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PART TWO
TNCs & EXPORT COMPETITIVENESS

Chapter VI
Patterns of Export Competitiveness

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CHAPTER VI

PATTERNS OF EXPORT COMPETITIVENESS

A. Global competitiveness patterns

Traditionally, trade competitiveness is measured by shares in world exports (Lall, 1998; 2000b). By this measure, 20 economies account for over three quarters of the value of world trade (figure VI.1). The list is dominated by developed countries, led by the United States, Germany and Japan. However, if one focuses on those economies that have *gained* market share during 1985-2000, another list emerges, a list containing mostly developing economies, led by China, and also including a number of economies in transition (figure VI.1). In other words, significant changes are taking place in world trade, and a number of developing countries and economies in transition are among the principal beneficiaries.

Trade patterns are changing significantly. These changes also reflect structural shifts in production caused by new technologies, new demand patterns, new logistical factors, new ways of organizing and locating production, new policies and new international trade rules and preferences. Perhaps the most important driver of the changing patterns of exports is *technological progress*.[1]

A broad classification of merchandise exports distinguishes between *primary products* and *manufactures*, with the latter further divided into four groups: *resource-based*, *low-technology*, *medium-technology* and *high-technology* products.[2] Since information and communication technology products are an important part of the high-technology group, they are shown as a sub-category in some instances. It is assumed that technological sophistication rises across these categories: primary and resource-based products are at one end, high-technology products at the other. Whether rapid and sweeping technological change affects all categories equally or favours some categories over others is still open to question. *Services*, although growing in importance, are not considered in this discussion, because of the unavailability of sufficiently detailed statistics on trade in services at the same level of detail as those for trade in goods.

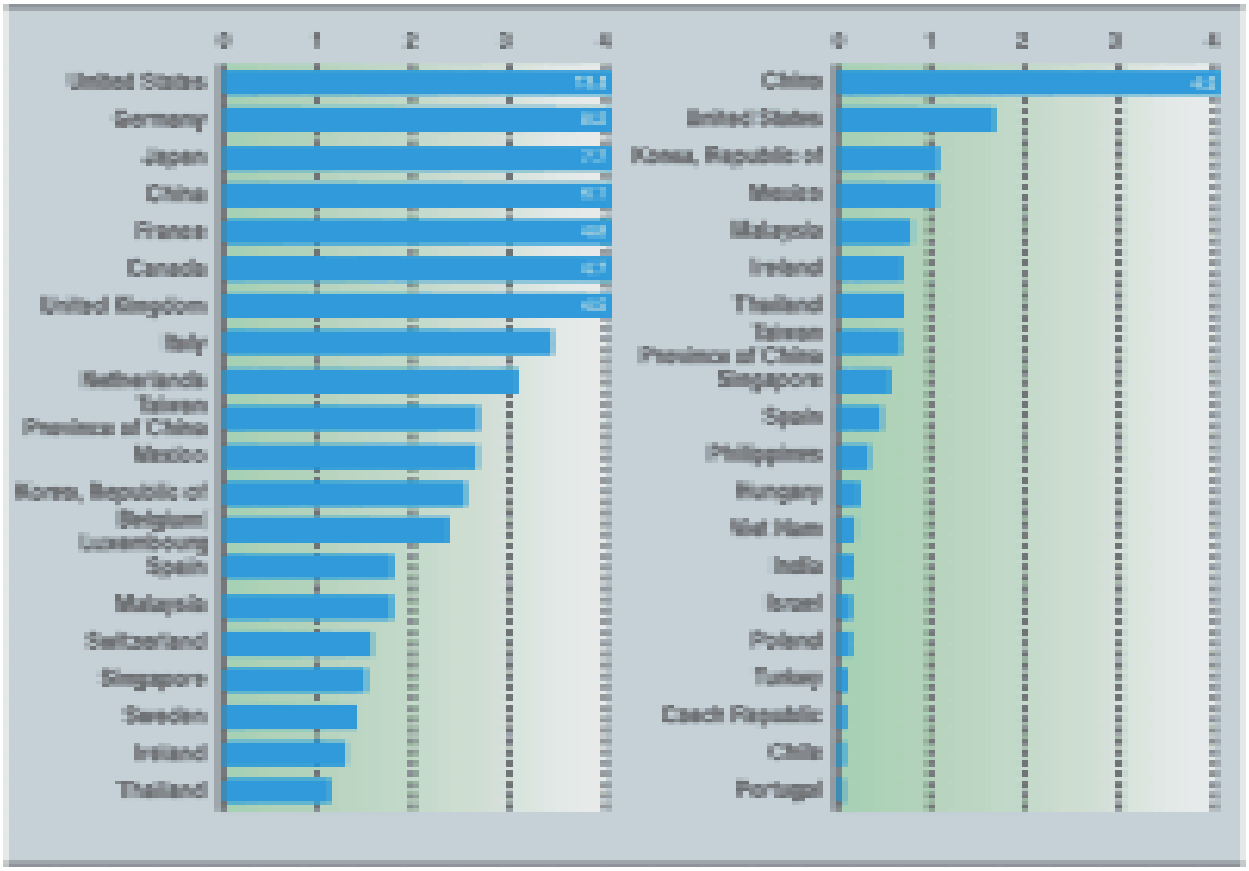
A few words of caution are in order at the start. All technology categorizations involve aggregation, and this may conceal variations at a disaggregated product or process level. For instance, the low-technology group may have some technology-intensive products, while the high-technology group may have products with stable or relatively simple technologies. Moreover, the classification is based on the core process, but all products go through a variety of processes, some simpler than others. High-technology semiconductor manufacture needs relatively simple assembly and testing while low-technology apparel manufacture needs sophisticated design. And products can move across categories – the application of biotechnology can transform resource-based products into high-technology ones. These refinements cannot be incorporated into this analysis, which aims only to provide a reasonably accurate general picture of broad trends.

So what are the structural trends in trade patterns? The most basic trend concerns fundamental changes in the total trade composition. *Primary products and resource-based manufactures have steadily lost shares over the past several decades*, falling below 50 per cent in 1984 and reaching 28 per cent by 2000 (figure VI.2). Non-resource-based manufactures have been driving export growth, with changing levels of technology intensity. The share of resource-based products in total world trade peaked in the early 1980s, and that of low-technology products in the early 1990s (figure VI.3). If this reflects long-term trends, it suggests that countries that have specialized in these products may find it hard to sustain high export growth. It *is* possible to grow in stagnant markets,

Figure VI.1. World export market shares, 2000, and changes, 1985-2000

The 20 economies with the largest export market shares, 2000
(Percentage)

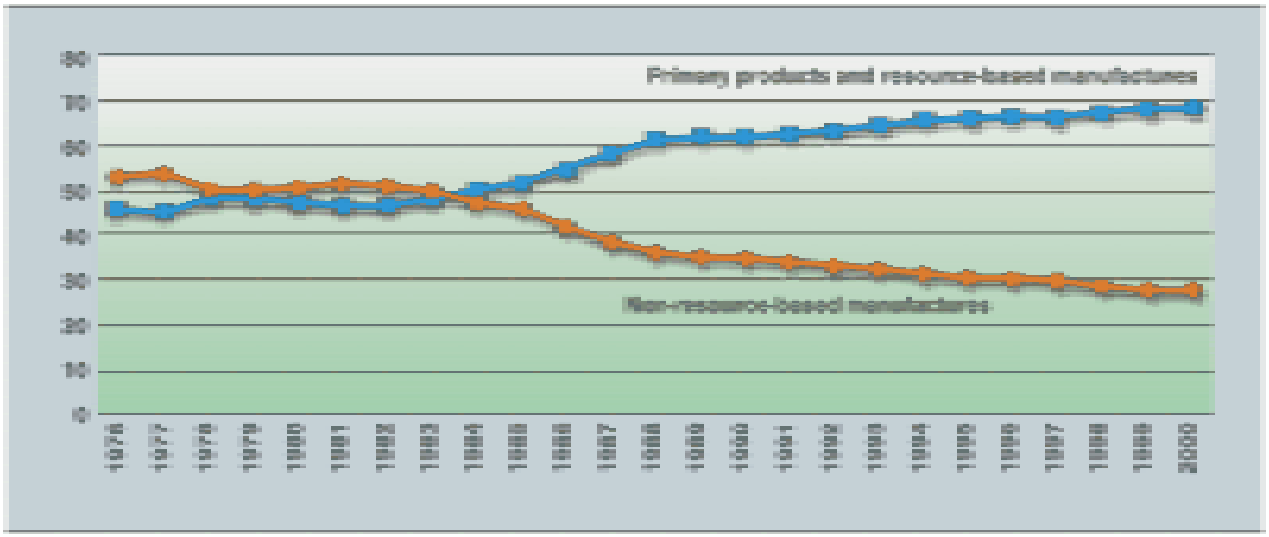
The 20 winner economies, based on export market share gains, 1985-2000
(Percentage)



Source: UNCTAD, based on the United Nations Comtrade database.

Figure VI.2. Shares of resource-based and non-resource-based products in world trade, 1976-2000[a]

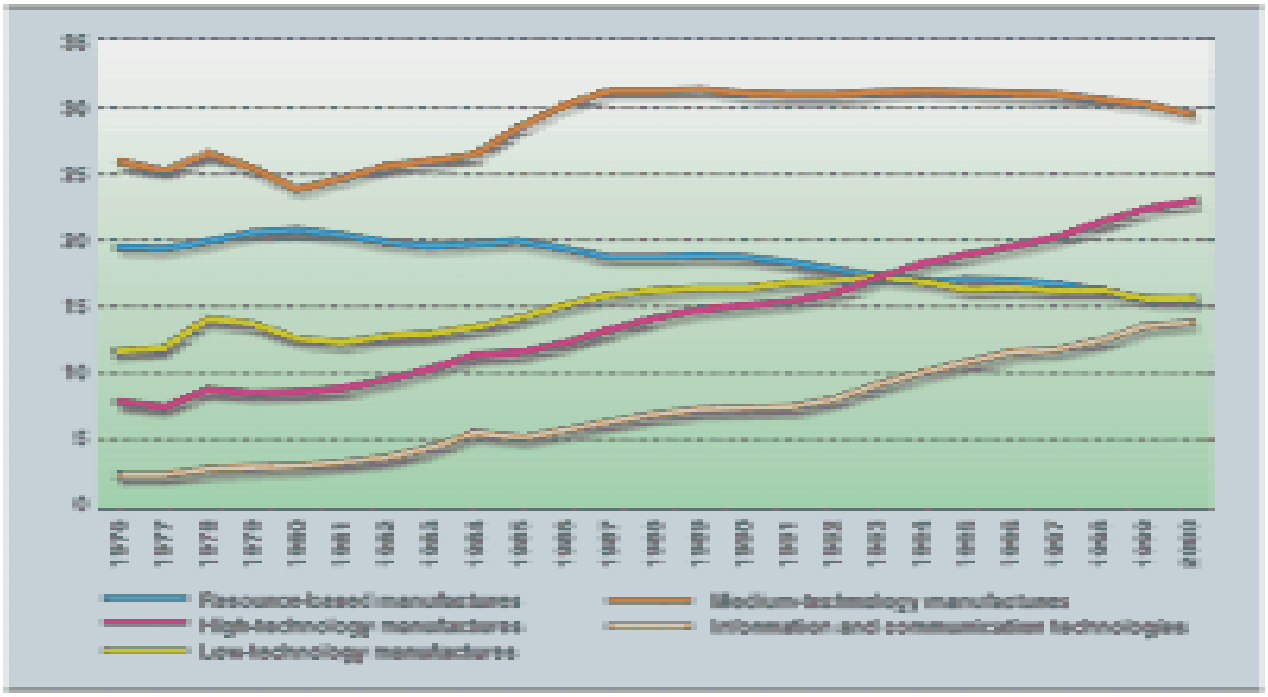
(Percentage)



Source: UNCTAD, based on the United Nations Comtrade database.

[a] Three-year moving averages are used. For 2000, a two-year average (1999-2000) is used.

Figure VI.3. Shares of manufactured products in world exports by technology groupings, 1976-2000
(Percentage)



Source: UNCTAD, based on the United Nations Comtrade database.

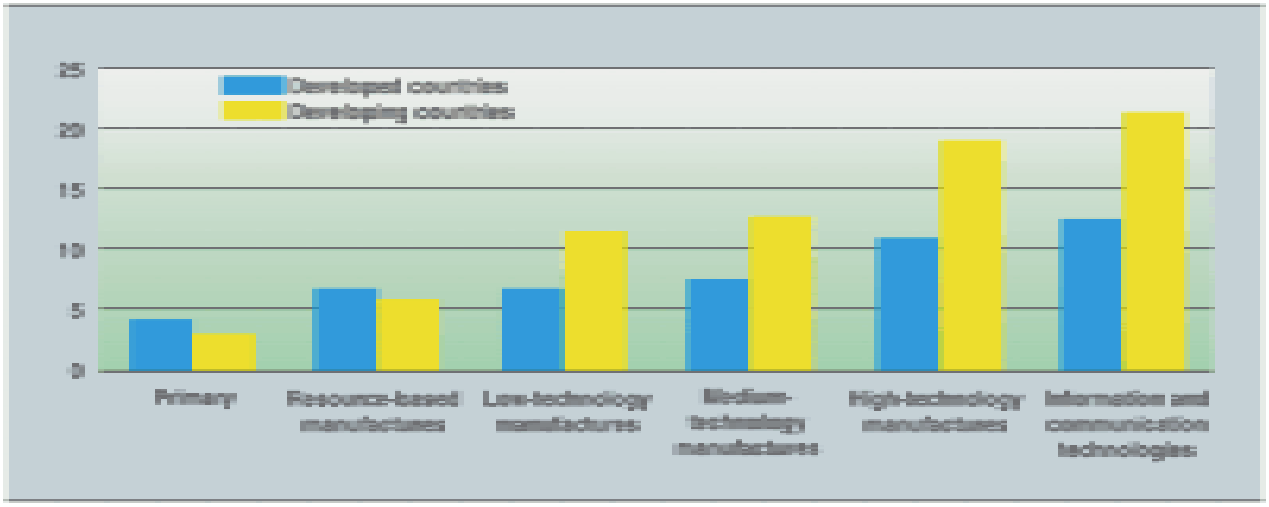
but it has to be at the expense of other exporters. When entry is easy and competition intense, as in low-technology products, constant effort is required to stay ahead of competitors.

Second, and perhaps most striking, *exports grow faster the more advanced the level of technology and the less the reliance on natural resources* (figure VI.4).[3] High-technology products are the most dynamic export category, not just for industrial countries but also for developing ones whose competitive edge has traditionally been in resource-based exports and labour-intensive manufactures.

Third, the share of parts and components in total trade is rising (Feenstra, 1998; Hummels, Ishii and Yi, 2001). This raises the question as to the precise dimension of the increase in trade values given that, increasingly, components and parts can be involved in numerous cross-border trade operations before being incorporated into the final products. This means that the same inputs may be counted several times. This being said, the share of parts and components in total machinery exports rose somewhat for the developed countries as a group, from 26 per cent in 1978 to 30 per cent in 1995 (Yeats, 2001). Such trade is particularly important in telecom equipment, office machinery, motor and non-motor vehicles, and electric machinery (Yeats, 2001; Ng and Yeats, 1999). In the telecom industry, for example, trade in parts and components accounted, on average, for half the total exports, while almost three-quarters of all Asian imports of telecom equipment consisted of components for further assembly (Ng and Yeats, 1999). At the country level, the ratio of parts and components in total manufacturing imports in 1996 varied between a quarter to almost half for a group of countries that are among the high export performers (the ASEAN-5,[4] Mexico and Ireland).

Fourth, developing countries are growing faster than industrial countries in exports of more technology-intensive products, while falling behind them in exports of primary products and resource-based manufactures.[5] *High-technology exports are now the largest foreign-exchange earners for the developing world*. In 2000, exports of high-technology products by developing countries amounted to $450 billion – $64 billion more than primary exports, $45 billion more than low-technology exports, $140 billion more than medium-

Figure VI.4. Average annual growth rates of world exports, by technology intensity, 1985-2000
(Percentage)



Source: UNCTAD, based on the United Nations Comtrade database.

technology exports, and $215 billion more than resource-based exports. A large proportion of high-technology exports by developing countries reflects, of course, relatively simple labour-intensive operations (assembling mainly imported components) rather than complex manufacturing or R&D using substantial local physical and technological inputs (Lall, 2001a, UNCTAD, 2002a, ch. III). But there are exceptions. Economies such as Singapore, the Republic of Korea and Taiwan Province of China have moved into the most complex areas of manufacturing and design. And local content is growing in many countries in which high-technology exports have taken root; in China, for instance, backward linkages are expanding (*WIR01*; Lemoine, 2000).

So much for structural trends. What is changing? More specifically, what are the most *dynamic products* in world trade and which are the up-and-coming countries?

During the period 1985-2000, at the four-digit Standard International Trade Classification (SITC, Rev. 2) level, the most dynamic products – defined here as the top 40 that accounted for at least 0.3 per cent of world trade and that increased their market share between 1985 and 2000 – are mainly from the high-technology group, although there are also some from the other technology groups (box VI.1).

The structural trends also suggest that sustained export growth tends to involve a move up the technology ladder – from simple to complex products – in addition to upgrading quality and efficiency in existing exports. In addition, good production "positioning", shifting from slow- to fast-growing segments, is an important part of any competitiveness strategy. And this is what the most dynamic exporters have been able to do. They started with simple products and functions and, over time (while upgrading the quality of the exports they were producing), they moved into more technology-intensive products and more demanding functions.

However, relatively few developing countries have thus far been able to build competitiveness in this manner. Regional and national export performance remains very uneven, and seems to be becoming more so over time (table VI.1). Within the developing world, East and South-East Asia has been the largest gainer in all categories apart from primary products. Latin America has made some gains but on a much smaller scale. South Asia, West Asia and North Africa have only managed marginal improvements. Sub-Saharan Africa has lost market share, even in the slow-growing primary and resource-based exports in which it is specialized.

Moreover, export performance is *highly concentrated* at the country level. And, over 1985-2000, this concentration rose for every

Box VI.1. Dynamic products in world trade, 1985-2000[a]

The 40 most dynamic products in world exports comprise only 5 per cent of the 786 products at the SITC, Rev. 2 four-digit level. But by 2000, they accounted for nearly 40 per cent of the value of total exports. As a group, these products grew at 12 per cent annually over the 15-year period (compared to overall export growth of 8.2 per cent) and raised their market shares by 15 percentage points.

Three manufacturing industries stand out: electronics, automotive and apparel, accounting for 19 of the 40 most dynamic products, and for almost one-quarter of the total import value in 2000. They also accounted for almost 10 percentage points of the growth in world trade in 1985-2000.

The 12 electronics items in the list accounted for 13 per cent of world exports in 2000 and for almost 9 percentage points of export growth between 1985 and 2000. Most of these high-technology products revolve around information and communication technologies. In medium-technology products, the automotive industry (four items) accounted for nearly 9 per cent of exports but grew relatively slowly, providing only 0.6 percentage points of the increase. In low-technology products, the main products were in apparel, which accounted for under 2 per cent of world trade and provided 0.6 percentage points of the increase.

Box table VI.1.1. Dynamic products in world exports, ranked by change in market share, 1985-2000
(Millions of dollars and percentage)

Rank	SITC code	Product	Market Share			Value		
			1985	2000	Increment	1985	2000	Annual growth rate
17764	Electronic microcircuits		0.82	3.38	2.56	13 976	186 887	18.9
2	7599	Parts and accessories for data processing machines[a]	1.02	2.33	1.30	17 446	128 882	14.3
3	7524	Digital central storage units, separately consigned	0.02	1.01	0.99	295	55 942	41.9
4	7643	Television, radio and related transmitters and receivers	0.11	0.91	0.81	1 811	50 614	24.9
5	5417	Medicaments	0.53	1.24	0.71	8 985	68 452	14.5
6	7649	Parts and accessories for telecom and recording apparatus[a]	0.67	1.28	0.61	11 346	70 633	13.0
7	7641	Telephonic and telegraphic apparatus	0.28	0.83	0.55	4 704	45 962	16.4
8	7523	Complete digital central processing units	0.30	0.74	0.44	5 160	40 845	14.8
9	7721	Electrical apparatus for making/breaking electrical circuits	0.64	1.05	0.41	10 919	58 297	11.8
10	7788	Other electrical machinery and equipment[a]	0.48	0.86	0.39	8 132	47 829	12.5
11	8942	Children's toys, indoor games	0.40	0.79	0.39	6 804	43 509	13.2
12	8939	Miscellaneous articles of chemicals	0.40	0.77	0.37	6 815	42 483	13.0
13	7924	Aircraft, mechanically propelled (other than helicopters)	0.44	0.78	0.34	7 496	43 222	12.4
14	7525	Peripheral units for data processing equipment	0.66	0.98	0.32	11 248	54 390	11.1
15	7712	Other electric power machinery and parts[a]	0.17	0.49	0.32	2 829	26 929	16.2
16	7731	Insulated electric wire, cable, bars, strip and the like	0.29	0.60	0.30	5 012	33 062	13.4
17	5148	Other nitrogen-function compounds	0.15	0.45	0.30	2 578	25 009	16.4
18	8462	Under garments, knitted or crocheted, of cotton	0.16	0.44	0.28	2 714	24 145	15.7
19	7768	Piezo-electric crystals, parts of transistors and cathode valves[a]	0.31	0.58	0.27	5 285	32 259	12.8
20	7522	Complete digital data processing machines	0.20	0.47	0.27	3 400	26 035	14.5
21	7810	Passenger motor cars	4.90	5.15	0.25	83 547	285 222	8.5
22	5839	Other polymerisation and copolymerisation products	0.16	0.40	0.24	2 736	22 087	14.9
23	8219	Other furniture and parts[a]	0.32	0.55	0.22	5 495	30 281	12.1
24	7763	Diodes, transistors and similar semiconductor devices	0.22	0.42	0.20	3 735	23 025	12.9
25	7149	Parts of non-electrical engines and motors[a]	0.28	0.46	0.19	4 712	25 648	12.0
26	8211	Chairs and other seats	0.26	0.43	0.18	4 366	24 006	12.0
27	8983	Gramophone records and other sound or similar recordings	0.33	0.50	0.17	5 609	27 880	11.3
28	8720	Medical instruments and appliances[a]	0.24	0.41	0.17	4 122	22 722	12.1
29	8451	Jerseys, pullovers, twin-sets, cardigans, jumpers etc.	0.39	0.54	0.15	6 594	29 987	10.6
30	8439	Other outer garments, women's, girls', infants', of textile fabrics	0.30	0.45	0.15	5 161	25 015	11.1
31	7284	Machinery and parts for specialized industries	0.68	0.82	0.14	11 618	45 617	9.6
32	7132	Internal combustion piston engines for road vehicles	0.45	0.58	0.14	7 599	32 368	10.1
33	5989	Chemical products and preparations[a]	0.45	0.58	0.13	7 603	31 865	10.0
34	7611	Television receivers, colour	0.27	0.40	0.13	4 589	21 955	11.0
35	5156	Heterocyclic compounds; nucleic acids	0.32	0.44	0.12	5 445	24 599	10.6
36	7849	Other parts and accessories of motor vehicles[a]	2.23	2.33	0.10	37 954	129 051	8.5
37	6672	Diamonds (except sorted industrial diamonds), unworked, cut	0.83	0.92	0.09	14 166	50 741	8.9
38	7139	Parts of the internal combustion piston engines[a]	0.34	0.40	0.06	5 814	22 249	9.4
39	7492	Taps, cocks, valves etc. for pipes, boiler shells, tanks, vats	0.34	0.40	0.06	5 854	22 168	9.3
40	7929	Aircraft parts[a] (except tyres, engines, electrical parts)	0.49	0.53	0.04	8 334	29 475	8.8
		Total above products	21.84	36.71	14.87	372 006	2 031 347	12.0

Source: UNCTAD, based on the United Nations' Comtrade database, 4-digit SITC, Rev. 2.
[a] Not elsewhere specified.

