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Flying geese or *sitting ducks?* Transnationals and industry *in developing countries*

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The constitution of a new international industrial order dominated by a core of large transnational corporations generally makes life more difficult for the great majority of developing countries because, since most are not in a position to compete effectively, they face still greater marginalization. TNCS more than ever before can significantly influence the international competitiveness and therefore the nature of incorporation of developing countries into the new increasingly integrated international production system. The national origin and form of foreign direct investment and technology are very important factors in accounting for the kind of impact TNCS have on local industry. The experience of some of the newly industrializing countries of developing Asia suggests that the more dynamic Japanese FDI and technology which comes in the form of minority capital or non-equity participation in local firms has been a very important element in improving the international competitiveness of those countries and ensuring the continuous technological upgrading of their industry. The Latin American experience with the less dynamic United States FDI and technology, which normally came in the form of the establishment of subsidiaries or majority-owned affiliates, has been that this has tended to reinforce the bias towards inward-looking industrialization by import-substitution and has therefore done little to improve the international competitiveness of Latin American industry, which is thus being progressively marginalized, both from an international and a corporate perspective.

I

Introduction

A new international industrial order is taking shape which will have dramatic consequences for developing countries (Mortimore, 1992). One of its principal characteristics is that it primarily concerns a transnational corporate core of a few thousand global companies operating in a half dozen technologically-advanced industries and in another half dozen which are undergoing an active process of industrial restructuring. Around this core, a new and integrated international production system is emerging. This system is centered on the Triad, that is, the huge markets formed by the European Economic Community, North America and Japan, but it also extends to regional clusters of developing countries associated with each of these three major markets (UNCTAD, 1993; CTC, 1991a).

Technology is now the most crucial element in defining competitive advantage.[1] Clear indications of the new international order are evident in the processes of globalization and specialization characterizing foreign trade flows and the processes of globalization and regionalization linked to flows of foreign direct investment. Within the Triad, Japanese transnational corporations have made enormous advances, primarily at the expense of their American and European counterparts. Their gains have been registered mainly in the technologically-advanced industries where international competition has become most intense, such as computers and office equipment, automobiles, consumer electronics, machine tools, etc., in which Japanese manufacturers have made big inroads into international markets and are establishing new international or regional manufacturing operations.

The increased international competition in global economic relations has meant that developing countries now receive fewer preferences from the OECD countries, and at the same time have to compete on harsher terms with them. Only a relatively small group of developing countries are in a position to do so. At the same time, it is evident that significant segments of the new international industrial order are being transferred or assigned to manufacturing operations in developing countries which possess the competitive advantages needed by the transnational corporate core. These developing countries *could* possibly be incorporated into the new international industrial order, but the extent of their incorporation will depend on the nature of the competitive advantages offered by the local industrialization process.

Whereas national policy decisions used to be the defining element of the local industrialization process, in the new international industrial order the more consequential aspects of decision-making shift to the transnational corporate core of the new and integrating international production system. In this sense, the competitive situation on international markets for TNC products and the corporate strategies designed to deal with this factor take preference in the transnational corporate core's decisions to make investments, generate trade and transfer technology. The way developing country governments adapt to this new order will determine whether they are integrated into the international production system as "flying geese" or "sitting ducks".

[1] See Cantwell and Dunning, 1991; Chandler Jr., 1990; Encarnation, 1992; OECD, 1992; Teece (ed.), 1987; and Thurow, 1992. With regard to developing countries, see Ernst and O'Connor, 1989.

II

International competitiveness: developing Asia's flying geese and Latin America's sitting ducks

In the course of the delineation of the new and integrating international production system, a limited number of developing countries will become associated with particular regional sourcing clusters or networks, which for all practical purposes will define their incorporation into the new industrial order. Historically, developing country industry has been incorporated in quite different ways by transnational corporations. The experiences of several developing Asian countries and most Latin American countries provide some insights here.

1. The developing Asia scheme

Table 1 shows the essence of a conceptual scheme, based on the works of Porter and Ozawa, by which the Asian experience can be interpreted (Porter, 1990; Ozawa, 1992). Simply put, it is argued that in Asia it is possible to identify a defined trajectory to growth and development directly related to the competitive advantages possessed by developing countries in Asia. There are four stages in this trajectory: factor-driven, investment-driven, innovation-driven and wealth-driven. Certain changes in patterns of foreign trade and foreign direct investment are associated with each stage.

In the first stage, the only advantages possessed by the usually extremely poor, overpopulated and underdeveloped countries are their natural resources and cheap unskilled labour. Industries in the fields of food processing, textiles and simple manufactures of leather and wood are usually initiated in this stage, as are assembly operations based on imported inputs. Foreign trade develops on the basis of exports produced by these factor-intensive activities, and foreign direct investment arrives seeking natural resources and cheap labour.

Over a period of time the developing country generates and accumulates capital and the weight of the industrialization process shifts toward the second stage: that based on more capital-intensive activities. As a result, in addition to the exports generated by the first stage of factor-driven growth there is the new foreign trade created by the investment-driven activities in consumer durables (consumer electronics and automobiles) and intermediate goods (steel, etc.)

TABLE 1

Competitive advantages and industrial development

Stage of industrial growth	Exports of goods	Foreign direct investment flows
1. Factor-driven	Natural resource-based and labour-intensive exports	Inflows of FDI seeking natural resources and cheap labour (food, textiles, etc.)
2. Investment-driven	The above, plus capital-intensive exports	Inflows of FDI to durable consumer and intermediate goods (consumer electronics. automobiles, etc.) Outflows to factor intensive industries
3. Innovation-driven	The above, plus capital goods and R & D-intensive exports	Inflows to capital equipment and R & D-intensive activities (machine tools). Outflows to investment-intensive industries
4. Wealth-driven	Loss of international competitiveness	

which initiate production in an import-substituting environment and then gradually become more internationally competitive. Outward foreign direct investment by local groups in the factor-intensive activities they have come to dominate is directed to other developing countries which offer more competitive advantages in these factors, while inward foreign direct investment is registered in the above-mentioned capital-intensive activities. Compared with the first stage, the second stage is characterized by much greater national value-added, rising real wage rates, and increasing technological sophistication of local manufacturing operations.

The third stage, based on innovation, is reached by very few developing countries. Japan might be considered the Asian leader in this respect. Here, technology becomes the primary element in determining competitiveness in the fields of capital equipment (machine tools) and research and development-intensive activities (computers, semiconductors), and over time such technology is increasingly locally-generated rather than transferred from the exterior. As foreign technology is accessed, assimilated, adapted, and eventually improved upon, new more technologically-sophisticated exports are added to the existing (but less and less dynamic) ones based on factors and investment. Outward foreign direct investment is directed to countries offering relatively more competitive advantages in the investment-driven industries in which local groups have become efficient, while inward foreign direct investment arrives to take advantage of technology-driven or innovation-intensive activities. As was the case in the transition from the first stage to the second one, local value-added grows, real wages rise and technological sophistication increases. The fourth stage, based on wealth, need not be referred to here as it does not yet fit the situation of the Asian countries; however, the loss of international competitiveness in this stage may be equated with the situation of Europe and the United States.

In the context of the foregoing conceptual framework, the "flying wild geese" scheme sees growth and technological progress in Asia in terms of the image of the arrow-shaped formation of migrating waterfowl, in which there is a lead goose which flies ahead of the flock and leads the way. In Asia, that role is played by Japanese industry, which is more technologically sophisticated and which, during the innovation-driven stage of competitive development, spins off investment-driven industries (intermediate and capital-intensive goods) to the more advanced of the developing countries of the region just as it did previously with labour-intensive manufacturing when it left the factor-driven stage of competitive development. In this sense, the newly industrializing Asian countries (Korea, Taiwan, Hong Kong and Singapore) occupy positions in the flying geese pattern immediately behind Japan. Certain members of the Association of South-East Asian Nations –the ASEAN Four (Indonesia, Malaysia, Philippines and Thailand)– follow by picking up the labour-intensive activities spun off by the Asian NICs. China might be considered to be further back in the flock, having picked up the most labour-intensive and least technologically-demanding assembly operations in which the ASEAN Four are currently losing relative competitiveness.

As can be appreciated, the operational element of this scheme is *the process of learning associated with technological development*, which begins with the transfer of the original foreign technology and passes through several successive stages –assimilation, absorption, diffusion, adaptation, institutionalization, generation and innovation– until the original technology (or an improved version of it) is again transferred, this time by the developing country which received it, to a relatively less technologically-advanced economy. Several countries of developing Asia have been particularly astute in employing export processing zones to begin the process of technology transfer which culminates in them challenging the original supplier of such technology on the international market.

