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**MULTINATIONAL CORPORATIONS IN NORTH AMERICA: FREE
TRADE INTERSECTIONS**

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INTRODUCTION AND SUMMARY

The paper analyzes the experiences of Canada, Mexico and the United States with foreign direct investment as a group, from a uniform theoretical perspective, with the goal of illuminating the interactions of the three countries. There are a number of unsuspected parallels between the Mexican and Canadian cases, resulting not only because of the impact of the U.S. on their economies, but also because of the importance of raw materials in their economic structure. These may prove useful for Mexican academics and policy makers; in particular, an effort is made to summarize the major works of Canadian economists with regard to foreign direct investment (FDI), in an effort to suggest fruitful lines of inquiry for their Mexican colleagues.

The structure of the paper is relatively straightforward. After a very brief theoretical interlude, the historical experiences of the United States and Canada are presented, in terms of both inward and outward FDI, followed by a shorter summary of the Mexican case. As one of the major issues in Canada has been the interaction between multinational firms (MNCs) and research and development (R&D), this literature is reviewed, followed by comments on its relevance to the Mexican case. Finally, some preliminary projections for FDI into Mexico as a result of the projected signing of a North American Free Trade Agreement (NAFTA) are reviewed.

In view of the length of the paper, the major conclusions will be summarized here. This century has seen a tremendous rise in the level of FDI from the United States, particularly into Canada and Mexico. That phase of expansion of outward investment appears to be ending, as the technological dominance of US firms recedes, due both to competition from other source countries in Europe and Asia, as well as the growing sophistication of domestic entrepreneurs in host countries. Moreover, the U.S. is now the largest recipient of FDI. The pattern of foreign ownership of Canadian firms traces a clear pattern of an inverted U, reaching a peak in the mid-1970s. However, the Mexican experience of foreign ownership after 1930 is U-shaped, with growing foreign investment in industry counteracting a deliberate policy of "Mexicanization" of raw materials and basic services.

We will see that in both countries, multinationals tend to be associated with higher wages and profit rates, more concentrated sectors, higher import

propensities, and greater reliance on imported technology. Nevertheless, the literature in Canada tends to explain this as due to the special characteristics of the individual industrial sectors, *per se*. It will be argued that this is also the case in Mexico. One area in which the Canadian literature has more strongly criticized foreign investment is in regards to R&D, which tends to be sponsored in the home country, thus lessening technological progress in the host country. While the data in Mexico on R&D are scarce, it is argued that the much lower levels of R&D make this argument of lesser importance, and that the weakness of the indigenous research apparatus makes FDI one of the more important sources of technological progress.

THEORETICAL APPROACHES

The major theoretical approach to be followed in this paper considers foreign direct investment (FDI) to reflect primarily microeconomic decisions taken by the firm in imperfectly competitive markets.¹ This approach explains FDI by focusing on a number of factors taken from the Industrial Organization literature, which indeed are assumed away in the standard Heckscher Ohlin trade model, such as transport costs, externalities, scale economies, and differing technological levels. Basically, there will be foreign investment when there are Ownership or Locational advantages for a firm to producing overseas which can best be captured by that firm's Internalization of production via FDI (hence the name OLI). Ownership advantages for a firm can include patents or trademarks, production or management techniques, special organizational methods, and particularly the existence of economies of scale. In contrast, the locational advantages are ascribed to the host country, and include factors such as resource availability, low wages or taxes, transport costs, language or other cultural factors, etc. Finally the internalization consideration looks for a key reason why the other two advantages cannot be utilized from afar, via some form of licensing or joint venture, by pointing to such reasons as insecurity of patent laws, lack of knowledge of the potential local licensees, avoidance of search and negotiation costs, special tariff rates for imports from branch plants, and the advantages allowed by intra-firm pricing, among others. The OLI approach is closely linked with Vernon's product cycle, in that these

advantages will generally be temporary, and the attraction of FDI will recede as, for example, local entrepreneurs learn the skills of production.² The OLI approach fundamentally views FDI as beneficial to both the host and the home country. This response is not surprising coming from a market oriented theoretical approach focusing on microeconomic factors, in a semi-competitive environment. Nevertheless, FDI is generally a "second best" solution, where the first best option would involve no tariffs, widespread diffusion of technology, greater competition, and basically, no distortions. Furthermore, it is clear that one quite valid response to the OLI approach would be to look for political economy reasons for tariffs, barriers to entry, or special locational advantages. Where these exist, an attitude hostile to FDI might well be appropriate. In view of what is to come, note that one particularly important implication of the OLI approach is that, because of its assumed special advantages, FDI will be associated with higher profit rates, industries which are more concentrated, use more advertising, and are technologically dynamic.

GLOBAL MAGNITUDES

An overview of recent trends of FDI, compared to GDP, in the developed countries can be seen in Table 1. With the exception of Japan, each of the industrial countries listed on that table has sizeable flows both inward and outwards, with Canada and Australia having the biggest inflows, relative to GNP. With regard to investment into developing countries, Table 1 indicates that the range of values of the ratio of the stock of FDI to GDP for LDC's is roughly similar to that for developed countries, with Asian countries tending to have less FDI than those in Latin America or Africa. In all but one of the Latin American countries listed, there is an increase of FDI compared to GDP in the decade 1975-1985. In terms of absolute amounts, the United States has been the major source of foreign investment since World War II, as indicated in Table 2. Perhaps more surprising is the fact that over two-thirds of FDI has been placed in the developed market economies, and, indeed, that the United States is now the recipient of more FDI than all developing countries combined, as well as the recipient of the largest amount by an individual country.³

Table 1. Inward and Outward FDI as Percentage of GNP, Various Countries.

IFDI/ OFDI/ GNP GNP			IFDI/ OFDI/ GNP G			IFDI/ OFDI/ GNP GNP		
U.K.			Australia			Netherlands		
1987	12.9	22.2	1988	19.8	11.7	1982	13.2	27.1
1980	11.5	14.8	1980	4.5	0.8	1973	12.0	24.8
1970	8.2	15.3						
Italy			Denmark			Japan		
1983	2.3	2.6	1981	6.2	3.7	1987	0.38	3.23
1971	4.7	2.0	1970	6.4	1.5	1980	0.31	1.85
			1960	2.5	1.5	1977		1.73
U.S.A.			Canada			Germany		
1989	7.7	7.2	1986	18.4	10.8	1985	4.8	7.1
1980	3.0	7.9	1980	20.4	8.9	1977	5.2	3.9
1970	1.3	7.7	1970	30.0	7.1	1965		1.8
1960	1.3	6.2	1960	33.6	6.4			
1950	1.2	4.1	1950	21.5	5.4			
1929	1.4	7.3	1926	34.6	7.7			
1914	3.4	7.0	1914	33.6				

Inward FDI/GDP, only

	Africa	Asia	Latin America	S.E. Europe	
1985	12.6	5.9	13.6	3.2	
1975	15.0	4.7	8.9	2.1	
	Cote d'Ivoire	Egypt	Morocco	Nigeria	
1985	19.1	20.3	6.0	5.4	
1975	12.6	0.5	2.3	20.9	
	Indonesia	S. Korea	Malaysia	Philippines	Thailand
1985	6.4	6.9	28.6	6.1	5.9
1975	3.2	2.8	24.7	3.1	3.4
	Argentina	Brazil	Chile	Colombia	Ecuador
1985	12.9	13.9	14.0	11.8	8.3
1975	5.9	5.6	5.7	7.4	11.6
	Mexico	Peru	Venezuela	Turkey	Yugoslavia
1985	8.9	15.4	15.0	0.8	0.3
1975	5.5	11.0	13.7	1.6	0.5

SOURCES: Industrial countries from UNCTC (1988), and author's calculations based on the investment data in OECD (1987), the IMF International Financial Statistics, and for the U.K. and Canada during 1926-1950 see the Historical Statistics... For the US in 1914, see Historical Statistics. The datum for Canada for 1914 refers to direct private investment from the U.K. and U.S. only. The UK total comes from Paterson (1976), the US total is that of Lewis (1938). The GNP is the rough estimate of Buckley (1955).

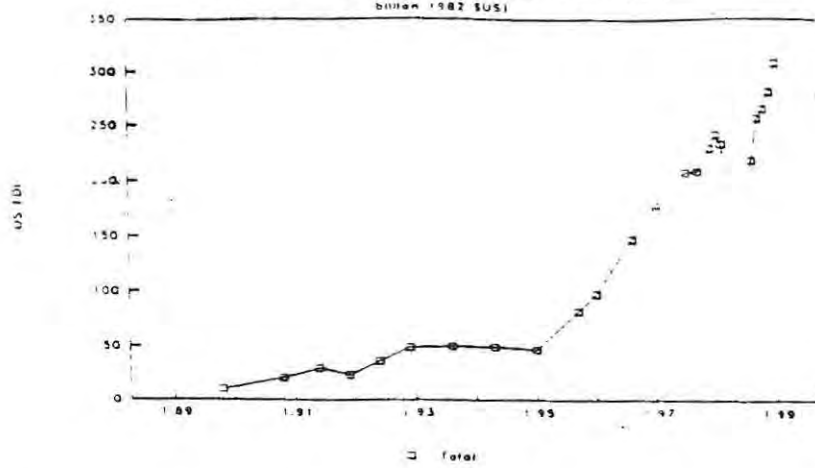
Table 2. Stock of FDI in Value and as Percentage of GDP.
(values in billion current \$US).