Source: UNCTAD.

[a] The methodology used here is quite similar to that used in UNCTAD's *Trade and Development Report 2002*. The *Trade and Development Report* selected dynamic products according to the criterion of average annual export value growth (at three digits of the SITC, Rev. 2) between 1980 and 1998. The *WIR* selects from the universe of world imports only those products (at four digits of the SITC, Rev. 2) that accounted for at least 0.33 per cent of total world trade in 2000, and ranks them according to the increase in their market shares between 1985 and 2000. The differences are minor. For a full description of the *Trade and Development Report* methodology, see UNCTAD, 2002a; Mayer, Butkevicius and Kadri, 2002.

Table VI.1. The structure of world trade in major product categories, by region, 1985 and 2000[a]

(Percentage)

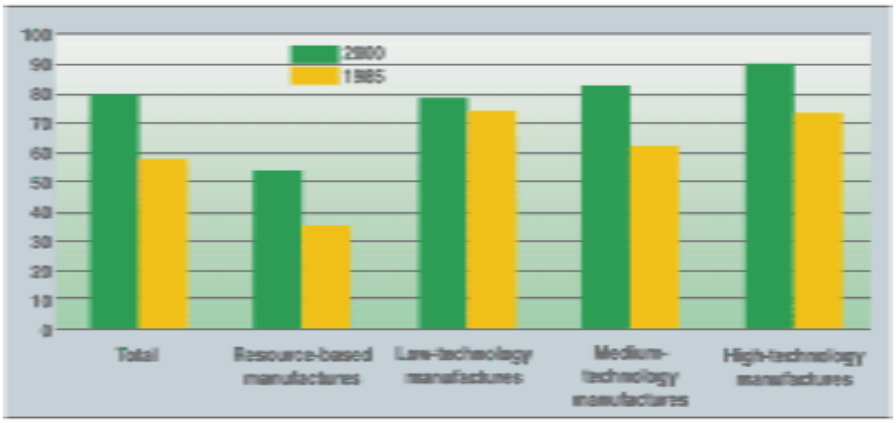
Product	Developed countries[b]		CEE[b]		Developing countries[b]		Of which: East and South-East Asia		Latin America and the Caribbean		Middle East and North Africa		South Asia		Sub-Saharan Africa	
	1985	2000	1985[c]	2000	1985	2000	1985	2000	1985	2000	1985	2000	1985	2000	1985	2000
Primary products	38.0	40.4	0.8	3.6	61.2	56.0	10.4	9.5	12.5	13.2	21.4	20.9	1.2	1.2	5.4	4.3
Manufactures based on natural resources	68.7	68.2	1.4	5.2	29.8	26.6	8.4	11.7	7.0	6.5	4.9	3.9	0.8	1.4	1.7	1.3
Manufactures not based on natural resources	81.9	66.8	0.6	2.4	17.5	30.8	10.8	22.6	2.6	4.6	0.8	1.1	0.6	1.0	0.4	0.2
Low-technology	66.4	49.7	1.2	3.6	32.4	46.6	22.9	33.4	3.2	5.3	1.6	2.7	1.9	3.4	0.5	0.4
Medium-technology	89.2	78.6	0.5	2.6	10.4	18.8	4.7	11.7	2.5	5.0	0.5	0.8	0.2	0.3	0.3	0.3
High-technology	83.2	63.4	0.2	1.3	16.6	35.4	10.9	29.1	2.1	3.6	0.3	0.3	0.1	0.1	0.3	0.1
Other transactions	71.2	58.4	0.2	1.2	28.6	40.4	5.3	8.6	4.2	4.8	0.9	0.9	0.2	0.2	4.1	1.9
Total	**68.9**	**63.5**	**0.8**	**2.9**	**30.3**	**33.6**	**10.1**	**18.7**	**5.8**	**6.0**	**6.3**	**4.0**	**0.8**	**1.0**	**1.9**	**1.0**

Source: UNCTAD, based on the United Nations' Comtrade database.

[a] Based on three-year average for 1985 (1984-1986) and a two-year average for 2000 (1999-2000).
[b] These three regions add up to 100 per cent for each export category.
[c] The share of CEE in exports is understated for 1985 because data are lacking in a number of countries. This also overstates the relative gain in the group's market shares over time.

technology category (figure VI.5). In 2000, the 10 leading developing-country exporters accounted for some 80 per cent of total manufactured exports by the developing world, up from 57 per cent in 1985. The pattern of country concentration in 2000 differed from that in 1985. In 1985, the degree of concentration was highest in the low-technology category, while in 2000 it was the highest in the high-technology category. This suggests that entry barriers into the high-technology category have become higher.

Figure VI.5. Shares of the top 10 exporters of manufactured exports in developing countries
(Percentage)

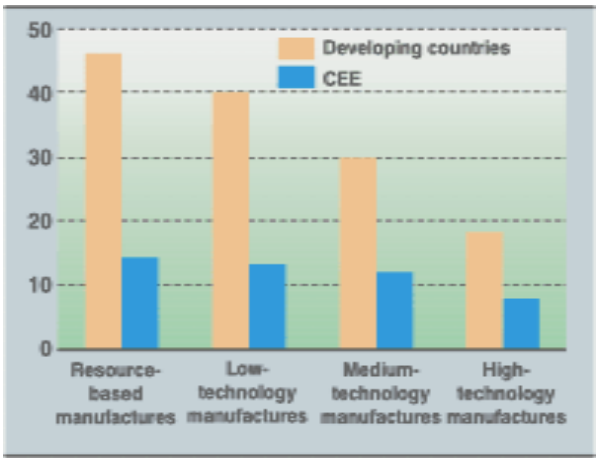


Source: UNCTAD, based on the United Nations' Comtrade database and UN-ECLAC's TRADECAN.

Another measure of concentration, the *number* of developing countries and economies in transition with exports of $500 million or more in 2000, indicates a high degree of concentration (figure VI.6). There are fewer large exporters the higher the technology level.

How have individual countries fared in increasing their market shares during 1985-2000? The "winners" are economies that have raised their world market shares by at least 0.1 per cent over the period, ranked from the highest to the lowest by rise in market share (table VI.2). Growing market shares show *dynamic* competitiveness (static competitiveness being shown by market shares at a point in time) and reveal the ability of a country to keep up with changing technologies and trade patterns. (Winners are analysed in more detail in the annex to this chapter.) Note that winners do not include large exporters that have not improved their competitive position during 1985-2000 (e.g. Japan in high-technology exports), even though they might have the largest market shares over the whole period.

Figure VI.6. Number of developing and CEE countries with exports of $500 million or more



Source: UNCTAD, based on the United Nations' Comtrade database and UN-ECLAC's TRADECAN.

It needs to be emphasized that export market shares are hard to gain and hard to sustain. A genuine improvement in international competitiveness can result from the upgrading of human resources or the use of improved technologies. On the other hand, market shares can also be gained because of temporary advantages such as preferential market access for labour-intensive, low-technology goods. Thus different factors can drive an increase in market share, some leading to sustained increases, others not.

Some points of interest to note when looking at the export winners in each category:

- China figures at the top of the list in all categories of exports, except for resource-based manufactures in which it ranks third.[6]

- Of the mature Asian newly industrializing economies, Hong Kong, China is a winner

only in resource-based manufactures while the Republic of Korea, Singapore and Taiwan Province of China appear in the top 10 of several categories (except resource-based manufactures and low-technology products, in which they have lost market shares). Of the new "tigers", Malaysia, Thailand and, to a lesser extent, the Philippines are prominently placed on the list for all sectors.

- From South Asia, India appears among the winners in resource-based manufactures and in the low-technology sector, while other countries such as Bangladesh, Pakistan and Sri Lanka appear only in low technology.

- In Latin America, Mexico is by far the strongest performer, ranking high virtually across the board, but especially in non-resource-based sectors. Other countries from the region rank far behind Mexico and fall into two groups: those that specialize in resource-based manufactures (Argentina and Chile) and those that do so in low-technology (Dominican Republic, El Salvador, Honduras) and high-technology (Costa Rica) goods.

- Sub-Saharan Africa is conspicuous by its absence, with even South Africa failing to appear among the top 20.

- From the European periphery, Turkey appears in all categories of non-resource-based manufactures, while Morocco appears in high-technology and low-technology, and Tunisia in low-technology.

- The leaders among the winners from CEE are Hungary, Poland and the Czech Republic, with Hungary showing the strongest growth in all categories except low-technology products. The Russian Federation appears only once as a winner, in resource-based manufactures, as does Slovakia in medium-technology products.

- Among developed countries, perhaps the most surprising fact is their prominence in resource-based manufactures, where they make up 8 of the 23 top winners. In high-technology products, the picture is different, with only four industrial country winners. This reflects in large part the transfer of segments of high-technology operations to low-cost countries by TNCs.

Table VI.2. The top 20 export winners, by technology category, 1985-2000

Rank	All sectors	Resource-based manufactures	Non-resource-based manufactures	High-technology manufactures	Medium-technology manufactures	Low-technology manufactures
1	China	Ireland	China	China	China	China
2	United States	United States	Mexico	Malaysia	Mexico	United States
3	Republic of Korea	China	Malaysia	Taiwan Province of China	United States	Mexico
4	Mexico	Republic of Korea	United States	Republic of Korea	Republic of Korea	Indonesia
5	Malaysia	India	Thailand	Singapore	Spain	Thailand
6	Ireland	Russian Federation[a]	Republic of Korea	Mexico	Taiwan Province of China	Malaysia
7	Thailand	Thailand	Singapore	Philippines	Malaysia	Canada
8	Taiwan Province of China	Indonesia	Philippines	Thailand	Thailand	Turkey
9	Singapore	Israel	Indonesia	Ireland	Hungary	India
10	Spain	Japan	Taiwan Province of China	Finland	Indonesia	Poland
11	Philippines	Switzerland	Ireland	Hungary	Poland	Viet Nam
12	Hungary	Chile	Hungary	Indonesia	Czech Republic[a]	Bangladesh
13	Viet Nam	Spain	Spain	Israel	Portugal	Honduras
14	India	Australia	Poland	Costa Rica	Singapore	Dominican Republic
15	Israel	Poland	Turkey	Poland	Turkey	Pakistan
16	Poland	Hong Kong, China	India	Czech Republic[a]	Argentina	Tunisia
17	Turkey	United Arab Emirates	Israel	Turkey	India	Sri Lanka
18	Czech Republic	Mexico	Viet Nam	Malta	Ireland	El Salvador
19	Chile	Iran	Czech Republic[a]	Spain	Slovakia[a]	Guatemala
20	Portugal	Argentina	Bangladesh	Morocco[b]	Australia	Morocco

Source: UNCTAD calculations, based on the United Nations' Comtrade database.

[a] 1995-2000.
[b] 0.04 per cent.

Note: Only countries with at least a 0.1 per cent increment in market share between 1985 and 2000 are included in the list.

- In non-resource-based products, Ireland, Spain and the United States lead the winners in the developed world. Other strong high-technology performers are Israel and Finland. The United States, the global winner in resource-based products and the runner-up in low-technology, does not appear at all in high-technology products (where it is the largest exporter in absolute terms but has not raised its market share). Part of the strong growth of its medium-technology and low-technology exports has to do with its export of components for overseas assembly, driven by its own TNCs.

- Japan, the second largest industrialized economy, figures among the winners only in resource-based products. It is a large exporter in most non-resource-based categories but has suffered from stagnant or falling market shares during the period considered. Most other large industrialized countries are in a similar situation. This is not surprising, in that it is difficult to raise shares beyond a certain (high) level. However, the United States did raise its high market shares in all but high-technology products, making its performance all the more remarkable.

The main conclusions of the analysis in this section are the following:

- The most dynamic products in world trade are found mainly in three manufacturing industries: electronics, automotive and apparel.

- Trade in parts and components has assumed more importance.

- The distribution of trade among developing countries is highly concentrated: the 10 leading developing-country exporters accounted for some four-fifths of total manufactured exports of developing countries in 2000.

- A number of developing economies have achieved important gains in market shares in technology-intensive industries of non-resource-based manufactures. The most noteworthy are China, Malaysia, Mexico, the Philippines, the Republic of Korea, Singapore, Taiwan Province of China and Thailand. Of the economies in transition, Hungary registered the greatest advance.

- It is also noteworthy that many small economies – such as Costa Rica, Ireland, Taiwan Province of China and Singapore – are among the most dynamic ones.

- Asian winners have gained market shares in all major markets (Japanese, European and North American), while the winners from the other regions have advanced only in the context of regional markets. Western and Eastern European winners have gained only in European markets, and countries in Latin America and the Caribbean have gained only in North American markets (see the annex to this chapter).

As will be discussed below, TNCs played an important role in the export performance of many of the most dynamic products in the winner countries. However, as discussed below export performance in and by itself needs to be complemented by sharing on the benefits of exports. Before discussing that, however, the role of TNCs in exports in general needs to be reviewed.

B. TNCs and exports

What role do TNCs play in the trade performance of countries?

1. The overall picture

The role of TNCs in expanding exports of host developing countries derives from the additional capital, technology and managerial know-how they can bring with them, along with access to global, regional, and especially home-country, markets. The resources and market access TNCs can bring can complement a country's own resources and capabilities and can provide some of the missing elements for greater competitiveness. Host countries can build upon these to enter new export activities and improve their performance in existing ones.

In some cases, especially those of countries in which domestic investment is limited by financial constraints, TNCs can help increase exports simply by bringing in additional capital and investing it in the exploitation of natural resources or low-cost labour. In such cases, foreign affiliates contribute to the export performance of host countries by bridging the resource gap and taking the risk of developing new exports.

The provision of capital has been an important aspect of the historical role of TNCs in building up developing-country exports of raw materials and labour-intensive manufacturing exports.

More importantly, TNCs can provide host countries with competitive assets for export-oriented production in technology-intensive and dynamic products in world trade. Such assets are often firm-specific, costly and difficult for firms in developing countries and economies in transition to acquire independently. When TNCs are unwilling to part with their ownership-specific advantages (as is the case with many of the newest and most valuable ones such as state-of-the-art technologies), FDI becomes particularly important for export competitiveness. Regardless of the mode of TNC participation, the transfer of such assets by TNCs to their foreign affiliates or non-equity partners in host countries through training, skills development and knowledge transfer opens up prospects for further dissemination to other enterprises and the economy at large. (On linkages, see *WIR01*.) This means that a wider group of firms (including domestic enterprises) can develop their exports and the factors underlying competitiveness get rooted in the host economy.

Besides strengthening the supply capacities of export-oriented industries in host countries through the transfer of resources, assets and capabilities, TNCs can enhance the demand conditions facing exports by developing countries and economies in transition, by facilitating their access to new and larger markets. This involves foreign affiliates' privileged access to TNCs' intra-firm markets and access at arm's length to TNCs' customers in global, regional and home-country markets. It also involves the access of non-equity partners to TNCs' international production systems. As in the case of technology, these links of foreign affiliates and contractual partners in host countries to markets can spill over to suppliers and other domestic firms. The case of ENGTEK, headquartered in Penang, Malaysia, is an example of a local supplier that engaged in closely-knit partnerships with TNCs and through this network became a global supplier (*WIR01*). In addition, host countries may also benefit from the lobbying activities of TNCs in their home countries for favourable treatment of exports from competitive host countries.

Finally, export-oriented affiliates can provide training for the local workforce and upgrade technical and managerial skills that benefit the host economy more broadly than the income earned by employees. Even simple operations need considerable training for new employees, particularly in developing countries without a strong industrial skill base. More sophisticated operations – complex manufacture, design, development and regional headquarters functions – entail more skill creation.[7] How much TNCs invest in employee training depends, of course, on the "raw material" the host economy provides – general education and training, technical skills, institutional support, standards and quality, and the like. This applies especially to export-oriented investments in advanced technological capabilities. This is the strategic challenge facing countries that have already attracted significant TNC export activity at low technological levels. Their future competitiveness depends on the host government's ability to boost the human capital and technological infrastructure. In turn, TNCs feed benefits back into local skill and technology systems, providing information, assistance and contracts.

On the other hand, depending on TNCs for all improvements in export competitiveness brings its own risks for host countries. TNCs may focus solely on the static comparative advantages of a host country. While this might resolve some of the short-term efficiency-related problems of TNCs, it means that a number of the benefits that can be associated with export-oriented foreign affiliates may fail to materialize in the host country (UNCTAD, 2002a). In particular, dynamic comparative advantages may not be developed, local value-added may not be increased and affiliates may not embed themselves in the local economy by building linkages to the domestic entrepreneurial community, by further developing labour skills, or by introducing more complex technologies.

Moreover, TNCs can leave countries when conditions change and profit prospects are affected. Export-oriented TNC activity is particularly sensitive to changes in the cost of production, market access, regulatory conditions or perceptions of risks. If relocation of foreign affiliates occurs with little warning, a host country can face serious problems. In labour-intensive industries, characterized

by an investment in capital not important enough to represent a big loss for investors in the case of disinvestment, sudden shifts in production locations – due, for example, to changes in regulations, incentives or preferential schemes – may occur more often. Over time, there is also a risk of relocation of labour-intensive production to lower-cost sites, as the wage level increases with income growth (*WIR95*, ch. V). Although the ability of TNCs to switch locations diminishes with the technology intensity of exports for many of the poorest host economies, it represents a serious problem requiring policy attention.

Finally, there is also the risk that host countries attempt to attract FDI – most particularly export-oriented FDI for which international competition is particularly strong – through incentives and by lowering labour standards, environmental standards or other economic or social standards. This can lead to a race to the top as far as incentives are concerned and a race to the bottom in terms of social benefits for workers and the economy as a whole. In addition, if all countries aim at exporting the same products at the same time, most of them may well be worse of (UNCTAD, 2002a).

All this suggests that countries need to pay attention not only to *attracting* export-oriented TNC activities, although this is the basis for benefiting from them. They also need to pursue active policies to *increase the benefits* from export-oriented TNC activities once they have attracted them. The trade balance is relevant here, but particular attention needs to be given to upgrading and the sustainability of export-oriented production.

What role, then, do TNCs play in trade?

There is no way to calculate the precise share. To begin with, data simply do not exist on that part of international trade that firms, under the common governance of TNCs, undertake via non-equity forms. When it comes to trade associated with foreign affiliates, an extrapolation from some leading industrialized countries that do collect such data puts the share of trade involving TNCs at around *two-thirds* of world trade for the latter half of the 1990s, including both intra-firm and third-party transactions (*WIR99*).[8]

More importantly, an estimated one-third of world trade consists of *intra-firm* trade (i.e. trade among the various parts of a single corporate system). The share of intra-firm exports by parent firms in the total exports of their home countries rose from 27 per cent in 1990 to 31 per cent in 1998 in the case of United States TNCs (United States, Department of Commerce, 1993, 2002), while it remained stable in the case of Japanese TNCs at around 38 per cent (Japan, MITI, 1998; Japan, METI, 2001a). This trend towards increasing intra-firm trade is corroborated by data for United States foreign-affiliate exports. Two-thirds of these exports were intra-firm in 1998, as compared to 55 per cent in 1983.

As noted earlier, trade in parts and components has assumed greater importance in world trade. Such trade also appears to be gaining in importance within corporate systems. In particular, the share of exports in electronic components and accessories as a percentage of total exports of electronic equipment was higher in the case of exports from United States foreign affiliates to affiliated firms (65 per cent) than in the case of the affiliates' exports to non-affiliated firms (58 per cent). At the same time, a shift from low- and medium-technology manufacturing exports towards high-technology manufactures can be observed since the early 1980s in intra-firm trade (annex table A.VI.1). The share of high-technology manufactures in intra-firm exports of United States affiliates rose from 29 per cent in 1983 to 43 per cent in 1998. All this suggests that the international intra-firm division of labour is intensifying – the hallmark of international production systems.

The significance of exports by foreign affiliates in total exports of host countries varies. Scattered national data on the share of foreign affiliates (as distinct from domestic firms) show that their contribution is often considerable and is growing over time (table VI.3). The significance of TNCs in host-country exports is not limited to countries that have benefited as export winners (as discussed in the preceding section); it can also be observed in other countries, such as Argentina, Brazil, Canada, Estonia, Finland and Slovenia (see table VI.2 for the list of top 20 exporters in non-resource-based manufacturing), in all of which more than 30 per cent of exports are accounted for by foreign affiliates.

How does the picture look if each of the main economic sectors is considered separately?

2. Primary products

In developing countries, the traditional role of TNCs has been to extract and export *primary products*. Although the share of this sector in world trade is declining (as it is in world FDI – see *WIR01*, Part One), the sector and the role of TNCs in it remains important for many countries and can help them move into higher-value-added activities (World Bank, 2002b). For many of the poorest countries, the availability of natural resources is their only comparative advantage. In Africa, for example, a good many of the continent's 54 countries depend on a limited number of primary products for the lion's share of

Table VI.3. Shares of foreign affiliates in the exports of selected host economies, all industries and manufacturing,[a] selected years

(Percentage)

Economy	Year	All industries	Manufacturing[a]
Developed countries:			
Austria	1993	23	14
	1999	26	15
Canada[b]	1994	46[c]	41[c]
	1995	44[c]	39[c]
Finland	1995	8	10
	1999	26	31
France[b]	1996	22	27
	1998	21	26
Ireland[b]	1991	..	74[d]
	1999	..	90[d]
Japan	1988	4	3
	1998	4	4
Netherlands[b]	1996	44	22
Portugal[b]	1996	23	21
	1999	17	21
Sweden[b]	1990	21[e]	21[e]
	1999	39[e]	36[e]
United States	1985	19	6
	1999	15	14
Developing economies:			
Argentina[f]	1995	14	..
	2000	29	..
Bolivia[f]	1995	11	..
	1999	9	..
Brazil[f]	1995	18	..
	2000	21	..
Chile[f]	1995	16	..
	2000	28	..
China	1991	17[g]	16
	2001	50[g]	44[h]
Colombia[f]	1995	6	..
	2000	14	..
Costa Rica	2000	50	..
Hong Kong, China	1985	..	10
	1997	..	5
India	1985	3	3
	1991	3	3
Malaysia	1985	26	18
	1995	45	49
Mexico[f]	1995	15	..
	2000	31	..
Peru[f]	1995	25	..
	2000	24	..
Republic of Korea	1999	..	15[i]
Singapore	1994	..	35
	1999	..	38
Taiwan Province of China	1985	17	18
	1994	16	17
Central and Eastern Europe:			
Czech Republic	1993	..	15[j]
	1998	..	47[j]
Estonia[b]	1995	..	26[j]
	2000	60	35[j,k]
Hungary	1995	58	52[j,l]
	1999	80	86[j,k]
Poland[b]	1998	48	35[j,l]
	2000	56	52[j,k]
Romania	2000	21	..
Slovenia	1994	..	21[j]
	1999	26	33[j,k]

Source: UNCTAD, based on the UNCTAD FDI/TNC database.