The "flying wild geese" scheme, as applied to Asia by Fukusaku, among others (Fukusaku, 1992), demonstrates that some developing countries are capable of *consciously altering the structural nature of their integration into the international production system* in respect of their exports of manufactures by increasing the human capital- and technology-intensive nature of the latter and reducing their natural resource- and unskilled labour-intensive aspects. In this way, their industrialization process becomes centered on *technological upgrading*, which in turn provides a more sustained basis for that process and ensures a measure of local control over industrialization in the context of the new international industrial order.

The "flying geese" scheme suggests that if it is necessary to imitate others in order to gain a place in

the new international industrial order, then it is of the utmost importance to emulate a *successful* example. In the space of fifty years Japan graduated from being a textile producer to a textile machinery producer. In this regard, the Asian NICs and the ASEAN Four have demonstrated not only that they are astute imitators but that they are even becoming tough competitors for their Japanese mentor. One need look no further than the examples of Korean automobiles or Taiwanese computers.

2. A comparison with Latin America

The magnitude of the success of developing Asian industry in terms of international competitiveness is further highlighted by a comparison with the situation in Latin America. Data from the United Nations COMTRADE data base on exports of manufactures during the 1966-1989 period show that the share corresponding to developing countries rose from less than 13% to over 19% and that of the Asian NICs and the ASEAN Four together rose from less than 4% to over 12%, whereas that of Latin America declined from 5% to 4% over the same period. A look at the relatively more technologically-advanced industries, such as electrical machinery and electronic equipment (ISIC 383), non-electric machinery (ISIC 382) and transportation equipment (ISIC 384), is even more telling.

Over the same period, the share of developing Asian countries in total exports of manufactures in ISIC category 382 rocketed from under 2% to almost 21%, whereas that of Latin America did not surpass 2%. Obviously, the success of the developing Asian countries in the electronics industry has been phenomenal (Ernst and O'Connor, 1992; Mody, 1989). In the non-electrical machinery industry (ISIC 382), developing Asia's share of exports of manufactures rose from less than 1% to 9% between 1966 and 1989, whereas that of Latin America only advanced from slightly less than 1% to slightly more than 1%. In the transport equipment industry (ISIC 384), developing Asia increased its share of total exports from less than 1% to over 4% during that period, whereas Latin America's penetration of the market did not exceed 2% in 1989. Thus, not only did developing Asia's export performance greatly exceed that of Latin America but it was particularly marked in the more technologically-sophisticated industries that TNCs tend to dominate in the context of the new international industrial order.

Blomström (1990, pp. 2 and 5) has suggested that FDI flows to the manufacturing sector of developing countries have traditionally coincided with the industrial and trade policies being implemented by those countries. In that sense, it may be noted that Latin America originally opted for an inward-looking strategy and attracted foreign manufacturing investment (mainly US and European) into protected import-substituting activities, and in spite of efforts at export promotion it never really succeeded in convincing TNCs to export in significant volumes from their local operations. The Asian NICs, which were relative latecomers in terms of their industrialization process, made a clear transition from import-substituting industrialization toward more outwardly-focussed policies which, combined with the judicious use of free export processing zones, have resulted in more export-oriented (mainly Japanese) TNC operations. Kojima (1975) even went so far as to suggest that FDI came in pro-trade and anti-trade variants. The similarities and differences in the Japanese and US TNC operations in these two regions will be dealt with in section III below.

Relative FDI flows to Latin America boomed during the 1970s and it appeared that the region was being progressively incorporated into the global productive structure, although with hindsight it is clear that Latin American trade flows, especially exports, did not keep pace with FDI inflows. The import-substituting nature of the industrialization process, which depended for its dynamism on the local market, was sent reeling by the 1980s debt crisis. The Asian NICs, in contrast, saw their export-oriented industrialization process dovetail well, first, during the 1960s and 1970s with the expanding multilateral trade framework and the establishment of a regional supply network by Japanese TNCs, and later in the 1980s with surging US imports and an explosion of intraregional FDI primarily associated with the offshore Chinese network.[2] Thus, FDI flows to Asia boomed in the 1980s (IMF, 1992, p. 172) and the Asian NICs were progressively incorporated into the global structure of production.

As table 2 shows, a feature shared by foreign trade and FDI has been that the principal gains were registered by the Asian region in general and the Asian NICs in particular; however, in the case of FDI

[2] The Economist, 1991, p. 11, and 1992, pp. 21-24; CTC, 1991b; Whitmore and Hyun, 1989.

TABLE 2

FDI inflows, by area and period, 1970-1989
(Average annual inflows in millions of dollars and percentages)

	1970-1974	1975-1979	1980-1984	1985-1989	1970-1974	1975-1979	1980-1984	1985-1989
All market economies	**14 691**	**27 534**	**52 841**	**117 047**	**100.0**	**100.0**	**100.0**	**100.0**
a) Industrial economies	12 682	21 022	37 326	100 081	86.3	76.3	74.8	81.4
b) Developing country economies	2 009	6 512	15 515	16 966	13.7	23.7	25.2	18.6
i) Asia	673	1 422	4 907	12 449	4.6	5.2	9.3	10.6
Taiwan (included in China) [a]	...	...	530	2 487	...	...	1.0	2.1
Korea	77	71	71	580	0.5	0.3	0.1	0.5
Hong Kong	...	...	680	1 650	...	...	1.4	1.4
Singapore	213	390	1 387	2 690	1.4	1.4	2.6	2.3
Malaysia	210	442	1 131	799	1.4	1.6	2.1	0.7
Thailand	83	64	285	732	0.6	0.2	0.5	0.6
Philippines	4	110	39	389	0.0	0.4	0.1	0.3
ii) Latin America	1 588	3 574	5 434	5 655	10.8	13.0	10.3	4.8
Brazil	852	1 823	2 100	1 426	5.8	6.6	4.0	1.2
Mexico	413	790	1 499	2 178	2.8	2.9	2.8	1.9
Argentina	10	120	439	730	0.1	0.4	0.8	0.6
Colombia	34	72	398	559	0.2	0.3	0.8	0.5
Chile	-142	99	242	125	-1.0	0.4	0.5	0.1
Venezuela	-140	-64	120	81	-1.0	-0.2	0.2	0.1
iii) Africa	537	918	1 096	2 602	3.7	3.3	2.1	2.2
iv) Middle East	-19	275	323	547	-0.1	1.0	0.6	0.5
Turkey	58	52	65	271	0.4	0.2	0.1	0.2

Source: International Monetary Fund, Balance of Payments Tape. UNCTC estimates for Taiwan/China and Hong Kong.
[a] As this figure combines Taiwan and China it is not comparable to the trade statistics.

the Asian gains were not only superior to those of Latin America but also the increasing relative incorporation of the Asian region coincided with an increasingly marginal position for Latin America, especially as of 1985. From the point of view of FDI inflows as a percentage of world totals, Latin America and developing Asia traded places over the 1970-1989 period. The developing countries in general became more marginal in terms of global foreign direct investment flows, with their share dropping from 25% to 19% during the course of the 1980s, but the Asian region actually increased its share from 5% to 11% over the 1970-1989 period, and those gains were concentrated mainly in the Asian NICs. The Latin American region saw its share contract from 11% to less than 5% during the same decade, after reaching a peak of 13% in 1975-1979, and it represented the most rapidly marginalized of all the developing areas.

Clearly, developing Asia and Latin America have had radically different experiences as regards their processes of industrialization, the international competitiveness of their manufactures and the nature of their incorporation into the new international industrial order. The image of flying geese and sitting ducks is a particularly appropriate one in the sense that the flying geese formation suggests order and direction. Moreover, viewed from the point of view of vulnerability to predators or hunters, the flying geese are well beyond the range of most hunters, whereas a duck quietly resting on the water usually represents a defenceless target with little hope of escape.

Having associated developing Asian industry with the image of flying geese and Latin American industry with that of sitting ducks, it is necessary to identify the factors which account for those different characterizations. Below, we suggest that the *national origin* of foreign direct investment (also considered as the source of foreign technology) and the *form* of FDI or technology transfer are critical explanatory factors.

III

The source and form of FDI and technology: their importance for international competitiveness

A first factor which needs to be explicitly taken into account in each case is the nationality (or country source) of the principal foreign investors and providers of foreign technology. Detailed and comparable information on the operations of European TNCs does not exist, therefore the present analysis will be limited to the operations of US and Japanese TNCs.

1. Characteristics of the activities of United States TNCs in Latin American industry

Historically, United States (and European) TNCs have dominated the foreign direct investment flows and technology transfers to Latin America, while more recently Japanese TNCs have come to dominate those going to the Asian NICs (CTC, 1992, and CTC, in the press). Given that the subsidiaries of United States TNCs were designed primarily to service the import-substitution needs of the local economy or, to a lesser extent, the processed raw material needs of the US TNCs, exports of manufactures were not a principal feature of such operations. While it is true that United States TNCs were responsible for a growing share of the exports of manufactures from Latin America, in general export propensities were low due to the preference for local sales, which were usually more profitable, and the relative inefficiency of those operations. United States TNCs dominated wide areas of the Latin American manufacturing sector (Newfarmer and Mueller, 1975), especially chemicals and machinery, and the limited efficiency of their operations generally prevented them from serving as significant competitive stimuli for national enterprises, especially from an export perspective (Jenkins, 1990, p. 218; Blomström, 1990).

