

Direct Foreign Investment in Central American Manufacturing

LARRY WILLMORE*

Carleton University

Summary. — Transnational enterprises control approximately 30% of the manufacturing output of the Central American Common Market (CACM). This paper examines the phenomenon at the level of the individual firm. A positive relationship is found between the degree of foreign control of leading firms and the degree of seller concentration in local industries. Few significant differences are found between foreign-controlled firms and their domestic counterparts when size and product mix are held constant. Foreign-controlled firms do, however, export more to CACM countries, employ more administrative personnel at higher salaries, and use less capital per unit of output.

Direct foreign investments have a long history in Central America. In 1897 the book value of equity investments held by foreigners was calculated at about twelve million dollars and was concentrated in the banana-growing countries of Guatemala, Honduras and Costa Rica.¹ The region continued to receive direct investments in 'enclave' activities and related public utilities throughout the twentieth century.² It is only in recent years that this 'enclave' type of investment has lost relative importance in the face of a new wave of investments in the manufacturing sector. These investments have been stimulated by the creation of a free trade area among the five Central American countries and by the creation of a highly protectionist common external tariff.

This paper utilizes survey data at the level of the individual firm in an effort to increase our understanding of foreign investment in Central American manufacturing. The first two sections of the paper provide a summary of available measures of the magnitude of the direct investment inflow and a discussion of Central American reactions to this inflow. Section III examines the statistical relationship between foreign control and concentration in manufacturing industries. The fourth section compares locally-owned manufacturing plants with their foreign-controlled counterparts and tests for significant differences with respect to profits, productivity, choice of technique,

foreign trade, wages and employment. The main empirical findings are summarized in a concluding section.

I. THE MAGNITUDE OF DIRECT FOREIGN INVESTMENT IN CENTRAL AMERICA

Foreign investment statistics are not very reliable, but Rosenthal has estimated that the book value of direct foreign investment in Central America increased from \$388 million in 1959 to \$755 million in 1969. About 60% of the total increase was directed toward the manufacturing sector,³ with the result that nearly a third of the total investment was in manufacturing in 1969 compared to less than 4% in 1959. (See Table 1 *overleaf*.)

The United States accounted for a large but declining proportion of direct foreign investment in the region. Approximately 81% of the book value of the total investments reported in Table 1 was of US origin in 1969 compared to 90% in 1959.⁴ According to Rosenthal, out of

* This paper was written while the author was a research associate of the Instituto de Investigaciones, Universidad de Costa Rica. Financial assistance from the International Development Research Centre (Canada) is gratefully acknowledged, but the views expressed herein do not necessarily reflect those of the Centre.

Table 1. *Estimated book value of direct foreign investment in Central America, 1959 and 1969*
(millions of US dollars)

	Total investments		Cumulative annual rate of increase	Investments in manufacturing		Cumulative annual rate of increase
	1959	1969	%	1959	1969	%
Guatemala	137.6	207.0	4.2	1.1	90.3	55.4
El Salvador	43.0	114.6	10.3	.7	43.7	51.1
Honduras	115.5	184.1	9.2	6.9	20.6	11.6
Nicaragua	18.9	76.3	15.0	5.3	41.5	22.8
Costa Rica	73.2	173.3	9.0	.6	36.7	50.9
Central America	388.2	755.3	6.9	14.6	232.8	31.9

Source: Gert Rosenthal, 'The role of private foreign investment in the development of the Central American Common Market', mimeo (March 1973), pp. 129, 436; and 'Algunos apuntes sobre el grado de participacion de la inversion extranjera directa en el proceso de la integracion Centroamericana', in *La Integracion Economica Centroamericana*, ed. Eduardo Lizano (Serie de Lecturas, Fondo de Cultura Economica, Mexico, 1975), p. 276.

a total of 572 foreign-owned firms identified in the area at the end of 1969, 413 had equity primarily of United States origin, 66 of Western Europe, 27 of Mexico, 11 of Japan and 11 of Canada.⁵ The relative importance of US investment in manufacturing is believed to be similar to that for aggregate direct foreign investment. A World Bank mission, for example, estimated that the United States accounted for about three quarters of the total flow of direct foreign investment in the manufacturing sector during the 1960s.⁶

A study of 187 United States-based transnational corporations, which reportedly account for over 80% of all US direct investments abroad, showed that there was little interest in Central America's manufacturing sector until after the process of economic integration was well under way. As of 1957, these large corporations had established or acquired only 24 manufacturing subsidiaries in the region, while in the subsequent ten years an additional 96 subsidiaries were formed. The distribution by country of these manufacturing subsidiaries is the following:⁷

	Guatemala	El Salvador	Honduras	Nicaragua	Costa Rica	Total
1957	11	2	5	2	4	24
1967	45	15	14	19	27	120

This apparent preference for Guatemala — the largest of the five countries — is also evident in Table 1, which shows that in 1969 Guatemala was host for nearly 40% of the \$233 million in direct foreign investments in manufacturing.

The dismantling of intra-regional tariffs, the establishment of a common external tariff and a liberal concession of fiscal incentives stimulated both foreign and domestic investment in Central America. A question arises as to what extent this capital formation in the manufacturing sector was financed by foreign rather than domestic savings. A World Bank mission, in a careful study, has estimated both the total financial requirements and the sources of financing in the manufacturing sector of each of the five countries during the 1962-69 period. The results of this study are summarized in Tables 2 and 3 *opposite*.

According to the World Bank study, foreign savings contributed 27.8% of total financial requirements of Central American manufacturing in the 1962-69 period. Total capital formation was financed from abroad to the extent of 24% during the same period,⁸ so there appears to have been somewhat greater reliance on foreign funds in the manufacturing sector than in the overall economies of Central America. Nearly two-thirds of the \$411 million capital inflow into Central America's manufacturing sector was in the form of direct investments, with the result that direct foreign investment contributed 17.6% of the total financial requirements, with variations from 14.6% in El Salvador to 21.1% in Nicaragua, and 15.8, 17.4 and 18.6% in Honduras, Costa Rica and Guatemala, respectively.

Although direct foreign investment accounted for 17.6% of industrial finance in Central America during the 1960s, foreign control of manufacturing activity may well exceed

Table 2. *Sources of industrial finance, 1962-69*
(millions of US dollars)

	Central America	Guatemala	El Salvador	Honduras ^a	Nicaragua	Costa Rica
<i>Total finance requirements</i> (fixed and working capital)	1,480	340	332	203	295	311
Sources of financing:						
DOMESTIC	1,070	245	263	163	185	214
Financial intermediaries	216	43	45	29	66	32
Depreciation allowances	435	188	81	37	59	70
Residual category ^b	418	14	136	96	59	112
FOREIGN	411	95	69	40	110	97
Reinvested earnings	113	33	17	22	26	15
New direct investment	147	30	32	10	36	39
External loans	151	32	20	8	48	43

Note: Entries may not sum to totals because of rounding.

^a1963-69.

^bIncludes reinvested earnings of local investors, local equity, and loans from non-institutional sources.

