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Chapter V

INDUSTRIALIZATION, TRADE AND STRUCTURAL CHANGE

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Chapter V

INDUSTRIALIZATION, TRADE AND STRUCTURAL CHANGE

A. Introduction

It is generally accepted that capital accumulation can help raise per capita income and living standards in an economy simply by allowing a fuller use of underutilized labour and natural resources without altering the efficiency with which resources are utilized. Long-term economic success, however, depends on sustained improvements in productivity; each worker producing more from any given level of effort provides the basis for rising incomes and living standards. In this sense, it is productivity gains, and not simply additional jobs, that characterize a virtuous process of accumulation and growth. Such a process is invariably associated with structural changes in output and employment as a result of both shifts in economic activities across agriculture, industry and services and upgrading to higher value-added activities within each sector through the introduction of new products and processes. The importance of structure to the development process is partly due to the fact that the overall level of income is closely linked to the allocation of resources among sectors, and the sectors can show, at any point in time, significant variations in productivity levels. But it also derives from differences in the potential of various sectors for technical progress and productivity growth. Such differences emerge not only in the broad division of sectors into agriculture, mining, manufacturing and services, but also in intra-sectoral structures.

The importance of establishing a broad domestic industrial base to respond to development challenges lies in its potential for strong productivity and income growth. That potential derives, on the supply side, from a predisposition to scale economies, specialization and learning and, on the demand side, from favourable global market and price conditions. Successful development experiences have established a close relationship between the growth rate of industrialization and of productivity (Kaldor, 1967), as well as between an acceleration of growth and a shift of labour from the low-productivity primary sector into higher-productivity industry (Kuznets, 1955). These observations have also been confirmed most recently by the experience of the East Asian NIEs (Ros, 2000: 19–30).

As discussed in the previous chapter, varying investment performance is a major reason for the differences among developing countries in their ability to establish and sustain a strong development path. Although the associated changes in the structure of economic activity reflect some common underlying forces, there is also considerable potential for diversity across countries in the timing and extent of structural changes, depending on the nature and composition of investment (both in machinery and equipment and in human and physical infrastructure), resource endowments, size and location. Foreign trade also exerts an important influence on the evolution of economic structure, insofar as it can help overcome domestic supply-side and demand-side constraints on industrialization and growth. However, as with investment, the extent to which trade feeds into a more or less dynamic and virtuous industrialization process owes a good deal to policy choices and interventions.

Following a discussion of the industrialization process in economic development, this chapter assesses how the main factors associated with building and maintaining industrial capacity, productivity and the pattern of trade have changed in developing countries over the past two decades. Particular attention is given to changes in international specialization within the industrial sector through upgrading. Throughout, the chapter compares and contrasts the performance of economies in East Asia and Latin America and, to a lesser extent, Africa, with respect to structural change, productivity growth, international competitiveness and trade.

B. Structural change and economic development

1. Industrialization and growth

Traditional agrarian societies tend to be subsistence economies and generally suffer from chronic surplus labour. The shift away from an agrarian economy usually begins with technological breakthroughs, leading to an acceleration of productivity growth in agriculture accompanied by the rise of new urban centres linked to commercial and financial activities. Historically, however, the big break came with the rise of manufacturing activity which, having made steady and widespread progress in the 18th century, took off more spectacularly in the 19th century in some European countries. There, it was associated with a demographic transition, revolutions in transport and communications, as well as fundamental changes in the organization of production and the relationship between capital and labour. As a result of the take-off, the world economy became divided into industrial leaders and "laggards", accompanied by a sharp divergence in the distribution of global income (Maddison, 2001).

Today, the challenge of narrowing income gaps with richer countries depends crucially on the creation of leading industrial sectors, along with related technological and social capabilities, in the context of the process of structural change that accompanies economic development (Abramovitz, 1986). A common pattern is discernible in most of the successful experiences. An initial sharp drop in the share of agriculture in total employment is followed by its continuous decline, steadying at a very low level as the economy matures. A weak rise in demand for foodstuffs, combined with relatively strong productivity growth in agriculture, explains the declining weight of the primary sector in overall economic

activity. This is associated with a sharp rise in the share of industry in terms of both employment and output. During the "industrialization stage" mechanization spreads to the primary sector, thereby sustaining the fall in agricultural employment. At the same time, strong complementarities with the service sector ensure a steady rise in employment and output in commercial services, transportation and finance.

As the economy grows, the differential growth in productivity and demand between industry and services brings about further structural changes in employment and output. While the growth in demand for manufactures slows down as incomes rise, relatively rapid productivity growth is maintained. As a result, industrial output keeps pace with demand without additional employment, and the share of industry in total employment starts to fall. If aggregate demand becomes sluggish, the industrial sector may start shedding labour, and hence lose employment in absolute as well as relative terms. On the other hand, relatively slow productivity growth of the service sector, coupled with a steady growth in the demand for its products, implies that this sector begins to absorb the employment released by industry. This process is accompanied by a persistent rise in the share of services in total employment and output, reaching over two-thirds at higher levels of income. These trends describe the process of "deindustrialization" that has occurred in mature high-income economies (Rowthorn and Wells, 1987).

The challenge of narrowing income gaps with richer countries depends crucially on the creation of leading industrial sectors, along with related technological and social capabilities.

Such structural changes rarely occur as a smooth or harmonious process. Indeed, they pose new and difficult economic challenges for policy makers. In particular, as labour is released from agriculture its absorption is not assured, with a consequent risk of disguised or open unemployment. In the earlier stages of industrialization, rapidly increasing demand for manufactures could lead to balance-of-payments difficulties and threaten sustained economic growth if the primary sector is unable to provide the necessary foreign exchange earnings. At a later stage of industrialization, as seen in many European countries over the past three decades, slow growth in aggregate demand could mean that labour released from industry cannot be productively absorbed in the services sector, resulting in persistent unemployment. This process can be called "negative deindustrialization" as opposed to "positive deindustrialization", the latter taking place in the context of rapid growth and full employment (Rowthorn and Wells, 1987: 25; see also *TDR 1995,* Part Three, chap. III).

There has been a good deal of diversity in the pace and scale of industrial development across countries. Such diversity is clearly influenced by factors susceptible to strong policy influences and choices, including the pace and nature of capital accumulation, trade and international competitiveness (Gomory and Baumol, 2000; Amsden, 2001). Resource endowments, size and geographical location also have a strong bearing on the timing and extent to which labour shifts into industrial activities. Countries rich in natural resources can delay industrialization even as they experience faster growth, resulting in a lower share of employment in manufacturing at any given level of income. However, they cannot always avoid pressure to establish dynamic industrial sectors, since it may not be possible to reach high income levels without a strong industrial base. Moreover, the pressure to diversify into industrial activities is likely to intensify if efforts to expand incomes are hindered by adverse terms of trade and external payments difficulties that prevent them from meeting the demand for manufactures. Indeed, those economies that have relied more heavily on primary commodity exports to achieve higher levels of income, such as Australia, Canada and some of the Scandinavian countries, have all experienced periods of strong industrial development and diversification as essential components of their sustained economic growth.

For late starters, the industrialization process tends to be more capital-intensive, offering greater opportunities for rapid productivity growth

due to their access to the technology and capital equipment produced in the more advanced economies. As a result, successful industrialization in developing countries is expected to create fewer jobs in industry at any given level of income. But opportunities for some late industrializers to become "workshop economies", producing large quantities of labour-intensive products for export, can go some way towards offsetting this tendency. Thus, they can expand manufacturing employment beyond the limits set by the domestic market. In the same vein, a mature economy, with a competitive edge in key industrial sectors and a surplus in manufacturing trade, can normally employ more labour in those activities and delay deindustrialization.

Most developing countries should be expected to experience a steadily rising trend in the share of manufacturing in total employment and output ...

Deindustrialization associated with strong productivity growth in manufacturing has been a visible trend in the advanced industrial economies over the past few decades.[1] Pooled data regressions on the share of manufacturing in total employment for 18 developed countries during the period 1963–1994 suggest that the level of per capita income at which deindustrialization typically becomes a visible trend is between $8,000 and $9,000 (measured at constant 1986 prices), a figure already reached in the 1960s in a number of advanced industrial economies (Rowthorn and Ramaswamy, 1999).

To the extent that most developing countries are well below this level of income, they should be expected to experience a steadily rising trend in the share of manufacturing in total employment and output. Indeed, as tables 5.1 and 5.2 show, this was generally the case in most developing regions until the early 1980s. In almost all regions in table 5.1, manufacturing employment started rising from the 1960s onwards whilst confirming the tendency, noted earlier, for late industrializers to exhibit a relatively lower share of employment in manufacturing than the early industrializers. Latin America already had a high share of manufacturing in total employment during the 1960s, and this was maintained in the two subsequent decades, except in the Southern Cone countries where it declined sharply during the 1970s from the higher levels of the 1960s. East Asia started from a lower level but caught up rapidly with Latin American countries during the 1960s and, in particular, in the 1970s, while sub-Saharan Africa made modest progress during those decades.

... this was generally the case until the early 1980s.

Output trends broadly paralleled this shift in employment. Again, in the early 1960s, Latin America, particularly the Southern Cone countries, had a higher share of manufacturing in GDP than other developing regions, and these shares were broadly maintained throughout the subsequent two decades. The high shares of both employment and output as early as the 1960s suggest that the import-substituting industrialization pursued in the region did have a significant impact on the process of structural change. In East and South Asia, the share of manufacturing progressed steadily from the relatively low levels of the early 1960s, and it showed a noticeably steeper rise in the first-tier NIEs. China already had a high share of manufacturing in GDP in the early 1960s due to its strong industrialization drive, and this increased even further in the two subsequent decades. In sub-Saharan Africa, there was also an upward trend during the period 1960–1980, but it was much weaker than in Asian countries. In West Asia and North Africa, the rise in the share of manufacturing in GDP during the 1970s was reversed in the subsequent decade, due to the increasing importance of crude oil production in the region.

The period since 1980 has been marked by a significant degree of divergence. The East Asian economies continued to industrialize at a rapid pace, with the first-tier NIEs reaching industrial maturity. The second-tier NIEs, thanks to their large natural-resource base, started to industrialize later, their industrialization gaining momentum from the late 1970s. China's pattern of early industrialization clearly shows the influence of central planning. From the 1980s, following its

Table 5.1

MANUFACTURING EMPLOYMENT AS A SHARE OF TOTAL EMPLOYMENT, BY REGION, 1960–2000

(Per cent)

Region	*1960*	*1970*	*1980*	*1990*	*2000*
Sub-Saharan Africa	4.4	4.8	6.2	5.9	5.5
West Asia and North Africa	7.9	10.7	12.9	15.1	15.3
Latin America	15.4	16.3	16.5	16.8	14.2
Southern Cone	17.4	20.8	16.2	16.6	11.8
South Asia	8.7	9.2	10.7	13.0	13.9
East Asia (excl. China)	8.0	10.4	15.8	16.6	14.9
First-tier NIEs	10.5	12.9	18.5	21.0	16.1
China	10.9	11.5	10.3	13.5	11.5
Developing countries	10.0	10.8	11.5	13.6	12.5
Developed countries	26.5	26.8	24.1	20.1	17.3

Source: UNCTAD secretariat calculations, based on data provided by the International Labour Organization.

Note: *Sub-Saharan Africa* includes Benin, Botswana, Burkina Faso, Cameroon, Central African Republic, Chad, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Gabon, Ghana, Kenya, Lesotho, Malawi, Mauritania, Mauritius, Niger, Nigeria, Rwanda, Senegal, South Africa, Togo, Zambia and Zimbabwe; *Latin America* includes the Southern Cone countries and Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay and Peru; *Southern Cone* includes Argentina, Brazil, Chile and Uruguay; *West Asia and North Africa* includes Algeria, Egypt, Morocco, Oman, Saudi Arabia, Tunisia and Turkey; *South Asia* includes Bangladesh, India, Pakistan and Sri Lanka; *East Asia* includes Hong Kong (China), Indonesia, Malaysia, the Philippines, the Republic of Korea, Singapore, Taiwan Province of China and Thailand.

increasing shift towards a market economy and the expansion of foreign-funded enterprises, there were reversals in terms of both employment and output (*TDR 2002*, chap. V). In sub-Saharan Africa, the share of manufacturing in total employment stagnated during the 1980s, associated with a decline in the share of manufacturing output in GDP; however, both stabilized in the 1990s at relatively low levels. Latin America seems to have experienced deindustrialization prematurely. The region as a whole saw a sharp drop in the share of manufacturing in total output during the 1980s and 1990s in the context of a significant slowdown in overall economic growth, while the share of manufacturing in employment started to fall in the 1990s after remaining relatively stable in the 1980s. The reversal was particularly pronounced in the Southern Cone countries. The share of manufacturing in total output in Latin America is now similar to that of the major industrial countries, while its level of per capita income is much lower.[2]

Turning to country experiences, only 8 of the 26 economies listed in table 5.3 succeeded in raising the share of manufacturing value added in GDP from the 1980s to the 1990s. Surprisingly, perhaps, three of these countries were in Africa (Côte d'Ivoire, Egypt and Ghana), but their shares nevertheless remained at modest levels. The Republic of Korea and Taiwan Province of China appear to be set to enter a phase of positive deindustrialization in the context of rapid growth. On the other hand, the East Asian second-tier NIEs (except the Philippines), which are in the intermediate stages of industrialization, experienced continuous and strong growth in the share of manufacturing value added in GDP and employment.

Table 5.2

MANUFACTURING OUTPUT AS A SHARE OF GDP, BY REGION, 1960–2000

(Per cent)

Region	*1960*	*1970*	*1980*	*1990*	*2000*
Sub-Saharan Africa	15.3	17.8	17.4	14.9	14.9
West Asia and North Africa	10.9	12.2	10.1	15.6	14.2
Latin America	28.1	26.8	28.2	25.0	17.8
Southern Cone	32.2	29.8	31.7	27.7	17.3
South Asia	13.8	14.5	17.4	18.0	15.7
East Asia (excl. China)	14.6	20.6	25.4	26.8	27.0
First-tier NIEs	16.3	24.2	29.6	28.4	26.2
China	23.7	30.1	40.6	33.0	34.5
Developing countries	21.5	22.3	24.7	24.4	22.7
Developed countries	28.9	28.3	24.5	22.1	18.9

Source: UNCTAD secretariat calculations, based on data on manufacturing output and GDP at current prices from World Bank, 1984 and 2003; and *Government Statistical System of the Republic of China*, online.
Note: For definitions of country groupings, see table 5.1.