While Latin American governments tended to cede the more technologically sophisticated industries to TNCs (machinery, chemicals, for example), believing that the latter would provide the necessary technology, they often obliged TNCs to take on local partners in certain specific activities (e.g., petrochemicals, auto parts, computer equipment, etc.). The conversion of import-substituting industries to export activities has become an urgent need for United States TNCs operating in Latin America since the debt crisis exploded in the 1980s. The degree of success attained in this is not as yet well-known, apart from the fact that trade liberalization policies have been found to be much slower than expected in provoking structural adjustment at the company level (Papageorgiou, Choksi and Michaely, 1990; Ten Kate, 1992).

2. Characteristics of Japanese TNCs in the industry of developing Asia

The impact of Japanese TNCs on the Asian NIC manufacturing sector appears to have been quite different. The Japanese TNCs seem to have selected their foreign investment and technology targets primarily in terms of factors related to international competitiveness rather than simply the size of the national market. To a significant extent, Japanese TNCs were transferring Japanese operations which had lost competitiveness to lower-wage areas abroad, as well as establishing low-cost sourcing centres to provide components for vertically integrated international industries. Given the small size of most developing Asian local markets, an export orientation was central to the decision-making process regarding investment and technology transfer. Incentives in the form of free export processing zones stimulated this transition.

Majority-owned Japanese operations in the zones usually generated a significant amount of subcontracting activities for local enterprises (Sato, 1986; Minato, 1986). To the extent that the national market came to interest these Japanese investors, joint ventures with local partners often proliferated. Japanese foreign direct investment was clearly an important element in relocating production within the

region in response to shifts in competitive advantage (United Nations, 1991, p. 86), but the most important feature was that *national* companies were driving those economies (CTC, 1992; *The Economist*, 1991, p. 11): especially local companies contracted as suppliers to Japanese TNCs. When Japanese TNCs lost competitive advantage, the Asian NICs were able to meet the cost and quality requirements demanded by the Japanese firms, and that served as a strong stimulus to consolidate a solid export-oriented process of industrialization. Behind the Asian NICs, the ASEAN Four stood waiting for opportunities, not only in labour-intensive industries but also in others in which their advances in technological upgrading became a factor in improving their international competitiveness (see, for example, Dahlman and Brimble, 1990).

Rather than making a simple comparison of the Latin American operations of United States TNCs with the Asian operations of Japanese TNCs, it has been considered more appropriate to concentrate on the more technologically-advanced operations (machinery and transport equipment) of *both* United States and Japanese TNCs, especially those with subsidiaries in both Latin America and Asia. It was felt that this would provide a clearer picture of the nature of the international competition at the technological frontier in so far as it involved developing countries. Table 3 provides a first approximation in this respect.

3. The situation in more technologically sophisticated industries

The information contained in table 3 provides a snapshot of the changes which took place during the 1980s in the more technologically complex activities of the manufacturing sector. It will be seen that while the 1982 stock of United States FDI in the manufacturing sector in general and in the machinery and transport equipment industries in particular was larger in volume (US$77 billion compared to US$20 billion) than that of Japan, the more technologically complex industries were of similar relative importance (around 38% of the total for the manufacturing sector) in terms of the structure of FDI stocks. The United States FDI was more centered on general machinery (13.4%), while that of Japan was more focussed on electrical equipment (14.4%). A similar concentration (around 14%) was encountered in the transport equipment industry. By 1989, however, great changes had taken place. The stock of United States FDI (US$156 billion) was still very superior to that of Japan (US$66 billion), but the Japanese FDI was expanding faster.

The composition of United States FDI did not change significantly during this period (flows were small compared to the large stock), but Japanese FDI showed rapid specialization in the machinery and transport equipment sectors, considerably outpacing the United States FDI in relative terms. In other words, the Japanese FDI over this period was considerably more dynamic in terms of its expansion (assisted after 1985 by a strongly appreciating yen) and its specialization in technologically sophisticated sectors (which increased from 36.5% to 48% of the total stock of FDI in the manufacturing sector).

Of special interest is the regional orientation of United States and Japanese FDI during the 1980s in these same industries. The table shows that the stock of United States FDI, historically centered on the European Community (43.4% in 1982), Canada (24%) and Latin America (18%), had changed somewhat by 1989. Relative increases occurred in the cases of the European Community (to 48%), Japan (from 2.4% to 6.4%) and developing Asia (from 2.7% to 4.3%), whereas a minor relative decline took place in the case of Canada and a dramatic decline occurred in that of Latin America (from 18% to 13.7%). The bulk of United States FDI remained focussed on the European Community and Canada, but the Asian region (Japan plus developing Asia) was apparently close to displacing the Latin American region as a target of FDI from United States TNCs operating in the manufacturing industry. In terms of industrial specialization in the machinery and transport equipment sectors, the biggest changes concerned new FDI in the transport equipment sector in Europe and Japan and the electrical equipment industry in developing Asia. Thus, even though the new inflows were relatively small compared with the large stock of FDI in the case of the United States TNCs, some alterations in its geographical distribution could be perceived during the 1980s.

The Japanese TNCs, however, were much more dynamic with their manufacturing sector FDI during the 1983-1989 period, and their regional focus was almost exclusively on the North American market, which rose from 27% to account for 51% of the total Japanese stock of FDI in the manufacturing sector. Developing Asia, which was previously the centre of the nascent FDI network with one-third of the total

TABLE 3

Comparison of growth and regional distribution of United States and Japanese foreign direct investment (FDI) in the manufacturing sector, 1982-1989

	European Community		North America [a]		Japan [b]		Latin America		Developing Asia		All countries	
	1982	1989	1982	1989	1982	1989	1982	1989	1982	1989	1982	1989
1) US FDI (US$ billions)	**33.3**	**74.9**	**18.3**	**32.3**	**1.8**	**10.0**	**13.8**	**21.3**	**2.1**	**6.7**	**76.7**	**155.7**
General machinery (non-electric)	7.4	16.4	1.9	3.3	[c]	2.6	1.7	2.8	0.2	0.8	13.4	27.1
Electric equipment	2.5	4.1	1.3	2.2	0.1	1.2	1.0	1.1	0.9	2.7	6.7	11.9
Transport equipment	3.4	9.2	3.8	7.7	...	2.3	1.7	3.2	[c]	0.3	10.1	23.5
2) US FDI (percentage)	**43.4**	**48.1**	**23.9**	**20.7**	**2.3**	**6.4**	**18.0**	**13.7**	**2.7**	**4.3**	**100**	**100**
General machinery (non-electric)	9.6	10.5	2.5	2.1	[c]	1.7	2.2	1.8	0.3	0.1	17.4	17.4
Electric equipment	3.3	2.6	1.2	1.4	0.1	0.8	1.3	0.7	1.1	1.8	8.8	7.6
Transport equipment	4.4	5.9	5.0	4.9	...	1.5	2.2	1.4	[c]	0.2	13.2	15.1
3) Japanese FDI (US$ billions) [b]	**1.4**	**7.9**	**5.2**	**33.5**	**-**	**-**	**3.9**	**5.6**	**6.5**	**15.6**	**19.5**	**66.1**
General machinery (non-electric)	0.2	1.8	0.5	4.0	-	-	0.3	0.4	0.4	1.6	1.4	7.9
Electric equipment	0.3	2.0	1.5	8.7	-	-	0.3	0.5	0.7	3.3	2.8	14.7
Transport equipment	0.2	1.3	0.8	4.5	-	-	0.6	1.1	0.5	1.3	2.9	9.0
4) Japanese FDI (percentage)	**7.2**	**12.0**	**26.7**	**50.7**	**-**	**-**	**20.0**	**8.5**	**33.3**	**23.6**	**100**	**100**
General machinery (non-electric)	1.0	2.7	2.6	6.1	-	-	1.5	0.6	2.1	2.4	7.2	12.0
Electric equipment	1.5	3.0	7.7	13.2	-	-	1.5	0.8	3.6	5.0	14.4	22.2
Transport equipment	1.0	2.0	4.1	6.8	-	-	3.0	1.7	2.6	2.0	14.9	13.6

Sources: United States data: US Department of Commerce, *US Direct Investment Abroad: 1982 Benchmark Survey Data*, Washington, D.C., December 1985 and *Survey of Current Business*, vol. 70, No. 8, August, 1990. Japanese data: Kerai Koho Center, *Japan 1992: An International Comparison*, Tokyo 1992 and *Japan 1984: An International Comparison*, Tokyo, 1984.