Source: IBRD, *Report of the Industrial Finance Mission to Central America: The Common Market and Its Future* (Washington, D.C.: 1971), tables 16, 19, annex tables 64-68; and Gert Rosenthal, 'The role of private foreign investment in the development of the Central American Common Market', tables 67-71.

this figure due to local borrowing, equity participation by local partners in joint ventures, capital consumption allowances, and loans from the parent company and other foreign lenders. Rosenthal estimates, primarily on the basis of data from the Central American Industrial Survey, that 'something like 30% of total industrial production in Central America in 1968 was turned out by plants partially or totally financed by foreign capital, while these same plants held slightly over one third of total industrial fixed assets'.⁹

Firms in Central America associated with foreign private capital presumably have readier access to external loans and supplier credits than do locally-owned enterprises, so a large proportion of the foreign borrowing reported in Table 2 was no doubt on behalf of foreign-controlled plants.¹⁰ There is unfortunately no way of estimating, even roughly, the importance of local financing in the operation of foreign-controlled plants in the region. Specific cases can be cited where local borrowing has financed a large part of the operation of a foreign subsidiary, but there are not sufficient data to support any firm conclusions.¹¹ Local participation in equity is not an important source of funds for foreign-affiliated plants in the region. Rosenthal found, in the case of 375 foreign subsidiaries for which data were available, that 'only about half the firms have any local participation at all, and most of those only on a minority basis'.¹²

A final point that is relevant to the question of foreign control is that direct foreign investment tends to be concentrated in relatively large manufacturing plants. This fact is illustrated by the size distribution of 2,174 domestic and 133 foreign firms that were included in the 1968 industrial survey. As can be seen in Table 4, nearly a quarter of the establishments employing one hundred or more persons were wholly or partially owned by non-residents, whereas less than 4% of the

Table 3. *Ratios of direct foreign investment and external financing to total financing of industrial investments, 1962-69*
(percentages)

	Direct foreign ^a investment/Total	External financing ^b / Total
Central America	17.6	27.8
Guatemala	18.6	28.0
El Salvador	14.6	20.7
Honduras ^c	15.8	19.6
Nicaragua	21.1	37.3
Costa Rica	17.4	31.3

^a Includes reinvested earnings of foreign equity.

^b Reinvested earnings, new direct investment and external loans.

^c1963-69.

Source: Table 2.

Table 4. *Distribution of resident- and non-resident-owned firms by number of employees, 1968*

Number of employees	Guatemala		Honduras		Costa Rica		TOTAL	
	R	NR	R	NR	R	NR	R	NR
5 - 9	346	2	105	0	185	0	636	2
10 - 19	235	6	154	2	214	7	603	15
20 - 29	126	4	68	4	109	9	303	17
30 - 39	61	1	34	4	48	1	143	6
40 - 49	57	8	23	1	33	2	113	11
50 - 74	64	7	28	2	43	3	135	12
75 - 99	25	9	26	3	31	8	82	20
100 - 199	57	13	25	8	18	11	100	32
200 and more	27	8	5	6	27	4	59	18
TOTAL	998	58	468	30	708	45	2174	133

R = firms wholly owned by residents of the country.
NR = firms wholly or partially owned by non-residents.

Source: SIECA, *El Desarrollo Integrado de Centroamerica en la Presente Decada* (Buenos Aires: BID-INTAL, 1973-74), appendix 9, p. 102.

remaining firms are affiliated with foreign capital. In addition, Rosenthal reports that foreign-owned firms tend, in general, to be among the largest within their respective manufacturing industry.¹³ This finding is further confirmed by the empirical evidence reported in section III of this paper.

II. ATTITUDES AND POLICIES TOWARD DIRECT FOREIGN INVESTMENT

Central American industrialists, many of whom feel threatened by competition from subsidiaries of transnational corporations, are the main proponents of policies to restrict the inflow of direct foreign investment in the region. In an important statement issued on 2 October 1965, the Federation of Central American Chambers of Industry (FECAICA) called for the adoption of a Central American Agreement on Foreign Investment to 'channel such investments toward the fields most desirable for the area's development', encourage joint ventures with local entrepreneurs and discourage foreign investments which 'threaten the stability of enterprises that are already established'.¹⁴ Foreign-owned subsidiaries are prominent members of the Chamber of Industry in each country, so it is significant that the FECAICA statement was approved by four of the five national delegations.¹⁵

A further indication of the attitude of the Central American business community towards direct foreign investment is revealed in a series of surveys undertaken in 1969 under the

auspices of the Organization of American States. The surveys unfortunately aggregate manufacturing with other branches of the economy and resident-owned with non-resident-owned firms.¹⁶ Nonetheless, as can be seen in Table 5, 181 of the 183 businessmen interviewed felt that direct foreign investment was desirable in general. A smaller majority (77%) expressed the view that foreign investment was desirable in their particular branch of the economy, but 80% of those interviewed favoured some type of government control or regulation of direct investment flows.

Representatives of the private sector thus appear to recognize the possible economic benefits of foreign investment, but nonetheless favour regulation because of the possibility that they themselves will be unable to compete with foreign-owned enterprises. Textile producers in the region, for example have advocated the complete prohibition of direct foreign investment in their industry, allegedly because of predatory pricing by foreign affiliates.¹⁷

The Central American industrialists have received direct and indirect support from intellectuals and opposition parties of the political Left in their call for government regulation of foreign capital inflows.¹⁸ Opposition to unrestrained direct foreign investment in the region thus comes from a curious mixture of businessmen that are traditionally adverse to any government control of private enterprise and individuals that are typically critical of capitalism in any form.

At the national level, despite the efforts of local industrialists and political groups, there

Table 5. *Survey of businessmen's attitudes toward direct foreign investment in Central America, 1969*

	Honduras	El Salvador	Nicaragua	Costa Rica	Total
Direct foreign investment:					
i) is desirable for the national economy	100%	100%	99%	98%	99%
ii) is desirable for our branch of the economy ^a	56%	100%	76%	83%	77%
iii) requires some type of control or regulation	90%	75%	85%	67%	80%
Number of persons (firms) interviewed	41 ^b	24	72 ^c	46 ^d	183

^aBranch refers to manufacturing, commerce, agriculture or services.

^b23 in manufacturing, 8 commerce, 2 agriculture and 8 services.

^c55 in manufacturing, 6 commerce, 7 agriculture and 3 services.

^d31 in manufacturing, 4 commerce, 8 agriculture and 3 services.

Source: Inter-American Economic and Social Council, *The Role of Foreign Private Investment in the Development of Latin America* (Washington, D.C.: Pan American Union, 1969), pp. 95-99, 121-29, 173-76, 197-201.

are and have been virtually no restrictions on direct foreign investments in manufacturing in any of the five countries.¹⁹ Indeed, during the past decade and a half, Central American governments have competed with one another to attract foreign investors with liberal fiscal incentives. In the absence of any common policy in the region,²⁰ such behaviour is quite rational because the decision of a potential investor to locate in another member country of the CACM leaves the government with the prospect of importing the products without the benefit of import duties or additional investment and employment.

At the regional level, the only attempt to regulate direct foreign investment can be found in the application of the Integration Industries Agreement, a scheme to grant quasi-monopoly status to selected manufacturing plants in the Central American Common Market. The first protocol to the Agreement restricts foreigners to a minority participation in the Guatemalan tyre plant and to a maximum 60% participation in Nicaragua's caustic soda and insecticide plant.²¹ The second protocol restricts foreign equity participation to 40% in a plate glass plant in Honduras,²² but this factory was never built.

In addition, the Economic Council of the CACM ruled that a tyre plant built by Firestone in Costa Rica could not obtain 'integration' status unless foreign participation in the

venture was reduced to 30% or less. Firestone found this and other conditions imposed by the Economic Council to be unacceptable, so the Costa Rican operation was never designated as an 'integration' plant.²³ Restrictions on foreign equity participation do not, however, appear to be very effective once a plant receives 'integration' status, for in August 1968 a United States-based transnational corporation purchased over 70% of the equity of the Guatemalan tyre plant without forfeiting rights as an 'integration industry'.²⁴

One regional institution - the Central American Bank for Economic Integration (CABEI) - has aided local industrialists through its lending policies and may in this way have had an indirect effect on the degree of foreign control of the Central American economies. CABEI's lending rates (7-8% in 1968, 6-9% in 1971) are lower than those of other public or private financial institutions in the region.²⁵ As a general rule, CABEI prefers to extend credit to locally-owned ventures and asks that joint ventures have substantial local (Central American) equity participation.²⁶ As can be seen from Table 6, during the first ten years of CABEI's existence over half of the industrial loans were extended to firms wholly owned by Central Americans, and in only one instance did the Bank approve a loan to a wholly-owned subsidiary of a transnational corporation.²⁷

Table 6. *Industrial loans approved by the Central American Bank for economic integration, 1961-70*

	Type of borrower	Number of borrowers	Amount of loans	
			(thousands of dollars)	(per cent)
1.	Firms wholly owned by residents	103	37,847	52.9
2.	Firms with minority foreign participation	18	20,040	28.0
3.	Firms with majority foreign participation	17	13,249	18.5
4.	Firms wholly owned by non-residents	1	353	0.5
	TOTAL	139	71,489	100

Note: Includes loans for feasibility studies.