OUTWARD FDI	1960		1975		1985	
	Value	%GDP	Value	%GDP	Value	%GDP
Total	67.7		282.0		713.5	
Developed Market Economies	67.0	6.7	275.4	6.7	693.3	8.0
U.S.A.	31.9	6.2	124.2	8.1	250.7	6.4
U.K.	12.4	17.4	37.0	15.8	104.7	23.3
Japan	0.5	1.1	15.9	3.2	83.6	6.3
Germany	0.8	1.1	18.4	4.4	60.0	9.6
Switzerland	2.3	26.9	22.4	41.3	45.3	48.9
Netherlands	7.0	60.6	19.9	22.9	43.8	35.1
Canada	2.5	6.3	10.4	6.3	36.5	10.5
Developing Countries	0.7		2.3		19.2	
INWARD FDI						
Total			246.8	4.9	637.2	6.1
Developed Countries			185.3	4.5	478.2	5.5
Western Europe			100.6	5.8	184.3	6.6
U.S.A.			27.7	1.8	184.6	4.7
Developing Countries			61.5	6.4	159.0	8.5
Africa			16.5	15.7	22.3	10.8
Asia			13	3.2	49.6	5.7
Latin America			29.7	8.9	80.5	13.6

SOURCE: UNCTC (1988), pp. 24 and 25.

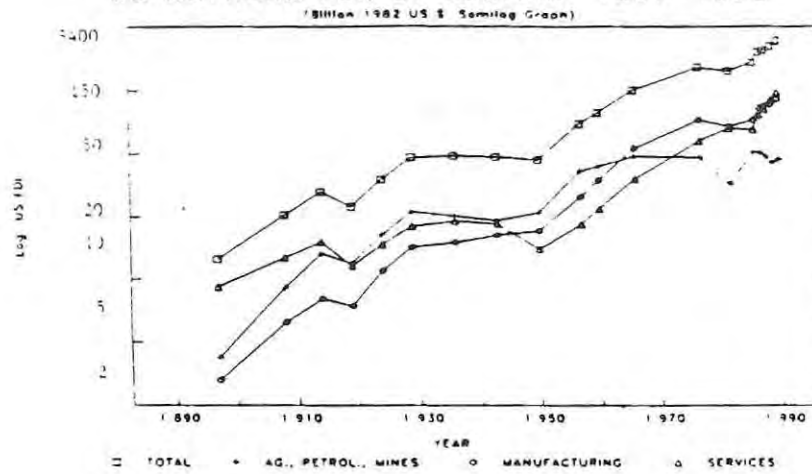
Note: the totals for outward and inward FDI do not match in the source.

US OUTWARD FDI, 1897-1990



Graphs 10, 11

US OUTWARD FDI, BY SECTOR: 1897-1990



US OUTWARD FDI, BY AREA: 1897-1990

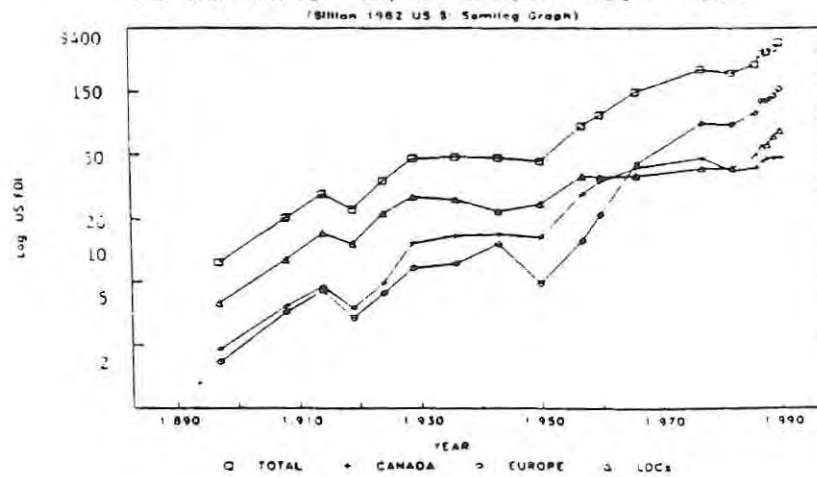


Table 3. Indicators of US Outward FDI,
(Sales and Assets in billion 1982\$; employment is index number, 1982=100)

	Sales						Employment	
	Total	Petro	Manuf	Canad	Europ	LDCs	Total	Manufacturing
1957	122	46	59	37	36	39		
1966	316	83	155	76	133	76	77	78
1977	963	353	366	141	411	272	108	110
1982	936	329	359	120	442	231	100	100
1986	816	175	394	116	428	143	94	
1989	1003	177	508	145	522		100	95

	Assets					
	Total	Petro	Manuf	Canad	Europ	LDCs
1957	136	47	48	45	30	53
1966	368	78	253	95	246	85
1977	728	170	284	128	307	172
1982	751	195	266	110	308	223
1986	818	153	313	114	376	212
1989	1040	153	389	152	521	

SOURCES: US Department of Commerce (1960), (1989), Benchmark Surveys
and Survey of CUrrent Business, Oct., 1991

Note: employment data for 1966 refers to an index for Majority Owned
Firms; all other items are for all affiliates. The employment data
for 1957 is not comprehensive, and so was not included here. Items
for "real" values are author's calculations, deflating by US GNP
deflator.

Table 4. Percentage Disaggregation of US Direct Investment in Manufacturing, 1966-198

	1966	1977	1982	1989		1966	1977	1982	198
ALL COUNTRIES					LDCs				
Food	9	9	9	10	Food	12	11	10	1
Chemicals	19	19	22	23	Chemicals	NA	25	23	2
Metals	7	7	7	5	Metals	NA	10	8	
Machinery	16	18	17	17	Machinery	NA	9	11	1
Electric	9	9	9	8	Electric	NA	11	12	1
Transport	19	15	13	15	Transport	12	10	11	1
Other	23	22	24	21	Other	NA	24	24	2
Canada					Mexico				
Food	9	10	8	7	Food	12	9	9	
Chemicals	16	15	22	20	Chemicals	28	27	18	2
Metals	7	8	7	8	Metals	8	12	8	
Machinery	12	10	10	10	Machinery		7	6	
Electric	8	7	7	7	Electric		9	12	
Transport	18	20	20	24	Transport	13	13	19	2
Other	14	29	25	25	Other		23	28	2
Europe & Other Developed Countries					Brazil				
Food	7	8	9	11	Food	10	9	10	
Chemicals	NA	19	21	24	Chemicals	17	19	21	1
Metals	NA	6	5	4	Metals	5	7	11	1
Machinery				21	Machinery		16	20	2
Electric				6	Electric		11	7	
Transport	22	15	12	13	Transport	18	12	7	1
Other				21	Other		27	24	2

Sources: U.S. Department of Commerce Benchmark studies, and August, 1989 Survey of Current Business

Note: NA or blank spaces indicate not available.

UNITED STATES

The United States had been involved in foreign direct investment since the nineteenth century, indeed, especially in Mexico and Canada. After World War I investments started to take off, contrary to the experience of the UK and the continental powers, only to be interrupted by the Depression, resuming again after WWII. Graph 1 shows our attempt at capturing the long term trend of FDI stocks, after a minimal attempt at correcting for price changes.⁴ Before 1950 third world countries, predominantly in Latin America, played a central role in US FDI; these investments were concentrated in non-ferrous mining and petroleum. The agriculture of banana and sugar plantations rapidly lost importance in the aggregates, with a shift of the sectoral distribution of U.S. FDI out of primary activities (in spite of the rise of petroleum) into manufacturing, which grew rapidly after 1950. More recently, one notes the rapid rise in US investments in Europe after 1960, the stagnation of investments into Canada after the mid-1970s, and a short-lived absolute decline in total outward FDI stocks during the 1980s.⁵ This decline is most true of petroleum; manufacturing and other activities also appear to have stagnated, to the degree of accuracy provided by the data in Table 3 on sales, assets and employment.⁶

The share of services is about the same in the 1980s as it was in the 1920s, having dipped during the early post World War II period. The recent rise of the US outward investment in services is centered in financial services, in Europe and Latin America (essentially Panama and the Caribbean tax havens). Without the increase in financing and insurance, the aggregate of the rest of the service sector would appear to have stagnated along with other areas of outward FDI.

While the data which reaches back to the first years of the century indicate strong shifts in the sectoral allocation of investment, one of the surprising results from the more detailed surveys after 1966 is the relative constancy, across countries and over time, of the distribution of US outward investment, both in terms of the major productive sectors, (primary, manufacturing and services) as well as inside the subsectors of manufacturing industry -- see Table 4. Specifically, note the similar profiles in Canada and Mexico. The implication is that while the overall magnitude of investment might depend on host country characteristics (income level and growth;

openness to FDI), the distribution of industrial FDI inside the sector is determined by the characteristics of each sector in the originator country.⁷

Because the suggestion of a slowing down or stagnation of outward US FDI is important to this work, an attempt was made to corroborate this by looking at the relative size of production and employment of U.S. affiliates inside the various host countries' economies. Table 5 presents these results for production in Canada and Mexico, while Table 6 does this for Europe considered as a single entity, and Table 7 analyzes employment. The following conclusions can be drawn. Since the early 1970s, there has been a continual decline in the relative size of the US presence in Canada.⁸ The rapid increase in the relative size of the US presence in Europe during the 1960s has not continued, so that there are now signs of relative equality of growth (or stagnation) with respect to production, and a decline in the US's share of employment. After also increasing in Mexico, there recently has been a relative decline in production, and a rise in employment -- this latter probably due to the maquila sector.