By contrast, almost all Latin American countries listed in the table saw significant declines in the share of manufacturing value added in GDP. This was most pronounced in Argentina and Chile following their introduction of economic reforms, during the 1970s and 1980s in Chile and during the 1980s and 1990s in Argentina. In Brazil and Mexico too, the sharp fall in the share of manufacturing activity in the 1990s coincided with an intensification of market-based reforms. In these cases, the decline in the relative importance of manufacturing activities occurred at a level of per capita income that was much lower than in either the industrialized economies or the East Asian economies. This might conceivably be interpreted as a desirable return to their comparative advantage in resource-based sectors, following their shift from import-substituting industrialization to an outward-oriented strategy. However, while this shift was associated with a significant acceleration of growth in Chile, this was not the case for Argentina, Brazil or Mexico. Furthermore, a comparison with European economies that have a well-endowed natural-resource base, such as the Scandinavian economies, shows that resource-rich Latin American countries, including Chile, are lagging considerably in industrialization, even allowing for their rich resource endowments. Available evidence on employment shows that the share of manufacturing employment in Chile and Argentina in the late 1990s was between one-half and one-third the level reached by the Scandinavian economies in the early 1960s, when they were at comparable income levels. In the resource-rich Scandinavian economies, the share of manufacturing employment started to fall from a much higher level of income – after having reached a higher peak – than the levels attained in Latin America.

In Chile, while it is possible that manufacturing activity may pick up, in both relative and absolute terms, once the opportunities in the primary sectors are exhausted, the current level of industrialization does not appear to contain the many dynamic elements needed for such a transformation. This point has been made in a recent assessment of Chile's pattern of structural change between 1960 and 1990, using an input-output accounting framework to gauge the strength of its

Table 5.3

SELECTED TRADE AND PRODUCTION INDICATORS FOR 26 DEVELOPING ECONOMIES, 1960–2000

(Percentage)

	Manufacturing value added as a share of GDP				*Exports of manufactures as a share of exports of goods and services*	
Economy	*1960–1969*	*1970–1979*	*1980–1989*	*1990–2000*	*1980–1989*	*1990–2000*
Argentina	38.6	35.3	29.3	20.3	25.9	26.4
Bolivia	..	..	..	15.8	2.8	15.3
Brazil	28.2	30.0	32.6	23.7	44.2	46.8
Chile	23.8	24.2	19.7	18.0	6.6	10.6
China	29.0	37.3	35.8	34.0	67.5	78.0
Colombia	18.9	23.0	22.0	17.0	15.4	23.9
Côte d'Ivoire	10.3	9.4	16.0	18.8	8.3	11.9
Ecuador	18.6	17.8	19.4	20.9	1.6	5.4
Egypt	..	15.7	14.6	17.8	7.8	10.0
Ghana	11.4	11.1	8.0	9.2	..	7.0
India	13.6	15.3	16.4	16.4	16.2	55.4
Indonesia	9.0	10.4	15.1	22.8	29.6	45.1
Kenya	10.5	12.0	11.8	11.2	7.1	15.8
Malaysia	9.5	16.8	20.3	27.3	27.7	63.0
Mexico	20.1	22.7	23.2	20.6	29.3	62.3
Morocco	16.2	16.7	18.0	17.6	26.4	33.7
Nigeria	5.0	4.8	8.2	4.9	..	1.1
Pakistan	14.3	15.9	16.0	16.6	55.3	73.4
Peru	16.9	21.4	26.8	15.3	11.9	13.2
Philippines	20.4	25.7	25.0	23.2	18.1	47.7
Republic of Korea	16.5	25.0	29.8	29.5	81.6	77.5
Taiwan Province of China	16.7	28.4	34.4	28.9	81.8	81.9
Thailand	14.2	19.0	23.5	28.8	30.6	56.7
Turkey	12.7	13.4	18.7	18.3	45.2	44.9
Uruguay	..	23.8	26.5	21.0	32.7	28.9
Venezuela	15.4	16.1	19.5	17.4	5.4	11.0

Source: UN/DESA, *Commodity Trade Statistics* database; World Bank, *World Development Indicators*, *2002*; and Thomson Financial Datastream.

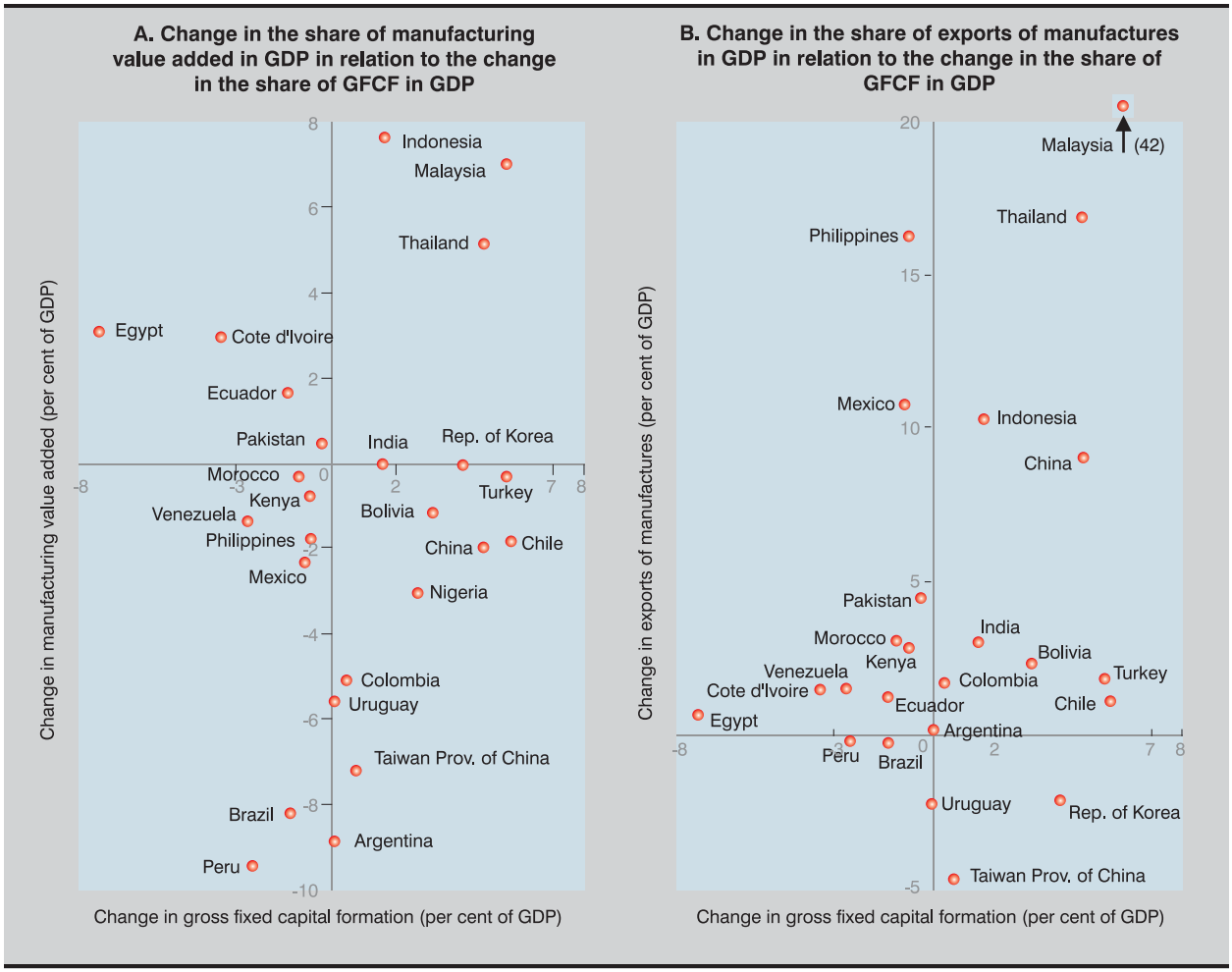
industrial sector. The legacy of a decade of reforms, beginning in the mid-1970s, appears to be weaker backward and forward linkages in this sector, particularly in the technologically sophisticated segment of manufacturing. The downgrading of "heavier industries" is reflected, in particular, in a sharp jump in imported inputs to nearly two-thirds of total inputs (compared to less than 40 per cent in the East Asian economies at a comparable stage of development) as well as a significant weakening of competitiveness in technology-intensive sectors (see subsection D.3 below). These raise concerns about the longer-term technological prospects, self-sustainability and overall stability of this pattern of structural change (Albala-Bertrand, 1999).

Taken together, the above evidence shows that, unlike the advanced industrial economies and the East Asian NIEs, the deindustrialization trend in many developing countries in Latin America and sub-Saharan Africa has not been a benign

Figure 5.1

CHANGES IN MANUFACTURING VALUE ADDED AND EXPORTS OF MANUFACTURES IN RELATION TO CHANGES IN GROSS FIXED CAPITAL FORMATION: 1990–2000 COMPARED TO 1980–1990

(Per cent of GDP)



Source: UNCTAD secretariat calculations, based on World Bank, *World Development Indicators, 2002*; and Thomson Financial Datastream.

product of differential productivity growth in the context of a steady economic expansion. Rather, it has coincided with a widespread slowdown in output growth. Indeed, a recent study of developing countries in the decades before and after the debt crisis in the 1980s has shown that across much of South and East Asia productivity remained high in the post-crisis period, often accelerating, and employment growth remained strong (Pieper, 2000). This pattern was supported by persistently high rates of economic growth in the periods before and after the crisis. Latin American economies have exhibited a different pattern. In most cases, growth in employment remained largely unchanged between the two periods while output growth was similar or lower. As a result, productivity growth remained slow or negative. The exceptions to this pattern are Brazil, where higher productivity growth in manufacturing was achieved at the cost of employment, which fell sharply, and Chile and Costa Rica, both of which enjoyed stronger output and productivity growth in the

later period. Economies in sub-Saharan Africa generally showed very little change across the two periods, reflecting widespread and persistent stagnation.

2. Capital accumulation, trade and industrialization

As noted above, the pace and pattern of industrialization are greatly influenced both by the pace and pattern of capital accumulation and the participation of countries in international trade. Indeed, successful industrialization in developing countries is often based on mutually reinforcing dynamic interactions between capital accumulation and exports. This dynamic export-investment nexus is well known and is described in some detail in *TDR 1996* in relation to the evolution of the East Asian NIEs. Exports broaden the size of the market and thus allow scale economies to be exploited; they also provide the foreign exchange needed for capital accumulation, in view of the dependence of most developing countries on imported capital goods. At the same time, investment improves export potential by adding to production capacity and improving competitiveness through productivity growth. Such a process is typically characterized by rising investment, exports and manufacturing value added, both in absolute terms and as a share of GDP. Over time, both foreign exchange and savings gaps close as exports and domestic savings begin to grow faster than investment.

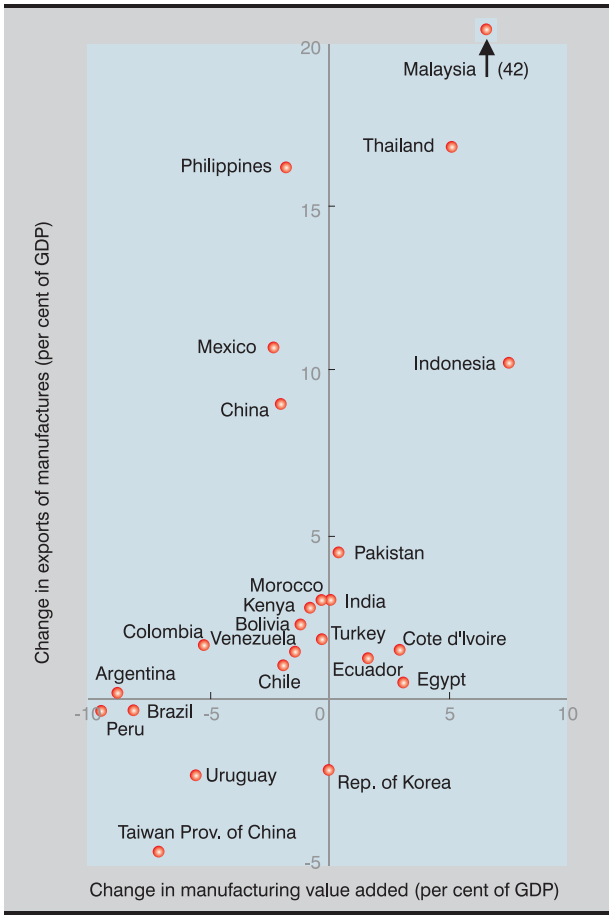
Figures 5.1A and 5.1B relate changes in the investment ratio over the period 1980–2000 to changes in the shares of manufacturing value added and exports in GDP, while figure 5.2 relates changes in the latter two to each other.[3] They show that countries which have been successful in sustaining a virtuous process of accumulation at the initial and intermediate stages of industrialization are the ones that have been able to combine rising investment with expanding manufacturing value added and exports. This is particularly the case for the three dynamic second-tier NIEs, namely Indonesia, Malaysia and Thailand. On the other hand, the Republic of Korea and Taiwan Province of China are in more mature stages of industrialization, combining still rising investment ratios with falling or stable shares of manufacturing value added and exports in GDP. In both cases, the share of manufacturing value added in GDP is still at much higher levels than in advanced industrial countries, and the share of manufacturing in total exports has been stable, at high levels that had already been attained in the 1970s and 1980s (table 5.3; see also Amsden, 2001, table 6.9).

Most Latin American countries combined a declining share of investment in GDP with a declining share of manufacturing value added. While

Figure 5.2

CHANGES IN MANUFACTURING VALUE ADDED IN RELATION TO CHANGES IN EXPORTS OF MANUFACTURES: 1990–2000 COMPARED TO 1980–1990

(Per cent of GDP)



Source: See fig. 5.1.

Box 5.1

MANUFACTURED EXPORTS AND VALUE ADDED IN MEXICO

The combination of a strong performance in manufactured exports with a weak performance in value added in some of the countries participating in international production networks, including Mexico, was already noted in *TDR 2002* at the aggregate level. The reason for this, according to an analysis by the UNCTAD secretariat of evidence from Mexico at the sectoral level, is that most of the increase in manufactured exports has been in those industries that have been participating in international production networks: clothing, non-electrical machinery, electrical machinery, transport equipment, and professional and scientific equipment. In clothing, the evidence for the period 1980–1998 shows that exports grew faster than the average for manufactured goods as a whole, but also that this was one of the few manufacturing sectors in which domestic value added declined between the early 1980s and 1998 (see table).

The fact that imports of both textiles and clothing also registered above-average growth rates, suggests that the inclusion of this sector in international production networks was accompanied by the substitution of a significant share of domestic production by imports. Transport equipment experienced the fastest export growth rate among all the manufacturing categories and became Mexico's second most important sector in manufactured exports. However, this sector's growth in value added exceeded the average for manufacturing by much less than its growth in exports. In non-electrical machinery, electrical machinery and professional and scientific equipment, exports also grew much faster than value added, although value added in these sectors also performed better than average. The disparity between the growth rates of manufacturing value added and exports was also due to weak growth in domestic value added and to strong growth in imports for domestic consumption in industries such as paper and products, printing and publishing, plastic products, glass and products, and other manufactured products. It is interesting to note that value added in processed foods, beverages and tobacco (i.e. sectors that have not been included in international production networks) rose rapidly, and that both processed foods and beverages continued to rank among the five most important manufacturing categories in terms of value added, but their export performance was below average.