Source: Gert Rosenthal, 'The role of private foreign investment in the development of the Central American Common Market', mimeo (March 1973), tables 37-42.

III. FOREIGN CONTROL AND SELLER CONCENTRATION

Two competing hypotheses have been presented as to the likely effect of direct foreign investment on market structure in host countries. The first hypothesis is that direct investment from abroad may break down local oligopolies and widen the scope for competition by increasing the number of firms within existing industries. New firms need not, of course, be controlled by foreigners, but the foreign entrant has ready access to trade marks, technology and credit, advantages which enable it to overcome what might be substantial barriers to entry for a purely domestic enterprise. A negative relationship is thus predicted, *ceteris paribus*, between the degree of foreign control and the degree of seller concentration in local industries.²⁸

The second hypothesis, which is contrary to the first, is that foreign entry might well result in mergers or bankruptcies among domestic firms, raising the level of seller concentration in the host country market. This hypothesis is popular in Central America because of a concern over the ability of domestic firms to compete with subsidiaries of transnational enterprises.²⁹

No student has yet presented any satisfactory evidence for either hypothesis in Central America.³⁰ *A priori*, however, one would not expect to find support for the first

hypothesis if foreign entry occurs typically via the 'take-over' of an existing domestic firm rather than through the establishment of new manufacturing facilities.³¹ In such cases, direct foreign investment does not cause an increase in the number of competitors in the market, and may result in a decrease if some domestic firms exit in the face of the growth of foreign-owned firms.

Foreign 'take-over' activities receive wide coverage in the Central American press, but it appears that relatively few foreign-owned firms begin their operations in the region by acquiring an established domestic enterprise. Rosenthal studied 299 subsidiaries of multinational enterprises in Central America and found that only 46 of these were established as a result of the take-over of domestic firms.³² In the vast majority of cases, direct foreign investment does represent new entry and the first hypothesis cannot be rejected on the grounds that the phenomenon is a mere transfer of ownership from residents to non-residents.

The remarkably comprehensive 1971 Industrial Survey in Guatemala provides an opportunity to submit the two hypotheses to a proper statistical test. The survey was actually a census of manufacturing plants employing 50 or more workers, and sampling was used in only 16 of the four-digit International Standard Industrial Classification (ISIC) categories.³³ Access to unpublished sales data permitted the construction of three-firm concentration ratios

and the identification of non-resident-owned firms among the larger establishments in each industry. These statistics are reported in Table 7 for 55 industries in Guatemala's manufacturing sector. Of the 29 non-resident-owned firms listed in the last column of Table 7, 100% foreign ownership and control was reported for

10 cases, majority ownership in 13 cases and minority (foreign) participation in only six cases. Sales data for foreign-owned firms are not reported in order to preserve the confidentiality of data submitted by individual establishments.

Table 7. Guatemala: concentration and foreign ownership of leading firms, 1971

ISIC	Industry	Sales (thousands of US dollars)	Percentage of sales in largest three firms	Number of wholly or partially foreign- owned firms among largest three firms
3111	Meat-packing	29,822	85.7	0
3112	Dairy products	6,220	58.4	0
3113	Prepared fruits and vegetables	8,361	79.8	2
3114	Prepared seafood	3,680	100 ^a	1
3115	Edible oils	13,196	70.2	0
3116	Grain mills	44,033	49.9	1
3117	Bakeries	6,627	20.2	0
3118	Sugar refining	26,576	50.2	0
3119	Candy	7,800	66.4	1
3121	Misc. food products	21,193	39.4	3
3131	Liquor	9,963	75.5	0
3132	Wine	2,634	85.8	0
3133	Breweries	9,446	100 ^a	0
3134	Non-alcoholic beverages	7,472	30.2	1
3140	Tobacco	12,700	99.2	1
3211	Yarn and cloth	33,440	40.5	0
3212	Articles of cloth	991	68.5	1
3213	Knitted goods	11,917	32.0	0
3215	Rope	2,835	69.1	0
3220	Clothing	8,239	18.3	1
3231	Leather tanning	3,871	71.2	0
3233	Leather goods, nes.	299	68.9	0
3240	Leather shoes	1,789	51.0	0
3311	Finished lumber	6,464	23.7	0
3312	Articles made of cane	470	100	0
3319	Other wood products	620	76.8	0
3320	Furniture of wood	2,876	31.4	0
3411	Pulp and paper	4,486	99.7	1
3412	Articles of paper	9,460	81.3	1
3420	Printing and publishing	8,914	39.0	1
3511	Basic industrial chemicals	1,483	86.9	1
3521	Paints and varnishes	3,287	93.0	1
3522-29	Consumer chemicals	34,476	32.2	2
3530	Petroleum refineries	23,234	100 ^a	2
3540	Petroleum products	113	100 ^a	0
3551	Tyres and tubes	9,480	98.7	2
3559	Other rubber products	4,731	86.0	0
3560	Plastic products	248	100	0
3610	Pottery	19	78.2	0
3620	Glassware	8,071	98.0	1
3691	Bricks	403	94.2	0

[continued overleaf]

3692	Cement	6,860	100 ^a	0
3699	Other non-metallic minerals	7,538	44.2	1
3710	Basic iron and steel	10,580	83.0	2
3720	Basic non-ferrous metals	83	100 ^a	0
3810	Metal products	12,333	34.2	1
3822	Agricultural machinery	313	95.1	0
3829	Non-electrical machinery	399	77.6	0
3831	Electrical machinery	11,308	76.0	1
3843	Automotive	2,065	74.4	0
3844	Motorcycles and bicycles	813	100 ^a	0
3851	Scientific instruments	199	100	0
3852	Photographic	122	100 ^a	0
3901	Jewellery	250	72.3	0
3909	Misc. manufactures	6,359	42.4	0

^atwo-firm industry.

Source: Published and unpublished data from Ministerio de Economía, Dirección General de Estadística, *I Encuesta Industrial Año 1971*.

Tables 8 and 9 summarize the relevant information from the 1971 Industrial Survey. In these tables 'high concentration' means that the leading three firms account for 90% or more of industry sales and 'low concentration' means that the leading three firms account for 90% or more of leading firm sales, 'medium foreign control' between 50 and 89.9% and 'low foreign control' less than 50% of sales. 'High foreign control' means that the foreign-owned firms account for less than 50% of the sales of the leading three firms. Foreign control thus refers to control of the sales of the leading three firms, not industry sales in general.

Although it was not possible to calculate the percentage of total industry sales made by all firms with foreign equity participation,³⁴ it is reasonable to assume that the degree of foreign control of total industry sales will be low when none of the leading firms are foreign-owned. Tables 8 and 9 thus suggest that in Guatemala, unlike more advanced industrial countries,³⁵ there is no simple correlation between seller concentration and foreign control of the sales in an industry. Direct foreign investment is not limited to highly concentrated industries; indeed, in eleven industries with 'high concentration' there is no apparent foreign participation at all, whereas in eight industries with low concentration one or more of the leading firms are foreign-owned.