US investment into Canada is roughly three times as large, relative to GNP or industrial totals, as it is into Mexico or Europe. As noted elsewhere in this paper, the US presence in Mexico is today much more concentrated into industry, so that while sales of US affiliates as a percentage of GDP is similar in Europe and Mexico, the US fraction of domestic manufacturing production (or value added) in Mexico is twice as large as the US share in Europe. The data in Table 7 indicate that the LDC share of manufacturing employment of US affiliates has increased from 20% in 1966, to 27% in 1977, and 32% in 1986.⁹

How to explain the relative, if not absolute stagnation of outward US FDI? The time series profiles for the US of a number of factors which OLI theory claims are determinants of were investigated. To the surprise of this author, the series in Table 8 for the US on industrial concentration, scale, multibranch activity, research and development intensity, and advertising show a decline during the 1970s, which is quite consistent with the observed pattern of changes in investment.

The results of an econometric exercise support the interpretation of the changes in foreign investment, in terms of the variables emphasized in the OLI perspective. Table 8a shows the results for two different specifications of

Table 5. Comparison of Sales of US Affiliates with Total Domestic Sales
in Canada and Mexico

	1957	1966	1977	1982	1987
--	------	------	------	------	------

Sales US Non-bank Affiliates as % of Host Country's GDP

Canada					
Total	36	45	46	40	35
Manufacturing	24	27	24	19	20
Mexico					
Total	10.8	12.4	13.2	12.8	12.8
Manufacturing	7.0	9.4	10.5	10.2	10.2

CANADA: Sales of US Manufacturing Subsidiaries as % of Domestic
Manufacturing Totals

Gross Value	35	41	36	36	34
Value Added	79	99	114	121	91

MEXICO: Sales of US Manufacturing Subsidiaries as % of Domestic
Manufacturing Totals

					(1988)
Gross Value	15.1	18.9	17.8	20.0	17.6
Value Added	33.6	45.2	48.0	47.9	40.1

SOURCES: Data on Sales of US Affiliates from US Department of Commerce (1960), (1989), the various Benchmark Surveys and Survey of Current Business, October, 1991. Data on exchange rates and GDP from the 1988 IFS. Data on Industrial Production and Value Added from various issues of UN Industrial Yearbook. 1957 data for Canadian GDP and industrial total from Urquhardt and Buckley (1965). Mexican data from various Cuentas Nacionales of SPP/INEGI or Banco de México.

Table 6. Comparison of Sales of US MNCs in Europe to Total European GDP and Industrial Production

	1957	1961	1966	1977	1982	1987
Total Sales of US Majority Owned Non-Bank Affiliates as % of European GDP	3.9	NA	7.0	10.4	11.9	9.2
Manufacturing Sales of US Majority Owned Non-Bank Affiliates as % of European GDP	2.2	3.0	3.8	4.9	4.7	4.6
Manufacturing Sales of US Non-Bank Affiliates as % of European Manufacturing Value Added	9	12	17	19	19 (1986)	
Relative Index: Real US MNC Sales/European Industrial Output, (1982=100)	39	49	67	111	100	121

SOURCES: Sales of U.S. affiliates from US Department of Commerce (1960), (1989), and Benchmark Surveys, and Survey of Current Business, September, 1970. Data for European GI is from OECD National Accounts of OECD Countries, 1953-69, and subsequent publications. Data for European Industrial Production from OECD Industrial Production, 1955-64, 1969-74 and Industrial Production, Historical Statistics. GDP represents national currency GDPs converted into dollars via the ECU.

Table 7. Comparison of US MNC Employment and Host Country Totals

	1966	1977	1982	1986
Employment in US MNCs as % of National Employment				

All MNCs

Canada	11.2	9.5	7.3	7.3
Europe	1.1	1.6	1.4	1.2
Mexico	NA	1.3	1.2	1.2

Manufacturing MNCs

Canada	7.6	5.8	4.3	3.9
Europe	0.9	1.2	1.0	0.8
Mexico	NA	1.1	1.1	1.1

Employment in US Manufacturing Affiliates
as Percentage of National Employment in Manufacturing

Canada	31	30	24	23
Europe	2.4	3.5	3.2	2.9
Mexico	9	8	9	10

Employment in US MNCs in LDCs as % of Total Overseas Employment in US MNCs

Total	28	28	31	30
Manufact.	20	27	31	32

SOURCES: Data on US MNCs from Benchmark Surveys and various years of U.S. Direct Investment Abroad. Data refer to Majority Owned Subsidiaries. Data on European employment from OECD Labour Force Statistics, various years. Canadian employment data from Statistics Canada. Mexican employment from various issues of INEGI/SPP Cuentas Nacionales; 1966 datum calculated using the ratio for 1977/1966 from Banco de México, Estadística Industrial Anual, 1966 and 1977.

Table 8. Indicators of Competitiveness of US Manufacturing Sectors, 1958-1987

	1958	1963	1967	1972	1977	1982	1987
Weighted Average of 4-Firm Concentration Ratios	33.7	34.2	35.0	34.8	36.4	34.9	
* Percentage of Establishments with more than 250 employees	1.5	1.6	1.9	1.8	1.6	1.5	
Ratio of Sales by Multiproduct Firms to total sales by industry	73	76	79	81	83	82	82
Ratio of Advertising Expenditures to total sales							
			(1970)	(1974)	(1979)		(1987)
			1.12	0.86	0.90		1.27
R&D as % of Net Sales, in R&D Performing Companies							
		(1963)	(1967)	(1972)		(1980)	(1986)
		4.5	4.2	3.4		3.0	4.7

SOURCE: First three items; corresponding years of U.S. Manufacturing Census. Fourth item; US Internal Revenue Service, Returns of Active Corporations, Balance Sheets... Table 2. Corporation Income Tax Returns. US IRS, various years. Last item from National Science Foundation, Research and Development in Industry, 1985-186, and 1987.

the dependent variable (assets and sales), using two different means of deflating the data (US price deflator, or nominal US GDP), for the three years 1966, 1976, and 1982. While it is clear that the high R-squareds are the result of using sectoral specific dummy variables, almost all of the coefficients are of the hypothesized sign, supporting the use of the OLI model in this historical context. Moreover, it is noteworthy that two of the variables which show the largest variation (R&D and advertising) have turned up again in the 1980s.¹⁰

We have argued that, although there has been a long term trend towards the increase in the nominal value of US outward FDI, adjustment for price changes neutralizes most of that apparent growth. Another important change in the aggregate data on FDI lies in the mode of financing, especially during the 1980s, as indicated by Table 9, where we see that equity outflows from the U.S. have tended to be negative, so that even nominal increases in the country's investment position are due to reinvested earnings or other factors. During the 1950s, 58% of the increase in the FDI position was due to equity flows and intercompany loans, while that ratio had dropped to 38% in the 1970s (Survey of Current Business, Feb., 1981, p. 42). This lack of "new" capital may have important consequences for countries seeking new investments.¹¹

Another consideration in this paper is the importance of changes in export markets as an attractor of FDI, which is said to be a crucial element in the globalization of the world economy. In 1988, an average of over two-thirds of the sales of US overseas affiliates stayed in the local host country market, a ratio which is slowly falling¹². About 90% of the sales of US MNCs in Europe stay in Europe.¹³ Most of the overseas sales from Canada and LDCs (including Mexico) go to the United States, so that trade to "third countries" represent only 7% of total sales. Even so, exports to the US are not the result of unhindered trade in free markets; the Canadian totals are pushed by trade in the motor vehicle sector,¹⁴ which is a controlled trade, while the Mexican numbers reflect the maquila sector, primarily. More broadly it is only in the electronics and transportation sectors that there is significant trade in inputs.

DIRECT INVESTMENT INTO THE UNITED STATES

One important aspect of the changing international economy is the

Table 8a. Regression Results on US FDI Assets and Sales, 1966-1982.
(regrnd)

Dep.Var.	R&D	Multipro	CR4	Scale	Ad.	R2
Real Assets	0.08 (0.10)	0.12 (1.02)	0.07 (1.21)	0.06 (0.16)	2.68 (2.44)	0.96
Real Sales	-0.03 (0.02)	0.30 (1.36)	0.03 (0.27)	0.06 (0.07)	4.14 (2.05)	0.94
Assets/GDP	28.20 (0.74)	7.17 (1.19)	1.93 (0.70)	-7.73 (0.38)	0.15 (2.63)	0.94
Sales/GDP	31.80 (0.52)	13.20 1.38	0.52 (0.12)	-10.6 (0.32)	0.19 (2.18)	0.89

Note: t-statistics in parenthesis. The coefficients on the industrial sector are not reported.

Equations are ols estimates, covering the years 1966, 1976, and 1982.