[a] In the case of US FDI North America signifies Canada.

[b] The dates of the Japanese figures are March 1984 and March 1990.

[c] Information not disclosed.

for manufacturing suffered a relative decline, with its share falling to 24%, while the Latin American region saw its share of the stock of FDI nosedive from 20% to 8.5%. Aside from the tremendous expansion in the North American market, only the European Community enjoyed an important relative increase (from 7% to 12%). With respect to industrial specialization in the machinery and transport equipment areas, the biggest increases were registered in the electrical equipment industry in North America (from 7.7% to 13.2%), developing Asia (3.6% to 5%) and the European Community (1.5% to 3%); the general machinery sector in North America (2.6% to 6.1%) and Europe (1% to 2.7%); and the transport equipment industry in North America (4.1% to 6.8%) and the European Community (1% to 2%). Thus, Japanese FDI in the manufacturing sector was considerably more dynamic than that of the United States, and as well as specializing increasingly in technologically more complex activities, it focussed progressively on the principal developed country markets of the Triad during the 1980s.

A common feature of the regional specialization of both United States and Japanese FDI during the 1982-1989 period was that Latin America's position became more marginal and it was progressively displaced by developing Asia. This was particularly so in the electrical machinery sector. More detailed information on the international aspects of United States and Japanese TNC affiliates operating in these

regions and their significance within the framework of the overall TNC networks is contained in table 4.

Before analyzing the data contained in that table, however, it should be noted that while relatively good and consistent information has become available on the nature and structure of United States and Japanese TNC activities that information is still far from perfect.[3] The information is collected by national authorities for different purposes, and while the most detailed United States data deal only with majority-owned foreign affiliates, the Japanese information includes all associates with more than 10% shareholding by the headquarters company or subsidiaries.[4] Fortunately, the Japanese TNC network is more prone than the United States one to employ joint ventures and minority holdings (Whitmore and Hyun, 1989). A consequence of this, however, is that the United States minority shareholdings in important areas, such as the Japanese automotive industry, are not included in the tables on sales. Also, the coverage of the Japanese survey is not nearly as complete as that for the United States. The 1989 version incorporated less than 65% of overall sales of manufactures, and reporting by the TNCs producing transport equipment was particularly low (42% of sales). Furthermore, the United States data provide information only for imports from the United States itself, while the Japanese figures provide information on imports both from Japan and from other sources. Nevertheless, despite the statistical problems involved the "benchmark surveys" of the United States Department of Commerce and the Japanese Ministry of International Trade and Industry represent the most comprehensive sources of comparative information on this subject.

With regard to the manufacturing sector as a whole, the information contained in table 4 indicates, first and foremost, that Latin America *never* represented a particularly important element of Japanese TNC operations (only 8% of local sales and exports in 1983) whereas the developing Asia region did (35 % of local sales, over half of all exports, and almost 40% of all imports). Second, during the 1980s Latin America became even less important to Japanese TNCs (3% of overall sales) while the developing Asia region retained a very significant role (29% of overall sales, over one-half of exports and one-quarter of all imports in 1989) in spite of the fact that flows were increasingly concentrated on the North American market during that decade. Third, it can be appreciated from these figures that the Japanese TNCs established regional supply networks and export platforms in developing Asia. Foreign trade played a fundamental role in these operations, not only as regards trade with Japan but also as regards exports to and imports from third parties. Developing Asia represented a core element of the international expansion of Japanese TNCs. Latin America played a marginal and declining role.

With regard to the operations of United States majority-owned foreign affiliates in the manufacturing sector as a whole, it can be stated that both Latin America and developing Asia have played relatively minor roles in their overall operations, although historically the place of Latin America has been considerably more important than that of developing Asia. Sales from their Latin American network were five times the value of those in developing Asia in 1977, and represented 16% of all local sales (but only 4% of all exports of manufactures). During the 1977-1982 period the relative importance of the Latin American region and the local-sales-centered nature of the operations of United States TNCs in that region was accentuated, reaching 19% of all local manufacturing sales (but only 5% of all exports). Between 1982 and 1989 the Latin American operations of United States TNCs became more marginal, dropping to only 12% of all local sales, although they did change in nature by becoming somewhat more export-oriented than previously (providing 6% of all exports of manufactures) and by beginning to serve more as sourcing centres for United States TNCs (supplying 9% of all exports of manufactures of these United States TNCs to the United States market), although exports to third parties declined. In spite of these changes, however, the Latin American operations of majority-owned United States TNCs did not come to represent a significant supply network nor an export platform of note.

[3] Among other analyses of the problems associated with FDI data, see OECD, 1987; Stekler and Stevens, 1991; US Department of Commerce, 1988; and Patterson, 1990.

[4] Three categories of association of local firms with transnational corporations can usefully be distinguished, according to the share of foreign capital in their equity: i) 100% foreign capital (wholly-owned subsidiaries); ii) 51% to 99% foreign capital (majority foreign-owned affiliates); and iii) 10% (or 25%) to 50% foreign capital (associates or majority local-owned affiliates). The differing levels of participation of foreign capital have important implications with regard to the control of local firms. The first two categories are sometimes combined to form a single category of foreign-controlled firms.

TABLE 4

Japanese and United States TNC affiliates: Comparative analysis of international aspects in the manufacturing sector by region, 1977, 1982 and 1989

	Japanese affiliates				United States majority-owned foreign affiliates					
	1982		1989		1977		1982		1989	
	US$ millions	% Ind. total	US$ millions	% Ind. total	US$ millions	% Ind. total	US$ millions	% Ind. total	US$ millions	% Ind. total
A. All manufacturing										
Latin America (total)	**2 011**	**8**	**3 081**	**3**	**24 217**	**12**	**39 506**	**15**	**47 539**	**9**
1. Local Sales	1 480	8	2 154	3	21 876	16	34 814	19	37 363	12
2. Exports	531	8	927	4	2 341	4	4 692	5	10 176	6
To home country	(229)	(8)	(335)	(4)	(874)	(5)	(1 855)	(7)	(6 412)	(9)
To others	(302)	(8)	(592)	(5)	(1 467)	(3)	(2 837)	(4)	(3 764)	(3)
3. Imports	203	3	295	1						
From home country	(187)	(3)	(119)	(...)	(2 644)	(11)	(4 379)	(13)	(8 577)	(13)
From others	(16)	(1)	(176)	(3)						
Developing Asia (total)	**9 920**	**40**	**29 533**	**29**	**5 125**	**3**	**9 933**	**4**	**24 647**	**5**
1. Local Sales	6 585	35	18 877	23	2 204	2	2 550	1	10 787	3
2. Exports	3 335	51	10 654	51	2 921	5	[a]	[a]	13 861	8
To home country	(1 107)	(39)	(4 669)	(57)	[a]	[a]	(4 060)	(15)	(8 535)	(13)
To others	(2 227)	(61)	(5 978)	(47)	[a]	[a]	(1 894)	(3)	(5 326)	(5)
3. Imports	2 655	38	8 246	25						
From home country	(1 845)	(31)	(6 381)	(23)	(935)	(4)	(2 771)	(8)	(4 524)	7
From others	(1 810)	(70)	(1 865)	(36)						
B. Non-electrical machinery										
Latin America (total)	**84**	**17**	**241**	**4**	**1 899**	**7**	**3 315**	**8**	**5 768**	**6**
1. Local Sales	70	18	230	5	1 649	9	1 705	11	4 102	7
2. Exports	14	13	10	1	250	2	611	4	1 666	4
To home country	(9)	(16)	(1)	(...)	(28)	(2)	(104)	(3)	(819)	(4)
To others	(4)	(8)	(10)	(1)	(222)	(2)	(507)	(4)	(847)	(4)
3. Imports	14	11	14	1						
From home country	(14)	(11)	(6)	(...)	(195)	(6)	(354)	(7)	(784)	(7)
From others	(...)	(...)	(8)	(6)						
Developing Asia (total)	**311**	**63**	**1 396**	**25**	**243**	**1**	**796**	**2**	[a]	[a]
1. Local Sales	224	59	794	19	71	...	[a]	[a]	[a]	[a]
2. Exports	87	81	602	42	172	2	[a]	[a]	[a]	[a]
To home country	(47)	(82)	(254)	(88)	(99)	(8)	(312)	(10)	[a]	[a]
To others	(40)	(78)	(348)	(30)	(73)	(1)	(24)	(2)	[a]	[a]
3. Imports	82	31	396	20						
From home country	(81)	(65)	(363)	(20)	(51)	(2)	(187)	(4)	(907)	(8)
From others	(1)	(...)	(33)	(26)						
C. Electrical equipment										
Latin America (total)	**203**	**3**	**812**	**2**	**1 991**	**11**	**2 674**	**11**	**3 598**	**10**
1. Local Sales	200	4	771	3	1 649	13	2 065	14	2 219	10
2. Exports	3	...	406	4	341	5	608	6	1 379	9
To home country	(...)	(...)	(...)	(...)	(260)	(12)	(507)	(11)	(1 272)	(18)
To others	(3)	(...)	(400)	(7)	(81)	(2)	(101)	(2)	(107)	(1)
3. Imports	34	1	10	1						
From home country	(34)	(1)	(68)	(1)	(348)	(15)	(927)	(20)	(2 054)	(27)
From others	(...)	(...)	(33)	(1)						

