (AMIA).

In summary, the Mexican automotive industry's output and its production structure have undergone a significant change. While this development depends essentially on a single market —North America— and involves vehicle assembly firms to a greater extent than autoparts manufacturers, the situation is expected to change gradually (see box II.6). In a crisis setting, this poses at least two major challenges: on one hand, to boost the domestic market as an option for growth and, on the other, to move from an export platform to the consolidation of an automotive manufacturing centre (Mortimore and Barron, 2005). This will require a proactive policy and a strategy to develop local autoparts suppliers and integrate the industry into international circuits.

Figure II.39
MEXICO: VEHICLE PRODUCTION, BY SEGMENT, 2000-2009
(Thousands of units)



Source: Economic Commission for Latin America and the Caribbean (ECLAC) on the basis of information from the Mexican Automotive Industry Association (AMIA).

Figure II.40
MEXICO: EXPORT AND IMPORT COEFFICIENTS, 1990-2009
(Percentages)

Source: Economic Commission for Latin America and the Caribbean (ECLAC) on the basis of information from the Mexican Automotive Industry Association (AMIA).

(b) Strategy and performance of vehicle manufacturers

From the beginnings of the automotive industry, vehicle production has been concentrated in plants of the Detroit Big 3: General Motors, Ford Motor and Chrysler. Ford was the first to establish in Mexico, in 1925 (Carrillo, 1993). During the era of import-substitution-driven industrialization, United States manufacturers accounted for 48% of vehicle output, and in the first five years of NAFTA that share rose to 65%. In the 10 years after 2000, they began to lose market share, which dropped from 60% in 2000 to 49% in 2009 (see figure II.41).

Box II.6
THE AUTOMOTIVE SUPPLY INDUSTRY IN MEXICO IS LAGGING BEHIND

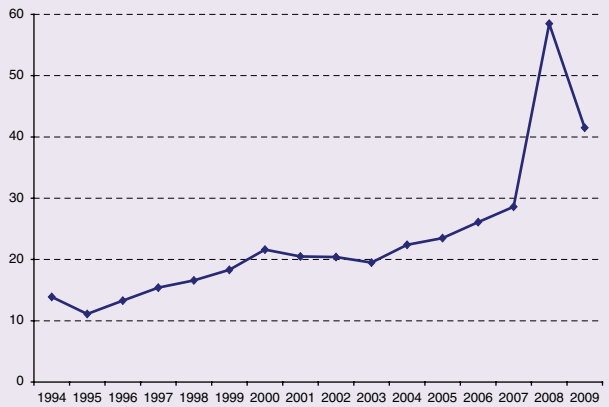
In Mexico, automotive component suppliers have experienced a boom. Yet, while the automobile production platform is obviously important, ranking tenth in the world, specialization in parts and components is in its infancy. The Mexican supplier industry increased its NAFTA share from 5% in 1980 to 9% in 2005, while autoparts production grew steadily: it reached nearly US$ 60 billion in 2008, but then fell by 30% in 2009 as a result of the crisis.

The number of suppliers in Mexico rose from 600 in 1995 to 1,945 in 2009, of which 345 were first-tier suppliers. In 2009, 70% of supply firms were foreign-owned, primarily by United States (33%), German (30%), Japanese (9%) and Canadian (5%) interests. Sixty-two percent of output goes to external markets, primarily vehicle manufacturers (70%) and other first-tier suppliers (20%), while the remaining 38% is bought by Mexican subsidiaries of vehicle manufacturers. In 2009, the main autoparts industry segments with operations in Mexico were electrical components (15%), transmissions, clutches and their parts (13%), engine replacement parts (12%) and gasoline engines (9%).

The parts industry is also of obvious importance in foreign trade. In 2000, finished vehicles accounted for two thirds of exports and parts for the remainder. The United States and Canada were the destination for 94% of vehicle exports and 81% of autoparts. With respect to imports, vehicles represented 26% and autoparts the remaining 74%, coming in from the United States and Canada 91% and 78% respectively. Four years later, the volume of trade had scarcely changed but its structure had undergone a major mutation: while finished vehicles represented 59% of exports and 54% of imports, autoparts now accounted for only 41% and 46% respectively. In other words, as the Mexican auto part sector increased its productive capacity, finished-vehicle imports rose. It is likely, however, that this relationship will change with rising vehicle imports from MERCOSUR and imports of parts and components from Asia.

Nevertheless, despite all this progress, heavy investment, and rising and more diversified production, the fact remains that suppliers —in particular national firms and the second and third tiers— remain weak links in the Mexican automotive industry's productive chain.

MEXICO: VALUE OF OUTPUT BY AUTOPARTS SUPPLIERS, 1994-2009
(Billions of dollars)



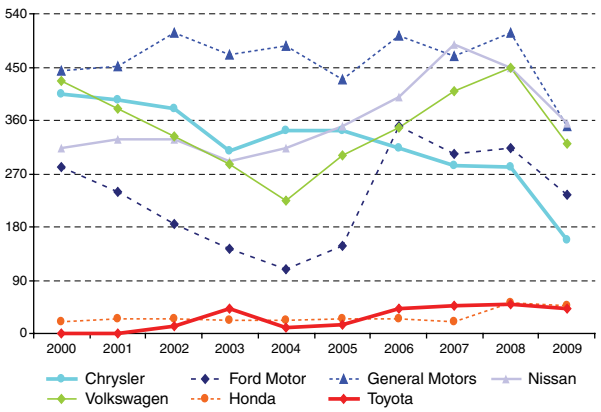
Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from the National Autoparts Industry (INA).

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

In recent years Nissan and Volkswagen have overtaken Chrysler and Ford, by all measures, and have challenged General Motors' leadership position (see figure II.41). What is striking in this scenario is the scant involvement of Japanese manufacturers, in particular Toyota and Honda, which have steered their investments instead to the southern United States.

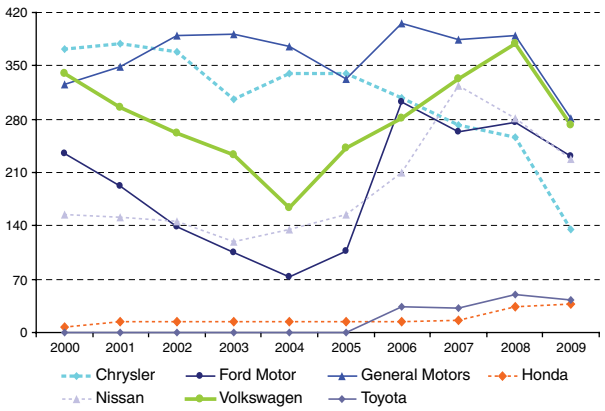
During most of the past ten years General Motors (at times accompanied by Chrysler) dominated both production and exports (see figure II.42). Since 2004, however, Volkswagen has expanded its export-oriented production steadily and has incorporated new models that are widely popular on the North American market, such as the New Beetle, Bora/Jetta and Golf Variant. In fact, Volkswagen's Mexican operations are a platform for exporting unique models to all world markets.

Figure II.41
MEXICO: LEADING AUTOMOTIVE MANUFACTURERS, BY OUTPUT, 1990-2009
(Thousands of units)



Source: Economic Commission for Latin America and the Caribbean (ECLAC) on the basis of information from the Mexican Automotive Industry Association (AMIA).

Figure II.42
MEXICO: LEADING AUTOMOBILE MANUFACTURERS, BY EXPORTS, 1990-2009
(Thousands of units)



Source: Economic Commission for Latin America and the Caribbean (ECLAC) on the basis of information from the Mexican Automotive Industry Association (AMIA).

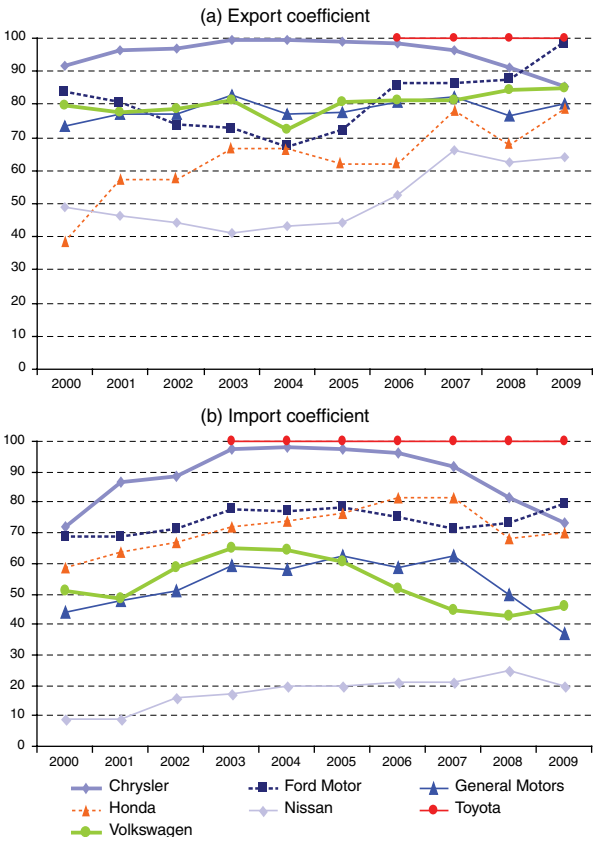
The United States "Big 3" are very export-oriented, shipping more than 80% of their Mexican production to foreign markets, mainly the United States and Canada. Because of the characteristics of its production —big cars and utility vehicles— Chrysler has the highest export coefficient. Ford has demonstrated a great capacity for recovery in Mexico, where its three plants have been vital to its restructuring in North America.[49] On the other hand, with Volkswagen's decision to produce unique models in Mexico, its export coefficient has remained almost unchanged at around 80%. Lastly, the Japanese manufacturers —with the exception of Nissan— have demonstrated a growing export capacity, despite the low production volumes of Honda and Toyota. Toyota is, in fact, an interesting case: it exports all of its Mexican production, and 100% of its sales in Mexico are imported (see figure II.43).

The Mexican domestic market is dominated by General Motors and Nissan, and they —Nissan in particular— have a low import coefficient, i.e. they favour domestic production (see figures II.43 and II.44). This tendency stands in contrast to the other automobile manufacturers, who serve the Mexican market with imported vehicles, primarily compacts. The most widely sold models in Mexico are the Tsuru (Nissan) and the Chevy (General Motors), which have a long history in the market and have undergone marginal updates over the years. In fact, solid sales have trumped various attempts to discontinue these models, which were geared solely to the domestic market. This tendency could be reversed to some extent by the approaching production of Ford's Fiesta and Chrysler's Fiat 500 models.

Even before the crisis, new-car sales in Mexico were being severely depressed by the import of used vehicles from the United States.[50] The lack of control over the quality and quantity of imported vehicles has hurt manufacturers and importers of new vehicles. Indeed, the situation has only accentuated the export bias of auto producers and their neglect of the domestic market.

In Mexico, the leading manufacturers are apparently reverting to long-term specialization in the passenger car segment, but with a greater emphasis on compacts. From 1988 to 1994, passenger vehicles accounted for 75% of market sales, while the current figure is about 70%, and there is an apparent reversal in the preference for light utility vehicles (see figure II.39).

Figure II.43
MEXICO: VEHICLE EXPORT AND IMPORT COEFFICIENTS, BY COMPANY, 2000-2009
(Percentages)



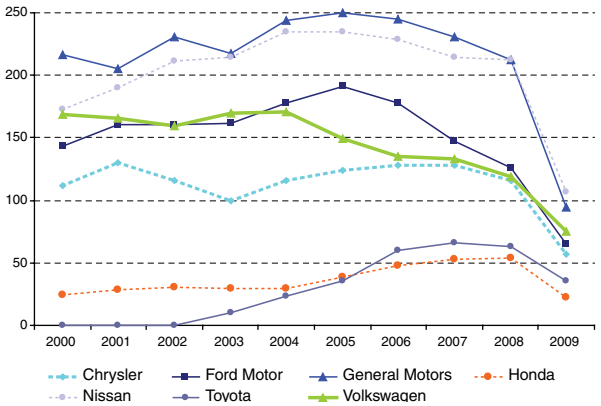
Source: Economic Commission for Latin America and the Caribbean (ECLAC) on the basis of information from the Mexican Automotive Industry Association (AMIA).

[49] Ford has two vehicle assembly plants in Cuautitlán and Hermosillo, and an engine factory in Chihuahua. The Hermosillo plant is one of the most modern in North America. In 2009 Ford shut down the Cuautitlán plant and is restructuring it to produce 300,000 units of a compact car, which it needs to round out its product line in the NAFTA zone.

[50] There are some 23 million vehicles on the road in Mexico, more than 8 million of which were imported, mainly from United States. With an average age of 18 years, they contribute to ageing of the vehicle fleet. At the present there are 3,150,000 imported used vehicles that have been licensed, but nearly 5,000,000 have not yet been licensed (*The Economist*, 5 June 2009).

Volkswagen and Nissan are the lead car makers, and Ford is catching up (see figure II.45). On the other hand, General Motors, and Chrysler in particular, are still having trouble adapting their production to smaller, more fuel-efficient cars, and their sales have declined, especially in the United States. Over the past 10 years, and especially in 2006, there was a widening gap between car production and the output of light utility vehicles, confirming the trend already observed in Mexico towards specialization in compact and subcompact autos (Mortimore, 1998). The crisis had a profound impact on both segments, and Ford and General Motors actually suspended production of heavy goods vehicles.

Figure II.44
MEXICO: LEADING AUTO MANUFACTURERS, BY DOMESTIC SALES, 1999-2009
(Thousands of units)



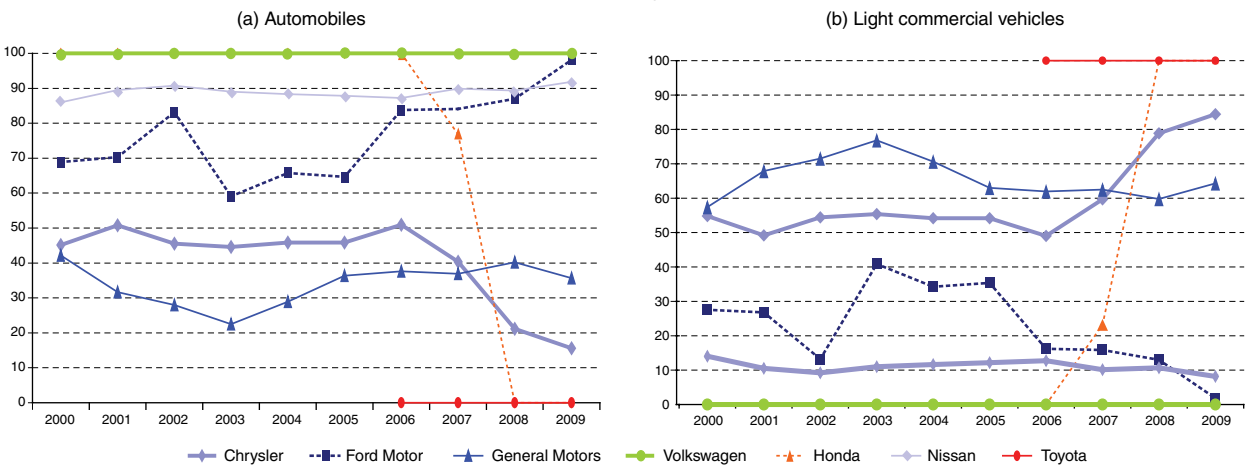
Source: Economic Commission for Latin America and the Caribbean (ECLAC) on the basis of information from the Mexican Automotive Industry Association (AMIA).

Table II.6
MEXICO: PROJECT ANNOUNCEMENTS, BY COMPANY, 2003-2009
(Millions of dollars)

	2003	2004	2005	2006	2007	2008	2009	Total
General Motors	0	43	0	600	307	660	301	1 911
Ford	1 907	8	0	0	0	1 107	0	3 022
Chrysler	0	250	0	2 007	577	25	339	3 198
Toyota Motor	188	0	0	37	0	25	0	250
Honda	8	24	30	80	0	0	0	142
Nissan	0	0	800	372	0	0	307	1 480
Volkswagen	292	0	0	307	0	1 019	0	1 619
Total	2 396	325	830	3 404	884	2 837	948	11 623

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from fDiMarkets CrossBorder Investment Monitor, Financial Times, Ltd., 20 April 2010.

Figure II.45
MEXICO: SEGMENT SHARES IN TOTAL PRODUCTION, BY COMPANY, 2000-2009
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC) on the basis of information from the Mexican Automotive Industry Association (AMIA).

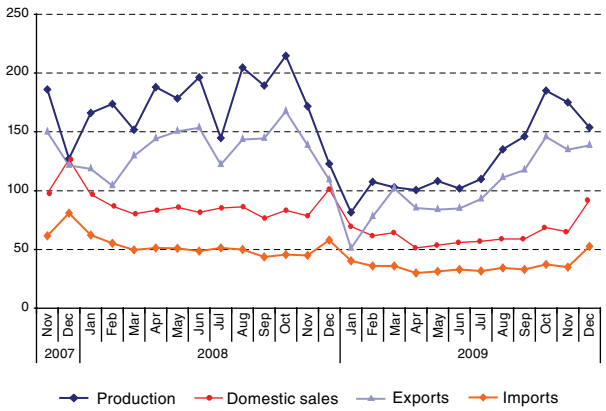
(c) The crisis and its impact on the Mexican automotive industry

As was the case in most of the major automotive markets, in Mexico auto sales collapsed in late 2008. Yet because of proximity to and dependence on the United States market (the focal point of the crisis and the home base of the main companies with operations in Mexico) the impact was particularly severe and prolonged. In the first half of 2009, production and exports fell by more than 42%, reflecting the recession in the United States. The impact on the domestic market was slightly less, but still alarming: sales dropped by nearly 30% and imports shrank by 35%. As the year progressed the situation began to recover, helped along in particular by the "cash for clunkers" scrapping programme in the United States and the improved outlook for the Detroit "Big 3", which served to reactivate production and exports. In addition, the establishment of sole production platforms to supply global markets (Nissan's Tiida and Volkswagen's Beetle, Bora and Sportwagen) should allow for greater export diversification. Nevertheless, the domestic market has not recovered, hit as it has been by a sharp contraction in GDP (-6.7%) and a systematic retreat in confidence indices. The recovery is expected to be slow (AMIA, 2010). In any case, output, exports and sales on the domestic market fell by around 30% in 2009 (see figure II.46).

Under these circumstances, nearly all automakers have taken steps to reduce operating costs and improve their financing conditions in order to cope with falling sales. Like their parent companies, the Mexican subsidiaries —automakers and suppliers alike— began to feel the effects of the recession in the last quarter of 2008. The companies then put into effect defensive strategies to reduce fixed costs (de-stocking, production cuts, a shorter workday, and plant shutdowns) as well as variable costs (cutting back on casual and unskilled labour, reducing wages during production shutdowns, and occasionally paring employee benefits).

Generally speaking, these measures represented an initial, cyclical reaction to market instability. Yet they seem to herald at least two longer-term scenarios for coping with the worldwide recession. On one side are the United States firms, hard hit by the collapse of their domestic and international markets, which have received government assistance for meeting their financial obligations. On the other side are the Asian firms, also affected by falling sales, which seem to have greater productive flexibility for adjusting to the new conditions of worldwide demand. Toyota's recent problems could change this picture, however (see box II.2).

Figure II.46
MEXICO: MONTHLY AUTOMOTIVE PRODUCTION, DOMESTIC SALES, EXPORTS AND IMPORTS, 2007-2009
(Thousands of units)



Source: Economic Commission for Latin America and the Caribbean (ECLAC) on the basis of information from the Mexican Automotive Industry Association (AMIA).

The Mexican government's response to the auto industry's crisis was relatively prompt, if limited, amid a flurry of demands for help from various economic and social sectors hit by the global crisis. The government has concentrated its support to the automotive sector on four areas: (i) the employment preservation programme; (ii) credit lines and guarantees for financial intermediaries lending to the sector; (iii) a fleet renewal programme; and (iv) various state programmes to provide supplementary support of the local level.

At the beginning of 2009 an employment preservation programme was established, initially funded at US$ 200 million, for the benefit of vehicle manufacturers.[51] The programme was intended to avoid mass lay-offs in the face of falling sales by absorbing a portion of the payroll of firms forced to implement production shutdowns. The mechanism provided that, instead of laying off redundant workers, the companies would sign a contract with the government to retain them at two-thirds wage for as long as the work suspension lasted. The government would cover one third, the company another third, and the remainder was considered the workers' contribution to combating the crisis and saving their jobs. Despite its limited funding, the major automakers and some suppliers signed onto this scheme, especially during the first half of 2009, when production stoppages were more frequent and prolonged. The programme is estimated to have forestalled the loss of perhaps 250,000 jobs.

At the same time, and with a view to reviving the market, the government and a national development bank (Nacional Financiera) created an emergency

[51] Business organizations were asking for a rescue plan of US$ 3 billion.

support programme for the automotive industry. This plan, funded to the tune of US$ 670 million, was designed to provide credit lines and guarantees to banks, financial intermediaries, and dealers in order to cushion the fall in domestic consumer demand for vehicles. The programme was not very successful, however, for it was unable to offer more flexible credit terms or significantly lower interest rates than those available on the market.

At mid-year, with a view to encouraging domestic sales, the government launched the Fleet Renewal Programme, inspired by the cash for clunkers scheme in the United States. The programme was funded with 500 million pesos (US$ 36 million), allocated to automakers in accordance with their market share, who could then pass on a subsidy of 15,000 pesos (US$ 1,100) for the purchase of a new vehicle, in exchange for scrapping an old one. The programme turned out to be cumbersome and hard to use, and the subsidy was relatively small in comparison with similar programmes in other countries. The initial phase saw 250 million pesos committed, and the remaining funds have been put on hold.

In conclusion, to counter the vulnerability of the Mexican industry in light of its heavy dependence on external markets, and the United States in particular, a strategy must be formulated for boosting the domestic market. To this end, industry associations have proposed action on several fronts: (i) promoting renewal of the vehicle fleet; (ii) revising vehicle safety, engineering and emissions standards; (iii) revisiting the structure of taxes on new vehicle purchases; (iv) encouraging the incorporation of technological innovations into new vehicles; (v) improving access to credit for vehicle purchases; (vi) improving the vehicle registration and licensing system; and, most importantly, (vii) banning or limiting the import of used vehicles.

In fact, the key to a comprehensive long-term growth strategy is an industrial policy for the automotive sector, with its corresponding legislative framework (Carrillo and García, 2009).

D. Conclusions

The worldwide automotive industry has recently undergone profound changes, and these are expected to become even more pronounced in the near future. With the lack of flexibility for adapting to adverse circumstances —essentially related to rising fossil fuel prices and greater environmental awareness on the part of governments and consumers— vehicle makers have found themselves in an extremely weak position. Global restructuring of the industry was necessary, but was systematically postponed.

Among the most important elements of this process is the off-shoring of production in search of lower costs and greater proximity to major consumer markets. In this respect Asia, and China in particular, as well as the new members of the European Union —Poland, the Czech Republic and Slovakia— have been the greatest beneficiaries. In Latin America, the transnational automotive companies have focused their interest on Mexico, as a platform for exporting to North America, and on Brazil, given the size of its domestic market and expectations of continued sound macroeconomic performance by the region's largest economy.

Because of its size and importance, the automotive industry has received strong and sustained government support in all countries that are host to operations of its parent corporations or subsidiaries. The recent crisis has highlighted this concern, calling forth massive and costly bailout plans by governments around the world.

The automotive industry has experienced significant development in the larger emerging economies, in particular the "BRIC" countries (Brazil, Russia, India and China), the Republic of Korea, Poland and Mexico. Industrial policy has played a key role in these countries in defining the industry's dimensions and orientation. The instruments used have varied, although they can be grouped into a few categories: (i) mechanisms to attract FDI in vehicle manufacturers and autoparts suppliers; (ii) financial incentives —credits such as those of BNDES in Brazil, tax relief, lower customs duties for automakers seeking to round out their product line with imports; (iii) strengthening the value chain; and (iv) creating and promoting national firms, such as those of the Republic of Korea, China and India.

In Latin America the transnational vehicle manufacturers have dominated the industry from its beginnings. In the case of autoparts, the relative importance of domestic firms has declined steadily, and first-tier global suppliers now dominate these activities. In Mexico and Brazil, the automotive regimes of the mid-1990s, together

with the stimulative effects of international economic and trade integration agreements such as NAFTA and MERCOSUR and various federal and state incentives, sparked a great expansion of firms that had been operating in those countries since the import-substitution-based industrialization era, and they attracted a considerable number of new players, particularly in Brazil.

Although they have elements in common, the patterns of specialization in the Brazilian and Mexican industry are quite different, reflecting government policy, business strategies, domestic market size, and distance to other important consumer markets.

In Mexico, the proximity of the United States has been an essential factor: the Detroit-based companies transferred their productive capacity to their southern neighbour as a way of rescuing their competitiveness in their own market, under attack from their Asian rivals. The Mexican industry therefore specialized in mid-sized and large vehicles aimed at the North American market. Government policies, in Mexico and in the United States alike —within and outside the NAFTA framework— have been designed to support and strengthen this productive model. Given the problems facing the major United States manufacturers and the abrupt and sudden collapse of demand in the United States, the Mexican industry experienced a sharp contraction and its weak points became all too apparent: first, its extreme dependence on the North American market and its problems in penetrating alternative markets, and second, the weakness of its domestic market which has never offered an alternative outlet for Mexican production. In fact, a significant portion of local demand is covered by imported compact cars. Third, vehicles assembled in Mexico depend to a large extent on the import, mainly from the United States, of the more sophisticated parts and components. This is more complicated for non-United States manufacturers that lack distribution networks of sufficient size in the NAFTA zone. The local authorities face a great challenge, then, in overcoming these structural difficulties.

In Brazil, the competitiveness of the automotive industry relies on four pillars: (i) a model specialized in compact vehicles with flex-fuel engines; (ii) the regional integration process (MERCOSUR); (iii) buoyant domestic demand, especially in recent times; and (iv) productive and commercial complementarity between transnational automakers in Brazil and Argentina. In addition, the federal government, several state governments and other government institutions such as BNDES have instituted various mechanisms to support and stimulate the sector.