R&D is research and development as % of performing company sales. Multiproduc is fraction of firms engaged in multiproduct sales. CR4 is concentration index of the top four firms, averaging for the two digit classification

Table 9. Financing of US Direct Investment Outflows, 1983-1990 (billion \$)

	1982	1983	1984	1985	1986	1987	1988	1989	1990
Direct Investment Position Abroad	207.8	207.2	211.5	230.3	259.8	314.3	333.5	370.1	421.5
Net Change		-0.55	4.28	18.77	29.55	54.51	19.19	34.20	51.40
Capital Flows		6.70	11.59	13.16	18.68	31.05	16.22	33.39	33.44
Net Equity		4.90	1.35	-2.21	0.55	4.64	-6.31	-4.47	6.17
Reinvested Earnings		13.46	17.21	14.10	10.02	19.71	12.61	22.37	22.25
Intercompany Debt		-11.67	-6.97	1.27	8.11	6.70	9.92	15.49	5.01
Valuation Adjustments		-7.24	-7.31	5.61	10.87	23.46	2.98	0.81	17.70

SOURCE: Survey of Current Business, August, 1990 and August, 1991.

NOTE: Valuation adjustments reflect changes in both domestic prices and exchange rates.

growing presence in the United States of foreign multinationals. The overall magnitudes of this phenomenon have recently been re-analyzed by the US Department of Commerce, and are summarized in Landefeld and Lawson (1991), repeated in Graph 2. Using two (out of three) standard measures of FDI, the value of direct investments into the US surpassed that of FDI from the US in the late 1980s. Leaving aside the details of the estimation procedures, and indeed recognizing that the net position is primarily of symbolic importance, we turn to more details of that data in Table 10. Two facts stand out: (1) compared to the intra-industry distribution of outward FDI from the US, the country's service sector has received proportionately much more inward investment than has industry; (2) almost all investment in the US has as its dominant market that of internal sales inside that country. A set of recent papers, paralleling the OLI perspective, has analyzed these phenomena, arguing for the importance of size and growth of market, the desire for access to high tech sectors in the US, as well as home country sources of finance.¹⁵

In summary, a slowing down of outward FDI, combined with a rapid increase in inward FDI, support suggestions from other sources of a relative decline in competitiveness of US industry, and its investment abroad.

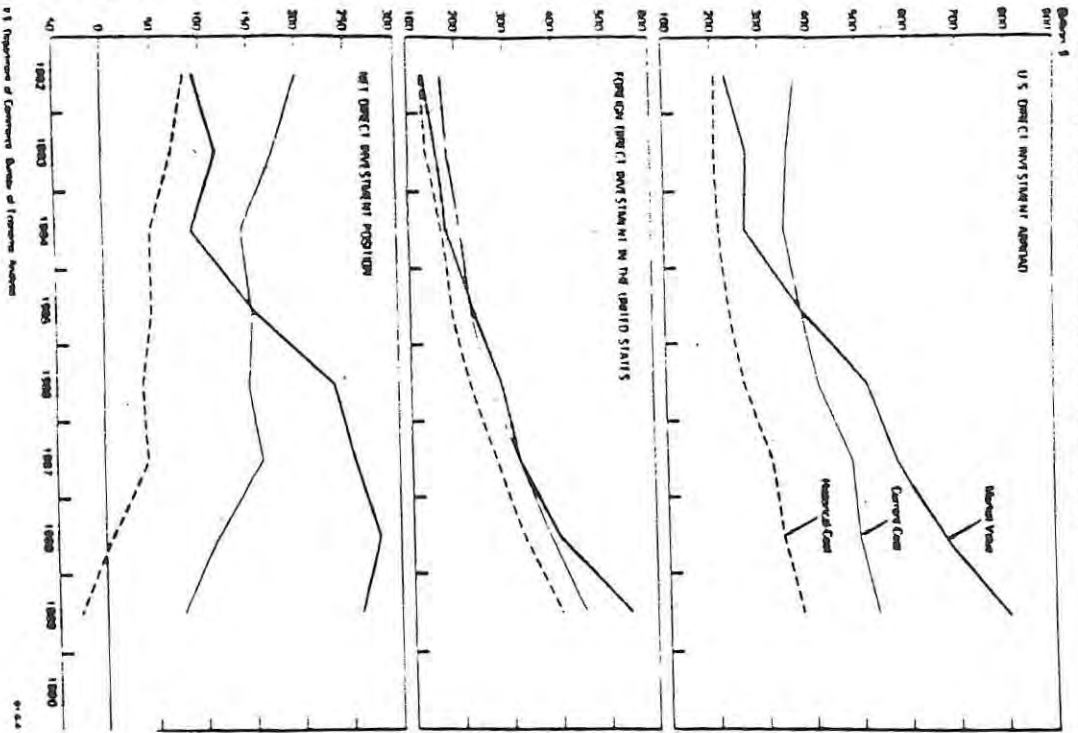
CANADA.

Tariffs and foreign investment play a central role in Canadian economic history. Conflicts with the United States over trade policy were an important ingredient in the events which led to the country's confederation in 1867. Protectionism - the "National Policy" tariff - was to epitomize the policy stance of the rest of that century -- with varying emphases on different economic activities, regions, etc. What is important for our purposes is whatever effect tariffs may have had in attracting US capital to Canada, that process has been at work for over a century; the creation of "tariff factories" was noted in 1904 (Rugman 1990:18). As Pomfret (1981:141) notes, for many years after confederation all investment was welcomed into the country, regardless of national origin. Nevertheless, nationalistic feelings did decide a number of elections, against the party supporting lowered tariffs on U.S. products ("No truck nor trade with the Yankees").

Multinationals have probably been studied with more care in Canada than anywhere else. A useful recent summary by Safarian (1985) points out that a

Graph 2.

Alternative Valuation of Direct Investment, 1982-89

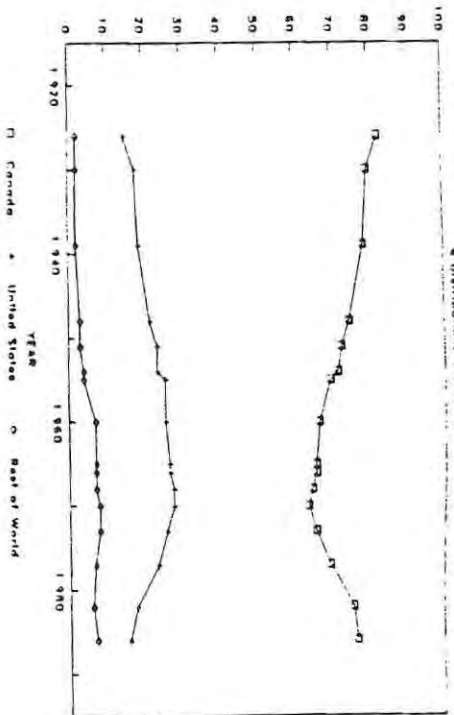


U.S. Department of Commerce, Bureau of Economic Analysis

9-84

SOURCE: Survey of Current Business, May, 1991

TABLE 3
OWNERSHIP OF CANADIAN CAPITAL STOCK
Distribution, 1926-1988



CANADIAN MANUFACTURING CAPITAL STOCK

Distribution of Ownership, 1926-1988

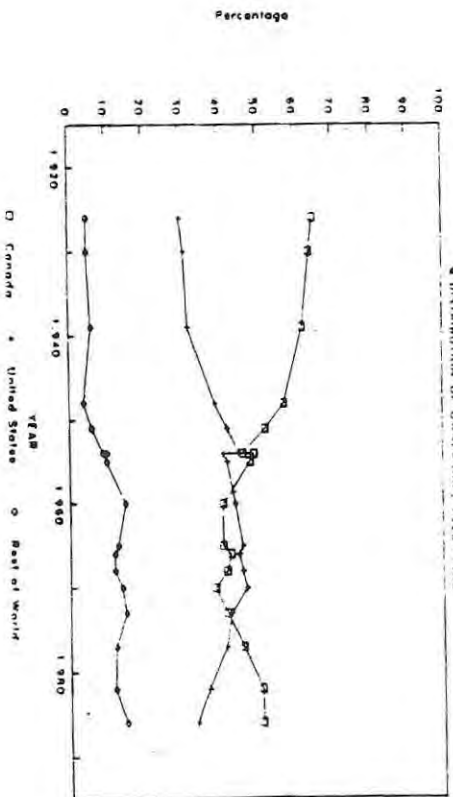


Table 10. Stock of FDI into the US in 1987; Sectoral Breakdown
and Geographical Distribution

1987	Total	% of Grand Total			% Each Country's Total			% Each Country's Manufacturing Tota		
		Can	Eur	Japan	Can	Eur	Japan	Can	Eur	Japan
All	100	12	53	25	100	100	100			
Petroleum	10	0	7	0	2	14	1			
Manufacturing	30	6	20	2	49	37	8	100	100	100
Food	3	0	2	0	3	5	0	7	12	4
Chemicals	1	NA	NA	0	NA	NA	1	NA	NA	10
PrimaryMetals	4	1	1	0	7	3	2	13	7	25
NonElectMachine	2	0	1	0	1	2	1	2	6	17
ElectMach	4	0	3	0	4	5	1	7	13	14
TransportEquip	1	NA	1	NA	NA	1	NA	NA	4	NA
OtherMFG	7	NA	NA	NA	NA	NA	NA	NA	NA	NA
Wholesale	37	1	14	21	10	26	82			
Finance	10	2	5	2	18	9	7			
Services	2	0	1	0	1	3	1			
OtherInd	9	2	6	0	20	10	1			

SOURCE: US Department of Commerce, (199?).

number of the empirical studies of the determinants of US FDI into Canada generally support the OLI approach discussed above. Multiplant production, R&D, concentration, scale economies, advertising and other barriers to entry have all been shown to be important. Profit rates for subsidiaries of US MNCs are higher than those for Canadian firms as well as other firms. The analysis of the effects of the Canadian tariff led Horst (1972) to argue that it attracted US firms; Caves (1982) and others have since argued that the size of sunk, fixed costs, together with growing familiarity with local conditions have limited the impact of the tariff on current investment decisions.

