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Multinational Enterprise Business
Behaviour and Industrialization
in ASEAN Countries

by
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Institut für Weltwirtschaft an der Universität Kiel

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Multinational Enterprise Business Behaviour
and Industrialization in ASEAN Countries*

I. Introduction

This paper gives a progress report of a research project focusing on the competition of Japanese, US, and European firms on ASEAN markets and their impact on economic development both in home and host countries [Hiemenz, 1984; Groß, 1985; Langhammer, Hiemenz, 1985; v. Kirchbach, 1985]. The subsequent sections provide an analysis of some aspects of the contribution which the business behaviour of foreign firms from different industrialized countries may have made to industrialization and export expansion in ASEAN countries in the 1970s and early 1980s. The analysis presented below is in the tradition of Sekiguchi, Krause [1980], Kojima [1978; 1985], and Lee [1983; 1984] and supplements recent work by Ariff, Hill [1985], Hill, Johns [1985], and Hill [1985].

In doing business with ASEAN as well as other developing countries, foreign firms pursue their own objectives that may not coincide with those of governments in the partner countries. The well-known motivations of foreign firms in formulating their international marketing strategies are a) to secure markets for their products by direct representation abroad, reliance on agency houses, foreign direct investment, and/or licensing agreements; b) to exploit firm-specific comparative advantages by re-

* The empirical analysis presented in this paper draws heavily on data compiled by my colleague Martin Groß. His assistance as well as comments by Rolf J. Langhammer are gratefully acknowledged. The project is undertaken with financial support by the VW Foundation.

locating parts of their production processes; and c) to control access to natural resources either by long-term purchase agreement or by investment into procuring and processing of commodities. The motivation to establish foreign affiliates and the resulting pattern of FDI have a bearing on national economic development of host countries through transfer of technology and contributions to export expansion. Although foreign investment was not a very important component of total gross domestic capital formation in any of the ASEAN countries except Singapore [Hill, Johns, 1985 : 360-361], there is reason to believe, that foreign investments may have played a significant role in the transmission of new methods of production and management. Foreign-operated plants, as well as plants operated jointly by domestic and foreign capital, are apt to adopt more up-to-date methods of production and management, and to produce newer types of products. Their techniques tend to spread to other domestic firms through local suppliers. Furthermore, direct foreign investment usually brings with it guaranteed foreign markets for its own products, and thus helps expand the exports of the host countries and increases their foreign exchange earnings. Whether these suggestions carry much weight for ASEAN industrial development is assessed in the following sections.

The subsequent section provides a brief overview of marketing strategies applied towards ASEAN countries by Japanese, US, and German multinational companies (TNCs), respectively, and of the sectoral distribution of foreign direct investment (FDI) that resulted from these strategies. Since this paper is primarily

concerned with industrialization issues, the analysis of TNCs business behaviour then concentrates on their involvement in manufacturing industries of host countries. In Section III, the pattern of FDI from different home countries is assessed across ASEAN countries as well as across manufacturing industries and compared to a number of industry characteristics in the host countries. Although large gaps in data availability severely restrict the implementation of rigorous statistical tools, an attempt is made to assess the relative importance of several explanatory variables such as factor absorption, effective protection, and export-orientation for investment behaviour of TNCs from different countries. This behaviour determines in turn the foreign firms' contribution to the direction and speed of industrialization and to the expansion and diversification of manufactured exports to old and new destinations. The latter aspect is dealt with in Section IV which gives evidence on the trade orientation of affiliated companies and the importance of intra-firm trade vis-à-vis total trade flows. Some tentative conclusions are drawn in the final section.

II. Marketing Strategies of Multinational Companies towards ASEAN Countries

A first clue with respect to the motivation of TNCs operating in ASEAN countries can be derived from the sectoral distribution of FDI presented in Table 1. Using stock data supplied by home coun-

tries of TNCs¹, the 1983 percentage distribution of FDI among sectors shows ASEAN to be a special case in the developing world. The two by far largest foreign investors in the region, Japanese and US TNCs (10.65 and 7.96 billion US\$, respectively), had concentrated the major share of their investment in mining activities (including petroleum) while manufacturing was the major sectoral recipient of the two home countries' foreign investment in the group of all developing countries. Similarly, German TNCs which so far have kept a low profile in ASEAN countries (1982 FDI : .56 billion US\$), have engaged in manufacturing activities to a considerably smaller degree than they did in other developing countries as indicated by the two thirds share of FDI in manufacturing for all developing countries in comparison to a somewhat above one third share in ASEAN. The growth rates for the 1976-1983 period confirm that preferences for FDI in non-manufacturing activities of ASEAN countries have been continuing both in the cases of US and German TNCs. Only Japanese manufacturing FDI has been growing slightly faster than the total stock of Japanese FDI in the region.

¹ Although home country data on FDI are even more scarce than respective data supplied by host countries, the former have been preferred because host country data - albeit being used frequently - are severely deficient. Data supplied by the five ASEAN countries differ with respect to definition, coverage, and time period. In particular, stock data on FDI refer to registered or approved investment in Indonesia, Malaysia, the Philippines, and Thailand. Realized investment is, however, considerably lower and realization rates vary significantly among home countries and over time. For details, see the report prepared for the EC Commission by Langhammer, Groß [1986].

Table 1 - The Sectoral Distribution of Japanese, US, and German FDI by Developing Regions in Per Cent (All Sectors = 100)

Home country	World	Total	Developing Countries	
			"Other Asia" ^a	ASEAN
<u>Japan</u>				
1983				
Mining	19.4	26.0	37.0	49.4
Manufacturing	31.9	37.1	39.9	39.6
Trade	16.0	4.7	4.5	1.9
Banking and Finance	7.2	3.1	2.5	1.2
1977-1983				
Annual average growth				
of total FDI	18.3	17.5	17.7	18.0
of manufacturing FDI	18.7	15.9	17.4	20.6
<u>US</u>				
1983				
Mining	29.4	34.3	39.8	65.7
Manufacturing	39.9	40.2	22.0	18.4
Trade	12.6	12.4	10.5	6.6
Banking and Finance	12.7	5.7	14.1	7.8
1976-1983				
Annual average growth				
of total FDI	7.8	6.0	13.9	14.7
of manufacturing FDI	6.6	8.3	10.6	13.3
<u>West Germany</u>				
1983				
Mining	4.8	7.5	0.1	n.a.
Manufacturing	43.6	61.4	38.3	34.8
Trade	19.7	7.5	15.4	18.9
Banking and Finance	10.5	11.2	35.0	39.3
1976-1983				
Annual average growth				
of total FDI	13.9	6.9	17.3	18.1
of manufacturing FDI	12.2	3.4 ^b	12.9 ^b	12.8

^aDeveloping market economies of Asia excl. Middle East. - ^b1977-1982.

Source: Deutsche Bundesbank, various issues; Ministry of Finance, various issues; U.S. Department of Commerce, various issues; unpublished data, and own calculations.

These trends which deviate a bit from observations made by Hill and Johns [1985 : 368-369] for a slightly different sample of East Asian developing countries on the basis of flow data supplied by host countries, do, however, correspond to the structure of economic activities still prevailing in ASEAN countries². Except for Singapore, shares of manufacturing value added in GDP are much lower in ASEAN countries than in other Asian or Latin American NICs. In 1982, these shares were below 20 per cent in Indonesia, Malaysia, and Thailand, and only in the Philippines it amounted to 25 per cent [Ariff, Hill : 1985 : Table 2.1]. It has to be left open at this point whether commodity-oriented FDI ultimately benefits the recipient country. Foreign support in exploiting domestically available raw materials may generate resources - in particular foreign exchange - that could enhance industrialization and economic development, but such gains may be offset by e.g. transfer pricing or unfavourable exchange rate effects (Dutch disease).