New investments should strengthen and deepen the specialization model, which finds support in several elements. The first is that this strategy is the one most suitable to the region's income structure and demand profile. A second factor that favours the specialization strategy is that the less powerful vehicles are more energy-efficient, and this reduces fuel costs and pollution emissions, making them much more suitable for urban use. Third, these vehicles have a greater national content, and therefore help support the local autoparts industry, thus reducing import pressures and increasing opportunities for the development of regional vehicles. Finally, specialization ensures an adequate scale of production, a key factor for international competitiveness.

The greatest risk to this production structure, especially in Brazil, has to do with uncertainties over the future commercial strategies of vehicle manufacturers from China and India, which are almost certain to gain a greater international presence in the compact and subcompact segments. However, the possibility remains that these firms may decide to install production capacity in the region as a route for market entry.

Given the different patterns of regional specialization, automakers with an established presence may round out their product lines by importing higher value added vehicles, opening the way for greater regional complementarity, in particular for manufacturers with plants in Mexico and, to a lesser extent, in Argentina. For Brazil, however, regional export markets for its compact vehicles will remain elusive as long as the national currency maintains its current strength.

To lend stability to the regional automotive industry it is essential to protect and stimulate the domestic market. In Brazil's case, the growth prospects for domestic production and demand are encouraging. By contrast, as noted earlier, Mexico is facing structural problems —lack of suitable institutions to enforce standards relating to physical and mechanical aspects, pollution emissions and safety, the absence of incentives for technological innovation and fleet replacement, a complex tax structure, and the large supply of imported used cars in the market: the authorities will need to address all these issues.

Problems in developed countries could lead to even more off-shoring of productive capacity. Under this scenario, Brazil and Mexico, which have been operating at near capacity in recent years, could be candidates for new investments. This opens an opportunity for a new cycle of investment by automakers and their suppliers. Yet there is a risk that the region may not be able to capture any significant portion of those new investments: despite the dynamism of the Brazilian auto industry and the importance of Mexico for NAFTA, regional production represents barely more than 8% of world output. It is also true that most of the growth in global vehicle production in recent years has taken place in other dynamic markets: China, India, Republic of

Korea, and some of the new members of the European Union. These regions are on their way to becoming important magnets for new investment in the sector and they are boosting their production of automotive parts and components.

Beyond proximity to the most dynamic markets, another decisive factor for attracting investment to the industry relates to strategies for reducing costs and enhancing competitiveness. Costs are being reduced systematically, and this is promoting reorganization of supply and production chains, as well as the development of new products and processes, and will continue to do so. In this respect, the steady appreciation of the Brazilian real represents a competitive disadvantage and is not conducive to attracting new investments. The sharp jump in auto part imports between 2007 and 2009, producing the first negative trade balance since 2002, reinforces this concern. Furthermore, a rising export coefficient is a likely prerequisite for any new investment project, and here again the appreciating exchange rate is an adverse factor.

Whatever happens to the exchange rate, another decisive factor in the automotive chain's new production configuration and its degree of regional complementarity will be the level of protection for domestic or regional vehicle and parts production. The level of protection from vehicle imports seems relatively workable for now, but the same cannot be said for autoparts.

Lastly, it is not enough to reinforce production capacity: what is essential is to strengthen technology and innovation capabilities and make better use of the automotive engineering base that exists in Brazil and Mexico by spending more on domestic R&D and on local development of new vehicle designs. A greater capacity for technological development will be key to the competitiveness of the Latin American productive base, allowing the industry to shift promptly to processes and products that are more efficient in economic, energy and environmental terms, especially in the area of electric, hybrid and hydrogen-cell engines.

Within this framework, the bigger countries of the region once again have broad scope for sector-specific industrial policies focused on innovation and production modernization, human capital formation, and vehicle assembly firms or parts makers, financed either by foreign or domestic investment.

Chapter III

Corporate strategies in the Latin American iron and steel industry: consolidation, growth and crisis

A. Introduction

Latin America's iron and steel industry has experienced strong growth in recent years, with significant flows of foreign direct investment (FDI), followed by a sudden adjustment as a result of the economic crisis. Starting in the early 1990s, the industry had undergone major transformation, with most companies in the region being privatized. Not only did this open the door to mergers and acquisitions and to consolidation into larger groups, it also fostered the foreign expansion of Latin American transnational companies (trans-Latins). Investment strategies in the region were marked by a steady increase in demand during the first decade of this century and the customary increase in iron-ore prices. In this new context, the iron and steel industry retained its status as a basic industry attracting special attention from Governments. Investment strategies in the iron and steel sector depend on the global strategies of transnational companies in the sector and on the world economic situation, which determines demand. They also depend on individual countries' industrial policies and local capacity-building.

The iron and steel industry is the archetypal basic industry. Iron and steel are essential inputs in almost all fixed capital investments, from machinery to infrastructure, and historically all Governments have conferred a key role on the iron and steel industry in their industrialization strategies. For much of the twentieth century, this entailed state ownership of iron and steel companies (in both Latin America and other regions). Nowadays the industry is

mainly in private hands, although it remains a special sector that few Governments are willing to stop supporting, either directly or indirectly.

Demand for iron and steel products is highest in the construction industry, which consumes 44% of world production, followed by the manufacture of transport equipment, with 17%, and machinery and tools, with 15% (UBS, 2008). The presence in a country of these and other heavy industries, together with infrastructure development, determines the growth potential of its iron and steel industry. The corporate strategies analysed in this chapter therefore hinge upon each country's industrial policy and performance. This performance was analysed extensively in chapter II on the automotive industry.

As the iron and steel industry depends on construction and heavy industry, it is highly sensitive to changes in the economic situation. Following years of strong economic growth, which had boosted demand for iron and steel and raised expectations for growth in the industry, steel consumption plummeted in 2009. In Latin America there was a 24% drop. In mid-2008, almost all the companies operating in the region had been considering major projects for increasing installed capacity that have had to be either cancelled or postponed.

In the Latin American iron and steel industry, subsidiaries of European and Asian companies coexist with local companies which, in many cases, have invested outside their home countries. Consequently the corporate investment strategies analysed in this chapter respond both to the local demand outlook and to the industry's development in other parts of the world. This analysis complements that of the automotive industry in the previous chapter in studying the crisis response of two key industrial sectors with a solid presence of transnational companies. This chapter is divided into four main parts. Part B presents a world overview of the iron and steel industry; parts C and D respectively analyse the strategies of the largest transnational companies present in the region and the leading trans-Latins companies in the iron and steel industry; part E puts forward some conclusions.

B. World overview of the iron and steel industry

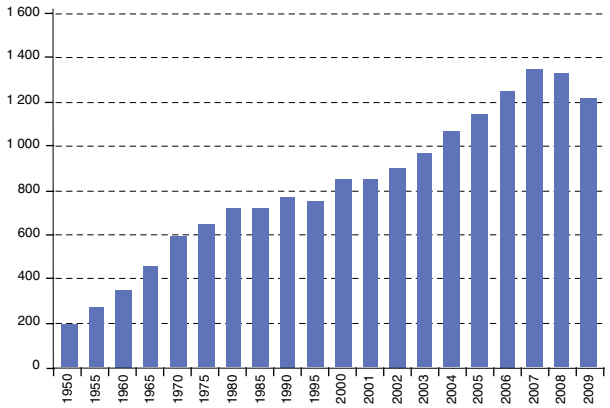
1. Production and trade trends

Since the end of the Second World War, the iron and steel industry has had two boom periods. The first occurred between 1950 and 1975, when the average annual growth rate reached 5% (see figure III.1), as a result of the infrastructure reconstruction effort and expansion in developed countries. In contrast, between 1975 and 2001 the industry's annual growth rate fell to 1.1% (less than world population growth), initially owing to the adverse effects of oil price rises, which increased the price of energy-intensive products.

The second boom period, between 2001 and 2007, was marked by growth in demand in the emerging economies, especially China. Between 1997 and 2006, whereas the apparent consumption of steel stagnated in the Group of Seven (G-7) economies (Canada, France, Germany, Italy, Japan, United Kingdom and United States), in China it grew by an annual 14%.[1] In Latin America, consumption rose by an annual 4% during this period, the lowest rate of all the developing regions. In fact, per capita steel consumption in the region has not risen since 1974, which indicates relative industrial stagnation (ILAFA, 2009). In response to this new pattern of demand, while production grew slowly in the more advanced countries (1.2% per year in Japan, 1.3% in North America and 2.7% in Europe), it grew faster in the emerging economies: the Commonwealth of Independent States (3.7%), Africa (4.0%), Latin America (4.4%), the Middle East (5.8%) and Asia (13.6%).

[1] A country's apparent consumption of steel is calculated as gross output plus imports, minus exports.

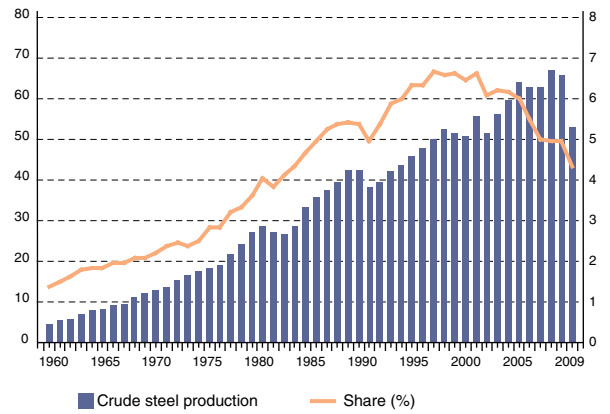
Figure III.1
WORLD PRODUCTION OF CRUDE STEEL, 1950-2009
(Millions of tons)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information provided by the World Steel Association (WSA).

In Latin America, the industry underwent the same three phases. Between 1960 (the first year for which data are available) and 1980, Latin America's industry experienced high growth rates (9.4% per year), driven mainly by heavy public investment; in that year the region's share of the global iron and steel industry rose to 4% (see figure III.2).

Figure III.2
LATIN AMERICAN CRUDE STEEL PRODUCTION, 1960-2009
(Millions of tons and percentage share of the world total)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information provided by the World Steel Association (WSA) and the Latin American Iron and Steel Institute (ILAFA).

The crisis sparked by the oil-price shock in the early 1970s hit the iron and steel industry in Latin America several years later than in the industrialized countries and, in the first three years of the 1980s, a number of small-scale plants were decommissioned. Moreover, the region became a net exporter of iron and steel products, owing to a decline in regional consumption of rolled products (from 27.8 million tons in 1980 to 18.3 million in 1983) and to the fact that projects for expansion and the construction of new plants, which had been initiated during the previous decade, came on stream (de Paula, 2009).

The 1990s was marked by the privatization of state-owned enterprises: in 1990, 52% of Latin America's steel was produced by state-owned enterprises, dropping to 7% three years later (Astaburuaga, 1993). By late 1997, all Latin American state-owned iron and steel companies had been privatized, except in Cuba and Ecuador. Between 2000 and 2007, production in Latin America increased by an annual 4.4%, although in 2008 the region's share of world production decreased to 5.0% as a result of strong Asian growth.

Owing to the scale of investment required, many Latin American countries produce very little or no steel. Brazil and Mexico are responsible for three-quarters of the region's steel production and, of the remaining countries, only Argentina, the Bolivarian Republic of Venezuela and, to a lesser extent, Chile, Colombia, Peru and Trinidad and Tobago (in that order), have an industry of any size (see figure III.3).

In addition to being the region's biggest steel producer, Brazil is the main steel exporter. Its exports of 10.4 million tons position it thirteenth in the world ranking. Its plays a much more important role in the iron-ore trade: it is the world's leading exporter (almost on a par with Australia), with 269 million tons. The world's main net exporters of iron and steel products are China, Japan and the former Soviet Union countries. The main net importers are countries in the rest of Asia, Africa and the Middle East, together with the United States. As a whole, Latin America's balance of trade is almost in equilibrium, with a small trade surplus (WSA, 2009).

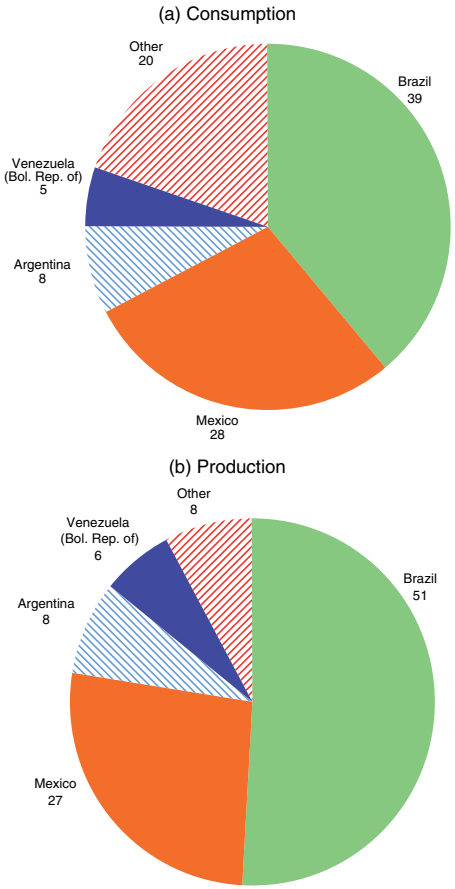
A distinction needs to be made in Latin American iron and steel exports between products in the primary manufacturing stage (slabs, blooms and billets) and more processed products, such as long-rolled products, flat-rolled products and tubes.[2] Latin American exports

[2] According to the Standard International Trade Classification (SITC, Rev. 3), products in the primary manufacturing stage are those in groups 671 and 672, whereas more processed products are the remaining codes in group 67.

of products in the primary manufacturing group are distributed evenly among the world's leading markets. In fact, many of the companies analysed in this chapter produce slabs in Latin American countries for dispatch to rolling mills from their own group in Europe, Asia or the United States. In contrast, exports of more processed products are targeted chiefly at the United States (29%) and other Latin American countries (50%), which indicates a degree of regional integration in these products.

In general, international trade in this sector, as in many other manufactures, has opened up considerably in the past two decades. The export share of world steel production grew from 26% in 1990 to 40% in 2000. As from 2000, extremely strong growth in production in China, which already represents 38% of world production, caused the proportion of exports to fall to 36% in 2008. This increase in trade, in an industry that receives indirect state protection, has also led to frequent trade disputes, almost always arising from accusations of dumping. In fact, the iron and steel industry has the second largest number of antidumping investigations in the world after the petrochemical industry (Stevenson, 2009), although the majority of antidumping investigations are related to Chinese exports. The recent "Buy American" clause in the United States package of measures for tackling the crisis will also restrict the export opportunities of the region's iron and steel companies, with the exception of those from Chile and Mexico (VanGrasstek, 2009).

Figure III.3
LATIN AMERICA: APPARENT CONSUMPTION AND PRODUCTION OF IRON AND STEEL, 2008



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information provided by the World Steel Association (WSA).

2. BRIC countries: key to a new structure for the industry

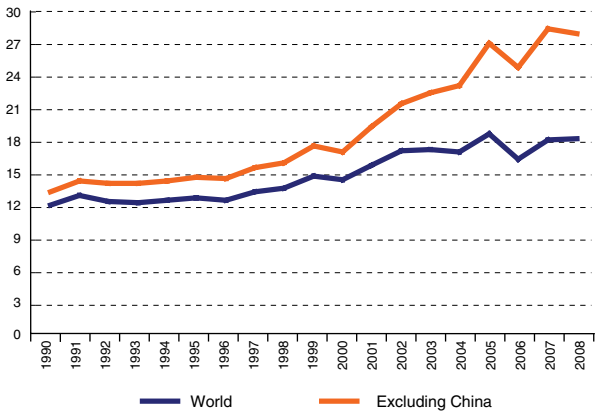
The industry is characterized by a medium to low level of technology, strong dependence on natural resources (iron ore and coal) and large economies of scale. This has created a trend towards consolidation into increasingly large companies, which has been evident since 1990 and accelerated up to around 2000. The combined share of the world's five largest companies rose from 12.3% in 1990 to 18.4% in 2008, and from 13.4% to 28.0% if China's industry is excluded (see figure III.4). This difference springs from the industry's astonishing growth in China, meaning that new Chinese companies joined the ranks of the largest companies. In Latin America, the five largest companies are responsible for 72.5% of production (Novegil, 2007), a level of consolidation comparable to that of other regions of the world, based on each region's total production volume.

The trend towards consolidation has been driven by mergers and acquisitions which, while they have always existed, have accelerated in recent years.[3] The total value

[3] For example, the United States Steel Corporation was founded in January 1901, combining the assets of a number of different companies. In 1901, the company was responsible for 67% of the United States' iron and steel production and no less than 29% of world production (de Paula, 2006).

of mergers and acquisitions in this sector rose from an annual average of nearly US$ 1 billion in 1994-1999 to nearly US$ 3 billion in 2000-2004 and US$ 8.2 billion in 2005-2008. Fuelling this boom were prospects for short-term growth in the industry, the healthy financial situation of purchasing companies and the availability of credit in markets. For all these reasons, 2009 saw a sharp drop in such operations, which in any case totalled US$ 4.4 billion.

Figure III.4
SHARE OF THE WORLD'S FIVE LARGEST IRON AND STEEL COMPANIES, 1990-2008
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information provided by the World Steel Association (WSA) and Metal Bulletin (MB).

To date, the most important of these operations has been the merger in 2007 of the world's two largest iron and steel companies, to form ArcelorMittal, which is the clear leader in the ranking of the largest companies on the basis of its crude steel production (see table III.1). In this ranking, companies from Europe, Japan and the United States coexist with companies from the principal emerging markets: Brazil, Russia, India and China (BRIC group). In 2008, twelve of the top 20 companies were from emerging markets (including the Republic of Korea), six of them from China. Back in 1990, only one company from the Republic of Korea, one from India and one from China figured among the 20 largest companies.

The emergence of large iron and steel companies in developing countries has been a logical consequence of the abovementioned boom in demand and production in those countries. Even though these companies prospered on the back of an expanding local market, the direct or indirect support of their Governments was nevertheless important: many started out as state-owned companies and, even now, numerous Chinese and some Indian companies are still state-owned. Both state-owned and private companies have been able to benefit from their size and their status as a basic industry to continue receiving privileged treatment from their Governments, which predated trade opening but has adapted over the years and survived.

Table III.1
LARGEST IRON AND STEEL COMPANIES IN THE WORLD, ACCORDING TO CRUDE STEEL PRODUCTION IN 2008
(Millions of tons)

Ranking	Company	Country of origin	Steel production
1	ArcelorMittal	Luxembourg	103.3
2	Nippon Steel	Japan	36.9
3	Shanghai Baosteel	China	35.4
4	Pohang Iron and Steel Company	Korea	34.7
5	JFE Steel	Japan	33.8
6	Hebei Steel Group	China	33.3
7	Wuhan	China	27.7
8	Tata Steel	India	24.4
9	Shagang	China	23.3
10	US Steel	United States	23.2
11	Gerdau	Brazil	19.5
12	Severstal	Russian Federation	19.2
13	Nucor	United States	18.2
14	Riva Group	Italy	18.0
15	Evraz	Russian Federation	17.7
16	Anshan Iron and Steel Group	China	16.0
17	ThyssenKrupp	Germany	16.0
18	Maanshan Iron and Steel Company	China	15.0
19	Sumitomo Metal	Japan	13.9
20	Steel Authority of India Limited (SAIL)	India	17.7

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information provided by the World Steel Association (WSA).

At times, this close relationship between iron and steel companies and Governments has curbed foreign direct investment in the industry. Among the world's large emerging economies, those of Brazil and Mexico are perhaps the most open to FDI in the iron and steel industry. While only China has formal restrictions on FDI in the sector, foreign-owned capital in the Russian Federation is practically non-existent owing to strong control by large local companies that are highly vertically integrated. Finally, in India, where a major increase in demand is expected in the future, there are serious institutional constraints on the construction of new plants, which is a severe disincentive to foreign companies.

In spite of formal and informal restrictions on FDI in many major markets, there is a clear trend for companies in mature markets to invest in developing countries. This has been driven by four factors: in addition to the growing demand mentioned earlier, developing-country markets have opened up as a result of the privatization of state-owned enterprises, production costs are lower and foreign companies are seeking natural resources. Companies from emerging markets have also sought internationalization, often for the same reasons as those cited above. In any case, many of the largest companies figuring in table III.1 still concentrate almost all their production capacity in their home countries.

3. Principal production strategies and their impact on internationalization

International growth strategies have been marked by the industry's three main characteristics cited earlier: its medium-low level of technology;[4] its dependence on natural resources and its economies of scale, which tends to lead to consolidation into large companies and which traditionally motivated public investment in the industry. A fourth characteristic of the industry —the fact that it produces a huge amount of carbon dioxide (CO_2) emissions— will also be very important from the standpoint of future investment strategies (see box III.1).

Box III.1
THE IRON AND STEEL INDUSTRY AND CO_2 EMISSION REDUCTIONS

Of all the manufacturing processes, iron and steel production is the largest CO_2 emitter. The iron and steel industry is responsible for almost one-quarter of industrial CO_2 emissions and 7% of all human-induced emissions (OECD, 2008). In spite of continual improvements that reduce the intensity of carbon emissions (calculated as the amount of CO_2 emitted per ton of steel), the industry will continue to be a big emitter in the foreseeable future and corporate strategies will be highly contingent upon this factor. Iron and steel companies operating in Latin America must prepare to reduce their emissions, even though there are no formal obligations in Latin American countries as yet.

Just as in other industries, iron and steel companies have argued for a sectoral agreement that allows them a degree of control over the way in which they reduce emissions and which guarantees similar competitive conditions for all companies (WSA, 2008). They have also urged Governments to consider CO_2 emissions from the standpoint of the product life cycle, and not just the industry that manufactures the product. This would, for instance, enable the extra CO_2 emitted in producing lighter steels to be offset against the reduced emissions from vehicles made of such steels, which would consume less fuel. With this strategy, the industry aims to guarantee its growth towards higher value-added products, even in a context of strict emission restrictions.

Although the scale of emission reductions that Latin American iron and steel companies will be required to make still remains to be defined, as does the timeframe they will be given to achieve them, the companies' future will undoubtedly be determined by their ability to adapt to a world with fewer CO_2 emissions. Over and above improvements in existing plants, which could reduce global emissions by an estimated 9% to 18% (IEA, 2007), there will be a trend towards investment in plants using less carbon-emitting processes. Accordingly, a long-term shift in production capacity is expected away from high carbon-emitting coke blast furnaces towards lower carbon-emission gas-based direct-reduction modules and much lower carbon-emission semi-integrated plants. This will be no easy transformation and the process will be slow and incomplete, even if it were to be accompanied by strong incentives, such as taxes on CO_2 emissions, carbon intensity-based barriers to trade in steel or direct subsidies on investment in new plants. This adaptation will also depend on each country's relative abundance of coal, natural gas or electricity, as well as iron ore and scrap. In Latin America there is a relative abundance of iron ore and a lack of scrap (with the exception of Mexico, which imports it from the United States), hampering the expansion of semi-integrated plants. A point of note is that the biggest projects in Latin America in recent years have been coke furnaces in Brazil. Lastly, the industry's global growth may be curbed unless more radical long-term innovations are found to reduce emissions drastically.

Source: Organisation for Economic Co-operation and Development (OECD) (2008), *Environmental Outlook to 2030*, Paris, 2008; Joseluis Samaniego (coord.), "Cambio climático y desarrollo en América Latina y el Caribe: una reseña", *Project documents*, No. 232 (LC/W.232), Santiago, Chile, Economic Commission for Latin America and the Caribbean (ECLAC), February 2009; World Steel Association (WSA), "A global sector approach to CO_2 emissions reduction for the steel industry", *Journal of Steel and Related Materials*, January 2008 and International Energy Agency (IEA), *Tracking Industrial Energy Efficiency and CO_2 Emissions, 2007*, Paris, 2007.

[4] In the 1990's, only 0.6% of the industry's production value was earmarked for research and development (R&D). This positions it almost on a par with low-technology industries such as textiles or food (0.3%) and considerably below medium- to high-technology industries such as the automotive industry (3.5%) (OECD, 2005), Annex A.

The industry's medium-low technology level means that the technological capacity of transnational companies has rarely been a decisive factor in their international expansion, and neither have there been mergers or acquisitions for the purpose of acquiring technology.

While the required scale of fixed investment has favoured consolidation, at the same time it has curbed the international expansion of many companies that consider it too risky to make major fixed-capital foreign investments. Such companies have preferred to limit their international expansion to other less capital-intensive phases in the production process and, as a result, they have kept most of their assets in their home country. As can be seen below, companies specializing in less capital-intensive processes are the ones that have internationalized the most. Moreover, State control of many companies has curbed their international expansion, even though some state-owned iron and steel companies, especially Asian ones, have invested abroad.

Lastly, dependence on natural resources has created a trend for companies to seek to guarantee their iron and coal supplies by acquiring mines, for the purpose of total integration. This trend, which has always existed, has intensified in recent years with the steep increase in the prices of these minerals and has been very important with regard to foreign investment in Brazil.

In general, the industry has experienced a trend towards either backward or forward vertical integration. With the exception of ArcelorMittal, which operates in all segments of the industry in every region of the world, each of the companies analysed in this chapter has focused on a subsector and has sought vertical integration or proximity to markets in a single region of the world. Almost all companies concentrate on iron and steel and are not involved in other activities unrelated to the industry.

Over and above these general characteristics, the following typology of the companies' different internationalization strategies can be identified (see table III.2) based on the stages in the iron and steel production chain (see box III.2).