Table 9 shows, however, that there is some relationship between seller concentration and the degree of foreign control of the sales of the leading firms in 22 industries in which at least one of the leading firms is foreign-owned. The correlation coefficient between concentration

Table 8. Guatemala: distribution by concentration class of 33 industries with no recorded direct foreign investment in the leading three firms, 1971

Concentration class ^a (per cent)	Industry
90 and over	Breweries Articles made of cane Bricks Cement Petroleum products Basic non-ferrous metals Plastic products Agricultural machinery Motorcycles and bicycles Scientific instruments Photographic
50-89.9	Meat packing ^b Leather tanning ^b Automotive ^b Dairy products Edible oils Sugar refining Liquor Wine Rope Leather goods Leather shoes Other wood products Pottery Non-electrical machinery Jewellery
Under 50	Finished lumber ^b Yarn and cloth ^b Bakeries Knitted goods Furniture of wood Miscellaneous manufactures

^aPercentage of sales in the largest three firms.

^bSome direct foreign investment is known to exist in the industry, although not in the leading three firms.

Source: Table 7.

Table 9. Guatemala: distribution of 22 industries according to concentration and degree of foreign control among the leading three firms, 1971

Concentration ^a		Foreign control ^b		
	High	Medium	Low	
High	Pulp and paper Petroleum refining Tyres and tubes Glassware	Prepared seafood Paints and varnishes Tobacco		
Medium		Prepared fruits and vegetables Candy Basic industrial chemicals Basic iron and steel Electrical machinery	Articles of cloth Articles of paper	
Low	Misc. foods	Consumer chemicals Other non-metallic minerals	Grain mills Non-alcoholic beverages Clothing Printing and publishing Metal products	

^aHigh, medium and low concentration is defined as the percentage of sales in the largest three firms being 90 and over, 50 to 89.9, and less than 50, respectively.

^bHigh foreign control means that firms with foreign equity participation account for 90% or more of the sales of the leading three firms, medium control between 50 and 89.9%, and low control less than 50%. None of the observations for foreign control were less than 30% in these 22 industries.

Source: Same as Table 7.

and foreign control is positive (0.57) and is significant at the 1% level for these 22 observations. The regression equation is

$$C = 25.1 + 0.683 F \quad (1)$$

where C is the computed value of the three-firm concentration ratio and F is the percentage of leading firm sales accounted for by firms with foreign equity participation. The standard error of the regression coefficient is 0.219.

If 'miscellaneous foods' is omitted from the sample, on the grounds that the low concentration ratio is not very meaningful for such a broadly defined industry, the correlation coefficient between concentration and foreign control rises to 0.71, the regression equation becomes

$$C = 15.1 + 0.883 F \quad (2)$$

and the standard error of the regression coefficient falls to 0.199. This equation suggests first that the degree of concentration rises as foreign control of leading firms rises and secondly that the market share of smaller firms is affected more than is the market share of leading domestic firms as foreign control increases. The following chart, which reports the calculated market shares implicit for

selected values of F in equation (2), illustrates these points:

F	C	Market Shares of:			total
		small firms	leading domestic firms	leading foreign firms	
50	59	41	29.5	29.5	100
60	68	32	27	41	100
70	77	23	23	54	100
80	86	14	17	69	100
90	95	5	10	85	100

These estimates are very rough, but the results are consistent with the hypothesis that direct foreign investment in leading firms raises the level of seller concentration in Guatemalan manufacturing industries. No support is found for the contrary hypothesis that entry of large foreign-owned firms reduces the degree of seller concentration.³⁶

In summary, the limited data that are available for one country and for a single year suggest that Central Americans may well be correct when they claim that direct foreign investment in manufacturing increases the

extent of monopoly power and lessens competition in local industries. These results are necessary, but not sufficient, to conclude that local entrepreneurs suffer as a result of foreign entry. A complete study would have to take into account the effects of direct foreign investment on foreign trade, for it is quite possible that increased seller concentration in the domestic market is at the expense of imports rather than sales by smaller firms.

IV. A COMPARISON OF RESIDENT AND NON-RESIDENT-OWNED MANUFACTURING PLANTS

Central American writers generally assume that local firms behave differently than their foreign-owned counterparts and that the local firm is invariably at a disadvantage in competing in a regional market. Rosenthal, for example notes that sellers took the initiative in most of the 'take-overs' of the 1960s, and concludes that

Two reasons seem to underlie the willingness – and, in some cases, eagerness – of local industrialists to sell: a) inability to adapt to the expanded market and competition brought by the integration process; and b) fear of foreign competition at the regional or national level. These two phenomena are intimately related.³⁷

Do foreign-controlled firms behave differently than otherwise comparable locally-owned firms? In this section, Costa Rican data are employed to test this proposition. Specifically, data for 33 non-resident (NR) controlled firms are compared with that for 33 resident (R) controlled firms with respect to profits, productivity, choice of technique, foreign trade, wages and employment.

(1) *The sample and statistical method*

The sample consists of 33 pairs of firms that are closely matched with respect to size and product mix.³⁸ The distribution of the firms by industry is reported in Table 10. The data are for the fiscal year ending 31 September 1971 and all 66 firms have industrial contracts that allow for a 90 to 100% exemption from most taxes, including duties on imported inputs. Profits, however, are exempt from tax for only the first five years of an industrial contract; thereafter 50% of the normal profits tax must be paid.

The Wilcoxon matched-pairs, signed-ranks test was used to test for significant differences

Table 10. *Costa Rica: distribution of the sample by industry*

Industry	Number of Pairs
Processed foods	4
Animal feed	2
Textiles	3
Knit synthetic clothing	1
Plywood	1
Paints	1
Pharmaceutical	3
Cosmetics	1
Soaps and detergents	1
Other consumer chemicals	3
Plastics	2
Sanitary plumbing	1
Metal products	6
Refrigerators and stoves	2
TV and stereo assembly	1
Zippers	1
TOTAL	33 pairs of firms

between the two types of firms. The Wilcoxon test gives more weight to pairs which show a large difference than to those which show a small difference. It is thus a non-parametric substitute for, and has a power efficiency equal to 95% of, the normal distribution *t*-test.³⁹

This approach follows that of Mason,⁴⁰ so it is useful to point out the differences between the two studies. First, this sample consists of 33 matched pairs whereas Mason had only 14. Secondly, all firms are located in the same country (Costa Rica) whereas Mason's sample included firms in both Mexico (five pairs) and the Philippines (nine pairs). Thirdly, in some cases the Costa Rican data are less appropriate for the purposes at hand than were those of Mason. It is necessary, for example to rely on the book value of machinery and equipment whereas Mason obtained estimates of replacement values. Fourthly, the firms in the Costa Rican sample are much smaller (average total assets of 780 thousand dollars) than those in Mason's sample (average total assets of 11.5 million dollars). Fifthly, Mason chose to reject the null hypothesis in favour of a hypothesis of difference in behaviour when there was a 20% or lower probability of no difference in a one-tailed test. The tests reported below are also one-tailed, but a more conventional 5% rejection region is used, so null hypotheses are less likely to be falsely rejected.

It should be emphasized that the comparison is between foreign firms and comparable domestic firms with industrial contracts. The test is thus for differences due to different international connections and managerial

practices, *not* differences due to size or government policy. It is known that NR firms tend to rank among the larger firms in a given industry. In addition, there is weak evidence that NR firms may be somewhat favoured in the granting of industrial contracts, presumably because of their ability to 'play off' one Central American country against another.⁴¹

(2) Profits

A direct test of any advantage of NR over R firms is to measure the extent to which differences in efficiency or market power are reflected in the profitability of the two sets of firms. For the industrial countries, the available evidence is mixed. Safarian⁴² reports that there does not appear to be a significant over-all difference between the two sets of firms in Canadian manufacturing, but Brash⁴³ and Dunning⁴⁴ found that United States-owned manufacturing plants show a substantially higher rate of return than domestically-owned plants in Australia and the United Kingdom, respectively.