Addressing more specifically the contribution of TNCs to industrialization, both volume and sectoral dispersion of manufacturing FDI from different home countries play a crucial role. In 1983, Japanese FDI in ASEAN manufacturing amounted to 4.23 billion US\$ compared to 1.46 and .20 billion US\$ for US and German TNCs, respectively. These figures reflect substantial differences in marketing strategies applied by TNCs from different countries

² This general conclusion has to be qualified, however, with respect to individual countries which were able to attract over-proportionate shares of manufacturing FDI as will be discussed below; see p. 11 ff.).

to penetrate Southeast Asian markets as has been shown by von Kirchbach [1985]. His findings are largely based on a trade channel analysis which reclassifies trade flows by type of trader [v. Kirchbach, 1985 : 10-14]. Table 2 gives such an analysis for the case of Thailand. The significant differences in marketing strategies in the sense of chosen institutional trade channels which become evident from Table 2 and which have been observed for other countries as well, have an impact on the investment position of TNCs from different countries in the region. Judging on the basis of the evidence compiled by v. Kirchbach for a number of Southeast and East Asian countries the following general trends seem to hold:

- The absolute amount and the share of exports to affiliated manufacturing subsidiaries in total European exports to the region was significantly smaller than for Japanese or US exports. Whereas Japanese and, to a lesser extent, US manufacturers have established their own captive markets in Asia, European manufacturers have been less prepared to establish this type of export bridgeheads. This has been a clear handicap considering that at least one quarter of total imports and in some countries significantly more were handled by foreign-affiliated manufacturers (see also Table 2).
- Most European TNCs continued to rely on European export and agency houses instead of up-dating their export and distribution network. European agency houses have lost most of their historical importance and are going through a profound struc-

Table 2 - Thai Imports^a by Countries of Origin and Trade Channel, 1980
(Percentage Share in Imports of All Trade Channels)

Trade channel	Countries of origin				
	Japan	EEC	USA	Developing Asian & Pacific countries	Others
Sogo shosha affiliates' own business	1.8	1.0	0.4	0.3	0.3
Independent agency houses	1.9	16.3	1.5	1.0	1.1
Marketing affiliates	10.7	12.2	3.8	36.1	2.6
All FTCs ^b	<u>14.4</u>	<u>29.5</u>	<u>5.7</u>	<u>37.4</u>	<u>4.0</u>
Total local trading companies	<u>12.2</u>	<u>11.6</u>	<u>9.3</u>	<u>3.6</u>	<u>4.7</u>
All trading companies	<u>27.6</u>	<u>41.2</u>	<u>15.5</u>	<u>41.4</u>	<u>8.8</u>
TNCs ^c with FTCs ^b participation	30.0	11.1	6.0	3.4	2.8
Other TNCs ^c	21.8	13.6	33.0	25.7	68.8
Asian TNCs ^c	0.2	0.7	0.4	0.1	0.4
Local manufacturing companies	20.4	33.4	45.1	29.4	19.2
All manufacturing companies	<u>72.4</u>	<u>58.8</u>	<u>84.5</u>	<u>58.6</u>	<u>91.2</u>
Total sample ^a	100.0	100.0	100.0	100.0	100.0
Percentage of sample ^a in total	43.9	35.7	54.6	36.1	95.4

^aSample including 144 major import products and imports of 354 major importers. - ^bFTCs: Foreign Trading Companies.
^cTNCs: Multinational Enterprises.

Source: v. Kirchbach [1985 : Annex table 7].

tural crisis in most countries under review. In addition the conflicts of interest between principals and distributors and the comparatively limited supervision of the agency houses by their European principals, have often worked to the latter's disadvantage. As a result, many European companies have not been able to break away from the circle of considering the markets under review as marginal, undertaking marginal marketing efforts and thereby remaining in a marginal position both in terms of market shares and FDI position.

- The declining role of the European agency houses stood in sharp contrast to the key contributions of the Japanese sogo shosha to the success of Japanese manufacturers in the region. Japan's top nine general trading companies handled approximately half of the region's bilateral trade with Japan and between 15 and 20 per cent of total trade of the countries under review. They had accumulated substantial equity interests throughout the modern sectors in Southeast Asia. Their unrivaled product, market and functional diversification put them into a unique position as two-way communicators and low-margin organizers for the whole range of economic relations between Japan and the region under review. This readily available pipeline for trade, investment and technological cooperation put Japanese exporters and investors into an advantageous position over their western competitors and also enabled small- and medium-sized companies to integrate into the division of labour between ASEAN countries and Japan.

- US investors, on the other hand, frequently benefited from the existence of a large and closely-knit American expatriate business community as well as from the powerful political and military position of their home country in the region. European companies did not have any comparable business infrastructure at their disposal in ASEAN countries. They tended to look for investment opportunities primarily in Latin American countries and in Africa, where they could benefit from old colonial ties and a strong European heritage due to immigration.

- European manufacturers have primarily aimed at the top-price segment of demand in contrast to their Japanese competitors which have been far more skilful in positioning products in terms of prices, product adaptation and distribution systems in the large and fast growing transitional or even traditional market segments.

The above analysis provides an explanation why German TNCs have rather relied on direct exports than on FDI to conquer ASEAN markets, and it suggests that - as far as there was investment - it is likely to have focused on other priority sectors within ASEAN manufacturing than FDI from e.g. Japan and to embody different technologies. One would expect German FDI to be located in highly protected, relatively capital-intensive industries which - according to Kojima - also are the target of US FDI while Japanese FDI would be more of the labour-intensive type catering to both local and foreign markets. If this were true, it could be argued that German and US investment in ASEAN countries have

aggravated the economic distortions resulting from ill-conceived incentive structure whereas Japanese FDI has supported restructuring towards more trade-oriented manufacturing activities. These questions are addressed in the following section.

III. The Pattern of Manufacturing FDI by Home Country

An analysis of manufacturing FDI in ASEAN countries based on home country information is severely impeded by a lack of sufficiently disaggregated data which would allow a comparison of FDI from different home countries, and by large gaps in published statistics due to the suppression of data for reasons of confidentiality. The available evidence is summarized in Table 3 and Annex Tables 1a-d. The data reveal major differences in the regional and sectoral composition of FDI from different home countries. About half of total Japanese FDI was received by Indonesia, but in terms of sectoral composition manufacturing was the prime target of Japanese FDI primarily in Malaysia and Thailand while the Philippines were a preferred location for US manufacturing FDI³.

For German TNCs, the concentration of FDI in manufacturing was highest in Malaysia. Country-specific peculiarities apart, sectoral priorities of Japanese manufacturing FDI were on average in

³ Singapore has been excluded from this and the subsequent analyses since in a highly developed city state with a large share of FDI in total investment evaluation criteria would have to be different from those applied to the other ASEAN countries under review.

Table 3 - FDI in Manufacturing Industries of ASEAN Countries, 1977-1983, per cent

Industry	FDI by home country ^a								
	Japan	1977 US	Germany	Japan	1981 US	Germany	Japan	1983 US	Germany
<u>ASEAN</u>									
Food	6.2	18.1	.	3.6	15.0	.	3.2	6.2	.
Chemical products	7.9	22.1	21.6	13.0	17.1	25.0	15.4	20.7 ^b	27.2
Metals & metal products	13.3	D	.	28.6	D	.	31.8	13.6 ^b	.
Machinery	3.6	3.1	3.7	5.1	D	10.5	5.6	0.7 ^b	4.5
Electrical machinery	6.6	22.7	18.8	7.6	D	15.0	7.0	35.9 ^b	30.7
Transport equipment	8.6	D	.	7.5	D	.	7.2	D	.
Textiles and clothing	33.1	) D	9.8	19.0	) D	.	15.9	) D	1.4
Other manufacturing	20.7	) D	46.1	15.6	) D	49.5	14.0	) D	36.3
Total manufacturing in p.c. of total FDI	34.8	21.6	47.8	45.6	24.4	40.2	39.6	18.4	37.8
<u>INDONESIA</u>									
Total manufacturing in p.c. of total FDI	25.2	9.9	58.2	34.5	7.6	79.5	27.5	4.7	77.5
<u>MALAYSIA</u>									
Total manufacturing in p.c. of total FDI	57.6	18.5	71.3	70.2	28.6	70.8	69.8	21.6	60.2
<u>PHILIPPINES</u>									
Total manufacturing in p.c. of total FDI	26.0	37.9	58.3	38.4	42.7	58.3	40.2	35.3	42.9
<u>THAILAND</u>									
Total manufacturing in p.c. of total FDI	75.4	21.5	36.7	73.7	4.7	38.0	74.9	4.5	42.5

^a D denotes data not disclosed for reasons of confidentiality. - ^b Estimates.