TABLE 4 *(Concluded)*

	Japanese affiliates				United States majority-owned foreign affiliates					
	1982		1989		1977		1982		1989	
	US$ millions	% Ind. total	US$ millions	% Ind. total	US$ millions	% Ind. total	US$ millions	% Ind. total	US$ millions	% Ind. total
Developing Asia (total)	**2 308**	**32**	**10 390**	**27**	**2 306**	**12**	**5 099**	**20**	**9 217**	**25**
1. Local Sales	846	15	3 888	14	[a]	[a]	621	4	2 958	13
2. Exports	1 462	86	6 502	72	[a]	[a]	4 478	44	6 259	41
To home country	(519)	(86)	(2 798)	(89)	[a]	[a]	(3 325)	(72)	(3 847)	(55)
To others	(943)	(86)	(3 704)	(63)	[a]	[a]	(1 153)	(20)	(2 412)	(29)
3. Imports	642	21	3 120	20						
From home country	(537)	(18)	(2 412)	(19)	(699)	(29)	(2 026)	(43)	(2 767)	(36)
From others	(104)	(74)	(707)	(26)						
D. Transport equipment										
Latin America (total)	**574**	**11**	**201**	**1**	**5 249**	**11**	**7 558**	**13**	**9 929**	**9**
1. Local Sales	546	12	191	1	4 867	16	6 887	21	6 677	11
2. Exports	531	8	9	...	382	2	671	3	2 839	6
To home country	(229)	(4)	(-)	(-)	[a]	[a]	(432)	(4)	(413)	(10)
To others	(302)	(11)	(9)	(...)	[a]	[a]	(239)	(2)	(3 565)	(2)
3. Imports	111	8	20	2						
From home country	(110)	(9)	(20)	(...)	(2 644)	(11)	(4 379)	(13)	(8 577)	(13)
From others	(1)	(2)	(...)	(3)						
Developing Asia (total)	**1 479**	**30**	**6 008**	**28**	[a]	[a]	[a]	[a]	**1 727**	**2**
1. Local Sales	1 282	28	5 534	28	[a]	[a]	[a]	[a]	1 608	3
2. Exports	198	56	474	27	[a]	[a]	234	1	119	...
To home country	(82)	(57)	(97)	(17)	[a]	[a]	(155)	(1)	(69)	...
To others	(116)	(55)	(377)	(32)	[a]	[a]	(79)	(1)	(50)	...
3. Imports	362	28	1 554	18						
From home country	(328)	(26)	(1 537)	(18)	(11)	(1)	(57)	(...)	(95)	(...)
From others	(34)	(68)	(17)	(25)						

Sources: United States Department of Commerce, *Benchmark Surveys on United States Direct Investment Abroad, 1977, 1982 and 1989*, Washington, D.C., April 1981, December 1985 and October 1991. Japan, Ministry of International Trade and Industry, *Benchmark Surveys on Japanese Companies' Foreign Activities: Compendium on Foreign Activity Data*, Tokyo, 1986 and 1991.
[a] Information not disclosed.

The operations of United States TNCs in developing Asia in 1977 were of marginal importance as they represented only 2% of all local sales and 5% of all exports of manufactures by United States TNCs. Even so, export sales by these United States TNCs in developing Asia in that year already surpassed those generated by their Latin American operations. By 1989, their overall sales had about quintupled in value (now equivalent to about one-half of those from the Latin American operations) and export sales had jumped to 8% of all exports by these firms and 13% of all of their exports to the United States. Thus, although the Latin American operations of the majority-owned United States TNCs remained more important in terms of total sales they were losing ground within the global corporate framework. The operations in developing Asia were increasing in importance, especially in respect of exports and particularly exports to the North American market, and developing Asia was becoming a sourcing centre for United States TNCs. As we shall see below, the central activity of the United States TNC network in developing Asia was in the very dynamic electrical equipment industry.

In other words, Latin American operations were of growing importance to United States TNCs as long as those corporations valued local sales as their principal activity, but their operations in the region declined in relative importance as the TNCs began to give increasing importance to export activities,

although it should be emphasized that some adjustments were visible by 1989 in terms of the increase in their export activities in Latin America.

In developing Asia, in contrast, United States TNCs clearly focussed their operations on the sourcing and trading of electrical equipment.

We thus see that the Japanese TNCs have very much focussed on developing Asia and that their operations involve high levels of foreign trade, which is consistent with the view that their primary purpose is one of component assembly and sourcing. The United States TNCs, which generally rely less on production facilities in developing countries than those in developed nations, had tended to concentrate these activities in the Latin American region, essentially for serving the local market. This difference between the manufacturing operations of Japanese and United States TNCs in developing regions began to lose some of its relevance in the 1980s as the Latin American activities of United States TNCs lost importance within the corporate network and began to change in nature, and as United States TNC activities in developing Asia gathered steam. This becomes clearer if we look at the situation of the more technologically sophisticated industries (see table 4).

It should be emphasized from the outset that the Latin American operations of Japanese TNCs in the machinery and transport equipment sector are of virtually no global significance, even taking into account obvious under-reporting in the transport equipment sector. This is reflected by the fact that Japanese TNCs, the most dynamic foreign direct investors in globalizing industries during the 1980s, paid almost no attention to Latin America. With regard to the manufacturing activities of Japanese TNCs in developing Asia, these were heavily concentrated in two areas of relative technological sophistication: electrical equipment (sales of US$10.4 billion, representing 27% of total sales by Japanese TNCs in that industry in 1989) and transport equipment (US$6 billion in sales, representing 28% of all sales by Japanese TNCs in the industry in that year). Japanese TNC operations in the non-electrical equipment sector in developing Asia might also be mentioned (although sales in 1989 only came to US$1.4 billion), because of the significant FDI which has taken place there during the 1980s (see table 3).

The operations of majority-owned United States TNCs in these two regions were concentrated in only three activities of relative technological sophistication: transport equipment in Latin America (sales of US$9.9 billion, representing 9% of all sales by United States TNCs in that industry in 1989), electrical equipment in developing Asia (sales of US$9.2 billion, corresponding to 25% of all sales of United States TNCs in that field in 1989) and non-electrical equipment in Latin America (sales of US$5.8 billion, equivalent to 6% of the total sales of United States TNCs in that industry in the year in question).

Compared to the Japanese TNC operations in the same sectors in these two regions, two features of United States TNCs stand out:

First, the most important Latin American fields of activity of majority-owned United States TNCs –transport equipment and non-electrical equipment– are activities of relatively minor importance which are tending to become more marginal within the global corporate structure (6%-9% of total sales by United States TNCs operating in those sectors in 1989, compared with 8%-13% in 1982). In contrast, the electrical equipment activities of United States TNCs in developing Asia are already very significant (25% of all sales by United States TNCs in that sector in 1989) and are expanding fast (up from 12% of total sales in 1977). In general, United States TNCs have been losing interest in Latin America.

Second, the high foreign trade component of the electrical equipment activities of United States TNCs in developing Asia, which accounted for over 40% of the exports of United States TNCs in that industry in 1989, indicates that United States TNCs are not necessarily bound to serve only the local market, as has been their traditional role in Latin America. Although the levels of foreign trade are considerably lower than the regional supply network in electrical equipment established by Japanese TNCs in developing Asia, United States TNCs have also created a kind of supply network to feed the North American market and, to a lesser extent, third countries.

At the same time, a glance at the changes taking place in the Latin American operations of United States TNCs in this sector indicates that while local sales have declined due to the recession in Latin America during the 1980s, the level of exports has increased substantially (from 6% to 9% of total exports of United States TNCs operating in this industry between 1982 and 1989), especially in the case of exports to the United States market (from 11% to 18% of such exports by United States TNCs in this industry over the same period). United States TNCs are trying to adapt their Latin American operations to

the new international industrial order in which regional supply networks represent a important element in international competitiveness. This is an important advance for United States TNCs; nevertheless, it should be pointed out that the exports of electrical equipment by their Latin American operations to the United States market consist primarily of consumer electronics, while the exports of electrical equipment by their developing Asian operations to the United States market are mostly computers and associated products. Thus, there are certain differences in terms of technological sophistication within the same industry between the United States TNC operations in developing Asia and those in Latin America, on top of the already mentioned differences relating to dynamism and potential for better integration into the global corporate networks of these TNCs.