A related research topic of interest is what would broadly be called the implications of the industrial organization characteristics of the Canadian economy. In an important series of publications, summarized in Baldwin and Gorecki (1986) the existence of economies of scale in Canadian manufacturing is demonstrated. It is argued that the smaller size of the Canadian economy, as well as the smaller scale of individual plants in Canada, explain much of the industrial productivity differential between Canada and the U.S. These authors emphasize two extensions of this theme; that productivity is also low because of greater diversity of products per plant in Canada, and due to shorter production runs. The implication is one of beneficial effects of greater trade openness on relative efficiency, by increasing so called x-efficiency.

Let us turn now to an historical overview of foreign investment into Canada. In the first two decades of this century, there was a rapid rise of FDI into Canada. There has been a dramatic shift in the ownership of foreign assets in Canada; the pre-World War I dominance of the United Kingdom was completely replaced by that of the U.S. by the 1960's. Related with that is a shift of the mode of investing, from portfolio to direct investment. Of most interest to us, however, is the fact that the share of foreign ownership of firms in Canada traces a long inverted U in the period since the 1920s, reaching its peak sometime in the early 1970s (see graph 3).

The official sources in Canada present a broad outline of the ownership of equity, going back to 1926; there is also much more disaggregated information on ownership, income, sales, profits, and taxes of corporations, from the late 1960s. Indeed, that source, known by its acronym CALURA, (Corporations and Labour Unions Returns Act), was created as a response to

unease over the weight in the Canadian society of both US firms and US labor unions. The CALURA data illustrate clearly the rise and subsequent decline in foreign ownership and control of Canadian corporations (Graph 4). Furthermore, the post 1970 decline is almost entirely due to a fall in the participation of US firms. Finally, while the starkest changes are noted in the mining and petroleum sectors, the shift is widely spread throughout industry.

A couple of qualifications should be noted in terms of the graph from the CALURA publications. In the earlier years, up to 10% of corporations were not classified as to country, so that, when in later years the sales from these corporations was indeed attributed to companies from a particular country (apparently most often Canada), there is an incorrect image of increasing domestic ownership. Secondly, as pointed out in Statistics Canada (1985a), during the 1970s there was a significant shift of production towards those sectors (particularly petroleum and mining) whose Canadian share was growing. This creates an index number type problem which overemphasizes the "average" shift in ownership, unless fixed weights (of production) are used. This author's attempt to present a more precise picture is shown in Table 11. The Canadian ownership for 1970 and 1981 is estimated using the CALURA publications and the more detailed information for manufacturing presented in Statistics Canada (1985a). On the basis of these estimates, the Canadian share of manufacturing and mining sales increased by 16%, and by 12% if attention is limited to manufacturing. Note that most of the change occurred in the 1970s, with only 1 to 2% shifting in the 1980s. The manufacturing subsectors are arranged in the Table according to a scheme emphasizing staple-based goods, which has a long pedigree in Canadian studies.¹⁶ In this breakdown, the largest part of the increase in Canadian ownership occurred in the staple sectors, although other sectors also gained. It is helpful to put this shift in ownership into perspective, by noting the distribution of the total stock of capital in the country. Nearly half the stock of physical capital in Canada is composed of residential housing, government and community buildings, in which significant foreign investment is unlikely. Of the total stock about one fifth is held in manufacturing, mining, and petroleum. The remaining third is composed of utilities and other service activities, which are also predominantly in Canadian hands.¹⁷ It is in the areas of mining, petroleum and manufacturing that the most significant changes in foreign

The Foreign-controlled Shares of Assets, Revenue, and Profits, Non-financial Industries, 1965-1987

Parts sous contrôle étranger des actifs, des recettes et des bénéfices, industries non financières, 1965-1987

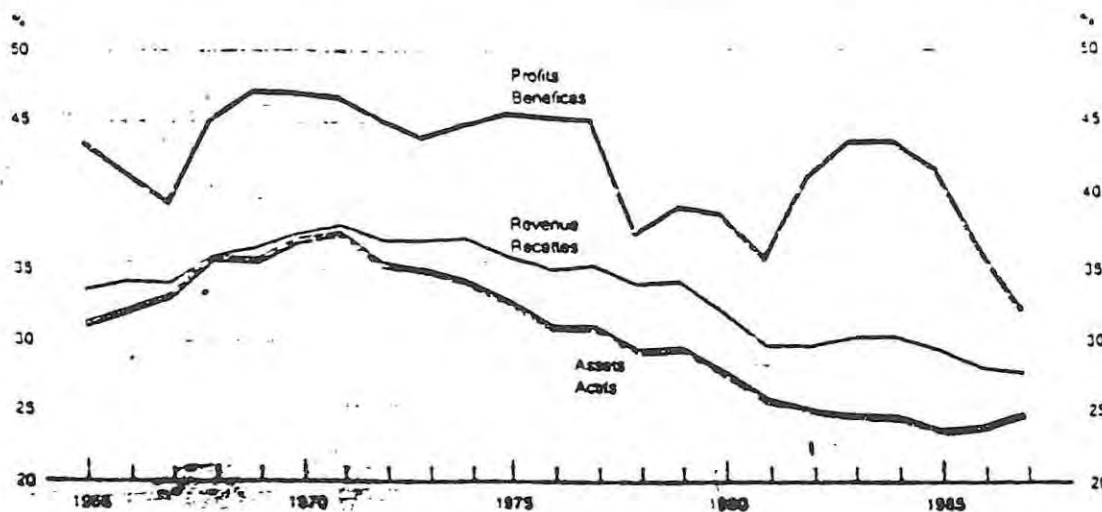


Chart - 3.2

Graphique - 3.2

The Foreign-controlled Share of Assets, Non-financial Industries, by Country of Control, 1965-1987

Part sous contrôle étranger des actifs, industries non financières, par pays de contrôle, 1965-1987

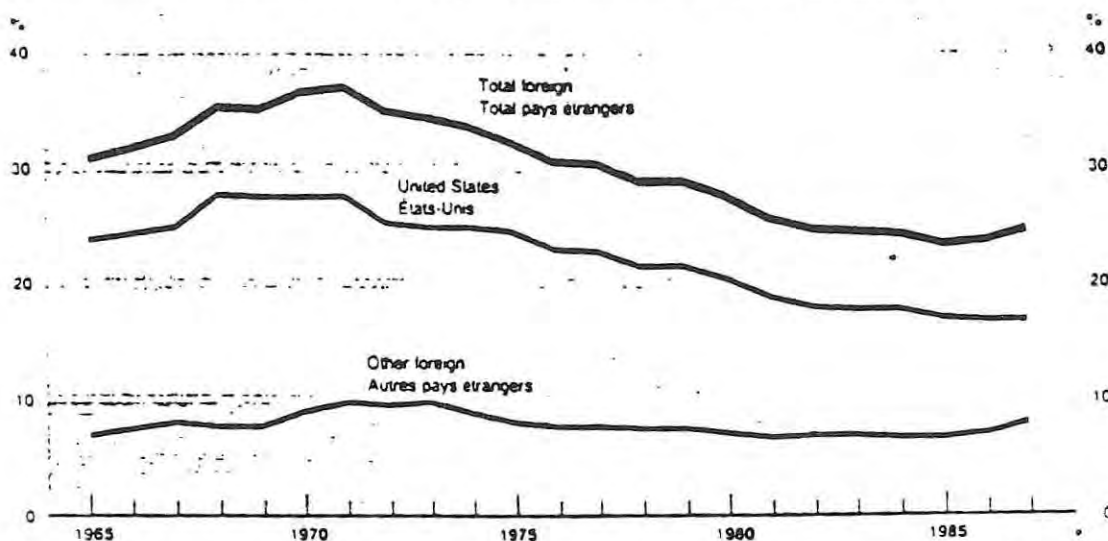


Chart - 3.3

Graphique - 3.3

The Foreign-controlled Share of Taxable Income, Non-financial Industries, 1969-1987

Part sous contrôle étranger du revenu imposable, industries non financières, 1969-1987