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in many of these countries the share of manufactured exports in GDP remained unchanged or fell, in others the falling or stagnant share of manufacturing value added in GDP was associated with a rising share of manufactured exports. This latter group consists of two sets of countries. First, the middle-income, primary-commodity exporters, where the increase in manufactured exports was moderate and started from a very low base (e.g. Colombia, Ecuador and Venezuela); and second, countries where the increase in manufactured exports was due to their participation in labour-intensive assembly activities. The most important example of the latter is Mexico, which combined a lower share of investment and manufacturing value added in GDP with a rapidly expanding share of manufactured exports (see box 5.1).[4]

In East Asia, only the Philippines manifests the same characteristics as Mexico in combining rising manufactured exports as a share of GDP with a falling share of manufacturing value added in GDP. As in Mexico, the share of investment in GDP fell in the Philippines during 1980–2000. While Malaysia also participates in international production networks through labour-intensive assembly activities, it succeeded in increasing both its manufactured exports and value added, although the increase in the former was much stronger (table 5.3). China saw a small decline in the share of manufacturing value added in GDP, but a large increase in manufactured exports, a disparity due partly to the extremely high share of manufacturing in GDP in the 1980s associated with central planning, and partly to the country's

Box 5.1 (concluded)

MEXICO: MANUFACTURING VALUE ADDED AND TRADE IN MANUFACTURES, BY SECTOR, 1980–1998

(Per cent)

	Value added			Exports			Imports		
	Share of sector in total manufacturing industry		Average annual growth	Share of sector in total manufacturing industry		Average annual growth	Share of sector in total manufacturing industry		Average annual growth
Sector	1980	1998	1980–1998	1980	1998	1980–1998	1981	1998	1981–1998
Food products	8.0	8.2	7.4	6.9	2.1	9.2	4.7	3.4	14.1
Beverages	10.8	8.8	6.9	1.3	1.1	15.0	0.4	0.2	24.7
Tobacco	3.9	3.7	8.0	1.0	0.1	0.3	0.0	0.0	33.1
Textiles	5.2	1.9	-0.1	5.6	3.6	15.3	1.1	4.0	27.4
Wearing apparel, except footwear	..	0.5	-0.1[a]	3.7	4.9	20.5	1.0	2.4	25.3
Leather products	..	..	..	0.7	0.3	14.6	0.2	0.7	27.6
Footwear, except rubber or plastic	..	0.3	-4.4[a]	1.2	0.4	11.0	0.1	0.1	19.7
Wood products, except furniture	0.7	0.2	-1.1	1.3	0.4	10.9	0.5	0.5	18.9
Furniture, except metal	..	0.2	1.0[a]	0.9	2.4	23.3	0.2	0.4	22.3
Paper and products	6.1	2.3	1.4	0.9	0.5	7.9	1.3	2.4	17.7
Printing and publishing	..	0.5	3.0[a]	0.6	0.4	15.0	0.7	0.9	18.5
Industrial chemicals	4.7	8.9	9.8	6.2	3.1	11.8	8.3	7.1	13.3
Other chemicals	6.7	8.8	8.9	2.0	1.7	16.6	2.3	3.1	18.7
Petroleum refineries	..	..	..	5.7	0.6	-1.1	0.8	1.8	15.1
Misc. petroleum and coal products	0.5	0.6	7.0	0.4	0.0	5.3	0.1	0.2	20.7
Rubber products	3.5	1.3	0.0	0.1	0.4	23.3	1.4	1.5	19.9
Plastic products	..	1.5	4.5[a]	0.9	1.0	19.1	0.7	4.2	34.4
Pottery, china and earthenware	..	0.5	6.3[a]	0.3	0.3	16.5	0.0	0.3	31.5
Glass and products	3.9	2.3	3.9	0.8	0.8	15.6	0.4	0.7	24.2
Other non-metallic mineral prod.	5.6	3.8	4.6	1.1	0.6	12.9	0.6	0.4	13.9
Iron and steel	13.3	7.9	3.6	0.9	2.2	21.2	8.6	2.9	13.0
Non-ferrous metals	3.7	3.2	4.8	14.6	1.3	4.1	1.8	1.9	17.6
Fabricated metal products	3.2	4.1	7.3	2.1	3.7	20.4	5.7	6.2	19.8
Machinery, except electrical	1.4	3.8	11.4	4.7	11.4	22.3	25.1	13.9	13.1
Electrical machinery	5.3	6.0	7.1	27.1	29.3	17.3	11.5	25.2	20.4
Transport equipment	13.5	20.2	9.2	5.4	22.3	24.2	18.0	11.5	13.3
Prof. and scientific equipment	..	0.4	8.3[a]	1.8	3.7	22.9	3.5	3.0	15.1
Other manufactured products	..	0.3	3.2	1.7	1.4	18.2	0.8	1.1	20.3
Memo item:									
Total manufacturing industry	100.0	100.0	6.8	100.0	100.0	16.8	100.0	100.0	16.6

Source: UNCTAD secretariat calculations, based on Nicita and Olarreaga, 2001.
a 1984–1998.

participation in low-value-added assembly activities within international production networks. Chile was the only country in Latin America to combine a strong investment performance with a lower share of manufacturing value added in GDP and a moderate increase in manufactured exports, from a very low base.

The support and protection given during the import-substituting industrialization of the 1960s

and 1970s undoubtedly allowed industry in Latin America, and to a lesser extent in Africa, to expand considerably faster than would have been possible under competitive conditions. Unlike in East Asia, however, which also made extensive use of industrial policies, these strategies in Latin America and Africa were not always able to promote viable industries (Hirschman, 1968). Consequently, with big-bang liberalization and the withdrawal of support and protection, industries in these regions, confronted with stiff competition, were forced to downsize, rationalize or perish. In this sense, the deindustrialization process, associated with the shift in the development paradigm, can be seen as a corrective step in the context of a Schumpeterian process of "creative destruction". However, after so many years of reform and adjustment, there is little sign of creative forces initiating a new virtuous process of accumulation, growth and structural change.

C. Productivity growth: inter-industry patterns

The close correlation observed in East Asia between high rates of investment, rising shares of manufacturing in GDP and strong export performance is underpinned by a rapid growth in productivity. However, the link between investment on the one hand and productivity growth and trade performance on the other is not automatic. While a shift to industrial activities is essential for attaining rapid productivity growth and high income levels, it is not always clear how the allocation of investment across sectors influences the speed with which the productivity gap with advanced industrial countries is narrowed. Indeed, there is no consensus as to whether productivity gains associated with investment can best be captured in sectors with large or small productivity gaps with advanced industrial economies. While some authors (Gerschenkron, 1962) have invoked the "advantage of backwardness" to support the view that sectors with the largest productivity gap tend to attract the most investment and narrow that gap the fastest, others (e.g. Krugman, 1990) have suggested that developing countries tend to narrow the productivity gap at equal rates across industrial sectors.

Productivity growth also depends on how investment is combined with learning in the context of technological progress. Even where technology is embodied in imported capital equipment along with complementary codified knowledge, certain aspects of any technology are tacit, and thus can be acquired only through learning-by-doing. Furthermore, using any imported technology efficiently would necessitate modification to suit specific local conditions. Thus, a country's initial knowledge base, combined with step-wise learning, determines how well it copes with and applies new technologies. From this perspective, technological change is the joint outcome of investment in modern capital equipment and learning how to use it efficiently (Nelson and Winter, 1982; Abramovitz, 1986; Lucas, 1993; and Nelson and Pack, 1999). Targeted technology policies also have a direct bearing on the outcome.

An important development that has influenced the sectoral pattern of technology transfer and absorption is the increasing vertical integration of production into distinct value-added stages located in different countries, and the greater par-

ticipation of developing countries in such global production networks. The kinds of industrial activities most easily relocated from more to less developed countries are those that use easily traded intermediate products, and in which the share of wages in production costs is high, because such activities benefit from a variation in wage costs across locations. As discussed in chapter IV, significant imports of both machinery and equipment and intermediate goods appear to accompany increased participation in such networks. Although this has been seen as a possible basis for technological leapfrogging and rapid acceleration of productivity growth, the technology transfer and learning processes in such networks are increasingly circumscribed by global strategies of TNCs, rather than by national development strategies of the recipient countries. Thus the pace of productivity growth in developing countries and the speed with which the productivity gap with developed countries in different sectors can be reduced are affected by the nature of their participation in international production networks, as well as by technology and capital goods imports and the process of learning and adaptation.

In Asia, labour productivity has improved significantly and continuously across all sectors, while no such trend is discernible in Latin America.

Table 5.4 shows the evolution of labour productivity in various developing countries and in the United States, the world's technology leader. It covers the manufacturing sector as a whole as well as a selection of low-, medium- and high-skill industries. The data are presented for 1980, 1985 and 2000 to enable an assessment of how the debt crisis and extensive policy reforms, which in most countries occurred between 1985 and 1990, might have affected sectoral productivity trends. Since the data reported sometimes refer to different periods, and large proportional changes often occur in countries with small industrial bases, the evidence needs to be interpreted with caution.

In all Asian countries for which data is available labour productivity has improved significantly, and in most cases continuously across all sectors, over the past two decades, while no such trend is discernible in Latin America (with the exception of Chile). Moreover, in many countries in these regions, productivity levels fell during the 1990s (i.e. the period after widespread trade and financial liberalization), and in some cases they dropped below the levels observed in 1985 (i.e. in the middle of the debt crisis).

A number of countries in Latin America, such as Argentina, Brazil and Mexico, experienced a particularly sharp productivity decline in traditional labour-intensive sectors such as textiles and clothing. By contrast, productivity performance was better in transport equipment than in manufacturing as a whole, and productivity growth in that sector in Brazil and Mexico even exceeded that observed in the United States. Productivity growth in food products in countries such as Brazil, Colombia and Mexico kept up comparatively well with that in the United States.

In Latin America, opening up to international competition and FDI led to a shift in the production structure towards the relatively capital-intensive sectors involved in processing abundant natural resources, while those activities intensive in R&D and in engineering lost weight.

In Asia, the Republic of Korea achieved higher rates of productivity growth than the United States, both in total manufacturing and in each of the sectors in the table. The evidence further suggests that other Asian economies, including India, Indonesia, Malaysia, Pakistan, the Philippines and Taiwan Province of China, as well as Turkey and Chile, also successfully reduced the productivity gap with the United States for manufacturing as a whole, but the rate of productivity growth varied widely across industries. A number of these countries have imported a substantial amount of machinery from developed countries over the past three decades (see chap. IV, table 4.3). Significantly, Mexico, which also imported large amounts of machinery,

Table 5.4

LABOUR PRODUCTIVITY IN 26 DEVELOPING ECONOMIES AND SELECTED INDUSTRIAL SECTORS, 1980–2000

(Index numbers, 1990 = 100)

	Total manufacturing (ISIC 300)			Food products (ISIC 311)			Textiles (ISIC 321)			Clothing (ISIC 322)			Electrical machinery (ISIC 383)			Transport equipment (ISIC 384)		
Country/economy	*1980*	*1985*	*2000*	*1980*	*1985*	*2000*	*1980*	*1985*	*2000*	*1980*	*1985*	*2000*	*1980*	*1985*	*2000*	*1980*	*1985*	*2000*
Argentina	..	122.1	85.1[a]	..	134.7	88.1[a]	..	109.9	55.7[a]	..	118.4	94.8[a]	..	101.2	64.2[a]	..	128.0	103.9[a]
Bolivia	77.0	58.3	90.8[b]	85.8	171.6	122.8	115.5	93.1	98.0	149.3	103.6	109.7	150.6	79.1	81.0	192.0	47.9	84.6
Brazil	..	79.9	114.0[c]	..	89.4	108.9[c]	..	91.8	76.9[c]	..	108.6	78.3[c]	..	83.2	102.0[c]	..	74.2	180.6[c]
Chile	80.2	115.3	144.6	97.7	117.0	149.6	79.8	97.9	121.7	98.8	123.9	184.8	49.5	83.5	104.4	98.3	110.6	174.6
China	..	..	242.1[d]	..	..	311.5[d]	..	..	181.7[d]	..	..	224.4[d]	..	..	285.1[d]	..	..	..[d]
Colombia	75.2	87.5	101.3	67.8	97.1	105.5	63.0	72.9	51.3	91.8	89.7	105.6	74.9	86.7	78.4	52.9	65.5	62.2
Côte d'Ivoire	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ecuador	79.8	77.2	117.3[d]	86.5	101.7	97.8[d]	99.4	95.1	101.3[d]	157.2	106.4	93.1[d]	119.9	107.6	61.5[d]	69.1	94.4	109.8[d]
Egypt	55.6	89.4	90.7[b]	73.5	94.6	81.6[e]	80.1	94.0	86.4[e]	93.1	134.0	181.3[e]	90.9	232.7	162.3[e]	76.0	128.9	262.8[e]
Ghana	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
India	55.2	72.5	152.4	34.6	78.3	174.0	69.9	67.7	107.4	43.3	52.1	107.5	64.2	69.3	173.1	60.8	73.9	123.2
Indonesia	54.0	68.9	124.2[d]	39.9	54.6	113.2	45.8	67.4	158.1	39.0	73.8	147.6	56.3	76.7	155.7	47.8	44.0	187.2
Kenya	83.7	88.8	89.4[e]	94.0	95.6	98.8[e]	104.2	88.4	74.0[e]	111.7	112.9	105.8[e]	25.1	32.9	90.9[e]	105.6	128.9	69.8[e]
Malaysia	67.1	93.9	171.1	90.6	96.4	162.7	60.2	61.5	208.6	62.8	73.9	151.2	66.6	98.6	219.3	40.9	55.6	116.8
Mexico	..	102.5	108.0	67.8	101.1	101.3	111.7	115.9	82.3	..	118.0	85.2	113.6	96.8	107.4	111.6	95.0	158.1
Morocco	85.8	81.8	117.0[d]	110.8	114.8	131.5[d]	79.0	99.9	99.2[d]	57.6	103.4	116.4[d]	70.3	88.4	85.9[d]	57.8	81.1	85.3[d]
Nigeria	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Pakistan	63.4	86.0	120.8[a]	89.5	106.6	118.8[a]	41.2	61.0	106.1[a]	61.0	67.0	133.8[a]	49.7	61.9	218.9	64.0	65.5	200.2
Peru	107.3	107.0	82.0[a]	117.5	74.6	57.5[a]	120.9	116.7	76.1[a]	119.6	101.3	124.5[a]	101.3	85.9	66.2	173.0	105.5	68.1
Philippines	74.1	79.9	150.0[b]	75.0	72.3	149.5	88.7	49.7	140.2[b]	77.1	50.6	145.3[b]	59.9	46.6	96.4[b]	63.5	28.8	152.5[b]
Republic of Korea	50.7	65.1	231.8	57.2	67.2	205.8	61.0	78.5	233.1	58.6	62.4	196.5	38.7	64.0	330.0	41.8	65.4	187.6
Taiwan Province of China	61.9	72.3	127.1[a]	57.3	82.8	110.6[a]	51.3	66.7	127.4[a]	70.1	78.3	92.2[a]	56.4	67.9	148.6[a]	54.1	61.8	118.0[a]
Thailand	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Turkey	61.3	71.5	121.3	65.4	71.8	134.4	75.3	77.7	114.2	59.5	68.9	148.5	62.8	76.5	135.6	54.5	59.9	135.4
Uruguay	88.0	125.9	127.5[d]	70.6	121.7	111.7[d]	76.3	114.6	115.3[d]	98.2	97.7	66.6[d]	69.6	118.4	81.1[d]	66.3	80.9	48.2[d]
Venezuela	83.6	91.3	114.1[e]	92.7	103.1	183.0[e]	99.0	124.7	45.9[e]	142.1	156.4	90.3[b]	105.9	110.2	98.2[b]	137.3	142.1	260.8[b]
Memo item:																		
United States	80.6	89.0	114.7[c]	79.5	92.1	113.2	84.1	89.4	118.0	82.7	93.0	144.1	78.5	88.3	220.4	80.3	98.6	149.9

Source: UNIDO, Industrial Statistics Database, 2002; World Bank, *World Development Indicators, 2002*; and Thomson Financial Datastream.