Source: As in Table 1.

chemical products and metals with an increasing trend since 1977, and in textiles and clothing as well as other manufacturing (comprising such important product categories as plastic goods, precision instruments, toys, and sports goods) with a declining trend. The focus of both US and German investment was on chemical products and electrical machinery. Using a similarity index Groß [1985 : Table 5] has shown that the patterns of Japanese and US manufacturing FDI overlap only to a small degree in all ASEAN countries under review while Japanese and German structures of manufacturing production in ASEAN countries prove to be fairly complementary. German and US patterns of FDI are, on the other hand, fairly similar among each other. These differences of investment patterns by home country did not change significantly over the 1977-1983 period and correspond to the composition of ASEAN imports by country origin [Langhammer, Hiemenz, 1985 : 112-114]. Japanese suppliers have increasingly dominated a number of import markets in the 1970s and early 1980s. Hence, an inter-industry specialization between Japan on the one hand and the US and Germany on the other hand has determined import patterns while US and German exporters were competing in more or less the same product categories (intra-industry specialization).

These observations seem to confirm the initial notion that industrialization and export expansion in ASEAN countries were stimulated in different ways by Japanese and non-Japanese FDI. The subsequent analysis seeks to establish in what way FDI may have helped the countries in the region to exploit comparative advantages in manufacturing. This issue is pursued by comparing the

patterns of FDI to various industry characteristics in ASEAN's "Other Four" (Table 4). As mentioned above, such an analysis suffers from the high industry aggregation of FDI data which leaves little choice but to employ fairly pedestrian tools of descriptive statistics such as indices and shares and which tends to veil differences among FDI of different origin. A further problem concerns the many gaps in US data. To increase the comparability of the data sets we have chosen to distribute the residual of US manufacturing FDI in each country among suppressed sectors according to the distribution of Japanese FDI among these sectors. Hence, the statistics presented in Table 4 represent a lower boundary of differences between Japanese and US patterns of FDI.

The first question to be asked is whether there has been a degree of similarity between the structure of manufacturing production in ASEAN countries and the pattern of FDI. Till 1977, all ASEAN countries had already undertaken considerable effort to establish a wide range of import substituting and export-oriented manufacturing activities. As a first working hypothesis one would assume that an inflow of modern production and management method into a wide range of manufacturing subsectors achieves more with respect to promoting industrialization and international competitiveness of the whole sector than an isolated transfer of technology to just few branches of manufacturing industries⁴. Following this

⁴ The diffusion of technical progress among manufacturing industries does, of course, depend on intersectoral linkages. Know-how associated with FDI in a few leading sectors may permeate all manufacturing activities through trickle-down effects. We assume, nonetheless, that this process is accelerated when FDI is widely distributed among industrial subsectors.

hypothesis a high similarity between FDI and production structures would be desirable from the point of view of the host country. The respective indices presented in Table 4 indicate two remarkable trends. First, in 1977, the degree of similarity between FDI and production structures has tended to be highest for the leading investor in each host country, i.e. Japanese TNCs in Indonesia, Malaysia, and Thailand and US TNCs in the Philippines (Annex Table 2). However, the differences of similarity indices among leading and other investors have largely evened out by 1983 although the ranking of investors by size of FDI has remained the same. And secondly, in 1983 similarity indices for Japanese and US FDI tend to converge below the 1977 level measured for the leading investor in all three countries for which these data are available. This suggests that the degree of inter-industry concentration has increased over time in the case of the leading investor, i.e. the US in the Philippines and Japan in Indonesia (after 1981) and Malaysia, while the other investors have revealed a tendency to broaden their spectrum of inter-industry diversification.

Despite the converging degree of inter-industry concentration of FDI, Japanese and US TNCs have nonetheless displayed different sectoral priorities as has been discussed above. The nature of this diversification of FDI is highlighted by comparing the shares of FDI from different home countries in the three⁵ leading sectors with respect to output growth, trade performance, and im-

⁵ In countries with only one or two clearly outstanding sectors the analysis was restricted to these sectors.

Table 4 - FDI and Selected Indicators of Manufacturing Production in ASEAN's "Other Four"

Indices	Japan	1977 US ^a	Germany	Japan	1981 US ^a	Germany	Japan	1983 US ^d	Germany
<u>INDONESIA</u>									
- Similarity index ^{b,c} FDI/ Manuf. Prod. ^d	.45 (.32)	.40	n.a.	.74 (.57)	.92	.53 (.53)	.51 (.34)	.53	.52 (.52)
- Share of FDI in top three growth sectors ^d	12.2 (12.2)	44.3	54.7 (n.a.)	11.3 (11.3)	33.4	66.9 (66.9)	10.7 (10.7)	47.3	65.6 (65.6)
- Share of FDI in top four negative RCA categories ^{d,e}	72.6 (46.3)	56.3	n.a.	12.3 (12.3)	34.1	66.9 (66.9)	11.8 (11.8)	48.0	65.6 (65.6)
- Share of FDI in top three ERP categories ^{d,f}	57.8 (51.5)	75.9	54.7 (54.7)	43.8 (29.1)	87.3	100.0 (100.0)	37.0 (25.4)	62.5	100.0 (100.0)
<u>MALAYSIA</u>									
- Similarity index ^{b,c} FDI/ Manuf. Prod. ^d	.92 (.63)	.40	n.a.	.63 (.52)	.48	.47 (.47)	.67 (.57)	.56	.49 (.49)
- Share of FDI in top three growth sectors ^d	30.4 (30.4)	60.4	n.a.	21.7 (21.9)	69.1	54.7 (54.7)	27.0 (27.0)	62.0	35.2 (35.2)
- Share of FDI in positive RCA categories ^{d,e}	11.7 (11.7)	2.3	. (.)	23.0	n.a.	.	22.5	n.a.	.
- Share of FDI in top three negative RCA categories ^{d,e}	9.3 (9.3)	22.1	n.a.	40.3 (40.3)	14.5	4.1 (4.1)	36.8 (36.8)	14.7	19.7 (19.7)
- Share of FDI in top two ERP categories ^{d,g}	75.6 (51.7)	38.3	n.a.	81.1 (66.2)	31.0	45.3 (4.1)	80.3 (66.8)	38.4	64.8 (19.7)
<u>PHILIPPINES</u>									
- Similarity index ^{b,c} FDI/ Manuf. Prod. ^d	.81 (.70)	.92	n.a.	.68 (.64)	.85	.75 (.54)	.64 (.61)	.64	.74 (.65)
- Share of FDI in top three growth sectors ^d	21.7 (27.1)	42.7	. (n.a.)	10.6 (13.6)	40.4	. (51.4)	9.7 (11.7)	19.0	. (25.0)
- Share of FDI in positive RCA categories ^{d,e}	44.6 (44.6)	53.7	n.a.	25.0 (25.0)	52.7	80.0 (80.0)	22.1 (22.1)	29.9	70.8 (70.8)
- Share of FDI in top three negative RCA categories ^{d,e}	27.2 (27.2)	31.2	50.0 (50.0)	40.7 (40.7)	41.4	20.0 (20.0)	49.3 (49.3)	62.4	29.2 (29.2)
- Share of FDI in top three ERP categories ^{d,f}	20.7 (20.7)	35.1	. (.)	40.3 (40.3)	41.1	. (.)	33.9 (33.9)	23.2	. (.)
<u>THAILAND</u>									
- Similarity index ^{b,c} FDI/ Manuf. Prod. ^d	.93 (.68)	.82	.22 (.22)	.96 (.73)	n.a.	.27 (.27)	.94 (.83)	n.a.	.39
- Share of FDI in positive RCA categories ^{d,e}	75.0 (75.0)	52.9	22.2 (22.2)	66.8 (66.8)	46.2	33.3 (33.3)	68.5 (68.5)	n.a.	42.5 (42.5)
- Share of FDI in top three negative RCA categories ^{d,e}	16.9 (16.9)	17.7	77.8 (77.8)	24.0 (24.0)	111.4	66.7 (66.7)	21.8 (21.8)	127.2	57.5 (57.5)
- Share of FDI in top three ERP categories ^{d,f}	23.3 (58.1)	25.6	77.8 (77.8)	22.6 (22.6)	n.a.	. (.)	19.0 (19.0)	n.a.	n.a.