Table III.2
INTERNATIONALIZATION STRATEGIES ACCORDING TO PARTICIPATION IN DIFFERENT STAGES IN THE IRON AND STEEL CHAIN [a]

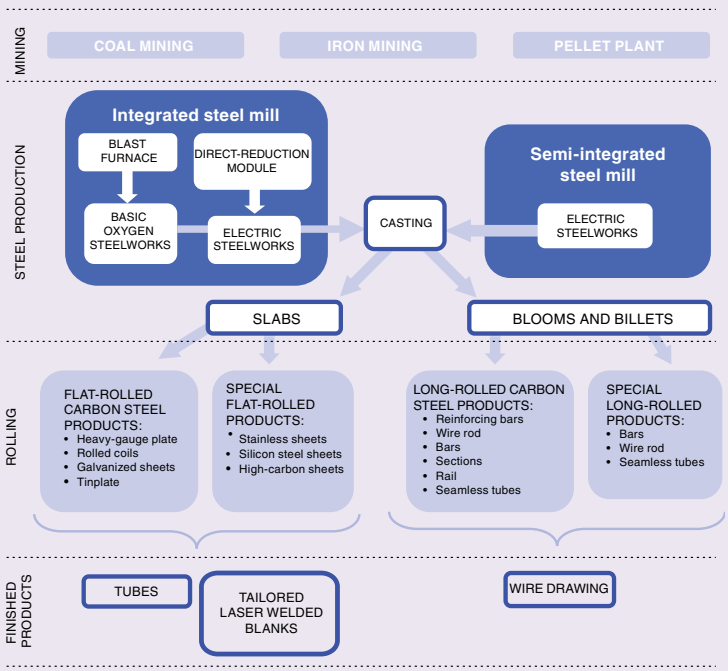
Type of strategy	Mining	Reduction	Steelworks	Rolling	Processing
Mining	•				
Total vertical integration	•	•	•	•	○
Vertical integration of semifinished products	•	•	•		
Integrated plant for rolled products		•	•	•	○
Integrated plant for semifinished products		•	•		
Semi-integrated plant for rolled products			•	•	○
Semi-integrated plant for semifinished products			•		
Rolling				•	○
Processing					•

Source: Economic Commission for Latin America and the Caribbean (ECLAC).
[a] • = compulsory; ○ = optional.

An iron and steel company is said to have a mining strategy when it invests in basic mineral resources (including iron, coal and manganese) outside its country of origin, mainly for export; hence its degree of vertical integration in the host country of the foreign direct investment is low. A total vertical integration strategy is a combination, in a country, of mining assets with an integrated plant (coke or direct-reduction) that produces rolled products and may extend as far as processing. A strategy of vertical integration of semifinished products extends from mining to the production of slabs, blooms and billets, which are milled in other countries. Under the latter two options, the company may be classified as a mining/metallurgy company.

Given the abundance of iron ore in Brazil, the latter two strategies have been very important in Latin America. Most of the companies analysed in this chapter have invested in mining (iron or coal) to supply their plants. ArcelorMittal produces 47% of its iron-ore needs in its own mines and Companhia Siderúrgica Nacional (CSN) is not only virtually self-sufficient, but it has hopes of becoming the world's fourth largest iron-ore exporter. Asian companies have tended to prioritize mining strategies in their investments in Latin America. Apart from owing shares in the mining sector, many iron and steel companies have entered into strategic alliances with mining companies. The Brazilian company Vale plays an important role, as it is the world's biggest

Box III.2
IRON AND STEEL PROCESSES AND PRODUCTS



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

The two most important inputs that mining contributes to the iron and steel chain are metallurgical (coking) coal and iron, in the form of fines, lumps or pellets. An iron mine produces fines and lumps, distinguished by grain size. A pellet plant usually produces pellets by agglomerating ultrafine minerals.

There are two main technology routes in steel production: integrated and semi-integrated steel mills. Integrated mills use iron ore to manufacture steel in blast furnaces or in direct-reduction modules (reduction process). The predominant pattern in the sector is to produce steel in blast furnaces by combining iron and metallurgical (coking) coal in large-scale plants. Another alternative is direct-reduction modules, which combine iron and natural gas (and sometimes non-coking coal) in medium-sized plants. This process is fairly widespread in Latin America, owing to a plentiful supply of natural gas. Integrated plants with a blast furnace have basic oxygen steelworks, whereas integrated direct-reduction plants have electric steelworks.

Semi-integrated plants produce steel from scrap. The process starts in the steelworks itself, with no need for reduction equipment. This is a more compact technology route and plants are considerably smaller in size than coke plants. Semi-integrated plants are more flexible, not only from an operational standpoint (it is much less expensive to change production volume than in integrated plants), but also from an economic standpoint (they are less capital-intensive). By contrast, they are unsuitable for making certain types of flat-rolled products and their expansion depends on the availability of scrap.

After the steel is produced, it is melted and processed into slabs for making flat-rolled products, or into blooms and billets for making long-rolled products and seamless tubes. The most common model is for flat-rolled products to be manufactured in integrated plants (coke or direct-reduction), although semi-integrated plants have gained ground in this segment. The model of semi-integrated plants predominates in the long-rolled products segment.

Steels are processed into final products by means of rolling. Both flat-rolled and long-rolled products are subdivided into carbon rolled products and special rolled products, including those made from stainless steel. The principal products in each category are shown in the figure above.

Each segment is targeted at different sectors and requires plants of different sizes, together with specific technological skills. For that reason, diversification strategies entail not only servicing different customer groups but also investing in plants with different processes.

Lastly, plants for finished products include: (a) welded tube plants, which manufacture welded tubes from flat-rolled products; (b) wire-drawing plants, which manufacture wire and thin bars from long-rolled products by reducing the material in width and thus increasing it in length; and (c) factories for tailored laser welded blanks (TLWB) which make blanks by welding together two or more flat-rolled elements. In general, very much less investment is required for building or acquiring processing plants than for acquiring iron and steel plants.

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

iron-ore producer and participates in iron and steel projects with almost all the companies analysed in this chapter.[5]

The strategy of an integrated plant for rolled products is one of the most traditional in the sector, entailing an integrated plant (coke or direct-reduction) but no mining investments. Integrated plants for semifinished products include the reduction and steelworks stages but not the rolling stage. Integrated plants require heavy investment, which is why almost all the companies that pursue this strategy have a low degree of internationalization. This

[5] Vale's increasing participation in iron and steel projects could be linked with the strategy of the Brazilian Government (which has a certain amount of control over the company) to increase exports of iron and steel products and reduce those of iron ore ("Vale in the mix", *Financial Times*, 14 February 2010).

type of plant produces predominantly flat-rolled products, which are an important input to the automotive industry (see chapter II).

Long-rolled products tend to be produced by semi-integrated plants for finished products, which comprise an electric steelworks and a rolling mill. A semi-integrated plant for semifinished products, which is relatively uncommon, has only an electric steelworks. Semi-integrated plants require less investment and are more flexible in adjusting to changes in demand. Companies specializing in this sector have a medium to high degree of internationalization. The main application for long-rolled products is infrastructure construction, such as reinforcing bars for concrete.

The strategy of rolling without steel production is common, especially in the flat-rolled products segment. It tends to involve joint operations between a local iron and steel company, which supplies the material for rolling and takes care of marketing, and a foreign company that supplies the technology. For the foreign company, it provides a means for production in a higher value-added segment, without the need for large-scale investments and by sharing costs with a local partner.

The processing strategy refers to investment in plants making products such as welded tubes, tailored laser welded blanks and drawn wire. In this case, the investment tends to be relatively small, which facilitates internationalization. It is common for a semi-integrated plant manufacturing long-rolled products to be acquired complete with its own wire mill. In the flat-rolled products segment, processing activities may be entrusted to distribution subsidiaries (via service centres), which do not carry out industrial operations. Companies focusing on this segment are the ones that invest in the largest number of countries. The most important end consumer of tubes is the hydrocarbon industry.

Most of the companies analysed in this chapter have pursued more than one of the abovementioned strategies, depending on their sector and size, as well as on the relative importance of the host country to the company. Furthermore, the current structure of many companies has evolved from a history of mergers and acquisitions of assets that did not always tie in perfectly with the head office's original strategy. The next two sections summarize the strategies of the companies operating in Latin America, which are discussed in more detail in the case studies in parts C and D.

4. Leading iron and steel companies in Latin America

A dozen iron and steel companies manufacture 72.5% of the region's crude steel: 17.5% are companies with their head office abroad and 55% are trans-Latins (see table III.3). The remaining 27.5% is produced by local companies that have not invested outside their home country. Parts C and D describe these companies' international growth strategies in detail and briefly discuss other less important companies in the region.

None of the iron and steel companies can be considered small, but even so, there are major size differences between the companies. ArcelorMittal, the leading producer in Latin America and the world, is virtually three times the size of the second largest producer and produces almost 100 times more steel than Votorantim Siderurgia. Apart from crude steel production (which tends to underestimate companies specializing in higher value-added products and more vertically integrated companies), table III.3 also shows sales of iron and steel products and the importance of these sales as a share of the total sales of the groups to which companies belong. Almost all the companies analysed are predominantly iron and steel companies, with only two exceptions: ThyssenKrupp (which started out as an iron and steel company and later diversified) and Votorantim Siderurgia. All have mining investments of one sort or another. A point of note is that the size difference between foreign and Latin American companies is reduced significantly if their capitalized value is used as a measure.

Apart from their country of origin and size, the main characteristic defining each of these companies is the market segment in which it specializes. With the exception of Gerdau, the largest companies specialize in flat-rolled products, which is the most capital-intensive process. ThyssenKrupp, Nippon Steel, Pohang Iron and Steel Company (POSCO), the Brazilian firms Usiminas and CSN and Argentina's Ternium are in this segment, whereas AcerlorMittal, which, as already mentioned, is a special case, also produces mainly flat-rolled products. These companies tend to have few assets outside their home countries, usually limited to rolling or mining.

Table III.3
MAIN PARAMETERS OF THE COMPANIES ANALYSED [a]

	Position in the world ranking, 2008	Crude steel production, 2008 (Millions of tons)	Sales, 2008	Capitalized value, November 2009	Share of its group's sales
			(Billions of dollars)		(Percentages)
ArcelorMittal	1	103.3	125.0	60.0	100
Nippon Steel	2	36.9	48.1	24.4	82
POSCO	4	34.7	33.1	42.7	87
Gerdau	11	19.5	18.0	21.1	100
ThyssenKrupp	17	16.0	70.9	18.7	37
Ternium	27	6.4	8.5	6.3	25
Tenaris	27	3.1	12.1	25.0	47
Usiminas	38	8.0	6.7	14.3	91
CSN	57	5.0	7.2	26.1	75
Industrias Campos Hermanos (ICH)/SIMEC	78	3.2	2.9	1.4	100
Vallourec	88	2.8	8.9	9.5	100
Votorantim Siderurgia	...	1.1	1.3	...	9

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information provided by the companies.
[a] Nippon Steel's sales refer to the period from April 2008 to March 2009. The position of Ternium and Tenaris in the world ranking refers to that of the Techint Group. Companies with their head office outside the region are shown in shaded rows.

Nippon Steel and its Brazilian associate Usiminas (Nippon Steel owns a stake in Usiminas) have pursued this strategy, as has CSN. ThyssenKrupp and POSCO, which up to now have produced no steel outside their home countries, have changed their strategy latterly with the construction of integrated plants in Latin America and Asia. Ternium is the only company in this segment to have a large proportion of its assets abroad, as a result of an aggressive acquisitions policy.

The Brazilian companies Votorantim and Gerdau and Mexico's Industrias Campos Hermanos (ICH)/SIMEC specialize in long-rolled products. Gerdau is the region's largest company in this segment, with more than half its production outside Brazil. Like many Mexican companies in other industries, ICH/SIMEC has focused its investments on the North American Free Trade Agreement (NAFTA) area and currently produces and sells more in the United States than in its home country. Even though Votorantim concentrates more than two-thirds of its production in Brazil, in recent years it has been engaged in a highly aggressive foreign investment strategy.

Lastly, the Franco-German company Vallourec and Argentina's Tenaris are the leading tube producers in the region. Both are highly internationalized, with plants distributed throughout Europe, North and South America, Asia and Africa.

The presence of foreign companies in Latin America dates back a long time: with the exception of POSCO, all made their first investment in the region in the 1950s or before. By contrast, trans-Latins did not start to invest outside their home countries until the 1990s (see table III.7). There are also differences between companies in their mode of entry into foreign markets. A large proportion of the international investments have been in greenfield plants, although in certain sectors of the industry a preference for strategic alliances or joint ventures is very common. This is to reduce the risk of highly capital-intensive investments and to facilitate vertical integration of the plant. POSCO, Nippon Steel and its associate Usiminas have shown a clear preference for strategic alliances. Moreover, many of the companies studied in this chapter have preferred to expand by means of mergers and acquisitions to avoid the lengthy completion periods of new projects. Techint, Gerdau and ArcelorMittal have shown a clear preference for this model of growth (see table III.4).

Several of the most important transactions have been privatizations, which were very predominant in the 1990s (see table III.4). At present, none of the large companies operating in the region is state-owned. In addition, the third largest operation is a renationalization: that of Siderúrgica del Orinoco (SIDOR) in the Bolivarian Republic of Venezuela. This is the only country in the region where the trend towards private ownership has been reversed, when the Government decided to nationalize the industry in 2008.

Table III.4
LARGEST EQUITY TRANSACTIONS IN THE LATIN AMERICAN IRON AND STEEL INDUSTRY, 1990-2009 [a]

	Year	Acquired company	Country	Acquiring company	Country	Announced value, in millions of US dollars
1	2007	Grupo IMSA	Mexico	Grupo Techint	Argentina	3 182
2	2005	Hylsamex	Mexico	Grupo Techint	Argentina	2 547
3	2009	Ternium Sidor	Venezuela (Bol. Rep. of)	Corporación Venezolana de Guyana	Venezuela (Bol. Rep. of)	1 970
4	1998	Siderúrgica del Orinoco (SIDOR)	Venezuela (Bol. Rep. of)	Grupo Techint (in conjunction with others)	Argentina and others	1 784
5	2007	Sicartsa	Mexico	Arcelor	Luxembourg	1 440
6	2009	Companhia Siderugica do Atlantico	Brazil	Vale do Rio Doce	Brazil	1 371
7	1991	Usiminas	Brazil	Multiple investors in privatization	Brazil	1 199
8	1993	CSN	Brazil	Multiple investors in privatization	Brazil	1 079
9	2008	Corporacion Aceros DM	Mexico	ICH/SIMEC	Mexico	850
10	2008	Acos Villares	Brazil	Gerdau	Brazil	789
11	2005	Companhyia Siderúrgica de Tubarão	Brazil	Arcelor	Luxembourg	700
12	1993	Acominas	Brazil	Multiple investors in privatization	Brazil	587
13	2008	Acindar	Argentina	ArcelorMittal	Luxembourg	543
14	2001	Altos Hornos de México	Mexico	Investment group [b]	Mexico	530
15	1998	Acesita	Brazil	Usinor	France	496

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from Thomson Reuters.
[a] Excluding operations resulting from the merger of Acerlor and Mittal Steel, as they originate from outside the region.
[b] After bankruptcy, a group of 150 banks acquired 40% of the company in exchange for a debt reduction.

ArcelorMittal outstrips all its competitors in terms of production, sales and internationalization. This size difference makes its strategy unique in the sector: only ArcelorMittal is able to combine high-intensity internationalization in every region of the world with a diversified product line (even though flat-rolled carbon steel products comprise most of its total production, with long-rolled carbon steel products representing 31% of total production). All the other companies focus on a single market segment, which determines their relative degree of internationalization.

5. Industry segments and foreign investment strategies

Table III.5 summarizes these internationalization strategies, which are classified according to their intensity (low, medium or high) and to whether they have focused on one, two or more regions.[6] The companies are also classified according to the subsector in which they specialize. As mentioned earlier, companies specializing in flat-rolled carbon steel products predominantly adopt low-intensity internationalization of the regional type. In the case of

[6] Internationalization is low when less than 25% of the income, assets or jobs are associated with international subsidiaries, and high when this figure exceeds 50%. Votorantim Siderurgia, which in this case is considered to have low internationalization, comes slightly above this threshold. Moreover, internationalization is divided into three types: (a) regional, where more than 75% of the income, assets or jobs of international subsidiaries is in the home region; (b) biregional, where the two most import regions for foreign direct investment represent individually at least 25% of the income, assets or jobs, and 75% jointly; and (c) global, where the total share of the two most important regions does not exceed 75% of income or assets.

Nippon Steel and POSCO, this is understandable owing to strong demand for iron and steel products in Asia, meaning that Asian companies rarely consider other markets. Collinson and Rugman (2007) studied the orientation of 115 Asian companies, 105 (91%) of which could be described as "home-region oriented". Only three could be considered as "global", five as "biregional" and two as "host-region oriented". In fact, in spite of the strong presence of Asian companies in the ranking of the largest producers, their investments in Latin America are still limited and have focused on guaranteeing inputs of iron ore.

Table III.5
COMPARATIVE CORPORATE STRATEGIES

		Internationalization intensity	
		Low	High
Geographic distribution	Regional	ThyssenKrupp (F) Nippon Steel (F) POSCO (F) Usiminas (F) Votorantim (L)	Ternium (F)
	Biregional	CSN (F)	Vallourec (T) Gerdau (L) ICH/ SIMEC (L)
	Global		ArcelorMittal (F/L) Tenaris (T)

Source: Economic Commission for Latin America and the Caribbean (ECLAC).
Note: (F) = specialization in flat-rolled carbon steel products;
(L) = specialization in long-rolled carbon steel products;
(T) = specialization in tubes;
(F/L) = production of both flat-rolled and long-rolled carbon steel products.

CSN combines high-intensity internationalization with biregional specialization. Ternium, which comes from a smaller market, has opted for high-intensity internationalization with regional consolidation.

For companies specializing in flat-rolled carbon steel products, the most common type of foreign investment is in rolling mills, where they manufacture higher value-added products without the high fixed costs of an integrated plant. In fact, the biggest obstacle to flat-rolled carbon steel producers increasing their internationalization is the cost of building or acquiring an integrated plant. Of the six flat-rolled carbon steel companies analysed in this chapter, the only one to own integrated plants outside its country of origin is Ternium. In any case, this model appears to be changing, as shown by the recent decisions of ThyssenKrupp and POSCO to build integrated plants abroad (ThyssenKrupp in Brazil and POSCO in India and Indonesia). ArcelorMittal has also built on this strategy, by planning a new integrated plant in Brazil. This may be a sign that acquisition alternatives are becoming increasingly scarce and that companies seeking international expansion will need to resign themselves to investing in new plants. It also points to steel production capacity being transferred to developing economies.

The situation is rather different for iron and steel companies specializing in long-rolled carbon steel products. As the average scale of plants is smaller and less capital-intensive (owing to the predominance of semi-integrated plants over integrated plants), the pace of internationalization may be faster. This explains the large number of countries in which Gerdau operates and the decision by Votorantim Siderurgia to become involved in a recent speedy internationalization process. In the latter case, the fact that the company belonged to a large group was of great importance, as this enabled it to finance its expansion at a faster pace than by the capital accumulation of its iron and steel subsidiary.

The average scale of plants in the tubes sector is even smaller, with the result that companies in this sector (Vallourec and Tenaris) have high-intensity internationalization. They differ in that Tenaris already has global internationalization, whereas Vallourec has biregional internationalization.

Irrespective of the sector in which they specialize, iron and steel companies have to consider two key factors in their internationalization decisions: market conditions for iron and steel products and the availability of raw material for engaging in backward vertical integration. The latter has been a key factor in attracting investment to the region, especially to Brazil, the world's leading iron-ore producer. Asian companies in particular have prioritized this consideration when announcing investment projects in the region: Nippon Steel and POSCO have pursued this strategy by investing in iron mines in Brazil to serve their plants in Asia. In addition, major mining projects have recently been announced by the Indian companies Jindal Steel & Power (in the Plurinational State of Bolivia) and Essar Steel (in Brazil), as well as the Chinese company Wuhan Steel (in Brazil).

This factor has also been very important in the strategies of the region's own iron and steel companies, many of which own iron mines: CSN, Usiminas and Gerdau Açominas in Brazil, Ternium and Altos Hornos de México (AHMSA) in Mexico, and Compañia de Acero del Pacífico (CAP) in Chile. Faced with price increases for iron and steel inputs, they became very keen to own their own mines. A good example is the acquisition of iron mines by Usiminas. This new priority even took precedence over its strategic plan to internationalize. Brazil's largest iron and steel companies, Gerdau and CSN, have also invested in coal mines in Colombia and Africa respectively in order to guarantee their supplies of coal, which is not produced in Brazil.

Associated with its abundance of iron ore is Brazil's growing prestige as an efficient steel producer, especially in the initial production stages. The cost of producing slabs in Brazil is estimated to be US$ 298 per ton, less than in any other country for which information exists (Sigwalt, 2009).[7] Both ThyssenKrupp and CSN produce slabs in Brazil for subsequent re-rolling in their plants in the United States and Europe. The Korean company Dongkuk has also pursued the same strategy for its future plant in collaboration with Vale.

The second factor to be taken into consideration, the search for markets, has also been important in the decision to invest in Latin America, even though demand for steel in the region cannot be compared with that of Asia, in terms of either absolute values or growth rates. Investments seeking a market in the region have focused particularly on rolling mills, such as those of POSCO in Mexico and Nippon Steel in Brazil, mainly to serve Asian automotive companies based in those countries (see chapter II). Companies specializing in tubes have also located their investments to serve the hydrocarbon industry, which is one of their main customers. Developing the industrial base and production capacity is key to attracting foreign investment in this industry.

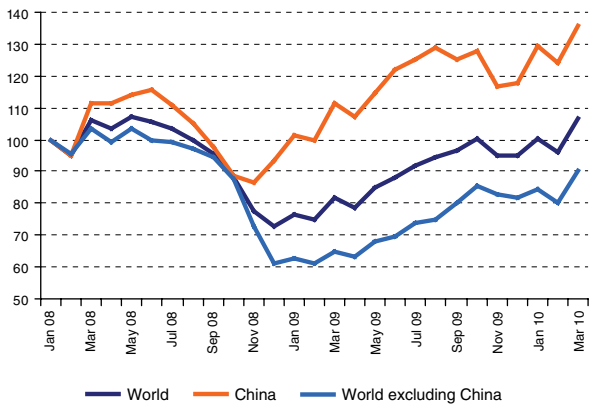
In general, the trend in the tubes subsector is to increase forward vertical integration with plants producing tube fittings and processing. By contrast, the trend among producers of carbon rolled products (flat- and long-rolled) is towards backward integration.

6. World economic crisis and corporate strategies

Iron and steel was one of the industries hardest hit by the recent world financial crisis. Figure III.5 shows the trend in world crude steel production, taking January 2008 as the baseline. Between August 2008 (the month before United States investment bank Lehman Brothers went bankrupt) and December 2008, world iron and steel production fell by 27%. Since then it has recovered, but the level reached in November 2009 was still 5% lower than in August 2008. The drop would be even sharper if China's good performance were to be excluded, as China's development path has differed markedly from that of other countries. In November 2009, world crude steel production, excluding China, was equivalent to only 83% of the August 2008 level. In the case of Latin America, the figure was 85%. This drop is explained by the performance of the two main consumer industries of iron and steel products: the construction industry and the metal industries, especially the automotive industry (see chapter II).

The construction sector is highly procyclical, as it grows above the average during periods of growth and shrinks more markedly during recessions. The latest crisis has been no exception to the rule: while most of the region's economies suffered a drop or very poor growth rates in their gross domestic product (GDP), the construction sector shrank even faster. The sector even shrank in Argentina and Brazil, which had slight GDP growth of 0.3% and 0.6%, respectively.

Figure III.5
MONTHLY PRODUCTION OF CRUDE STEEL, 2008-2010
(January 2008 = 100)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information provided by the World Steel Association (WSA).

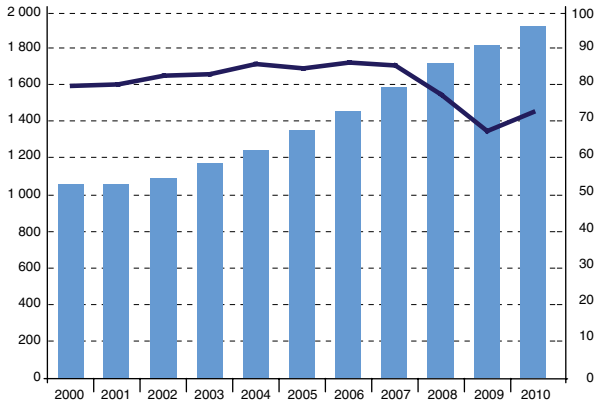
As explained in chapter II, despite many Governments adopting incentives to promote car sales, world vehicle production fell sharply in 2009. The behaviour of producer countries in Latin America varied: whereas Brazil maintained its production rate, Mexico and Argentina reduced theirs significantly. The sharp downturn in production in the United States also affected demand for iron and steel from Mexico and Brazil, which export a large proportion of their production to the United States market.

Even in Brazil, where steel-consuming sectors maintained their production level, the crisis suddenly dashed the growth expectations of previous years. As the iron and steel industry has little flexibility to adjust

[7] The same source estimates costs of US$ 308 in the Commonwealth of Independent States, US$ 329 in India, US$ 382 in Japan, US$ 387 in Europe and US$ 413 in China.

its capacity to demand, this change in the expected trend was enough to trigger a steep drop in the use of installed capacity and a resulting reduction in earnings. Capacity use, which had remained at 83% until 2007, fell to 77% in 2008 and to 67% in 2009. It is expected to rise to 73% in 2010 (see figure III.6). This level of unused capacity, which will continue over the coming years, will be a major disincentive to increasing installed capacity.

Figure III.6
INSTALLED CAPACITY AND LEVEL OF CAPACITY USE, 2000-2010 [a]
(Millions of tons and percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information provided by the World Steel Association (WSA) and Daniel Novegil, "El mercado mundial del acero", a document presented at the fiftieth Latin American Iron and Steel Congress of the Latin American Iron and Steel Institute (ILAFA), Quito, December 2009.

[a] Project delays and cancellations will reduce the actual increase in installed capacity in 2009 and 2010.

In mid-2008, all the companies analysed in this chapter had been considering major projects for expanding installed capacity. The great majority took defensive action by halting projects not yet initiated, slowing down the construction of those already under way and deferring equity transactions. Some new plants that were completed (or on which construction continued) had already passed the point of no return, including: Votorantim Siderurgia Resende, Vallourec Sumitomo in Jeceaba and Companhia Siderúrgica do Atlântico (ThyssenKrupp and Vale do Rio Doce), all located in Brazil. As companies sought to preserve their liquid assets, instead of building new plants they favoured projects that optimized existing structures. Significantly, they have not reduced installed capacity.

Even though the crisis has had a heavy impact, the recovery has been faster than expected. World consumption is estimated to have fallen by 9% in 2009 and a recovery of the same magnitude is expected in 2010, with marked regional differences (see table III.6). In the case of Latin America, following a 24% drop in 2009 there is expected to be a partial recovery of 11% in 2010, returning to the 2005 consumption level. Even more remarkable is that, while the United States and Japan fell back to 1983 consumption levels, China experienced a 25% increase during the 2008-2009 biennium. The current crisis will therefore accelerate the trend in recent years to shift iron and steel production to emerging markets, especially Asia.