Note: Labour productivity calculated as real value added (in national currency) per worker. Nominal value added deflated by the GDP-deflator. Electrical machinery includes semiconductors and telecommunications equipment.

a 1996. ***b*** 1997. ***c*** 1995. ***d*** 1999. ***e*** 1998.

Table 5.5

SECTORAL SHARES IN MANUFACTURING VALUE ADDED IN SELECTED DEVELOPING ECONOMIES, 1970–2000

(Per cent)

	Argentina				*Brazil*				*Chile*				*Colombia*			
Sectors	*1970*	*1980*	*1990*	*1996*	*1970*	*1980*	*1990*	*1996*	*1970*	*1980*	*1990*	*2000*	*1970*	*1980*	*1990*	*2000*
I	15.6	..	14.3	13.7	18.8	..	..	22.8	14.9	7.7	8.1	6.7	10.7	10.2	9.6	7.3
II	9.9	..	8.5	7.7	9.9	..	..	8.7	7.7	2.6	1.8	2.3	2.9	4.0	4.3	2.3
III+IV	36.2	..	46.7	48.6	35.8	..	..	42.4	43.2	61.5	64.6	66.8	45.7	50.1	51.2	53.0
V	38.2	..	30.5	30.0	35.5	..	..	26.1	34.2	28.2	25.5	24.1	40.7	35.6	34.9	37.4
	Mexico				*Malaysia*				*Republic of Korea*				*Taiwan Province of China*			
	1970	*1980*	*1990*	*2000*	*1970*	*1980*	*1990*	*2000*	*1970*	*1980*	*1990*	*2000*	*1973*	*1980*	*1990*	*1996*
I	13.3	..	14.1	11.8	9.8	21.4	30.5	48.9	9.1	16.6	29.1	39.7	21.1	21.5	28.7	36.2
II	5.5	..	14.4	18.9	3.2	4.3	5.6	4.1	5.4	6.1	10.5	11.8	5.0	6.3	7.8	8.0
III+IV	46.8	..	48.8	43.8	49.5	41.2	36.8	29.0	45.5	39.5	31.6	27.9	35.7	37.5	35.8	35.3
V	34.4	..	22.6	25.4	37.5	33.1	27.1	18.0	39.9	37.8	28.8	20.6	38.3	34.6	27.7	20.4

Source: Cimoli and Katz, 2001; and UNIDO, Industrial Statistics Database, 2002.

Note: Sector I: Metalworking industry (ISIC 381, 382, 383, and 385), including computers and office equipment, telecommunications equipment, and semiconductors.
Sector II: Transport equipment (ISIC 384).
Sector III: Food, beverages and tobacco (ISIC 311, 313, and 314).
Sector IV: Natural-resource processing industries (ISIC 341, 351, 354, 355, 356, 371, and 372).
Sector V: Traditional labour-intensive industries (ISIC 321, 322, 323, 324, 331, 332, 342, 352, 361, 362, 369, and 390).

did not share in this productivity trend, except, as noted, in transport equipment and, to a lesser degree, in electrical machinery.

Differences across countries in the development of labour productivity in various industries are also reflected in changes in the relative weight of individual sectors in total industrial value added. Table 5.5 shows the increasing importance of industries based on natural resources in the major Latin American economies, with the exception of Mexico, and the declining importance of the metalworking industries (including the information technology subsectors), with the exception of Brazil. This implies that opening up to international competition and FDI led to a shift in the production structure towards the relatively capital-intensive sectors involved in processing abundant natural resources, while those activities intensive in research and development (R&D) and in engineering lost weight in total industrial output, thereby reducing the potential for productivity growth and innovation (Cimoli and Katz, 2001).

Regarding structural change, Mexico holds an ambiguous position which reflects the weight of the automobile sector and *maquiladora* industries – sectors with different labour intensities – in its recent pattern of industrialization. However, an examination of the structural-change index of the United Nations Industrial Development Organization (UNIDO) suggests that, while there was a restructuring in manufacturing after market-oriented reforms, structural change remained the same for the period 1984–1994 under the new policy regime as it had been for the 1970–1981 period under import substitution (Máttar, Moreno-Brid and Wilson Peres, 2002: 27–28; Moreno-

Brid, 1999: 48–49). Moreover, the sectors with the largest increase in their share in GDP during 1987–1994 (namely, automobiles, motors and accessories, and non-electrical machinery and equipment) also had the largest increase in 1970–1981. Thus more than a decade of economic reforms appears not to have radically changed the structure and dynamics of manufacturing activity.

These changes in the share of different sectors in manufacturing value added in Latin American countries significantly differ from those observed in the Asian economies shown in table 5.5. While the intensity of these changes differed considerably across the Asian economies, the metalworking and automotive industries gained in importance in all of them. The shift towards metalworking was accompanied by a sharp decline in the importance of natural-resource-based and labour-intensive industries.

A recent study provides evidence that the share of those manufactures commonly associated with successful industrial upgrading (electrical machinery, non-electrical machinery and transportation equipment) grew particularly rapidly in the Republic of Korea, Malaysia, Thailand and Turkey, but much less so in Brazil, Chile, Mexico and, particularly, Argentina (Amsden, 2001). While structural change within the manufacturing sector was limited during the period 1980–1994, it was greatest in economies such as Indonesia and Malaysia, which experienced substantial growth in manufacturing value added as a share of GDP, and lowest in semi-industrial economies, such as Argentina and Mexico, as well as in more mature industrial economies (the Republic of Korea and Taiwan Province of China), where that share contracted. Thus the weak performers included countries that experienced both "positive" and "negative" patterns of deindustrialization.[5]

D. Trade and the pattern of structural change

Close integration into the international trading system through rapid liberalization has been the cornerstone of economic reform in developing countries since the mid-1980s. This could be expected to influence the pattern of structural change, along with resource endowments and geography. However, the impact of trade integration largely depends on the circumstances under which it takes place, and on the policies pursued during the integration phase. Integration in Latin America and Africa marked a sharp shift in development strategy, occurred in a big-bang manner and followed the debt crisis (i.e. in a period of weakness). This contrasts with the integration process in East Asia that occurred from a position of strength and was characterized by a continuous and purposeful strategy of gradual opening up. China represented in some ways an exception, as it combined a rapid pace of integration with accelerated growth, largely because its opening up was from a position of strength common to other Asian countries. It is likely that the pattern of industrialization and structural change across the developing world since the debt crisis has been related to these underlying patterns of trade integration.

1. Industrialization and competitiveness

It is generally agreed that a country's pattern of participation in international trade is determined to a large extent by its resource endowments and the efficiency with which resources are utilized. Conventional wisdom suggests that greater international mobility of capital should increase the

importance of relative endowments of high-skilled and low-skilled labour in shaping the effect of trade on the pattern of industrialization. In particular, in most developing countries, industries using low-skilled labour should be expected to attract capital, making that labour more productive and those industries more competitive on international markets. According to this view, developing countries should specialize in low-skilled, labour-intensive manufactured goods and import high-skill-intensive goods from advanced countries. This would lead to a narrowing of the wage gap between unskilled and skilled workers in developing countries.

Integration in Latin America and Africa occurred in a big-bang manner and in a period of weakness.

Studies on international specialization often assume that in an economy rates of productivity growth differ widely across industrial sectors, while wages develop more equally across industries.[6] Such asymmetry can provide an important source of structural change. In a dynamic context, uneven productivity growth across industries, combined with even growth in wage rates, implies that workers in industries with relatively higher productivity are not fully compensated. The productivity gains are thus spread over the whole economy through general wage increases and changes in relative prices. Such wage and productivity dynamics – and hence the development of relative unit labour costs – will have a major bearing on the comparative cost advantages of different countries in specific industries. If a country experiences relatively faster productivity growth in some industries than in others, while wages are growing at similar rates across industries, it will gain comparative advantage in the catching-up sector, provided that productivity and wage developments in other countries do not follow the same pattern.[7]

Changes in specialization in a country are often associated with changes in "international competitiveness", although this concept is more appropriate to discussions of performance of individual enterprises.

A comparison of unit labour costs in the sample of 26 developing countries relative to the United States for a number of manufacturing categories in 2000 does not reveal a consistent pattern, as ratios differ substantially for individual countries in different industrial categories, as well as for individual categories in different countries (table 5.6). The fact that the table includes data for countries with small industrial sectors, which therefore often experience considerable fluctuations in their levels of wages and productivity over time, may partly explain this absence of a consistent pattern. For all industrial categories and all the selected countries taken together, there have been almost equal numbers of upward and downward changes in the ratios over the past two decades. But it is noteworthy that the Republic of Korea is the only country in the table where the ratio of unit labour costs to that in the United States fell in all five sectors. In a number of other countries (notably India), labour costs relative to the United States also fell in traditional labour-intensive industries such as clothing. By contrast, this ratio rose in other sectors for a large number of countries, particularly in electrical machinery. It is perhaps surprising that this is the case even for economies that have become, in varying degrees, successful exporters of telecommunications equipment and semiconductors within international production networks, such as Malaysia, Mexico, the Philippines, Taiwan Province of China, Thailand and Turkey. Strong productivity growth appears to have been a key determinant of export success in these products in Malaysia and Taiwan Province of China, while relatively slow productivity growth in Mexico and the Philippines (see table 5.4) suggests that other factors, including wages and exchange rates, played a more important role in these countries in retaining competitiveness.

Table 5.6

UNIT LABOUR COSTS IN 26 DEVELOPING ECONOMIES AND SELECTED SECTORS, 1980 AND 2000

(Ratios to the United States level)

	Food products		Textiles		Clothing		Electrical machinery		Transport equipment	
Economy	1980	2000	1980	2000	1980	2000	1980	2000	1980	2000
Argentina	0.87[a]	1.95[b]	0.48[a]	1.28[b]	0.48[a]	0.64[b]	0.70[a]	2.11[b]	0.79[a]	1.78[b]
Bolivia	0.86	0.61	0.93	0.76	0.82	0.65	0.51	1.00	0.47	1.34
Brazil	0.53[c]	0.74[b]	0.42[c]	0.65[b]	0.39[c]	0.47[b]	0.52[c]	0.81[b]	0.60[c]	0.53[b]
Chile	0.63	0.80	0.65	0.89	0.55	0.51	0.88	0.90	0.46	0.74
China	0.68	..	0.26	..	0.08	..	0.59	..	0.42	..
Colombia	0.60	0.62	0.47	0.66	0.58	0.47	0.48	1.01	0.53	0.97
Côte d'Ivoire	0.92	1.50[d]	0.85	1.06[d]	0.73	1.02[d]	0.78	1.34[d]	0.36	1.69[d]
Ecuador	1.36	0.88[e]	0.91	0.30[e]	0.82	0.34[e]	0.96	1.20[e]	0.86	0.55[e]
Egypt	1.45	1.45[f]	1.27	1.21[f]	0.99	0.38[g]	1.00	1.10[g]	1.51	0.71[g]
Ghana	1.00	0.82[b]	0.80	0.96[b]	0.45	0.60[b]	1.08	0.39[b]	0.84	1.63[b]
India	1.74	1.29	1.25	1.57	0.96	0.47	1.01	0.98	1.24	1.43
Indonesia	0.97	0.71	0.61	0.42	0.95	0.45	0.49	0.62	0.40	0.26
Kenya	1.16	1.31[e]	1.00	2.20[e]	0.94	0.96[e]	1.47	0.74[e]	1.10	3.34[e]
Malaysia	0.60	1.08	0.75	0.59	0.82	0.84	0.71	1.01	0.67	0.69
Mexico	1.00	0.90	0.85	0.88	0.69[h]	0.64	0.73	1.06	0.49	0.43
Morocco	2.08	1.61[e]	1.19	1.38[e]	1.25	1.05[e]	1.42	1.49[e]	1.34	0.92[e]
Nigeria	0.99	0.29[b]	0.85	0.80[b]	0.52	0.11[b]	0.56	0.56[b]	0.09	0.04[b]
Pakistan	..	..	..	..	..	..	..	..	..	..
Peru	0.43	1.02[b]	0.43	0.62[b]	0.66	0.46[b]	0.37	0.95[b]	0.25	0.50[b]
Philippines	0.63	0.65[d]	0.60	0.67[d]	0.80	0.59[d]	0.60	0.80[d]	0.47	0.40[d]
Republic of Korea	0.81	0.73	0.74	0.63	0.71	0.62	0.82	0.56	0.78	0.71
Taiwan Prov. of China	0.94	1.93[b]	1.09	1.45[b]	0.44	0.80[b]	0.97	1.81[b]	0.78	1.17[b]
Thailand	0.46[i]	0.92[j]	0.46[i]	0.87[j]	0.67[i]	1.07[j]	0.35[k]	0.65[j]	0.48[k]	0.41[j]
Turkey	1.12	1.09	0.70	0.69	0.62	0.43	0.72	0.97	0.98	0.65
Uruguay	1.65	1.64[e]	0.84	0.74[e]	0.76	0.69[e]	1.03	1.52[e]	0.72	1.22[e]
Venezuela	1.34	0.93[d]	1.14	0.72[d]	1.03	0.49[d]	0.98	0.68[d]	0.86	0.17[d]

Source: UNCTAD secretariat calculations, based on UNIDO, Industrial Statistics Database, 2002.
Note: Unit labour costs calculated as wages (in current dollars) divided by value added (in current dollars).
a 1984. ***b*** 1995. ***c*** 1985. ***d*** 1997.
e 1999. ***f*** 1996. ***g*** 1998. ***h*** 1984.
i 1979. ***j*** 1994. ***k*** 1982.

appropriate to discussions of performance of individual enterprises (Krugman, 1994). A business enterprise can be called internationally competitive if it can sell its products at the same price (or slightly below) and earn the same return as its competitors. While this definition of competitiveness is straightforward, measuring changes in the international competitiveness of a country's tradeables sector is more complicated, particularly for developing countries for which the required

data are often unavailable. The real exchange rate is a widely used index of the competitiveness of a country's tradeables sector. A popular definition of the real exchange rate relies on the purchasing power parity approach, according to which the real exchange rate equals the nominal exchange rate multiplied by the ratio of the foreign price level to the domestic price level. An assessment of the international competitiveness of a country's industrial sector would, ideally, be based on the relative price of foreign to domestic production baskets of internationally traded industrial goods. But as data on this are unavailable for most countries, an assessment is made here based on consumer-price indices.