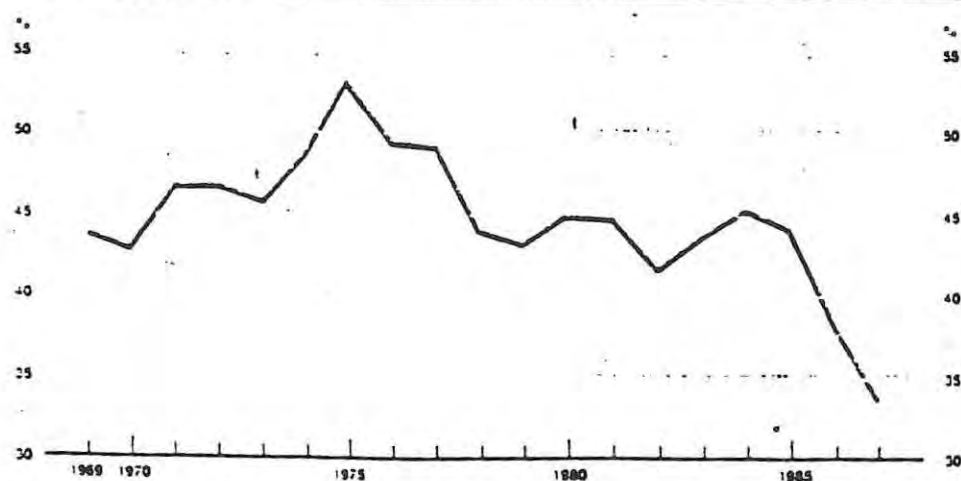


Table 11. Domestic Control of Output of Canadian Productive Sectors, in Percent; 1970-1987

	1970	1981	1987				
Total Non-Financial	63	70	72				
Agriculture & Forestry	93	96	98				
Total Mining	20	52	60				
Metal Mining	33	66	71				
Mineral Fuels	9	42	50				
Other Mining	35	62	77				
					1970	1981	1987
Total Manufacturing	39	51	52				
Food	68	74	73	Subgroups:			
Beverages	68	65	62				
Tobacco	18	0	0	Consumer Goods	65	67	68
Rubber Products	9	11	13				
Leather Products	73	78	84				
Textile Mills	50	48	54				
Knitting Mills('86)	78	82	93				
Clothing Industries	90	84	91				
Furniture	81	89	88				
Wood Industries	76	83	78	Staples	39	56	58
Paper & Allied Industries	55	72	73				
Primary Metals	58	85	82				
Metal Fabrication	50	64	74				
Non-Metallic Minerals	44	42	45				
Petroleum & Gas	1	24	26				
Printing & Publishing	87	89	91	High-Tech	25	34	35
Machinery	22	49	47				
Transport Equipment	9	15	15				
Electrical Products	36	37	42				
Chemicals & Products	16	24	24				
Miscellaneous	40	53	65				
Total Utilities	89	93	95				
Transportation	89	93	95				
Storage	92	98	99				
Communications	88	88	88				
Public Utilities	89	96	97				
Construction	85	89	95				
Wholesale Trade	75	73	73				
Retail Trade	81	87	88				
Services	81	83	90				

SOURCE: Basic data from CALURA Reports, various years. Some of the ownership for 1970 and a small part of 1980 was assigned, according to Statistics Canada, Domestic and foreign control of manufacturing, mining and logging establishments in Canada, 1981. That source indicates, for all manufacturing industries, an increase of Canadian control from 47.9 to 54.0% over 1970-1981 (p. 13). Averages are fixed weights; weights are sectors' share of 1981 value added.

ownership have occurred, of the order of 15% of those sectors, in this century. Thus we are speaking of a change of 15% in the ownership of 20% -- just 3% of the nation's total physical capital.

While many commentators attacked the growth of US MNCs in Canada, their decline has hardly been noted, certainly not in the technical literature. A number of explanations for the changes in the weight of MNCs in Canada come to mind, both political and economic. Turning first to the former, less quantifiable factors, recall that the period of rising foreign ownership was also one of heightened Canadian nationalism as well as deteriorating French/English relations, which Prime Minister Trudeau (governed 1968-1984, with a brief interruption in late 1979) tried to resolve. During this period a Foreign Investment Review Agency (FIRA) was created (in 1973), and the New Energy Policy initiated in 1980. These actions, along with many others, were intended to increase Canadian participation, especially in energy and mining, but in other economic sectors as well. The change in Canadian ownership occurred both in the private as well as the public sector (Petrocan, Canadian Development Corporation).¹⁸ In analyzing the effect of these legal/institutional changes, Rugman (1980:145) concluded that in its early years, "...FIRA operate[d] in a very favorable manner toward proposed foreign direct investments...[and did] not offer a substantial barrier to trade in capital." FIRA's policy was definitely not favorable to FDI in 1980-81, partially attributed to its leadership by Herbert Gray, but more basically reflecting the spirits of the time (Rugman, 1990:25). The Progressive Conservative Government in 1985 replaced FIRA by Investment Canada, which has taken a much more favorable approach to FDI. That government's initiation of the free trade discussions with the US are in part a continuation of the reversal of previous nationalist policies. Of course, a parallel process occurred in Mexico.

The OLI model suggests a number of potential factors which might cause changes in the weight of MNCs in Canada. One of these is tariffs, of obvious interest in a discussion of a North American free trade agreement. Tariffs have had a clear downward trend in Canada, widespread across economic sectors, due to the country's participation in the GATT, (Economic Council of Canada, 1988:133-135), which should, *ceteris paribus*, decrease FDI. However, this explanation of a decline in US investment in Canada is not convincing, because

the tariff reductions were already occurring prior to 1970, during the period when FDI was rising. As noted earlier, Caves (1982), Rugman (1990), and others tend to downplay the current importance of barriers, basing their arguments both on direct survey questionnaires and interviews, as well as formal econometric exercises.

It was argued above that some indicators of the attractiveness to US firms of investment abroad may indeed have declined. The question is one of changing comparative OLI advantages between the US and Canada, and may be due to an improvement on Canada's part, or a decline in the US. The latter explanation corresponds to today's conventional wisdom of the relative decline of the US economy, especially in the technologically competitive areas typical of FDI (UNCTC 1988:29); the political and economic implications of this for the NAFTA are discussed in Roett (1991). As an explanation for declining US FDI into Canada, this interpretation is insufficient, because that decline was not as strong elsewhere in the world. To the extent that this is a relative phenomenon, specific to the US and Canada, then we should also look for the explanation in Canada.

With the exception of Meredith (1984), the studies of US FDI into Canada have not attempted a combined analysis of the different variables between the two countries. Moreover, this author knows of no study which attempts an explanation of the relative weight of US FDI in Canada across time. The data on Canadian R&D in Table 12 could support this comparative approach, although as we will show below much of the R&D performed in Canada is due to subsidiaries of US firms. An argument based on concentration immediately confronts the problem that production in Canada is much more concentrated than production in the US or elsewhere, in which case the OLI perspective would predict outward FDI. The standard response to this in the Canadian literature is that a CR4 ratio is an inappropriate indicator in a highly open economy such as Canada's, because imported products increase competitive pressure. See the discussion in Green (1990, chapter 4). The situation is even worse for multibranch activity, because of the presence of US subsidiaries. Data on advertising expenditures by firms in Canada are not available after 1965, in part because of the spillovers from advertising expenditures in the US.¹⁹

A slightly different approach would be to investigate total factor productivity (TFP) in Canada compared to that of the US, and interpret an

Table 12. Canadian Industries; Intramural R&D as % Sales. 1973-1988

	1973	1979	1983	1988
Total All Industries	0.9	0.8	1.2	1.4
Total Mining	0.7	0.7	0.7	0.5
Mining	0.8	0.6	0.8	0.5
Crude Petroleum & Gas	0.6	0.8	0.6	0.6
Total Manufacturing	0.9	0.9	1.3	1.5
Total Services	0.6	0.7	0.9	1.4
Transportation	0.2	0.2	0.3	0.4
Electrical Power	0.6	0.9	1.0	1.1
Computer Services		5.8	6.2	12.3
Engineering Services	* 4.5	7.6	13.4	16.5
Other Non-Manufacturing	3.9	0.6	0.7	1.1

Source: Basic data from Statistics Canada Industrial Research and Development 1982 p 76
1985 p. 90, 1988, p. 62. A "*" indicates value for a year different from 1973.

relative increase in Canadian TFP as causing or at least accompanying a decline in the factors which lead to US investment in Canada. The relevant work is indeed available to us in Baldwin and Gorecki (1986), who find that Canadian TFP (their TFP, Table 6.5) did increase significantly compared to that in the US during the 1970s. However, it must also be noted that the more aggregated analyses done at the OECD such as by Englander et al., (1988) do not lead to such positive conclusions in terms of Canadian technological progress. Technology and R&D are discussed further below. In conclusion, while political factors were clearly important, there are some indications that a relative improvement in technology has led to a reduction of MNCs in Canada.

Another explanation for declining US FDI into Canada which is certainly often referred to in popular accounts is the decline in the availability in the US of capital, due to crowding out, declining savings, etc. While no work directly measuring this will be attempted here, it is worth noting that the US continued to invest abroad in the 1970s, especially in Europe, by amounts which, if redirected into Canada, would easily have led to a growing presence there.

OUTWARD FDI FROM CANADA

One of the important changes in the Canadian economy in recent years has been the surge in its outward FDI. Two characteristics of this which are noteworthy here are the strong preference for investment into the United States, and the concentration of this investment in certain sectors. Paraphrasing Rugman (1990), these are firms which are expanding due to their own firm specific (ownership) advantages, which were been built up in industries in which Canada has an inherent comparative advantage (raw materials), but which are now due to vertical integration, technological expertise, etc. There are also some corporations whose advantages are strictly technological, Northern Telecom being the best example.