Table III.6
VARIATION IN THE APPARENT CONSUMPTION OF IRON AND STEEL PRODUCTS, 2008-2011
(Percentages)

	2008	2009	2010	2011	Situation in 2010
World	-2	-9	9	5	2008
United States	-8	-39	18	8	1983
European Union (27 countries)	-8	-32	12	8	1992
Japan	-3	-33	14	0	1983
Commonwealth of Independent States	-14	-30	4	8	2000
Latin America	2	-24	11	6	2005
China	3	19	5	3	2010
India	-3	9	12	14	2010

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information provided by the World Steel Association (WSA) and Daniel Novegil, "El mercado mundial del acero", document presented at the fiftieth Latin American Iron and Steel Congress of the Latin American Iron and Steel Institute (ILAFA), Quito, December 2009.

For a resumption of the projects announced and postponed in Latin America, first there needs to be a more vigorous and sustainable recovery in demand for steel, which in turn depends on economic recovery. It is therefore reasonable to suppose that some such projects will not materialize; this will possibly be the most lasting effect of the world economic crisis on the Latin American iron and steel industry. It does not mean that the region's iron and steel production will not grow, only that it will grow more slowly and, wherever possible, by optimizing plants already in operation. It has to be borne in mind that the production increase between 2001 and 2008 was exceptional and that the iron and steel industry has already experienced lengthy periods of stagnant demand and surplus installed capacity in the past, which are likely to recur.

Independently of this economic downturn, the global iron and steel market will continue to shift away from developed countries and towards emerging economies, as confirmed by the corporate strategies reviewed in this chapter. Latin America will continue to attract investment from companies seeking to control mining resources. To avoid being reduced to the role of raw material exporters, the region's economies will need to further develop the industrial base and infrastructure, which underpin the iron and steel market. To supplement their abundance of natural resources, they will need to build internal capacity in the iron and steel industry and its associated industries.

Table III.7
INTERNATIONALIZATION STRATEGIES OF THE COMPANIES ANALYSED

	ArcelorMittal	ThyssenKrupp	Nippon Steel	Pohang Iron and Steel Company	Vallourec	Tenaris
Start of operations	2007	1999	1970	1967	1889	1954
Start of internationalization	1921	1913	1957	1986	1887	1993
Entry into Latin America	1921	1913	1957	2009	1922	1993
Preferred type of foreign direct investment						
Shareholding	Majority	Strategic alliance	Strategic alliance	Strategic alliance	Strategic alliance	Majority
Construction or acquisition	Acquisition	Construction	Construction	Construction	Acquisition	Acquisition
Type of plant	All	Rolling	Rolling	Rolling	Rolling	Integrated and rolling
Preferred type of foreign direct investment in Latin America						
Shareholding	Majority	Wholly-owned subsidiary	Strategic alliance	Wholly-owned subsidiary	Subsidiary	Majority
Construction or acquisition	Acquisition	Acquisition	Construction	Construction	Construction	Acquisition
Type of plant	Integrated plant	Rolling	Integrated plant + rolling	Finishing facilities		Integrated
Internationalization intensity	High	Low	Low	Low	High	High
Geographic distribution of internationalization	Global	Regional	Regional	Regional	Biregional	Global
Countries with production plants in Latin America	Argentina, Brazil, Costa Rica, Mexico, Trinidad, Uruguay, Venezuela (Bol. Rep. of)	Mexico	Brazil	Mexico	Brazil, Mexico	Argentina, Brazil, Colombia, Mexico
Types of product made at headquarters	...	Only flat steels	Mainly flat steels	Mainly flat steels	Tubes and fittings	Tubes and fittings
Types of product made abroad	All	Only flat steels	Only flat steels	Mainly flat steels	Tubes and fittings	Tubes and fittings
Types of product made in Latin America	All	Only flat steels	Only flat steels	Only flat steels	Tubes and fittings	Tubes and fittings
Impact of the crisis on foreign direct investment	Delays in ongoing projects; halt on new projects	Delays in ongoing projects	Halt on new projects	No interruption in projects	Delays in ongoing projects	Delays in new projects
Impact of the crisis on foreign direct investment in Latin America	Delays in ongoing projects; halt on new projects	Delays in ongoing projects	Halt on new projects	No interruption in projects	Delays in ongoing projects	Delays in new projects
Importance of Latin America prior to the crisis	Medium	Low	Medium	Low	Medium	Medium
Importance of Latin America after the crisis	Medium	High	Medium	Low	High	Medium
	Gerdau	ICH/SIMEC	Votorantim	Ternium	Usiminas	CSN
Start of operations	1901	1934	1937	1970	1962	1946
Start of internationalization	1980	2005	2007	1997	1992	2001
Entry into Latin America	1980		2007	1997	1992	
Preferred type of foreign direct investment						
Shareholding	Majority	Majority	Majority	Majority	Strategic alliance	Majority
Construction or acquisition	Acquisition	Acquisition	Acquisition	Acquisition	Acquisition	Acquisition
Type of plant	Semi-integrated	Integrated and semi-integrated	Integrated	Integrated	Integrated	Rolling
Preferred type of foreign direct investment in Latin America						
Shareholding	Majority		Majority	Majority	Strategic alliance	
Construction or acquisition	Acquisition		Acquisition	Acquisition	Acquisition	
Type of plant	Semi-integrated		Integrated	Integrated	Integrated	
Internationalization intensity	High	High	Medium	High	Low	Low
Geographic distribution of internationalization	Biregional	Biregional	Regional	Regional	Regional	Biregional
Countries with production plants in Latin America	Argentina, Brazil, Chile, Colombia, Dominican Republic, Guatemala, Mexico, Peru, Uruguay, Venezuela (Bol. Rep. of)	Mexico	Argentina, Brazil, Colombia	Argentina, Guatemala, Mexico	Argentina, Brazil, Guatemala, Mexico	Brazil
Types of product made at headquarters	Only long steels	Only long steels	Only long steels	Only flat steels	Only flat steels	Only flat steels
Types of product made abroad	Mainly long steels	Only long steels	Mainly long steels	Mainly flat steels	Mainly flat steels	Only flat steels
Types of product made in Latin America	Mainly long steels		Mainly long steels	Mainly flat steels	Mainly flat steels	
Impact of the crisis on foreign direct investment	Halt on new projects		Halt on new projects	Delays in new projects	Delays in new projects	
Impact of the crisis on foreign direct investment in Latin America	Halt on new projects		Halt on new projects	Delays in new projects	Delays in new projects	
Importance of Latin America prior to the crisis	Medium	High	High	High	High	High
Importance of Latin America after the crisis	Medium	High	High	High	High	High

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

C. Strategies of foreign iron and steel companies in Latin America

Part B presented a general overview of the iron and steel industry and of the internationalization strategies of the major companies present in Latin America. Parts C and D describe in detail the strategies of these companies, their history of mergers and acquisitions, the current distribution of their production capacity, their latest expansion projects and their response to the crisis over the past year. This part is devoted to the strategies of the leading international iron and steel companies with operations in Latin America: ArcelorMittal, Nippon Steel, POSCO, ThyssenKrupp and Vallourec. All the sales and production figures provided relate to 2008, unless otherwise indicated.

1. ArcelorMittal: the iron and steel industry's global supermarket

Whereas most of the companies analysed in this chapter focus on a single market segment and invest in one or two regions of the world, ArcelorMittal has pursued a different strategy: it manufactures all types of product in every part of the world, making it the industry's "global supermarket".

ArcelorMittal is the largest iron and steel company in the world, producing 103.3 million tons of crude steel, with total sales of US$ 125 billion. In 2008, flat-rolled carbon steel products accounted for 65% of its production, followed by long-rolled carbon steel products (31%) and stainless steel tubular and rolled products (2%). It has few non-iron and steel operations and these tend to be linked with its core business. It owns 66 integrated and semi-integrated iron and steel plants located in 20 countries on four continents and has strong backward vertical integration: it meets 47% of its demand for iron and 13% of its demand for coal either from its own mines or via long-term contracts.

To understand ArcelorMittal's special role in the global iron and steel industry, two characteristics need to be taken into account. The first is that, unlike the other companies, ArcelorMittal cannot be associated with a particular country of origin. The first investment of its Indian controlling shareholder was in Indonesia in 1976, whereas the company has its registered office in Luxembourg and its headquarters in London. The second is ArcelorMittal's large number of integrated coke plants, owing to its complex history of mergers and acquisitions, some linked with privatizations. As integrated coke plants are highly capital-intensive, it is rare for a company to own many.

The current company is the result of a merger in 2007 between Mittal Steel and Arcelor, which were then the two largest iron and steel companies in the world.[8] Arcelor had been founded in 2002, as the result of a merger between Aciéries Réunies de Burbach-Eich-Dudelange (ARBED) (Luxembourg), Aceralia (Spain) and Usinor (France).[9]

When ArcelorMittal was formed, its investments in Latin America confirmed the "multisite supermarket" model: it produced flat-rolled carbon steel products, special flat-rolled products and long-rolled products (predominantly made from carbon steel) in plants in Argentina, Brazil, Costa Rica, Mexico and Trinidad and Tobago. Another aspect worthy of note is that the

[8] Mittal Steel was founded in 1989. Its first investment was the lease of Iron & Steel Company of Trinidad & Tobago/Iscott in 1989. Its subsequent acquisitions include Sibalsa (Mexico, 1991); HSW (Germany, 1995); Ruhort and Hochfeld (Germany, 1997); Inland Steel (United States, 1998); Unimétal (France, 1999); Sidex (Romania, 2001); Annaba (Algeria, 2001); Nova Hut (Czech Republic, 2003); BH Steel (Bosnia, 2004); Balkan Steel (Macedonia, 2004); PHS (Poland, 2004); Iscor (South Africa, 2004); ISG (United States, 2005) and Kryvorizhstal (Ukraine, 2005).

[9] ARBED was founded in 1911 as the result of a merger between three iron and steel and mining companies located in Luxembourg and Saarland. Aceralia was the name adopted in 1997 following the privatization of Corporación Siderúrgica Integral (CSI), which had been founded in 1993 when Empresa Nacional Siderúrgia SA (Ensidesa) merged with Altos Hornos de Vizcaya (AHV). Usinor was established in 1948 after merging the assets of Denain-Anzin and Forges et Aciéries du Nord et de l'Est. In 1966, Usinor merged with the company Lorraine-Escault. Sacilor was formed two years later, with investments from De Wendel and Sidelor. In 1987, the French Government founded Usinor-Sacilor following a merger between the two companies, which later resumed the name Usinor (De Paula, 1998).

company had six integrated plants in Latin America: three coke and charcoal integrated plants (Brazil) and three direct-reduction integrated plants (Argentina, Mexico and Trinidad and Tobago).[10]

ArcelorMittal has continued to grow since it was established, mainly through acquisitions. Its main transactions in the region have been:

- Sicartsa (Mexico) in 2007, whose main asset was an integrated coke plant in Mexico. The company also had a semi-integrated plant, two rolling mills and iron mines in Mexico and a semi-integrated plant in the United States. All specialize in long-rolled products. The Sicartsa plant stands alongside the old Sibalsa plant (already owned by ArcelorMittal); although they were both part of a single project, they were privatized separately.
- Cinter (Uruguay) in 2007: a plant for stainless steel welded tubes.
- Unicom (Bolivarian Republic of Venezuela) in 2008: six plants for carbon steel welded tubes.
- Laminadora Costarricense and Trefilería Colima (Costa Rica) in 2008: increasing its stake from 50% to 100%.
- London Mining South America (Brazil) in 2008: acquisition of iron-ore mining operations, the current name of which is Mineração Serra Azul.

ArcelorMittal's strategy in both Mexico and Brazil was to increase backward vertical integration. Moreover, the acquisition of two welded tube plants in the region is consistent with the growing importance of tubular products in the company's product range, consolidating its "supermarket strategy".

Outside Latin America, ArcelorMittal was involved in eight major new projects in 2008, including integrated coke plants in India with a capacity of 12 million tons, which are experiencing considerable delays (Gugliermina, 2008).[11]

Before the crisis began, ArcelorMittal's main projects in Latin America were as follows: (i) Tubarão (Brazil), expansion of the hot-strip mill from 2.8 million to 4 million tons, which was completed in 2009; (ii) Vega do Sul (Brazil), expansion of the cold-strip mill and a new hot-dip galvanizing plant (350,000 tons), planned for completion in 2010; (iii) Belgo-Mineira (Brazil), an increase in installed capacity from 3.9 million to 6.5 million tons; and (iv) a new semi-integrated plant for long-rolled products (Mexico), with a crude steel capacity of 1 million tons. The Tubarão and Vega do Sul projects were highly advanced and were completed, albeit with some delay. In the case of Belgo-Mineira, the works for doubling the Monlevade plant, which were already under way, were temporarily halted and later resumed. Investments in a further two plants (Juiz de Fora and Vitória) did not proceed and are on hold, as is the new plant for long-rolled products in Mexico.

Recently ArcelorMittal announced its interest in partnering with the mining company Vale to build Companhia Siderúrgica de Ubu (CSU) in Brazil, a new integrated coke plant specializing in slabs for export, with a capacity of 5 million tons. Construction is scheduled to start in 2011 and the plant is due to come into operation in 2014.

At present, India is the biggest rival to Latin America for ArcelorMittal greenfield investments. Although India has in its favour the growth potential of its domestic market (stemming from rising per capita consumption) and its location in Asia, the institutional obstacles to setting up major iron and steel projects in India have been very difficult to overcome. Even though ArcelorMittal has a strategic interest in China, it has been unable to overcome the obstacles to acquiring a controlling stake in Chinese iron and steel companies. As a result, it owns only minority stakes in two companies: China Oriental and Hunan Valin.[12] Table III.8 shows ArcelorMittal's most representative industrial assets; all its assets are considered to be international.

[10] ArcelorMittal inherited the following Mittal Steel investments: (a) Iscott (Trinidad and Tobago), an integrated direct-reduction plant specialized in long-rolled carbon steel products, which it leased in 1989 and acquired in 1994; (b) Sibalsa (Mexico), an integrated direct-reduction plant specialized in slab production, which was purchased in 1991; and (c) Productora Mexicana de Tubería (Mexico), a welded tube plant acquired in 1992. All three were privatizations.
Arcelor controlled Belgo-Mineira (Brazil) which had been formed by ARBED in 1921. When ArcelorMittal was founded in 2007, Belgo-Mineira had four iron and steel plants in Brazil (one integrated coke plant and three semi-integrated plants) and it was the majority shareholder in Acindar (Argentina), which owned an integrated direct-reduction plant. Belgo-Mineira also owned 50% of the capital of the rolling mill Laminadora Costarricense and wire-drawing plant Trefilería Colima, both in Costa Rica. All these plants specialized in long-rolled products. Aceralia's only asset was a 49% stake in Hispanobras, a pellet plant in Brazil, jointly with Vale.
Arcelor also contributed with other investments in Latin America, which had previously belonged to Usinor: (a) Acesita (Brazil), an integrated coke and charcoal plant specializing in special flat-rolled products (stainless and silicon steels), in which Usinor invested in 1998; (b) Companhia Siderúrgica de Tubarão (Brazil), an integrated coke plant producing semifinished products and flat-rolled carbon steel products, in which it bought a stake in 1998; and (c) Vega do Sul (Brazil), a hot-dip galvanizing plant that came into operation in 2003.

[11] The remaining projects identified are: (a) an alliance to build a 4.8 million-ton hot-strip mill in Turkey; (b) a 1.4 million-ton integrated direct-reduction plant in Egypt; (c) a 600,000-ton semi-integrated plant in the Russian Federation; (d) a 600,000-ton seamless-tube plant in Saudi Arabia; (e) a 400,000-ton bar re-rolling mill in Mozambique; and (f) a 300,000-ton welded-tube plant in Nigeria. It was not until 2009 that ArcelorMittal acquired its first asset in India's iron and steel industry, when it bought a 35% stake in the Uttam Galva Steels re-rolling mill, producing cold-rolled coils and galvanized sheets, for the sum of US$ 109 million.

[12] In the case of Hunan Valin, ArcelorMittal also forged alliances for the construction of rolling mills, one for the production of flat-rolled carbon steel products (cold-rolled coils and galvanized sheets) and the other for special flat-rolled products (silicon steel sheets).

Table III.8
INTERNATIONALIZATION OF ARCELORMITTAL TYPE OF STRATEGY, MARKET SEGMENT AND LOCATION

Type of strategy	ArcelorMittal									
	Flat carbon steels		Special flat steels		Long carbon steels		Carbon steel tubes		Special steel tubes	
	Latin America	Other regions	Latin America	Other regions	Latin America	Other regions	Latin America	Other regions	Latin America	Other regions
Mining	Brazil	Russia								
Total vertical integration		Algeria, Canada, China [a], Kazakhstan, United States			Brazil, Mexico	Bosnia, Ukraine				
Vertical integration of semifinished products	Mexico									
Integrated plant for rolled products	Brazil	Belgium, France, Germany, Poland, Romania, Spain, Turkey [a], China [a], S. Africa	Brazil		Argentina, Trinidad and Tobago	Canada, Czech Rep., Poland, Turkey [a]				
Integrated plant for semifinished products										
Semi-integrated plant for rolled products		Canada, Belgium, United States, France		Belgium	Brazil, Mexico	Algeria, Bosnia, France, Luxembourg, Morocco, Poland, Romania, South Africa, Spain, United States				
Semi-integrated plant for semfinished products										Belgium, France
Rolling	Brazil	Belgium, Czech Rep., Estonia, France, India [a], Italy, Luxembourg, Macedonia, Spain, United States		France	Costa Rica Mexico	Spain, United States				France
Processing	Mexico	Australia, Belgium, China [a], France, Germany, India [a], Slovakia, Spain, United Kingdom					Mexico, Venezuela (Bolivarian Republic of)	Algeria, Canada, Czech Rep., France, Kazakhstan, Poland, Romania, South Africa, United States	Brazil Uruguay	Belgium, Czech Rep., France

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from ArcelorMittal.
[a] Joint-venture.

In principle, Latin America should maintain its relative importance in ArcelorMittal operations. The construction of integrated plants in India will tend to increase the importance of Asia chiefly to the detriment of the more mature European and North American markets, where the company has a relatively large market share (which it will find hard to increase because of antitrust policies). If problems persist with setting up megaplants in India, ArcelorMittal's investments in Latin America will grow in importance.

In addition, the company has shown no great interest in building large plants in the Russian Federation, perhaps because of the investments it has already made in Ukraine and Kazakhstan. In 2007, ArcelorMittal even sold 25% of its shares in Severgal, a rolling mill producing galvanized sheets, to its partner Severstal, giving the latter total control over Severgal. The construction of a semi-integrated plant for the production of long-rolled products in the Russian Tver region is not expected to come to fruition, even though ArcelorMittal purchased three coal mines in Russia in 2008, confirming its trend towards backward vertical integration.

In 2009, ArcelorMittal was more selective in its acquisitions. Its equity transactions included the purchase of processing plants from Noble (for tailored laser welded blanks) and various operations in Australia, Belgium, France, Germany, Mexico, Slovakia, Spain and the United Kingdom, as well as joint ventures in China and India.

In short, ArcelorMittal's situation in the industry can be described as unique owing to its combination of three characteristics: (a) high-intensity internationalization; (b) wide geographic distribution of its internationalization; and (c) considerable diversification of its product line. The profile of all the other foreign companies operating in Latin America is rather different.

2. ThyssenKrupp: towards an international integrated production system

ThyssenKrupp was the result of a merger in 1997 between Germany's two largest iron and steel companies: Thyssen and Krupp-Hoesch. It is seventeenth in the ranking of the world's largest iron and steel companies, with its production of 16 million tons of crude steel.

Of the foreign companies analysed this section, ThyssenKrupp is the least dependent on the iron and steel industry: only 25% of its US$ 70.9 billion in sales is from flat-rolled carbon steel products and 12% from flat-rolled stainless steel products. The remainder is distributed among its technology divisions: capital goods, marine systems, mechanical components and automotive solutions (22%); elevators (9%) and services (31%).

In 2008, ThyssenKrupp Steel produced all its steel in Germany, where the company achieved 53% of its sales. Indeed, as 90% of its sales were concentrated in Europe, the company can be characterized as home-region oriented. Up to now, internationalization has been of little importance to ThyssenKrupp Steel.

In fact ThyssenKrupp Steel (including its predecessors) did engage in internationalization experiences that were later discontinued, three of which were in Brazil: (a) Ferteco, an iron-mining investment aimed at supplying German iron and steel plants, which was sold to Vale in 2001; (b) Cosigua,[13] a semi-integrated plant owned jointly with Gerdau, which was finally dissolved in 1979; and (c) GalvaSud, a rolling mill opened in 2000 that it owned jointly with CSN, for an investment of US$ 236 million. This investment became the subject of a legal dispute between the two partners in 2003 and, the following year, ThyssenKrupp Steel sold its stake to CSN.

ThyssenKrupp Steel's current investments outside Latin America include one in Spain and two in China in rolling and processing, all in collaboration with local partners.[14] As the study of Nippon Steel and POSCO below confirms, the rolling plus cross-border joint-venture model has been common in the internationalization strategies of companies specializing in flat-rolled products. In the finished products segment, ThyssenKrupp Steel has processing subsidiaries (for the manufacture of tailored laser welded blanks) in China, the Czech Republic, Italy, Mexico, Sweden and Turkey, and strategic alliances in China and the United States.

The most important investment at present, marking a change in the company's strategy, is the construction of an integrated coke plant for semifinished products with a capacity of 5 million tons in the state of Río de Janeiro (Brazil). For the first time, a significant percentage of ThyssenKrupp Steel's crude steel will be produced outside Germany. The new company is called Companhia Siderúrgica do Atlântico (CSA) and is a strategic alliance between ThyssenKrupp Steel and the mining company Vale. The estimated cost of the project is US$ 6.75 billion. Although Vale's initial stake was 10%, to prevent further delays in the project Vale agreed to expand its stake to 26.9% by means of a capital increase of US$ 1.4 billion.

At least 60% of the 5 million tons of slabs will be sent to the company's future rolling mill in Alabama (United States) and the remainder will go to the Duisburg plant (Germany). The United States rolling mill is due to come into operation in 2010 at a cost of US$ 3.25 billion and with a capacity of 9.5 million tons. ThyssenKrupp's first integrated plant in Brazil is therefore oriented towards supplying rolling mills in developed countries, establishing

[13] Cosigua came into operation in 1972. Following the Brazilian Government's ban on the installation of new electric furnaces in 1975, Gerdau decided to convert it into an integrated direct-reduction plant (Guimarães, 1987). Cosigua was turned into a strategic alliance between Gerdau and Thyssen, in which the German company owned 47.9% of the capital with voting rights. Cosigua installed a direct-reduction module in 1977, using Purofer technology, a process patented by Thyssen. This technology originally used natural gas, but had to be adapted to local conditions, so it started by using gasoline and then shifted to heavy fuel oil. As the results of the Purofer module proved unsatisfactory, it was decommissioned. Consequently, the joint operation was dissolved in 1979 and Thyssen absorbed the entire loss arising from installation of the equipment, without having achieved its objective of turning Cosigua into a technology model by converting it into an integrated direct-reduction plant.

[14] The Spanish plant (Galmed) is a hot-dip galvanizing plant (400,000 tons). Originally, it was a joint operation between the Spanish company Aceralia (51%), the French company Usinor (24.5%) and ThyssenKrupp (24.5%). In 2001, Usinor, ARBED and Aceralia announced their intention to merge their assets to form Arcelor. The European Commission approved the transaction, on the condition that stakes in seven galvanizing plants were sold, including Galmed. In 2003, ThyssenKrupp purchased Arcelor's stake, which gave it ownership of all shares in Galmed. In short, it was a joint venture which, for regulatory reasons, ended with a company being controlled by a single owner. ThyssenKrupp Steel partnered with Angang Steel to build a hot-dip galvanizing plant in China, TAGAL (450,000 tons), which was opened in 2003, in which each partner owns 50% of the capital. The TAGAL II plant is being built under similar corporate and production conditions, and was planned to come into operation in 2009.

an international integrated production system. While the objectives differ from those of its previous investments, this is the third time that ThyssenKrupp is partnering with a local company.

ThyssenKrupp Stainless, another division of the group for special long-rolled products, has units in China, Germany, Italy and Mexico.[15] In 1980, 34% of its sales were concentrated in Germany and 44% in other European countries. In Mexico, the Mexinox rolling mill has a capacity of 270,000 tons of cold-rolled coils.[16] ThyssenKrupp Stainless has a dual industrial structure, with semi-integrated plants in Europe and rolling mills in Mexico and China.

In addition, ThyssenKrupp Stainless is building a semi-integrated plant in Alabama (United States), with investments of US$ 1.4 billion. The semi-integrated production of special flat-rolled products and flat-rolled carbon steel products will be combined in a single plant. The ThyssenKrupp Stainless plant will have a steelworks (1 million tons) and a cold-rolling mill (350,000 tons). ThyssenKrupp's simultaneous linked investments in Brazil and the United States will mean a significant increase in the relative importance of internationalization for the company (see table III.9). In the Alabama project, there will also be synergies between the flat-rolled products division and the stainless steel rolled products division.

Table III.9
INTERNATIONALIZATION OF THYSSENKRUPP TYPE OF STRATEGY, MARKET SEGMENT AND LOCATION

Type of strategy	ThyssenKrupp			
	Flat carbon steels		Special flat steels	
	Latin America	Other regions	Latin America	Other regions
Mining				
Total vertical integration				
Vertical integration of semifinished products	Brazil [a b]			
Integrated plant for rolled products				
Integrated plant for semifinished products				
Semi-integrated plant for rolled products				Italy, United States [a]
Semi-integrated plant for semifinished products				
Rolling		China [a], Spain, United States [b]	Mexico	China [a]
Processing	Mexico [a]	China, Czech Republic, Italy, Sweden, Turkey, United States [a]		

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from ThyssenKrupp.
[a] Minority stake or joint venture.
[b] Under construction.