^aTo compute indices and shares presented in this table suppressed data on US FDI were approximated by distributing the residual of US manufacturing FDI among suppressed sectors according to the distribution of Japanese FDI among these sectors. This procedure minimizes the differences between Japanese and US patterns of FDI. - ^bThe similarity index is

computed as $0 < \cos (S_j^x, S_j^y) < 1 = \frac{\sum_j S_j^x S_j^y}{\sqrt{[\sum_j (S_j^x)^2][\sum_j (S_j^y)^2]}}$; S_j^x denotes the percentage distribution of FDI by

home country x among manufacturing industries j while S_j^y is the respective distribution of manufacturing value added in host country y. - ^cThe 1977 structure of FDI is compared to the structure of production in the 1970s; 1981 as well as 1983 FDI are related to the structure of production in the 1980s. - ^dFigures in brackets give results on the basis of the more detailed Japanese classification of manufacturing industries; all other indices and shares are computed with respect to the narrower US classification (see Annex Table 1). - ^eBoth 1981 and 1983 FDI is compared to 1982 RCA values. - ^fBoth 1981 and 1983 FDI is compared to 1980 effective rates of protection. - ^gAll FDI compared to 1980 ERP only.

port protection. Table 4 shows that in all countries for which data are available and all years under review both US and German TNCs have geared their FDI much more towards fast growing manufacturing subsectors than Japanese TNCs did. The major explanation for this uniform pattern is the high share of US and German investment in chemical industries and electrical machinery, subsectors which hardly figure prominently in the sectoral distribution of Japanese FDI (Annex Tables 1a-d). The production of electrical machinery was favoured both by a fast growing and usually highly protected domestic market for consumer electronics and household appliances and opportunities to export parts and components produced at low wage costs. The latter aspect has, however, not yet had an overriding importance in the period under review as RCA values given in Annex Table 1 indicate. Chemical industries - the other rapidly growing industrial subsector particularly in Indonesia - also enjoyed high rates of effective protection in almost all ASEAN countries, and therefore it is not surprising that the share of US and German FDI in industries granted high effective protection clearly exceeds the Japanese share in these industries in all countries except for Malaysia and the Philippines in 1983. In Malaysia, Japanese investors appear to have concentrated on highly protected industries much more than US and German investors did. These estimates are clearly misleading since they reflect to a substantial degree Japanese investment in textile and clothing activities. This sector enjoys high rates of effective protection in the domestic market, but the lion's share of Japanese investment in this industry took place in free trade areas and was designed to cater to world markets.

This example shows that the above findings have to be interpreted with great caution since they are heavily influenced by the industry classification dictated by available FDI data. Slight variations of this classification, in particular a more detailed breakdown of industries, can have a substantial influence on the shares of FDI in groups of industries with similar characteristics as some of the bracketed figures indicate. To obtain additional insight into the contribution FDI has made to industrialization and trade expansion in the ASEAN region the pattern of FDI is compared to the pattern of "revealed comparative advantage" (RCA) among manufacturing industries. Table 4 gives shares of FDI by home country for groups of industries with positive (export-oriented industries) and with high negative RCA values (import-competing industries). Note that industries with high negative RCA value are not identical with highly protected industries. The structure of protection applied in ASEAN countries and elsewhere in the developing world mostly benefits the producers of chemicals and consumer goods while producers of other industrial intermediates and of investment goods receive little or no protection. For, e.g., machinery industries, effective rates of protection are at most average in all four countries while RCA values are consistently among those topping the negative list (Annex Table 1). Hence, negative RCA values capture a wider range of import-competing industries than effective rates of protection.

The early stage of industrialization in Indonesia is reflected in such negative RCA values for all manufacturing activities. Con-

cerning the other three more industrialized countries there are three groups of industries with a clear revealed comparative advantage in international trade in more than one country. These are the resource-based food industries⁶ as well as textiles and clothing and the industries lumped together in other manufacturing with comparative advantages based on low labour costs. The share of FDI from different sources in industries with positive RCA values varies considerably among ASEAN countries and over time. US and German TNCs have focused on export-oriented industries more than Japanese TNCs in the Philippines while the opposite applies to Malaysia and Thailand. Taking all three investors together, the share of FDI in export-orientated industries has been largest in Thailand, while the data for Malaysia are likely to underestimate the true extent of FDI in such industries because of the above mentioned classification problems.

Concerning the internationally least competitive industries, US and Japanese investors switch ranks over time, but in the 1980s the share of US and also German FDI in these industries is generally larger than the Japanese share in Indonesia, the Philippines and Thailand. The dominating factors for this result are the US investment in car manufacturing and chemical industries, the latter also being a priority sector for German investors.

⁶ Another resource-based industry with positive RCA values was metals and metal products in Malaysia in 1977. The international competitiveness of this industry was based on the country's natural endowment with tin, but this competitiveness was lost on the industry-wide scale later on when more manufactured metal products were imported.

What do these findings mean with respect to the contribution of TNCs to industrialization and the transition to more outward-oriented manufacturing activities in ASEAN countries? It should be recalled that the evidence presented so far does not tell anything about the strategies applied by foreign affiliates in ASEAN countries in terms of sales and market orientation; this subject will be taken up in the next section. So far, we have merely established which manufacturing subsectors may have benefited from an inflow of FDI through an improved availability of modern production and management techniques as well as training methods which can be emulated by domestic firms. In this respect, the following observations emerge from the above analysis. US and to a much smaller degree German TNCs seem to have contributed more to manufacturing output growth than Japanese TNCs which had focused on industrial subsectors recording relatively slow growth in the period under observation. However, at least in the 1970s, US and German FDI was - with the exception of the Philippines - rather geared towards securing domestic markets protected against international competition than towards establishing bridgeheads for exports to the US or other countries. The latter was much more the case for Japanese TNCs with their heavy emphasis on investment in resource-based or labour-intensive industries. Hence, one may in fact argue that US FDI has deepened the inward bias of ASEAN manufacturing production generated by policy intervention in favour of domestic producers as Kojima [e.g. 1978] did.

The evidence presented above is, however, far from being conclusive. Using a broader measure of trade performance, i.e. RCA values, sectoral investment patterns of Japanese and US TNCs are much less easily classified as favouring either inward or outward orientation of industrial development. The detailed data presented in Annex Table 1 suggest furthermore that investment patterns have been changing in the late 1970s and early 1980s when trade protection to domestic industries had been somewhat lowered in most ASEAN countries under review compared to the early 1970s and industrialization policies in general were more supportive to export-oriented activities, e.g. by the establishment of export processing zones [for details see Ariff, Hill, 1985]. By 1983, US and also German FDI had shifted to manufacturing industries with a good record of export expansion and in this respect became more similar to the Japanese pattern of FDI. Priority sectors for FDI did, however, remain distinctly different for investors from the various home countries (Table 3). While Japanese FDI was concentrated in metal industries, textiles and clothing as well as other traditional labour-intensive industries, US and German FDI focused on those modern labour-intensive industries lumped together in the category electrical machinery and on chemical industries which - under the impact of successive oil price shocks - have emerged as a source of largely resource-based exports, primarily in Indonesia and Malaysia (and Singapore, of course). This leads to the conclusion that in recent years FDI from the other two home countries has contributed to the development of industries with a high export potential in a similar way Japanese FDI had benefited such industries already in the 1970s.

This conclusion does, however, not answer the question whether the transfer of technology from different home countries was equally beneficial to ASEAN manufacturing or whether "Japanese-style" FDI was in better accordance with the factor endowment of the host countries as Kojima [1985] has recently contended again. The evidence on this issue is scanty and mostly anecdotal, and Lee [1983] has argued that such differences of transferred technologies are likely to be a historical phenomenon which has disappeared with the convergence of technology levels in the US and Japan. The only test of the Kojima hypothesis which can be performed on the basis of our data is a comparison of labour intensities embodied in FDI in the Asian region. This measure rather provides an indication of the type of activity established in host countries than of the technology itself. The factor intensity shows, however, whether FDI has helped to realize comparative advantages based on the abundance of cheap and relatively well educated labour.