Clearly, then, the source of FDI and technology is a very important element in determining the nature of the integration of developing country industry into the new international industrial order. Japanese FDI and technology in developing Asia has produced more positive effects than the United States variety in Latin America, as the above-mentioned differences clearly show.

4. The importance of the form of FDI and technology transfer

In terms of the form of FDI and technology transfer, two examples are particularly relevant.

i) *The electrical machinery and electronic equipment industry*

The manufacturing side of the microelectronics revolution has indisputably been centered on developing Asia, and that region has come to serve as a sourcing centre and export platform for the TNCs operating in that industry, both Japanese and United States. This suggests that in equal conditions the more recent behaviour of Japanese and United States TNCs has been convergent in terms of regional manufacturing operations in certain developing countries. Moreover, the Latin American operations of United States TNCs active in this sector are apparently trying to adapt by converting from local-market-centered operations to component manufacture and final product assembly for export to the United States market.

It must be emphasized, however, that there are several critical differences in the behaviour of United States and Japanese TNCs in their respective regional networks, and those differences heavily influence the availability of opportunities and the benefits going to the developing countries incorporated into or associated with those different TNC regional networks. For example, the United States TNC network is based more directly on *majority* ownership of local operations, whereas the Japanese TNCs use a good deal of *minority* and non-equity ownership options, especially *licensing or subcontracting relationships*. The licensing or subcontracting relationships used by Japanese TNC regional networks have been found to be of significance for national firms in the developing countries used for sourcing, as they facilitate their technological upgrading within a national industrial strategy which pursues incorporation into the new international industrial order, particularly from the point of view of trade and investment flows.

With regard to this topic it may be noted that while the four Asian NICs can all be considered successes in furthering the incorporation of their economies into that new order by way of trade and investment flows, especially in the electronics industry, there are certain distinctions which should be made. Hong Kong and Singapore have followed what could be termed a TNC-*centered* strategy, while Korea and, to a lesser extent, Taiwan have followed a TNC-*associated* one. Both variants began as low-cost assembly bases for export-oriented TNCs, often via export processing zones, but the Korean/Taiwanese variant went further than the Hong Kong/Singapore one by using domestic demand to assist national suppliers in graduating to the status of competitors with their own brand name products (Mody, 1989; *Business Week*, 1993).

In terms of the importance of TNCs for these two strategies, the Hong Kong/Singapore variant utilized foreign direct investment as a major element in domestic capital formation, reaching levels of 15.2% and 25.5% of such investment, respectively, during 1985-1987, while the levels for Taiwan and Korea were considerably lower, at 3.3% and 1.4%, respectively (CTC, 1992). While the proportion of the stock of FDI in the manufacturing sector which was channeled to the electronics sector was roughly similar for these NICs, at about one-third of the total (except for Hong Kong with 46%), the nature and national origin of this FDI differed considerably, and these differences held important consequences in terms of the national benefits from this foreign participation.

In general, FDI in this sector in Hong Kong and Singapore came primarily from the United States and usually took the form of majority-owned foreign affiliates. In Korea and, to a lesser extent, Taiwan, FDI in this sector came principally from Japan and was often in the form of minority capital participation and new forms of investment (Oman, 1984 and 1989; Germidis, 1980). For that reason, the principal electronics firms, by sales, with operations in Hong Kong (Digital, General Electric, Hewlett-Packard, Honeywell and IBM) and Singapore (Seagate, Philips and National Semiconductors) are usually subsidiaries of United States TNCs, whereas the most important electronics companies in Korea (Samsung and Goldstar) and Taiwan (Tatung, Sampo and Teco) are now national firms. The Korean/Taiwanese variant has been more successful in stimulating nascent industrial clusters which provide a firmer technological basis upon which national firms can sustain the catching up process (Ernst and O'Connor, 1992, chap. V; OECD, 1988). This would appear to be a useful, if difficult, strategy for developing countries which possess sufficient domestic demand to help nurture national champions through associations with TNCs which provide them with the requisite technologies.

The Asian NICs' success in the electrical equipment industry would appear to be one of the most pertinent examples for developing countries in respect of their incorporation into the new international industrial order in formation, because it is based on increased international competitiveness which has produced significant trade and investment flows. Notably, the Asian regional network centered on Japanese TNCs has provided some developing countries with significant opportunities to become more integrated into the international industrial system by taking advantage of the phase of Japanese foreign direct investment called "subcontracting-dependent, assembly-based industrialization" (Lawrence, 1992) and the assembly-transplanting stage of multinationalism (Ozawa, 1992, pp. 52-53).

The regional core network strategies of Japanese transnational corporations in the electrical and electronics industry now appear to follow a pattern of strong upstream (supply) linkages between Japan and Asian affiliates, which then serve the dual function of, firstly, selling finished goods to local and regional markets (import-substituting investments) and secondly exporting to affiliates in the Triad to support their own operations with low-cost inputs (rationalized investments) (CTC, 1991a; *The Economist*, 1993). This provides a relatively small group of developing countries with the opportunity to integrate their productive structure for the electronics industry more fully into the structure of the more dynamic elements of the international industry. High sales volumes and larger export markets have made possible the development of regional supply networks, with integrated operations in several Asian countries, supplying inputs to one another. Foreign direct investment by Asian NICs in this sector in the ASEAN Four and other developing countries is gaining strength (Whitmore, Lall and Hyun, 1989). Thus, some NICs have graduated from being merely suppliers of local TNCs to becoming authentic competitors in certain lines of electrical machinery and electronic equipment production, as suggested by the flying wild geese scheme.

ii) *The automobile industry*

Another relevant example of the importance of the form of FDI or technology transfer is that of the automobile industry. Information available for this industry highlights in particular the importance of this aspect and is another example of the clear differences between a TNC-centered Latin American industry and a TNC-associated Asian one. Here, the analysis will be limited principally to capital shareholding, as the more sinuous topics of subcontracting and other non-equity relations with suppliers escape the limits of the present article.

The data in tables 5 and 6 provide the relevant available information, although these data are from 1986 and do not include substantial Japanese automotive TNC investments in Asia which occurred after that date. Thus, table 5 shows that in 1986, only 12 major automotive TNCs possessed about 90% of the total TNC automobile production capacity in developing countries. About half of that production capacity was in the form of subsidiaries or majority-owned affiliates. The other half consisted of minority-owned affiliates or non-equity forms of association. Roughly speaking, that capacity was distributed more or less equally among Japanese, European and United States TNCs. The distinguishing feature was that the production capacity of United States and European TNCs operating in developing countries was primarily in the form of subsidiaries or majority-owned affiliates, whereas the Japanese capacity was almost exclusively in the form of minority-owned associations or non-equity relationships.

TABLE 5

Operations of automobile TNCs in developing countries, by form of investment, 1986
(Thousands of units)

	Majority-owned	Minority-owned	Non-equity	Total
Transnational corporation				
Mitsubishi	6.7	483.9	27.9	518.5
Volkswagen	482.6	14.3	6.5	503.4
General Motors	374.8	63.0	13.7	451.5
Ford	355.6	4.1	2.9	342.5
Fiat	168.5	74.9	44.3	287.7
Nissan	78.2	66.7	47.7	192.5
Mazda	9.5	115.9	43.5	168.9
Suzuki	-	98.9	36.3	135.2
Daimler Benz	48.4	60.1	12.0	120.5
Renault	56.6	26.6	25.3	108.5
Toyota	29.3	13.2	52.7	95.2
Chrysler	87.3	4.8	0.3	92.6
All others	11.3	179.5	158.9	349.7
Distribution by home region				
Japan	125.5	841.2	304.8	1 271.5
Europe	763.3	234.8	137.1	1 135.2
United States	800.2	129.8	30.0	959.9
Total	**1 689.0**	**1 205.8**	**471.8**	**3 366.6**

Source: Calculated from Charles Oman, "New Forms of Investment in Developing Country Industries", Paris, OECD, 1989, table 4.22, p. 201. See original table for definitions and explanatory notes.