The economic crisis has had a considerable impact on ThyssenKrupp, as the company was in the midst of three major projects worth US$ 11.4 billion. Furthermore, two of the projects (CSA and the plant for flat-rolled carbon steel products in the United States) had already passed the point of no return. The solution was to slow the pace and, in the case of CSA, to request a larger resource contribution from the partner in the joint operation. The stainless steel rolled products project in the United States was delayed by one year and will come into operation in late 2010. Owing to the poor conditions in the stainless steel rolled

[15] ThyssenKrupp Acciai Speciali Terni (Italy), a steelworks and rolling mill with a capacity of 1.5 million tons, is a wholly-owned subsidiary of ThyssenKrupp, which became a shareholder in the company when Terni was privatized in 1994. At that time, when it was acquired by the KAI consortium, comprising Krupp (50%) and the Italian firms Tadfin (21%), Riva (21%) and Falck (8%), Terni's installed capacity was 800,000 tons (Balconi, 1996). Shanghai Krupp Stainless in China is a joint operation between ThyssenKrupp Stainless (60%) and the Chinese iron and steel company Shanghai Baosteel (40%). The plant came on stream in 2001, with a capacity equivalent to 80,000 tons. Even though its capacity was expanded to 300,000 tons, it has remained a rolling mill producing only cold-rolled coils.

[16] In 1990, the Mexican Government sold its minority stake to Ahorrinox. Later the same year, Mexinox became a tripartite strategic alliance, with its capital divided among Thyssen Edelstahl (Germany), Acerinox (Spain) and Ahorrinox (Mexico). In 1997, KruppThyssenNirosta (the successor to Thyssen Edelstahl) acquired 33.3% of Mexinox, which belonged to Mexican investors, and a further 23.3% from Acerinox, whose stake dropped to 10%. At present Mexinox is a wholly-owned subsidiary of ThyssenKrupp Stainless.

products market, it was conjectured that the steelworks would not be opened until 2012. In the meantime, the material needed to operate the rolling mills would be supplied by its European plants. More recently it has been suggested that the new steelworks would be put into operation in 2013.

In short, the economic crisis has delayed ThyssenKrupp projects in Brazil and the United States that are already under construction. Even though these investments will be put into operation later than planned, they will change the intensity and geographic distribution of ThyssenKrupp's internationalization substantially, without the company ceasing to specialize in flat carbon steels and special flat steels. Brazil is playing a key role in this model change, which will make the company less home-region oriented.

3. Nippon Steel: the second biggest iron and steel company in the world produces very little outside Japan

Nippon Steel is the leading iron and steel company in Japan and second in the world, after ArcelorMittal. It produces 36.9 million tons of crude steel and has sales of US$ 48.1 billion. In spite of having diversified to some extent into capital goods, chemicals, electronics and new materials, 82% of its sales comes from its iron and steel division. The company is fairly specialized in higher value-added carbon rolled products: 64% of its sales are from the flat-rolled products division, 18% from the special rolled products division, 13% from the long-rolled products division and 5% from other products (Nippon Steel Corporation, 2008).

Nippon Steel's first foreign investment was in Usiminas in Brazil. Usiminas was founded in 1956 as a private company but, in mid-1957, it was consolidated as a Japanese/Brazilian strategic alliance, with the Government of Brazil holding a controlling stake. The initial stake of the Japanese companies in the Nippon Usiminas consortium was 40%. The Japanese partners were responsible for technology transfer: they implemented the design project, provided technical assistance during construction, put the plant into operation and were responsible for operating it in the early years (1962-1966). Nippon Steel's objective was to use Usiminas as a showcase for its technological capacity. The initiative received the explicit support of the Japanese Government (Pinho and Olivera, 2002).

Over time, as Usiminas grew, the stake of Nippon Usiminas (and hence of Nippon Steel) slowly shrank, as it did not participate in all the capital subscriptions. Usiminas was privatized in 1991 and Nippon Steel currently controls 25% of its capital. The strategy of Usiminas as an independent company is described in part D, section 5.

Nibrasco, a joint venture by Vale (51%) and Japanese partners (49%),[17] came into operation in 1975. The company comprised two pellet plants in the port of Tubarão (Espírito Santo, Brazil), with a combined capacity of 6 million tons. The purpose of this investment was to supply the iron and steel plants in Japan.

In the late 1980s, Nippon Steel's internationalization strategy focused on rolling, mainly flat-rolled products in partnership with local companies. The United States was its priority in this respect. In 1989, it acquired 13% of Inland Steel (Mangum et al, 1996) and invested in two joint operations,[18] in partnership with Inland Steel itself.

Since the mid-1990s, the company has focused its foreign investment in Asia, always in rolling, in alliances with local partners. In 1994, Nippon Steel founded the company Guangzhou Pacific Tinplate (PATIN) in China[19] and, in 1995, it formed two strategic alliances in Thailand

[17] Nippon Steel held 25.4% of the shares. The remaining Japanese shareholders were NKK, Sumitomo Metal, Kawasaki Steel, Kobe Steel, Nisshin Steel and Nissho Iwai (NKK and Kawasaki Steel merged in 2001 to form JFE Steel).

[18] The first of these joint ventures is I/N Tek, with a capacity of 1.6 million tons of cold-rolled coils, in which Nippon Steel has a 40% stake. The second is I/N Kote, which operates two galvanizing plants, one a hot-dip plant (450,000 tons) and the other an electro-galvanizing plant (400,000 tons), in which Nippon Steel has a 50% stake. I/N Tek came into operation in 1990 and I/N Kote, the following year. In both cases, the current partner is ArcelorMittal.

[19] This is a rolling mill with a production capacity of 200,000 tons of tin plate. The required cold-rolled coil (blackplate) is produced in Japan, taking advantage of geographic proximity. Nippon Steel owns 25% of the capital.

for the manufacture of cold-rolled products and welded tubes, to which it added a third in 1998.[20] In 2004 it entered into a strategic alliance to found Baosteel-NSC/Arcelor Automotive Steel Sheets (BNA), which came into operation the following year: Nippon Steel took a 38% stake in the capital, along with allies Shanghai Baosteel (50%) and ArcelorMittal (12%). The plant includes a cold-strip mill (1.8 million tons) and two hot-dip galvanizing plants (800,000 tons).

After investing in Brazil, China, Thailand and the United States, Nippon Steel's current projects focus on strengthening its position in the markets it already serves, rather than on expanding its geographic distribution.[21] Two investments confirm this trend: BNA (China) and I/N Kote (United States) decided to build new hot-dip galvanizing lines with a capacity of 450,000 and 500,000 tons respectively. Although both plants were planned to come into operation in 2010, they were halted in December 2008 owing to the economic crisis.

Nippon Steel's activities in Brazil in the 2000s confirm the characteristics of its internationalization strategy. For instance, Unigal, a joint operation between Nippon Steel (40%) and Usiminas (60%), was founded in 1999. Unigal has a hot-dip galvanizing plant with a capacity of 400,000 tons at a cost of US$ 250 million. Nippon Steel not only supplied the technology, it also played a major role in raising finance. Over time, Nippon Steel's stake in Unigal has shrunk from 40% to 30%.

Usiminas and Nippon Steel decided to build a second hot-dip galvanizing line (Unigal 2), with a capacity of 550,000 tons. The plant is scheduled to come into operation in 2011. In another project, Usiminas is expanding its capacity for rolling heavy-gauge plate (by 500,000 tons) and adopting the accelerated cooling technique by transferring technology from Nippon Steel. The relationship between Usiminas and Nippon Steel is therefore a technology alliance in which Nippon Steel has always had a major shareholding in Usiminas. In 2008, Nippon Steel acquired Vale's stake in Usiminas (see part D, section 5, on Usiminas).

Usiminas is the only steel producer outside Japan in which Nippon Steel currently has a shareholding. Nippon Steel's minority stake in Unigal and Unigal 2 confirm that its predominant internationalization strategy is based on the model of a joint venture with local partners for building rolling mills. Unigal 2 is further proof of Nippon Steel's preference for consolidating its position in countries where it already has investments, at the expense of wider geographic diversification. Brazil has tended to retain its relative importance as far as Nippon Steel's foreign investment is concerned.

In addition, Nippon Steel has three minority investments in iron-ore mining in Brazil: (i) Nibrasco, where the shareholder composition comprises Vale (51%), Nippon Steel (25.4%) and other Japanese shareholders (23.6%); it has an annual pellet production capacity of 10 million tons; (ii) MBR, where the shareholder composition comprises Vale (93%), Nippon Steel (2.4%) and other Japanese shareholders (4.6%); and (iii) Namisa, a CSN subsidiary devoted to iron-ore mining, with 40% of the shares purchased by several Asian companies for US$ 3.1 billion. Nippon Steel and POSCO each purchased 6.5% of Namisa. The other investors are Japanese: JFE Steel, Sumitomo Metal, Kobe Steel, Nisshin Steel and Itochu. In all three cases, Nippon Steel's aim is to guarantee the supply of Brazilian iron ore to iron and steel plants located in Japan. Nippon Steel also holds stakes in iron mines in Australia and in coal mines in Australia and Canada (see table III.10).

Nippon Steel's internationalization intensity is low: domestic sales and assets make up more than 90% of its total consolidated sales and assets (Nippon Steel Corporation, 2008, page 74). Its combined exports from Japan and sales from joint ventures abroad accounted for only 28.9% of its sales of iron and steel products in 2008 (21.5% in Asia and 7.4% on the other continents). Furthermore, its international investments focus more on flat-rolled products than on the products made by its headquarters. In general, Nippon Steel prefers to establish relationships with partners that share its vision of business and cooperation, combined with cross-equity participation, rather than to engage in mergers and acquisitions (Minura, 2007).

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[20] Siam United Steel (SUS), with a production capacity of 1 million tons of cold-rolled products, and Siam Nippon Steel Pipe (SNP), with a capacity of 60,000 tons of welded tubes. Both were founded in 1994. Nippon Steel owns 45% of the capital of SUS and 60% of the capital of SNP. Siam Tinplate (STP), in which Nippon Steel owns 6% of the capital, was set up in 1998 with a capacity of 150,000 tons of tin plate and 120,000 tons of chromium-plated sheets.

[21] In November 2009, Nippon Steel and two Japanese trading companies announced an agreement to purchase 55% of the shares of the tinplate manufacturer PT Latinusa, for US$ 60 million. PT Latinusa, which is the only tinplate manufacturer in Indonesia, has a capacity of 60,000 tons. Nippon Steel will acquire 40% of the shares. The state-owned enterprise Kratatau Steel, which owns 94% of Latinusa, is planning to sell 20% of the shares on the stock exchange. The transaction with Nippon Steel was not finalized by early 2010.

Table III.10
INTERNATIONALIZATION OF NIPPON STEEL TYPE OF STRATEGY, MARKET SEGMENT AND LOCATION

Type of strategy	Nippon Steel Flat carbon steels	
	Latin America	Other regions
Mining	Brazil [a]	Canada,[a] Australia [a]
Total vertical integration		
Vertical integration of semifinished products		
Integrated plant for rolled products	Brazil [a]	
Integrated plant for semifinished products		
Semi-integrated plant for rolled products		
Semi-integrated plant for semifinished products		
Rolling	Brazil [a]	China [a], Indonesia [b], Thailand [a], United States [a]
Processing		

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from Nippon Steel Corporation.
[a] Minority stake or joint venture.
[b] Under construction.

At first sight, the economic crisis did not alter the pillars of Nippon Steel's internationalization strategy, which was already based on minimizing risk. It continued with the same rationale, albeit at a slower pace. In fact, in March and April 2009, the company managed to operate with 50% unused capacity. As unused capacity shrank to 20% in September 2009, its investments can be expected to recommence, including those related to BNA and I/N Kote.

Nippon Steel's main investments in Latin America are "via" Usiminas or "in partnership" with Usiminas. As the company gives priority to rolling mills in its international investments, measuring its participation solely in terms of its share of crude steel production fails to convey its true importance in the region. The same applies to POSCO, which is examined below.

4. POSCO: strong growth but little focus on Latin America

The Pohang Iron and Steel Company (POSCO) was formed as a state-owned enterprise of the Republic of Korea in 1968 and was privatized in 2000. It currently produces 34.7 million tons of crude steel (65% of Korea's total volume), making it the world's fourth largest iron and steel company. It has sales of US$ 33.1 billion, of which 87% comes from iron and steel production. Its production is distributed between 65% flat-rolled carbon steel products, 25% special flat-rolled products (stainless and silicon steels), 6% long-rolled products (wire rod) and 4% other products (POSCO, 2009).

POSCO maintains most of its activities in Korea and its internationalization strategy concentrates on Asia, mainly on the manufacture of flat-rolled products, in alliance with local partners. Up to 1994, it participated in three projects outside its home country: one in the United States[22] and two in Vietnam.[23] Between 1995 and 2002, it joined six more projects, four of which were

[22] In 1986, it formed USS-POSCO Industries (UPI), a 50-50 joint venture between POSCO and US Steel. It is a re-rolling mill, comprising a cold-strip mill (1.5 million tons), two hot-dip galvanizing lines (540,000 tons) and two electrolytic tinning lines (500,000 tons). The plant already existed but was modernized by means of a heavy investment programme (US$ 450 million) and reopened in 1989. The joint operation was based on the following division of duties: (a) POSCO would contribute the technology, to guarantee a reliable source of hot-rolled coils produced in its country of origin; and (b) US Steel would make available its extensive distribution network. Owing to its location in the state of California, UPI's business activities prioritized the western United States. Each partner meets half the requirement for hot-rolled coils (Mangum et al, 1986).

[23] POSVINA is a 50-50 joint venture with Southern Steel for the production of galvanized sheets. It came into operation in 1992 and has a capacity of 240,000 tons. VSC-POSCO (VPS) is a joint venture between POSCO (40%), Daewoo (10%), VNSteel (34%) and Hai Phong Steel (16%). It was opened in 1994 and has a re-rolling capacity of 300,000 tons of wire rod.

in China.[24] In 2003, it became a shareholder in further six projects: five in Asia (three of which were in China) and one in Latin America (Mexico).

Vietnam, together with China, is the chief destination for POSCO investment. Even though its first investments in Vietnam were modest, a cold-strip mill with a 1.2 million ton capacity came into operation in 2009, to which it is planned to add a 3.6 million ton hot-strip mill. Although the POSCO project in Vietnam was conceived as an investment wholly controlled by the company, Nippon Steel took a 15% stake in April 2009. There is a cross-shareholding between POSCO and Nippon Steel. Their cooperation began in 2000, when Nippon Steel acquired 3% of POSCO shares and POSCO acquired around 2% of Nippon Steel shares. In 2006, their ties were strengthened through additional share purchases: POSCO now has a 3.5% stake in Nippon Steel, which, in turn, owns 5.0% of the Korean company's shares.

Latin America has played a secondary role in the POSCO internationalization strategy, mainly focused on mining. The Korean company's first investment in the region, in 1999, was in a direct-reduction module (1.5 million tons) installed in the Bolivarian Republic of Venezuela. The plant was built by a joint venture between POSCO (60%), CVG-Ferrominera Orinoco, Raytheon and Hylsamex. There were a number of problems with the project, ranging from trade union disputes to operational issues, and it was finally halted in 2001, with debts of US$ 266 million that were settled by the partners. In 2004, the facilities were sold to Tenaris (50.2%) and Sidor (49.8%), for US$ 120 million, and rechristened Materiales Siderúrgicos Masisa.

In 1996, POSCO and Vale formed a strategic alliance to build a pellet plant with a capacity of 4 million tons in the port of Tubarão (Brazil). The plant, which came into operation in 1998, stands adjacent to the plants of Nibrasco (tied to Nippon Steel) and Hisponobras (tied to AcerlorMittal). As mentioned in the analysis of Nippon Steel, POSCO became a shareholder of the Namisa iron-mining company in 2008. The POSCO model was therefore to establish strategic alliances in both the Latin American mining projects in which it was involved. Table III.11 shows the main foreign investments of POSCO.

Apart from mining, in 2009 POSCO opened a hot-dip galvanizing plant in Mexico with a capacity of 400,000 tons at a cost of US$ 250 million. The company had actually been operating in Mexico since 2007, when it put into operation two processing units, each with a capacity of 170,000 tons, located in the states of Puebla and San Luis Potosí. The galvanizing plant therefore represented backward vertical integration. POSCO will supply the majority of the cold-rolled coils needed for galvanizing. The plant specializes in supplying automotive finishing companies in Mexico, even though part of its production may be exported. With this investment, POSCO is seeking to expand its range of products and to establish long-term supply contracts with automobile manufacturing companies.

A point of note is that, in the early 2000s, POSCO was planning to build an integrated coke plant for exporting slabs, in partnership with Vale, in the state of Maranhão (Brazil). After abandoning the project in 2005, POSCO announced that the plant would instead be built in Orissa state (India), with a projected capacity of 12 million tons of crude steel. This project is running three years behind schedule, largely because of problems in acquiring land and obtaining mining permits. Construction of phase one (for 4 million tons, with a budget of US$ 3.7 billion) is expected to start in 2010 (Lee and Bu, 2009). In December 2009, POSCO announced a memorandum of understanding with the state-owned enterprise Krakatau Steel in Cilegon (Indonesia) to build a 6 million-ton plant. Construction is planned to commence in 2011 and phase one (for 3 million tons) is expected to be completed in 2013. Assuming that at least one of the two projects comes to fruition, this would represent a change of strategy for POSCO, as it would be increasing its internationalization beyond the rolling segment.[25]

At present fewer than 10% of its assets are located abroad and 90% of these are in other Asian countries. With respect to POSCO end markets, exports from the Republic of Korea and sales from joint ventures abroad represented only 32% of its iron and steel sales in 2008. POSCO sent 64% of its total exports to Asia.

[24] Zhangjiagang Pohang Stainless Steel (ZPSS) is a joint venture between POSCO (82.5%) and Shagang (17.5%). When it started up in 1998, it was involved only in rolling activities. However, in 2006 a steelworks was added with an 800,000 ton capacity. The plant has a hot-rolling mill (Steckel), with a capacity of 1 million tons. Qingdao Pohang Stainless Steel (QPSS) is a company wholly controlled by POSCO that was set up in 2004. It produces stainless steel cold-rolled coils (180,000 tons) and is supplied with hot-rolled coils by ZPSS. Benxi Steel POSCO Cold Rolled Sheets is a strategic alliance between POSCO (25%) and Benxi Steel (75%), comprising a cold-strip mill (1.9 million tons), which came into operation in 2006.

[25] POSCO did not acquire its first foreign-based iron and steel plant until December 2007, when it bought a 60% stake in MEGS, the only producer of electrogalvanized sheets in Malaysia, with a capacity of 120,000 tons.

Table III.11
INTERNATIONALIZATION OF POHANG IRON AND STEEL COMPANY TYPE OF STRATEGY, MARKET SEGMENT AND LOCATION

Type of strategy	Pohang Iron and Steel Company					
	Flat carbon steels		Special flat steels		Long carbon steels	
	Latin America	Other regions	Latin America	Other regions	Latin America	Other regions
Mining	Brazil [a]	Australia,[a] Canada,[a] Indonesia [a]		New Caledonia [a]		
Total vertical integration		India [b]				
Vertical integration of semifinished products						
Integrated plant for rolled products						
Integrated plant for semifinished products						
Semi-integrated plant for rolled products				China [a]		
Semi-integrated plant for semifinished products						
Rolling	Mexico	China,[a] Malaysia,[a] United States,[a] Vietnam [a]		China, Thailand [a]		Vietnam [a]
Processing	Mexico					

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from Pohang Iron and Steel Company (POSCO).
[a] Minority stake or joint venture.
[b] Under construction.

As the overall trend in its recent investment projects in new plants in India and Indonesia is to reinforce this preference for Asia, it is reasonable to expect that Latin America will continue to be a secondary target for POSCO. Any new investments that it makes in the region would tend to reproduce its recent experience in Mexico (a plant making finished products for the automotive industry). Considering the size of the automobile market, Brazil may be a good option for a second POSCO galvanizing plant in the region.

Despite having postponed three projects in its home country for around one year, POSCO is one of the iron and steel companies whose international investments have been least affected by the economic crisis. In fact, it completed three projects in 2009: POSCO Mexico, POSCO Vietnam and United Spiral Pipe (a welded tube plant in the United States with a production capacity of 270,000 tons).[26] The three projects inaugurated in 2009 had undoubtedly already passed the point of no return, obliging the company to finish them. In addition, institutional factors held up the start of construction on the larger-scale venture (the Orissa plant). In early 2010, the company announced an ambitious growth plan with investments worth US$ 8 billion, mainly for the purpose of vertical integration.

5. Vallourec: Brazil as an export platform

The Franco-German company Vallourec occupies eighty-eighth position in the world ranking of iron and steel companies, with 2.8 million tons of crude steel.[27] As Vallourec specializes in higher value-added products (seamless tubes), its position in the ranking fails to convey its true international importance. The company has sales of US$ 8.9 billion, distributed among the following divisions: tubes for oil and natural gas (46%); tubes for energy generation (20%); tubes for mechanical and petrochemical equipment (11% each); tubes for automobiles and other tubes (6% each).

In addition, there was wide geographic distribution of the company's sales, with 66% going to customers outside

[26] POSCO owns 35% of this strategic alliance, in partnership with US Steel (35%) and SeAH Steel Corp (30%). SeAH is a Korean company specializing in tubes. Although the new plant stands next to the UPI plant, this does not entail vertical integration; in fact, POSCO and US Steel will be supplying hot-rolled coils to United Spiral Pipe.

[27] Even though the name Vallourec was not used until 1930, when it came to designate a tube plant in Valenciennes (France), the company's origins date back to 1889, when Société Métallurgique de Montbard was founded, which acquired Société Française de Fabrication des Corps, which itself had come into operation at Montbard in 1895. Although Vallourec went through a number of equity transactions, up to 1996 its industrial assets were concentrated in France.

the European Union. A relatively small share of Vallourec's income came from Germany (18%) and France (6%). Its largest market is North America (24%). The remainder of its sales is distributed among Asia and the Middle East (20%), South America (14%), other European Union countries (11%) and the rest of the world (7%). Although the company does not publish production data by region, it does publish data on direct jobs, half of which are in France and Germany. The remainder is distributed among South America (33%), North America (12%), Asia (3%) and other European countries (2%).

Only four of Vallourec's 51 production units in 11 countries produce steel (those in Germany, Brazil, the United States and France). Outside Germany and France, Vallourec produces special welded tubes in China, India, the Republic of Korea and the United States (see table III.12). The finishing units are in Canada, China, the United States and the United Kingdom. The main plants for tube fittings are in China, Indonesia, Mexico and Nigeria.[28]

Vallourec's investments in Latin America are channelled through its wholly-owned subsidiary Vallourec and Mannesmann Tubes (V & M), which is the result of Vallourec's acquisition in 2000 of tube plants formerly belonging to the German company Mannesmann (see box III.3).

Table III.12
INTERNATIONALIZATION OF VALLOUREC TYPE OF STRATEGY, MARKET SEGMENT AND LOCATION

Type of strategy	Vallourec					
	Carbon steel seamless tubes		Special welded tubes		Processing and tube fittings	
	Latin America	Other regions	Latin America	Other regions	Latin America	Other regions
Mining						
Total vertical integration	Brazil					
Vertical integration of semifinished products						
Integrated plant for rolled products	Brazil [a b]					
Integrated plant for semifinished products		United States [a]				
Semi-integrated plant for rolled products						
Semi-integrated plant for semifinished products						
Rolling				China,[a] India,[a] Republic of Korea,[a] United States [a]		
Processing					Mexico	Canada, China, Indonesia,[a] Nigeria,[b] United Kingdom, United States [a]

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from Vallourec.
[a] Minority stake or joint venture.
[b] Under construction.

Recently V & M has stepped up its foreign investments. In 2002 it acquired the seamless tube plant North Star Tubes in the United States (changing its name to V & M Star), a strategic alliance between V & M Tubes (80.5%) and Sumitomo (19.5%). In 2006 the V & M Changzhou plant came into operation in China. This is a plant specializing in cold-finished large-diameter special seamless tubes produced in Germany.

In 2007, Vallourec and Sumitomo announced that they were forming a joint venture, with a 56% and 44% stake respectively, to build a new integrated plant (blast furnace, steelworks and rolling mill) for producing seamless tubes. The plant is under construction in Jeceaba (Minas Gerais) and will have an annual production capacity of 600,000 tons of seamless tubes. The project will include the construction of a steelworks with an annual capacity of 1 million tons of bars, approximately 700,000 tons of which will be used by the new seamless tube factory and the remainder by V & M do Brasil. The Jeceaba plant will be devoted mainly to the manufacture of tubular products for the oil industry. With operations planned to start in 2010, the estimated total investment is US$ 1.6 billion. As the increase in supply will far outstrip growth in domestic demand, 80% of the new plant's production will need to be exported.

[28] Some of these downstream activities were acquired in 2008 from the United States' company Grant Prideco, for US$ 800 million. In September 2009, Vallourec announced an agreement for the purchase of a plant producing tube fittings in Dubai, but the transaction was still awaiting approval by the competent authorities.

Box III.3
THE HISTORY OF MANNESMANN: IRON AND STEEL PIONEERS FALL VICTIM TO THE TELECOMS MARKET

In 1995, the Mannesmann brothers Reinhard and Max invented a new rolling process (cross-rolling) for the manufacture of seamless steel tubes. In 1890 came another major innovation, the pilger rolling process. The combination of the pilger and the cross-rolling techniques became known as the Mannesmann process. Seeking to exploit this technological advantages, Mannesmann opened tube plants in Remscheid (Germany), Bous (Sarre), Komotau (Bohemia) and Landore (Wales), followed by another in Dalmine (Italy). Thus, unusually for the iron and steel industry, the company's internationalization was driven by technological innovation.

In the 1920s and 1930s, Mannesmann regained control of two plants outside Germany that had been expropriated after the First World War. The Bous plant was confiscated by France in 1949, after the Second World War, and was finally recovered in 1986.

In the 1950s, Mannesmann embarked on a new internationalization effort, building iron and steel plants and tube mills in Brazil, Canada and Turkey. The integrated coke/charcoal mill in Belo Horizonte (Minas Gerais) was built following the discovery of oil in Bahia. It came on stream in 1954 with an initial capacity for 100,000 tons and, although specialized in seamless tubes, it also produced medium and heavy special steel bars.

In 1970, the manufacture of tubes still represented 77% of the company's sales. As demand for iron and steel products waned, however, this proportion fell to just 8% in 1999. Around two thirds of Mannesmann's investments in 1990–1999 were in telecommunications, which came to account for 39% of total sales in 1999 (Punir and Jackson, 2001). Finally, in 2000 Mannesmann was acquired by the telephone company Vodafone of the United Kingdom, at the height of the telecoms bubble.