[a] Share of exports of foreign affiliates in the manufacturing sector in merchandise exports of host economies.
[b] Data for exports of foreign affiliates refer to exports of majority-owned foreign affiliates only.
[c] Data for exports of foreign affiliates from OECD, 2002.
[d] Data refer to local units, from the Central Statistics Office, Census of Industrial production.
[e] Data from Swedish ITPS, 2001. Manufacturing includes mining and quarrying.
[f] Data for exports of foreign affiliates were based on 1998-2000 average and were provided by ECLAC, International Trade and Integration Division. Based on a sample of 385 foreign-owned firms, 82 in Argentina, 160 in Brazil, 20 in Chile, 21 in Colombia, 93 in Mexico and 9 in Peru.
[g] Data from MOFTEC.
[h] 2000.
[i] Data from Soon (2001), based on exports of 267 exporting companies out of a sample of 305 manufacturing foreign affiliates, accounting for 47.5 per cent of the stock of FDI in the Republic of Korea. Total exports generated by foreign affiliates are thus likely to be considerably larger (based on a survey undertaken by the Korea Institute of Economy and Technology.
[j] Data on the exports of foreign affiliates from Andrea Eltetö (2000).
[k] 1998.
[l] 1993.

their export earnings. To illustrate, in Botswana, diamonds alone accounted for 79 per cent of exports in 1999, while copper and nickel represented an additional 5 per cent. In Papua New Guinea, gold and copper together accounted for almost half the exports in 1999 (Ericsson, 2002).

While natural resources are generally not dynamic in world trade, new resource-based exports are emerging, such as horticulture, often with TNC involvement at one or more points of the value chain. In Kenya, for example, horticulture – with substantial TNC involvement (box VI.2) – was the second most important export item in 2001, accounting for 16 per cent of total merchandise exports (Kenya, Central Bureau of Statistics, 2002). In more traditional agricultural commodities (such as bananas and other tropical fruits), the role of TNCs continues to be important, although often through more specialized non-equity forms focused on marketing and distribution (UNCTAD and Cyclope, 2000, pp. 161-163). In most of these commodities, the value chains are increasingly led by large retailers that, in their quest for cost reduction and optimum distribution, build long-term direct-supply relationships with locally-owned producers (Humphries, 2001). This is a departure from the historical role of TNCs in food value chains, where they used to own production facilities as well as transportation and distribution facilities (box VI.3). In fisheries, the quest by developed-country TNCs for new sources of supply to serve expanded markets has led to an increased role for export-oriented FDI (box VI.4). As the value added in the supply chain moves away from catch or breeding towards freezing and transport, the industry is becoming increasingly knowledge- and skills-intensive (UNCTAD and Cyclope, 2000, p. 199).

In petroleum, a key primary product, new entrants into export markets (such as Angola), rely significantly on FDI, while traditional exporter countries are increasing technological sophistication and value added through both equity and non-equity arrangements with TNCs. In other extractive industries, the increasing application of new information technologies has resulted in a shift of the main value added from simple discovery and deployment of capital to the application of intelligence on known deposits and improvements in capital efficiency (Humphries, 2001). This shift not only makes mining activities increasingly technology-intensive, but also re-emphasizes the need for various forms of cooperation with the technological leaders, typically TNCs. In the Namibian water diamond industry, for example, De Beers and Namco have established joint ventures with Namibian

Box VI.2 Kenya's dynamic horticultural export industry

Horticulture is a rapidly growing export item. Over the four-year period between 1997 and 2001, its share in exports increased from 12 to 16 per cent (Kenya, Central Bureau of Statistics, 2002). In the flower segment of horticulture alone, the 70 leading Kenyan grower firms employed more than 50,000 people and exported flowers worth $110 million to the European Union market in 2001 (FPEAK, 2002). By 2001 Kenya had become the leading flower supplier of the European Union (accounting for 25 per cent of EU imports), ahead of Colombia (17 per cent) and Israel (16 per cent) (idem).

TNCs play an important role in Kenya's horticulture, although it varies between segments. Close to 90 per cent of Kenya's flower production, for example, is controlled by foreign affiliates (FPEAK, 2002). The supply chain is under the common governance of TNCs, from breeding through flower production to marketing and distribution. The reason for this close control is the capital- and technology-intensity of flower production. In contrast, 60 to 70 per cent of the exportable fruits and vegetables are grown by small-scale local farmers, either through out-grower schemes or through contract farming arrangements. TNCs provide farm inputs (seeds, chemicals and fertilizers), technical support and quality control as well as market information to smallholder farmers, channelled through the fresh produce exporters associations (idem). The fast expansion of flower production is, of course, not without problems, including health hazards for workers unprotected from chemicals used in flower growing. These issues have been recognized by the Food and Agriculture Organization and the United Nations Environmental Programme, which in 2001 together set up a project in Kenya to introduce alternatives to toxic chemicals (FAO, 2002). The Government of Kenya has a number of laws limiting the exposure of workers to chemicals; the effectiveness of the local enforcement of these laws, however, needs to be strengthened (ILO, 2001, p. 223).

Source: UNCTAD.

Box VI.3. The food value chain

To minimize the negative effects of commodity dependency, many commodity-dependent countries seek to diversify out of basic food commodities into higher-value-added products by moving into food-processing (e.g. the preservation and transformation of raw materials into such products as instant coffee and fruit juice) or by developing new types of food products. This strategy, however, is not easy to implement, because:

- Tariff barriers in developed countries are frequently higher for processed food products than for unprocessed ones.
- The food-processing industry is well established; a small number of TNCs controls the worldwide supply and distribution networks and brands.
- Many developing countries lack the access to raw materials, capital and markets necessary to achieve economies of scale.
- Demand for preserved products has been stagnant in developed countries as consumers' tastes shift towards fresh produce.

With the growth of international sourcing of fruits and vegetables and the increasing concentration of retailing in developed countries, the role of TNCs in host countries is changing. In the past, TNCs invested primarily in plants for the production of processed food (e.g. soluble coffee in many developing countries). They were also often the largest exporters - and also responsible for the distribution and transport - of non-traditional agricultural products in Latin America (e.g. Del Monte in Costa Rica and Dole in Honduras, both in pineapple exports); they produced most of their exports and contracted the rest to medium and large domestic growers (Thrupp, 1995). More recently, as in the case of the apparel industry, some leading TNCs no longer own factories or logistic facilities in developing countries; instead, they own retail outlets and brand names in developed countries. In this case, there are no equity links between the retailers and the rest of the value chain. However, the retailers play a decisive role in defining the structure of international trade and in determining who will be included in or excluded from the network.

Accordingly, the recent patterns of FDI in the food industry show the following characteristics:

- An increasing number of domestic exporters control land to increase supervision of the production process and secure supplies. Some large producers and exporters in Africa have invested in neighbouring countries to gain access to land. In the value chain of fresh vegetables, for example, many African exporters are encouraged by United Kingdom supermarkets to take on more of the processing activities formerly controlled by importers. In the value chains of fresh and processed fruit, market requirements are transmitted from large buyers to exporters, who then take control of production and shipment to meet those requirements. Some large, locally-owned exporters control the transport of their products. One example is Kenya's largest horticultural exporter, Homegrown, which established a joint venture with an airline company.
- Importers in developed countries invest directly in exporting companies and in farms in producer countries to ensure continuity of supply and provide the resources needed for increased local processing. For example, some importers in the United Kingdom have invested in production facilities, not only in Europe but also in the Middle East and Africa, to supply supermarkets all year round from their own farms.
- Exporters in developing countries invest in importers – or create their own importing companies – in developed countries (e.g. Homegrown's establishment of its own importer in the United Kingdom) to diminish the risk of being displaced by exporters from other countries.

The development of niche markets for higher-value fresh fruits and vegetables can create new opportunities for developing-country exports. The question arising from the development of entire-channel marketing systems, in which a greater emphasis is placed on the closer management and monitoring of food value chains, is how to link with developed-country firms within the chain. Developing-country firms are thus seeking stronger equity (e.g. joint ventures) or non-equity (e.g. strategic alliances) links with international partners who provide greater access to markets and resources for upgrading, while improving their competitiveness.

Source: UNCTAD, 2000f.

Box VI.4. FDI in the salmon industry in Chile

Fish is the only primary product included in the 50 most dynamic exports in the period 1985-2000, occupying the forty-ninth spot at the 3-digit level of the SITC, Rev. 2 (using the same criteria as the box VI.1). Chile and China have become two of the major exporters of fresh fish (after Norway, the United States and the Russian Federation), and are the two countries that have increased their world market share the most over the period. Chile's principal success in this industry has been in the category of fresh fillets (SITC 0343) where Chilean exports accounted for almost 20 per cent of world imports in 2000, up from 2 per cent in 1985. Most of these exports come from salmon farming, an industry that reached $950 million in 2000, or 5.3 per cent of the total exports of the country (up from 1.8 per cent in 1991).

Although local companies (with important assistance from the Government) developed the salmon industry, foreign affiliates of TNCs from Europe, North America and Japan have become major exporters. By 1999, the top three exporters were all foreign affiliates. Growing international demand encouraged the major companies to seek out new sites for production, and Chile offered optimal conditions in the natural environment and the availability of labour and other inputs. Because salmon rearing in Chile is subject to Government concessions, most TNCs have preferred to acquire existing companies that already possessed concessions. In 2000, about 40 per cent of total production was in the hands of foreign affiliates.

The Chilean salmon industry still has the potential to develop further, and exports are expected to reach between $2.5 and $3 billion by 2010, based on estimated future investments of $1.5 billion. But the industry is also subject to the price fluctuations typical of other primary products: in 2001, a collapse in prices meant that a 50 per cent increase in the volume of exports translated into only a 1 per cent rise in export revenues. Salmon producers are expected to maintain output levels in 2002.

Source: UNCTAD, based on ECLAC, 2001 and Economist Intelligence Unit, 2002b.

firms and hired Namibian staff to employ front-line technology (the sweeping of the ocean floor outside the coast) in deep-water extraction. This technology is more knowledge-intensive than traditional on-land mining. Many of these ventures involve non-equity forms of TNC participation, such as contractual arrangements, rather than FDI. In bauxite mining, for example, the list of the largest 15 producers controlling more than four-fifths of world output in 2000 includes not only TNCs but also State enterprises from Guinea (fifth), Venezuela (seventh), India (tenth) and Jamaica (twelfth) (Ericsson, 2002).

3. Services

Services are a sector in which the potential for export-oriented FDI in developing countries and economies in transition is considerable, for a number of reasons:

- Services account for more than two-thirds of the GDP of developed countries (UNCTAD, 2001g, pp. 300-315), the world's principal export markets. By 1999, the share of services in GDP had surpassed 50 per cent in the developing world, and 57 per cent in the economies in transition. These countries are therefore strengthening their ability to produce more services for all markets.
- In 1999, only 12 per cent of service production entered international trade, compared to 51 per cent of the production of goods.[9] As the tradability of services increases as a result of the use of modern information and communication technologies (Sauvant, 1990), it can be expected the production of a growing number of services (or their components) will shift to developing countries, as manufacturing did.[10]
- United States data suggest that services firms are considerably less transnationalized than manufacturing firms – by a factor of three (table VI.4). However, for many corporations, service exports are ancillary to their international production activities in non-service areas and include R&D, sales and marketing, as well as procurement centres. A number of TNCs relocate these services to lower-cost sites or places that make more logistical sense, and export them from there. In the developing world, Asia appears to be more advanced than other regions in attracting both types of export-oriented FDI in services: FDI related to service exports and FDI related to service functions in international production systems. All this suggests that there is a considerable potential for firms to transnationalize and for countries to attract FDI in the services sector.

In this context, it should also be noted that trading companies play an important role in facilitating exports from host countries. In the case of the United States, wholesale trading foreign affiliates accounted for one quarter of the total exports of all majority-owned foreign affiliates of United States TNCs in 1998 (United States, Department of Commerce, 2002). This role is even stronger for Japanese trading TNCs, the *sogo shoshas*: in 1998, nearly half the exports by foreign affiliates of Japanese TNCs were handled by trading companies (Japan, METI, 2001a). The exports of *sogo shoshas* (many actually also produced by them) range from agriculture and mining to manufacturing and services products.

Services FDI in developing countries and CEE is, indeed, becoming important. As in the case of developed countries, more than half of developing countries' total FDI inward stock was in the services sector in 2000, a share nearly double that of a decade ago.[11] For example, the majority (58 per cent) of the 3,742 new global FDI projects monitored between 2001-May 2002 involved service functions.[12] A number of these service projects – including R&D, regional headquarters and call/shared-service centres (accounting for nearly one quarter of all global FDI projects) – are export oriented. And the share of developing countries and economies in transition in some of these types of projects is on the rise. For example, their share of call centres and shared-service centres increased from 22 per cent in 2001 to 39 per cent in the first five months of 2002.[13] In R&D, their share rose from 25 per cent to 42 per cent over the same period. In the Indian information technology and software development industry alone (box VI.5), 63 major investment projects, creating almost 65,000 new jobs, were initiated during that period. While the move of export-oriented services FDI to developing countries is still incipient, it has been gathering pace.

Table VI.4. The degree of transnationality of United States firms, by sector, 1992 and 1997
(Percentage)

Sector	1992	1997
Total	11.6	12.5
Primary	30.9	36.2
Secondary	23.6	27.1
Tertiary	6.6	7.4

Source: UNCTAD, FDI/TNC database.

Notes: Data refer to sales of non-bank majority-owned foreign affiliates of United States non-bank TNCs divided by total sales of all United States firms. Total sales of all United States firms were taken from the 1992 and 1997 *Economic Census* of the United States Census Bureau. Data on the 1997 Census are classified according to the 1997 North American Industry Classification, superseding the Standard Industrial Classification used in prior Censuses. Data represent total sales, shipments, receipts, revenue or business done by establishments and therefore are not fully comparable to sales by foreign affiliates. Primary sector refers to mining.

Box VI.5. Indian computer software and services exports

Software and related services have been among India's fastest-growing export items, averaging 40 per cent growth per annum in 1988-2002, and expanding from $70 million in 1988 to a projected $7.6 billion in 2001/2002. Industry experts estimate that this industry accounted for 16 per cent of India's total exports in 2000/2001, employed 5 million people, and received $1.6 billion in investments (NASSCOM, 2002).

The software exports of India are highly concentrated in a few large firms (box table VI.4.1). Of the country's 30,000 software firms, just 20 accounted for 28 per cent of the industry's exports. The export propensity of these top firms is higher than 92 per cent (http://www.nasscom.org). Most of the leading software producing and exporting firms are Indian-owned. Even in the city of Bangalore, where FDI in the Indian software industry is concentrated, only 150 of the 1,001 firms operating in the technology park were foreign-owned at the end of 2001 (STPI, 2002). Moreover, some of the Indian firms are themselves becoming outward investors (Patibandla and Petersen, forthcoming, p.11).

Nevertheless, foreign companies play an important role in the industry. Foreign affiliates alone accounted (in 1998/1999) for some 19 per cent of India's software exports, often to their parent companies (Kumar, 2001); to that, one would have to add exports undertaken on the basis of non-equity links. Almost all major United States and European information technology firms are present in India, despite a limited domestic software market. They cluster their high-technology activities largely into a single location, Bangalore, because of limited basic services elsewhere. Of the 112 new FDI ventures (including both manufacturing and services) established in India between January 2001 and May 2002,[a] Bangalore attracted 38 per cent.

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Box VI.5. Indian computer software and services exports (concluded)

Some key projects – such as Intel's 1,000-job technology centre – were established in Bangalore. The strategies of TNCs in Bangalore are focused on the exploitation of a single critical input available there: skilled human resources. This means that they need to nurture local capabilities through close collaboration with universities and research centres.

To maintain their technological edge, foreign affiliates in Indian software follow two contrasting strategies. Some of them (such as Hewlett Packard, Oracle and Motorola) opt for fully-controlled affiliates, closely integrated into their corporate networks. These affiliates then subcontract product development to local software firms. Others (such as Nortel and Cisco) opt for collaboration and joint ventures with local information technology firms. In the latter cases, the establishment of joint ventures and the conclusion of collaboration agreements have been facilitated by the fact that some of the senior managers of the TNC parent companies are Indian expatriates.

Source: UNCTAD.

[a] Data provided by PricewaterhouseCoopers.

The location of international service functions appears to be concentrated so far in only a few countries. In the developed world, Ireland has been highly successful in attracting international service functions (box VI.6). In the developing world, India has been a successful location, especially for software development and other international service functions. All this suggests that countries seeking to explore new frontiers in attracting export-oriented FDI should consider various service industries as well as service functions of all sorts of firms.

Box VI.6. Ireland: the growth of services exports

The export competitiveness of Ireland improved, not only by attracting FDI in manufacturing, but also in services, especially IT-based ones, such as telecom, computer and other business services. Since the late 1980s, this has been part of the investment promotion strategy followed by the Investment and Development Agency (IDA). Results include the setting up there of Intel's EU headquarters, the transformation of Ireland into a top location for customer-support services (shared-services centres[a] and call centres[b]), and the successful positioning of Ireland as the market leader in Europe for greenfield FDI in software,

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Box VI.6. Ireland: the growth of services exports (concluded)

healthcare and medical, engineering and financial services. Its International Financial Services Centre attracted increasing inflows of both FDI and portfolio capital.[c] Although new investment in the electronics and IT-services industries slowed in 2001[d], new investment took place in healthcare and financial services. Of the top 55 of Ireland's foreign-owned exporters, four were in services in 1998 (IDA, 1999). In 2000, foreign services affiliates accounted for a large share of Irish services exports, with their export propensity being higher than that of foreign manufacturing affiliates (89 per cent compared to 86 per cent, respectively – Forfás, 2002).

Source: UNCTAD.

[a] Such as Whirlpool setting up its European Shared Services Centre in Dublin in 1995. Ireland is now the European financial control centre for Whirlpool, employing over 60 people, servicing the company's sales network in 16 Western European and Nordic countries. Ireland was chosen because of low operating costs, language skills, technical skills and the speed and ease of set up. Furthermore, shared-services centres were set up by Compaq, Allergan, Electrolux, Informix, Microsoft and Apple among others (IDA, 2002).

[b] Call centre operations were established by American Airlines, Hertz, Starwood Hotel & Resorts, Best Western, UPS, Zomax and Dell (IDA, 2002).

[c] The IFSC, established in 1987, involves over 400 foreign affiliates in such areas as banking, investment finance, corporate treasuries and insurance. Around it, a world-class support network of software development, telecommunications, shared-services centres and legal and accountancy services has emerged. Certification of new IFSC projects had already ceased by the end of 1999. Furthermore, certification of expansion of existing entities will cease at end-2002. By 2005, the different legislative regimes for the IFSC and the domestic financial services sector will be eliminated, in accordance with a corporation tax agreement with the EU by introducing a 12.5 per cent corporate tax rate (IFSC, 2002).

[d] Among the measures envisaged by foreign affiliates to weather the current economic downturn in the information and communication technology industry (ICT) was the expansion of services in this industry, according to a survey by Forfás and IDA (Forfás and IDA, 2001). The survey, conducted between May and July 2001, covered 16 major IDA-supported foreign electronics affiliates (Forfás and IDA, 2001). While some highly specialized manufacturing activities will continue on a small scale, expanded services might include: ICT outsourcing, e-commerce, customer support, supply chain management and sales and systems integration all requiring highly skilled workers. To support this transition, Forfás and IDA Ireland, in conjunction with the Department of Enterprise, Trade and Employment, have put in place an "Action Plan" to improve the business environment for foreign electronics affiliates in Ireland. These efforts have become all the more necessary in light of Ireland's diminishing cost competitiveness in traditional electronics manufacturing activities (such as printed circuit boards, consumer PCs, mobile phones and most other consumer electronics, such as speakers) in comparison with locations such as the CEE or Asian countries.

4. Manufacturing

The most prominent role played by FDI in the exports of developing countries is in the *manufacturing* sector. However, this role differs from country to country. In economies for which data are available for this sector, the share of foreign affiliates in total manufacturing exports ranges from 4 per cent in the case of Japan to 90 per cent in the case of Ireland for developed countries. For developing economies, it ranged from 3 per cent in the case of India (1991 – the most recent available year) to 49 per cent in the case of Malaysia in 1995 (table VI.3). In CEE, the share was between 33 per cent (Slovenia) and 86 per cent (Hungary) in 1999. In many developing countries and CEE, the share appears to be more than one-third and seems to have increased over time, most dramatically in China. In developed countries, it does not seem to have changed much over time.

Two aspects of the role of TNCs in the export of manufactures deserve special mention. The first concerns the setting up of *operations aimed at international markets from the start*, sometimes in the context of specific product mandates given to foreign affiliates. In the developing world, this has been the most recent form of TNC export involvement and perhaps the most important quantitatively. In the initial stages – and this persists in many countries – most such investments were relatively isolated from the host economy, they sought essentially to tap cheap labour. TNCs operating in export processing zones (EPZs) (to be discussed in chapter VII) exemplify this. In recent years, however, the distinction between domestic and export-oriented activities has been breaking down, with TNCs being allowed to serve both markets from the same facilities. In liberal trading environments like that of Singapore, this is the norm. For economies undergoing liberalization, a good example is China. Its large market and competitive production base allow TNCs to mount scale-intensive operations that serve domestic markets and move rapidly, or almost simultaneously into exports.

The second concerns the *leveraging of the presence of foreign affiliates* as a vehicle to facilitate the internationalization of domestic firms (especially suppliers of affiliates) through exports and outward FDI, upgrading, in this manner, the international competitiveness of domestic firms. The impact of foreign affiliates on domestic companies' export activities can be divided into direct and indirect effects (Blomström et al., 2000).

- *Direct effects* occur when exporting foreign affiliates establish backward linkages with local firms, which then become "indirect exporters". In addition, given the often personalized nature of buyer-supplier relationships, foreign affiliates may also provide useful contacts with other affiliates of the TNC network (Raines, Turok and Brown, 2001). For example, in the Southern Common Market (Mercosur) area in Latin America and in China, Nestlé actively assisted selected suppliers to become regional suppliers to Nestlé; Hitachi's semiconductor affiliate in Malaysia similarly assisted its vendors by introducing them to other Hitachi affiliates (*WIR01*). Export endeavours of suppliers can also be helped by their gaining access to the knowledge and information controlled by a foreign affiliate such as knowledge of foreign market conditions related to design, packaging and product quality (Blomström et al., 2000). In the United Kingdom, almost half of the domestic suppliers to TNCs had benefited in such a way from the linkages to foreign affiliates (PACEC, 1995). There are furthermore "reputation effects" to consider. According to some successful suppliers in Asia, once their reliability was proven to one large foreign affiliate, reference was provided to other assemblers or manufacturers within the same business network, or to other foreign affiliates, thus generating new opportunities (*WIR01*). Similar findings were noted in a study of suppliers to such investors as Sony and Nissan in the United Kingdom (Morris and Imrie, 1992) and in other studies (Echeverri-Carrol, Hunnicut and Hansen, 1998). The internationalization of local suppliers – by way of either increased exports or FDI – has been found to be more likely to occur when domestic collaboration between suppliers and investors is not only high, but also involves high-value-added activities. Factors that influence the likelihood of transnationalization include the complexity of the production process, the level of local procurement by the foreign affiliate, the autonomy and mandate

of the foreign affiliate, and the importance of geographical proximity between investors and suppliers (Raines, Turok and Brown, 2001).