Most countries that sought to increase their international competitiveness, but achieved little or no improvement in labour productivity, appear to have had to resort to wage suppression or sharp depreciations ...

An alternative index of changes in a country's degree of competitiveness refers to relative unit labour costs (i.e. the ratio of nominal wages expressed in dollars to labour productivity also expressed in dollars, relative to the same ratio in the United States). This definition of the real exchange rate is particularly useful as it allows the decomposing of changes in international competitiveness into the relative impact of changes in nominal wages, labour productivity and the nominal exchange rate. A combination of a virtuous and sustainable improvement in social welfare and a high degree of international competitiveness is characterized by strong productivity growth associated with a rise in investment and increased or stable employment, a rate of growth of real wages that keeps pace with productivity, and a nominal exchange rate that maintains purchasing power parity.

... but none of these countries achieved sustained improvements in export and value-added performance.

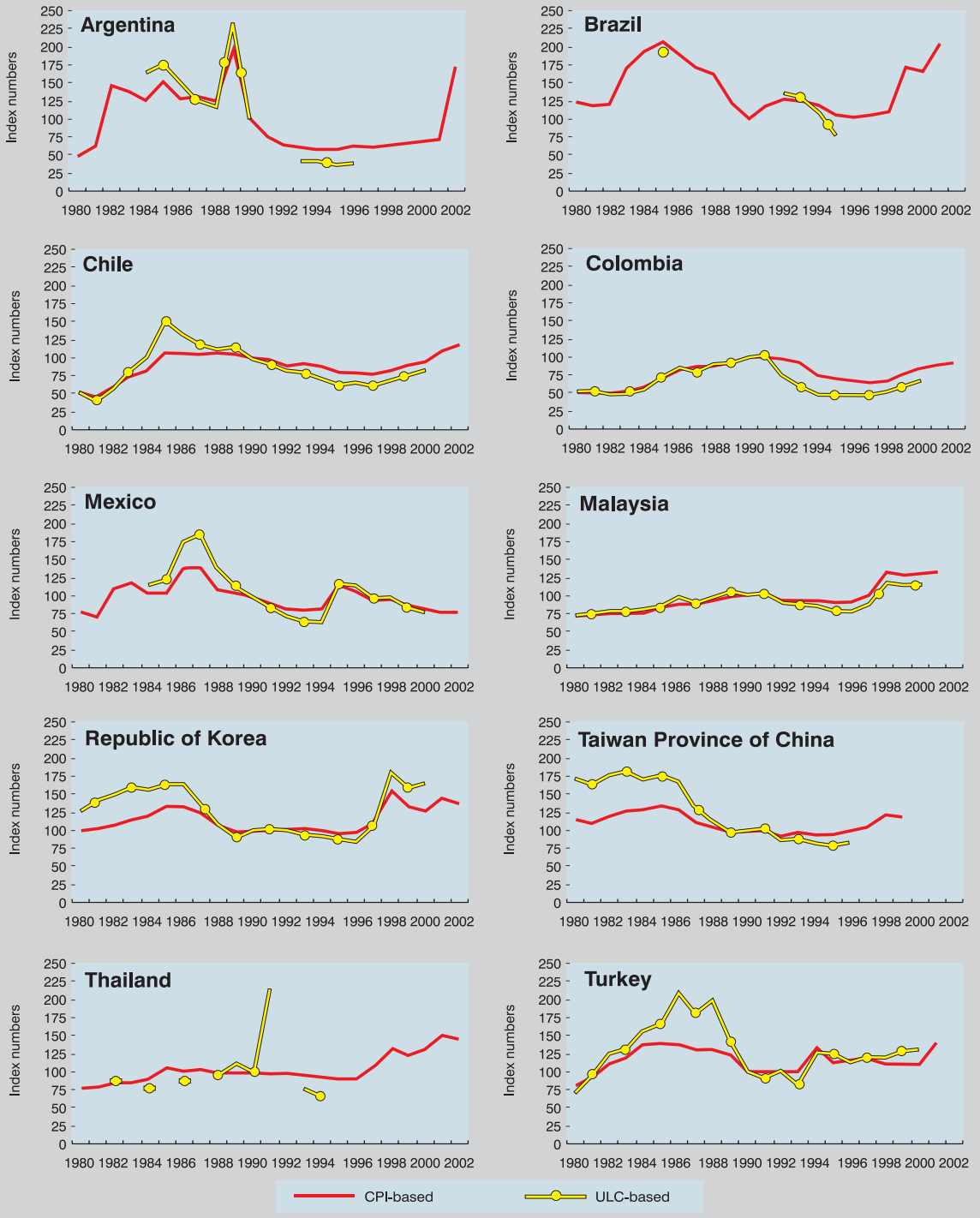
While real exchange rates based on relative consumer-price indices and those based on relative unit labour costs largely move in parallel, their degree of divergence from each other can vary over time, indicating changes in profit margins earned in world markets. Evidence given in figure 5.3 suggests that the high profit margins earned by exporters of manufactures in the Republic of Korea and Taiwan Province of China during most of the 1980s had fallen at the end of the decade and in the 1990s, and were only restored, in the case of the Republic of Korea, in the aftermath of the financial crisis of 1997–1998. While exporters of manufactures in Argentina, Chile, Malaysia, Mexico and Turkey also benefited from increasing profit margins on international markets during the 1980s, these margins appear to have been smaller than those of East Asian exporters, as indicated by the narrower gap between the curves of real exchange rates calculated on the basis of indices for consumer prices and unit labour costs respectively. Exporters of manufactures in Brazil, Colombia and Thailand also appear to have experienced a profit squeeze on international markets during the 1990s, but without having benefited from rising profits during the 1980s.

Table 5.7 summarizes the findings regarding the changes in international competitiveness and export performance of domestic manufacturers over the past two decades.[8] The growth rate of manufactured exports is a key performance indicator, but since it may be misleading with respect to countries that start from a small base of manufactured exports, it is supplemented in the table by the share of manufactures in total non-oil merchandise exports in 2000. Of the 26 economies in the table, Côte d'Ivoire, Nigeria, Peru and Uruguay have shown poor growth in manufactured exports over the past two decades. Despite a more rapid growth performance, the share of manufactures in total non-oil exports has remained very low in Chile, Ecuador, Ghana and Kenya. This group includes three countries that experienced the strongest improvement in the competitiveness indicator: Ghana, Ecuador and Nigeria. These countries raised the competitiveness of their manufactures through wage repression or a sizeable currency depreciation, rather than through strong productivity performance, which suggests that the

Figure 5.3

REAL EXCHANGE RATES OF SELECTED DEVELOPING ECONOMIES WITH RESPECT TO THE UNITED STATES DOLLAR, 1980–2002

(*Index numbers, 1990 = 100*)



Source: UNCTAD secretariat calculations, based on IMF, *International Financial Statistics, 2002*; and UNIDO, Industrial Statistics Database, 2002.

Note: The CPI-based curves represent the real exchange rate index with respect to the United States dollar based on relative consumer price indices. The ULC-based curves represent the real exchange rate index with respect to the United States dollar based on relative unit labour costs.

Table 5.7

INDICATORS RELATED TO THE INTERNATIONAL COMPETITIVENESS OF EXPORTERS OF MANUFACTURES IN 26 DEVELOPING ECONOMIES

(Index numbers for 2000 with 1980 = 100, unless otherwise indicated)

Country	Real dollar exchange rate based on consumer price index[a]	Real dollar exchange rate based on unit labour costs[b]	Real effective exchange rate[c]	Nominal wages per worker[d]	Labour productivity[e]	Unit labour costs[f]	Real wages[g]	Memo items: Average annual growth of exports of manufactures	Memo items: Share of manufactures in total non-oil merchandise exports in 2000
								(Per cent)	
Argentina (1984–1996)	47.7	23.3	66.7	240.5	50.5	101.9	73.5	13.9	40.1
Bolivia (1980–1997)	164.8	106.7	159.1	94.8	73.9	66.7	78.7	19.0	33.2
Brazil (1985–1995)	50.9	39.9	43.3	152.2[h]	114.8[h]	96.3	137.4	8.6	60.2
Chile	183.7	162.3	155.8	168.3	180.4	82.1	148.0	14.0	16.2
China (1980–1999)	..	..	343.2	..	142.3	..	..	27.4[i]	91.3
Colombia	173.2	127.6	153.4	191.1	138.2	101.0	136.0	11.7	57.0
Côte d'Ivoire (1980–1997)	195.8	140.7	150.9	107.2	110.2	106.9	107.8	3.4	18.4
Ecuador (1980–1999)	244.6	340.5	218.1	44.6	105.9	36.7	54.0	16.0	17.4
Egypt (1980–1997)	92.4	148.7	..	146.1	158.8	42.5	69.3	11.8	63.7
Ghana (1980–1995)	698.3	178.0	651.3	58.6	77.9	81.0	221.5	12.5	16.0
India	215.8	300.1	215.6	141.3	279.9	52.8	145.9	12.0	81.1
Indonesia (1980–1999)	331.3	285.5	332.2	114.7	228.2	81.7	188.0	24.8	76.5
Kenya (1980–1999)	153.0	175.9	..	97.9	120.1	61.8	74.1	10.0	22.6
Malaysia	187.5	160.2	151.8	241.1	255.2	84.9	216.5	22.1	89.7
Mexico (1984–2000)	78.2	67.0	73.9	213.4	113.0	90.2	100.7	23.8	92.5
Morocco (1980–1999)	173.0	202.0	131.8	96.8	136.3	60.8	82.9	10.6	66.5
Nigeria (1980–1996)	119.7	864.3	232.4	28.8	183.3	25.3	18.1	3.9	57.5
Pakistan (1980–1996)	188.7	..	180.7	..	177.1	95.2	181.4	12.8	86.1
Peru (1980–1996)	35.3	52.1	..	227.3[j]	140.1[j]	47.4	36.2	4.9	21.9
Philippines (1980–1997)	120.6	105.3	118.9	263.2	202.6	80.5	163.0	17.5	92.9
Republic of Korea	129.1	130.4	129.0	533.5	459.5	72.1	329.8	12.1	96.0
Taiwan Prov. of China (1980–1996)	86.7	49.7	91.4	550.7	205.9	121.0	248.6	12.9	96.4
Thailand (1982–1994)	108.5	75.4	171.3	141.6	98.6	140.9	105.9	30.4	79.8
Turkey	139.3	184.6	108.8	161.7	197.0	54.5	107.8	17.4	83.1
Uruguay (1980–1999)	113.8	120.0	92.0	175.4	146.6	68.0	98.5	6.8	47.5
Venezuela (1980–1998)	122.4	453.3	161.6	42.4	136.2	19.2	26.3	15.0	63.7

Source: UNCTAD secretariat calculations, based on IMF, *International Financial Statistics, 2002*; World Bank, *World Development Indicators, 2002;* UNIDO, Industrial Statistics Database, 2002; and Thomson Financial Datastream.

a Index of bilateral exchange rate with the United States dollar multiplied by the ratio of index of United States consumer prices to the index of domestic consumer prices; an index number higher than 100 indicates a real depreciation of the local currency.

b Ratio of domestic unit labour costs to United States unit labour costs.

c Based on relative consumer prices.

d Calculated on the basis of dollar values.

e Real value added per worker calculated by deflating value added (in United States dollars) per worker by the GDP-deflator.

f Ratio of nominal wages in manufacturing (deflated by the consumer price index) to value added in manufacturing (deflated by the GDP-deflator). An index number higher than 100 indicates an increase in the share of labour in the functional distribution of income.

g Nominal wage per worker deflated by the consumer price index.

h 1990–1995.

i 1985–1999.

j 1982–1996.

improvement in their competitiveness represented a correction of the imbalances between low productivity and relatively high domestic wages and prices.[9]

By contrast, the Republic of Korea and Taiwan Province of China registered strong growth in manufactured exports based on a significant increase in labour productivity. As a result, manufacturers in these economies were able to maintain competitiveness, while at the same time achieving the fastest increase in wages among all economies listed in the table. China, Malaysia and Mexico experienced particularly strong growth in their manufactured exports, which today account for about 90 per cent of their total non-oil exports, but their performance in terms of labour productivity growth was much less impressive; a phenomenon consistent with the observation above that the increase in manufacturing value added in these countries has lagged behind that in manufactured exports, although to varying degrees.

Most countries that sought to increase their international competitiveness, but achieved little or no improvement in labour productivity, appear to have had to resort to wage suppression or sharp depreciations. Thus the level of wages fell in most African and Latin American countries in the table. Evidence further suggests that since the mid-1980s rapid trade liberalization in these regions has also been associated with growing wage inequality between skilled and unskilled labour (UNCTAD, 2001; ILO, 2001). While various explanations have been offered for this trend, the extent to which countries have responded to competition from emerging, low-cost producers of labour-intensive manufactures by cutting wages or replacing less educated with better educated labour, rather than by new investment and upgrading, appears to be of particular importance. The competitiveness of Latin American manufacturers was further undermined by sharp appreciations. Indeed, the sharpest nominal appreciations among all the countries listed in the table occurred in Argentina, Brazil and Peru, and this has been a major factor in the very strong deterioration in the international competitiveness of these countries' manufacturers over the past two decades.

The limited data on the sectoral distribution of investment available for a number of Latin American countries (ECLAC, 2001, table I-6) suggests that there is indeed a positive link between the development of industrial investment as a share of GDP and labour productivity in the manufacturing sector. In Chile, the sectoral investment coefficient of industry more than doubled between the early 1980s and the late 1990s and, as can be seen from table 5.7, this rise was accompanied by a strong increase in labour productivity in Chilean manufacturing. By contrast, the sectoral investment coefficient of industry in Peru fell during the 1990s to about half its average level of the 1970s and 1980s, a drop that was accompanied by a sizeable decline in the country's labour productivity in manufacturing between 1980 and 1996. In Bolivia and Colombia, the sectoral investment coefficients changed little between the mid-1980s and mid-1990s, with only a slight rise in manufacturing labour productivity. In Brazil, as noted above, there was a sizeable improvement in manufacturing productivity, attained through labour-shedding rather than investment. However, none of the countries that improved their competitiveness by wage suppression or massive devaluations achieved sustained improvements in export and value-added performance to a similar extent as countries that had succeeded in raising productivity and wages in a virtuous process of capital accumulation and employment expansion.