Labour intensities for Japanese and US FDI given in Table 5 have been computed on the basis of employment and capital stock data supplied by MITI and the 1977 US benchmark survey. These estimates require the qualification that the comparability of Japanese and US capital stock data could not be established beyond doubt. The results do in any case conform to the expected pattern: In 1977, US investment in manufacturing abroad was in general more capital-intensive than Japanese manufacturing FDI, but there was no significant difference in factor intensities of Japanese and US FDI in the Asian region. In some manufacturing

Table 5 - Employment per US \$ Million of Total Assets in Foreign Affiliates by Region, 1977 and 1983

Industry	JAPAN			US			Industry
	World	"Other" Asia ^a	Latin America	World	"Other" Asia ^a	Latin America	
<u>1977</u>							
Total manufacturing	32.7	55.9	22.5	25.4	59.7	33.9	Total manufacturing
Food	17.6	40.8	19.9	30.8	78.8	50.6	Food
Textiles & clothing	50.6	65.6	38.7				
Wood processing	10.5	42.8	20.6				
Chemical products	15.6	17.7	9.4	15.8	22.3	22.9	Chemical products
Iron & steel	13.6	20.5	12.8	18.5	35.8	23.3	Metals & metal prod.
Non-iron metals	12.3	24.3	20.4				
Machinery	46.2	50.7	64.7	22.1	51.4	30.2	Machinery
Electrical Machinery	58.5	92.1	36.0	44.2	122.3	57.4	Electrical Machinery
Transport equipment	11.8	22.9	21.4	28.3	42.8	33.5	Transport equipment
Precision instruments	91.0	114.8	64.9				
Other manufac.indus.	45.0	63.7	65.2	28.5	83.5	38.8	Other manufac.indus.
<u>1983</u>							
Total manufacturing	18.6	30.2	12.5				
Food	28.5	40.5	41.4				
Textiles & clothing	20.8	19.7	38.9				
Wood processing	22.8	106.3	14.2				
Chemical products	15.8	22.9	11.0				
Iron & steel	6.5	10.5	6.1				
Non-iron metals	8.4	43.3	6.3				
Machinery	25.4	59.4	16.9				
Electrical Machinery	27.6	51.8	29.5				
Transport equipment	28.0	27.4	29.4				
Precision instruments	34.4	52.8	27.1				
Other manufac.indus.	16.5	22.3	34.3				

^a Developing market economies in Asia excl. Middle East.

subsectors such as food processing, electrical machinery, and transport equipment, US investment even appears to have been more labour-intensive than Japanese FDI. The 1983 figures for Japan show, furthermore, the considerable degree of upgrading and structural change which Japanese affiliates in Asia have undergone within the relatively short period of six years. By 1983, labour intensity of total Japanese manufacturing FDI had almost halved, while it declined even more in textiles and clothing. This clearly supports the notion that whatever differences may have existed between US and Japanese technologies transferred to ASEAN countries, they hardly matter anymore in the 1980s.

IV The Trade Orientation of FDI

A second area of interest in addition to technologies focuses on the direct contribution foreign affiliates have made to industrial restructuring and expansion of manufactured exports in ASEAN countries. As discussed in Section II, the perceptions of ASEAN markets and hence, marketing strategies have differed substantially among TNCs from Germany, Japan, and the US. One would expect that their business behaviour is reflected in imports and exports of products through intra-firm trade, and it should be interesting to observe whether these linkages have undergone any change in response to local industrialization and more policy emphasis on export promotion. Due to a lack of data, little is known so far about the import behaviour of foreign affiliates in developing countries. Concerning intra-firm exports Hill and Johns [1985

: 376-377] conclude that this type of trade has played a more important role for Japanese than for US TNCs in the Asian region.

v. Kirchbach [1985] has pointed out that marketing strategies of TNCs have an impact on imports of developing countries since FDI is likely to increase trade between home and host country compared to direct sales or sales via agency houses. Intensified trade relations may result both from imports of capital goods to establish foreign affiliates and imports of intermediate products used for local processing. The trade relations may, however, weaken over time as the industrial base of the host country diversifies and intermediate as well as capital goods become available locally. The scarce evidence mainly on intra-firm imports of Japanese foreign affiliates in ASEAN countries seems to confirm these basic notions, but also provides some additional information. Table 6 shows that

- the pattern of the intra-firm shares in total imports is hardly correlated with the pattern of FDI (Table 2) but rather reflects the local availability of inputs at the respective stages of industrialization. In 1974, the shares of intra-firm imports were high in traditional export-oriented industries such as food processing or textiles and clothing, in new export-oriented activities such as electrical machinery, and technology-intensive industries mainly supplying domestic markets such as non-ferrous metals and transport equipment (the export orientation of foreign affiliates will be discussed in greater detail below);

Table 6 - Intra-Firm Exports to Foreign Affiliates in ASEAN Countries in Per Cent of Total Exports of Japan and the US to ASEAN Countries

Industry	1974	Japan	1981	US 1977	Industry
Food	58.2		3.1	4.0	Food
Wood products	3.0		0.1	D	Wood products
Chemical products	6.2		4.2	D	Chemical products
Iron and steel	6.3		6.8	5.7	Metals & metal products
Non-ferrous metals	23.8		20.7		
Machinery	.1		2.4	2.3	Machinery
Electrical machinery	20.0		11.5	D	Electrical machinery
Transport equipment	20.7		12.6	2.8	Transport equipment
Textiles and clothing	35.4		9.6		
Precision instruments	11.5		41.1		
Other manufacturing	10.1		9.7	D	Other manufacturing
Total manufacturing	<u>13.0</u>		<u>9.6</u>	D(≥ 16.7) ^a	Total manufacturing
All industries				<u>14.6</u>	All industries

D denotes data not disclosed for reasons of confidentiality.

^aValue in brackets comprising only MOFAS (majority owned foreign affiliates).

Source: Data compiled by Martin Groß on the basis of UN [various issues]; MITI [1974, 1981], US Department of Commerce [1981]; and own calculations.

- the strong vertical integration of Japanese parent company and foreign affiliate weakens with the progress of industrialization in the host country. This is both evident from the declining share of intra-firm trade in total manufacturing imports in 1981 and, even more so, from the marginal importance of this trade in most industries highly dependent on imported intra-firm input in 1974. However, affiliates in the emerging new export industry "precision instruments" exhibit a strong reliance on imports supplied by their parent companies in 1981;

- if anything, the 1977 data derived from the benchmark survey of US foreign affiliates suggest somewhat closer trade relations between US parents and foreign affiliates compared to Japanese TNCs. The available sectoral breakdown does, however, not provide any clues concerning the nature of these ties.

Indications from this evidence are that in particular Japanese foreign affiliates were able to play a pioneering role in establishing both import substitution and export industries in ASEAN countries because of their easy access to the supply of inputs from parent companies. They also acted as a catalyst for the emergence of local producers of intermediate inputs which were able to gradually replace imported input, and thus, foreign affiliates made a contribution to improving inter-industrial linkages.

Concerning export orientation the behaviour of Japanese and US foreign affiliates was clearly different at the beginning of the

industrial take-off in the early 1970s as Kojima [1978] has suggested. Data on sales direction of foreign affiliates in "Other Asia" given in Table 7 and Annex Table 3 confirm that Japanese FDI was much more geared towards production for exports in 1974 than US FDI in roughly the same period. Furthermore, Japanese foreign affiliates had exported between 50 and 70 per cent of their production in those industries in which resource-rich and labour-abundant Asian countries can be expected to possess comparative advantages (food, textiles and clothing, wood processing, electrical machinery, precision instruments, and other manufacturing). Roughly in the same industries, Japanese foreign affiliates continue to show a strong export orientation throughout the 1970s so that one may indeed conclude the Japanese TNCs have promoted not only industrialization but also the expansion of manufactured exports in ASEAN countries by setting early examples in terms of both exportable products and absorptive markets.

However, as already observed in Section III differences between Japanese and US foreign affiliates tend to become less distinct in the late 1970s and early 1980s. The export orientation of all Japanese manufacturing affiliates (sum of H+T) declines substantially between 1974 and 1979, and recovers only slightly thereafter. The relative decline stems from a large expansion of local sales of chemical products, electrical machinery and transport equipment (Annex Table 3). Due to the gaps in US data, these changes cannot be compared directly to the behaviour of US foreign affiliates, but the right-hand side of Table 7 which shows

Table 7 - Sales Strategies of Japanese and US Affiliates ^a in "Other" Asia ^b

Industry	Share of export destinations in total sales (per cent)										Sales per US \$ million of FDI						Industry
	1974		Japan 1979		1983		US 1970		US 1977		Japan 1979		Japan 1983		US 1977		
	H	T	H	T	H	T	H	T	H	T	foreign	local	foreign	local	foreign	local	
All industries	27.35	20.45	19.02	21.62	31.00	27.80	6.12	25.96	34.45	26.49	0.20	0.59	0.31	0.69	1.10	0.70	All industries
Manufacturing indus.	26.35	20.55	8.90	23.70	10.50	24.50	6.04	20.56	D	D	0.26	0.54	0.36	0.68	D	0.68	Manufacturing industries
Food	37.48	14.23	20.17	32.37	18.01	18.98	8.76	2.58	D	D	0.83	0.75	0.93	1.58	D	D	Food
Textiles & clothing	28.39	26.55	7.99	75.38	4.70	30.48					0.24	0.05	0.11	0.20			
Wood processing	47.81	23.15	52.09	10.05	16.57	30.18					0.72	0.44	1.08	1.23			
Chemical products	10.02	7.33	6.50	8.09	5.62	9.91	0.76	3.03	D	D	0.12	0.67	0.23	1.24	D	1.06	Chemical products
Iron & steel	10.43	11.52	1.40	19.10	11.91	5.31	D	D	D	D	0.15	0.60	0.11	0.55	D	D	Metals & metal products
Non-ferrous metals	19.03	5.17	5.99	12.08	2.39	25.80					0.02	0.11	0.65	1.66			
Machinery	17.52	19.75	7.12	11.61	6.20	29.63	5.42	63.25	40.74	30.04	0.12	0.52	0.62	1.11	0.61	0.25	Machinery
Electr.machinery	29.13	25.29	12.00	29.40	11.99	36.90	23.03	15.79	D	D	0.58	0.81	0.73	0.76	D	D	Electr.machinery
Transport equipm.	13.24	12.73	8.10	10.60	14.99	5.80	D	D	D	D	0.17	0.72	0.28	1.06	D	D	Transport equipment
Precision instrum.	13.97	50.20	20.60	50.10	44.90	44.34					1.20	0.50	1.53	1.61			
Other manuf. indus.	29.65	24.25	11.45	21.22	12.67	17.64	16.22	18.92	D	D	0.29	0.61	0.18	0.40	0.60	D	Other manuf. industries

H = sales to home country; T = sales to third countries.