TABLE 6

Operations of automobile TNCs in developing countries, by region of host country and form of investment, 1986
(Thousands of units)

	Latin America			Asian NICs		
	Majority-owned	Minority or non-equity	Total	Majority-owned	Minority or non-equity	Total
Transnational Corporation						
Mitsubishi	-	1.3	1.3	6.7	508.6	515.3
Volkswagen	482.6	5.3	487.9	-	8.5	8.5
General Motors	368.5	9.2	377.7	0.3	61.3	61.6
Ford	305.6	0.2	305.8	30.0	5.9	35.8
Fiat	168.0	71.4	239.4	-	29.4	29.4
Nissan	78.2	4.0	82.2	-	107.2	107.2
Mazda	-	13.7	13.7	9.5	144.9	154.4
Suzuki	-	1.0	1.0	-	133.4	133.4
Daimler Benz	48.4	1.5	49.9	-	69.6	69.6
Renault	54.1	26.2	80.3	-	8.9	8.9
Toyota	8.3	19.4	27.7	21.0	44.9	65.9
Chrysler	87.5	5.1	92.6	-	-	-
All others	8.2	52.9	61.1	2.5	226.5	229.0
Distribution by home region						
Japan	86.5	54.5	141.0	39.0	1 072.5	1 111.5
Europe	759.0	131.5	890.6	0.7	149.3	150.1
United States	763.9	25.0	788.9	30.3	127.4	157.6
Total	**1 609.4**	**211.2**	**1 820.5**	**70.0**	**1 349.2**	**1 419.2**

Source: Calculated from Charles Oman, "New Forms of Investment in Developing Country Industries", Paris, OECD, 1989, table 4-23, pp. 202-203. See original table for definitions and explanatory notes.

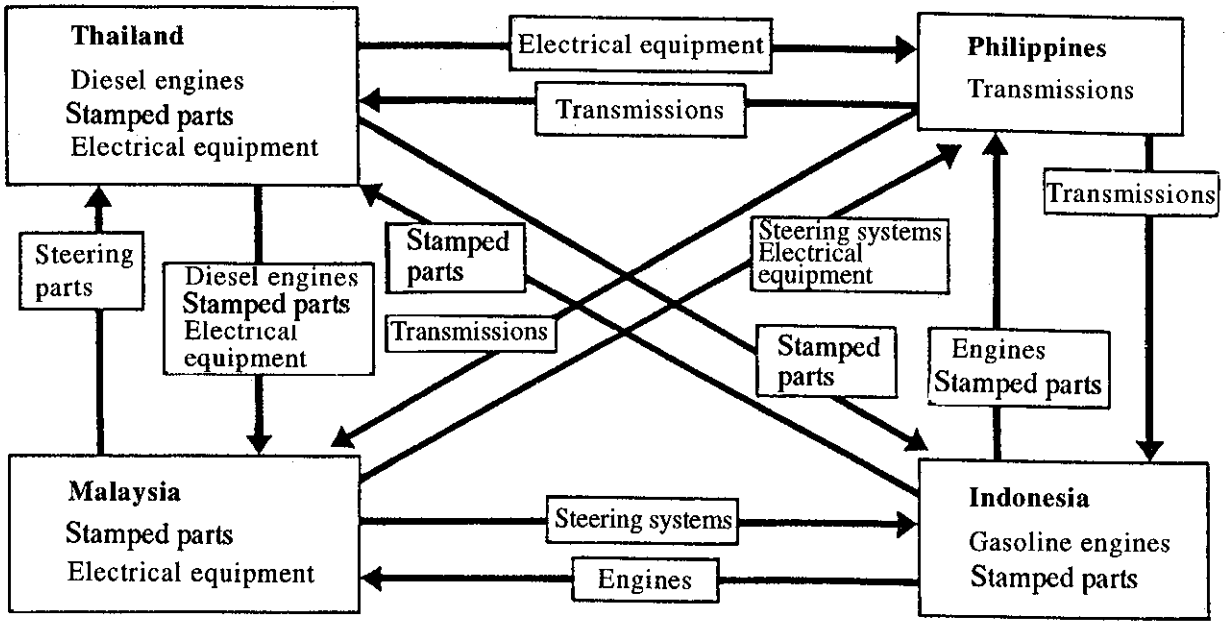
Table 6, which compares the Latin American situation to that of Asia, shows that the United States and European auto TNC production capacity in developing countries was very much concentrated (85%) in Latin America, while that of the Japanese auto TNCs was even more concentrated (89%) in Asia. More pointedly, most (88%) of the United States and European auto TNC capacity was in the form of subsidiaries or majority-owned affiliates, while that of the Japanese auto TNCs in Asia was almost exclusively via minority-owned associates or non-equity associations. These data reconfirm that the Latin American automobile industry can be categorized as TNC-centered, while that of developing Asia can be considered TNC-associated, and that this difference apparently holds important consequences for the predominant automotive industries in developing countries of these respective regions.

It must be reiterated that the source and form of TNC participation in the automobile industry in developing countries are not the only factors explaining the relative success of the developing Asia experience or the relative decline of the Latin American one. Moreover, significant differences exist within the Latin American region itself. The successful restructuring of the Mexican automobile industry represents a clear exception to this generalization linking relative economic performance to the form, origin and level of foreign participation. Subsidiaries of TNCs operating in Mexico exported over 340 000 vehicles to the United States in 1992 (AMIA, 1993, p. 33), and the Mexican autoparts industry (primarily motors) supplied 12% of all imports of automotive components to the United States market in 1989 (Bowring, 1990, p. 61). Nevertheless, one certain implication of this analysis is that the rest of the Latin American auto industry is in bad shape, apparently because it is a poor copy of the relatively less efficient United States and European auto TNCs and is in even more dire need of restructuring than its own progenitors. Troubled manufacturer-supplier relations also seem to hamper its ability to compete internationally (Bowring, 1990, chap. III).

In Asia, the Japanese auto TNCs' strategies have given rise to accelerated local processes of technological upgrading which have culminated, on the one hand, in productive efficiency and trade gains derived from specialization, as the case of Toyota suggests (figure 1), and on the other hand in the production of "developing Asian cars" such as Hyundai, Kia, etc.

FIGURE 1

Automobile operations of Toyota in four ASEAN countries



Source: "Part exchange", in *Far Eastern Economic Review*, 21 September 1989, p. 73.

Motor Trend magazine recently named a Hyundai model as one of the ten best autos imported into the United States. Some developing Asian auto TNCs have even invested in production facilities in the North American and European markets in order to obtain "insider status" in the global automotive industry.

These Asian "flying geese" show enviable competitive strength in their automotive activities. The Latin American automobile industry, however –excepting to a certain extent the Mexican component, which is being integrated into the North American auto industry– does not appear to enjoy any such advantages and is in serious danger of being severely damaged by the auto TNC shake-up (in terms of overcapacity) which is taking place at a global level. It has a "sitting duck" look about it.

IV

Final comments

It would be a gross exaggeration to claim that the very evident and significant differences in the industrial experiences of Latin America and developing Asia and the nature of their incorporation into the new international industrial order were produced exclusively by the transnational corporations in general and the origin and form of foreign direct investment and technology in particular. It would also be a gross over-simplification, however, to suggest that these factors were not central ones in the explanation of this position.

In a world in which decision-making power is shifting towards the major transnational corporations and away from governments, international market dynamics for specific products and the TNCs' corporate strategies for organizing global production will play an ever greater role in determining the spatial location of industry, transfers of technology and trade patterns. The developing countries are in a difficult position because the new situation allows transnational corporations to pick and choose among them. In a context of reduced bargaining power for developing country governments, factors affecting or associated with the relative international competitiveness of a national industry become determinants of a country's incorporation into the new international industrial order.

Within this new order, the source and form of foreign direct investment and technology, both past and present, heavily influence a developing country's chance of success. The experience of developing Asia, based in large part on Japanese FDI and technology, often in the form of minority participation, licensing, or supplier relationships as original equipment manufacturers, has produced a much higher relative level of international competitiveness for Asian industry than has the Latin American experience with primarily United States FDI and technology, usually in the form of subsidiaries or majority-owned affiliates. This is particularly so in the more technologically sophisticated industries, as the examples of the electrical machinery, electronic equipment and automotive sectors clearly show.

The national origin and form of foreign direct investment and technology have played an important role and had a very significant impact in the successes of developing Asian industry in mastering complex technologies, reaching impressive levels of efficiency of production through specialization, and penetrating discriminating international markets. The competitive advantages of developing Asia have attracted the most dynamic foreign investment and technology in the best form for providing opportunities for local industry to become better incorporated into the new international industrial order. In this manner, the Asian "flying geese" have adapted well to the new international industrial order.

Those same factors have likewise played an important role and had a significant impact in the difficulties encountered by Latin American industry. Less dynamic FDI and technology, within the context of a closed import substituting model of industrialization, produced inward-looking, inefficient and uncompetitive industry in the region. Technology transfer via subsidiaries or majority-owned affiliates did not produce significant learning experiences for

local industry in terms of the assimilation, adaptation and improvement of dynamic technologies. On the contrary, best-practice manufacturing in Latin America (including the subsidiaries of TNCs) is not only far behind the technological frontier but is often close to downright obsolescence. Higher levels of exports of manufactures today often come at the expense of national value added in the production process, because the crisis of the 1980s caused investment to stagnate or collapse in the region precisely at the time that technological upgrading was becoming the crucible for the incorporation of developing countries into the new international industrial order. In order to compete with flying geese, sitting ducks must first get airborne.