Some basic data on FDI from Canada are presented in Table 13, in which we can see that there has been a rise in the relative importance of outward compared to inward, and that the United States has consistently received over half of Canada's outward investment. That the ratio of outward to inward FDI has been growing since around 1960 may simply be a reflection of the decline

Table 13. Stock of Direct Investment Abroad from Canada. (Million current Canadian \$).

	1926	1950	1960	1965	1970	1980	1982	1985
Total	397	990	2467	3469	6188	26967	35558	49909
Manufacturing				2111	3207	11750	16763	24823
Mining, Smelting, Petroleum and Gas			543	495	870	8231	9049	10319
Finance, Merchandising, Utilities and Other				1183	2810	6328	16561	25725

Percentage Breakdown of Total

Manufacturing	61	52	44	47	50
Mining, Smelting, Petroleum and Gas	14	14	31	25	21
Finance, Merchandising, Utilities and Other	34	45	23	47	52

Investment into the US as Percentage of Respective Items

Total	66	59	54	62	67	71
Manufacturing				59	70	72
Mining, Smelting, Petroleum and Gas				67	61	66

Ratio of Non-financial Investment Flows:

Outward/Inward	22	25	19	20	23	44	52	60
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Details of Manufacturing Investment Outflows

	1970	1985
Manufacturing	3207	24823
Beverages	938	3994
Non-Ferrous Metals	837	8030
Wood & Paper Products	480	4647
Iron & Products	593	2108
Chemical Products	112	4626
Other Manufacturing	247	1418

Sources: Statistics Canada, Canada's international investment position, various years, supplemented by Historical Statistics of Canada. Financial flows should not be included.

in US investment in Canada, but recall that outward FDI has also been rising compared to the country's GNP. According to US Department of Commerce, (199?) most of the Canadian FDI is designed for sales inside the country. Of particular importance for our interests is that the Canadian outward investment tends to concentrate in two areas, natural resource staples and finance/services. Evidence also indicates that the outward FDI is highly concentrated among Canadian firms (Globerman, 1985). Overall, this information would suggest that the Canadian experience is consistent with a basic model of FDI driven by organizational advantages developed by firms in those areas in which Canada has been developing, due to an inherent comparative advantage, based on factors such as natural resources. This interpretation would also imply that Canada has not achieved international competitiveness in a broad cross section of manufacturing areas.²⁰ The high fraction of Canadian outward investment originating in services and financial areas is typical of the inflow of investment into the US, from any country. It is perhaps also worth commenting that some have argued that the interventionist attitudes which characterized Canadian policy on inward FDI in the late 1970s had led to a certain type of capital flight; while this may well have occurred even in the categories of long term direct investments under consideration here (finance and real estate, for example), the magnitudes are not large.

FDI IN MEXICO, AN HISTORICAL OVERVIEW

Every Mexican schoolchild knows that foreign domination of key economic activities was very high at the turn of the century, and that conflicts between the Mexican government and foreign investors were an important factor leading up to the Revolution, and, indeed, continued to dominate after the major armed conflicts had ceased, peaking with the nationalization of the foreign owned oil companies in 1938. Since then, the government has maintained a posture of welcoming foreign investment in the manufacturing sector, but wishing to maintain national ownership of raw materials and basics services. A 1973 law reinforced a decree from 1944 indicating the priority for Mexicanization -- majority local ownership -- of new investments. Only in 1989 was this policy reversed, although even today foreign investment is limited or forbidden in a number of sectors.²¹

Disaggregated data for FDI in Mexico are presented in Table 14. A number

of considerations affecting the percentage of foreign ownership of Mexican wealth can now be considered. One historical question is the degree of foreign ownership before the Revolution broke out in 1910. The study which this author judges to be the most authoritative is that of Alanís Patiño (1943), who estimated that foreigners owned 40% of Mexican wealth in 1930, and perhaps 20% in 1902 at 20%. Table 14c reports our totals -- 15% for 1902 and 30% for 1930 -- which have subtracted out foreign held national debt. Other estimates are much higher, in part because they do not consider agriculture, and focus on larger firms.²²

The desire to nationalize key activities has played a central role throughout most of this century. Indeed, the pre-revolutionary government had already obtained majority ownership and control of the railroads, via purchases of stocks at prices which were to remain a source of contention for decades. Subsequently, there has been a significant drop in foreign ownership of many activities, with the marked exception of manufacturing, where both domestic and foreign investment have increased dramatically. Note in Table 14c that the share of Mexican agriculture owned by foreigners was relatively small compared to other sectors, however large individual tracts were in terms of absolute size, or political impact. The nationalization of petroleum in 1938 may have involved assets valued at US\$300 million²³, but this would account for perhaps only a third of the decline in the stock of foreign investment between 1929 and 1940. Nearly as significant is the long term decline in foreign ownership of mining, in spite of its increase during the 1920s. President Cárdenas's policy toward mining in the latter 1930s was pressured from the left by the nationalistic and populist fervor ignited by agricultural reform and strengthened by the conflict over petroleum, as well as labor mobilizations from inside the mining sector. No action was eventually taken by his government against the foreign firms, but they, reacting to the hostile atmosphere, decided to decapitalize.²⁴ The "Mexicanization" of a much weaker mining sector was finally decreed in 1961. This came soon after the nationalization of electrical power in 1960, and the Mexicanization of telephones in 1958.

Mexico's industrial sector has not undergone these extreme fluctuations between complete and null foreign ownership. The indications encountered by this author are that Mexicans have always had a significant, if not majority,

TABLE 14a. Estimates of the Stock of Capital in Mexico, 20th Century.
Million current Pesos

	1902	1911	1930	1935	1940	1950	1960	1970	1980	1985
Total	7558p		9692P 11600g	14768p	14011P 15210g 19435y	112338m 78208x	428193m 364000g	430000T		
Agriculture			3465p 3422c	4096c	3784p 4386c	12868m 29567c	52011m 92787c	169780c		
of which:										
Land			2288L		2781L	20684L	63444L	89326L		
Livestock			754L		1140L	6205L	21054L	64798L		
Const.&Vehicles			380L		465L	2350L	8289L	15657L		
Mines		344z	156p	278c	634p	2101m	4946m 1444e 799E	5637e 4294E		876299c 220696E
Petroleum	104d	120p	368c	244p	3161m	17334m	247750 6866E	653865σ 24772E	31507E 384049E	3626022c 799993E
Industry		684p	649c	914p	18965m	83400m 25095c 18291E	57699c 65602E			15561199c 1843110E
Services		4963P		7543P	75243m	270502m		325101E		21074749c
Transport					6645m	46135m 34307e 3467E	36609c 39017e 9196E			3526219c 323918E
Railroad	1600P	1451p		1708p			26941c	58277E		2447907c
Light&Gas	247d	296p		896p		14720E	32728E	133272E		284257E
Telef&Teleg.		43p		58p	930m	4041m 5618e 14E	7535B 11081e 149E	83553B 466377B		5844642c 4305474c 208566E
Construction					690m	3698m 203E	5681e 2531E	32049E 12842E		2362931c 21387E
Commerce	617p		1019p	9144m	24120m	17894c 3221e 6123E	19705e 15287E 38229c	43651E		4254471c 272616E 3143943c
Other Services						3589e 4407E	11148e 10329E	44669E		416986E
Government		810p		1191p	16019m	77118m				
GDPdef	6.8	9.3	12.8	11.1	16.6	47.7	100	141.2	717	7175

Note: The 1985 census gives values at replacement cost; other censuses report historical costs.

Sources: see below

TABLE 14b. Estimates of the Accumulated Stock of Foreign Investment in Mexico, 20th Century. (million current US\$)

	1902	1911	1924	1929	1940	1950	1960	1970	1980	1990
Total	460P	1450d 1750h	1258f	1513P	449j	556j	1081j	2822s	8459i	28776i
Agriculture	97d	200f 135ee			8j	4j	19j	31ks	8i	33i
Mines	408d	300f			108j	112j	169j	155s	420i	391i
Petroleum	52d	478f	409r		1j	12j	22j	30s		
Industry	65d	60f			32j	148j	602j	2083s	6560i	18270i
Services	925D	220f			300j	290j	269j	523s	1471i	10072i
Transport&Commun.		160f			142j	75j	31j	8s		
Railroads		383p			565d					
Light&Gas		119d				141j	137j	15j	3s	
Telefon&Teleg										
Construction					0j	5j	9j	10s		
Comerce	61d	50f		16j	70j	196j	436s	755i	1982i	
Banks		83d 105n								

TABLE 14c. Estimates of the Foreign Ownership of Mexican Wealth, 20th Century (Percentages)