D denotes data not disclosed for reasons of confidentiality.

^aOnly "majority owned foreign affiliates (MOFAS)". - ^bDeveloping market economies in Asia excluding Middle East.

Source: Annex Table 3.

sales per US\$ million of FDI indicates that in 1983 average output devoted to local markets by Japanese foreign affiliates had reached the level attained by US foreign affiliates in 1977. The admittedly shaky evidence suggests nonetheless two things. US TNCs had originally focused their investment activities on securing domestic markets in Asian developing countries but later on discovered the potential of these countries as export-bridgeheads for catering to world markets. Japanese TNCs had discovered the cost advantages of relocating production processes to Asian and in particular ASEAN countries much earlier than their US counterparts, but increasingly turned to also supplying local markets when domestic demand offered new sales opportunities as a result of progressing industrialization and high income growth. It remains an open question which TNCs did a better job in furthering industrial restructuring in ASEAN countries. From a welfare point of view import substitution activities are not necessarily inferior to export industries; both have to expand to enhance industrialization as Sekiguchi and Krause [1980 : 437] as well as others have pointed out.

To assess the contribution of foreign affiliates to manufactured export expansion, the structure of their exports needs to be analyzed in greater detail. Table 7 reveals that Japanese affiliates had - at least initially - directed their foreign sales more to their home market than US affiliates. This pattern has changed later on in the case of Japanese firms when markets of third countries became their major export destination. Unfortunately, US data do not provide information on this issue. The

evidence hints at the crucial role intra-firm trade may have played in paving the way for more export-oriented industrialization in ASEAN countries. This role is assessed in Table 8 for Japanese TNCs operating in the Asian region. Table 8 shows the pattern of exports of this region to the world and to Japan, respectively, and gives the shares of Japanese foreign affiliates in these trade flows.

Before reviewing the role of intra-firm trade, it is important to note that the pattern of exports of Asian developing countries to Japan differs substantially from the respective pattern of exports to all other countries and had expanded at a slower pace than total exports (9.8 per cent per annum compared to 15.8 per cent in nominal terms). Throughout the period under observation, labour-intensive exports had a much smaller weight in trade with Japan compared to total trade while resource-based exports such as chemicals, iron and steel, and non-ferrous metals had relatively higher shares. The exception is food which maintained a dominating position in the export basket destined for Japan but progressively lost importance in the total exports.

Turning to exports of Japanese affiliates in comparison to total exports of the region, it seems safe to conclude that these exports did not influence the expansion of manufactured export in any significant way. The share of Japanese affiliates in total manufactured exports was merely 6.7 per cent in 1974 and even declined in subsequent years. A similar trend is observable for all industrial subsectors except for the very heterogeneous cate-

Table 8 - Exports of Japanese Foreign Affiliates and Total Exports of "Other" Asia, 1974, 1979, and 1983

	1974				1979				1983			
	Share of exports to		Share of affiliates in total exports to		Share of exports to		Share of affiliates in total exports to		Share of exports to		Share of affiliates in total exports to	
	World	Japan	World	Japan	World	Japan	World	Japan	World	Japan	World	Japan
	in p.c. of all exports		in p.c.		in p.c. of all exports		in p.c.		in p.c. of all exports		in p.c.	
All industries	100.0	100.0	6.8	11.1	100.0	100.0	5.8	13.1	100.0	100.0	12.8	39.8
Total manufacturing	<u>61.5</u>	<u>23.9</u>	<u>6.7</u>	<u>27.9</u>	<u>66.0</u>	<u>37.7</u>	<u>4.2</u>	<u>9.7</u>	<u>67.9</u>	<u>34.0</u>	<u>4.6</u>	<u>15.6</u>
	in p.c. of total manufacturing		in p.c.		in p.c. of total manufacturing		in p.c.		in p.c. of total manufacturing		in p.c.	
Food	23.9	35.4	2.7	9.6	17.0	45.8	1.9	3.1	13.5	33.9	1.3	3.1
Chemicals	4.0	5.6	5.2	15.5	3.4	4.2	4.4	13.3	3.5	5.5	9.3	25.4
Iron & steel	2.8	1.1	7.9	76.7	2.9	3.5	5.4	2.6	2.8	6.6	4.0	13.7
Non-ferrous metals	4.4	9.9	1.8	4.6	3.3	5.6	2.0	3.3	1.9	6.1	7.3	2.4
Machinery & transport equipment	15.6	7.4	15.7	(129.2)	20.5	8.6	8.7	55.6	27.5	12.0	9.4	79.2
Textiles & clothing	26.9	21.7	7.4	34.5	25.2	24.3	4.1	3.4	23.2	16.5	1.5	3.4
Other manufacturing	22.4	18.8	4.0	17.2	27.4	19.5	2.5	11.2	27.4	19.3	2.3	11.3

Source: UN [various issues]; Annex Table 3.

gory machinery which most likely reflects exports of electrical machinery produced by Japanese affiliates located in export processing zones. These findings do, however, apply to the whole Asian region (i.e. including the East Asian NICs), and it is not clear whether they are also valid with respect to ASEAN countries.

The same qualification has to be made with respect to exports to Japan in which Japanese affiliates have a significant stake as Hill and Johns have already concluded on the basis of other data. Table 8 shows for total manufacturing, and even more so for exports from many subsectors high shares of Japanese affiliates in exports to Japan in 1974, but generally declining shares in subsequent years. By 1983, Japanese firms have retained a dominating position only in the category machinery exports (probably the result of outward processing of parts and components which are then re-imported). The obvious importance of intra-firm trade at early stages of industrialization and export diversification may not be considered to be a surprise in light of the close association of many Japanese companies to powerful trading houses (soga shosha) which provide means both of financing and marketing [Yoshihara, 1983].

One is tempted to argue that intra-firm trade has performed the task of a door-opener to Japanese markets and thus prepared access for local Asian suppliers. However, a more cautious interpretation of the evidences seems to be required in light of the diminishing importance of Japan as an export market and the

changing composition of exports to Japan. First, the share of Asian exports to Japan in total exports has declined from 13.6 per cent in 1974 to 8.4 per cent in 1983 [UN, various issues]. Even if Japanese intra-firm trade has provided some guidance to local suppliers on how to conquer Japanese markets, this knowledge was hardly crucial for the export drive of Asian countries in the 1970s. And secondly, the composition of intra-firm exports to Japan is biased towards chemical products and machinery (Table 8). This suggests that intra-firm trade may reflect firm-specific intermediate input requirements of large, vertically integrated companies rather than a general competitiveness of Asian suppliers in Japanese markets which are traditionally sheltered against "too much" competition from abroad. Insofar, support to export expansion provided by intra-firm exports of Japanese affiliates in Asia may have had an effect only within narrow limits.