(Original: English)

Bibliography

AMIA (Asociación Mexicana de la Industria Automotriz) (1993): La industria automotriz terminal mexicana en 1992, *Boletín*, No. 325, Mexico City, January.

Blomström, M. (1990): *Transnational Corporations and Manufacturing Exports from Developing Countries*, New York, United Nations, United Nations Centre on Transnational Corporations (CTC). United Nations publication, Sales No. E.90.II.A.21.

Bowring, A. (1990): *The US Automotive Aftermarket: Opportunities and Constraints for Developing Country Suppliers*, Industry Series Paper No. 39, Washington, D.C., World Bank, June.

Business Week (1993): Taiwan: the arms dealer of the computer wars, New York, McGraw-Hill, Inc., 28 June.

Cantwell, J. A. and J.H. Dunning (1991): Multinational enterprises, technology and the competitiveness of European industries, *Aussenwirtschaft*, No. 46, Heft 1, Zürich, Verlag Rüger, April.

Chandler Jr., Alfred D. (1990): *Scale and Scope: the Dynamics of Industrial Capitalism*, Cambridge, MA, Harvard University Press.

CTC (1991a): *World Investment Report 1991. The Triad in Foreign Direct Investment*, New York. United Nations publication, Sales No. E.91.II.A.12.

——(1991b): Investment in Asia quintuples in the 80s, *Transnationals*, vol. 3, No. 3, New York, October.

——(1992): *World Investment Directory 1992. Asia and the Pacific*, vol. 1, New York. United Nations publication, Sales No. E.92.II.A.11.

——(in the press): *World Investment Directory 1993. Latin America and the Caribbean*, vol. 4, New York.

Dahlman, C. J. and P. Brimble (1990): *Technology Strategy and Policy for Industrial Competitiveness: a Case Study of Thailand*, Industry Series Paper No. 24, Washington, D.C., World Bank.

Encarnation, Dennis (1992): *Rivals Beyond Trade: America versus Japan in Global Competition*, New York, Cornell University Press.

Ernst, D. and D. O'Connor (1989): *Technology and Global Competition. The Challenge for Newly Industrialising Economies*, Paris, Organization for Economic Co-operation and Development (OECD), OECD Development Centre.

——(1992): *Competing in the Electronics Industry: the Experience of Newly Industrialising Economies*, Paris, OECD, Development Centre.

Far Eastern Economic Review (1989): Part exchange, 21 September.

Fukusaku, Kiichiro (1992): *Economic Regionalization and Intraindustry Trade: Pacific Asian Perspective*, Technical Papers, No. 53, Paris, OECD, OECD Development Centre.

Germidis, D. (ed.) (1980): *International Subcontracting. A New Form of Investment*, Paris, OECD.

IMF (International Monetary Fund) (1992): Asian developing countries record impressive growth, *IMF Survey*, vol. 21, No. 11, Washington, D.C., 25 May.

Japan, Ministry of International Trade and Industry (1986): *Benchmark Survey on Japanese Companies' Foreign Activities: Compendium on Foreign Activity Data*, Tokyo.

——(1991): *Benchmark Survey on Japanese Companies' Foreign Activities: Compendium on Foreign Activity Data*, Tokyo.

Jenkins, R. (1990): Comparing foreign subsidiaries and local firms in LDCs: theoretical issues and empirical evidence, *The Journal of Development Studies*, vol. 26, No. 2, London, Frank Cass & Co. Ltd.

Kerai Koho Center (1984): *Japan 1984: An International Comparison*, Tokyo.

——(1992): *Japan 1992: An International Comparison*, Tokyo.

Kojima, K. (1975): International trade and foreign investment: substitutes or complements, *Hitotsubashi Journal of Economics*, vol. 16, No. 1, Tokyo, Hitotsubashi University, June.

Lawrence, R.Z. (1992): An analysis of Japanese trade with developing countries, *UNCTAD Review*, No. 3, Geneva, United Nations Conference on Trade and Development (UNCTAD). United Nations publication, Sales No. E.91.II.D.21.

Minato, T. (1986): The Japanese system of subcontracting and interfirm communication, *Linkage Effects and*

Small Industry Development, Tokyo, Asian Productivity Organization.

Mody, A. (1989): *Institutions and Dynamic Comparative Advantage: Electronics Industry in South Korea and Taiwan*, Industry Series Paper No. 9, Washington, D.C., World Bank, Industry and Energy Department.

Mortimore, Michael (1992): A new international industrial order, *CEPAL Review*, No. 48 (LC/G. 1748-P), Santiago, Chile, Economic Commission for Latin America and the Caribbean (ECLAC), December.

Newfarmer, R. and W. Mueller (1975): *Multinational Corporations in Brazil and Mexico: Structural Sources of Economic and Non-Economic Power*, Report to United States Senate, Washington, D.C., U.S. Government Printing Office.

OECD (Organization for Economic Co-operation and Development) (1987): *Recent Trends in International Direct Investment*, Paris.

——(1988): *The Newly Industrializing Countries: Challenge and Opportunities for OECD Industries*, Paris.

——(1992): Technology and the Economy: The Key Relationships, Paris.

Oman, C. (1984): *New Forms of International Investment in Developing Countries*, Paris, OECD.

——(1989): *New Forms of Investment in Developing Country Industries: Mining, Petrochemicals, Automobiles, Textiles, Food*, Paris, OECD.

Ozawa, Terumoto (1992): Foreign direct investment and economic development, *Transnational Corporations*, vol. 1, No. 1, New York, United Nations, February.

Papageorgiou, D., A.M. Choksi and M. Michaely (1990): *Liberalizing Foreign Trade in Developing Countries: the Lessons of Experience*, Washington, D.C., World Bank, September.

Patterson, N. (1990): The world statistical discrepancy on foreign direct investment flows: a preliminary review (WPMCF2/4), Washington, D.C., IMF, 18 May, *mimeo*.

Porter, Michael (1990): *The Competitive Advantage of Nations*, New York, Free Press.

Sato, Y. (1986): Formation of the Japanese style subcontracting production system: historical perspective and socio-economic imperatives, *Linkage Effects and Small Industry Development*, Tokyo, Asian Productivity Organization.

Stekler, L.E. and G.V.G. Stevens (1991): *The Adequacy of US Direct Investment Data*, International Finance Discussion Papers No. 401, Washington, D.C., Board of Governors, Federal Reserve System, June.

Teece, David (ed.) (1987): *The Competitive Challenge: Strategies for Industrial Innovation and Renewal*, Cambridge, MA, Ballinger Publishing Co.

Ten Kate, A. (1992): Trade liberalization and economic stabilization in Mexico: lessons of experience, *World Development*, vol. 20, No. 5, New York, Pergamon Press, May.

The Economist (1991): A survey of Asia's emerging economies: where tigers breed, vol. 321, No. 7733, London, 16 November.

——(1992): Overseas Chinese. A driving force, vol. 324, No. 7768, London, 18 July.

——(1993): Japanese manufacturing. Asian promise, vol. 327, No. 7815, London, 12 June.

Thurow, Lester (1992): *Head to Head: the Coming Economic Battle Among Japan, Europe and America*, New York, William Morrow & Co. Inc.

UNCTAD (United Nations Conference on Trade and Development) (1993): *World Investment Report 1993. Transnational Corporations and Integrated International Production*, New York, Programme on Transnational Corporations. United Nations publication, Sales No. E.93.II.A.14.

United Nations (1991): *Industrial Restructuring in Asia and the Pacific. In Particular with a View to Strengthening Regional Co-operation*, Bangkok, Economic and Social Commission for Asia and the Pacific (ESCAP)/Government of the Republic of Korea, March.

United States, Department of Commerce (1981): *US Direct Investment Abroad: 1977 Benchmark Survey Data*, Washington, D.C., April.

——(1985): *US Direct Investment Abroad: 1982 Benchmark Survey Data*, Washington, D.C., December.

——(1988): Defining and measuring international direct investment: a methodological review, *International Direct Investment: Global Trends and the US Role*, Appendix G, Washington, D.C., November.

——(1990): *Survey of Current Business*, vol. 70, No. 8, Washington, D.C., August.

——(1991): *US Direct Investment Abroad: 1989 Benchmark Survey Data*, Washington, D.C., October.

Whitmore, K., S. Lall and Jung-Taik Hyun (1989): *Foreign Direct Investment from the Newly Industrialized Economies*, Industry Series Paper No. 22, Washington, D.C., World Bank, Industry and Energy Department, December.

Whitmore, K. and Jung-Taik Hyun (1989): *Japanese Direct Foreign Investment: Patterns and Implications for Developing Countries*, Industry Series Paper No. 1, Washington, D.C., World Bank, February.