- *Indirect effects* of the presence of export-oriented foreign affiliates occur when local firms manage to copy the operations of foreign affiliates, employ staff trained by foreign affiliates, and benefit from improvements in infrastructure and reductions in trade barriers undertaken in response to the demands of foreign companies (Blomström et al., 2000). In Mexico, for example, one study found that the probability of a Mexican-owned plant engaging in exports was positively correlated with its proximity to TNCs but not correlated with the concentration of overall exporters (Aitken et al., 1997).

In some instances, on the other hand, links to foreign affiliates may impede the efforts of suppliers to transnationalize. This may be the result of purchasing policies that indirectly hamper the transationalization efforts of suppliers through restrictive contracts or intense price competition (Raines, Turok and Brown, 2001).

In sum, TNCs, through equity and non-equity links, account for a substantial share of exports in a number of developing countries, and their role spans all sectors. In the *primary* sector, besides minerals and petroleum, TNCs contribute to the development of resource-based exports in such areas as food processing and horticulture. In *manufacturing*, they tend to be the leaders in export-oriented production and marketing, especially for the most dynamic products, for which linking up to marketing and distribution networks is crucial. Their international production systems can take various forms, ranging from production-driven FDI-based systems involving intra-firm trade among affiliates to looser buyer-driven, non-equity-based networks of independent suppliers (as in international subcontracting and contract manufacturing). The increased tradability of services offers new opportunities for exports, the best-known example, so far, being the Indian software industry. But these opportunities also extend to services related to international production systems, such as regional headquarters, procurement centres, shared-services centres and R&D activities.

C. Some winner countries

What role did TNCs play in the success of the winners identified earlier in this chapter that is, countries that had made large strides in improving their export competitiveness and consequently increased their market shares in the world's principal markets?

To answer this question, it is necessary to go beyond an examination of the role of TNCs in the export performance of countries in general. It requires country and company level data that do not exist for the great majority of countries. For a number of significant cases, however, they do exist. It should be emphasized that winner countries come in two categories: those that gain market share in all major markets and those whose gains are concentrated in a specific region. China and Korea are in the first category, while the other cases are in the second. This section provides a window, so to speak, on what is happening in these countries and, in particular, the role of TNCs in their success.[15]

1. China

China's impressive export growth, from $26 billion in 1985 to $249 billion in 2000, was accompanied by a substantial growth in FDI inflows, from $2 billion in 1985 to $41 billion in 2000; the bulk of its inward FDI stock came from other Asian economies in the earlier period. The country's strong export growth was underpinned by a strengthening of its export competitiveness in all markets - reflected in an increase of the country's market share from less than 2 per cent to more than 6 per cent during this period. This increase was even more remarkable in technology-intensive products (table VI.5). The structure of China's exports has also changed: in 1985, exports of primary products and resource-based manufactures represented 49 per cent of all exports, while in 2000 their share had receded to 12 per cent and that of non-resource-based manufactures had jumped to 87 per cent (table VI.5). The share of high-technology exports had jumped from 3 per cent in 1985 to 22 per cent in 2000. All of the country's 10 principal export products in 2000 (accounting for 42 per cent of total exports) were dynamic products in world trade. Three of them were in high-

technology industries (telecom equipment, automatic data-processing machines, and parts and accessories of computers) that accounted for 13 per cent of total exports.

What was the role of TNCs in this export dynamism? Foreign affiliates accounted for less than 9 per cent of total Chinese exports in 1989; in 2001 their share had jumped to 48 per cent[16] (figure VI.7). More than 90 per cent of exports by foreign affiliates were manufactured goods, in which machinery and equipment and "other" manufacturing were prominent.

The share of exports by foreign affiliates in technology-intensive industries rose from 59 per cent in 1996 to 81 per cent in 2000 (figure VI.8). The following are examples of the share of foreign affiliates in China's exports of specific products (tables VI.6 and VI.7):

- Electronic circuits: these experienced rapid growth in exports between 1996 and 2000 (a fivefold increase in export value); foreign affiliates accounted for 91 per cent of their exports in 2000. Intel alone exported products worth over $400 million in 2000. Samsung was also a major exporter of electronic circuits as well as consumer electronics.
- Automatic data-processing machines: foreign affiliates accounted for 85 per cent of

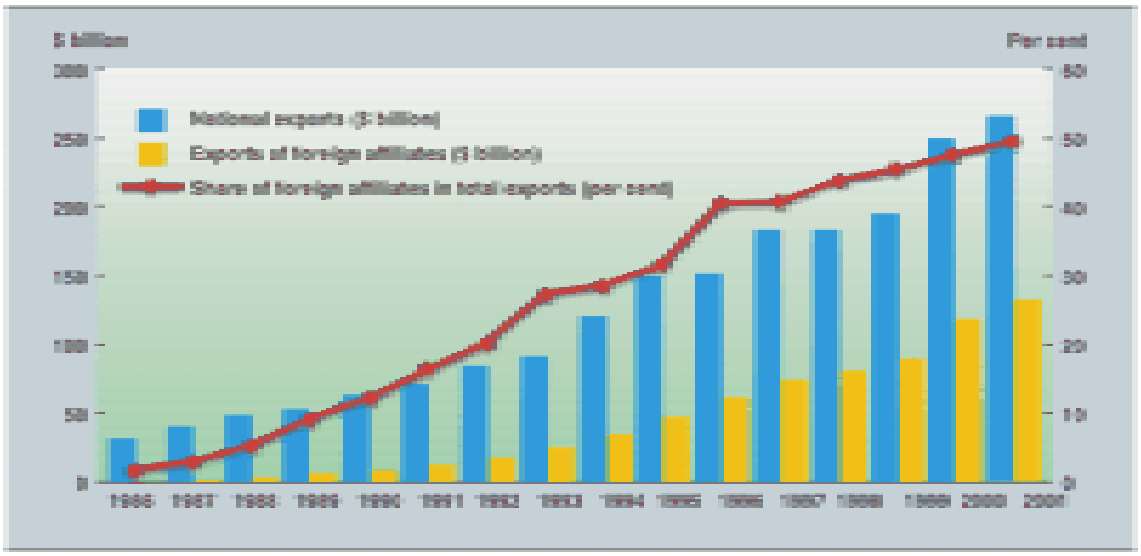
Table VI.5. China's competitiveness in world trade, 1985-2000

Product	Category		1985	1990	1995	2000
I. Market share			**1.6**	**2.8**	**4.8**	**6.1**
1. Primary products[a]			2.4	2.6	2.5	2.3
2. Manufactures based on natural resources[b]			1.1	1.3	2.1	2.7
3. Manufactures not based on natural resources[c]			1.5	3.4	6.1	7.8
Low technology[d]			4.5	9.1	15.5	18.7
Medium technology[e]			0.4	1.4	2.6	3.6
High technology[f]			0.4	1.4	3.6	6.0
4. Others[g]			0.7	0.7	1.4	1.8
II. Export structure			**100.0**	**100.0**	**100.0**	**100.0**
1. Primary products[a]			35.0	14.6	7.0	4.7
2. Manufactures based on natural resources[b]			13.6	8.2	7.4	6.9
3. Manufactures not based on natural resources[c]			50.0	76.2	84.6	87.1
Low technology[d]			39.7	53.6	53.5	47.6
Medium technology[e]			7.7	15.4	16.9	17.3
High technology[f]			2.6	7.3	14.2	22.4
4. Others[g]			1.4	0.8	1.0	1.1
III. 10 Principal exports (SITC Rev.2)	**A[h]**	**B[i]**	**14.2**	**30.2**	**38.5**	**41.5**
894 Baby carriages, toys, games and sporting goods	*	+	2.5	7.3	8.4	8.5
851 Footwear		+	1.2	4.6	7.2	5.5
764 Telecommunications equipment	*	+	0.4	1.9	3.5	4.9
752 Automatic data processing machines, units	*	+	-	0.3	1.6	4.1
845 Outer garments, knitted or crocheted	*	+	3.6	4.4	4.1	3.9
759 Parts and accessories of computers, etc.	*	+	0.1	0.3	1.8	3.6
843 Outer garments, women's and girls', textile fabrics	*	+	3.8	5.5	4.8	3.5
831 Travel goods (trunks, suitcases, etc.)	*	+	1.8	3.6	3.6	2.8
893 Articles n.e.s. of plastic materials (div.58)	*	+	0.3	1.4	2.3	2.3
821 Furniture and parts thereof	*	+	0.5	0.8	1.3	2.3

Source: UNCTAD, based on the United Nations Comtrade database and the TRADECAN computer software of ECLAC.

[a] Contains 45 basic products that are simple to process; includes concentrates.
[b] Contains 65 items: 35 agricultural/forestry groups and 30 others (mainly metals, excluding steel, plus petroleum products, cement, glass, etc.).
[c] Contains 120 groups representing the sum of low, medium and high technology.
[d] Contains 44 items: 20 groups from the textile and garment category, plus 24 others (paper products, glass and steel, jewellery).
[e] Contains 58 items: five groups from the automotive industry, 22 from the processing industry and 31 from the engineering industry.
[f] Contains 18 items: 11 groups from the electronics category, plus another seven (pharmaceutical products, turbines, aircraft, instruments).
[g] Contains nine unclassified groups (mainly from section 9).
[h] Groups belonging (*) to the 50 most dynamic in world imports, 1985-2000.
[i] Groups in which China gained (+) or lost (-) world import market share, 1985-2000.

Figure VI.7. China: share of foreign affiliates in total exports, 1986-2001
(Billions of dollars and percentage)

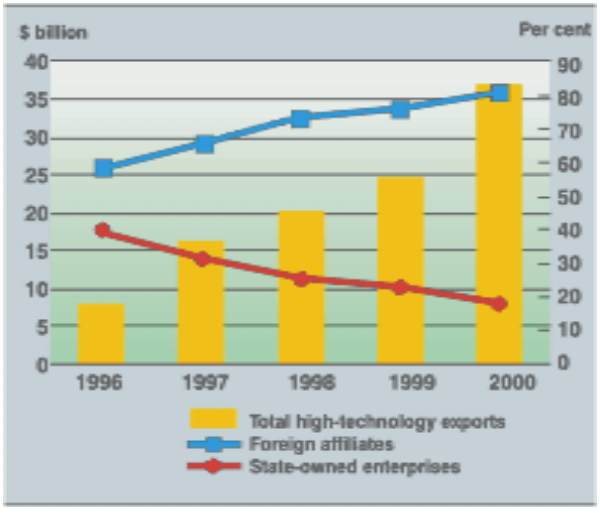


Source: UNCTAD, based on data provided by MOFTEC.

exports in 2000. IBM alone exported $1.5 billion, while Seagate and Epson each exported about $1 billion worth.

- Mobile phones: saw a sixfold increase in exports from China; foreign affiliates accounted for 96 per cent of China's exports in 2000. The affiliates of Motorola, Nokia, Ericsson and Siemens drove this expansion, with Motorola exporting more than $1 billion in 2000. This was against the background of a highly dynamic domestic market.

Figure VI.8. China: exports of high-technology products and shares of foreign affiliates and State-owned firms, 1996-2000
(Billions of dollars and percentage)



Source: UNCTAD, based on China, Ministry of Science and Technology.

In contrast, Chinese domestic enterprises predominate in the low-technology sector, especially in the export of toys, travel bags and yarns and fabrics.

Export activity by foreign affiliates in China can be documented at the company level for the country's 100 leading foreign affiliates in 2000 (table VI.6). Exports from these companies alone accounted for 10 per cent of total exports from China. Most of these companies were concentrated in the electronics and telecom industries.

China undoubtedly has the advantage of the size and growth of its domestic market and the abundant availability of surplus labour. Another advantage that China offers are rapidly growing supply networks, i.e. numerous clusters of domestic and foreign firms which can provide a wide range of services and supplies to enable TNCs to perform efficiently, within a single investment location, thereby reducing significantly logistic costs.

Table VI.6. China: exports by the leading foreign affiliates,[a] 2000

(Millions of dollars and percentage)

Rank	Name of parent firm	Name of affiliates	Home economy	Industry	Value	Percentage of total exports
1	Samsung Electronics	Dongyuan Samsung Electro-Mechanics	Republic of Korea	Electronics	1 491.0	0.53
	5 affiliates [b]	Tianjin Samsung Electro-Mechanics				
		Samsung Electronics Huizhou				
		Tianjin Samsung Electronic Monitor				
		Tianjin Samsung Electronics				
2	IBM	Shenzhen Kaifa Technology	United States	Electronics	1 457.8	0.52
	4 affiliates [b]	Shenzhen Hailiang Storage Equipment				
		Great Wall International Information Products (Shenzhen)				
		IBM Shenzhen Technology Co., Ltd.				
3	Nokia Beijin Nokia Mobile Telecommunications	Finland	Telecommunications	1 143.1	0.41	
	2 affiliates [b]	Dongguan Nokia Mobile Phones				
4	Motorola Electronics	Motorola (China) Electronics	United States	Electronics	1 122.5	0.40
5	Seagate Technology	Seagate Technology International Wuxi	United States	Electronics	1 079.2	0.39
	2 affiliates [b]	Seagate Technology (Shenzhen)	Japan	Electronics	959.5	0.34
6	Seiko Epson	Epson Engineering (Shenzhen)				
	2 affiliates [b]	Suzhou Epson Crystal Parts & Components				
7	Philips Electronics	Philips Key Module (Shanghai)	Netherlands	Electronics	611.8	0.22
	2 affiliates [b]	Philips Consumer Electronics Co.of Suzhou				
8	AOC International	Top Victory Electronics (Fujian)	Taiwan Province of China	Electronics	608.8	0.22
9	CLP Holdings	Guangdong Nuclear Power Joint Venture	Hong Kong, China	Electric services	582.2	0.21
10	Sanyo Electric	Shenzhen Sanyo Huaqiang OpticalTechnology	Japan	..	558.9	0.20
	2 affiliates [b]	Sanyo Electric (Shekou)				
11	..	Shunde Shunda Computer	..	..	547.0	0.20
12	..	Dalian Electronics Products (S.Z)	..	..	541.2	0.19
13	Flextronics International	Flextronics Computer (Shenzhen)	Singapore	Electronics	523.7	0.19
	2 affiliates [b]	Flextronics Computer (Zuhai)				
14	LG Electronics	LG Electronics Products (S.Z.)	Rep. of Korea	Electronics	519.8	0.19
15	..	Xinmao Technology (Shenzhen)	..	..	518.3	0.19
16	Sharp Sharp Office Equipments (Changshu)	Japan	Electronics	509.9	0.18	
2 affiliates [b]	Wuxi Sharp Electronic Components					
17	Uniden	Uniden Electronics Shenzhen	Japan	Electronics	504.7	0.18
18	Canon	Canon Zhuhai	Japan	Photographic equipment	449.8	0.16
19	Intel	Intel Technology (Shenzhen)	United States	Electronics	404.8	0.14
20	..	Shenzhen Shungang Storage Enterprise Shareholding	..	..	364.8	0.13
21	Mitsumi Electric	2 affiliates [b]				
	2 affiliates [b]	Zhuhai Mitsumi Electric				
22	Sony	Shanghai Suoguang Electronics	Japan	Electronics	351.1	0.13
23	..	Shanghai Ruixin Industry	..	..	332.6	0.12
24	..	Amertek (S.Z.) Computer	..	..	326.8	0.12
25	Struers	Suzhou Logitech Electronic	Denmark	Computer peripherals	323.3	0.12
26	Acer Suzhou	Acer Peripherals	Taiwan Province of China	Computer peripherals	320.2	0.11
27	..	Renbao Computer Industry (China)	..	..	320.0	0.11
28	Hyundai	Qingpu Hyundai Electronics (Shanghai)	Republic of Korea	Electronics	303.6	0.11
29	..	Weiguan Technology (Shenzhen)	Taiwan Province of China	..	300.0	0.11
30	..	Siamen Swire Aircraft Engineering	..	..	283.2	0.10
31	Premier Image Technology	Foshan Premier Camera	Taiwan Province of China	Photographic equipment	266.3	0.10
32	Ericsson	Beijin Ericsson Mobile Telecommunications	Sweden	Telecommunications	263.7	0.09
33	Tsan Kuen Enterprise	Xiamen Tsann Kuen	Taiwan Province of China	Electrical apparatus	249.9	0.09
34	AT&T	Shanghai AT&T Telecommunication Equipment	United States	Telecommunications	243.9	0.09
35	Cheung Kong Holding	Yantian International Container Wharf	Hong Kong, China	Port development	237.6	0.09
36	..	Fujin Precision Industry (Shenzhen)	..	..	237.2	0.08
37	NEC	Shanghai Huahong NEC Electronics	Japan	Electronics	224.6	0.08
38	Minebea	Minebea Electronics & Hi-Tech Components	Japan	Electronics	211.3	0.08
39	..	Shenzhen Nanfang Zhongji Container Manufacturing	..	..	207.0	0.07
40	Fountain Set Holdings	Dongguan Fuan Textiles Ltd.	Hong Kong, China	Textile and knitting	206.9	0.07
41	..	Dongguan Pulse Electronical	..	Electronics	202.1	0.07

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Table VI.6. China: exports by the leading foreign affiliates,[a] 2000

(Millions of dollars and percentage)

Rank	Name of parent firm	Name of affiliates	Home economy	Industry	Value	Percentage of total exports
42	..	Shanghai Da Ba Industry	..	..	176.9	0.06
43	..	Xiamen Jinwong Enterprise	..	..	176.0	0.06
44	Thomson Multimedia	Thomson (Dongguan)	France	Electronics	175.3	0.06
45	..	NPG Monitor (Dong Guan)	..	..	174.0	0.06
46	..	Shanghai Xinkang Electronics	United States	Electronics	173.2	0.06
47	..	Richon Asia Industry (Shenzhen)	..	..	172.3	0.06
48	..	Nidec (Daliang) Ltd.	..	..	171.8	0.06
49	Matsuoka	Matsuoka Group	Japan	Garment and printing	167.6	0.06
50	..	Dangong Fanshan Monitor	..	..	164.3	0.06
51	Matsushita Electronic Industry	China Hualu Matsushita Video	Japan	Electronics	162.5	0.06
52	..	Guangzhou Dongbaoo (Pan Ao) Jewelery	..	..	156.7	0.06
53	Victor Co. of Japan	JVC Shanghai Elecronics	Japan	Electrical equipment	151.9	0.05
54	..	Shenzhen Royece Liquid Warehouse	..	..	151.9	0.05
55	Shinwa	Shinwa Industries (China) Ltd.	Japan	Electrical equipment	150.5	0.05
56	Toshiba	Dalian Toshiba Television Set	Japan	Radio and TV receiving sets	147.2	0.05
57	Siemens	Shanghai Siemens Mobile Communication	Germany	Telecommunications	143.5	0.05
58	Hitachi	Hitachi Semiconductor (Suzhou)	Japan	Electronics	142.4	0.05
59	..	Xinui Zhongji Container	..	..	142.4	0.05
60	..	Shenzhen Xianjin Micro-Electronic Technology	..	..	142.3	0.05
61	Olympus Optical	Olympus (Shenzhen) Industrial	Japan	Photographic equipment	141.5	0.05
62	Golden Field International Holdings	Golden Field United Textiles Ltd.	Hong Kong, China	Textile	136.6	0.05
63	Nam Tai Electronics	Nam Tai Electronic (Shenzhen)	Virgin Islands, United Kingdom	Electronics	136.1	0.05
64	..	Qingtao Shoes	..	..	136.0	0.05
65	..	Panyu Chuang Xin Shoes	..	..	135.8	0.05
66	..	Shanghai Zhongji Freezer	..	..	135.2	0.05
67	..	Shanghai Far East Container	..	..	134.8	0.05
68	Whirlpool	Shunde Whirlpool SMC Microwave Products	United States	Electrical apparatus	134.3	0.05
69	..	Shenzhen Sayifa Microelectronics	..	..	131.3	0.05
70	Mitsui Mitsubishi Stone Integrated Circuits	Japan	Electronics	129.3	0.05	
71	..	Conghua Donglin Diamond	..	..	128.7	0.05
72	Solectron	Solectron (Suzhou) Technology	United States	Printed circuit board	128.3	0.05
73	Makita Makita (China)	Japan	Electrical apparatus	126.8	0.05	
74	..	Shanghai Jindao Container	..	..	126.4	0.05
75	..	Shanghai Zhenhua Ports Machinery	..	..	126.1	0.05
76	..	Nantong CIMC-Smooth Sail Container	..	..	124.9	0.04
77	..	Super-Micro Semiconductor (Suzhou)	..	..	124.8	0.04
78	Umax Data System	Umax Computer (Suzhou)	Taiwan Province of China	Electronics	124	0.04
79	Alpine Electronics	Dalian Alpine Electric	Japan	Electronics	121.5	0.04
80	General Electric Company	GE America Plastic China Ltd.	United States	Plastics	119.0	0.04
81	..	Zhongshan Dongming Audio-Video Electronics	..	..	119.0	0.04
82	Legend Computers LLC	Huiyang Legend Computer	Oman	Electronics	117.9	0.04
83	Mabuchi Motor	Mabuchi Motor Dalian Ltd.	Japan	Automotive	117.0	0.04
84	Fujitsu	Fujitsu (Shangai)	Japan	Electronics	116.5	0.04
85	..	Shanghai Xinge Honfrrous Metal	..	..	116.5	0.04
Total above				**26 500.4**	**9.48**	
Total exports of China					**279 562.0**	**100.00**

Source: UNCTAD, based on China, MOFTEC, 2001a and *Who Owns Whom CD-ROM 2002* (Dun and Bradstreet).

[a] Foreign affiliates as defined and identified by MOFTEC. All affiliates that are owned by the same parent firm are consolidated.

[b] Consolidated list of affiliates owned by the same parent.

There is some evidence to suggest that local content is deepening and industrial upgrading is taking place (China, MOFTEC, 2001b). Local component suppliers in China are growing in number, density and capability, particularly in industrial clusters along the coastal areas (idem). Thus, many local authorities and entrepreneurs, particularly along the coastal areas (e.g. Guangdong, Fujian, Jiangru and Zejiang Provinces) have made special efforts to build clusters of suppliers working with TNC in a specific industry. The share of local procurement in total purchases by Japanese affiliates in the manufacturing sector increased, from 35 per cent in 1993 to 42 per cent in 1999 (Japan, MITI, 1995; Japan, METI, 2002).