V Conclusions

Despite the many loopholes in available data a few conclusions emerge from the preceding analysis. Sectoral composition of FDI and marketing strategies applied by TNCs from Germany, Japan, and the US have differed substantially in ASEAN countries, but the impact FDI had on the progress of industrialization and export expansion appears to have converged over time. US and German investment initially focused on access to local markets, but spread out to more export-oriented industries at the end of the

1970s and in the early 1980s while the opposite tendencies were observed for the investment behaviour of Japanese TNCs. Similarly differences of technologies embodied in FDI from different home countries also have disappeared with the convergence of technological development in Japan and the US in recent years. There are indications, however, that the transfer of technology has made a more important contribution to the emergence of internationally competitive industries in ASEAN countries in the 1970s than the direct participation of foreign affiliates in manufactured exports. In particular, the importance of intra-firm trade for preparing access to new overseas markets for local suppliers should not be overestimated. All in all, the experience of ASEAN countries provides an example for the beneficial effects FDI can have - irrespective of their source of origin - on successful industrialization in hitherto resource-based economies, provided economic policies do not distort incentives for both local and foreign investors.

Annex Table 1a - INDONESIA : The Structure of FDI and Selected Production and Trade Indices

Industry	FDI ^a			Structure of production			Real growth of industrial output ^b		Revealed comparative advantage (RCA) ^c		Effective rates of protection ^b					
	Japan	US 1977	Germany	Japan	US 1981	Germany	Japan	US 1983	Germany	1971	1982	1977	1982	1975	1980	
Food	3.1	2.0	.	1.9	6.4	.	1.6	8.3	.	54.2	23.9	9.3	-16.2	-27.7	125	4
Chemical products	7.5	30.9	54.7	4.8	18.5	51.6	5.1	20.9	56.7	3.9	10.5	35.0	-86.1	-94.2	81	61
Metals & metal prod.	16.9	D	.	49.3	5.6	.	56.8	D	.	2.0	5.4	11.5	-71.6	-72.2	3	-1
Machinery	0.7	0.0	.	1.0	0.7	.	1.1	0.6	.	0.3	1.4	.	-95.7	-96.9	16	15
Electrical machinery	1.9	13.4	D	2.6	14.9	15.3	2.0	26.4	8.9	2.1	4.3	21.2	-93.6	-81.6	35	58
Transport equipment	2.8	0.0	.	4.0	.	.	3.6	.	.	0.8	6.0	13.8	-100.0	-100.0	28	33
Textiles and clothing	40.9	) D	.	22.5	) 53.9	.	18.3	) D	.	11.2	9.9	3.8	-94.0	-22.6	89	81
Other manufacturing	26.3	) D	.	13.9	) 53.9	33.1	11.6	) D	34.3	25.5	38.6	.	-83.3	-42.4	.	.

Annex Table 1b - MALAYSIA : The Structure of FDI and Selected Production and Trade Indices

Industry	FDI ^a			Structure of production			Real growth of industrial output ^b		Revealed comparative advantage (RCA) ^c		Effective rates of protection ^b					
	Japan	US 1977	Germany	Japan	US 1981	Germany	Japan	US 1983	Germany	1971	1981	1976-81	1977	1982	1970	1980
Food	5.9	3.5	.	3.7	2.1	.	3.8	2.9	.	24.0	23.1	3.1	-44.8	-46.1	0	24
Chemical products	5.9	17.4	D	36.6	12.4	4.1	33.2	11.2	19.7	7.9	5.1	8.1	-87.0	-79.9	) 52	42
Metals & metal prod.	11.7	2.3	.	6.6	2.1	.	11.1	3.3	.	7.3	26.4	) 12.9	17.6	-31.1	.	.
Machinery	1.5	4.6	0.0	2.0	D	.	1.7	D	.	2.5	3.6	) 12.9	-88.0	-78.0	) 64	39
Electrical machinery	15.1	53.5	D	11.4	64.9	54.7	12.4	55.2	35.2	3.0	13.9	8.6	-32.1	-13.5	) 64	39
Transport equipment	2.0	.	.	1.8	1.2	.	1.9	D	.	2.9	4.7	15.5	-88.2	-87.8	164	-5
Textiles and clothing	34.1	) 18.6	.	23.0	) D	.	22.5	) 23.9	.	2.9	4.3	6.7	-29.4	1.9	17	85
Other manufacturing	23.9	) 18.6	D	14.9	) D	41.2	13.5	) 23.9	45.1	48.1	16.5	.	-20.7	-39.7	.	.

^a D denotes data not disclosed for reasons of confidentiality. - ^b Averages of selected items from each industry. - ^c For concept of measurement see Appendix.

Annex Table 1c - PHILIPPINES : The Structure of FDI and Selected Production and Trade Indices

Industry	FDI ^a			Structure of production			Real growth of industrial output ^b 1976-80	Revealed comparative advantage (RCA) ^c		Effective rates of protection ^b						
	Japan	US 1977	Germany	Japan	US 1981	Germany		Japan	US 1983	Germany	1977	1982	1974	1980		
Food	14.1	31.6	.	5.9	35.2	.	5.2	15.4	.	40.1	29.9	6.7	50.8	34.5	449	0-809
Chemical products	20.7	27.8	50.0	27.6	28.4	20.0	22.8	39.9	29.2	13.1	11.1	2.7	-76.9	-72.7	6	14
Metals & metal prod.	22.8	4.4	.	31.4	3.2	.	25.9	5.4	.	5.6	12.4	5.9	-59.6	-69.2	11-29	15-68
Machinery	2.2	0.3	.	1.7	2.5	.	1.7	1.3	.	0.9	1.4	8.3	-94.9	-92.3	92	17
Electrical machinery	5.4	10.7	.	3.0	D	.	2.8	D	.		3.8	3.9	-70.4	-46.0	62	12-85
Transport equipment	4.4	D	.	11.4	D	.	24.8	D	.	3.2	5.5	3.9	-90.0	-84.0	127	32
Textiles and clothing	19.6	) D	D	8.9	) D	51.4	7.2	) D	25.0	8.7	11.1	7.0	37.6	51.8	84	61
Other manufacturing	10.9	) D	D	10.2	) D	28.6	9.7	) D	45.8	24.6	24.3	.	20.9	26.2	-	-

Annex Table 1d - THAILAND : The Structure of FDI and Selected Production and Trade Indices

Industry	FDI ^a			Structure of production			Real growth of industrial output ^b	Revealed comparative advantage (RCA) ^c		Effective rates of protection ^b						
	Japan	US 1977	Germany	Japan	US 1981	Germany		Japan	US 1983	Germany	1977	1982	1978	1982		
Food	20.9	17.7	.	15.8	46.2	.	12.6	3.1	.	39.7	30.0	n.a.	84.5	84.0	4	12
Chemical products	9.9	17.7	77.8	9.9	111.4	66.7	7.7	127.2	57.5	6.4	7.1		-94.0	-88.4	76	123
Metals & metal prod.	6.4	8.0	.	6.9	D	.	7.7	D	.	3.6	2.9		-21.8	-23.3	80	60
Machinery	1.8	.	.	3.8	0.0	.	4.9	0.0	.	1.6	1.6		-91.3	-90.8	76	86
Electrical machinery	1.8	21.5	.	2.4	D	.	2.1	D	.	1.2	2.2		-54.0	-25.6	n.a.	188
Transport equipment	5.2	.	.	10.3	0.0	.	9.2	0.0	.	4.4	8.2		-100.0	-44.1	392	308
Textiles and clothing	46.5	) 35.3	.	43.2	) D	.	37.4	) D	.	15.6	19.5		59.0	60.3	102	68
Other manufacturing	7.5	) 35.3	22.2	7.9	) D	33.3	18.5	) D	42.5	27.5	28.5		-4.5	12.9	-	-

^a D denotes data not disclosed for reasons of confidentiality. - ^b Averages of selected items from each industry. - ^c For concept of measurement see Appendix.

Source: See Table 1 for FDI; UN, various issues for the structure of production and industrial output growth; and Ariff, Hill, 1985; Bautista et al., 1979 : Table 8; and Bautista, 1982 for effective rates of protection; own computations.

Annex Table 2 - FDI in Manufacturing by Home and Host Country in Mill. US-\$^a - 1976/77
and 1983/84

	Japan		U S		Germany	
	1977	1983	1976	1984	1976	1984
Indonesia	682 (84.4)	2 001 (90.3)	103 (12.7)	152 (6.9)	23 (2.8)	63 (2.8)
Malaysia	205 (67.9)	533 (55.3)	76 (25.2)	370 (38.4)	21 (7.0)	61 (6.3)
Philippines	92 (24.9)	290 (38.8)	274 (74.1)	443 (59.2)	4 (1.1)	15 (2.0)
Thailand	172 (76.1)	390 (89.4)	47 (20.8)	35 ^b (8.0)	7 (3.1)	11 (2.5)

^aFigures in brackets are shares of total investment in each home country. - ^b 1983.

Source: See Table 1.