Revealed comparative advantage increased strongly in Argentina and Brazil in sectors that have been supported by industrial policy.

2. Upgrading exports

As already noted, some production and export patterns are more favourable to industrialization and growth than others. It is possible to establish a virtuous circle between investment, exports and growth by investing in sectors with significant productivity and market potential, and using the export proceeds to finance imports of capital goods and intermediate inputs required for

further productivity increases. Exports of more technology-intensive manufactures are of key importance in this context because, as discussed in some detail in *TDR 2002*, primary sectors often face adverse terms-of-trade movements as well as limits to raising productivity, and markets for labour-intensive manufactures exported by developing countries are rapidly becoming oversupplied.

In examining the links between industrial upgrading and exports, five broad groups are used here based on a distinction between primary commodities (Group I) and manufactures; the latter are further distinguished according to whether their production relies mainly on labour and natural resources (Group II), and whether they are characterized by low-technology intensity (Group III), medium-technology intensity (Group IV), or high-technology intensity (Group V).[10] Table 5.8 shows that between 1980 and 2000, the share of primary commodities in total non-oil exports declined rapidly in all the economies, for some of them from an already low level, as in the Republic of Korea and Taiwan Province of China. Exceptions are Chile, Côte d'Ivoire and Ghana, where the decline was much more modest. The fall in commodity prices relative to manufactures played an important role in this trend. But only three countries in the table, Côte d'Ivoire, Colombia and Ghana, experienced an absolute decline in export earnings from primary commodities due to sharp declines in wood, coffee and cocoa exports respectively. While a number of countries also experienced sharp falls in export earnings in certain commodities (Argentina in cereals and sugar, Brazil in cocoa and coffee, Turkey in cotton and live animals, and Egypt in cotton and wool), their total earnings from commodity exports increased. Chile has been particularly successful in changing the composition of its primary commodity exports; it has raised the share of food and other agricultural products and reduced that of non-ferrous metals, especially copper.

Developing countries are becoming increasingly similar to developed countries in the structure of their manufactured exports, but not in the structure of their manufacturing value added.

The sharp fall in the share of primary commodities in non-oil exports contrasts with the steep rise in the share of medium- and/or high-technology-intensive products in three major Latin American economies (Argentina, Brazil and Mexico) and the three East Asian economies shown in the table (Malaysia, the Republic of Korea and Taiwan Province of China). Ghana, India, Morocco and Turkey experienced the largest increase in the share of labour- and resource-intensive manufactures, while the Republic of Korea and Taiwan Province of China are the only economies in the table where this product group declined in importance along with the drop in the share of primary commodities.

However, success in upgrading differs significantly among the Asian and Latin American economies that shifted to technology-intensive products. Industrial upgrading of exports from the Republic of Korea and Taiwan Province of China has been based on a comparatively wide range of medium- and high-tech products. This has led to an increase in the relative importance of electrical and non-electrical machinery, road motor vehicles, industrial chemicals, and electronics, as well as ships and boats in the Republic of Korea and iron and steel in Taiwan Province of China. By contrast, industrial upgrading in Malaysia has been based on a much narrower range of products, concentrating on electrical and non-electrical machinery, as well as electrical and electronic goods, in the context of the participation of the economy in international production networks. The increase in the share of manufactures in the three large Latin American economies has also been based on a relatively narrow range of products. In Mexico, the share of automobiles in total non-oil exports has grown strongly, along with that of the electronics and labour- and resource-intensive industries, such as clothing and wood products. Argentina and Brazil have also experienced a strong increase in the share of automobile exports, as well as chemicals, pharmaceuticals and aircraft.

There appears to be a close relationship between the evolution of the structure of exports and the inter-industry pattern of investment in the

Table 5.8

COMMODITY STRUCTURE OF EXPORTS FROM SELECTED DEVELOPING ECONOMIES, 1980–2000

(Percentage of total non-oil exports)

	Republic of Korea			Taiwan Prov. of China			Malaysia			China			India		
Commodity group	*1980*	*1990*	*2000*	*1980*	*1990*	*2000*	*1980*	*1990*	*2000*	*1980*	*1990*	*2000*	*1980*	*1990*	*2000*
Group I	9.9	5.5	4.0	10.7	6.7	3.6	74.9	33.7	10.3	..	20.4	8.7	40.9	26.6	18.9
Food	6.7	3.1	1.5	8.7	4.0	1.2	4.8	5.3	1.9	..	12.1	5.1	25.2	14.7	12.9
Non-ferrous metals	0.5	0.6	1.2	0.3	0.9	1.1	12.0	1.9	1.0	..	1.1	1.4	0.2	0.5	0.7
Other primary commodities	2.7	1.7	1.3	1.8	1.7	1.3	58.1	26.5	7.3	..	7.3	2.2	15.5	11.4	5.3
Group II	42.5	33.3	14.8	40.6	28.3	14.1	6.7	12.3	9.3	..	38.9	33.2	38.5	51.1	52.6
Textiles	12.8	9.5	7.9	9.2	9.4	8.2	1.9	1.6	1.4	..	13.0	6.8	15.3	12.8	14.2
Clothing	17.0	12.5	3.1	12.4	6.0	2.1	1.5	5.5	2.6	..	17.4	15.0	7.9	14.9	14.5
Footwear, leather and travel products	6.8	8.9	1.6	11.0	7.0	1.2	0.4	0.5	0.2	..	4.5	6.0	6.3	6.8	3.6
Wood and paper products	2.5	0.5	0.2	5.4	3.4	1.4	2.4	2.8	3.6	..	1.1	2.6	0.3	0.1	0.2
Paper, print and publishing	0.9	0.8	1.4	0.6	0.8	0.7	0.2	0.8	0.8	..	0.6	0.8	0.2	0.2	0.5
Non-metallic mineral products	2.5	1.0	0.6	1.9	1.7	0.6	0.3	1.2	0.8	..	2.4	2.0	8.5	16.4	19.7
Group III	19.1	14.7	11.5	8.6	10.3	10.5	0.7	3.2	1.9	..	5.9	8.4	5.7	4.8	6.6
Iron and steel	9.5	5.8	4.2	1.7	1.5	3.2	0.2	0.9	0.7	..	2.3	2.1	1.1	1.7	3.2
Fabricated metal products	4.4	2.6	1.9	4.3	5.1	4.8	0.4	0.8	0.9	..	2.6	3.4	2.9	2.0	2.5
Simple transport equipment	1.6	1.9	0.4	2.1	3.2	2.0	0.1	0.1	0.2	..	0.6	2.3	1.6	0.9	0.6
Ships and boats	3.5	4.4	5.1	0.6	0.5	0.5	0.0	1.3	0.0	..	0.4	0.7	0.0	0.2	0.2
Group IV	8.2	13.3	21.5	12.3	18.7	19.5	3.0	8.5	10.9	..	13.7	15.7	7.0	6.6	6.6
Rubber and plastic products	3.5	2.5	1.7	3.7	4.2	2.5	0.6	1.5	1.2	..	0.9	2.7	0.6	1.1	1.3
Non-electrical machinery	1.7	3.9	6.2	4.3	7.0	7.2	1.0	2.8	3.2	..	4.6	4.5	3.4	3.2	2.6
Electrical machinery (excl. semiconductors)	2.3	3.6	4.4	3.8	6.3	8.6	1.3	3.9	6.1	..	2.0	8.0	1.5	1.2	1.5
Road motor vehicles	0.7	3.4	9.3	0.5	1.1	1.3	0.1	0.4	0.3	..	6.2	0.5	1.6	1.1	1.2
Group V	16.8	27.9	46.3	18.6	27.5	48.2	14.3	39.0	66.1	..	14.8	26.2	5.1	9.3	11.7
Industrial chemicals	4.2	3.7	8.2	2.4	3.9	6.0	0.7	1.8	4.1	..	5.6	4.2	2.8	5.1	7.2
Pharmaceuticals	0.1	0.2	0.2	0.1	0.1	0.0	0.1	0.2	0.1	..	1.2	0.7	1.5	2.7	3.0
Computers and office equipment	0.5	4.2	12.2	1.1	10.0	20.0	0.0	2.8	23.5	..	0.7	7.7	0.0	0.6	0.4
Communication equipment and semicond.	9.2	18.2	24.2	12.8	11.2	19.6	11.9	31.5	36.0	..	4.9	10.3	0.2	0.4	0.4
Aircraft	0.8	0.3	0.4	0.0	0.0	0.1	0.9	1.1	0.3	..	0.0	0.2	0.0	0.0	0.1
Scientific instruments	1.9	1.4	1.1	2.2	2.3	2.6	0.6	1.6	2.0	..	2.4	3.0	0.6	0.4	0.6
Other manufactures	3.5	5.3	1.9	2.9	5.6	1.2	0.4	3.2	1.5	..	6.3	7.8	2.7	1.6	3.6

/...

Table 5.8 (continued)

COMMODITY STRUCTURE OF EXPORTS FROM SELECTED DEVELOPING ECONOMIES, 1980–2000

(Percentage of total non-oil exports)

	Argentina			Brazil			Chile			Colombia			Mexico		
Commodity group	*1980*	*1990*	*2000*	*1980*	*1990*	*2000*	*1980*	*1990*	*2000*	*1980*	*1990*	*2000*	*1980*	*1990*	*2000*
Group I	76.0	68.2	59.9	60.3	46.3	39.8	91.4	89.7	83.8	79.6	59.8	43.0	40.6	30.3	7.5
Food	51.7	42.7	39.9	40.2	21.8	17.4	17.0	23.2	21.9	73.5	51.7	32.2	21.2	16.6	4.3
Non-ferrous metals	1.8	2.4	1.9	0.5	4.8	3.3	51.8	44.2	29.9	0.1	0.2	0.7	6.3	5.2	0.9
Other primary commodities	22.6	23.1	18.1	19.6	19.7	19.0	22.6	22.3	32.1	6.1	7.9	10.1	13.1	8.6	2.3
Group II	8.7	10.0	8.8	9.4	12.7	12.9	1.8	3.7	5.2	13.2	26.0	22.1	8.7	7.8	12.8
Textiles	0.5	1.8	1.5	3.2	2.6	1.7	0.1	0.5	0.7	3.5	3.2	3.6	0.8	2.1	1.7
Clothing	1.8	0.9	0.3	0.5	0.8	0.5	0.0	0.5	0.2	3.1	10.9	7.0	3.1	0.5	5.8
Footwear, leather and travel products	5.1	4.9	4.1	2.8	4.9	4.6	0.1	0.5	0.2	1.0	4.4	2.2	0.7	0.8	0.6
Wood and paper products	0.1	0.3	1.1	1.0	0.8	2.3	0.1	0.7	1.3	0.3	0.3	1.0	0.4	0.5	2.5
Paper, print and publishing	0.9	1.3	1.4	0.9	2.4	1.9	1.3	1.5	2.5	1.9	2.9	4.3	1.8	1.2	0.9
Non-metallic mineral products	0.4	0.8	0.5	1.0	1.2	1.7	0.2	0.2	0.2	3.3	4.3	4.1	1.8	2.7	1.3
Group III	3.1	8.1	4.9	6.4	13.5	8.6	2.0	1.4	1.4	1.3	5.1	6.2	2.2	7.5	4.5
Iron and steel	1.9	6.9	4.0	4.4	11.8	7.0	0.4	0.9	0.5	0.0	4.1	4.2	0.5	4.6	1.2
Fabricated metal products	0.8	0.9	0.6	1.1	1.2	1.3	0.6	0.4	0.6	1.2	0.9	1.8	1.5	2.1	2.6
Simple transport equipment	0.1	0.1	0.1	0.4	0.3	0.3	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.7
Ships and boats	0.3	0.2	0.3	0.5	0.2	0.0	1.0	0.2	0.2	0.0	0.0	0.0	0.0	0.5	0.0
Group IV	5.4	5.4	14.9	15.0	15.6	19.3	0.9	0.9	3.0	2.5	2.5	8.6	19.4	35.8	43.6
Rubber and plastic products	0.1	0.6	1.1	0.6	1.1	1.6	0.2	0.4	0.8	0.4	0.7	2.1	0.2	0.6	1.7
Non-electrical machinery	2.9	2.7	3.7	6.8	8.0	7.8	0.3	0.2	0.7	1.2	1.0	1.3	5.4	13.3	8.3
Electrical machinery (excl. semiconductors)	0.8	0.5	0.9	1.2	1.5	1.9	0.1	0.1	0.4	0.4	0.8	2.3	10.2	3.2	15.3
Road motor vehicles	1.6	1.5	9.1	6.5	5.1	8.0	0.3	0.2	1.1	0.5	0.1	3.0	3.6	18.7	18.2
Group V	6.7	8.2	11.1	8.3	11.0	18.8	4.0	3.9	6.3	2.8	5.6	18.7	24.9	16.5	29.3
Industrial chemicals	4.6	6.2	7.3	3.9	5.8	6.1	3.7	3.4	5.7	2.1	5.1	14.9	6.5	10.2	2.9
Pharmaceuticals	0.5	0.3	1.5	0.2	0.3	0.5	0.0	0.1	0.2	0.4	0.3	2.8	0.7	0.5	0.6
Computers and office equipment	0.8	1.0	0.2	1.8	0.6	0.9	0.0	0.0	0.1	0.1	0.0	0.0	2.0	3.4	7.8
Communication equipment and semicond.	0.1	0.0	0.2	1.3	1.7	3.6	0.2	0.0	0.1	0.0	0.0	0.1	12.9	0.6	14.9
Aircraft	0.0	0.1	1.2	0.5	1.8	6.8	0.0	0.3	0.2	0.1	0.0	0.7	0.6	0.4	0.2
Scientific instruments	0.6	0.5	0.8	0.6	0.8	0.9	0.1	0.0	0.1	0.2	0.1	0.3	2.2	1.3	2.9
Other manufactures	0.2	0.2	0.3	0.6	0.9	0.7	0.0	0.2	0.3	0.6	1.0	1.4	4.2	2.1	2.3

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Table 5.8 (concluded)

COMMODITY STRUCTURE OF EXPORTS FROM SELECTED DEVELOPING ECONOMIES, 1980–2000

(Percentage of total non-oil exports)