After the acquisition, Mannesmannröhren-Werke, the iron and steel subsidiary which had suffered heavy losses, was sold to the German company Salzgitter for the symbolic sum of 1 deutschmark. Vallourec, which had created the joint venture Vallourec & Mannesmann tubes (V&M Tubes) with Mannesmann in 1997, took control of that venture in 2000, with assets in Brazil, France and Germany. The main asset in Brazil was the Belo Horizonte mill mentioned above, which currently has a capacity of 4 million tons and maintains its own ore mines.

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

Vallourec is considering an investment of approximately US$ 1 billion for increasing the installed capacity of V & M Star (United States) from 830,000 tons to 1.4 million tons of crude steel. If this project materializes, Vallourec will expand its crude steel production mainly in countries where the company already owns steelworks. Another important aspect is the closer cooperation ties being forged with Sumitomo. In February 2009, the two companies decided to invest US$ 120 million in setting up a cross-shareholding scheme.

After a period of intensive equity transactions, Vallourec now specializes entirely in tubes and tube fittings. Its chief ongoing international investment is the construction of an integrated plant in Brazil as noted earlier. Although this project has experienced delays, it will be finally inaugurated in 2010, which will increase the importance of Latin America for Vallourec. The project —as well as the possible expansion of the United States plant— will significantly increase the degree of internationalization of the company's production.

6. Other transnational companies

In addition to the five companies considered so far, a further six foreign companies have made, or will make, major investments in Latin America. The companies in operation include Voest-Alpine (Austria), which produces 7.71 million tons and controls Villares Metals (Brazil), a plant manufacturing special long-rolled high-alloy steel products that produces 140,000 tons of crude steel. The plant came into operation in 1964 under the name Eletrometal. When Aços Villares acquired it in 1996, it changed the name to Villares Metals. In 2000, the iron and steel company Sidenor took over 52% of Aços Villares group's shares. In 2004, Sidenor sold Villares Metals to the Austrian company Böhler-Uddeholm, which in turn was acquired by Voest-Alpine in 2007.

As regards projects under construction, the most advanced is a 250,000-ton capacity heavy plate mill that the Italian iron and steel company Beltrame plans to install in the province of Santa Fe (Argentina). Beltrame, which specializes in long-rolled products, produced 2.82 million tons of crude steel in 2008. The plan is to inaugurate the project in 2010 and for 70% of the plate mill's production to be exported. The estimated investment is US$ 53 million.

Dongkuk (Republic of Korea), in which the Japanese iron and steel company JFE Steel holds 14.9% of the shares, produced 2.9 million tons of crude steel in 2008. The company owns steelworks with a combined capacity of 3 million tons for manufacturing long-rolled carbon

steel products. It also owns three heavy-plate rolling mills (4.2 million tons), for which it needs to buy slabs. Dongkuk decided to partner with the Brazilian mining company Vale to build an integrated coke plant in the state of Ceará (Brazil) for slab production and export. The project is called Companhia Siderúrgica do Pecém (CSP). Phase one involves installing a plant with a capacity of 3 million tons, which will require investments of US$ 3.3 billion. Although work will start in December 2009, the equipment is not scheduled to arrive until 2012, with the result that the plant should come into operation in 2013. By the end of phase two in 2016, slab-production capacity is planned to have doubled to 6 million tons.

Work has not yet commenced on a further three announced projects. Jindal Steel & Power (India), which produced 1.6 million tons of crude steel in 2008, started to prospect the Plurinational State of Bolivia's El Mutún iron mines in 2009. The company intends to build a pellet plant (10 million tons), direct-reduction modules (6 million tons) and an iron and steel plant (1.8 million tons), which will require an investment of US$ 2.1 billion. Construction of the projects was originally scheduled to commence in 2010, to enable them to come on stream in 2014, but the company has already acknowledged possible delays.

Essar Steel (India), which produced 3.4 million tons of crude steel in 2008, is planning to build an integrated direct-reduction plant in Trinidad and Tobago, with a capacity of 2.5 million tons of hot-rolled coils at a cost of US$ 2.2 billion. In addition, Essar Steel obtained an iron prospecting permit in the state of Amapá (Brazil), to supply the plant. Even though the Essar Caribbean Steel project was announced in 2005, there have been repeated delays in its start-up.

In 2008, the state-owned enterprise Wuhan Iron and Steel (China) produced 27.7 million tons of crude steel, making it the world's seventh largest iron and steel company. In December 2009, it announced its intention to form a joint venture with the Brazilian company EBX (with a 70% and 30% stake respectively) to build a plant in the state of Río de Janeiro with a capacity of at least 5 million tons. Wuhan purchased a 21.5% stake in the EBX subsidiary MMX Mineração e Metálicos for US$ 400 million. MMX is planning to expand the production capacity of the Serra Azul complex from 8.7 million tons of iron ore to 33.7 million tons by 2013.

D. Strategies of iron and steel trans-Latins

This part continues the detailed description of the strategies of iron and steel companies and examines the experience of seven Latin American companies with some degree of internationalization in their production: Gerdau, ICH/SIMEC, Votorantim Siderurgia, Ternium, Usiminas, CSN and Tenaris.[29] Gerdau, ICH/SIMEC and Votorantim Siderurgia specialize in long-rolled products; Ternium, Usiminas and CSN specialize in flat-rolled products and Tenaris specializes in tubular products. This part concludes by analysing two major iron and steel companies with a very limited international presence: Altos Hornos de México and Compañía de Acero del Pacífico. Each section discusses the respective company's recent investment strategy in the region as well as its response to the crisis. All the sales and production figures provided refer to 2008, unless otherwise indicated.

1. Gerdau: a sector leader seeking diversification

Gerdau is the world's eleventh largest iron and steel company: it produces 19.5 million tons of steel and has sales of US$ 18 billion. The company was founded in 1901, began to produce steel in 1948 and started expanding in the late 1960s by means of various acquisitions. It is currently the largest company operating in Latin America to specialize in long steel products. Its special long-rolled products division generates 19% of its income; the remainder comes from long-rolled carbon steel products in three divisions: North America (36%), Brazil (34%) and Latin America (11%). Gerdau produces flat-rolled products in only two countries, after purchasing companies

[29] These seven Latin American transnational companies hold a 55% share of Latin American production. Latin American companies operating solely in their country of origin hold another 27.5% share.

specialized in these products. Although the company does not operate in other industrial sectors, it owns a bank, which supports its financial activities.

Gerdau's first foreign investment was the purchase of Laisa (Uruguay) in 1980, which at that time had a capacity of 24,000 tons of crude steel. However, its internationalization only became important after 1989, when it bought Gerdau Courtice Steel (Canada). Since then, it has purchased iron and steel companies in Chile (1992), Argentina (1997), the United States (1999), Colombia (2004), Spain (2006), Peru (2006), Mexico (2007), the Dominican Republic (2007), the Bolivarian Republic of Venezuela (2007), India (2007) and Guatemala (2008). It is now a highly internationalized company, with around 55% of its production outside Brazil.

Gerdau owns 60 production units (see table III.13). In terms of its production process, most of Gerdau's plants are semi-integrated (using scrap as the principal feedstock), except for: (a) integrated coke plants (Açominas, which is the largest in the group, in Brazil, and Kalyani Gerdau in India); (b) integrated charcoal plants (Divinópolis and Barão de Cocais in Brazil); (c) integrated direct-reduction plants (Usiba in Brazil); and (d) integrated coke and direct-reduction plants (SIDERPERU in Peru).

Table III.13
INTERNATIONALIZATION OF GERDAU TYPE OF STRATEGY, MARKET SEGMENT AND LOCATION

Type of strategy	Gerdau					
	Long carbon steels		Special long steels		Flat carbon steels	
	Latin America	Other regions	Latin America	Other regions	Latin America	Other regions
Mining	Colombia					
Total vertical integration						
Vertical integration of semifinished products						
Integrated plant for rolled products	Peru				Peru [b]	
Integrated plant for semifinished products				India [a]		
Semi-integrated plant for rolled products	Canada, Chile, Colombia, Mexico, United States, Uruguay, Venezuela (Bol. Rep. of)			Spain, United States		United States [a]
Semi-integrated plant for semifinished products						
Rolling	Argentina, Dominican Republic,[a] Guatemala [a]	United States				
Processing						

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from Gerdau.
[a] Minority stake or joint venture.
[b] Under construction.

With respect to its vertical integration, Gerdau purchased iron mines close to Açominas in Brazil in 2003. Its medium-term objective is to produce 80% of the iron ore used by its Brazilian plants. In 2008, it acquired 51% of Cleary Holdings, which has metallurgical and coking coal reserves (1 million tons) in Colombia. It also operates 39 scrap processing plants in various parts of the world, which supply its semi-integrated plants.

As regards products, flat-rolled products are manufactured only by SIDERPERU, where they represent around 20% of installed capacity, and by Gallatin Steel (United States), a strategic alliance with ArcelorMittal that Gerdau joined when it purchased Co-Steel in 2002. Co-Steel was a company specializing mainly in long-rolled products, so it can be concluded that Gerdau entered flat-rolled production by chance. Gerdau produces special long-rolled products in Brazil, Spain (Sidenor, acquired in 2006) and the United States (MacSteel, acquired in 2008). All its other plants are in the long-rolled carbon steel segment.

In terms of its equity structure, Gerdau usually seeks to acquire a controlling stake, although it takes a gradual approach to achieving this objective. Nevertheless, it is engaged in two strategic alliances: Gallatin Steel (United States) and Kalyani Gerdau Steel (India). The latter does not produce rolled products at present. Gerdau has a minority stake in a further three companies: Corporación Centroamericana del Acero (Guatemala), INCA (Dominican Republic) and Aceros Corsa (Mexico). Gerdau also owns Sidertul in Mexico.

Before the crisis broke, Gerdau had announced a number of projects to expand its production capacity in Brazil and other countries:

- Construction of a heavy plate mill (870,000 tons) and a medium-section rolling mill (650,000 tons), and expansion of the existing heavy-section rolling mill, all in Açominas (Brazil), which would require a total investment of US$ 835 million.
- Construction of a new semi-integrated plant (1 million tons), with a rolling mill for producing sections

(700,000 tons) in Mexico. The project, budgeted for US$ 400 million, was planned to come into operation in 2010. It would be managed by Estructurales Corsa, a joint operation between Gerdau and the controlling stakeholders of Aceros Corsa.

- Increase in SIDERPERU crude steel capacity from 450,000 tons to 1.5 million tons in 2011 and 3 million tons in 2013, at a cost of US$ 1.4 billion.
- Construction of a new semi-integrated plant in Argentina, with a capacity of 650,000 tons of crude steel and 450,000 tons of long-rolled carbon steel products, planned for completion in 2011. By the end of phase two in 2016, the capacity of the steelworks and rolling mill would be increased to 1.1 million tons, for an investment of US$ 524 million.
- Construction of a new steelworks in Tocancipá (Colombia) in 2009, which would increase installed capacity in that country from 510,000 tons to 760,000 tons.

Most of these projects and others not yet under way have been postponed. What is more, Gerdau reduced production by halting blast furnaces and suspending the manufacture of flat-rolled products in Peru. In the fourth quarter of 2009, Gerdau announced that it was resuming a number of projects, including the expansion of the heavy-section rolling mill from 540,000 tons to 700,000 tons (US$ 60 million) by 2011 and the installation of a heavy plate mill (1 million tons), budgeted for US$ 1 billion, which is scheduled to come into operation in late 2012, both in Açominas. It also decided to install a long-steel rolling mill (300,000 tons) for the production of reinforcing bars and special bars in Kalyani Gerdau Steel (India), at a cost of US$ 50 million.

Gerdau is the company that operates in the largest number of Latin American countries, which is explained partly by its specialization in long-rolled carbon steel products: this segment serves mainly the construction sector and a semi-integrated plant has a considerably smaller minimum optimal scale than an integrated coke plant. The company's growth was boosted strongly by its acquisitions both inside and outside Latin America. The current prospects for new purchases in the region are limited, given the extensive consolidation in the sector.[30] In this regard, Gerdau's future development path could take three possible directions:

- Diversification into flat-rolled products: the announced heavy plate mill in Açominas (Brazil) is Gerdau's first investment in this direction. As mentioned earlier, in both the United States and Peru, Gerdau entered flat-rolled product manufacturing only by acquiring companies specializing in long-rolled products that also made flat products.
- Consolidation of its existing positions in Latin America: previously announced investments for the construction of new plants in Argentina and Mexico, as well as the large expansion in Peru —which were later postponed— illustrate this strategic goal.
- Wider geographic distribution of its operations: increased investments outside the Americas, a process that has so far been fairly timid (Spain and India) and is spearheaded by special long-rolled products.

2. Industrias Campos Hermanos and Grupo SIMEC: entry into the United States market and a change of strategy

Industrias Campos Hermanos (ICH) was founded in Mexico in 1934 for the manufacture of hand tools. In the 1960s, it began a process of backward vertical integration and shifted to producing rolled products. In 1993 it purchased the large-diameter welded tube plant Procarsa in a privatization tender. In 1997, it acquired Compañía Mexicana de Perfiles y Tubos, which manufactures welded tubes and tubular sections. In 1999, it took control of Siderúrgica del Golfo.

In 2001, ICH acquired 82.5% of the SIMEC Group, which owned two semi-integrated plants specializing in the production of long-rolled carbon steel products: Compañía Siderúrgica de Guadalajara (CSG), located in the Mexican state of Jalisco, and Compañía Siderúrgica de California (CSC), in the state of Baja California. ICH currently controls 76.5% of SIMEC, which accounts for 80% of ICH net sales of US$ 2.9 billion. Both companies combined produce 3.2 million tons of crude steel (in 2008), which would be sufficient to rank ICH as the seventieth largest company in the sector. Both companies operate solely in the iron and steel industry.

[30] According to Morales (2007), in Latin America in 2006 the combined share of the three biggest producers in their respective markets was: 56% for reinforcing bars; 67% for wire rod; 61% for merchant bars and 87% for sections. The combined share of the five biggest producers was: 75% for reinforcing bars; 83% for wire rod; 71% for merchant bars and 100% for sections.

Until 2001, ICH/SIMEC specialized in long-rolled carbon steel products and welded tube production. Since then, it has been engaged in a dual process of diversification into special long steel products and into other countries.

- In 2004, it acquired Atlax and Metamex, both located in Mexico, which belonged to the Spanish iron and steel company Sidenor. These two units specialized in the production of special long-rolled products.
- In 2005, it entered the United States industry by purchasing Republic Engineered Products. SIMEC purchased a 50.2% stake and ICH, the remaining 49.8%. At that time, Republic Engineered Products was one of the leaders in the United States special long-rolled products segment. It owned two plants and three rolling mills in the United States and a rolling mill in Canada. The nominal capacity of Republic Engineered Products was 2.1 million tons, at a time when that of SIMEC was only 1.2 million tons. Consequently, the transaction had a great impact on SIMEC corporate strategy (by virtually tripling its size), on the location of its assets (start of its internationalization strategy) and on its production specialization (special long-rolled products increased from one-third to two-thirds of its production).
- In 2008, it acquired Aceros DM and Aceros San Luis (in Grupo San), two Mexican long carbon-steel producers (600,000 tons), for US$ 850 million. This reduced the intensity of its internationalization as well as the relative importance of the special long-rolled products segment.

In any case, 73% of the company's total sales in 2008 came from special long-rolled products, 22% from long-rolled carbon steel products and 5% from welded tubes. Its long-rolled carbon steel products and welded tubes are manufactured only in Mexico.

Currently ICH/SIMEC controls 16 production units, including five semi-integrated plants in Mexico and one semi-integrated plant and an integrated coke plant in the United States (see table III.14). It has an installed capacity of 4.5 million tons of crude steel (3.3 million in semi-integrated plants and 1.2 million tons in an integrated coke plant), plus 3.8 million tons of rolled products.

Table III.14
INTERNATIONALIZATION OF INDUSTRIAS CAMPOS HERMANOS AND GRUPO SIMEC TYPE OF STRATEGY, MARKET SEGMENT AND LOCATION

Type of strategy	ICH/SIMEC Special long steels	
	Latin America	Other regions
Mining		
Total vertical integration		
Vertical integration of semifinished products		
Integrated plant for rolled products		United States
Integrated plant for semifinished products		
Semi-integrated plant for rolled products		United States
Semi-integrated plant for semifinished products		
Rolling		Canada, United States
Processing		

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from ICH/SIMEC.

As a result of its acquisitions in the United States, ICH/SIMEC is a highly internationalized company within the NAFTA countries. It produces 58% of its crude steel in the United States and the remainder in Mexico. In rolled products, the respective percentages are 49% and 51%. As regards sales to end customers, 58% goes to the United States, followed by Mexico (36.5%), Canada (1.5%), other Latin American countries (1.0%) and the rest of the world (3%).

In 2007, ICH/SIMEC announced the construction of a new semi-integrated plant with a capacity of 500,000 tons in the Mexican state of Tamaulipas. The plant, budgeted for US$ 500 million, will specialize in special long-rolled products.

The special long-rolled products segment is highly dependent on sales to the automotive chain in general and to manufacturers of automotive parts in particular. Owing to the steep fall in automobile production in North America,

plants specializing in this segment are those that suffered the largest amount of downtime in 2009: 30% in the case of the Mexican plants and 55% in the United States plants.[31] The plants acquired from Grupo San, specializing in long-rolled carbon steel products (particularly reinforcing bars), were those that had the least amount of downtime (15%). This makes it reasonable to postpone new investments. Furthermore, if the projects were to materialize, they would perhaps focus on long-rolled carbon steel products.

In short, ICH/SIMEC began its activities in the long-rolled carbon steel product segment. In the 2000s, it pursued its diversification into special long steel products, a strategy that was reinforced by internationalization (in the United States and Canada), leaving it highly exposed to the automotive components industry. Its latest investments indicate a certain return to its roots, by refocusing on the Mexican long carbon-steel industry.

3. Votorantim Siderurgia: strong growth supported by a large group

The Votorantim group is a Brazilian conglomerate with total sales of US$ 15 billion, of which Votorantim Siderurgia accounts for only 1.3 billion. Foreign operations (Argentina and Colombia) are responsible for 28% of Votorantim Siderurgia's sales. In Brazil, the company owns 100% of Siderúrgica Barra Mansa (long-rolled carbon steel products), in addition to 5.8% of the total capital of Usiminas (flat-rolled carbon steel products) and 13% of Usiminas' capital with voting rights. Siderúrgica Barra Mansa represents an estimated 43% of Votorantim Siderurgia's income, whereas the stake in Usiminas represents 29%.

The family-controlled Votorantim group began its activities in the textile industry in the late 1910s. It started to diversify in the 1930s and founded Siderúrgica Barra Mansa in the state of Río de Janeiro. In the early 2000s, Votorantim would have been characterized as an industrial conglomerate with a high degree of vertical integration and no major investments in other countries. During the 2000s, it commenced its internationalization strategy in the cement sector, in which it was already the leader in Brazil. In 2007, following several decades during which the iron and steel industry gradually lost importance within the group, Votorantim resumed investments in the sector with a number of acquisitions and projects for new plants:

- In 2007, it acquired 52% of the Colombian iron and steel company Aceros Paz del Río (APR) for US$ 489 million. APR is an integrated coke plant with a capacity of 350,000 tons that specializes in long-rolled carbon steel products, with 20% flat-rolled products. It is a case of total vertical integration, since it owns its own iron, coal and limestone mines (see table III.15). In 2008, Votorantim Siderurgia increased its stake in the total capital of APR to 72.6%.

Table III.15
INTERNATIONALIZATION OF VOTORANTIM SIDERURGIA TYPE OF STRATEGY, MARKET SEGMENT AND LOCATION

Type of strategy	Votorantim Siderurgia			
	Long carbon steels		Flat carbon steels	
	Latin America	Other regions	Latin America	Other regions
Mining				
Total vertical integration	Colombia		Colombia [a]	
Vertical integration of semifinished products				
Integrated plant for rolled products				
Integrated plant for semifinished products				
Semi-integrated plant for rolled products	Argentina			
Semi-integrated plant for semifinished products				
Rolling				
Processing				

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from Votorantim Siderurgia.
[a] Under construction.

[31] According to Solarz (2009), the annual production of light vehicles in North America and Mexico fell from 15.1 million units in 2007 to 12.8 million in 2008. The forecast for 2009 is a further drop to 7.5 million units, with a partial recovery to 10.1 million units in 2010 and to 11.8 million units in 2011 (see chapter II).

- In late 2007, Votorantim Siderurgia negotiated the purchase of 27% of the capital of the Argentine company Aceros de Bragado (AcerBrag), which owns a semi-integrated plant with a capacity of 250,000 tons. It is Argentina's second biggest company specializing in the production of long-rolled carbon steel products, after Acindar (a subsidiary of ArcelorMittal). In mid-2008, Votorantim Siderurgia increased its shareholding in AcerBrag to 53%.
- In 2009, it opened a new semi-integrated plant specializing in long-rolled carbon steel products, in Resende (state of Río de Janeiro), 40 kilometres away from its first plant. The nominal capacity of the new unit is 1.05 million tons of crude steel and 650,000 tons of rolled products (the capacity of the former plant is 750,000 tons). The project cost approximately US$ 600 million.

Furthermore, in 2008, it announced its intention to form a strategic alliance with the Colombian company Acesco (a rolling and processing plant for flat-rolled products). The aim of this alliance, called Siderúrgica del Río Grande de la Magdalena (Sidermag), is to install a plant capable of producing 1.4 million tons of hot-rolled coils, with a technology never before used in South America: thin slab casting. The estimated investment is US$ 1.5 billion, with start-up planned for 2012. The project was suspended owing to the crisis, but the partners are expected to announce their decision whether (or not) to resume in 2010.

The Colombian new plant is designed to meet a shortfall in domestic flat-rolled steel production, as Colombia currently imports an annual 1.2 million tons of flat-rolled products. In fact, APR decided to cease its small-scale, uncompetitive production of flat-rolled carbon steel products (70,000 tons) and to increase its production of long-rolled carbon steel products to 430,000 tons in 2010 and to 700,000 tons in the medium term. In order to continue serving local customers with flat-rolled carbon steel products, APR became a sales representative for Usiminas in Colombia.[32]

In November 2009, as evidence that it intends to maintain its accelerated pace of growth, Votorantim Siderurgia announced the formation of Siderúrgica de Três Lagoas (Sitrel), in the Brazilian state of Mato Grosso do Sul, in a 50-50 strategic alliance with the controlling shareholder of Grendene, one of the largest footwear producers in Brazil. Phase one will be to build a rolling mill for long-rolled carbon steel products, which will use billets produced in the Resende semi-integrated plant. The mill is planned to come into operation in 2012.

In a short time, Votorantim Siderurgia acquired two plants abroad and opened the Resende plant in spite of the crisis. Even though it did not continue with the new plant for flat-rolled products in Colombia, it still has investment projects planned for the future. In its 2008 annual report, the company stated that, with the Resende unit and the planned expansions of Acerías Paz del Río and AcerBrag, it expects to increase its capacity to 3 million tons by 2012 (Votorantim Siderurgia, 2009, page 57). Votorantim Siderurgia's membership of a large group will enable it to implement its ambitious investment plans and possibly to become a major player in the Latin American iron and steel industry over the coming decade.

4. Ternium: an acquisitions strategy resulting in a high degree of internationalization

Ternium is the flat- and long-rolled products division of the Italo-Argentine Techint Group. It produces 6.4 million tons of crude steel and has sales worth US$ 8.5 million. The Techint Group is the world's twenty-seventh largest producer, with 10.4 million tons, and has sales of US$ 26 billion.[33] Ternium was formed in 2005 to pool the assets of three Techint subsidiaries specialized in rolled products: Siderar in Argentina, Sidor in the Bolivarian Republic of Venezuela and Hylsamex in Mexico, whose development path is described below.

[32] According to Votorantim Siderurgia, there were few applications for APR's flat-rolled carbon steel products. In turn, Sidermag could serve more sophisticated markets, such as appliances, automotive parts, tubes, construction engineering, and machinery and equipment, even though it could not supply the sector for external automobile parts (Ribeiro, 2008).

[33] The Techint Group was founded in Argentina in 1945. In its first 10 years of operation, it concentrated its activities on developing civil engineering projects. In the 1950s, it began to diversify and switched to making metallic structures, equipment and heavy parts, in addition to taking shareholdings in steel tube-producing plants in Argentina and Mexico. By adding a rolling mill in 1970, it entered the flat-rolled carbon steel product segment. In the 1990s, it began to invest in oil and natural gas prospecting and in health service provision. Its chief divisions are Ternium, Tenaris (a steel tube producer discussed in Part D, section 7), Techint E&C (engineering and construction), Tenova (equipment manufacture), Tecpetrol (oil and natural gas) and Humanitas (health service provision).

Siderar's origin dates from 1970, when the Techint Group put into operation a cold-strip mill (*Propulsora Siderúrgica)* in Argentina. In 1992, the group headed the consortium that purchased the Argentine iron and steel company Somisa in a privatization tender, changing its name to Aceros Paraná. Somisa owned an integrated coke plant specializing mainly in flat-rolled carbon steel products. For the Technint Group, this acquisition represented backward vertical integration. After the privatization, it was decided to decommission the billet production line (700,000 tons, one-third of its installed capacity), concentrating the group wholly on flat-rolled carbon steel products. In 1993, Aceros Paraná merged with Propulsora and with three Techint Group service centres (Bernal, Sidercrom and Aceros Revestidos), changing its name to Siderar. In 1997, Siderar expanded its production of coated flat carbon steels with the acquisition of Comesi (Argentina).

The Techint Group entered the Bolivarian Republic of Venezuela in 1997 as part of the consortium Amazônia, which won the tender for privatizing Siderurgia del Orinoco (Sidor). The consortium, which comprised Siderar (Argentina), Usiminas (Brazil), Sivensa (Bolivarian Republic of Venezuela), Tamsa and Hylsamex (Mexico), acquired 70% of Sidor's shares and the Government retained the remaining 30%. The companies controlled by Techint (Siderar and Tamsa) owned 40% of the consortium. Sidor owned an integrated direct-reduction plant (3.6 million tons of crude steel). The rolling mill produced flat-rolled carbon steel products (2.4 million tons) and long-rolled carbon steel products (1.2 million tons). The Sidor financial restructuring process was completed in 2003, when the Government's stake increased from 30% to 40.3%.