Annex Table 3 - Sales Destination of Japanese and US Affiliates^a in "Other" Asia^b - US \$ Mill.

Industry	Japanese Affiliates						US Affiliates ^a						Industry			
	1974			1979			1983			1977						
	L	H	T	L	H	T	L	H	T	L	H	T	L	H	T	
All industries	<u>3462</u>	<u>1814</u>	<u>1356</u>	<u>9422</u>	<u>3019</u>	<u>3432</u>	<u>14167</u>	<u>10659</u>	<u>9559</u>	<u>3859</u>	<u>348</u>	<u>1475</u>	<u>7312</u>	<u>6449</u>	<u>4960</u>	All industries
Manufacturing indus. ^c	<u>2197</u>	<u>1090</u>	<u>850</u>	<u>6410</u>	<u>846</u>	<u>2254</u>	<u>9330</u>	<u>1424</u>	<u>3490</u>	<u>1239</u>	<u>102</u>	<u>347</u>	<u>2204</u>	<u>D</u>	<u>D</u>	Manufacturing indus.
Food	171.0	132.7	50.4	213.6	90.8	145.7	332.0	94.9	100.0	172.0	17.0	5.0	D	123.0	56.0	Food
Textiles & clothing	465.0	293.0	274.0	151.3	72.7	686.0	704.0	51.1	331.0							
Wood processing	21.2	34.9	16.9	24.5	33.7	6.5	88.4	27.5	50.1							
Chemical products	282.0	34.2	25.0	642.6	48.9	60.9	1910.0	127.0	224.0	508.0	4.0	16.0	772.0	D	D	Chemical products
Iron & steel	244.0	32.6	36.0	437.0	7.7	105.0	621.0	83.4	39.5	110.0	D	D	35.0	D	D	Metals & met.prod.
Non-ferrous metals	73.3	18.4	5.0	219.0	16.0	32.3	384.0	12.8	138.0							
Machinery	59.1	16.5	18.6	226.0	19.8	32.3	745.0	72.0	344.0	52.0	9.0	105.0	71.0	99.0	73.0	Machinery
Electr. machinery	474.0	303.0	263.0	1489.0	305.0	747.0	1990.0	467.0	1437.0	93.0	35.0	24.0	D	D	D	Electr. machinery
Transport equipment	292.0	52.2	50.2	920.0	91.7	120.0	1733.0	328.0	127.0	D	D	D	D	D	D	Transport equipment
Precision instruments	17.7	6.9	24.8	56.6	39.8	96.8	262.0	23.0	227.0							
Other manuf. indus.	162.0	104.2	85.2	682.0	116.0	215.0	814.0	148.0	206.0	122.0	30.0	35.0	D	121.0	214.0	Other manuf. indus.

L = sales to local markets; H = sales to home country; T = sales to third countries.

D denotes data not disclosed for reasons of confidentiality.

^aOnly "majority owned foreign affiliates (MOFAS)". - ^bDeveloping market economies in Asia excluding Middle East. - ^cExports of individual industries do not always add up to total manufacturing exports.

Source: MITI, various issues; US Department of Commerce, 1982.

Appendix

A Note on the Methods of Investigation

Relative net exports were used as indicator of the "revealed comparative advantage" (RCA) of a country in a certain product group. This indicator measures the extent to which foreign trade surpluses (-deficits) of a country in one product group diverge from the foreign trade position of this country in total manufactured goods. The measure has been scaled so that it assumes values between + 100 and - 100. High positive values of the measure indicate a high international competitiveness.

The relative net exports of the country i in the product group j in trade with a certain region (RCA_{ij}) can be calculated according to the formula:

$$RCA_{ij} = \left[\frac{x_{ij}^{-m_{ij}}}{x_{ij}^{+m_{ij}}} - \frac{j \sum (x_{ij}^{-m_{ij}})}{j \sum (x_{ij}^{+m_{ij}})} \right] \times \left[\begin{array}{l} \frac{100}{1 - \frac{j \sum (x_{ij}^{-m_{ij}})}{j \sum (x_{ij}^{+m_{ij}})}} \text{ if } \frac{x_{ij}^{-m_{ij}}}{x_{ij}^{+m_{ij}}} > \frac{j \sum (x_{ij}^{-m_{ij}})}{j \sum (x_{ij}^{+m_{ij}})} \\ \frac{100}{1 + \frac{j \sum (x_{ij}^{-m_{ij}})}{j \sum (x_{ij}^{+m_{ij}})}} \text{ if } \frac{x_{ij}^{-m_{ij}}}{x_{ij}^{+m_{ij}}} < \frac{j \sum (x_{ij}^{-m_{ij}})}{j \sum (x_{ij}^{+m_{ij}})} \end{array} \right]$$

The symbols denote:

x_{ij} the exports of country i in product group j ;

m_{ij} the imports of country i in product group j .

Bibliography

Ariff, Mohamed, Hal Hill, Export-Oriented Industrialisation : The ASEAN Experience (Allen & Unwin Australia Pty Ltd., 1985).

Bautista, Romeo M., John H. Power and Associates, Industrial Promotion Policies in the Philippines. Manila, 1979.

--, The 1981-85 Tariff Changes and Effective Protection of Manufacturing Industries. Mimeo, Manila 1982.

Deutsche Bundesbank, Die Auslandsverflechtung der Unternehmen im Ausland, in: Monatsberichte der Deutschen Bundesbank, various issues.

--, Unpublished Data on German Direct Investment in ASEAN countries made available to the author.

Groß, Martin, The Extent, Structure and Change of German, Japanese and US American Direct Investment in ASEAN Countries. Kiel Working Paper, 239 (Kiel : Institut für Weltwirtschaft, 1985).

Hiemenz, Ulrich, Verpaßt Europa den Anschluß in Fernost? Kiel Discussion Papers, 101 (Kiel : Institut für Weltwirtschaft, 1984).

Hill, Hal, Foreign Investment and Industrialisation in Indonesia (Canberra : Australian National University, Research School of Pacific Studies, 1985).

--, Brian Johns, "The Role of Direct Foreign Investment in Developing East Asian Countries". Weltwirtschaftliches Archiv, Vol. 121, 1985, pp. 355-381.

Kirchbach, Friedrich von, The Role of Marketing Strategies in Penetrating Southeast and East Asian Markets". Kiel Working Paper, 249 (Kiel : Institut für Weltwirtschaft, 1985).

Kojima, Kiyoshi, Direct Foreign Investment (London : Croom Helm, 1978).

--, "Japanese and American Direct Investment in Asia : A Comparative Analysis". Hitotsubashi Journal of Economics, 26, 1985, pp. 1-35.

Langhammer, Rolf J., Ulrich Hiemenz, "Declining Competitiveness of EC Suppliers in ASEAN Markets : Singular Case or Symptom?" Journal of Common Market Studies, Vol. 24, 1985, pp. 105-119.

--, Martin Groß, EC Foreign Direct Investment in ASEAN and its Impact on Trade. Kiel: Report commissioned by the Centre for European Policy Studies, Brussels, June 1986.

Lee, Chung H., "International Production of the United States and Japan in Korean Manufacturing Industries : A Comparative Study". Weltwirtschaftliches Archiv, Vol. 119, 1983, pp. 744-753.

--, "On Japanese Macroeconomic Theories of Direct Foreign Investment". Economic Development and Cultural Change, Vol. 32, 1984, pp. 713-723.

Ministry of Finance, Zaisei Kingu Tokei Geppo (Monetary and Financial Statistics Monthly), Special Issues: Japan's Private Overseas Investments, 1977, 1981, 1983.

Ministry of International Trade and Industry (MITI), Wagakuni Kigyo no Kaigai Jigyo Katsudo (The overseas economic activities of Japanese corporations), Tokyo, various issues.

Sekiguchi, Sueo, Lawrence B. Krause, "Direct Foreign Investment in ASEAN by Japan and the United States". In: Garnaut, Ross (Ed.), ASEAN in a Changing Pacific and World Economy (Canberra : Australian National University Press, 1980), pp. 421-446.

United Nations (UN), Yearbook of Industrial Statistics, Vol. I : General Industrial Statistics, New York, various issues.

--, Commodity Trade Statistics according to the Standard International Trade Classification. Statistical Papers, Series D, New York, various issues.

U.S. Department of Commerce. Bureau of Economic Analysis, International Investment Division, 1981, U.S. Direct Investment Abroad, 1977, Washington, D.C.

Yoshihara, Kunio, Sogo Shosha : Vanguard of the Japanese Economy. Kuala Lumpur 1983.