In Central America, it is usually assumed that NR firms are more profitable than R firms, but Rosenthal reports that:

scant information available from Guatemala's income tax office and the Industrial Survey of 1968 suggest that, if anything, average rates of return on domestic industrial plants were higher than those for foreign plants. However, this very preliminary conclusion warrants further study, especially between competing plants within the same economic activity.⁴⁵

Despite Rosenthal's observations, we will test the hypothesis that NR firms are more profitable than R firms against the null hypothesis that there is no difference between the two sets of firms. The measure used is the percentage return (profits plus interest payments) after depreciation but before tax on the book value of total assets exclusive of land.⁴⁶

Costa Rica applies a progressive rate of tax to both personal and business income. This tax system encourages owner-managers of tightly-held firms either to withdraw their salaries in the form of profits (small firms and firms totally exempt from profits tax) or to withdraw profits in the form of salaries (large firms subject to at least partial profits tax).⁴⁷ An executive compensation adjustment was applied to R firms on the assumption that 7,000 dollars per year is the opportunity cost of an executive's time. This is the average salary paid to Costa Rican executives by 57 NR firms in 1971.

In the case of NR firms, the rate of return is likely to be biased upwards by an unknown amount. R firms must pay as much as 10% of sales for the use of a trade mark and varying amounts for technical assistance.⁴⁸ In NR firms, as much as 50% of the investment may represent capitalized 'know-how',⁴⁹ hence profits and value-added are higher than if technology and trade marks were purchased in the market.⁵⁰

Transfer pricing of imports or exports might also bias the reported profits of NR firms, but this is not likely given the absence of foreign exchange controls during this period in Costa Rica and given that the firms in question were exempt from most direct and indirect taxes. The price data necessary to test this presumption were not available for firms in the Costa Rican sample, but Rosenthal found no evidence of consistent transfer pricing of raw materials imported by NR firms in Guatemala during 1969.⁵¹

The results of the Wilcoxon test on the profit data are reported in Table 11 and do not allow us to reject the null hypothesis that NR firms are no more profitable than comparable R firms.⁵²

(3) Productivity and choice of technique

With respect to production methods and productivity, most students predict that NR firms are more productive than their locally-owned counterparts in terms of output per worker, and would ascribe this difference to some combination of more highly trained workers, superior management and greater capital intensity. Empirical evidence is meagre, but some support for this hypothesis has been found in Australia and the United Kingdom.⁵³ Since the parents of NR firms are based in relatively high-wage countries, it seems reasonable to assume, *a priori*, that 'when (these) enterprises deviate from their local competitors in choice of production techniques, the deviation tends to be toward the use of techniques that reflect their access to relatively inexpensive capital and their experience with techniques that are capital intensive'.⁵⁴

Some writers have advanced the contrary hypothesis that locally-owned firms tend to be more capital intensive (though not necessarily more productive in terms of output per worker) than their NR counterparts. Strassman, for example reports that 'in Mexico, foreign branches tend to operate more labour-intensively, with older equipment and more

shifts, than locally-owned plants'. He attributes this to the fact that mechanization reduces the need to manage labour, which local entrepreneurs do rather poorly, and 'the capital-intensiveness of organization-saving techniques is secondary'.⁵⁵

Differences in productivity and capital intensity between R and NR firms have not yet been subjected to a proper test in Central America. Brewster has noted, using aggregate 1968 Guatemalan data, that 'domestic-owned enterprise tends to be much more labour intensive than foreign-owned enterprise, even for identical or similar industries' and suggests that 'one way to minimize the loss of employment is to increase the ratio of domestic to foreign ownership of industry'.⁵⁶ Rosenthal, using the same data as Brewster, was surprised to find that the output-capital ratio 'was higher for foreign plants than for indigenous plants in 11 out of the 19 activities'. Moreover, he cautions that 'the 58 foreign manufacturing plants were, on the whole, relatively large and sophisticated plants, while within the 995 indigenous plants

there were a great many family and artisan type firms, heavily dependent on labour'. Rosenthal suggests that an explanation for the relatively low capital-output ratios in NR firms may be that 'foreign plants . . . operated at a higher percentage of their installed capacity'.⁵⁷

As Rosenthal noted, the main deficiency of his and Brewster's analyses is that the two sets of firms were not truly comparable in terms of size or product mix. Using the data for 33 matched pairs of firms in Costa Rica, it is possible to subject the observations of these writers to a more rigorous statistical test. As shown in Table 11, the results indicate that while NR firms tend to have a higher output-labour ratio than R firms, the differences are not statistically significant at the 5% level. With respect to the capital-labour ratio, the results lend no support to Brewster's thesis that NR firms are more capital intensive. Indeed, when capital intensity is measured by fixed assets per employee, it is almost possible to conclude the reverse.

Table 11. *Costa Rica: test for significant differences between resident- and non-resident-owned firms*

Direction of hypothesized relation	Wilcoxon test	
	Significance level	5% Level decision
1. NR firms in the sample are larger than R firms in the sample, where size is measured by		
a. Total assets	.230	Do not reject H_0
b. Fixed assets	.656	Do not reject H_0
c. Number of employees	.375	Do not reject H_0
2. NR firms are more profitable (higher rate of return on total assets)		
a. Without executive compensation adjustment	.496	Do not reject H_0
b. With executive compensation adjustment	.351	Do not reject H_0
3. NR firms are more productive than R firms, where productivity is measured by		
a. Value-added per employee	.128	Do not reject H_0
b. Value-added per factory worker	.089	Do not reject H_0
4. NR firms have a lower capital-output ratio, where capital-output is measured by		
a. Equipment per factory worker	.398	Do not reject H_0
b. Fixed assets per employee	.928	Do not reject H_0
c. Total assets per employee	.864	Do not reject H_0

[continued opposite]

5. NR firms have a lower capital-output ratio, where capital-output is measured by		
a. Equipment/value-added	.097	Do not reject H_0
b. Fixed assets/value-added	.022	Reject H_0
c. Total assets/value-added	.034	Reject H_0
6. NR firms utilize production facilities more hours per year (N = 15)	.441	Do not reject H_0
7. NR firms export a larger proportion of their output	.0006	Reject H_0
8. NR firms import a larger proportion of raw materials and intermediates	.092	Do not reject H_0
9. NR firms are less integrated vertically	.776	Do not reject H_0
10. NR firms use (composition of labour force)		
a. Relatively more executive personnel	.133	Do not reject H_0
b. Relatively more technical personnel	.606	Do not reject H_0
c. Relatively more non-executive white collar employees	.012	Reject H_0
d. Relatively less factory labour	.074	Do not reject H_0
11. NR firms pay higher wages to		
a. Technical personnel (N = 24)	.720	Do not reject H_0
b. Costa Rican technical personnel (N = 18)	.422	Do not reject H_0
c. Non-executive white collar employees (N = 32)	.034	Reject H_0
d. Production workers	.170	Do not reject H_0
e. Mean including executives	.003	Reject H_0
f. Mean excluding executives	.020	Reject H_0

Note: The level of significance was calculated by a normal approximation, and represents the probability of committing a Type I error, i.e. of falsely rejecting the null hypothesis that there is no difference between the two sets of firms. All tests are one-tailed; a significance level exceeding .5 indicates that the direction of the relationship is opposite to that hypothesized.

NR = non-resident-owned and controlled (usually 100%)

R = resident-owned and controlled

N = number of *pairs* of firms (equal to 33 unless otherwise specified)

The findings reported in Table 11 do lend statistically significant support to Rosenthal's discovery of relatively low capital-output ratios in NR firms, but they do not support his explanation of the phenomenon. There does not appear to be any statistically significant difference between R and NR firms in the utilization of plant and equipment. It should be emphasized, however, that it was not possible to measure the extent to which some equipment is idle during the time the plant itself is in operation, and this may be an important factor.

In summary, at the 5% level of significance, it is possible to conclude only that the capital-output ratio is relatively low in NR firms. It is, of course, mathematically impossible for the capital-output ratio to differ consistently between the two sets of firms while both output-labour and capital-labour ratios remain the same. A typical NR firm must then have *either* a higher output-labour ratio *or* a lower capital-labour ratio, *or* both, in comparison to its locally-owned counterpart.⁵⁸ The statistical significance of this conclusion is,

however, less than that reported in Table 11 because NR firms often pay less than market price for services and the use of trade marks. This biases the value-added of NR firms upwards, hence capital-output downwards and output-labour upwards.