In 2005, the Techint Group purchased the stake of Hylsamex in Amazônia for US$ 107 million, after which it acquired Hylsamex itself for US$ 2.2 billion. Hylsamex operated three iron and steel plants in Mexico: Monterrey (an integrated direct-reduction plant for the manufacture of flat-rolled carbon steel products), Puebla (an integrated direct-reduction plant specializing in the manufacture of long-rolled carbon steel products) and Apodaca (a semi-integrated plant also making long-rolled carbon steel products). All the iron ore used in the group's Mexican plants came from its own mines in the states of Colima and Michoacán.

In 2007, Ternium acquired Grupo IMSA (Mexico), which only owned rolling mills in its home country, the United States and Guatemala, with the following installed capacity: hot-rolled coils (2.2 million tons), cold-rolled coils (1.8 million tons) and galvanized sheets (1.7 million tons). Within the year it disposed of some of these assets as it considered them to be non-strategic. They included Steelscape, comprising three rolling mills located in the United States.

In April 2008, the Government of the Bolivarian Republic of Venezuela announced its intention to nationalize Sidor and, in July, took operational control of the assets. In May 2009, the parties reached an agreement according to which Ternium would be paid US$ 1.97 billion in compensation for its 59.7% shareholding in Sidor.

Following an intense process of equity transactions (acquisitions, disposal of non-strategic assets and nationalization of its operations in the Bolivarian Republic of Venezuela), Ternium's production structure can be summarized as follows (see table III.16):

- Argentina: integrated coke plant with a capacity of 2.9 million tons of crude steel and 2.8 million tons of flat-rolled carbon steel products;
- Mexico: integrated direct-reduction and semi-integrated plants with a combined capacity of 3.5 million tons (2 million tons of flat steel and 1.5 million tons of long steel products) and 6.8 million tons of rolled products (5.7 million tons of flat-rolled carbon steel products and 1.1 million tons of long-rolled carbon steel products);
- United States: galvanizing plant (240,000 tons);
- Guatemala: galvanizing plant (125,000 tons).

In 2008, 61% of Ternium's sales were to North America, 39% to South and Central America and only 1% to other countries. It can be concluded, therefore, that it is a company with strong biregional internationalization.

Prior to the economic crisis, Ternium had formally announced two large-scale projects, one in Mexico and the other in Argentina. The Mexican project was scheduled for implementation in two phases; phase one will be to install a semi-integrated plant to make 2 million tons of hot-rolled coils, for an estimated investment of US$ 2.7 billion. It is planned to come into operation in 2012. Under phase two, budgeted for US$ 1.5 billion, there are plans to build a cold-strip mill (1 million tons) and a galvanizing plant (300,000 tons). Construction is due to start in late 2010 or early 2011.

In Argentina the plan was to install a continuous slab-casting machine (2.5 million tons), which would increase capacity from 2.8 tons to 4 million tons, 1 million tons of which would be exported to Mexican plants. This project was formally suspended. There were rumours that Ternium would build an integrated plant in the state of Río de Janeiro (Brazil) but this has not been confirmed. The impact of the crisis was therefore more severe in the company's home country than abroad.

Table III.16
INTERNATIONALIZATION OF TERNIUM TYPE OF STRATEGY, MARKET SEGMENT AND LOCATION

Type of strategy	Ternium			
	Flat carbon steels		Long carbon steels	
	Latin America	Other regions	Latin America	Other regions
Mining				
Total vertical integration	Mexico		Mexico	
Vertical integration of semifinished products				
Integrated plant for rolled products				
Integrated plant for semifinished products				
Semi-integrated plant for rolled products			Mexico	
Semi-integrated plant for semifinished products				
Rolling	Guatemala	United States		
Processing				

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information supplied by Ternium.

In any case, Ternium's strategy indicates its intention to step up its activities in flat-rolled carbon steel products in Latin America. Despite the nationalization of Sidor's assets, Ternium is still a company with a high degree of internationalization if one takes into account its specialization in flat-rolled products. This becomes clear if one compares it with Usiminas and CSN, whose development path is discussed in the following two sections.

5. Usiminas: in search of vertical integration in Brazil

Usiminas produces 8 million tons of crude steel in its two integrated coke plants in Brazil (Ipatinga and Cubatão), which positions it thirty-eighth in the world ranking. It has sales of US$ 11.764 billion, of which 91% is from the iron and steel division (including the distribution of iron and steel products). The other divisions are capital goods (7%) and iron-ore mining (2%). The latter is a new activity for Usiminas, which it instigated in 2008 when it purchased the mining company J. Mendes.

Usiminas was founded in 1956 in the form of a strategic alliance between Brazilian (predominantly state) capital, with a stake of 60%, and the consortium Nippon Usiminas, headed by Nippon Steel, with a stake of 40%. In 1991 it was privatized and Nippon Steel currently controls 25% of the company's capital with voting rights.

The ties between Nippon Steel and Usiminas influenced the latter's organizational culture and internationalization strategy. This means that Usiminas has preferred strategic alliances to direct acquisitions, either to sell technology or to dilute risks.

Usiminas started by acquiring stakes in former state-owned enterprises. In Brazil, it took control of Cosipa, which was privatized in 1993. To start with, Usiminas controlled 49.8% of Cosipa's capital with voting rights but, in practice, it operated as a majority shareholder. As time went by, it gradually increased its shareholding until it held virtually all the capital of Cosipa in 2005.

Usiminas has very modest production internationalization. Its only two operations outside Brazil have been minority stakes in two Techint Group-led consortia. In fact, Usiminas' chief motives for foreign investment have been to sell technical assistance contracts and to obtain strategic information concerning the markets involved. In 1992 it took a 6.25% stake in the consortium that acquired Somisa (Argentina). In addition to the Techint Group, Vale and the Chilean iron and steel company CAP also invested in the consortium. As a result of the merger that culminated in the formation of Siderar, the foreign investors' stake shrank from 34% to 29%. This meant a 5.3% reduction in Usiminas' stake.

Usiminas' second foreign investment was in 1997, when it joined the consortium that acquired Sidor (Bolivarian Republic of Venezuela), which originally comprised three Techint Group companies (40%), the Mexican company Hylsamex (30%), the Venezuelan company Sivensa

(20%) and Usiminas (10%). Subsequently, the latter's stake was increased to 16.6%, by means of an additional contribution of capital.

When Ternium was formed, Usiminas incorporated its existing shares in Siderar and Sidor into the new company and invested a further US$ 100 million, giving it a 14.25% stake in Ternium. Since then, Usiminas' international investments have been limited to its stake in Ternium, which is itself a highly internationalized company with production in the United States, Guatemala and Mexico, in addition to Argentina (see table III.16).[34]

In the 2000s, Usiminas declared its interest in acquiring rolling mills abroad, mainly in the United States and Europe. In Europe, it also considered building a heavy plate mill in Spain, in partnership with the Spanish company Ros Casares (which acts as a distributor). The feasibility studies for the project were suspended in 2006. Characteristically, this project would be based on a strategic alliance, reproducing Nippon Steel's traditional strategy.

With respect to investments in the Brazilian iron and steel industry, Usiminas had announced a number of projects prior to the crisis, in particular:

- A new integrated slab plant (5 million tons), in the state of Minas Gerais, at a cost of US$ 6 billion;
- An increase in iron-ore mining (from the current 6 million tons to 29 million tons, including the construction of a pellet plant), with investments worth US$ 3.5 billion;
- A new hot-strip mill in the Cubatão plant (2.3 million tons), budgeted for US$ 1.4 billion;
- Unigal 2: a hot-dip galvanizing plant (550,000 tons), in partnership with Nippon Steel, to be installed in the Ipatinga plant at an estimated cost of US$ 580 million;
- Expansion of the heavy plate mill (550,000 tons) in the Ipatinga plant, in addition to the adoption of accelerated cooling technology for producing higher value-added rolled products, with investments worth US$ 500 million.

Owing to the crisis, the largest project —the construction of a new integrated plant— was first delayed and later formally suspended. This investment focused on the manufacture of slabs: 60% for export and 40% for rolling and sale on the domestic market. With respect to iron-ore mining, US$ 100 million will be earmarked for expanding capacity to 12 million tons in 2010. The other projects are active. This confirms that Usiminas has shifted its priority to optimizing the current production structure instead of building a new plant. This would appear to be the predominant option throughout Latin America's iron and steel industry.

6. Companhia Siderúrgica Nacional: backward integration in Brazil and forward integration in the United States and Europe

Companhia Siderúrgica Nacional (CSN) produces 5 million tons of crude steel (positioning it fifty-seventh in the world ranking) and has a net income of US$ 7.2 billion: 75% in the iron and steel division, 15% in the mining division and 10% in the remaining divisions.

CSN came into operation in the 1940s as a state-owned enterprise with a fairly diversified line of iron and steel products.[35] In 1993 it was privatized and, since 1995, when it decommissioned the rail rolling mill, produces only flat-rolled carbon steel products in the iron and steel sector. It has a high degree of vertical integration, which extends from iron-ore and coal mining as far as downstream activities.

CSN internationalization is limited to two operating rolling mills and a minority stake in a coal mine

[34] As Usiminas has not divulged how much its minority stake in Ternium represents in terms of sales or profits, the market value of the Ternium shares owned by Usiminas in December 2008 was compared with the market value of Usiminas itself at the same point in time. The result was 4.3%, which confirms the scant importance of internationalization for Usiminas.

[35] CSN pioneered the production of flat-rolled products and the use of coke in Brazil's iron and steel industry. Construction of its plant, located in Volta Redonda (state of Río de Janeiro), commenced in 1942. The blast furnaces and steelworks came into operation in 1946, rail and hot- and cold-strip rolling mills in 1947 and, finally, a coated-product line (galvanized sheets and tin plate) in 1948 (De Paula, 1998).

(see table III.17). Its first transaction was to purchase the assets of Heartland Steel (United States) for US$ 69 million in 2001, to which it added an investment of US$ 120 million in the working capital.[36] The company was rechristened CSN LLC.[37]

According to Silva (2002, page 55), the main motives for this investment were to reduce the cost of borrowing and to sidestep the steel import restrictions that were beginning to be imposed in the United States in 1999. Clearly the objective was to export slabs, a semifinished product with no history of protectionist measures, and to use its subsidiary to incorporate higher value-added at a later stage. CSN should have acquired a hot-strip mill or a heavy plate mill for this purpose. By purchasing a cold-strip mill and galvanizing plant, it was forced to subcontract the business of processing slabs into hot-rolled coils to a United States iron and steel company. For this reason, when it purchased the assets of Heartland Steel, CSN declared its interest in acquiring a hot-strip mill in the United States.

Table III.17
INTERNATIONALIZATION OF CSN TYPE OF STRATEGY, MARKET SEGMENT AND LOCATION

Type of strategy	CSN Flat carbon steels	
	Latin America	Other regions
Mining		Mozambique [a], South Africa [a]
Total vertical integration		
Vertical integration of semifinished products		
Integrated plant for rolled products		
Integrated plant for semifinished products		
Semi-integrated plant for rolled products		
Semi-integrated plant for semifinished products		
Rolling		Portugal, United States
Processing		

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from Companhia Siderúrgica Nacional (CSN).
[a] Minority stake or joint venture.

The second CSN foreign transaction was the purchase in 2003 of 50% of Lusosider (Portugal), which owned a cold-strip mill (500,000 tons), a hot-dip galvanizing plant (300,000 tons) and a tinning line (80,000 tons). In 2006, CSN purchased the stake of its partner (Corus), giving it 100% control of Lusosider. As there are no protectionist restrictions on exports of hot-rolled coils to Portugal, production could be integrated more efficiently with operations in Brazil.

In both the United States and Portugal, the objective of CSN internationalization was to access the local market by linking the operations in Brazil. The Volta Redonda plant therefore supplies slabs to the United States and hot-rolled coils to Portugal. CSN foreign direct investment facilitates better intelligence concerning the market served, as well as better logistics (by adopting just-in-time practices).

Even though CSN has repeatedly announced plans to expand Lusosider, they never came to fruition.[38] On the contrary, the Portuguese plant halted the tinning line in January 2008 owing to unfavourable market conditions and to its small scale of operation. In December 2008, the other facilities were practically halted and half the workforce was laid off. Lusosider started to resume its activities en March 2009, and by the final quarter of 2009 its situation had virtually returned to normal.

Internationalization is of little importance to CSN at present. Lusosider and CSN LLC were each responsible for 5% of CSN total sales in 2008 (CSN, 2009). Following a few failed attempts to acquire foreign iron and steel companies, CSN has shifted its current priority to investing in Brazil, particularly to expand iron-ore mining.[39] It plans to expand the capacity of the Casa de Pedra mine (a wholly-owned subsidiary) from the current 22 million to 70 million tons in 2013, with investments of US$ 1.5 billion. In the case of Namisa, a strategic alliance between CSN and Asian iron and steel companies, holding a stake of 60% and 40% respectively, US$ 2 billion will be required to expand capacity from 7 million to 33 million tons, including two pellet plants. Furthermore, the increase in iron-ore export capacity in the port of Itaguaí, from 30 million to 100 million tons, is

[36] This plant came into operation in 2000, at a cost of US$ 285 million.

[37] Heartland Steel's main assets were a pickling line for hot-rolled coils (1 million tons), a cold-strip mill (800,000 tons) and a galvanizing line (300,000 tons).

[38] In mid-2004, its intention was to build new re-rolling lines, without the plant ceasing to specialize in cold-rolled coils and galvanized sheets. With a capacity of 500,000 tons, the project was costed at US$ 350 million. In 2007, CSN was considering investing US$ 260 million to expand Lusosider's capacity to 1 million tons. The plan included adding a hot-strip mill (3 million tons) to the plant, at a cost of US$ 1.04 billion.

[39] The foreign companies included Wheeling-Pittsburgh (United States) and Corus (United Kingdom), which in the end was acquired by the Indian company Tata Steel.

costed at US$ 1 billion. CSN aims to become the world's fourth biggest iron exporter by 2013.

In 2009, CSN purchased 16.3% of the Australian company Riversdale Mining, a coal producer with assets in South Africa and Mozambique, for US$ 161 million (Tata Steel owns 19.4% of the shares).

Even though its mining projects are its biggest priority, CSN is investing in a cement plant (US$ 360 million), which came into operation in 2009 and a semi-integrated plant for long-rolled products (US$ 354 million, which is scheduled to start up in 2010).[40] In the case of cement, the objective is to take advantage of opportunities for joint production, whereas the Volta Redonda plant will be responsible for the production of long-rolled products, to exploit operational synergies.

Among the projects start-ups that were postponed on account of the economic crisis, CSN was considering building a third blast furnace in the Volta Redonda plant, with a capacity of 1.5 million tons, as well as two integrated coke plants, each producing 4.5 million tons of crude steel, in the states of Minas Gerais and Río de Janeiro. In the cases of the third blast furnace and the new plant in the state of Río de Janeiro, the purpose is to produce slabs. As CSN has no desire to return to being a big exporter of slabs, the projects were for the acquisition or construction of rolling mills abroad. CSN future foreign investments would therefore tend to confirm the model of rolling (which, as mentioned earlier, has been adopted by many iron and steel companies specialized in flat-rolled products) and the acquisition of assets in mining operations.

In December 2009, CSN made a surprise announcement of its public bid to purchase CIMPOR, Portugal's biggest cement producer, in a transaction estimated to be worth US$ 8.1 billion, a figure that includes debts of US$ 2.6 billion assumed by CSN. With a capacity of 36 million tons, CIMPOR is the market leader in the Cape Verde Islands, Mozambique and Portugal. It occupies important market positions in Brazil (where it is the third largest company), China, Egypt, India, Morocco, Peru, South Africa, Spain, Tunisia and Turkey. CIMPOR owns six cement factories in Brazil, with a capacity of 6.4 million tons (18% of the company's total). If this operation were to materialize, it would significantly increase the internationalization and diversification of CSN production. According to Aguiar and Grimaldi (2009), cement would then represent 19% of CSN operating income in 2010, while iron and steel would represent 59% and iron-ore mining, 19%.

7. Tenaris: specialization in tubes and wide geographic distribution to serve the oil industry

Tenaris is the tubular products division of the Techint Group (the world's twenty-seventh largest iron and steel producer). Tenaris produces 3.1 million tons of crude steel, 3 million tons of seamless tubes and 1.5 million tons of welded tubes. Its net income is US$ 12.1 billion.

When it was set up in 2001, Tenaris grouped together all the tube-producing companies in the Techint Group.[41] The first was Siderca (Argentina), which, in a gradual process of backward vertical integration, started operating a rolling mill for seamless tubes in 1954, a steelworks in 1962 and its direct-reduction module in 1976. Its production capacity has increased over time, particularly during the second half of the 1980s, when a US$ 646 million investment programme enabled it to expand its capacity from 370,000 tons to 820,000 tons. Independently, in 1986, the Techint Group acquired a controlling stake in Siat, an Argentine welded tube plant.

In 1993, Siderca acquired a considerable shareholding in the Mexican company Tamsa, which owned an integrated direct-reduction plant.[42] Not only does this acquisition represent the start of its internationalization process, it also introduced production specialization between the two seamless tube companies. Siderca specialized in the production of smaller-diameter seamless tubes using more complex production processes, while Tamsa specialized in the manufacture of larger-diameter seamless tubes using simpler and speedier production processes.

[40] CSN put its cement factory into operation in May 2009. In the first year of operation, it will produce an estimated 300,000 tons. This volume is expected to increase gradually to 1 million tons in 2010 and 2.5 million in 2011.

[41] In 2002, the group increased its shareholding in its tube-producing subsidiaries as follows: Siderca (from 71.2% to 99.1%), Dalmine (from 47.2% to 88.4%) and Tamsa (from 50.5% to 94.5%).

[42] Tamsa was founded in 1952 and began operations in 1954; the Techint Group built the plant. Until the early 1990s, Techint owned barely 5% of Tamsa.

In 1995, Techint took control of the Italian company Dalmine.[43] This acquisition also favoured internal production specialization, as the Italian semi-integrated plant was targeted more at production of the sort of tubes used by the automotive and petrochemical industries.

Between 1998 and 2005, the Techint Group acquired several smaller companies, which increased the intensity and geographic distribution of internationalization in its tube businesses:

- In 1998, Tamsa purchased 70% of the seamless tube plant belonging to Sidor, with the remaining 30% being acquired by the state-owned enterprise Corporación Venezolana de Guayana (CVG). Under the new administration, the small plant (50,000 tons) was rechristened Tavsa.
- In 1999, Siderca took a 39% stake in the capital of the welded tube plant Confab (Brazil). In 1993, Siat and Confab had signed a cross-shareholding agreement, in which each took a 30% stake in the other company. Techint currently controls 40% of Confab's total capital and 99% of the capital with voting rights.
- In 2000, Siderca and the Japanese iron and steel company NKK formed a joint venture called NKKTubes, with a respective stake of 51% and 49%. This is a seamless tube plant (260,000 tons), and was the very first instance of foreign direct investment by a Latin American iron and steel company in Asia.
- Also in 2000, Siderca began to operate a seamless tube plant in Canada belonging to Algoma Steel. In 2004, Siderca acquired those assets.[44]
- In 2004, Tenaris (50.2%) and Sidor (49.8%) announced their acquisition of the direct-reduction plant Posven for US$ 120 million, which had been out of operation since 2001. A new company was formed to control the plant, called Materiales Siderúrgicos Masisa.
- Also in 2004, Tenaris acquired the Romanian seamless tube producer Silcotub, in addition to a minority stake in several other smaller Romanian companies. Silcotub specializes in small-diameter seamless tubes. The following year, Tenaris purchased an electric steelworks (400,000 tons), also in Romania, to supply Silcotub.
- In 2005, Siat and Siderar acquired the welded tube plants of Acindar (Argentine subsidiary of ArcelorMittal), with a combined capacity of 211,000 tons.

More important still was the purchase in 2006 of the United States company Maverick Tube for US$ 3.18 billion. Maverick Tube owned welded tube plants (in particular for the oil and natural gas industry) in Canada, Colombia and the United States, with an installed capacity of 1.8 million tons, although it had no steelworks.[45] As a result of this acquisition, Tenaris' installed capacity increased to 3.4 million tons of seamless tubes and 2.7 million tons of welded tubes. Prior to that transaction, its welded tube operations were confined to Argentina (Siat) and Brazil (Confab). According to Tenaris, one advantage of purchasing Maverick was complementary production, which enabled it to broaden its product range.

In 2007, Tenaris paid US$ 2.2 billion to buy Hydril (United States), which specialized in products such as drill-pipe threads, sealing for pipes, corrosion barriers and pressure-control valves. The strategic objectives of this acquisition were to complement its product line and to increase its market presence in the Gulf of Mexico. The following year, Tenaris sold off the pressure-control valve business to General Electric (United States), for US$ 1.1 billion. This means that both Tenaris and Ternium ended up disposing of some of the activities in their business portfolios that they had inherited through acquisitions but considered to be non-strategic.

In 2009, Tenaris purchased the company Seamless Pipe Indonesia Jaya (SPIJ), which specializes in processing (heat treatment and premium connections) tubular products for the oil industry, with a capacity of 120,000 tons. Tenaris paid US$ 72.5 million to buy 77.5% of the company. Its acquisitions of Hydril and SPIJ reveal that Tenaris is seeking to broaden its activities in the market of premium connections for the oil and natural gas industry. The company produces tube fittings, both in tube-manufacturing plants (in Argentina, Brazil, Mexico, Romania and the United States) and in stand-alone plants (in Canada, China, Indonesia, Nigeria, the United Kingdom and the United States).[46] The latter were less costly, which facilitates wider geographic distribution. For example, when the new plant in China came into operation in 2006 with a capacity of 40,000 tons, the budget was only US$ 25 million (see table III.18).

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[43] Dalmine was founded by the German company Mannesmann in 1906 under the name Società Anonima Tubi Mannesmann. In 1995, the Italian Government put Dalmine up for sale. In this privatization process, 84% of Dalmine's shares were sold and Techint became the biggest shareholder when it bought 35%.

[44] The plant was built in the 1950s by the German company Mannesmann and leased by Algoma Steel in 1971. Two years later, Algoma acquired the factory. After closing in 1999, the plant did not resume operations until 2000, under a leasing agreement. This was the second time that a plant originally built by Mannesmann was later acquired by Techint.

[45] Maverick was founded in 1978 and grew exponentially during the 2000s. In 2000, it merged with Canadian tube manufacturer Prudential Steel and acquired five tube plants from LTV Tube (United States) in 2002, and TuboCaribe (Colombia) in 2005. It also sold its tubular-section activities in 2005 and closed the mechanical tube plant in 2006.

[46] In Africa, in addition to factories in Nigeria, Tenaris owns a service centre in Alexandria (Egypt) and plans to open another service centre in the Misurata Free Zone (Libya) in 2010.

Table III.18
INTERNATIONALIZATION OF TENARIS TYPE OF STRATEGY, MARKET SEGMENT AND LOCATION

Type of strategy	Tenaris					
	Carbon steel seamless tubes		Carbon steel welded tubes		Processing and tube fittings	
	Latin America	Other regions	Latin America	Other regions	Latin America	Other regions
Mining						
Total vertical integration						
Vertical integration of semifinished products						
Integrated plant for rolled products	Argentina, Mexico					
Integrated plant for semifinished products						
Semi-integrated plant for rolled products		Italy, Romania				
Semi-integrated plant for semifinished products						
Rolling		Canada, Japan	Argentina, Brazil, Colombia	Canada, United States		
Processing						Canada, China, Indonesia, Italy, Nigeria, United Kingdom, United States

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from Tenaris.

The geographical distribution of Tenaris sales in 2008 was as follows: North America (40%), South America (24%), Europe (15%), the Middle East and Africa (15%) and Asia and Oceania (6%). With respect to production (based on the number of employees in each country), 28% is concentrated in Argentina. The remainder is distributed among other Latin American countries (25%), the United States and Canada (19%), Europe (17%), Asia (3%) and countries which, separately, account for fewer than 700 jobs (8%).

With a one year lag after Ternium, Tenaris also suffered setbacks in its investments in the Bolivarian Republic of Venezuela, owing to the Government of the Bolivarian Republic of Venezuela's decision to nationalize many of the activities in the mining/metallurgy chain. This affected the following Tenaris investments: the Tavsa seamless tube plant (with a 70% stake) and the direct-reduction modules of Matesi (a 50.2% stake) and Comsigua (a 6.9% stake). In all three cases, operational control has already been transferred to the Government of the Bolivarian Republic of Venezuela, but no financial compensation has yet been forthcoming.

In 2008, Tenaris announced the construction of a new integrated direct-reduction plant in Mexico, including a rolling mill, at a cost of US$ 1.6 million and with a capacity of 450,000 tons. The new plant is scheduled to be opened in 2010.

So, as a company specializing in tubular products that has been investing increasingly in premium connections for the oil and natural gas industry, Tenaris can be expected to broaden its geographic distribution still further in the coming years.

8. Altos Hornos de México and Compañía de Acero del Pacífico: two major companies that are not yet internationalized

(a) Altos Hornos de México

Altos Hornos de México (AHMSA) produces 3.7 million tons of crude steel, making it the largest of the Latin American iron and steel companies operating solely in its home country and the world's seventy-third largest iron and steel company. It has sales of US$ 2.6 billion, of which 90% come from the iron and steel business and 10% from coal sales to third parties. Flat-rolled carbon steel products are responsible for 94% of its iron and steel sales and long-rolled carbon steel products, for 6%.

The company was established in 1941 by the Mexican Government in partnership with Mexican entrepreneurs and the United States iron and steel company Armco. The objective was to develop an integrated coke plant in the Mexican state of Coahuila that could supply it with local iron ore and coal. Its initial capacity was 140,000 tons of steel; it produces hot-rolled coils, cold-rolled coils, tinplate and tubes. Its capacity was expanded gradually until it reached 4.3 million tons in 1983.

AHMSA was privatized in 1991, when it was acquired by Grupo Acerero del Norte (GAN). After

decommissioning obsolete equipment, capacity shrank to 2.8 million tons. Following the privatization, AHMSA developed an ambitious growth plan, under which it invested US$ 1.3 billion during the 1992-1997 period. In addition to modernizing and expanding the integrated coke plant to 3.8 million tons, AHMSA purchased Aceros Nacionales in 1995, reopened the Cerro de Mercado iron mine and, in 1996, it even diversified its production into the manufacture of galvanized sheets.