The share of high-technology industries in total FDI has increased rapidly inducing an industrial upgrading of the country (China, MOFTEC, 1997, 1999, 2000, 2001b; Zhang et al., 1997; Xian and Zhang, 1997). High-technology TNCs have set up over 100 R&D centres, mostly in Shanghai and Beijing (*WIR01*, p. 26). For example, Motorola has established 18 R&D centres in the area of electronics and Microsoft has established three. The availability of a large pool of hard and soft R&D infrastructure (particularly well-qualified researchers) has attracted R&D centres. These R&D centres have played a significant role in enhancing the innovative capability of foreign affliates and upgrading their activities (Hu, 2002). At the same time, local firms are becoming more export-oriented and are moving up the technology ladder. In fact, a large number of high-tecnology export-oriented foreign affiliates are joint ventures with local firms, having in this manner a sort of ”crowding in” effect.

Since the 1980s, China’s FDI policies have been quite proactive, both at the central level and at the level of provinces and cities. The main elements comprise a set of industrial guidelines (with three distinct categories of industries in which FDI is encouraged, restricted or prohibited), incentives (particularly targeting high-technology and export-intensive industries) and economic and technology development zones, which target mainly export-oriented manufacturing TNCs, particulary in high-technology industries. China now has 49 national zones, complemented by literally hundreds of EPZs, development zones, industrial parks, and science and technology zones at the sub-national level. They are established to attract not only foreign investors but also domestic companies.

Table VI.7. China: shares of domestic companies and foreign affiliates in the export of selected goods, 1996 and 2000[a]

(Millions of dollars and percentage)

Item	Total		Domestic companies		Foreign affiliates	
	1996	2000	1996	2000	1996	2000
Yarns and fabrics						
Value	4 547	5 900	3 441	4 223	1 107	1 677
Per cent	100	100	76	72	24	28
Toys						
Value	5 473	8 293	2 979	4 594	2 494	3 699
Per cent	100	100	54	55	46	45
Travel bags						
Value	2 653	3 767	1 461	2 361	1 192	1 406
Per cent	100	100	55	63	45	37
Electronic circuits						
Value	996	4 105	216	288	781	3 817
Per cent	100	100	22	7	78	93
Data processing, office machines and related products						
Value	5 391	16 547	940	2 551	4 451	13 996
Per cent	100	100	17	15	83	85
Mobile phones (transmitter-receiver apparatus)						
Value	487	2 931	37	108	450	2 823
Per cent	100	100	7	4	92	96

Source: UNCTAD, based on China Customs General Administration, 2002.

[a] This database consists of the 200 largest companies and the 500 principal exports.

2. Costa Rica

Between 1985 and 2000, Costa Rica's exports grew five-fold, from $1.1 billion in 1985 to $5.5 billion in 2000. FDI inflows have followed the same trend, rising almost sixfold from $70 million to $409 million in 2000. Along with this growth in exports, an upgrading in the composition of exports has also taken place. In the case of Costa Rica's exports to North America, its main market - where its market share has doubled - primary products accounted for 65 per cent of its exports in 1985, but in 2000 their share had decreased to 24 per cent (table VI.8). On the other hand, the share of non-resource-based manufactures rose from 27 per cent to 68 per cent, with a striking gain in high-technology exports, which jumped from 1 per cent to 35 per cent. Of the 10 principal export product gains, accounting for more than three-quarters of the total, two high-technology exports (parts and accessories for computers, and semiconductors) accounted for one-third of the total exports. Costa Rica gained market share in nine of the top ten export product groups in the North American market, six of which are dynamic products.

FDI in general, and a major investment by Intel in particular, played a central role in the improvement of Costa Rica's export competitiveness. About two-thirds of the present FDI stock was accumulated during the 1990s. About two-thirds of the inflows went into the manufacturing sector and about two-thirds came from the United States. The 1998-1999 peak in inward FDI had much to do with the $400-500 million investment project undertaken by Intel to establish a

Table VI.8. Costa Rica's competitiveness in the North American market, 1985-2000

Product	Category		1985	1990	1995	2000
I. Market share			**0.2**	**0.2**	**0.2**	**0.3**
1. Primary products[a]			0.7	0.7	0.8	0.7
2. Manufactures based on natural resources[b]			0.1	0.1	0.1	0.1
3. Manufactures not based on natural resources[c]			0.1	0.1	0.2	0.3
Low technology[d]			0.2	0.5	0.6	0.4
Medium technology[e]			0.0	0.0	0.1	0.1
High technology[f]			0.0	0.0	0.0	0.4
4. Others[g]			0.0	0.1	0.1	0.2
II. Export structure			**100.0**	**100.0**	**100.0**	**100.0**
1. Primary products[a]			64.5	45.9	38.4	24.3
2. Manufactures based on natural resources[b]			7.9	5.4	5.9	4.8
3. Manufactures not based on natural resources[c]			26.7	47.2	53.5	68.1
Low technology[d]			20.2	40.6	43.3	25.0
Medium technology[e]			5.3	5.2	7.9	8.6
High technology[f]			1.2	1.4	2.3	34.5
4. Others[g]			0.9	1.6	2.3	2.8
III. 10 Principal exports (SITC Rev.2)	**A[h]**	**B[i]**	**62.2**	**64.5**	**62.6**	**75.9**
759 Parts and accessories for computers, etc.	*	+	0.2	0.0	0.2	29.0
057 Fruit and nuts (not oil nuts) fresh or dried		+	33.9	27.2	24.1	15.5
846 Under garments, knitted or crocheted	*	+	5.0	9.8	12.1	8.1
842 Outer garments, men's and boys' of textile fabrics		+	3.7	9.6	10.9	5.7
776 Thermionic valves and other semiconductors, n.e.s.	*	+	0.3	0.1	0.1	3.8
071 Coffee and coffee substitutes		+	12.5	6.0	4.1	3.6
872 Medical instruments and appliances, n.e.s.	*	+	-	0.5	1.9	3.4
931 Special transactions and commodities not class.	*	+	0.8	1.3	1.7	2.6
845 Outer garments, other articles, knitted/crocheted	*	+	0.5	3.1	4.0	2.3
843 Outer garments, women's, and girls' of textile fab.		-	5.4	6.8	3.5	1.9

Source: UNCTAD, based on the United Nations' Comtrade database and the TRADECAN computer software of ECLAC.

[a] Contains 45 basic products that are simple to process; includes concentrates.
[b] Contains 65 items: 35 agricultural/forestry groups and 30 others (mainly metals, excluding steel, plus petroleum products, cement, glass, etc.).
[c] Contains 120 groups representing the sum of low, medium and high technology.
[d] Contains 44 items: 20 groups from the textile and garment category, plus 24 others (paper products, glass and steel, jewellery).
[e] Contains 58 items: five groups from the automotive industry, 22 from the processing industry and 31 from the engineering industry.
[f] Contains 18 items: 11 groups from the electronics category, plus another seven (pharmaceutical products, turbines, aircraft, instruments).
[g] Contains nine unclassified groups (mainly from section 9).
[h] Groups belonging (*) to the 50 most dynamic in North American imports, 1985-2000.
[i] Groups in which Costa Rica gained (+) or lost (-) North American import market share, 1985-2000.

new assembly and testing facility for microprocessors. Intel's plant in Costa Rica was the 28th largest manufacturing company in Latin America by sales in 1999, and the region's 27th biggest exporter in 2000.

Costa Rica's principal export products are parts and accessories for computers, accounting for 25 per cent of exports in 2000; they originate mainly from one foreign affiliate, that of Intel (table VI.9). Although Intel dominates Costa Rican exports, these are becoming increasingly diverse, with restructuring into other dynamic products such as medical devices (even though apparel and primary products remain important). Foreign affiliates account for a significant proportion of these new exports. Two foreign affiliates (Abbott and Baxter) account for virtually all Costa Rican exports of medical devices (representing 3 per cent of total exports). TNCs such as Sara Lee and Wrangler are among Costa Rica's principal exporters of garments, and Standard Fruit is the second largest single exporter of fruit. Overall, the country's top 20 foreign affiliates accounted for nearly half of the country's total exports in 2000 (table VI.9).

There is no doubt that an active Government has been a central factor in Costa Rica's success. Efforts to upgrade the level of education, improve infrastructure, provide a friendly investment environment, and encourage the widespread use of English are combined with deliberate FDI targeting strategies. The country's IPA made careful efforts to channel FDI into electronics in order to restructure the country's comparative advantage away from garments (Mortimore and Zamora, 1998) and primary products (Costa Rica, Ministry of Foreign Trade, 1997). The results of Costa Rica's targeting have spread beyond the initial areas (electronics and medical devices) to the services sector; the latest success was the decision by Procter & Gamble to site its global business centre for the Americas there as of 2001 (González, 2002). The IPA has thus put Costa Rica on a more dynamic development trajectory, through its active role in shaping the country's development policy (Rodríguez-Clare, 2001).

Despite this success in attracting export-oriented FDI, however, there is as yet little evidence of substantial linkages with local enterprises and embedding of the export platforms in the local economy.

Table VI.9. Costa Rica: exports by the 20 leading foreign affiliates, 2000
(Millions of dollars and percentage)

Rank	Name of affiliates	Name of parent firm	Home economy	Industry	Value	Percentage of total exports
1	Componentes Intel Costa Rica	Intel	United States	Electronics	1 676	25.1
2	Standard Fruit Company de Costa Rica	Dole Food	United States	Fresh fruits and vegetables	155	2.3
3	Corp. De Desarrollo Agricola Del Monte	Del Monte Foods	United States	Fruit and tree nuts	138	2.1
4	Abbott Laboratories	Abbott Laboratories	United States	Medical devices	102	1.5
5	Ind Textilera del Este S.A. (Heredia)	Sara Lee	United States	Apparel	94	1.4
6	Sawtek S.A.	Triquint Semiconductor	United States	Electronics	94	1.4
7	Baxter	Baxter International	United States	Medical devices	92	1.4
8	Manufacturera de Cartago S.A	Sara Lee Intimate Apparel	United States	Apparel	76	1.1
9	Wrangler de Costa Rica S.A	V F Northern Europe	United Kingdom	Apparel	62	0.9
10	Merck Sharp & Dohme (I.A.) Corp.	Merck	United States	Pharmaceuticals	61	0.9
11	Babyliss C.R., S.A.	Conair	United States	Electronics	57	0.9
12	Liga Agricola Industrial de La Cana	..	..	Natural resources	50	0.7
13	Coca Cola Interamerican Corporation	Coca-Cola	United States	Bottled and canned soft drinks	45	0.7
14	Conducen, S.A.	Phelps Dodge	United States	Non ferrous wire drawing	43	0.6
15	Terramix	Hultec	United States	Rubber gaskets	42	0.6
16	Warners de Costa Rica, Inc.	Warnaco Group	United States	Apparel	40	0.6
18	Remecinc S.A.	REMEC	United States	Electronics	38	0.6
19	Trimpot Electronicas S.A.	Bourns	United States	Electronics	38	0.6
20	Confecciones H.D. Lee, S.A.	VF	United States	Apparel	36	0.5
	Total above				**2 939**	**44.0**
	Total exports of Costa Rica				**6 682**	**100.0**

Source: UNCTAD, based on Costa Rica, Ministry of Foreign Trade, General Direction of Customs and *Who Owns Whom CD-ROM 2002* (Dun and Bradstreet).

3. Hungary

Hungary's high export performance has been accompanied by a substantial increase in FDI inflows. Exports have more than tripled, from $10 billion in 1990 (the year of the opening up of the economy) to $28 billion in 2000. At the same time, FDI inflows increased more than fivefold, from $311 million in 1990 to $1.6 billion in 2000. Hungary's market share in Western Europe, its principal market, tripled as well (table VI.10). The structure of its exports to that market also changed dramatically: the share of primary products and resource-based manufactures in total exports declined from 60 per cent in 1985 to 14 per cent in 2000, with non-resource-based manufactures increasing to 85 per cent in 2000, from 39 per cent in 1985. The share of high-technology exports rose substantially, from 4 per cent in 1985 to more than 25 per cent in 2000. Medium-technology exports also increased in importance, moving from a share of nearly 13 per cent in 1985 to 45 per cent in 2000. This shift in competitiveness is reflected in the export categories included in the list of the top 10 export products of Hungary. They accounted for half the country's exports. All of them are dynamic in the Western European market and eight are in electronics and the automobile industry.

TNCs have been the main drivers of export growth in Hungary, generating four-fifths of the country's exports in 1999. Affiliates located in EPZs have been particularly dynamic, increasing their exports

Table VI.10. Hungary's competitiveness in the Western European market, 1985-2000

Product	Category		1985	1990	1995	2000
I. Market share			**0.3**	**0.3**	**0.5**	**0.9**
1. Primary products[a]			0.3	0.5	0.4	0.4
2. Manufactures based on natural resources[b]			0.4	0.5	0.5	0.5
3. Manufactures not based on natural resources[c]			0.2	0.3	0.5	1.1
Low technology[d]			0.4	0.5	0.8	0.8
Medium technology[e]			0.1	0.2	0.5	1.3
High technology[f]			0.1	0.1	0.4	1.1
4. Others[g]			0.1	0.2	0.2	0.1
II. Export structure			**100.0**	**100.0**	**100.0**	**100.0**
1. Primary products[a]			26.9	20.8	10.5	4.5
2. Manufactures based on natural resources[b]			32.9	27.1	18.4	9.8
3. Manufactures not based on natural resources[c]			39.2	50.5	70.0	85.1
Low technology[d]			22.6	27.2	25.9	14.9
Medium technology[e]			12.7	18.2	32.6	44.9
High technology[f]			3.9	5.1	11.6	25.2
4. Others[g]			1.0	1.6	1.0	0.6
III. 10 Principal exports (SITC Rev.2)	**A[h]**	**B[i]**	**2.8**	**4.9**	**23.9**	**50.2**
713 Internal combustion piston engines and parts	*	+	0.1	0.1	7.2	12.4
752 Automatic data processing machines, units thereof	*	+	0.1	0.0	1.0	10.1
781 Passenger motor cars (excl. public service type)	*	+	0.0	0.1	1.8	6.6
763 Sound equipment, dictating machines, etc.	*	+	0.0	0.0	1.1	3.4
764 Telecommunications equipment, n.e.s.	*	+	0.2	0.9	2.4	3.4
773 Equipment for distributing electricity	*	+	0.1	1.1	3.7	3.3
784 Parts and accessories, n.e.s. of the motor vehicles	*	+	0.3	0.5	2.0	3.1
759 Parts, n.e.s., of and accessories for 751 and 752	*	+	0.1	0.2	0.9	2.8
778 Electrical machinery and apparatus, n.e.s.	*	+	1.7	1.5	3.1	2.7
761 Television receivers	*	+	0.1	0.5	0.9	2.4

Source: UNCTAD, based on the United Nations' Comtrade database and the TRADECAN computer software of ECLAC.

[a] Contains 45 basic products that are simple to process; includes concentrates.
[b] Contains 65 items: 35 agricultural/forestry groups and 30 others (mainly metals, excluding steel, plus petroleum products, cement, glass, etc.).
[c] Contains 120 groups representing the sum of low, medium and high technology.
[d] Contains 44 items: 20 groups from the textile and garment category, plus 24 others (paper products, glass and steel, jewellery).
[e] Contains 58 items: five groups from the automotive industry, 22 from the processing industry and 31 from the engineering industry.
[f] Contains 18 items: 11 groups from the electronics category, plus another seven (pharmaceutical products, turbines, aircraft, instruments).
[g] Contains nine unclassified groups (mainly from section 9).
[h] In column A: groups belonging (*) to the 50 most dynamic in Western European imports, 1985-2000.
[i] In column B: groups in which Hungary gained (+) or lost (-) Western European import market share, 1985-2000.

steadily between 1996 and 2000, to account for half the exports of foreign affiliates and 45 per cent of the total (annex table A.VI.2). Contract manufacturers also play an important role, especially large ones such as Flextronics (box VI.7).[17]

The top 10 Hungarian exports to *world* markets are produced by TNCs: seven were produced by foreign affiliates only, and the other three partly by foreign affiliates in 1999 (annex table A.VI.3). The leading 50 foreign affiliates (table VI.11) accounted for 45 per cent of the country's total exports in 2000[18]. The industries in which they are active also contain the most dynamic export products. More specifically:

- In the automobile industry, Audi/Volkswagen (with over $3 billion in exports), Opel/GM and Suzuki, as well as parts producers such as Delphi and ZF, are among Hungary's principal exporters.
- In electronics, IBM and Philips each export over $2 billion, followed by GE, Flextronics and Samsung.

Hungary was one of the first economies in transition actively to seek FDI, a policy complemented by an innovative EPZ regime (box VII.12). Its association agreement with the EU granted it preferential access to its main market, particularly for locally assembled products. However, its

Box VI.7. Flextronics' Industrial Parks in Hungary

Flextronics is the leading contract electronics manufacturer in CEE, with a nearly 40 per cent share of the industry's total investment there (annex table A.VI.4). Four-fifths of its cumulative regional investment of more than $1 billion went to Hungary. Only one other contract manufacturer in electronics, the much smaller Finnish-owned Elcoteq, has large investments in the region (almost 26 per cent) (annex table A.VI.4).

Flextronics has centred its CEE Industrial Park activities in Hungary because of the country's proximity to the West European market, relatively low wages,[a] a good supply of engineers and scientists and an encouraging government policy (Pfaffstaller, 2001). As to the last of these factors, the regulatory framework – including simplified customs regulations, duty-free treatment for imports into EPZs, investment incentives and government support to EPZs – was particularly appreciated by Flextronics, as were local efforts to reduce the hassle costs of doing business through a speedy and transparent approval process managed within the framework of a "one-stop shop" and the simple, quick and cheap purchase of land. Finally, the services of investment promotion authorities in the form of advice and contacts, of local labour offices in recruitment, and of local authorities in providing services to expatriates (e.g. with regard to schooling and housing) also helped tilt the balance towards this location.

Flextronics has designated Hungary as one of its potential centres of excellence for electronics development. The strategy is based on the assumption that a balance between costs and capabilities can be maintained only if, by investing more into capabilities, the location is gradually upgraded to do design work and engage in product development. Recent developments – such as the unsuccessful venture to produce Microsoft's X-Boxes in Hungary (the production of which was abandoned and relocated to China in May 2002) – highlight the need for upgrading from increasingly uncompetitive assembly to more value-added activities. As the development of skills and accession to the EU are expected to lead to higher wages in Hungary, Flextronics is already considering subcontracting sub-assembly work to lower-wage countries not previously selected for investment. In March 2001, it began a pilot project in Beregovo, Ukraine, near the Hungarian border and close to its Nyíregyháza facility in the north-east of Hungary, to assemble circuit boards for that facility. However, more automated jobs, such as contact assembly – the soldering of integrated circuits, diodes and other small components – are not expected to move out of Nyíregyháza to lower-cost locations.

By 2000, Flextronics had become Hungary's sixth most important direct exporter. Of its sales revenue of close to $1 billion, about half came from products exported directly, while the other half was from products provided to other customers that exported the final products.

Source: UNCTAD.

[a] Wages for low-skilled factory workers in Hungary are about $2 an hour, as compared to $15 in Austria. They are even lower in neighbouring Ukraine, where workers now assemble circuit boards for as little as 40 cents an hour (Pfaffstaller, 2001).

Table VI.11. Hungary: exports by the 50 leading foreign affiliates, 2000

(Millions of dollars and percentage)

Rank	Name of affiliates	Name of parent firm	Home economy	Industry	Value	Percentage ot total exports	Free zone
1	Audi Hungária Motor Kft.	Volkswagen	Germany	Automotive	3 187	11.2	√
2	IBM Storage Products Kft.	IBM	United States	Electronics	2 240	7.8	√
3	Philips Magyarország[a]	Philips Electronics	Netherlands	Electronics	2 027	7.1	√
4	GE Hungary Rt.	General Electric	United States	Electronics	639	2.2	
5	Opel Magyarország Jármügyártó Kft.	General Motors	United States	Automotive	628	2.2	√
6	Flextronics International Kft.	Flextronics International	Singapore	Electronics	430	1.5	√
7	Alcoa Köfém Kft.	Alcoa	United States	Aluminium	314	1.1	
8	Suzuki Rt.	Suzuki Motor	Japan	Automotive	300	1.1	
9	NABI Rt.	North American Bus Industries	United States	Automotive	249	0.9	
10	Samsung Electronics Magyar Rt.	Samsung Electronics	Rep. of Korea	Electronics	241	0.8	√
11	Electrolux Lehel Hütögépgyár Kft.	Electrolux	Sweden	Machinery	212	0.7	
12	Visteon Hungary Kft.	Visteon	United States	Electronics/ Automotive	187	0.7	
13	Delphi Packard Hungary Kft.	Delphi Automotive Systems	United States	Automotive	169	0.6	√
14	Panrusgáz Magyar-Orosz Gázip.Rt.	Gazprom	Russian Federation	Oil and gas/trading	113	0.4	
15	Egis Gyógyszergyár Rt.	Servier	France	Pharmaceutical	102	0.4	
16	Opel Southeast Europe Kft.	General Motors	United States	Automotive	100	0.4	
17	Chinoin Gyógyszer és Vegyészeti Termékek Gyára Rt.	Sanofi Synthélabo Group	France	Pharmaceutical	99	0.3	
18	Neusiedler-Szolnok Papírgyár Rt.	Anglo American	United Kingdom/ South Africa	Paper	92	0.3	
19	Procter & Gamble Hungary Kkt.	Procter & Gamble	United States	Chemicals	91	0.3	
20	Alcoa Európai Keréktermék Gyártó Kft.	Alcoa	United States	Automotive/tyres	90	0.3	√
21	Biogal Gyógyszergyár Rt.	Teva Pharma	Germany	Pharmaceutical	85	0.3	
22	Taurus Mezögazdasági Abroncs Kft.	Michelin	France	Tyres	77	0.3	
23	ZF Hungária Ipari és Kereskedelmi Kft.	Zeppelin-Stiftung	Germany	Automotive	75	0.3	
24	LuK Savaria Kuplunggyártó Kft.	Luk Lamellen und Kupplungsbau Beteiligungs	Germany	Automotive	70	0.2	√
25	Clarion Hungary Kft.	Clarion	Japan	Automotive	69	0.2	√
26	Dunastyr Polisztirolgyártó Rt.	ECP	Italy	Plastics	62	0.2	
27	Csepeli Fémmü Rt.	CSMV Invest	Austria	Iron and steel	57	0.2	
28	Dunapack Papír és Csomagolóanyag Rt.	W.Hamburger & Mosburger	Austria	Paper	51	0.2	
29	Henkel Magyarország Kft.[a]	Henkel Beiz und Elektropolier-technik	Austria	Chemicals	48	0.2	
30	Taurus Gumiipari Rt.	Michelin	France	Tyres	48	0.2	
31	Unilever Magyarország Kft.	Unilever	Netherlands	Chemicals	47	0.2	
32	Ikarusbus Jármügyártó Rt.	Renault Fiat	France Italy	Automotive	44	0.2	
33	Kodak Kft.a	Eastman Kodak	United States	Machinery	43	0.2	
34	Nestlé Hungária Kft.	Nestlé	Switzerland	Food and beverages	39	0.1	
35	Gabona Rt.	André & Cie	Switzerland	Food and beverages	39	0.1	
36	Temic Hungary Kft.	Continental	Germany	Automotive	38	0.1	
37	Kometa 99 Kft.	Pedrazzini Family	Italy	Food and beverages	31	0.1	
38	DWA Dunaferr–Voest Alpine Hideghengermü Kft.	Voestalpine	Austria	Iron and steel	30	0.1	
39	LG Electronics Magyar Kft.	LG Electronics	Rep. of Korea	Electronics	28	0.1	
40	Michelin Magyarország Kft.	Michelin	France	Tyres	27	0.1	
41	Hungerit Rt.	..	..	Food and beverages	26	0.1	
42	Ericsson Magyarország Kft.	Ericsson	Sweden	Electronics	20	0.1	
43	Duna-Dráva Cement Kft.	Heidelberg Cement	Germany	Building materials	20	0.1	
44	Mátra Cukor Rt.	Eridania Béghin-Say	France	Food and beverages	19	0.1	
45	Nitrogénmüvek Rt.	..	..	Chemicals	17	0.1	
46	Donau Brennstoffkontor Kft.	Baustofimportkontor	Austria	Coal	15	0.1	
47	Aral Hungária Kft.	Aral	Germany	Oil and gas	15	0.1	
48	Nutricia Termelöház Rt.	Royal Numico	Netherlands	Food and beverages	14	0.0	
49	Hungrana Rt.	Tate and Lyle	United Kingdom	Food and beverages	13	0.0	
50	Siemens Nemzeti Vállalatcsoport[a]	Siemens	Germany	Electronics	11	0.0	
	Total above				**12 688**	**44.5**	
	Total free zones above				**9 337**	**32.7**	
	Total exports of Hungary				**28 541**	**100.0**	

Source: UNCTAD, based on Figyelö Top 200 database 2001, http://www.fn.hu/hetilap/cikk.cmt?id=101546, and *Who Owns Whom CD-ROM 2002* (Dun and Bradstreet)

[a] Consolidated data.

high dependence on foreign affiliates located in EPZs raises the risk that the activities are not deeply embedded. The country's new policy challenge is to improve local capabilities and attract foreign affiliates with higher-value-added functions.