(4) Foreign trade

It is sometimes hypothesized that foreign-controlled firms, because of their international connections, have a greater propensity to engage in foreign trade than do locally-owned firms. From this it follows that NR firms should outperform R firms in terms of exports, be more prone to import goods from abroad, and be less integrated vertically.

A considerable body of aggregate data exists to support the thesis that NR firms are more active than R firms in export markets. Rosenthal, for example reports that in the case of Guatemala, NR firms accounted for less than a third of manufacturing production but 44.6% of manufactured exports to member countries of the CACM during 1970.⁵⁹ For Latin America as a whole, United States-controlled subsidiaries in 1966 accounted for less than 10% of gross value-added in the manufacturing sector and for over 40% of manufactured exports.⁶⁰

One might speculate that the observed export performance of NR firms may be due to size or product mix. The results reported in Table 11 suggest strongly that such is not the case, for it is possible to reject at the 0.0006 level the null hypothesis that there is no difference in the export/sales ratios of R and NR firms operating in Costa Rica. Non-resident-owned firms, in other words, appear to have a superior export performance even when size and product mix are held constant. This lends support to the complaint of Central Americans that the protective common external tariff exists primarily for the benefit of foreign-owned plants.⁶¹

With respect to imports, NR firms do tend to import a larger proportion of their total purchases of raw materials and intermediate goods, but the difference is not significant at the 5% level.⁶² (See Table 11.) It is interesting to note that our findings are different from those of Safarian, who compared 66 large resident-owned and 107 large non-resident-owned manufacturing plants in Canada and found a statistically significant difference in propensities to import, but not in export performance.⁶³ The Costa Rican results may

thus not be universally valid, but rather a reflection first of the fact that NR firms tend to regard the CACM as a single internal market and secondly of the fact that all firms in the sample have industrial contracts which encourage import-intensive production.

Finally, it is frequently alleged that since direct foreign investment is viewed as an alternative to exporting, NR firms will be more apt to engage in mere 'assembly operations', importing component parts from other locations where there are longer production runs and lower costs due to scale economies.⁶⁴ Using the ratio of gross value-added to gross production (both net of indirect taxes) as a crude measure of vertical integration, the statistical results reported in Table 11 provide no support for the hypothesis that 'foreign subsidiaries are typically less integrated vertically than the domestic firms with which they compete'.⁶⁵ If anything, the reverse is true, but the difference in degrees of vertical integration is not statistically significant.

(5) Employment

Rosenthal has argued that one of the reasons for the successful export performance of NR firms is their relative abundance of managerial and technical personnel:

In the domestic plant, the owner apparently takes over many of the management and technical functions since [in Guatemala] ... the [58] foreign enterprises had, on the average, one administrative employee for every 3 labourers, and one technical employee for every 9 labourers, while the corresponding ratios for [995] domestic plants were 6 and 36, respectively. The 'intermediate layers' of management, then, were heavily concentrated in foreign enterprises, which were organized from the start to meet the greater administrative burdens that competing in the expanded regional market imposed on them.⁶⁶

There is no doubt that Rosenthal's observations are true for R and NR firms in the aggregate, but some of the observed differences in the composition of the labour force may be due to the fact that R firms are generally smaller in size than NR firms, and it is common for the owner of a small family firm to 'take over many of the management and technical functions'.

What conclusion can be reached when size and product mix are held constant? The results reported in Table 11 suggest that NR firms *do not* employ relatively more technical personnel than *comparable* R firms, however NR firms do employ a significantly larger proportion of

administrative employees. Rosenthal's suggestion that NR firms employ proportionately more administrative personnel thus remains valid when the sample is restricted to comparable pairs of firms.

Another hypothesis is that NR firms have an advantage over R firms because the former pay higher wages and attract workers with greater abilities and skills.⁶⁷ Aggregate data do suggest that wages are higher in NR firms,⁶⁸ but again this might be due to the fact that NR firms are among the largest in the Central American economies. As shown in Table 11, when size and product mix are held constant, the average monthly wage paid by NR firms is significantly higher than that paid by R firms to employees in general. This result appears to depend on the relative importance of administrative employees in NR firms, for it is only for this category of employees that NR wages are significantly higher than R wages at the 5% level.⁶⁹

V. CONCLUSION

Manufacturing accounted for only 13% of Central America's gross domestic product when the Central American Common Market was formed in 1960, but by the end of the last decade it accounted for over 17% of the region's gross domestic product. Direct foreign investment has played a large role in this expansion of manufacturing activity behind the protective wall of a common external tariff. Non-resident-owned firms tend to be among the largest in the manufacturing sector, and control approximately 30% of the region's industrial output.

Central American industrialists generally support the restriction of direct foreign investment to activities that are not competitive with established enterprises. This position is supported by some intellectuals and leaders of opposition parties who feel that most of the benefits of integration are accruing to 'certain migratory birds',⁷⁰ to transnational corpora-

tions rather than to local entrepreneurs. Nonetheless, the five governments have imposed virtually no restrictions on direct investments in manufacturing and indeed have competed among themselves in efforts to attract a larger share of the investments destined for the Central American region. At the regional level, attempts to favour local investment over investment from abroad have met with little success. In general, Central America has followed an 'open door' policy with respect to foreign capital inflows.

A case might be made for a selective restriction of direct investment flows on the grounds that the presence of foreign subsidiaries increases the extent of monopoly power and lessens competition in local industries. Data for Guatemala are consistent with this view, for there appears to be a positive relationship between the degree of foreign control of leading firms and the degree of seller concentration in local industries. But there is not necessarily a direct link between concentration and social welfare, particularly in small economies such as those of Central America. High prices and high costs may be associated with many firms producing inefficiently behind a tariff wall.⁷¹ An industry with few firms but with no legal barriers to further entry may produce more efficiently and may be less able to assert monopoly than an industry with more firms and barriers to the entry of foreign competitors.

Many misgivings that Central Americans have with respect to foreign-owned manufacturing plants may be equally applicable to large domestically-owned plants. Our study of a sample of industrial firms in Costa Rica suggests that there are few significant differences between foreign-owned firms and their domestic counterparts when size and product mix are held constant. The foreign-owned plants do, however, export a significantly greater proportion of their production to other markets in the isthmus, employ relatively more white-collar workers at a higher salary, and have a lower capital-output ratio.

NOTES

1. Cleona Lewis, *America's Stake in International Investments* (Washington, D.C.: Brookings Institution, 1938). Cited in United Nations Economic Commission for Latin America, *External Financing in Latin America* (New York: 1965), p. 15.

2. For a brief history, see Gert Rosenthal, 'The role of private foreign investment in the development of

the Central American Common Market', mimeo (March 1973), pp. 55-97. A summary of this book-length monograph appears as 'Algunos apuntes sobre el grado de participacion de la inversion extranjera directa en el proceso de la integracion Centroamericana', in *La Integracion Economica Centroamericana*, ed. Eduardo Lizano I. (Mexico: Serie de Lecturas, Fondo de Cultura Economica, 1975), pp. 272-96.