	Côte d'Ivoire			Morocco			Turkey			Egypt			Ghana		
Commodity group	*1980*	*1990*	*2000*	*1980*	*1990*	*2000*	*1980*	*1990*	*2000*	*1980*	*1990*	*2000*	*1980*	*1990*	*2000*
Group I	93.3	87.2	81.6	75.3	45.8	33.5	70.6	30.6	16.9	69.6	39.8	36.3	98.4	94.9	84.0
Food	60.8	59.7	61.5	28.2	25.9	22.1	41.4	18.2	10.7	18.4	13.1	13.5	78.3	73.3	49.5
Non-ferrous metals	0.0	0.0	0.0	2.1	1.8	1.5	0.6	1.8	1.4	2.1	12.3	5.8	14.0	4.2	15.6
Other primary commodities	32.5	27.5	20.1	45.0	18.2	9.9	28.7	10.6	4.8	49.1	14.4	17.0	6.2	17.5	18.9
Group II	3.2	9.9	8.8	12.8	27.2	39.8	22.2	42.0	44.2	26.5	44.8	36.9	0.6	2.4	9.0
Textiles	1.2	2.1	2.0	5.3	5.0	1.7	11.9	11.4	13.7	23.6	30.5	17.4	0.1	0.0	1.5
Clothing	0.4	0.4	0.3	4.8	17.7	33.6	7.5	26.3	24.3	2.0	7.9	13.6	0.0	0.0	0.1
Footwear, leather and travel products	0.1	0.0	1.1	1.9	3.1	3.0	0.0	0.6	0.7	0.4	1.4	0.8	0.0	0.0	0.1
Wood and paper products	1.3	2.9	2.4	0.6	0.8	0.8	0.2	0.3	0.9	0.3	3.6	0.8	0.5	2.1	6.7
Paper, print and publishing	0.1	0.1	1.5	0.0	0.2	0.3	0.1	0.5	0.7	0.1	0.9	1.2	0.0	0.0	0.4
Non-metallic mineral products	0.2	4.5	1.5	0.2	0.4	0.5	2.4	2.8	3.8	0.0	0.5	3.2	0.0	0.2	0.4
Group III	0.5	0.7	1.4	0.2	0.9	1.0	1.4	13.6	9.9	1.9	6.7	5.3	0.2	1.7	1.1
Iron and steel	0.2	0.6	0.7	0.0	0.2	0.6	0.9	11.8	7.0	1.6	4.5	3.6	0.0	0.6	0.4
Fabricated metal products	0.1	0.1	0.5	0.2	0.4	0.3	0.5	1.2	2.2	0.3	2.2	1.7	0.0	0.2	0.6
Simple transport equipment	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.9	0.1
Ships and boats	0.0	0.0	0.1	0.0	0.2	0.1	0.0	0.5	0.4	0.0	0.0	0.0	0.1	0.1	0.0
Group IV	1.6	0.6	2.6	0.6	2.6	4.7	3.0	4.9	16.4	0.1	1.2	5.5	0.2	0.3	4.3
Rubber and plastic products	0.1	0.1	1.7	0.0	0.4	0.5	0.3	0.7	2.3	0.0	0.4	4.0	0.1	0.0	2.6
Non-electrical machinery	1.0	0.3	0.4	0.1	0.5	0.3	1.2	1.4	4.6	0.0	0.3	0.9	0.1	0.2	1.1
Electrical machinery (excl. semiconductors)	0.2	0.1	0.2	0.1	1.0	3.6	0.5	1.7	4.1	0.1	0.5	0.4	0.0	0.0	0.1
Road motor vehicles	0.4	0.1	0.4	0.3	0.6	0.3	0.9	1.1	5.4	0.0	0.1	0.2	0.0	0.1	0.4
Group V	1.4	1.5	5.2	10.8	23.0	20.4	2.4	8.0	10.3	1.7	7.0	13.1	0.5	0.3	1.3
Industrial chemicals	0.9	1.4	5.0	10.8	19.6	12.3	1.7	5.3	3.2	1.2	6.1	10.6	0.2	0.2	0.9
Pharmaceuticals	0.0	0.0	0.0	0.0	0.6	0.2	0.1	0.6	0.5	0.5	0.7	2.3	0.0	0.0	0.1
Computers and office equipment	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.1	0.0	0.0	0.1	0.0
Communication equipment and semicond.	0.1	0.0	0.0	0.0	2.8	7.0	0.3	1.9	3.5	0.0	0.0	0.1	0.0	0.0	0.2
Aircraft	0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.0	2.5	0.0	0.0	0.0	0.3	0.0	0.0
Scientific instruments	0.2	0.0	0.0	0.0	0.1	0.8	0.1	0.1	0.2	0.0	0.2	0.1	0.0	0.0	0.0
Other manufactures	0.1	0.1	0.2	0.3	0.5	0.7	0.4	0.8	2.4	0.2	0.5	2.8	0.0	0.3	0.3

Source: UNCTAD secretariat calculations, based on United Nations Commodity Trade Statistics tapes and estimates by the United Nations Statistical Office.

Note: Total non-oil exports refer to SITC sections 0–8, less section 3. The commodity group "Other manufactures" includes sanitary and plumbing products; toys and sporting goods; office and stationary supplies; works of art; jewellery; musical instruments; and other miscellaneous manufactures. For further explanations see text.

major Latin American countries over the past three decades. Data in table 5.9 show that there has been little change in the ranking of industrial sectors regarding the allocation of investment, and that the share of the five most important sectors taken together strongly increased in all countries except Chile. Generally, there has been no significant shift in investment towards technology-intensive industrial categories in any of the Latin American countries for which data are available. Indeed, in almost all cases where a substantial change occurred in the inter-sectoral pattern of investment, there was a shift towards resource-based or labour-intensive products (i.e. metal products in Chile, paper and pulp in Chile and Colombia, and clothing in Peru). The main exception is transport equipment in Brazil and Mexico, where investment registered a strong increase. As discussed in *TDR 2002*, the automobile sector in these two countries has experienced substantial restructuring over the past few years, based on investment by TNCs. This, however, has increased the technology content of automobile exports without leading to a similar increase in their domestically generated contents.

3. Trends in international specialization

An assessment of the extent to which changes in the industrial composition of exports examined above have been associated with a consolidation of countries' positions in international trade requires a comparative analysis of changes in international specialization. For this purpose, an analysis was undertaken by the UNCTAD secretariat of changes in international trade patterns in 21 industrial categories for the period 1980–2000.[11] It compared the sector-specific indices of revealed comparative advantage (RCA) based on export data for the periods 1980–1984 and 1996–2000 (table 5.10).

The evidence shows that in the Republic of Korea and Taiwan Province of China, the greatest increase in the RCA indices was in the medium- and high-technology manufacturing categories, and the sharpest declines were in the labour-intensive and resource-based manufacturing categories. The data for Chile show the opposite picture, with the largest increase being in labour-

Table 5.9

INVESTMENT IN LEADING MANUFACTURING SECTORS IN FIVE LATIN AMERICAN COUNTRIES FOR DIFFERENT PERIODS SINCE 1970

(Per cent of total manufacturing investment)

Brazil			
1970–1988		*1995–1997*	
Iron, steel, metal prod.	18.2	Iron, steel, metal prod.	22.8
Food products	10.0	Transport equipment	13.4
Transport equipment	7.7	Food products	11.2
Electrical machinery	4.3	Electrical machinery	4.6
Plastic products	2.3	Plastic products	3.6
Total of the five sectors	42.5	Total of the five sectors	55.6
Chile			
1979–1985		*1990–1995*	
Food products	35.7	Food products	28.8
Paper and pulp	14.0	Paper and pulp	27.2
Non-metal minerals	13.4	Drinks	6.5
Press and publications	6.8	Chemical industry	6.3
Drinks	5.8	Metal products	5.7
Total of the five sectors	75.7	Total of the five sectors	74.5
Colombia			
1970–1989		*1992–1995*	
Food products	12.6	Food products	14.3
Oil refineries	8.6	Oil refineries	11.1
Non-metal minerals	7.5	Non-metal minerals	8.5
Drinks	6.1	Drinks	7.5
Metal products	3.8	Paper and pulp	6.8
Total of the five sectors	38.6	Total of the five sectors	48.2
Mexico			
1970–1985		*1991–1994*	
Food products	10.6	Transport equipment	19.0
Transport equipment	9.5	Food products	12.1
Chemicals	6.6	Chemicals	9.7
Electrical machinery	5.6	Drinks	6.4
Drinks	4.9	Electrical machinery	5.6
Total of the five sectors	37.2	Total of the five sectors	52.8
Peru			
1972–1989		*1994–1997*	
Textiles	18.7	Food products	29.1
Food products	14.1	Textiles	9.7
Chemical industry	5.7	Metal products	5.3
Metal products	4.5	Clothing	5.1
Other chemicals	3.7	Other chemicals	3.7
Total of the five sectors	46.7	Total of the five sectors	52.9

Source: ECLAC, *Investment and Economic Reform in Latin America*, 2001, table A-7.

Table 5.10

INDICES OF REVEALED COMPARATIVE ADVANTAGE FOR MANUFACTURED EXPORTS OF SELECTED ECONOMIES, 1980–2000

Industrial sector	Republic of Korea			Taiwan Province of China			Malaysia			China			Argentina		
	1980–1984	1996–2000	Average annual change (Per cent)	1980–1984	1996–2000	Average annual change (Per cent)	1980–1984	1996–2000	Average annual change (Per cent)	1987–1990	1996–2000	Average annual change (Per cent)	1980–1984	1996–2000	Average annual change (Per cent)
Labour- and resource-intensive manufactures															
Textiles	+	+	2.3	+	+	4.6	+	–	-4.1	+	+	-8.4	–	–	4.7
Clothing	+	–	-9.2	+	–	-9.0	+	+	-3.7	+	+	-3.5	–	–	-6.2
Footwear, leather and travel products	+	+	-4.9	+	+	-8.3	–	–	-5.2	+	+	5.5	+	+	-1.6
Wood, cork and furniture	–	–	-9.7	+	–	-6.0	+	+	-1.6	–	–	5.0	–	–	17.5
Paper, print and publishing	–	–	6.7	–	–	6.0	–	–	4.1	–	–	-1.4	–	+	3.3
Non-metallic mineral products	–	–	-5.2	–	–	-3.6	–	–	1.2	–	–	0.2	–	–	2.2
Manufactures with low technology content															
Iron and steel	+	+	1.8	–	–	7.7	–	–	7.2	–	–	2.2	+	+	1.3
Fabricated metal products	+	–	-2.3	+	+	4.4	–	–	1.7	+	+	0.0	–	–	-1.4
Simple transport equipment	–	–	-2.9	+	+	5.0	–	–	8.9	–	+	10.9	–	–	-1.6
Shipbuilding	+	+	2.7	–	–	1.2	–	–	4.7	–	–	5.3	+	–	-5.5
Manufactures with medium technology content															
Rubber and plastic products	+	–	-1.6	+	+	-0.5	+	–	-2.3	–	–	9.1	–	–	5.4
Non-electrical machinery	–	–	11.1	–	–	6.6	–	–	0.8	–	–	0.2	–	–	2.8
Electrical machinery	–	+	6.0	–	+	5.1	+	+	-5.7	–	–	10.1	–	–	-3.7
Road motor vehicles	–	–	18.0	–	–	5.9	–	–	3.1	–	–	-23.3	–	+	12.0
Manufactures with high technology content															
Industrial chemicals	–	–	8.8	–	–	8.7	–	–	3.4	–	–	-4.0	+	+	-0.3
Pharmaceuticals	–	–	2.8	–	–	-6.9	–	–	-10.1	–	–	-10.0	+	+	1.6
Computers and office equipment	–	–	10.1	–	+	12.7	–	+	32.9	–	–	20.7	+	–	-17.3
Communications equipment	+	+	0.7	+	–	-4.2	+	+	7.3	+	+	0.7	–	–	9.8
Aerospace	–	–	-0.3	–	–	10.3	–	–	-0.5	–	–	13.4	–	–	14.7
Professional and scientific equipment	–	–	2.2	–	–	2.5	–	–	3.0	–	–	0.3	–	–	-0.7
Other manufactures	–	–	-2.2	+	+	-3.5	–	–	2.5	+	+	0.8	–	–	5.6

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Table 5.10 (concluded)

INDICES OF REVEALED COMPARATIVE ADVANTAGE FOR MANUFACTURED EXPORTS OF SELECTED ECONOMIES, 1980–2000

	Brazil			*Chile*			*Mexico*			*Côte d'Ivoire*			*Morocco*		
Industrial sector	*1980–1984*	*1996–2000*	*Average annual change (Per cent)*	*1980–1984*	*1996–2000*	*Average annual change (Per cent)*	*1980–1984*	*1996–2000*	*Average annual change (Per cent)*	*1980–1984*	*1996–2000*	*Average annual change (Per cent)*	*1980–1984*	*1996–2000*	*Average annual change (Per cent)*
Labour- and resource-intensive manufactures															
Textiles	+	–	-4.5	–	+	14.4	–	–	2.9	+	+	-3.7	+	+	-8.0
Clothing	–	–	-4.5	–	–	14.6	+	+	3.6	–	–	-8.8	+	+	3.1
Footwear, leather and travel products	+	+	-0.9	–	–	11.5	–	–	-1.9	–	+	3.4	+	+	-0.6
Wood, cork and furniture	+	+	2.2	+	+	4.6	+	+	1.1	+	+	-1.7	+	–	-3.8
Paper, print and publishing	–	+	2.0	+	+	-1.5	+	–	-4.9	–	–	2.3	–	–	7.9
Non-metallic mineral products	–	–	0.9	–	–	1.8	–	–	-2.2	+	+	-2.3	–	–	4.0
Manufactures with low technology content															
Iron and steel	+	+	2.3	+	–	-2.6	–	–	5.6	–	–	2.5	–	–	32.7
Fabricated metal products	–	–	1.0	+	+	0.3	–	+	3.8	–	+	2.0	–	–	-1.3
Simple transport equipment	–	–	-1.3	–	–	14.5	–	–	7.7	+	–	-10.6	–	–	-5.4
Shipbuilding	–	–	-6.0	+	+	7.3	–	–	3.3	–	+	2.8	–	–	6.8
Manufactures with medium technology content															
Rubber and plastic products	–	+	1.4	+	+	4.1	–	–	6.7	–	+	8.7	–	–	6.1
Non-electrical machinery	–	–	0.9	–	–	5.2	–	–	0.5	–	–	-5.2	–	–	4.0
Electrical machinery	–	–	-3.8	–	–	0.7	+	+	-1.8	–	–	-9.1	–	–	16.0
Road motor vehicles	+	+	-0.4	–	–	2.4	–	+	8.3	–	–	-4.3	–	–	-3.9
Manufactures with high technology content															
Industrial chemicals	–	–	-0.3	+	+	-2.7	–	–	-5.0	–	+	1.8	+	+	-4.0
Pharmaceuticals	–	–	-1.4	–	–	7.4	–	–	-4.4	–	–	-8.1	–	–	3.0
Computers and office equipment	+	–	-10.5	–	–	0.4	+	+	0.8	–	–	-12.7	–	–	3.7
Communications equipment	–	–	-2.0	–	–	-2.3	+	+	0.4	–	–	-5.7	–	–	-9.0
Aerospace	–	+	7.3	–	–	1.8	–	–	3.0	–	–	-2.5	–	–	5.1
Professional and scientific equipment	–	–	0.2	–	–	-0.1	–	–	1.0	–	–	-7.8	–	–	19.9
Other manufactures	–	–	-1.6	–	–	8.8	+	+	-2.5	–	–	-0.6	–	–	2.0

Source: UNCTAD secretariat calculations, based on UN/DESA, *Commodity Trade Statistics* database, and estimates by the United Nations Statistical Office.