4. Ireland

Ireland doubled its share in the Western European market, with total exports increasing almost eightfold between 1985 and 2000, from $10 billion in 1985 to $76 billion in 2000. FDI inflows rose even faster, from $164 million in 1985 to $24 billion in 2000. This was largely due to the country's upgrading into such dynamic industries as electronics, pharmaceuticals, medical devices and IT-related services, as reflected in the change in the structure of its exports to its main market, Western Europe (table VI.12). The share of primary products fell from 21 per cent in 1985 to 6 per cent in 2000. The share of low-technology exports also fell from 16 per cent in 1985 to 10 per cent in 2000, while the share of high-technology exports increased from 23 per cent in 1985 to 36 per cent and is now the most important category of exports. The 10 principal products, concentrated in chemicals (including pharmaceuticals), electronics and processed primary products, accounted for two-thirds of total exports. Eight of them are dynamic in Western European imports and Ireland is gaining market share in all of them.

Foreign affiliates accounted for a large share of Irish exports, reaching 90 per cent in 1999. Two-thirds of Ireland's top 100 exporters are foreign affiliates. They are

Table VI.12. Ireland's competitiveness in the Western European market, 1985-2000

Product 2000	Category		1985	1990	1995
I. Market share			**1.0**	**1.1**	**1.4**	**2.1**
1. Primary products[a]			0.9	1.2	1.2	1.1
2. Manufactures based on natural resources[b]			1.0	1.5	2.3	4.2
3. Manufactures not based on natural resources[c]			1.0	1.0	1.3	1.7
Low technology[d]			1.0	1.1	1.3	1.3
Medium technology[e]			0.6	0.6	0.6	0.7
High technology[f]			1.9	1.9	2.6	3.6
4. Others[g]			0.6	0.6	0.4	1.2
II. Export structure			**100.0**	**100.0**	**100.0**	**100.0**
1. Primary products[a]			20.5	15.5	10.5	6.0
2. Manufactures based on natural resources[b]			22.7	24.7	29.1	34.9
3. Manufactures not based on natural resources[c]			55.3	58.2	59.4	56.6
Low technology[d]			16.2	17.1	15.9	9.9
Medium technology[e]			15.9	16.3	13.8	10.5
High technology[f]			23.3	24.9	29.8	36.2
4. Others[g]			1.5	1.5	0.9	2.5
III. 10 Principal exports (SITC Rev.2)	**A[h]**	**B[i]**	**34.9**	**42.6**	**53.2**	**67.6**
514 Nitrogen-function compounds	*	+	0.4	2.1	5.0	16.2
752 Automatic data processing machines, units thereof	*	+	11.0	10.7	13.2	14.8
541 Medicinal and pharmaceutical products	*	+	2.2	3.3	6.3	8.4
515 Organo-inorganic and heterocyclic compounds	*	+	4.0	3.7	5.8	6.4
759 Parts, n.e.s., of and accessories for 751 and 752	*	+	4.8	6.0	3.2	6.3
898 Musical instruments and parts and accessories	*	+	2.0	4.6	6.9	5.3
098 Edible products and preparations, n.e.s.	*	+	2.5	3.9	5.6	3.1
764 Telecommunications equipment, n.e.s.	*	+	1.1	1.6	2.3	3.0
011 Meat and edible meat offals, fresh, chilled or frozen		+	6.1	5.3	4.0	2.1
551 Essential oils, perfume and flavour materials		+	0.9	1.4	0.9	2.0

Source: UNCTAD, based on the United Nations' Comtrade database and the TRADECAN computer software of ECLAC.

[a] Contains 45 basic products that are simple to process; includes concentrates.
[b] Contains 65 items: 35 agricultural/forestry groups and 30 others (mainly metals, excluding steel, plus petroleum products, cement, glass, etc.).
[c] Contains 120 groups representing the sum of low, medium and high technology.
[d] Contains 44 items: 20 groups from the textile and garment category, plus 24 others (paper products, glass and steel, jewellery).
[e] Contains 58 items: five groups from the automotive industry, 22 from the processing industry and 31 from the engineering industry.
[f] Contains 18 items: 11 groups from the electronics category, plus another seven (pharmaceutical products, turbines, aircraft, instruments).
[g] Contains nine unclassified groups (mainly from section 9).
[h] In column A: groups belonging (*) to the 50 most dynamic in Western European imports, 1985-2000.
[i] In column B: groups in which Ireland gained (+) or lost (-) Western European import market share, 1985-2000.

responsible for a good part of electronics exports, with Intel and Dell exporting more than $4 billion each, followed by Gateway, Apple and others (table VI.13). In chemicals, foreign exporters are concentrated in pharmaceuticals, with Janssen and Swords exporting over $1 billion each. In processed primary products, foreign affiliates do not play a role.

Beyond the most dynamic products, the top 55 foreign affiliate exporters – which account for one-third of the country's exports – are notable in computer-related services; Microsoft leads with exports of over $2 billion, followed by Lotus. In medical devices, Baxter is the leader.

Since the 1980s, Ireland has implemented an industrialization strategy that relies on FDI to promote dynamic export products, using various fiscal and financial incentives, and putting most emphasis on the constant upgrading of the level of education. The linchpin in the implementation of this strategy is the Investment and Development Agency, which is endowed with a large budget (euro 164 million for grants, euro 27 million for promotion and administration in 2000 – IDA, 2001b) for this purpose (Ruane, 2001). The country's membership in the EU gives it preferential access to the Western European market, an advantage of particular interest to non-EU investors, especially those from the United States. High levels of education, low labour costs, a business-friendly environment and good infrastructure (especially in IT) are also conducive to attracting FDI. These factors played a role when, in 1990, Intel opened its first production site in Leixlip to service the European market, a decision that gave a strong boost to the country's electronics industry. Intel cited five main reasons why Ireland was chosen as its manufacturing and technology centre in Europe: the availability of large numbers of skilled workers, including engineers and technicians; the low tax rate of 10 per cent; clean water; a good supply of electricity; and business-friendly government policies (IDA website, http://www.idaireland.com, 21 May 2002).

Ireland intends to strengthen its knowledge-based development, with an emphasis on further upgrading of skills and research capabilities as key competitive factors (IDA, 2001a)[18]. FDI is expected to continue to play an important role in this strategy, which includes deeper embedding of foreign affiliates into the local economy and encouraging the internationalization of their suppliers (*WIR01*). Business parks providing world class business services have been set up in various regions of the country, while the Investment and Development Agency intermediates between institutions of higher learning and foreign affiliates to respond to the needs of technologically advanced industries.

5. Mexico

Between 1985 and 2000, Mexico doubled its market share in North America, which takes about 90 per cent of its exports. Over the period, total exports increased almost sixfold: from $19 billion in 1985 to $166 billion in 2000. Mexico has entered the top league of countries in export competitiveness: by 2000, it had the eleventh largest market share in global exports. It rose from fifth to third most important source of United States imports (after Canada and Japan). FDI inflows increased seven times between 1985 and 2000, from nearly $2 billion in 1985 to $ 15 billion in 2000. The structure of Mexican exports to the North American market also changed significantly between 1985 and 2000. The share of primary products and resource-based manufactures fell from 55 per cent to 16 per cent, while the share of non-resource based manufactured exports rose from 42 per cent to nearly 80 per cent (table VI.14). Medium-technology (40 per cent) and high-technology (25 per cent) products led the way. The top 10 export products, accounting for slightly over half of total exports, are concentrated in the automotive and electronics industries. Seven of the 10 are dynamic in the North American market and Mexico gained market shares in all but one.

TNCs have been critical to Mexico's entry into the major league of exporters. In the automotive industry, the country's success is intimately linked with FDI, especially United States FDI induced by NAFTA (Mortimore, 1998a; Dussel, 1999; ECLAC, 2000). In particular, the restructuring of the United States auto industry led to the expansion of exports by General Motors, Ford and Chrysler from Mexico, followed by their competitors (Volkswagen and Nissan), which turned Mexico into a world-class

Table VI.13. Ireland: exports by the 55 leading foreign affiliates, 1998[a]

(Millions of dollars and percentage)

Rank	Name of affiliates	Name of parent firm	Home economy	Industry	Value	Percentage of total exports
1	Intel Ireland Ltd.	Intel	United States	Electronics	4 804	6.4
2	Dell Products (Europe) BV	Dell Computer	United States	Electronics	4 313	5.8
3	Microsoft Ltd	Microsoft	United States	Computer-related services	2 380	3.2
4	Janssen Pharmaceutical Ltd.	Jonson & Johnson	United States	Pharmaceuticals	1 337	1.8
5	Swords Laboratories	Bristol-Myers Squibb	United States	Pharmaceuticals	1 026	1.4
6	Gateway 2000 Europe	Gateway	United States	Electronics	967	1.3
7	Apple Computer Ltd	Apple Computer	United States	Electronics	892	1.2
8	EMC	EMC	United States	Electronics	744	1.0
9	3Com Technologies	3 Com	United States	Electronics	684	0.9
10	Motorola BV	Motorola	United States	Electronics	506	0.7
11	Lotus Development BV	IBM	United States	Computer-related services	409	0.5
12	Thermo King Europe	Ingersoll-Rand	United States	Electronics	294	0.4
13	Baxter Healthcare SA	Baxter International	United States	Medical appliances	265	0.4
14	Allergan Pharmaceuticals	Allergan	United States	Pharmaceuticals	253	0.3
15	Eli Lilly SA	Lilly, Eli and Company	United States	Pharmaceuticals	245	0.3
16	American Power Conversion Corporation (ACP) BV	American Power Conversion	United States	Electronics	232	0.3
17	NEC Semiconductors Ireland Ltd.	NEC	Japan	Electronics	228	0.3
18	Cabletron Systems	Enterasys Network	United States	Electronics	223	0.3
19	Howmedica International Inc.	Howmedica International	United States	Medical appliances	190	0.3
20	Smithkline Beecham (Manufacturing)	Smithkline Beecham	United Kingdom	Pharmaceuticals	178	0.2
21	Yamanouchi Ireland Co. Ltd.	Yamanouchi Pharmaceutical	Japan	Pharmaceuticals	149	0.2
22	Lufthansa Airmotive Ireland Ltd.	Deutsche Lufthansa	Germany	Aero Engines	135	0.2
23	Molex Ireland Ltd.	Molex	United States	Electronics	126	0.2
24	Loctite (Ireland) Ltd.	Henkel	Germany	Pharmaceuticals	122	0.2
25	Symantec Ltd.	Symantec	United States	Computer-related services	122	0.2
26	Bausch and Lomb Ireland	Bausch & Lomb	United States	Medical appliances	119	0.2
27	Power Products Ltd.	..	..	Electronics	119	0.2
28	Braun Ireland Ltd.	Gillette Company	United States	Medical appliances	116	0.2
29	Procter & Gamble (Manufacturing) Ireland Ltd	Procter & Gamble	United States	Chemicals	113	0.2
30	Fujitsu Microelectronics Ireland Ltd.	Fujitsu	Japan	Electronics	110	0.1
31	Rhône Poulenc Rorer Pharmaceuticals Ltd.	Rhône-Poulenc	France	Pharmaceuticals	109	0.1
32	Metal Processors Ltd.	Calder Holdings	United Kingdom	Metal products	103	0.1
33	Eurologic Systems Group Ltd	Network Appliance	United States	Electronics	101	0.1
34	Celestica Ireland Ltd.	Celestica	Canada	Electronics	94	0.1
35	Bayer Diagnostics Manufacturing Ltd.	Bayer	Germany	Medical appliances	92	0.1
36	Saehan Media Ieland Ltd.	Saehan Industries	Rep. of Korea	Video tapes	92	0.1
37	Verbatim	Mitsubishi Chemical	Japan	Electronics	91	0.1
38	Fondermann and Co. (Ireland) Ltd.	OPSM Protector	Australia	Medical appliances	91	0.1
39	Stafford-Miller (Ireland) Ltd.	Block Drug Company	United States	Medical appliances	89	0.1
40	Roche Ireland Ltd.	Roche Holding	Switzerland	Chemicals	88	0.1
41	Norton (Waterford) Ltd.	Ivax International	United States	Pharmaceuticals	65	0.1
42	Henkel Ireland Ltd.	Henkel	Germany	Chemicals	65	0.1
43	Elan Pharma Ltd.	Capital Group Companies	United States	Pharmaceuticals	64	0.1
44	Tellabs Ltd.	Tellabs	United States	Electronics	64	0.1
45	Jacobs Engineering Inc	Jacobs Engineering Group	United States	Business activities	61	0.1
46	Pulse Electronics Ltd.	Technitrol	United States	Electronics	59	0.1
47	Schering Plough (Bray) Ltd.	Schering-Plough	United States	Pharmaceuticals	58	0.1
48	Sterwin Dungarvan	Sanofi-Synthélabo Group	France	Pharmaceuticals	57	0.1
49	Krups Engineering Ltd.	El. Fi. Elettro Finanziaria	Italy	Electronics	57	0.1
50	General Semiconductor Ireland	Vishay Intertechnology	United States	Electronics	55	0.1
51	Allied Signal Ireland Ltd.	Honeywell International	United States	Diversified	54	0.1
52	Square D.Co. Ireland	Schneider Electric	France	Electronics	52	0.1
53	Mallinckrodt Medical Ltd.	Mallinckrodt Medical	United States	Medical appliances	51	0.1
54	Hollister Plc.	Hollister	United States	Medical appliances	46	0.1
55	Lucent Technologies Ireland Ltd.	Lucent Technologies	United States	Electronics	46	0.1
	Total above				**23 205**	**31.0**
	Total foreign-owned exports [b]				**45 804**	**61.2**
	Total exports of Ireland				**74 878**	**100.0**

Source: UNCTAD, based on IDA, *Export Link*, edition 3, 1999, and *Who Owns Whom CD-ROM 2002* (Dun and Bradstreet).

[a] Does not include primary sector, food and beverages, textiles. Some companies might have been excluded due to data unavailability.

[b] Majority-owned foreign affiliates only.

automotive export platform. The exports of these five firms alone amounted to 27 billion in 2000, representing 17 per cent of Mexico's exports. Other leading exporters are components manufacturing TNCs such as Lear and Visteon – with close to $2 billion in exports, and the industry has been upgraded and strengthened as a result.

In the electronics industry, two sets of TNCs drive exports from Mexico. The first consists of United States computer and telecom manufacturers led by IBM with $10 billion in exports in 2000. The second consists of Asian and European TNCs that launched and later deepened *maquiladora* operations to strengthen their competitiveness in the United States market and meet NAFTA rules-of-origin requirements for inputs. Leading the latter are Sony, LG and Thomson, each with over $1 billion in exports.

Nearly two-thirds of the country's manufactured exports come from foreign affiliates. The 35 main exporters alone accounted for 30 per cent of all exports in 2000 (table VI.15), led by automotive and electronics firms – precisely those industries with the most dynamic export products.

Local content in assembly operations is generally low. For example, a very small proportion of inputs in the television industry

Table VI.14. Mexico's competitiveness in the North American market, 1985-2000

Product	Category		1985	1990	1995	2000
I. Market share			**4.5**	**5.1**	**7.2**	**9.5**
1. Primary products[a]			13.0	9.5	9.9	10.4
2. Manufactures based on natural resources[b]			3.1	2.8	3.4	3.7
3. Manufactures not based on natural resources[c]			2.9	4.7	7.5	10.6
Low technology[d]			2.1	3.4	5.9	8.8
Medium technology[e]			2.7	5.1	8.7	11.5
High technology[f]			4.7	5.3	7.0	10.6
4. Others[g]			3.5	5.6	6.7	8.0
II. Export structure			**100.0**	**100.0**	**100.0**	**100.0**
1. Primary products[a]			43.7	24.2	14.5	10.7
2. Manufactures based on natural resources[b]			11.3	8.2	6.3	5.1
3. Manufactures not based on natural resources[c]			41.5	62.9	74.9	79.2
Low technology[d]			7.3	11.6	14.0	15.4
Medium technology[e]			21.8	34.3	40.9	39.4
High technology[f]			12.5	17.1	20.3	25.1
4. Others[g]			3.4	4.6	4.0	4.3
III. 10 Principal exports (SITC Rev.2)	**A[h]**	**B[i]**	**49.6**	**47.8**	**48.9**	**51.4**
781 Passenger motor cars (excl. public service type)	*	+	1.0	7.0	10.5	11.0
333 Petroleum oils, crude, also from bituminous min.		-	31.5	14.5	8.7	7.4
764 Telecommunications equipment, n.e.s.	*	+	4.4	3.6	4.1	6.0
752 Automatic data processing machines, units	*	+	0.0	1.7	2.4	4.8
773 Equipment for distributing electricity	*	+	3.2	5.4	5.5	4.5
931 Special transactions and commodities not class.	*	+	2.8	4.2	3.6	4.1
784 Parts and accessories, n.e.s. of the motor vehicles	*	+	3.2	4.9	4.3	3.7
761 Television receivers		+	0.7	3.0	3.9	3.6
782 Motor vehicles for the transport of goods		+	0.7	0.6	3.0	3.6
772 Elec.apparatus for making/breaking elec. circuits	*	+	2.0	3.0	2.9	2.7

Source: UNCTAD, based on the United Nations' Comtrade database and the TRADECAN computer software of ECLAC.

[a] Contains 45 basic products that are simple to process; includes concentrates.
[b] Contains 65 items: 35 agricultural/forestry groups and 30 others (mainly metals, excluding steel, plus petroleum products, cement, glass, etc.).
[c] Contains 120 groups representing the sum of low, medium and high technology.
[d] Contains 44 items: 20 groups from the textile and garment category, plus 24 others (paper products, glass and steel, jewellery).
[e] Contains 58 items: five groups from the automotive industry, 22 from the processing industry and 31 from the engineering industry.
[f] Contains 18 items: 11 groups from the electronics category, plus another seven (pharmaceutical products, turbines, aircraft, instruments).
[g] Contains nine unclassified groups (mainly from section 9).
[h] Groups belonging (*) to the 50 most dynamic in North American imports, 1985-2000.
[i] Groups in which Mexico gained (+) or lost (-) North American import market share, 1985-2000.

(3 per cent) is supplied by locally-owned firms (*WIR01*, box IV.3), although, in the automobile industry, local content is higher. Only a few TNCs have set up design and development facilities in Mexico. Deepening of TNCs' roots in the local economy is a strategic priority for Mexican competitiveness, and requires considerable investment in enhancing local skills, suppliers and institutions.

Mexico's success with export-oriented FDI began with utilizing the United States production-sharing mechanism in association with the Mexican *maquiladora* scheme (see chapter VII). In the 1990s, the country negotiated 32 free trade and investment agreements with its principal trading partners, of which NAFTA is the most important. An agreement with the EU entered into force in 2001.

6. Republic of Korea

Between 1985 and 2000, the exports of the Republic of Korea rose sixfold, from $30 billion in 1985 to $172 billion in 2000. FDI inflows rose from $200 million in 1985 to $9 billion in 2000. The country is third on the list of overall winners, and fourth on that of high-technology manufactures and resource-based manufactures (table VI.2). Its overall market share increased from 1.5 to 2.5 during the period 1985-2000 (table VI.16), with export success based largely

Table VI.15. Mexico: exports by the 35 leading foreign affiliates, 2000
(Millions of dollars and percentage)

Rank	Name of affiliates	Name of parent firm	Home country	Industry	Value	Percentage of total exports
1	IBM México	IBM	United States	Electronics	9 630	5.3
2	Daimler Chrysler Mexico	DaimlerChrysler	Germany	Automotive	6 941	3.8
3	General Motors de Mexico	General Motors	United States	Automotive	6 732	3.7
4	Volkswagen Mexico	Volkswagen	Germany	Automotive	5 182	2.9
5	Ford Mexico	Ford Motor	United States	Automotive	3 471	1.9
6	Nissan Mexico	Nissan Motor	Japan	Automotive	2 720	1.5
7	Lear Corporation Mexico	Lear	United States	Automotive	1 878	1.0
8	Visteon Mexico	Visteon	United States	Automotive	1 676	0.9
9	Panamerican Beverage Inc	Coca-Cola	United States	Beverages	1 624	0.9
10	Sony Mexico	Sony	Japan	Electronics	1 621	0.9
11	General Electric Mexico	General Electric	United States	Electrical apparatus	1 157	0.6
12	Alcoa	Alcoa	United States	Metals	1 070	0.6
13	Thomson	Thomson Industries	United States	Electronics	1 037	0.6
14	LG Electronics Mexico	LG Electronics	Rep. of Korea	Electronics	1 037	0.6
15	Sanyo Manufacturing Mexico	Sanyo Electric	Japan	Electronics	837	0.5
16	Grupo Kodak Mexico	Eastman Kodak	United States	Photographic	739	0.4
17	Grupo Modelo	Anheuser-Busch	United States	Beverages	694	0.4
18	Kemet de Mexico	Kemet	United States	Electronics	692	0.4
19	Favesa	Lear	United States	Automotive	684	0.4
20	Samsung Mexico	Samsung Electronics	Rep. of Korea	Electronics	678	0.4
21	United Technologies Mexico	United Technologies	United States	Automotive	655	0.4
22	SIA Electrónica de Baja California	Sanyo Electric	Japan	Electronics	622	0.3
23	Industria John Deere	John Deere	Australia	Machinery	449	0.2
24	Mabe	General Electric	United States	Machinery	431	0.2
25	Siemens	Siemens	Germany	Electrical machines	403	0.2
26	Carplastic	Visteon	United States	Automotive	381	0.2
27	Black & Decker Mexico	Black & Decker	United States	Tools	351	0.2
28	Xerox	Xerox	United States	Office machines	295	0.2
29	BASF Mexico	BASF	Germany	Chemicals	270	0.1
30	DuPont Mexico	Dupont, E.I. De Nemours	United States	Chemicals	251	0.1
31	Electrónica Clarion	Clarion	Japan	Electronics	236	0.1
32	Hewlett-Packard Mexico	Hewlett-Packard	United States	Electronics	228	0.1
33	Mexinox	Mexinox United States	United States	Metals	208	0.1
34	Procter & Gamble	Procter & Gamble	United States	Chemical	152	0.1
35	Nestlé Mexico	Nestlé	Switzerland	Food	122	0.1
	Total above				**55 154**	**30.6**
	Total exports of Mexico				**180 392**	**100.0**

Source: UNCTAD, based on United Nations-ECLAC, Information Center of the Unit on Investment and Corporate Strategies, and *Who Owns Whom CD-ROM 2002* (Dun and Bradstreet).

on high- and medium-technology manufactures: exports rose from 14 per cent to 38 per cent of total exports for high-technology manufactures and from 22 per cent to 29 per cent for medium-technology products. On top of that success, the Republic of Korea improved its market share in manufactures based on natural resources. Five high-technology exports – semiconductors, computers and parts and accessories, telecom equipment, and electrical machinery and apparatus – alone accounted for over one-third of all exports. Passenger motor cars represented another significant export item. The country gained market share in all 10 of the principal export products, seven of which are being dynamic in world trade.