3. Including petroleum refining and distribution.
4. Rosenthal, *op. cit.*, pp. 129–30.
5. *ibid.*, tables 25–27. Of the 572 firms, 283 operated in the manufacturing sector. There is some evidence that Rosenthal's inventory of foreign firms is incomplete. *Comercio Exterior* (March 1972, p. 232) reports that 55 Mexican companies have direct investments totalling US \$89 million in Central America. Pesticau lists 14 Canadian firms, including Bata Shoe Company, Colgate-Palmolive (Canada) Limited and Moore Corporation, that are known to have direct investments in Central America. Colin I. Bradford, Jr. and Caroline Pesticau, *Canada and Latin America: The Potential for Partnership* (Montreal: Private Planning Association, 1971), pp. 172–73.
6. International Bank for Reconstruction and Development, *Report of the Industrial Finance Mission to Central America: The Common Market and Its Future* (Washington, D.C.: 1971), p. 32.
7. The results of this special tabulation of data from J. W. Vaupel and J. P. Curhan, *The Making of Multinational Enterprise* (Cambridge, Mass.: Harvard University, 1969) are reported in Rosenthal, pp. 112–14 and tables 28–29. For additional evidence of increased investment in the manufacturing sector, see Sheldon L. Schreiber, 'The United States private investor and the Central American Common Market', in US Congress, Joint Economic Committee, *Latin American Development and Western Hemisphere Trade, Hearings* (Washington, D.C.: 1965), pp. 260–85.
8. The corresponding proportion of total capital formation financed by foreign savings ranged from a high of 28% in Costa Rica to a low of 16% in Honduras. Approximately one third of the foreign capital inflow was in the form of direct investments. SIECA, *El Desarrollo Integrado de Centroamerica en la Presente Decada* (Buenos Aires: BID-INTAL, 1973–74), appendix 1, tables 1.19–1.25 and 2.1–2.6.
9. Rosenthal, 'The role of private foreign investment', p. 385.
10. Statistics are scarce, but Rosenthal (*ibid.*, pp. 120–21) has collected some evidence to support this conjecture.
11. Rosenthal (*ibid.*, p. 141) found one dramatic case 'where a multinational firm borrowed from a local bank the total amount required to acquire an established factory that had been successfully run for over ten years by local entrepreneurs'.
12. *ibid.*, p. 123.
13. *ibid.*, pp. 386–90 and table 102.
14. Minutes of the meeting of 2 October 1965, in Inter-American Economic and Social Council, *The Role of Foreign Private Investment in the Development of Latin America* (Washington, D.C.: Pan American Union, 1969), pp. 162–65.
15. 'The delegation of Guatemala maintained the position that foreign investment in the Central American area should be free; furthermore, it felt such investment to be necessary, urgent and desirable'. In contrast, 'all members of the delegation of El Salvador maintained that Central American industrialists should be protected against investors who may harm the economic development of the area if allowed to act without controls'. *ibid.*, p. 162.
16. In the case of El Salvador, 13 of the 24 persons interviewed were executives of firms with foreign equity participation (including an unreported number of wholly-owned foreign subsidiaries). This is somewhat like surveying priests in an attempt to ascertain community attitudes toward the Church.
17. 'Foreign-owned firms are able to sustain losses for several years . . . ; and once they have eliminated firms owned by Central Americans, prices will rise to the limit permitted by tariff protection'. Petition of the Asociacion Centroamericana de Industriales Textileros published in *Economía* (Guatemala), (April 1965), pp. 3–4. For a similar case with respect to the paper industry, see 'Honduras: the 78 million dollar question', *Latin America* (London), (31 May 1968), pp. 170, 172.
18. Many intellectuals tend to regard economic integration and direct foreign investments in manufacturing as new forms of dependency. See, for example Guillermo Molina Chocano, *Integracion Centroamericana y Dominacion Internacional* (San Jose: Editorial Universitaria Centroamericana, 1971); Edelberto Torres Rivas, *Interpretacion del Desarrollo Social Centroamericano* (San Jose: Editorial Universitaria Centroamericana, 1971); and Susan Bodenheimer, 'Masterminding the mini-market: US aid to the Central American Common Market', *NACLA's Report* (May 1973), pp. 3–21. For statements of opposition parties, see Francisco Villagran Kramer, *Integracion Economica Centroamericana: Aspectos Sociales y Politicos* (Guatemala: Universidad de San Carlos, 1967), pp. 327–43.
19. 'The countries have followed, in general, an "open door" policy with respect to foreign capital. With relatively few exceptions, foreign capital has the same privileges and obligations as national capital in the five countries of the region'. SIECA, *El Desarrollo Integrado*, appendix 9, p. 99.
20. In June 1965 the five ministers of economy did issue a statement promising some coordination of policies vis-à-vis foreign investment, but this promise was never fulfilled. See 'Declaration of the Ministers of Economy of Central America', in Inter-American Economic and Social Council, pp. 168–69.
21. *Primer Protocolo al Convenio sobre el Regimen de*

- Industrias Centroamericanas de Integración*, San Salvador (29 January 1963), articles 13 and 21.
22. *Segundo Protocolo al Convenio sobre el Régimen de Industrias Centroamericanas de Integración*, San Salvador (5 November 1965), article 3.
23. See David E. Ramsett, *Regional Industrial Development in Central America: A Case Study of the Integration Industries Scheme* (New York: Praeger Publishers, 1969), pp. 51–52.
24. Rosenthal, *op. cit.*, p. 146.
25. IBRD, *Report of the Industrial Finance Mission*, pp. 30–31; CABEL, *Investment Opportunities in the Central American Common Market* (Tegucigalpa, 1971), p. 22.
26. For details, see Rosenthal, *op. cit.*, pp. 212–21.
27. The loan was granted to a plastics firm owned by United Brands in Honduras.
28. See, for example, G. A. D. MacDougall, 'The benefits and costs of private investment from abroad: a theoretical approach', *Economic Record*, 36 (1960), pp. 27–28; and Richard E. Caves, 'Industrial organization', in J. H. Dunning (ed.), *Economic Analysis and the Multinational Enterprise* (London: George Allen & Unwin, 1974), pp. 136–38.
29. See Eduardo Lizano, 'El problema de las inversiones extranjeras en Centroamérica', in *Comentarios sobre Economía Nacional* (Universidad de Costa Rica, 1971), pp. 217–37.
30. Rosenbluth, in the only published test of these hypotheses, concludes that the observed simple correlation between seller concentration and the percentage of sales under foreign control in Canadian industries is due to the tendency for foreign-controlled enterprises to dominate the larger firms of an industry rather than any direct relationship between seller concentration and foreign control. G. Rosenbluth, 'The relation between foreign control and concentration in Canadian industry', *Can. J. Economics*, 3 (February 1970), pp. 14–38.
31. It is, of course, possible for neither hypothesis to be confirmed, as was the case with Rosenbluth's study. In this connection, it is interesting to note that Rosenbluth reports that foreign-controlled firms accounted for a disproportionately high share of mergers in Canada during the 1945–61 period. *ibid.*, pp. 29–38.
32. This study was not restricted to the manufacturing sector. Of the 46 'take-overs', 24 took place in Guatemala, 11 in Costa Rica, 6 in Nicaragua, 4 in El Salvador and 1 in Honduras. In half of the take-overs, local sellers retained a minority interest in the firm, though they normally did not participate in management. Rosenthal, *op. cit.*, pp. 360–71.
33. Sampling was employed in ISIC 3112, 3116, 3117, 3118, 3121, 3211, 3213, 3220, 3240, 3311, 3320, 3420, 3529, 3699, 3810, and 3909.
34. This is due to the fact that sampling was used to estimate the aggregate sales of smaller firms in some industries.
35. See, for example John H. Dunning, *American Investment in British Manufacturing Industry* (London: George Allen & Unwin, 1958), pp. 155–57; Daniel Chudnovsky, 'Empresas multinacionales y tecnología en la industria argentina', *Comercio Exterior*, 25 (April 1975), pp. 453–54; and Rosenbluth, *op. cit.*, pp. 18–19.
36. This test is similar to one used by Rosenbluth, who found no support for either hypothesis in Canada.
37. Rosenthal, *op. cit.*, p. 362. For a similar view, see Lizano, 'El problema de las inversiones extranjeras en Centroamérica'.
38. The data were collected by a Costa Rican government agency.
39. See Sidney Siegel, *Nonparametric Statistics for the Behavioural Sciences* (New York: McGraw-Hill, 1956), pp. 75–83.
40. R. Hal Mason, 'Some observations on the choice of technology by multinational firms in developing countries', *Review of Economics and Statistics*, 55 (August 1973), pp. 349–55.
41. Between 1960 and 1970, NR firms received 20% of the total number of industrial contracts in Costa Rica and accounted for 56% of investment (new plant and expansion of existing facilities) under such contracts. Samuel Stone, 'Inversiones industriales en Costa Rica', *Revista de Ciencias Sociales*, 7 (April 1973), pp. 67–89.
42. A. E. Safarian, *The Performance of Foreign-Owned Firms in Canada* (Montreal: Private Planning Association, 1969), chapters 6 and 7.
43. Donald T. Brash, *American Investment in Australian Industry* (Canberra: Australian National University Press, 1966), chapter 10.
44. John H. Dunning, *The Role of American Investment in the British Economy* (London: Political and Economic Planning, 1969), pp. 130–36.
45. Rosenthal, *op. cit.*, p. 126.
46. Land is excluded because the book values reported bear no relation to current market prices (opportunity costs), and in any case land is not an important input in the production of manufactured goods. Total assets are estimated as the sum of fixed assets plus inventories of raw materials at the begin-