Note: RCA is measured as an economy's share in total world exports in a given sector divided by the economy's average export share in all manufacturing sectors. A plus sign indicates an RCA of 1 or above, a minus sign indicates an RCA of less than 1. Manufactured exports refers to SITC Rev. 2, 5–8, less 68. Other manufacturing includes SITC Rev. 2, 812 and 894–899.

and natural-resource-intensive manufacturing sectors and the greatest decline in the high-tech sectors. While changes in the RCA indices of Argentina and Brazil are more varied, the pattern is similar to that of Chile. The main feature that distinguishes the three Latin American countries from each other is the strong increase of these indices in the aerospace sector in both Argentina and Brazil (moving from below to above unity in the case of Brazil) and their sharp increase in Argentina in communications equipment and automobiles. This is particularly noteworthy, since automobiles and aerospace are the two industries in Argentina and Brazil that have been supported by industrial policy in recent years, despite extensive market-oriented reforms.[12] Changes in the RCA indices of Mexico and Malaysia reflect the increasing involvement of these two economies in assembly-based activities within international production networks. Both countries acquired or increased their RCA in computer and communications equipment manufacturing. Similarly, Mexico experienced a strong increase in its RCA index for road motor vehicles.

Given the greater import intensity of production and exports in developing countries, the examination of the pattern of exports does not provide adequate indications as to the evolution of inter-industrial patterns of production and value added in these countries. In this sense, improvements in the pattern of exports, particularly in terms of a shift towards high-tech products, does not necessarily indicate a concomitant improvement in the pattern of production and manufacturing value added. In *TDR 2002*, such an analysis was undertaken at the aggregate level for the manufacturing sector as a whole. In the present *TDR*, it is complemented by an analysis of sector-specific evidence, comparing bilateral structural similarity indices for exports of manufactures and manufacturing value added for selected country groups and economies. Evidence presented on these in table 5.11 shows that for a developing country, a higher degree of similarity with respect to any of the leading developed countries in terms of the pattern of manufactured exports does not necessarily imply a corresponding similarity in its pattern of manufacturing value added.[13] Indeed, while the structure of manufactured exports of developing countries as a whole became increasingly similar to that of developed countries as a whole between 1980 and 1998, this was much less so for the pattern of manufacturing value added. The composition of both manufactured exports and value added of most Asian economies shown in the table came to resemble more closely that of the major developed countries, but this was not generally true for the other countries.

The analysis suggests that there is little correlation between the growing similarity in the structures of manufactured exports and manufacturing value added. Among the developing countries listed in the table, the Republic of Korea stands out for having reached a manufacturing value added structure that was by far the closest to that prevailing in the leading developed countries. The manufactured export structure of China, Malaysia, Mexico, the Philippines and Singapore also began to resemble that of the major developed countries, but this was much less so for the structure of their manufacturing value added. For the majority of Latin American countries, the structure of their manufactured exports became moderately more similar to that of the major industrial countries, while the structure of their manufacturing value added became less similar.

Evidence suggests a strong divergence in the evolution of international specialization between Asian and Latin American developing countries.

In sum, available evidence suggests a strong divergence in the evolution of international specialization between Asian and Latin American developing countries. The Republic of Korea and Taiwan Province of China have gained RCA in medium- and high-technology manufactures, and the production structures of these economies have become significantly similar to the economies of the major industrial countries, both in production and exports of manufactures. In Malaysia and Mexico, the pattern of specialization has moved towards the assembly of computers and office equipment, communications equipment, computers and (particularly in Mexico) automobiles. The processing of natural resources has come to dominate production and export activities in Argentina,

Table 5.11

STRUCTURAL SIMILARITY INDICES FOR EXPORTS OF MANUFACTURES AND MANUFACTURING VALUE ADDED FOR SELECTED DEVELOPING ECONOMIES, 1980–1981 AND 1997–1998

	Structural similarity with											
	United States				*Japan*				*Germany*			
	Exports		*Value added*		*Exports*		*Value added*		*Exports*		*Value added*	
	1980–1981	*1997–1998*	*1980–1981*	*1997–1998*	*1980–1981*	*1997–1998*	*1980–1981*	*1997–1998*	*1980–1981*	*1997–1998*	*1980–1981*	*1997–1998*
Asia												
Hong Kong, China	1.26	1.01	0.95	0.73	1.24	1.03	0.94	0.79	1.29	1.17	1.03	0.93
Rep. of Korea	1.06	0.53	0.61	0.38	0.90	0.52	0.52	0.36	0.94	0.58	0.59	0.31
Singapore	0.74	0.70	0.47	0.57	0.63	0.36	0.47	0.57	0.72	0.89	0.46	0.51
Taiwan Prov. of China	1.08	0.57	0.66	0.64	0.97	0.57	0.55	0.55	1.05	0.67	0.59	0.52
Malaysia	1.32	0.71	0.71	0.67	1.19	0.71	0.59	0.68	1.31	0.88	0.72	0.61
Philippines	1.30	0.92	0.75	0.67	1.35	0.93	0.77	0.63	1.25	1.05	0.79	0.71
China	1.14	0.89	0.68	0.62	1.31	0.90	0.61	0.57	1.08	0.99	0.60	0.60
India	1.26	1.27	0.69	0.68	1.34	1.34	0.58	0.63	1.24	1.19	0.61	0.66
Turkey	1.59	1.21	0.74	0.73	1.55	1.24	0.62	0.67	1.50	1.14	0.66	0.74
Latin America												
Chile	1.33	1.15	0.74	0.82	1.50	1.33	0.69	0.76	1.30	1.08	0.84	0.88
Colombia	1.17	1.10	0.69	0.76	1.35	1.27	0.67	0.74	1.16	0.97	0.73	0.85
Costa Rica	1.22	0.86	0.78	0.76	1.29	0.94	0.75	0.79	1.16	0.97	0.82	0.88
Mexico	0.90	0.47	0.91	0.80	0.93	0.45	0.82	0.74	0.91	0.50	0.85	0.73
Venezuela	0.95	0.93	0.59	0.78	1.06	1.19	0.51	0.73	0.98	0.97	0.63	0.79
Memo item:	*Structural similarity with developed countries' average*											
Developing countries	0.87	0.57	0.46	0.37								

Source: UNCTAD secretariat calculations, based on data from Nicita and Olarreaga, 2001. The structural similarity indices have been calculated using a method suggested by Krugman, 1991. The index values are the sum of the absolute differences between the home country and foreign country in the shares of different sectors of manufacturing industry in total exports of manufactures or in total manufacturing value added. This measure varies between zero and two; a value of zero indicates identical sector compositions of the two economies, and a value of two indicates complete dissimilarity of sectoral structures.

Brazil and Chile, although the automobile and aerospace industries have gained in importance in Argentina and Brazil. Taken together, the evidence suggests that among the major developing countries, only the first-tier East Asian NIEs have succeeded in simultaneously upgrading their production and export structures. By contrast, in other countries the change in the pattern of specialization of production has not involved a shift towards high-value-added activities.

E. Conclusions

The analysis in this and the previous chapters suggests that regarding the process of accumulation, industrialization, trade and structural change, it is possible to distinguish between five broad categories of economies:

- The first group includes first-tier NIEs, notably the Republic of Korea and Taiwan Province of China, which have already achieved a considerable degree of industrial maturity through a rapid accumulation of capital, and growth in industrial employment, productivity and output, as well as in manufactured exports. In both economies the share of industrial output is well above the levels of advanced industrial countries, but the pace of expansion of production capacity and output in the industrial sector has slowed down compared to previous decades.

- The second group consists of countries that are progressing rapidly in industrialization. They are increasing the share of manufacturing in employment, output and exports and upgrading from resource-based and labour-intensive products to medium- and high-tech products in both output and trade. These include the dynamic second-tier NIEs, notably Malaysia and Thailand. China and, to a lesser extent, India should also be considered in this group of rapid industrializers, even though they are at earlier stages of industrialization compared to the second-tier NIEs.

- The third group comprises countries that have rapidly integrated into international production networks by focusing on simple assembly operations in labour-intensive manufactures. These countries have seen a sharp rise in industrial employment and manufactured exports, but their performance in terms of investment, manufacturing value added and productivity growth, as well as overall economic growth, has been poor. Two countries that stand out in this group are Mexico and the Philippines.

- The fourth group comprises countries that have reached a certain level of industrialization, but have been unable to sustain a dynamic process of industrial deepening in the context of rapid growth. These include Brazil and Argentina, where investment performance has been poor, industry has been losing its relative importance in total employment and value added, productivity growth has been cyclical (resulting from labour-shedding rather than faster accumulation and technical progress), industrial upgrading has been limited, and exports have continued to be dominated by primary products and low-value-added manufactures. In these countries, progress achieved in certain industries such as aerospace and automobiles, has not gone deep enough to establish a dynamic momentum in industry. Many African countries are also in this group in terms of sluggish progress in their industrialization and structural change, even though they are at a much lower level of industrial development.

- A final category consists of countries that have achieved sustained and strong growth by intensifying exploitation of their rich natural resources through a rapid pace of capital accumulation. However, their industrial per-

formance has been weak both in terms of manufacturing value added and exports, and prospects for further structural change and productivity growth appear to be limited. The most outstanding example is Chile.

Countries in any one of these groups may also manifest characteristics of those belonging to the other groups. For instance, China and Malaysia have also expanded their manufactured exports much faster than value added by participating in international production networks, but unlike Mexico, their investment and growth performance has been impressive. This explains why manufacturing productivity has been growing much faster, and the share of manufacturing value added in GDP has been stable (China) or rising (Malaysia). There are also borderline cases between the second group of rapid industrializers and the fourth group of "laggards". For instance, Turkey is closer to the former, while Colombia is closer to the latter group.

In this comparative analysis of economic performance in terms of industrialization and structural change, the contrast between East Asia and Latin America is particularly striking. All major Latin American countries are in the groups that lack dynamism in industrialization, structural change and productivity growth, while most of the major East Asian economies are at various stages of successful industrialization. Thus the structural weaknesses which gave rise to fundamental policy reforms in Latin America during the 1980s persist. There are undeniably some improvements with respect to the 1980s, but the economic position of much of Latin America with respect to the industrializing economies in Asia and elsewhere has weakened. Much of this is due to the failure of policy reforms to create the conditions needed to initiate a rapid process of capital accumulation and technological change in order to restructure the economies to meet the challenges posed by a rapid integration into the world trading system – an issue that is taken up in the next chapter. ■

In this comparative analysis, all major Latin American countries are in the groups that lack dynamism in industrialization, structural change and productivity growth, while most of the major East Asian economies are at various stages of successful industrialization. Thus the structural weaknesses which gave rise to fundamental policy reforms in Latin America during the 1980s persist.

Notes

1 The exact timing and pace of this shift in different developed countries is influenced by policy choice as well as supply shocks, such as the sudden discovery of raw materials, which can accelerate the shift away from manufacturing employment. This happened in the Netherlands, following the discovery of natural gas (hence the term "Dutch disease" sometimes used to describe this process), and in some favourably located smaller European economies, thanks to a sharp rise in earnings from tourism and financial services. By contrast, trade has helped sustain industrial employment in Japan, despite relatively stagnant domestic markets.

2 For a comparison with industrial countries, see Arrighi, Silver and Brewer, 2003.

3 In these figures, for comparison purposes, the shares of investment, value added and exports in GDP are measured at current prices. As a result, changes in the investment ratio in figures 5.1 and 5.2 can be different from those in table 4.1 where it was measured at constant prices. Of the countries contained in these figures, the difference is particularly large for Peru, which shows an increase in the investment ratio at constant prices but a decrease at current prices. This is also true for Mexico, but the magnitudes involved are small.

4 When measured at constant prices, the share of gross fixed capital formation (GFCF) in GDP rose, on average, by less than one percentage point during the 1990s compared to the 1980s while the share of manufactured value added rose by some 1.5 percentage points. Applying the same price index to manufactured exports as to value added, the share of such exports in GDP measured at constant prices would show an increase of 12.7 percentage points during the same period, that is, 8.5 times the increase in the share of manufacturing value added in GDP.

5 These results are based on calculating the growth rate of real manufacturing value added for every percentage point of structural change, using a structural change index from Moreno-Brid (1999).

6 See, for example, Dornbusch, Fischer and Samuelson, 1977; and Gomory and Baumol, 2000.

7 A switchover in the structure of comparative advantage can also occur in a Heckscher-Ohlin model when a country changes its endowment structure faster than others. However, this appears to be empirically less relevant, given that the relative position of country groups with respect to their endowments in human capital, natural resources and labour has changed little over the past 40 years, as discussed in *TDR 1998*: 186.

8 Figures in table 5.7 do not indicate relative competitive positions of the manufacturing sectors of the countries concerned (as the positions also depend on the situation in the base year of the index), but simply the direction of change in each country.

9 These results, based on labour productivity measured in dollars, differ from the index numbers given in table 5.4 based on national currencies. The difference is small for most countries except Bolivia, China and Ecuador.

10 For further discussion of these categories, see *TDR 2002*, chap. III. For a similar analysis, focusing on Latin America, see Katz and Stumpo, 2000.

11 This analysis of export patterns is based on a revised version of the Balassa index of revealed comparative advantage (RCA); the approach follows Proudman and Redding, 2000; and Redding 2002.The measure of RCA used by these authors evaluates an economy's export share in a given sector relative to its *average* export share in all manufacturing sectors, rather than to the weighted sum of export shares in all manufacturing sectors. For the advantages of this modification, see Proudman and Redding, 2000: 394.

12 Industrial policy in the automobile sector has been closely linked to regional policies in the context of the Southern Common Market (MERCOSUR). Thus

part of the strong export performance of the automobile sector in both countries is likely to reflect intra-industry trade between Argentina and Brazil (*TDR 2002*, chap. III), while the export success of Brazil's aerospace industry owes a great deal to Embraer's move in the mid-1990s into what was then a niche market for civilian regional jets (Goldstein, 2002).

13 It is clear that a specific index of similarity to a leading developed country does not have the same significance for all developing economies. Indices with respect to Germany, which can be taken as a proxy for indices with the European Union, are likely to be more important for Turkey, while indices with the United States are of overriding importance to Latin America.

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