In 1998, AHMSA had a shaky financial situation. To try to remedy the problem, it sold two plants in the first quarter of 1999: the galvanizing plant was purchased by Grupo IMSA and Aceros Nacionales was purchased by Deacero. However, these measures were not enough and, in the second quarter of 1999, with bank debt of US$ 1.9 billion, AHMSA filed for protection against creditors.

AHMSA foreign subsidiaries are small and are unconnected with the iron and steel industry. In Israel, the company is developing a copper mine and sewage treatment technology. In the United States, it has businesses in the communication and Internet markets.

In 2006, AHMSA announced the Fénix project, budgeted for US$ 825 million, in order to expand its installed capacity by 40% to 4.75 million tons of crude steel. The main facilities to be added to the plant are a blast furnace, an electric arc furnace and a continuous-slab casting machine. In mid-2008, the project's scope was increased to include a new heavy plate mill (500,000 tons). By December 2008, when the project was formally suspended, AHMSA had already invested US$ 760 million, equivalent to 54% of the estimated total investment. According to the latest information, the new blast furnace will start operating in 2010, one year later than originally planned.

(b) Compañía de Acero del Pacífico

The Chilean company Compañia de Acero del Pacífico (CAP) produces 1.2 million tons of steel. It has sales of US$ 2 billion, with the following distribution by division: iron and steel industry (59%), mining (23%) and iron and steel processing products (18%). CAP was founded in 1946 as a joint venture (53% private capital and 47% public capital). The state's controlling stake increased to 99% in 1973; the company was privatized between 1984 and 1987.

CAP has a high degree of vertical integration. Of the 8.4 million tons of iron it produces, 1.8 million tons are used as feedstock for its integrated coke plant. The plant manufactures 1.15 million tons of rolled products, 150,000 tons of which are for the processing division. It has a very broad product range, given its small-scale production: it manufactures reinforcing bars, grinding bars, wire rod, hot-rolled coils, cold-rolled coils, galvanized sheets and tinplate. Long-rolled products account for 58% of its total production and flat-rolled products, for 42%.

CAP has only two foreign investments: Tubos y Perfiles Metálicos (Peru) and Tubos Argentinos (Argentina). Both are tube and processing plants. They are responsible for 25% of the sales of the CAP processing division, which represents 4% of the company's total sales.

In 2008, CAP announced major projects worth more than US$ 4 billion. Approximately US$ 550 million was to be invested in rolling plants and US$ 1.87 billion in increasing crude steel capacity from 1.45 million to 3 million tons by 2012. This would increase its exports to 1.5 million tons of slabs. Furthermore, it was to invest US$ 1.6 billion in expanding iron mining from 8 million to 17 million tons. As a result of the crisis, the projects have been temporarily suspended but are expected to be resumed during the course of 2010.

CAP mining capacity had already been increased to 11.5 million tons. Over the next five years, the company plans to gradually increase its mining capacity to 17 million tons, which includes investments in Ecuador and Peru in a strategic alliance with the Chinese company Jihan Iron & Steel. CAP mining activities are channelled through its subsidiary Compañía Minera Huasco, in which the Japanese company Mitsubishi controls more than 50% of the capital.

E. Conclusions

Each of the companies described above has pursued a different strategy, depending on their origin, their history of mergers and acquisitions and the market segment in which they specialize. However, a common feature of the company histories explored in this chapter is a trend towards either forward or backward vertical integration, and towards internationalization. In many cases, especially in the largest companies specializing in flat-rolled products, such international expansion is still timid: in Latin America, the most common system

of integrated international production is where the more capital-intensive phase (steel production) is located in the home country, with only downstream processes (which require smaller investments) or iron-ore mining carried out abroad. However, the shift in demand to the emerging economies is forcing many companies to locate their steel production in new countries, increasing their internationalization.

Even though there has been less spectacular growth in demand for iron and steel in Latin America than in Asia, the region has a major comparative advantage in terms of its abundant iron-ore supplies. This has favoured the industry's expansion in Brazil, which has the largest reserves and lower production costs for semifinished products. Foreign companies have entered Brazil with the intention of exporting iron ore or producing steel for subsequent processing in their plants in other countries. Brazilian companies have also benefited from plentiful iron-ore supplies to boost their international expansion.

Another decisive factor in the companies' investment strategy has been national industrial policy —either measures relating directly to the iron and steel industry or measures affecting other steel-consuming industries. Given the size and importance of iron and steel companies, few Governments have been completely neutral when designing policies that affect the industry, either in Latin America or elsewhere in the world, which has also influenced internationalization strategies.

FDI in the Latin American iron and steel sector has increased in recent years: while European and Japanese companies have stepped up their investments, other Asian companies have entered for the first time, and many local companies have expanded into other countries. Although the crisis of 2008 and 2009 has curbed growth, the response of the companies analysed in this chapter has been cautiously optimistic. They have not reduced their capacity but only postponed projects or halted project expansion. How many of these projects will be resumed will depend on the strength of the recovery in demand in the coming years.

Bibliography

ACEA (European Automobile Manufacturers' Association) (2010), "New passenger car registrations, European Union", *Press Release*, 15 January [online] http://www.acea.be/index.php/news/news_detail/passenger_cars_2009_registrations_down_16_compared_to_2008.

Aguiar, M. and P. Grimaldi (2009), *Companhia Siderurgica Nacional: Transformational Move into Cement Business,* São Paulo, Goldman Sachs Brazil.

Åhman, Max (2001), "Primary energy efficiency of alternative powertrains in vehicles", *Energy*, vol. 26, No. 26, November.

Aitken, Brian J. and Ann E. Harrison (1999), "Do domestic firms benefit from direct foreign investment? Evidence from Venezuela", *The American Economic Review*, vol. 89, No. 3, June.

Alfaro, Laura, Sebnem Kalemli-Ozcan and Selin Sayek (2009), "FDI, Productivity and Financial Development", SSRN eLibrary, January.

Alfaro, Laura and others (2010), "Does foreign direct investment promote growth? Exploring the role of financial markets on linkages," *Journal of Development Economics*, vol. 91, No. 2.

___ (2004), "Multinationals and linkages: an empirical investigation", *Economía*, vol. 4, No. 2.

Álvarez, Lourdes and Elizabeth Sepúlveda (2006), "Reformas económicas, inversión extranjera directa y cambios en la estructura de la industria automotriz china (1980-2004), *Contaduría y administración*, No. 218, National Autonomous University of Mexico (UNAM), January-April [online] http://www.ejournal.unam.mx/rca/218/RCA21805.pdf.

AMIA (Mexican Automotive Industry Association) (2010), *Cifras de diciembre de 2009*, Mexico City, January.

Andrews, Deborah, Paul Nieuwenhuis and Paul Ewing (2006), "Black and beyond—colour and the mass-produced motor car", *Optics & Laser Technology*, vol. 38, No. 4-6, June-September.

ANFAVEA (National Association of Motor Vehicle Manufacturers of Brazil) (2010), "Carta da ANFAVEA", No. 284, São Paulo, January [online] http://www.anfavea.com.br/cartas/Carta284.pdf.

Astaburuaga, A. (1993), "Panorama: positivo comportamiento de la siderurgia de América Latina en 1992", *Siderurgia latinoamericana*, No. 396.

Balconi, M. (1996), "Privatization of the Italian state-owned steel industry", *Steel Times*, vol. 224, No. 1.

BANAMEX (Banco Nacional de México) (2009), "La industria de autos en México: sobrevivencia del más apto" *Examen de la situación económica en México*, vol. LXXV, No. 990 [online] http://www.banamex.com/esp/pdf_bin/esem/esemdic08ene09.pdf.

Blomstrom, Magnus and Ari Kokko (2003), "The Economics of Foreign Direct Investment Incentives", National Bureau of Economic Research (NBER), February.

BNDES (National Bank for Economic and Social Development) (2008a), "Indústria automotiva na América do Sul", *Informe setorial*, No. 8, Rio de Janeiro, November [online] http://www.bndes.gov.br/SiteBNDES/export/sites/default/bndes_pt/Galerias/Arquivos/conhecimento/setorial/informe-08AI.pdf.

Borensztein, E., J. De Gregorio and J-W. Lee (1998), "How does foreign direct investment affect economic growth?", *Journal of International Economics*, vol. 45, No. 1, 1 June.

Burstein, Ariel T. and Alexander Monge-Naranjo (2009), "Foreign know-how, firm control, and the income of developing countries", *Quarterly Journal of Economics*, vol. 124, No. 1, 1 February.

Byosiere, Philippe and Denise J. Luethge (2009), *The US Automotive Industry in Transition: Is It a World War, Civil War or Economic War?*, Université d'Evry-Val d'Essonne, Paris, Groupe d' Etudes et de Recherches Permanent sur l' Industrie et les Salariés de l' Automobile (GERPISA), June [online] http://www.gerpisa.univ-evry.fr/rencontre/17.rencontre/GERPISAJune2009/Colloquium/Abstracts/A_S.04_Byosiere_Luethge.pdf.

Carrillo, Jorge (1993), "La Ford en México. Restructuración industrial y cambio en las relaciones sociales", Ph.D. thesis, Mexico City, El Colegio de México.

Carrillo, Jorge and Humberto García (2009), "La situación de la industria automotriz en México", Mexico City, Colegio de la Frontera (COLEF), unpublished.

CentralAmericaData (2009), "Guatemala: Planta de carbón sin financiamiento," 26 November.

Central Bank of Nicaragua (2009a), *Informe trimestral de balanza de pagos. Tercer trimestre 2009*, September.

___ (2009b), *Informe trimestral de balanza de pagos. Segundo trimestre 2009*, June.

___ (2009c), *Informe trimestral de balanza de pagos. Primer trimestre 2009*, March.

Christensen, Thomas Budde (2009), "Integration of environmental technology in modularised production systems in the automotive industry", document prepared for the conference "Joint Action on Climate Change", Aalborg, 9-10 June [online] http://gin.confex.com/gin/2009/webprogram/Manuscript/Paper2518/Thomas%20Budde%20Christensen%20JACC-paper,%20integration%20of%20env%20tech%20in%20auto%20industry.pdf.

Cimoli, Mario, Giovanni Dosi and Joseph E. Stiglitz (2009), *Industrial Policy and Development: the Political Economy of Capabilities Accumulation*, Oxford University Press, November.

Collinson, S. and A.M. Rugman (2007), "The regional character of Asian multinational enterprises", *Asia Pacific Journal of Management*, vol. 24.

Cooney, Stephen (2008), *U.S. Motor Vehicle Industry: Federal Financial Assistance and Restructuring*, CRS Report for Congress, Washington, D.C., December [online] http://www.fas.org/sgp/crs/misc/R40003.pdf.

CSN (National Steel Company) (2009), *CSN Form 20-F*, São Paulo.

Dannenberg, Jan and Christian Kleinhans (2007), "The coming age of collaboration in the automotive industry", *Mercer Management Journal*, No. 17, Munich [online] http://www.oliverwyman.com/fr/pdf_files/MMJ17-AutoIndustryCollab.pdf.

De Paula, G.M. (2009), "La siderurgia latinoamericana: 50 años de transformaciones (Parte 1)", *Acero latinoamericano*, No. 514.

___(2006), "La consolidación en la industria siderúrgica mundial y latinoamericana", *Acero latinoamericano*, No. 497.

___(2005), "Estrategias de internacionalización en la siderurgia latinoamericana", *Acero latinoamericano*, No. 489.

___(1998), "Privatização e estrutura de mercado na indústria siderúrgica mundial", *doctoral thesis*, Rio de Janeiro, Institute of Economics, Federal University of Rio de Janeiro.

Donnelly, Tom, Kemal Mellahi and David Mannis (2001), "The European automobile industry: escape from parochialism", *European Business Review*, vol. 14, No. 1.

ECLAC (Economic Commission for Latin America and the Caribbean) (2010), *Statistical Yearbook for Latin America and the Caribbean* (LC/G.2430-P), Santiago, Chile, January. United Nations publication, Sales No. E.10.II.G.1.

___ (2009a), *Preliminary Overview of the Economies of Latin America and the Caribbean, 2009* (LC/G.2424-P), Santiago, Chile, December. United Nations publication, Sales No. E.09.II.G.149.

___ (2009b), *Foreign Direct Investment in Latin America and the Caribbean, 2008* (LC/G.2406-P), Santiago, Chile, July. United Nations publication, Sales No. E.09.II.G.24.

___ (2008), *Foreign Investment in Latin America and the Caribbean, 2007* (LC/G.2360-P), Santiago de Chile, June. United Nations publication, Sales No. E.08.II.G.11.

___ (2007), "Progreso técnico y cambio estructural en América Latina y el Caribe", *Project documents*, No. 136 (LC/W.136), Santiago, Chile, October.

___ (2005), *Foreign Investment in Latin America and the Caribbean, 2004* (LC/G.2269-P), Santiago, Chile, March. United Nations publication, Sales No. E.05.II.G.32.

___ (2004), *Foreign Investment in Latin America and the Caribbean, 2003* (LC/G.2226-P), Santiago, Chile. United Nations publication, Sales No. E.04.II.G.54.

___ (1998), *Foreign Investment in Latin America and the Caribbean, 1998* (LC/G.2042-P), Santiago, Chile. United Nations publication, Sales No. E.98.II.G.14.

El Heraldo (2009), "Inversión extranjera bajó en 44.7% el año pasado", 31 December.

El País (2009), "Chávez Anuncia de nuevo la nacionalización de Santander", 20 March.

El Universal (2010), "Chávez firma decreto expropiatorio de Éxito", 20 January.
___ (2009), "Chávez estatiza mineras", May.
European Parliament (2009), *Impact of the Financial and Economic Crisis on European Industries* (IP/A/ITRE/RT/2009-04), April [online] http://www.navarrainnova.com/pdf/cluster_automocion/impact_financial_economic_crisis_april09.pdf.
Griffith, Rachel, Stephen Redding and John Van Reenen (2004), "Mapping the two faces of R&D: Productivity growth in a panel of OECD industries", *The Review of Economics and Statistics*, vol. 86, No. 4.
Griliches, Zvi (1998), *R&D and Productivity: The Econometric Evidence*, University of Chicago Press, June.
Gugliermina, P. (2008), "Challenges for steel industry", document presented at the sixty-third ABM Annual Congress, Santos, Brazilian Metals Association (ABM), 28 July-1 August.
Guimarães, O.F.N. (1987), "Tecnología e siderurgia brasileña", *Revista brasileña de tecnología,* vol. 18, No. 2.
Haskel, Jonathan E., Sonia C. Pereira and Matthew J. Slaughter (2007), "Does inward foreign direct investment boost the productivity of domestic firms?", *Review of Economics and Statistics*, vol. 89, No. 3.
Hong, U.K. (2004), "Will Korean companies increase their overseas investment in the ALADI countries?: implications of investment success cases", *Las relaciones comerciales Corea – América Latina*, Montevideo, Latin American Integration Association (ALADI).
Höpner, M. and G. Jackson (2001), "An emerging market for corporate control? The Mannesmann takeover and German corporate governance", *MPIfG Discussion Paper*, No. 01/4, Colonia, Max-Planck-Institut für Gesellschaftsforschung.
IBM (2004), *Challenges for the Automotive Industry in an on Demand Environment. Seven Areas of Strategic Action*, IBM Business Consulting Services, New York [online] http://www-935.ibm.com/services/us/imc/pdf/g510-3956-challenges-automotive-on-demand.pdf.
IEA (International Energy Agency) (2007), *Tracking Industrial Energy Efficiency and CO2 Emissions, 2007*, Paris.
ILAFA (Latin American Iron and Steel Institute) (2009), *Latin America Iron and Steel in Figures, 2009* [online] http://www.ilafa.org/siderurgia/Documents/América%20Latina%20en%20Cifras%202009.pdf.
ILO (International Labour Organization) (2005), *Automotive industry trends affecting component suppliers*, Geneva.
IMC (Información Minera de Colombia) (2009a), "La brasileña Vale compra una mina de carbón de la colombiana Argos", 2 April.
___ (2009b), "El país se volvió punto estratégico para Gerdau", 9 January.
Javorcik, Beata Smarzynska (2004), "Does foreign direct investment increase the productivity of domestic firms? In search of spillovers through backward linkages", *The American Economic Review*, vol. 94, No. 3, June.
Keller, Wolfgang (2004), "International technology diffusion", *Journal of Economic Literature*, vol. 42, No. 3.
Keller, Wolfgang and Stephen R. Yeaple (2009), "Multinational enterprises, international trade, and productivity growth: firm-level evidence from the United States", *Review of Economics and Statistics*, vol. 91, No. 4, 1 November.
Kim, K-C. (2009), "The reorganization of global steel industry and the implications for POSCO", *SERI Quarterly*, vol. 2, No. 1.
Korth, Kim (2009), "2009 Automotive Outlook", document presented at the Original Equipment Suppliers Association (OESA) Regional Meeting, Atlanta, May [online] http://www.oesa.org/presentations/index.php.
KPMG (2009a), *Global M&A: Outlook for Automotive*, London, August [online] http://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/Documents/Global_MA_Outlook_for_%20Automotive.pdf.
___ (2009b), *KPMG's Global Auto Executive Survey 2010, Industry Concerns and Expextations to 2014*, London [online] http://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/Documents/Global-Auto-Survey-2010.pdf.
___ (2008), *Momentum: KPMG's Global Auto Executive Survey 2009, Industry Concerns and Expextations 2009-2013*, London [online] http://www.kpmg.de/docs/20090101_Global_Auto_Executive_Survey_2009.pdf.
Kugler, Maurice (2006), "Spillovers from foreign direct investment: within or between industries?", *Journal of Development Economics*, vol. 80, No. 2, August.
Lee, C. and E. Bu (2009), *POSCO: Positive Messages on the Road*, Seoul, Macquarie Research.
Mangum, G.L. and others (1996), *Transnational Marriages in the Steel Industry: Experience and Lessons for Global Business*, London, Quorum Books.
Mercer Management Consulting, Fraunhofer Institut IMP and IPA (2004), *Future Automotive Industry Structure (FAST) 2015*, Frankfurt.
Messerlin, P. (1986), "The European iron and steel industry and the world crisis", *The Politics of Steel: Western Europe and the Steel Industry in the Crisis Years (1974-1984)*, Y. Mény and V. Wright (orgs.), Berlin, Walter de Gruyter.
Mimura, A. (2007), "Trends in the consolidation of the world steel industry and Nippon Steel's strategy", document presented at the twentieth Brazilian Iron and Steel Congress, São Paulo, Brazilian Iron and Steel Institute.

Morales, R. (2007), "Consolidación en la industria del acero", document presented at the forty-eighth Congress of the Latin American Iron and Steel Institute (ILAFA), Cartagena de Indias.

Moran, Theodore H., Edward M. Graham and Magnus Blomström (2005), *Does Foreign Direct Investment Promote Development? New Methods, Outcomes and Policy Approaches*, Peterson Institute, April.

Mortimore, Michael (1998), "Corporate strategies and regional integration schemes involving developing countries: the Nafta and MERCOSUR automobile industries", *Science, Technology and Development*, vol. 16, No. 2, Glasgow, University of Strathclyde.

Mortimore, Michael and Faustino Barro (2005), "Informe sobre la industria automotriz mexicana", *Desarrollo productivo series*, No. 162 (LC/L.2304-P), Santiago, Chile, Economic Commission for Latin America and the Caribbean (ECLAC). United Nations publication, Sales No. S.05.II.G.52.

Nippon Steel Corporation (2008), *Nippon Steel Annual Report 2008: Year Ended March 31, 2008*, Tokyo.

Novegil, D. (2009), "El mercado mundial del acero", document presented at the fiftieth Latin American Iron and Steel Congress of the Latin American Iron and Steel Institute (ILAFA), Quito, December.

___(2007), Presentation at the forty-eighth Congress of the Latin American Iron and Steel Institute (ILAFA), Cartagena de Indias.

OECD (Organisation for Economic Co-operation and Development) (2009a), *OECD Science, Technology and Industry Scoreboard 2009*, Paris, OECD Publishing, October.

___ (2009b), *Responding to the Economic Crisis: Fostering Industrial Restructuring and Renewal*, Paris, July [online] http://www.oecd.org/dataoecd/58/35/43387209.pdf.

___ (2008), *Environmental Outlook to 2030*, Paris.

___ (2005), *Science, Technology and Industry Scoreboard, 2005*, Paris.

___ (2002), *Foreign Direct Investment for Development*, Paris, OECD Publishing, September.

Orme, A. (2004), "Meeting tinplate production challenges", *Metal Bulletin Monthly,* No. 406.

Ornelas, Sergio (2009) "Mexico's auto industry. The 2009 crisis and beyond", *MexicoNow*, vol. 7, No. 39.

Orsato, Renato and P. Wells (2007), "U-turn: the rise and demise of the automobile industry", *Journal of Cleaner Production*, No. 15 [online] http://ic.ucsc.edu/~rlipsch/EE80S/orsatoandwells.pdf.

Pinho, M. and V.P. Oliveira (2002), "Internacionalização e tecnologia em empresas líderes da siderurgia mundial", Project on the technological behaviour of enterprises, Araraquara, State University of São Paulo (UNESP).

POSCO (2009), *POSCO Form 20-F*, Seoul.

PROESA (National Investment Promotion Agency of El Salvador) (2009), "PROESA anuncia el inicio de operaciones de cuatro nuevas empresas en El Salvador", *Boletín*, 27 November.

Queiroz, S.R.R. (1987), "Siderurgia no Brasil: o desenvolvimento do setor de aços especiais", Master's thesis, Campinas, Institute of Economics, State University at Campinas (UNICAMP).

Reyes Kipp, R. (2005), "Fusiones y adquisiciones de la industria automotriz mundial", business administration thesis, Puebla, Department of Business Administration, Business School, University of the Americas, December.

Ribeiro, I. (2008), "Votorantim fará maior usina da Colômbia", *Valor econômico*, 24 September.

Ribes, Gabriela (2009), "¿Qué está ocurriendo en la concentración automovilística mundial? Principales consecuencias", *Boletín económico de ICE*, No. 2970, Madrid, August [online] http://www.revistasice.com/cmsrevistasICE/pdfs/BICE_2970_21-30__05EA608D524124160A7634FCD72F2C1E.pdf.

Rodríguez, Tatiana and Manuel Salgado (2009), "Colombia minera, un sector en desarrollo", *Litosfera*, vol. 1.

Romer, Paul M. (1990), "Endogenous Technological Change", *The Journal of Political Economy*, vol. 98, No. 5, October.

Salerno, Mario (2009), "The Impact of the Crisis on the Brazilian Auto Industry", document presented at the Roundtable on the Automotive Industry, Geneva, International Labour Organization (ILO), 20-21 May [online] http://www.gerpisa.univ-evry.fr/rencontre/17.rencontre/GERPISAJune2009/Colloquium/Papers/S.07_Salerno.pdf.

Sarti, Fernando and Célio Hiratuka (2009), "Desempenho da indústria automobilística no Brasil no período reciente", Campinas, State University at Campinas (UNICAMP), November, unpublished.

Senter, Richard and Walter McManus (2009), "Reshaping the Big Three", document prepared for the Seventeenth International Colloquium of the Groupe d' Etudes et de Recherches Permanent sur l' Industrie et les Salariés de l' Automobile (GERPISA), Paris, June [online] http://www.gerpisa.univ-evry.fr/rencontre/17.rencontre/GERPISAJune2009/Colloquium/Papers/S.01_Senter.pdf.

Shimizu, Koichi (2009), "The uncertainty of Toyota as the new world number one carmaker", *The Second Automobile Revolution*, Michel Freyssenet (ed.), Groupe d'Études et de Recherche sur l'Industrie et les Salariés de l'Automobile (GERPISA), Palgrave Macmillan.

Sigwalt, Juarez (2009), "A Vale na siderurgia", document presented at the seminar "Reducción del mineral de hierro y tecnología minera", Brazilian Metals Association (ABM), Ouro Preto, 22-26 November.

Silva, T.A.M. (2007), "Tecnologia bi-combustível e seus impactos no setor automobilístico", coordinated by Professor Fernando Sarti, Institute of Economics, State University at Campinas (UNICAMP).

Silva, V.P. (2002), "A estrategia de internacionalización da Companhia Siderúrgica Nacional", Rio de Janeiro, Institute of Economics, Federal University of Rio de Janeiro, unpublished.

Solarz, B.D. (2009), "The global economic crisis and its impacts on the U.S./NAFTA steel industry", document presented at the fiftieth Latin American Iron and Steel Congress of the Latin American Iron and Steel Institute (ILAFA), Quito, December.

Stevenson, Cliff (2009), *Global Trade Protection Report, 2009*, antidumpingpublishing.com [online] http://chongbanphagia.vn/beta/down.php?file=files/Global%20Trade%20Protection%20Report%202009_0.pdf.

UBS (2008), *Mining and Steel Primer. Hard Rock to Heavy Metal Amid Scarcity*, London, UBS Investment Research.

UNCTAD (United Nations Conference on Trade and Development) (2009), *World Investment Report 2009: Transnational Corporations, Agricultural Production and Development* (UNCTAD/WIR/2009), Geneva. United Nations publication, Sales No. 09.II.D.15.

UNIDO (United Nations Industrial Development Organization) (2003), "The global automotive industry value chain: what prospects for upgrading by developing countries", Vienna [online] http://www.unido.org/fileadmin/media/documents/pdf/Services_Modules/Automotive_Industry.pdf.

Vallourec (2009), "Vallourec: 2008 annual information document", Paris [online] http://www.euroinvestor.co.uk/news/story.aspx?id=10371985.

VanGrasstek, Craig (2009), "Trends in United States trade with Latin America and the Caribbean and trade policy towards the region", *Comercio internacional series*, Nº 98 (LC/L.3151-P), Santiago, Chile, Economic Commission for Latin America and the Caribbean (ECLAC). United Nations publication, Sales No. E.09.II.G.124.

Votorantim Siderurgia (2009), *Relatório annual*, São Paulo.

WSA (World Steel Association) (2009), *World Steel in Figures, 2009* [online] http://www.worldsteel.org/?action=newsdetail&id=271.

___ (2008), "A global sector approach to CO2 emissions reduction for the steel industry", *Journal of Steel and Related Materials*, January.

WTO (World Trade Organization) (2009), *International Trade Statistics 2009*, Geneva [online] http://www.wto.org/english/res_e/statis_e/its2009_e/its09_toc_e.htm.

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