The Republic of Korea is distinct from the other winner countries covered in this section because, on the spectrum of linkages with TNCs, it has relied much less on FDI to achieve that outcome. Its export gains have come mainly from large national conglomerates, the *chaebols*,[19] often through low-equity or non-equity relationships with TNCs, especially with regard to their main export items, semiconductors, electronics and automobiles (Kwon, 2001; Amsden, 1989). Original equipment manufacturing was an important stepping stone to that success. In the space of 10 years, the country leapfrogged into the semiconductor industry to advance from being a mere assembler

Table VI.16. The Republic of Korea's competitiveness in the world market, 1985-2000

Product 2000	Category		1985	1990	1995
I. Market shares			**1.5**	**1.9**	**2.2**	**2.5**
1. Primary products[a]			0.3	0.5	0.3	0.4
2. Manufactures based on natural resources[b]			0.7	0.8	1.2	2.0
3. Manufactures not based on natural resources[c]			2.3	2.6	2.9	3.2
Low technology[d]			5.0	4.7	3.0	2.8
Medium technology[e]			1.1	1.6	2.2	2.5
High technology[f]			1.8	2.5	3.8	4.2
4. Others[g]			0.5	0.7	1.4	1.2
II. Export structure			**100.0**	**100.0**	**100.0**	**100.0**
1. Primary products[a]			4.8	3.2	1.9	1.7
2. Manufactures based on natural resources[b]			9.3	7.4	9.1	12.0
3. Manufactures not based on natural resources[c]			84.7	88.0	86.7	84.4
Low technology[d]			48.7	41.7	22.5	16.9
Medium technology[e]			21.7	25.9	31.3	29.2
High technology[f]			14.4	20.5	32.9	38.4
4. Others[g]			1.1	1.3	2.2	1.8
III. 10 Principal exports (SITC Rev.2)	**A[h]**	**B[i]**	**21.6**	**28.0**	**47.0**	**54.3**
776 Thermionic valves and tubes and other semiconductors, n.e.s.	*	+	4.8	7.3	16.7	16.4
752 Automatic data processing machines, units thereof	*	+	0.9	3.4	3.4	6.8
781 Passenger motor cars (excl. public service type)	*	+	1.4	3.1	5.1	6.8
764 Telecommunications equipment, n.e.s.	*	+	3.2	3.4	3.8	6.6
334 Petroleum products, refined		+	2.1	0.5	1.8	4.3
759 Parts, n.e.s., of and accessories for 751 and 752	*	+	0.7	1.1	3.4	3.7
583 Polymerization and copolymerization products	*	+	0.7	1.2	2.9	3.1
653 Fabrics, woven, of man-made fibers		+	4.0	4.4	5.0	2.5
674 Universals, plates and sheets, of iron or steel		+	2.7	2.3	2.3	2.5
778 Electrical machinery and apparatus, n.e.s.	*	+	1.2	1.3	2.4	1.7

Source: UNCTAD, based on the United Nations' Comtrade database and the TRADECAN computer software of ECLAC.

[a] Contains 45 basic products that are simple to process, includes concentrates.
[b] Contains 65 items: 35 agricultural/forestry groups and 30 others (mainly metals, excluding steel, plus petroleum products, cement, glass, etc.).
[c] Contains 120 groups representing the sum of low, medium and high technology.
[d] Contains 44 items: 20 groups from the textile and garment category, plus 24 others (paper products, glass and steel, jewellery).
[e] Contains 58 items: five groups from the automotive industry, 22 from the processing industry and 31 from the engineering industry.
[f] Contains 18 items: 11 groups from the electronics category, plus another seven (pharmaceutical products, turbines, aircraft, optical and measuring instruments).
[g] Contains nine unclassified groups (mainly from section 9).
[h] Groups belonging (*) to the 50 most dynamic in world imports, 1985-2000.
[i] Groups in which the Republic of Korea gained (+) or lost (-) world market share, 1985-2000.

of discrete devices under contract to TNCs to become a major player in its own right: the second largest memory chip and the third largest semiconductor producer in the world. For the more mature and simpler technologies, reverse engineering was used, complemented by original equipment manufacturing arrangements. Such arrangements accounted for virtually all electronics exports early on, but by 1990 their share had fallen to 70-80 per cent (60 per cent for the *chaebols*). For example, Samsung had reduced that share to about 40 per cent of its total exports by 1994 (Cyhn, 2002). Hyundai's experience, first with an Overseas Assembly Agreement with Ford, then with a low equity arrangement with Mitsubishi, followed by a host of licensing agreements with major automobile TNCs, allowed it to acquire the appropriate technology to design and develop its own model: the Pony. As early as 1975, this export model had achieved 90 per cent local content. Thus, Hyundai moved from the assembly of foreign models, to the assembly of an indigenous model with foreign licences to be able, finally, to manufacture a completely indigenous model. Overall, 40 per cent of the total exports of the Republic of Korea were estimated to involve original-equipment-manufacture arrangements in 1985, but over time that factor became increasingly less important as the Korean conglomerates developed their own brands.

In parallel with the rise of the *chaebols*, outward FDI accelerated during the 1990s, rising from an annual average of less than $1 billion in the period 1988-1993 to $3 billion in the period 1994-1997.[21] Over half went into manufacturing operations while trade-supporting FDI accounted for slightly less than one-fifth in 2001. The Korean firms' principal motives for establishing their own international production systems were the desire to gain cost advantages by relocating industries, to cope with trade barriers, to gain access to new markets and high technology and to gain competitiveness over domestic rivals. Overall, the Republic of Korea remains one of the few examples of a developing country that has become an export winner mainly by way of low-equity or non-equity relationships with TNCs, in combination with strong national policies promoting domestic companies, which eventually, became TNCs in their own right. The fact that Samsung is one of the principal exporters to China is in itself quite revealing.

But the balance between equity and non-equity forms is changing. Due to the economic crisis of 1997 and the fact that Korean firms were experiencing increasing difficulties in accessing foreign technology led the Republic of Korea to liberalize its FDI policy. Inflows grew substantially in the late 1990s, from $2 billion in 1996 to $9 billion in 2000, before falling back to $3 billion in 2001. As a consequence, the share of foreign affiliates in the country's total exports has risen. The five foreign companies found in the list of the principal exporters alone accounted for $9 billion of the $92 billion exported by the top 27 in 2001 (table VI.17). Still, the national conglomerates drive the bulk of Korea's exports.

The example of the Republic of Korea shows that substantial export gains in manufacturing can be made without equity links to TNCs. One of the major benefits of the country's national development strategy has, indeed, been that exporters are more embedded in the economy. They have driven the national industrialization process by building linkages, increasing local content and value-added activities, and upgrading to more complex activities. The experience of Korean *chaebols* with low-equity or non-equity relationships with TNCs in the semiconductor, consumer electronics and automobile industries illustrates how the Government can work with domestic firms to help them graduate from technological imitation to innovation (Kim, 1997). Nevertheless, that strategy ran into difficulties in the late 1990s, as access to frontier (as opposed to mature technologies became more difficult and as the financial problems of the *chaebols* deepened. For this reason, the role of FDI in Korean development was reviewed and a new approach was pursued.

* * *

In each of these winner countries, TNCs have played a significant role in improving export competitiveness, either through equity or non-equity relationships. But large as the share of TNC activities is, it varies considerably. Of the leading exporters, the Republic of Korea is an example of a winner

with a relatively small FDI presence, although non-equity links have played an important role. The other winners, especially

The winner countries are located in five rings. The central circle (ring 1) contains countries with market-share increases of 5 per cent or more during 1985-2000. Each

Table VI.17. Republic of Korea: exports by the leading 50 companies, 2000
(Millions of dollars and percentage)

Rank	Name of firms	Name of parent firm	Home economy	Industry	Value	Percentage of total exports
1	Samsung Electronics Co., Ltd.	Citibank [a]	United States	Electronics	20 270	13.5
2	LG Electronics Inc.	-	Rep. of Korea	Electronics	8 135	5.4
3	Hyundai Motor Co., Ltd.	DaimlerChrysler[b]	Germany/ United States	Automotive	6 642	4.4
4	Hyundai Electronics Industries Co., Ltd.	-	Rep. of Korea	Electronics	6 586	4.4
5	Amkor Technology Korea, Inc.	Amkor Technology	United States	Electronics	4 695	3.1
6	Kia Motors Co.	-	Rep. of Korea	Automotive	3 859	2.6
7	Hyundai Heavy Industries Co., Ltd.	-	Rep. of Korea	Ship building and repairing	3 578	2.4
8	S-Oil Corp.	-	Rep. of Korea	Petroleum refining	3 111	2.1
9	SK Corp.	-	Rep. of Korea	Petroleum refining	2 996	2.0
10	Daewoo Motors	-	Rep. of Korea	Automotive	2 838	1.9
11	Pohang Iron & Steel Co., Ltd.	-	Rep. of Korea	Blast furnace and steel mills	2 701	1.8
12	Daewoo Heavy Industries Ltd.	-	Rep. of Korea	Chemicals and allied products	2 538	1.7
13	Nokia TMC Ltd.	Nokia	Finland	Communication equipment	2 383	1.6
14	Chip PAK Korea	Chip PAK	United States	Electronics	2 364	1.6
15	TriGem Computer Inc.	-	Rep. of Korea	Electronics	2 042	1.4
16	Hyundai Oil Refinery Co., Ltd.	-	Rep. of Korea	Petroleum products	1 812	1.2
17	Anam Semiconductor	Amkor Technology	United States	Electronics	1 808	1.2
18	Samsung Heavy industries Co., Ltd.	-	Rep. of Korea	Ship building and repairing	1 773	1.2
19	Samsung SDI Co., Ltd.	-	Rep. of Korea	Storage batteries	1 708	1.1
20	LG Caltex Oil	ChevronTexaco	United States	Petroleum refining	1 620	1.1
21	LG Philips LCD	Philips Electronics	Netherlands	Electronics	1 566	1.0
22	Samsung Electro-Mechanics	-	Rep. of Korea	Electro-mechanics	1 366	0.9
23	LG Chemical Ltd.	-	Rep. of Korea	Petrochemicals	1 209	0.8
24	Daewoo Electronics	-	Rep. of Korea	Electronics	1 198	0.8
25	SK Corp.	-	Rep. of Korea	Petroleum refining	1 120	0.7
26	Incheon Oil	-	Rep. of Korea	Petroleum refining	976	0.6
27	Korea Sony	Sony	Japan	Electronics	969	0.6
28	Hyundai Chemical Co., Ltd.	-	Rep. of Korea	Petrochemicals	891	0.6
29	Hyosung Textile	-	Rep. of Korea	Textile	689	0.5
30	Kohap Ltd.	-	Rep. of Korea	Petrochemicals	680	0.5
31	Kumho	-	Rep. of Korea	Tyres	600	0.4
32	Samsung Chemical Co., Ltd.	-	Rep. of Korea	Petrochemicals	575	0.4
33	Hanjin Heavy Industries Co., Ltd.	-	Rep. of Korea	Ship building and repairing	564	0.4
34	Hankook Tire	-	Rep. of Korea	Tyres	555	0.4
35	Hanjung (Korea) Heavy Industries & Construction Co., Ltd.	-	Rep. of Korea	Chemicals and petrochemicals	509	0.3
36	Korea Zinc Co., Ltd.	-	Rep. of Korea	Metal mining	500	0.3
37	Orion Electronics	-	Rep. of Korea	Electronics	494	0.3
38	DongBu Steel	-	Rep. of Korea	Steel sheets and coils	491	0.3
39	Inchon Iron & Steel Co., Ltd.	-	Rep. of Korea	Steel sheets	490	0.3
40	Korea BASF	BASF	Germany	Plastic material synthetic resins	474	0.3
41	Korea Data System	-	Rep. of Korea	Electronics	453	0.3
42	TaeKwang Industrial Co., Ltd.	-	Rep. of Korea	Textile	431	0.3
43	Taihan Electric Wire Co., Ltd.	-	Rep. of Korea	Electric wires and cables	414	0.3
44	LG Cable Ltd.	Hitachi Cable	Japan	Electric wires and cables	404	0.3
45	Kolon Industries , Inc.	-	Rep. of Korea	Synthetic fibre	393	0.3
46	Tongkook Corp.	-	Rep. of Korea	Textile	387	0.3
47	Hansol Paper Co., Ltd.	-	Rep. of Korea	Paper mills	375	0.2
48	Hanwha Chemical Corp.	-	Rep. of Korea	Plastic material synthetic resins	367	0.2
49	Fairchild Korea Semiconductor Ltd.	Fairchild Semi-conductor	United States	Carburettors, pistons, rings, valves	341	0.2
50	Cheil Industries Inc.	-	Rep. of Korea	Textile	339	0.2
	Total above				**103 274**	**68.7**
	Total exports of Rep.of Korea				**150 400**	**100.0**

Source: UNCTAD, based on information provided by Republic of Korea, Korea International Trade Association.

[a] Citibank has a minor participation (13.6 per cent) in Samsung Electronics' equity.
[b] DaimlerChrysler has a minor participation (10.0 per cent) in Hyundai Motor's equity.

in non-resource-based manufactures – the most dynamic segment of world trade – have relied on TNCs to boost their export performance. China, Costa Rica, Hungary, Ireland and Mexico became export winners mainly by relying on FDI to generate their most dynamic exports. Beyond that, each country had its own specific advantages, enabling it to become linked to international production systems. China has the advantage or its large economy, which allows economies of scale and helps expand exports. Hungary, Ireland and Mexico have one common advantage: preferential access to a major market. In Costa Rica and Ireland, national policy in the form of a proactive approach to attracting high-technology FDI and linking up to international supplier networks has been an important factor. In all of them, TNCs have played a substantial role in expanding exports.

Notes

1 There are many ways to categorize activities by technology levels but most agree on the activities that fall into the different categories. The dividing line is generally the complexity of the technology and the intensity of spending on R&D.

2 *Primary products* cover minerals and agricultural or forest products exported in an unprocessed state. *Resource-based manufactures* include processed foods and tobacco, simple wood products, refined petroleum products, dyes, leather (not leather products), precious stones and organic chemicals. Resource-based products can be technologically simple (food or leather processing) or capital-scale-and skill-intensive (e.g. petroleum refining). *Low-technology manufactures* include textiles, garments, footwear, other leather products, toys, simple metal and plastic products, furniture and glassware. These products tend to have stable, well-diffused technologies largely embodied in capital equipment, with low R&D and skill requirements and low economies of scale. Labour costs tend to be a major element of cost and barriers to entry are relatively low, at least in the segments in which developing countries specialize. *Medium-technology manufactures* are "heavy industry" products such as automobiles, industrial chemicals, machinery, and standard electrical and electronic products. They tend to have complex but not fast-changing technologies, with moderate levels of R&D but advanced engineering and design skills and large scales of production. Barriers to entry tend to be high because of capital requirements and strong "learning" effects in operation, design and product differentiation. *High-technology manufactures* are complex electrical and electronic (including information and communication technologies) products, aerospace products, precision instruments, fine chemicals and pharmaceuticals. Most call for advanced manufacturing capabilities, large R&D investments, advanced technology infrastructures and close interactions between firms, universities and research institutions. However, many activities, particularly electronics, have final assembly processes with simple technologies where low wages are an important competitive factor. The categorization is consistent with that in *WIR99*, chapter 8. Information and communication technologies comprise SITC, Rev. 2, 764, 776, 759, 752.

3 See *WIR99*, p. 229. Technology-intensive products are growing faster in both trade and production: during 1980-1997, total manufacturing production in 68 countries (representing over 95 per cent of global productive capacity) grew at 3.0 per cent per annum and manufactured exports at 6.6 per cent. High-technology production grew at 6.2 per cent and high-technology exports at 10.2 per cent (NSF, 2000). While the definition of "high-technology" products used by the NSF differs slightly from the one used here, the trends are likely to be very similar.

4 ASEAN-5: Indonesia, Malaysia, the Philippines, Singapore and Thailand.

5 CEE is not analysed here because 1985 data on several countries are lacking. As a result, group growth rate figures overstate the real expansion.

6 This may not be surprising in view of the country's size. In the developing world, China accounts for a much larger share of manufacturing value-added (about 30 per cent) than exports (18 per cent) (UNIDO, 2002). In this sense, China has some way to go before its exports "catch up" with its production capacity. However, large size is no guarantee of export dynamism – Brazil and India are good examples of this. China itself was a fairly small exporter a decade or so ago; its status now reflects an ability to build and maintain impressive rates of export growth (see the annex to this chapter).

7 Note that the training that takes place in the labour-intensive end of high-technology activities is generally far more advanced than in low-technology activities like clothing or footwear. This is the reason why high-technology export activities are less footloose than low-technology ones.

8 Third-party trade involves a TNC in one country exporting to an independent local firm and to its affiliated firms in another country.

9 See, World Bank, World Development Indicators database, http://www.worldbank.org/data/wdi2002/, and UNCTAD, Handbook of Statistics online, http://stats.unctad.org/.

10 In 1996-1998, the share of developing countries in world industrial production reached 20 per cent. In world services output, their share

was only 14 per cent (World Bank, 2002a).

11 In developed countries, the share of services in total inward FDI stock also rose gradually over the past decade, to reach 56 per cent in 2000, up from 43 per cent in 1980. However, the share of services in the total exports of foreign affiliates remained relatively small, ranging from less than 1 per cent in France to 24 per cent in Japan. Furthermore, the share of the services sector in the total exports of foreign affiliates operating in Japan and the United States declined by nearly half during the past decade or so, despite the rising share of services in total FDI. Much service FDI in these countries is not export oriented.

12 Data provided by PricewaterhouseCoopers.

13 Data provided by PricewaterhouseCoopers.

14 Data provided by PricewaterhouseCoopers.

15 In all case studies in this section, the trade data for 1985 are the average of 1984-1986 and those for 2000, are the average for 1999 and 2000.

16 The following assessment was made by MOFTEC: "Overall, FIEs (note of the editor: foreign affiliates) already in operation have been performing well, with their growth margins in terms of such leading economic indicators as industrial value-added, export value, tax payments and surplus of foreign exchange all higher that the national average, and with an obviously higher share in the aggregate national economy, thus providing a strong boost to the sustained, rapid and healthy development of the national economy" (China, MOFTEC, 2001).

17 On Flextronics' global strategy, see box V.4.

18 The Hungarian surveys of top exporters do not report data for those firms that do not disclose relevant information. This leads to the omission of some large firms, such as Nokia or Knorr-Bremse, which are probably also leading exporters.

19 For a discussion of services export from Ireland, see box VI.6.

20 The most prominent ones are Samsung, Hyundai, LG, Daewoo and SK.

21 The transnationalization of several of the larger Korean TNCs faltered during the 1990s because of acquisitions that did not work out (Zenith and AST) and ill-advised expansion projects (Daewoo's expansion into risky markets and the failure of Hyundai's plant in Canada).

Annex to Chapter VI. Winners[a] in world trade, 1985-2000

successive ring represents the previous limit divided by half: thus, ring 2 contains countries with a market share between 2.5 per cent (5 divided by 2) and 4.9 per cent (the limit of the previous ring), and so on. The 2000 position is indicated by the name of the country, and its 1985 position, if different, is indicated by a ball. Arrows show the direction and magnitude of change over the period. This graphic representation is a useful way of showing the dynamics of world trade at the national level. Apart from its visual impact, it is useful in that it provides four kind o information at a glance: the definition of country winners, an indication of their concentration, the magnitude of overall and individual changes, and a sense of which countries might become the new entrants.

High technology. The main winners from the developing world are the East Asian economies and Mexico. China and Taiwan Province of China lead the group and now have world market shares higher than 5 per cent (ring 1). The most remarkable performance is that of China, which moves from ring 5 to ring 1, to become the largest exporter of high-technology products in the developing world. Another four developing countries have market shares of 2.5 to 4.9 per cent (ring 2): Singapore, the Republic of Korea, Malaysia and Mexico. They are followed by Thailand and the Philippines (ring 3), with Indonesia trailing some distance behind (reaching ring 5). Brazil retains a position in ring 5, while India and Costa Rica are just outside this ring.

There are relatively few winners from the industrialized world: while there are many large exporters of high-technology products, they have not increased their market shares. Ireland is the main winner, reaching ring 3 from ring 4. Finland (ring 5 to 4) and Israel (into ring 5) follow. Spain remains in ring 4. Turkey is outside ring 5.

In CEE, Hungary is the main winner, the only country to enter ring 5. However, three others (Poland, the Czech Republic and the Russian Federation) are hovering on the fringes of the ring.

Medium technology. There is only one main winner, the United States. Other industrial countries that have improved their positions are Spain, Ireland, Portugal and Australia. Austria and Finland make gains, but within the same range. Israel lies just outside. There are four East European entrants with three just beyond.