- ring of the fiscal year plus estimated inventories of finished goods and goods in process. This last inventory estimate is calculated as one sixth of total sales in fiscal 1971.
47. Nearly all domestic firms are tightly held. In the entire CACM, only 55 firms sell equity shares openly to the public. SIECA, *El Desarrollo Integrado de Centroamerica*, appendix 9, p. 157.
48. Roberto Lopez Porras, *Empresas de Accion o Capital Multinacional en Centroamerica* (Guatemala: SIECA, 1972), p. 36.
49. *ibid.*, pp. 31–32.
50. Richard Caves also notes the 'common practice of transferring the implicit rents from the use of trade marks, technical know-how and the like in the form of profits rather than service charges', in 'International corporations: the industrial economics of foreign investment', *Economica*, 38 (February 1971), p. 14, n. 3.
51. Rosenthal, *op. cit.*, pp. 344–46 and table 95. Of 35 imported items studied, price differentials were less than 50% in all but three cases and 'the price paid by the foreign firm was higher than that paid by the domestic firm in 15 cases, lower in another 14 cases, and the same for the remaining 6'. Vaitos, however, in a study of selected industries in Colombia, Chile, Peru and Ecuador, reports that 'overpricing on products imported by foreign-owned subsidiaries was in general higher . . . than that of nationally-owned firms. Foreign subsidiaries in the cases investigated apparently use transfer pricing of products as a mechanism of income remission, thus significantly understating their true profitability'. Constantine Vaitos, *Intercountry Income Distribution and Transnational Enterprises* (London: Oxford University Press, 1974), p. 50. The fact that Rosenthal's conclusions differ from those of Vaitos probably is a reflection of the absence of exchange restrictions in Guatemala. On this point, see R. Müller and R. D. Morgenstern, 'Multinational corporations and balance of payments impacts in LDCs: an econometric analysis of export pricing behaviour', *Kyklos*, 27 (1974), pp. 310–11; and S. M. Robbins and R. B. Stobaugh, *Money in the Multinational Enterprise* (New York: Basic Books, 1973), pp. 91–92.
52. Mason's study of 14 pairs of firms produced an identical conclusion.
53. Brash, *op. cit.*, chapter 7; Dunning, *The Role of American Investment in the British Economy*, pp. 143–44. See also Mason, 'Some observations on the choice of technology'.
54. R. Vernon, 'The location of economic activity', in J. Dunning (ed.), *Economic Analysis and the Multinational Enterprise* (London: George Allen and Unwin, 1974), p. 108.
55. W. Paul Strassman, *Technological Change and Economic Development: The Manufacturing Experience of Mexico and Puerto Rico* (Ithaca: Cornell University Press, 1968), p. 274 and chapters 4–5. See also A. O. Hirschman, *The Strategy of Economic Development* (New Haven: Yale University Press, 1958), chapter 8; and C. Clague, 'The determinants of efficiency in a underdeveloped country', *Economic Development and Cultural Change*, 18 (January 1970), pp. 188–205.
56. Havelock Brewster, 'The choice between efficiency and industrial balance: protection and employment in the Central American Common Market', mimeo, (Guatemala: SIECA and UNIDO, April 1972).
57. Rosenthal, *op. cit.*, pp. 289–90.
58. If Q = output, K = capital and L = labour, then
- $$\frac{K}{Q} = \frac{K/L}{Q/L}$$
- and a relatively low K/Q requires either a low K/L or a high Q/L .
59. Rosenthal, *op. cit.*, pp. 390–94 and tables 98, 103, 104.
60. Raymond Vernon, *Sovereignty at Bay: The Multinational Spread of U.S. Enterprises* (New York: Basic Books, 1971), p. 104. See also G. K. Helleiner, 'Manufactured exports from less developed countries and multinational firms', *Economic Journal*, 83 (March 1973), pp. 21–47. Jose R. de la Torre, 'Marketing factors in manufactured exports from developing countries', in Louis T. Wells (ed.), *The Product Life Cycle and International Trade* (Boston: Harvard Graduate School of Business Administration, 1972), pp. 227–59, argues that the lack of marketing skills accounts for the fact that domestic firms show a lower propensity to export than do foreign manufacturing affiliates.
61. See, for example, Jaime V. Monge Donis, 'Fallas de la integracion Centroamericana' in *Memoria del Primer Congreso Centroamericano de Integracion* (Guatemala: 1971), pp. 275–80. While a precise break-down between intra-regional and extra-regional exports was not available, exports to regions other than Central America and Panama were trivial for the firms in the Costa Rican sample.
62. Mason chose to reject the null hypothesis in favour of a greater import propensity on the part of NR firms in his sample, but the level of significance was 9.9% in a one-tailed test. He did not test for differences in export performance.
63. A. E. Safarian, *Foreign Ownership of Canadian Industry* (Toronto: McGraw-Hill, 1966), pp. 294–95. See also R. W. Wilkinson, *Canada's International Trade: An Analysis of Recent Trends and Patterns* (Montreal: Private Planning Association, 1968), pp. 127–31.

64. See, for example, Caves, 'International corporations', p. 13 and Bodenheimer, 'Masterminding the mini-market: US aid to the Central American Common Market'.
65. Caves, 'International corporations', p. 13. Richard Caves presents some weak evidence for Canada in support of the hypothesis of less vertical integration in NR firms relative to R firms in *Diversification, Foreign Investment, and Scale in North American Manufacturing Industries* (Ottawa: Economic Council of Canada, 1975), pp. 44-45.
66. Rosenthal, *op. cit.*, pp. 364-65.
67. Mason, p. 354, concludes that 'the higher wage is supported by somewhat higher skills, since United States firms appear to be somewhat more productive than their local counterparts - not always significantly so in a statistically meaningful way, but the rank orderings indicate this to be the direction of influence'.
68. See SIECA, *El Desarrollo Integrado de Centro-america*, appendix 9, p. 107, and Rosenthal, *op. cit.*, pp. 320-34.
69. The international business of NR firms might account for higher administrative salaries, for the mere presence of a few bilingual secretaries, which are highly paid in Costa Rica, increases the average salary of white-collar employees.
70. Celso Gamboa, 'Ante imperdonables fallas del Congreso Juridico sobre la Integracion Economica Centroamericana', *La Nacion* (San Jose), (27-28 November 1964), quoted in Lizano, p. 227. A similar fear is reported by G. K. Helleiner in 'The role of multinational corporations in the less developed countries' trade in technology', *World Development*, 3 (April 1975), p. 171.
71. See, for example, Stefan Stykolt and Harry C. Eastman, 'A model for the study of protected oligopolies', *Economic Journal*, 70 (June 1960), pp. 336-47. The automobile assembly industry in Costa Rica, which is a good example of this phenomenon, is discussed by Roger D. Hansen in *Central America: Regional Integration and Economic Development* (Washington, D.C.: National Planning Association, 1967), pp. 53-54.