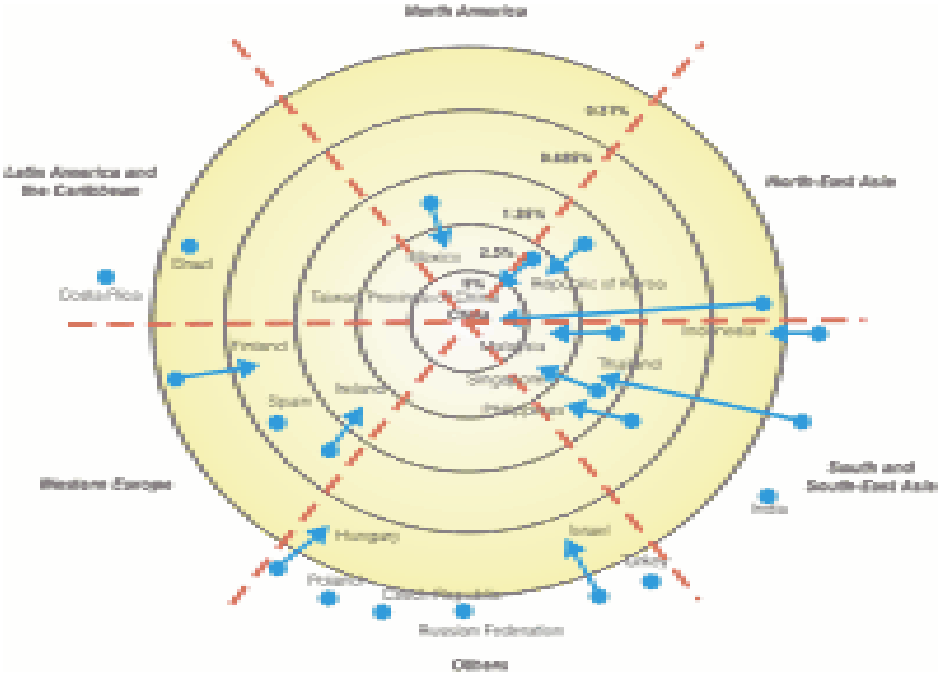
The developing world puts up an impressive performance, again dominated by East Asia. The most dynamic winner is China. Mexico also has an impressive performance. The Republic of Korea and Taiwan Province of China lead the other dynamic exporters. Singapore, Malaysia and Thailand move up from a lower level, while Indonesia moves into the figure. The Philippines remains positioned outside as does the main exporter from South Asia, India. In Latin America, apart from Mexico, the only country in the figure is Brazil, with Argentina and Costa Rica lying just outside. In the rest of the developing world, Saudi Arabia and South Africa lie a little beyond the limit.

Low technology. This figure is more densely populated than the previous ones. As expected, there are a larger number of winners in activities with low entry barriers and frequent relocation in search of low wages. Interestingly, the United States appears as one of the main winners. The other, not surprisingly, is China. The largest gains in market share are achieved by Mexico and Indonesia.

Most East and South-East Asian exporters are present but the mature “tigers” (Singapore, the Republic of Korea and Taiwan Province of China) are absent – they are withdrawing from this technological category. Four South Asian economies appear as winners, led by India and Pakistan. There are several countries from Latin America and the Caribbean, most lying outside; Brazil, however, is not present. In other regions, Morocco and Tunisia improve their position, while Egypt and the United Arab Emirates appear just outside.

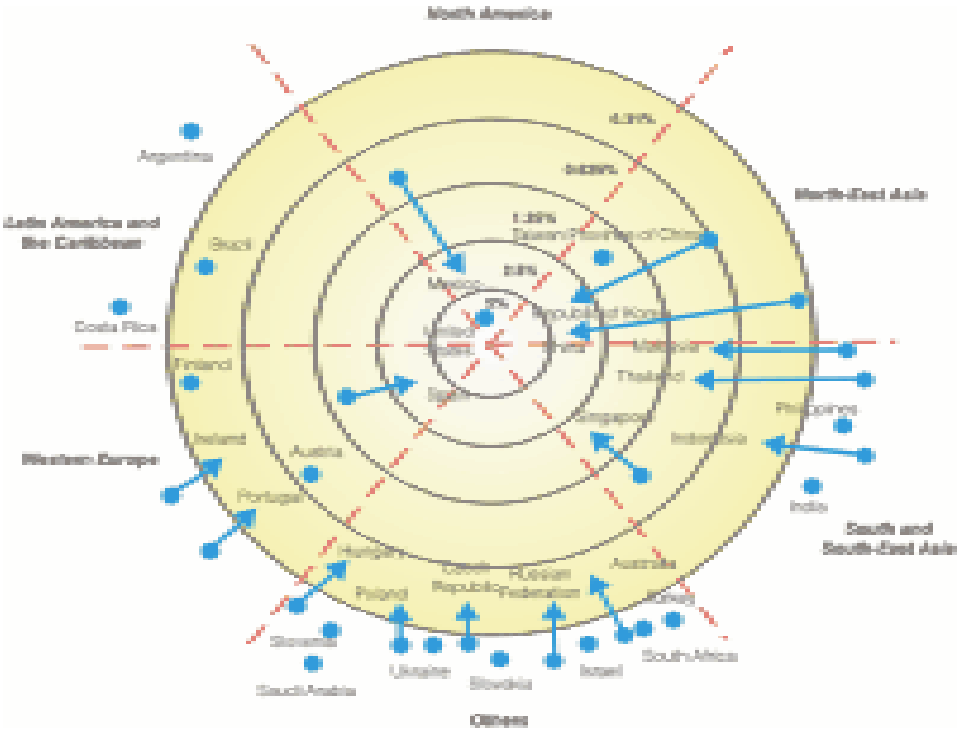
A number of CEE countries also improve their competitive positions in low-technology products, led by Poland and the Czech Republic. Other industrialized countries in the figure include Canada, Ireland, Turkey, Australia and Israel. Major exporters of fashion products such as Italy and France are not present as they have not increased their market shares during this period.

Figure VI.9. Winners in the high-technology manufactures trade, 1985-2000



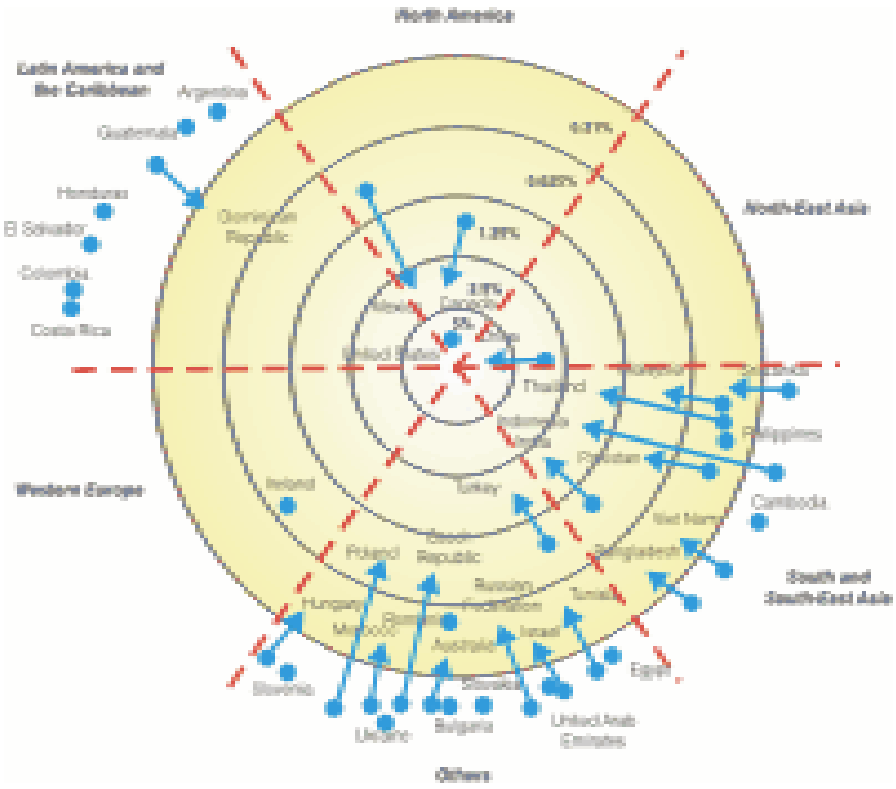
Source: UNCTAD.

Figure VI.10. Winners in the medium-technology manufactures trade, 1985-2000



Source: UNCTAD.

Figure VI.11. Winners in the low-technology manufactures trade, 1985-2000



Source: UNCTAD.

a "Winners" are exporting countries that raised their share in world markets over 1985-2000, taking as a cut-off point a 0.3 per cent share in the relevant technological category.

CONCLUSIONS:

Benefiting from export competitiveness

Improving export competitiveness is important and challenging but it is not an end in itself. It is only a means to an end: the promotion of development. This raises the question of the benefits resulting from TNC-associated trade, beginning with improving the *trade balance*, and continuing with *upgrading* export operations and *sustaining* them over time. In each case, the issue is how host developing countries can most benefit from the assets that TNCs command. Much depends on the strategies pursued by TNCs within their international production systems, on the one hand, and local infrastructure and technological, institutional and supplier capabilities as well as the policies pursued by Governments, on the other.

A first approximation for assessing benefits and costs – although not the most important one – involves the *trade balance*. Even though export-oriented FDI helps to increase exports, foreign affiliates also import, and imports may increase significantly along with exports. In such cases, net foreign-exchange earnings may be negligible. Moreover, high export values may co-exist with low levels of local value added. This is typically the case, for example, when foreign affiliates mainly assemble imported components, reflecting the relatively unimportant role assigned to them in production systems.

Measuring the trade balance of export-oriented foreign affiliates as well as their value added, is fraught with difficulties. The data typically lump together export-oriented FDI and domestically-oriented FDI, making it difficult to determine the trade balance of export-oriented foreign affiliates separately. (Presumably, the trade balance of domestic-market-oriented FDI would be negative.) Furthermore, no systematic data exist on the composition of imports by foreign affiliates, which is relevant for understanding the implications for host economies. Scattered information suggests that the imports of parts and components were high in certain industries, such as telecommunications, electric machinery and vehicles (chapter VI), especially in countries that hosted labour-intensive activities of international production systems. Furthermore, in developing countries, one would expect that newly established affiliates (or affiliates that intend to expand their capacities) would typically need to import capital goods (just as many domestic firms do) in order to expand local productive capacities.[1] Such imports are of a different nature – more likely to be indispensable for the production of the goods or services in question to take place – than imports of components for assembly or other inputs (for which domestic alternatives may be available or capable of being developed), yet both types of imports would be counted simply as affiliate imports. Moreover, imports would be particularly high when production facilities are being set up and reliance on home-country or other foreign suppliers of inputs tends to be high, and then presumably decline (partly as a result of the growth of local linkages). The imports of foreign affiliates in China are an instructive example (although one that cannot necessarily be generalized in this respect), in that the data show that a substantial part of imports by foreign affiliates consists of capital goods (box VI.8). Although the trade balance effects of foreign affiliates' activities remain the same when the composition of imports is taken into account, the overall economic implications for China are different, as imports of capital goods add significantly to the capital stock and productive capacity of the country.

In any event, as far as the impact on a country's balance-of-payments position – often a major underlying concern for developing countries (although somewhat diminished in importance as countries' exchange-rate policies have become more flexible) – is concerned, focussing on the trade balance captures only a part of the impact of TNC activities. Additional factors that need to be taken into account are capital

Box VI.8. FDI and the trade balance: the case of China

The data on imports and exports by foreign affiliates in China show a trade deficit until 1997 and modest surpluses in more recent years (box figure 1). This may suggest that the trade-related benefits of FDI, with its high import content, are quite limited for China. The reality is, however, more complex.

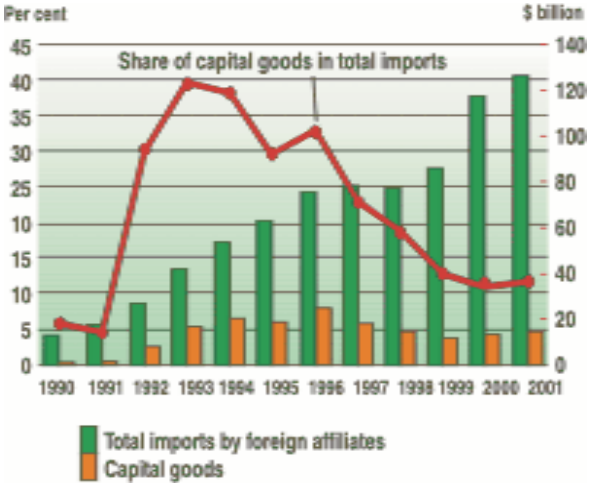
Box figure VI.8.1. The trade balance of foreign affiliates in China, 1990-2001

(Billions of dollars)

Source: UNCTAD, based on data provided by MOFTEC.

An examination of the composition of foreign-affiliate imports reveals that a significant proportion consists of capital goods (i.e. machinery and related equipment) to create or expand and up-grade productive capacity in affiliates (including joint ventures). Indeed, the share of such imports was high during the 1992-1997 FDI boom (box figure 2).

Box figure VI.8.2. The share of imports of capital goods in total imports by foreign affiliates in China, 1990-2001



Source: UNCTAD, based on data provided by MOFTEC.

Source: UNCTAD.

inflows, the repatriation of earnings and capital, and other long-term impacts on the foreign-exchange earnings of foreign affiliates and associated local companies. Such an analysis of the balance-of-payments impact, which would also have to be weighed against their other (structural) effects on a country's development and welfare, falls outside the scope of the present report.[2]

The question of *upgrading* exports relates to the extent to which FDI involves higher technological content and domestic value added in host-country export production and a restructuring of exports from those based on static comparative advantage to those based on dynamic comparative advantage. The starting point is that specialization in different segments of international production systems may imply different benefits and competitive prospects. There is therefore some concern that specialization in labour-intensive segments, even of high-technology exports, may in some ways be undesirable as it may provide few benefits in training or technology and meagre spillovers to the local economy. Besides, the competitive edge of low-cost labour may disappear as wages rise. Still, labour-intensive exports are economically beneficial as long as local value added is positive at world prices, even if it does not rise at the same pace as the total value of exports. In fact, where surplus labour is unlikely to be used in more remunerative or economically desirable activities, it is in the interest of the countries concerned that it be used in production for export. Any theory of comparative advantage would suggest that such countries should specialize in simple labour-intensive processes at the beginning of their export drive; the question is whether they can subsequently upgrade and sustain their exports.

TNCs can contribute to the upgrading of a country's competitiveness by either investing in higher-value-added activities

in industries in which they have not invested before or by shifting, within an industry, from low-productivity, low-technology, labour-intensive activities to high-productivity, high-technology, knowledge-based ones.[3] The first of these processes is illustrated by a number of the winners discussed in this Part, especially those that experienced a notable shift – as a result of substantial new FDI inflows and new roles in supplier networks – from low to medium – to high-technology industries and sectors. Also rising significance is the growth of FDI-associated service exports from developing countries.

Intra-industry upgrading occurs in several ways. There is, first of all, the situation in which TNCs locate production facilities aimed at serving highly competitive national, regional and global markets in a developing country; many of the dynamic products identified in chapter VI fall into this category. TNCs need to upgrade these production facilities continually just to survive, let alone capture higher market shares for a given product. Intra-industry upgrading also involves adding or moving into higher-value products within the same industry. The success of countries such as China, Ireland, Malaysia, the Philippines and Singapore in upgrading the export competitiveness of their electronics industries is a case in point. Thus, for example, Motorola, in its own interest, substantially upgraded its facilities in China (box VI.9); Ireland convinced Intel to upgrade beyond assembling and testing to wafer fabrication; and Malaysia established long-term relationships with Matsushita Electric and Sony working with them to upgrade their export operations for colour televisions into regional manufacturing operations. But even where strong corporate self-interest is involved, government policy (often in close cooperation with TNCs) can play a role in encouraging upgrading, in particular by ensuring that the production environment allows such upgrading and that it extends to more value-added functions such as R&D. The case of Motorola in China, is a case in point.

Something similar tends to take place in the case of foreign affiliates hitherto protected by import barriers. Under pressure from trade liberalization and competition, many TNCs restructure – in their own interest – import-substitution activities into export-oriented operations, at least in countries in which a competitive base exists, or can be created. Some outstanding examples are the automotive industry in Mexico and the colour television industry in Malaysia and Thailand (UNCTAD, 2000e). Here, policies played an important role. In Mexico, it was the launch of the *maquiladora* scheme, combined with the need of the automobile industry to find low-cost production sites and the further liberalization of NAFTA with its rules of origin for the automobile industry that had a profound effect on the country's export competitiveness. The rules of origin were initially established to help United States automobile TNCs to compete better in their home market against Asian, specifically Japanese, TNCs. This worked very much in Mexico's favour as Ford, General Motors and Chrysler (now DaimlerChrysler) and their suppliers set up world-class plants there to export to the United States market. Then, Volkswagen, a German automobile TNC, established an export platform in Mexico and was obliged to bring its global suppliers into Mexico to meet the NAFTA rules of origin. The overall result was a complete restructuring of the Mexican automobile industry from a protected and inefficient import-substitution activity to a highly competitive export platform.

These are examples from some of the most dynamic export products of how the self-interest of TNCs, combined with appropriate government policy, can produce major improvements in the export competitiveness of host countries. In other situations, however, considerably stronger government efforts are required to capitalize on the assets of TNCs and what, in the absence of such efforts, may only be temporary advantages. The garment industry exemplifies why simply attracting export-oriented activities in and by itself might not be enough to move up the value-added ladder and increase national benefits.

Branded manufacturers of garments like Sara Lee and Fruit of the Loom made use of the United States' production-sharing mechanism (see chapter VII) to gain competitive advantage vis-à-vis Asian producers by establishing assembly operations in the Caribbean basin. In the context of the Multifibre Arrangement quotas, this mechanism allowed these assemblers to remain competitive in the United States market in spite of the fact that wage levels in the

Box VI.9. Upgrading and embedding export-oriented operations in a host economy: the case of Motorola in China

Motorola entered China in 1987. In 1992, it began production, among other things, of beep-pagers, mobile phones, two-way radios and automobile electronics. Over the past decade, Motorola increased its investments in China several times, partly by reinvesting its earnings. By the end of 2001, its total investment in China had reached $3.4 billion. Its business operations include 36 foreign affiliates, including a holding company and a number of joint ventures, with 13,000 employees and nearly $5 billion in sales in 2001. Motorola is the biggest foreign electronic company, as well as the leading high-technology producer and exporter in China. In 2001, Motorola's exports from China amounted to $1.7 billion: 34 per cent of its total sales.

Over the past decade, Motorola has increased the sustainability of its operations in several ways:

- *Investment and technology transfer*. Motorola has steadily strengthened its R&D in China. In November 1999, it set up a research institute in Beijing to oversee its 18 R&D centres (with a total of 1,000 employees by 2002). Some of the latest models of mobile phones were developed, designed and produced in China, combining wireless communications with Internet access. These products are now competing in the international market.
- *Local sourcing*. Motorola assists local suppliers in improving management, efficiency and quality control. It also brings local suppliers into contact with foreign buyers. In 1997, for example, Motorola provided 5,600 hours of training to 118 local suppliers. In 2001, Motorola and some of its affiliates outside China, purchased $1.8 billion in supplies from local sources. In 2002, the company had over 170 first-tier and 700 second-tier suppliers in China.

Motorola has also formed strategic alliances with Chinese universities, institutions and enterprises in high-technology R&D projects, including the Motorola NCIC Advanced Communications Technology Lab, the Motorola-DaTang Cooperation Project, the Motorola-Jinpeng Cooperation Project and the Motorola-Eastcom Cooperation Project.

In November 2001, soon after China's entry into WTO, Motorola established a new five-year strategy, the "2+3+3 strategy". The "2" refers to building China into a world-wide manufacturing and R&D base. The first "3" refers to three new growth areas, namely semiconductors, broadband and digital trunking systems, in which Motorola has been a technology leader in the world market. The second "3" refers to the following three $10-billion goals by 2006: annual output to reach $10 billion, accumulated investment in China to reach $10 billion; and accumulated local procurement to reach $10 billion.

The Motorola manufacturing base in Tianjin is scheduled to be transformed into two parts: a semiconductor production centre and an Asian communications production base. The semiconductor centre, one of the biggest in the world, will mainly produce advanced semiconductors to support wireless communication, automobile electronics and advanced consumer electronics. The Asian communications production base is being expanded to produce high-quality, latest-model mobile phones and related digital technology. Motorola also plans to increase its R&D expenditures to a cumulative $1.3 billion by 2006 and recruit 4,000 researchers.

Located initially in an economic development zone in Tianjin, Motorola enjoyed various kinds of preferential treatment, particularly incentives that encouraged export oriented and high-technology FDI. Business facilitation by the local government has also been instrumental for nurturing the required industrial cluster and in building investment infrastructure for Motorola. Motorola Tianjin, in turn, has become an "anchor" to attract sequential and associated FDI to the country.

Source: UNCTAD, based on various sources of information about Motorola China.

Caribbean basin were higher than many other garment production sites. Contrary to the experience of Mexico in respect of the rules of origin of NAFTA, this mechanism did not allow host countries to progress by increasing local content, raising value added or upgrading the industry. This is because the tariffs applied to value added outside the United States discourage the use of local inputs. For that reason, Costa Rica, for example, chose to focus on electronics and other industries. With the impending implementation of the WTO Clothing and Textile Agreement, many host countries specializing in garment exports will have great difficulties in facing competition from Asia, especially from China. In anticipation of this, some of these branded manufacturers are cutting back on their international production systems and relying more on

full-package suppliers and contract manufacturers. The nature of the production-sharing mechanism that restricted the upgrading of the local operations beyond low-wage assembly has left these export platforms in difficult circumstances. Corrective national policy action is urgent in cases like this (Mortimore, 2002).

This underlines the importance of ensuring the *sustainability* of export-oriented foreign affiliates. For such affiliates not to be ephemeral, they need not only to upgrade, but to be progressively embedded in host economies through strong backward linkages.[4] This requires policies aimed at fostering local capabilities, and, in particular technological capabilities, human resources and a competitive domestic enterprise sector. Where these policies are successful, they are likely not only to make the exports involved more sustainable and beneficial for the host countries involved, but also to increase the competitiveness of the domestic enterprise sector, the bedrock of economic development. In the end, some of these domestic enterprises may become TNCs in their own right and contribute to the development of their home countries through their own global activities. The success of a number of (mainly Asian) countries in attracting export-oriented TNC activities as part of a broader national industrialization strategy offers a model for others.

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TNCs play an important role in the exports of many developing countries and economies in transition. Indeed, for the most dynamic products in world trade, TNCs are central for enabling these countries to reach world markets, and they provide some of the "missing elements" that developing countries need to upgrade their competitiveness in export markets. The potential benefits of TNC export activity are still far from fully exploited and they are growing. Technologies are changing. Processes and functions are increasingly divisible, and the boundaries of what is internal and external to firms are shifting. The "death" of distance – or its diminishing cost – is stretching location maps. New activities are likely to join the globalization surge, including many from developing economies. The challenge for countries that would like to improve their export competitiveness in association with TNCs is how to link up with the international production systems of these firms and how to benefit from them.

The spread of TNC activity offers host countries opportunities to expand exports and move into higher value-added activities. Capitalizing fully on static benefits and transforming them into dynamic and sustainable advantages requires pro-active government support. To benefit most from TNC-associated export competitiveness, developing countries must make continuous efforts to root TNC activities in host economies, raise the level of local content, increase the value added by these activities, upgrade them into more sophisticated areas and make them sustainable. TNCs, in a number of circumstances, will take initiatives of their own, in their own self-interest. But national policy efforts – and the policy space to pursue them – are critical for both attracting export-oriented FDI and ensuring its sustainability in order to advance development.

Notes

1 In the absence of the financing of capital-goods imports by FDI, countries seeking to build productive capacities would presumably have to spend foreign exchange to acquire them.

2 For a brief discussion of the balance-of-payments effects of FDI on ASEAN countries, see *WIR97*, chapter II.

3 For an analysis of the role of TNCs in competitiveness in general, see *WIR95*, especially chapter V, focusing on industrial restructuring in host economies.

4 See *WIR01* for an examination of how more and deeper linkages can be encouraged by government policies.