	1902	1911	1930	1935	1940	1950	1960	1970	1980	1985
Total	14P,A		30P,A	33p,A	11w,A	4M,A	3M,A 10s,S	13s,S		
Agric.	10z,A	9p,A 20e				<1 M,A	<1 M,A <1 s,S	<1 s,S		
Mines	97z,A	98z,A	98p,A			46M,A	42M,A 69s,S	56s,S		11C,A
Petroleum	100d,A		99p,A			3M,A	2M,A 1s,S	3s,S		
Industry	29v,A		54p,A	17u,A	7M,A	9M,A 20s,S 32t,A 30C,A	45C,A 28s,S 29q,S	27q,S		25C,A
Services			42p,A							
Tran&Comunication							4s,S	1s,S		
Railroad	71d,S	79p,A								
Light&Gas	98d,S	94z,A	100p,A			49M,A	2M,A 1s,S	1s,S		
Telf&Teleg					60μ		33μ			
Comerce						7M,A	10M,A 7s,S	7s,S		
Construction						6M,A	1s,S	1s,S		
Banks		77n,A	40=S							

Codes: A is value of assets; S is value of sales/production

SOURCES: See next page

SOURCES: p Alanís Patiño (1943); c official census; q Casar et al. (1990); s Sepulveda y Chumacero (1973) note, first year is 1962; d D'Olwer (1965); e Banco de México (1978) - totals are adjusted for depreciation - the E represents data from diskettes distributed by the Banco de México, where these data were significantly different from those in the 1978 publication; f Dunn; h Navarettte (1960); m Banco de México (1982); j Banco de México (1982); i Segundo Informe de Presidente Salinas - the 1990 totals are estimates; L Lamartine Yates (1975: 56), there is a minor discrepancy from his census total and this for 1930; g Goldsmith (1985), referring to "tangible assets"; x multiplying Goldsmith's (1985) datum for 1948 by the ratio of nominal GDP in 1950 to that of 1948; y calculated using 1940 GDP and a K/O ratio of 2.5 (Cossio Izquierdo 1962:641) - note the corresponding estimate of Reynolds is 3.3; v, datum given by Rosenzweig (1965) for percentage of new issues, 1886-1910; w calculated using m and denominator of 20,000; u using m and c; t NAFINSA (1977), citing 1965 industrial census; z Sherwell (1929) - latest date is 1926; l CIEN (1983); Q Secretaría de Comercio (1977); & CFE (s.f.); α Aguilera Gómez (1982); θ SPP (1980); σ SPP (1986); μ Wright (1971) - first year is 1945; e Tannenbaum (1929: 360) referring to 1923, foreign as % of private; n Ceceña (1970:54) using an exchange rate of 2; = Moore (1963:44), referring to deposits

The capital letters (D,M,P,C) imply the author has made calculations based on the corresponding sources (d,m,p,c). In particular, Alanís Patiño gives as the ratios of foreign to total wealth in 1902 and 1930 as 20 and 40 percent; the corresponding data in the table reflects the reduction for government foreign debt, and the datum for 1935 should also be lowered. One might note that D'Olwer reports other sources' estimates of foreign ownership in 1910 at 67 and 73%, based on widely diverging estimates of Mexican assets. As D'Olwer did not accept those two sources' estimates of foreign capital, this paper will not make further reference to their estimates of domestically owned capital.

Notes: The "|" indicates item is included in the series above. Services may include "otros". Some data for 1911 is 1910, and some for 1930 is 1929. Some data for the 1920s include factories not in operation. The attempt was made to separate out from the total value of wealth that of cash and government bonds, and to separate industrial bonds from "direct" investment; this latter was not possible for the sources before 1930. The calculations for foreign ownership ratios in 1985 used the end of year exchange rate, which was 44% higher than the average for the entire year.

share of manufacturing. Any such conclusion inevitably depends on the definition of an industrial enterprise; particularly at the beginning of the century the weight of artisan shops in employment (and perhaps output) must have been high. Textiles was probably the most important sector of pre-revolutionary manufacturing industry, and experienced significant foreign investment, especially from Spain and France.²⁵ Complicating the picture is the fact that many foreigners, particularly Spaniards, eventually stayed in Mexico. Note in Table 14c that the industrial census of 1935 stated that slightly over half of manufacturing capital and production was controlled by foreigners, which may reflect this upward bias.

On somewhat firmer ground, the data for the post World War II period in Table 14 suggest levels of foreign ownership of manufacturing which are significantly lower than one half. Even for these more recent times, there are significant problems with the data, particularly relating to the use of historical or replacement cost, treatment of depreciation, etc.²⁶ Nevertheless, the suggestion from the Table is that the foreign presence fell during the middle decades of the century, and is now slowly rising, although it has not reached the earlier levels.²⁷ An increase in the foreigners' share of manufacturing assets and production is visible in the data for the 1960s, and contributed to the restrictive law on FDI of 1973. This relative increase did not occur in those service sectors for which data are available.

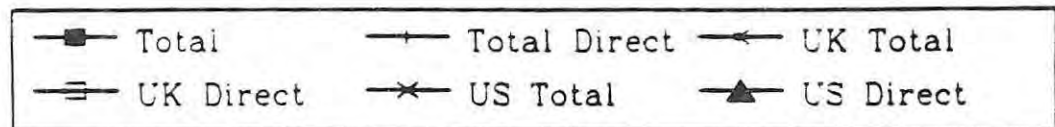
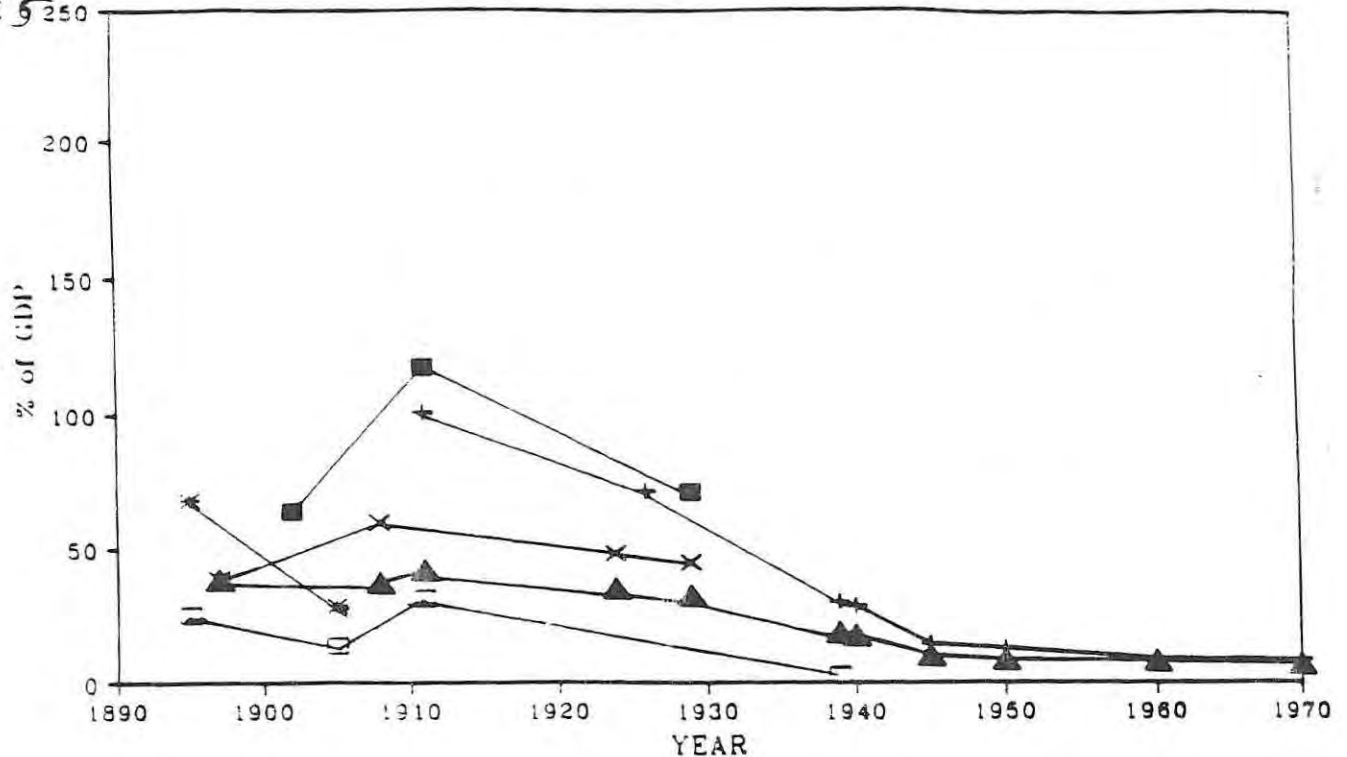
COMPARISONS

Given the importance of FDI in both these countries, a direct comparison of the evolution may be useful. The available data for Canada and Mexico, including both direct and what is now called portfolio investment, is presented in Graph 5. In the early years of the century, the value of the stock of foreign investment was greater than GNP in both countries, with Canada's total being slightly higher. The ratio of foreign investment to GNP has declined significantly, with the relative decline being greater in terms of long term loans to the private sector ("portfolio investment") than was the relative decline in FDI. Note also the decline of the position of the U.K. with respect to the U.S.

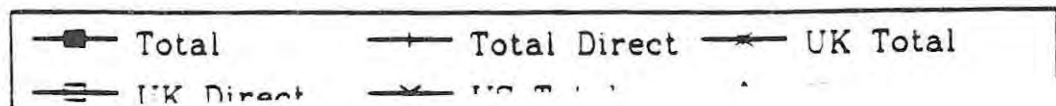
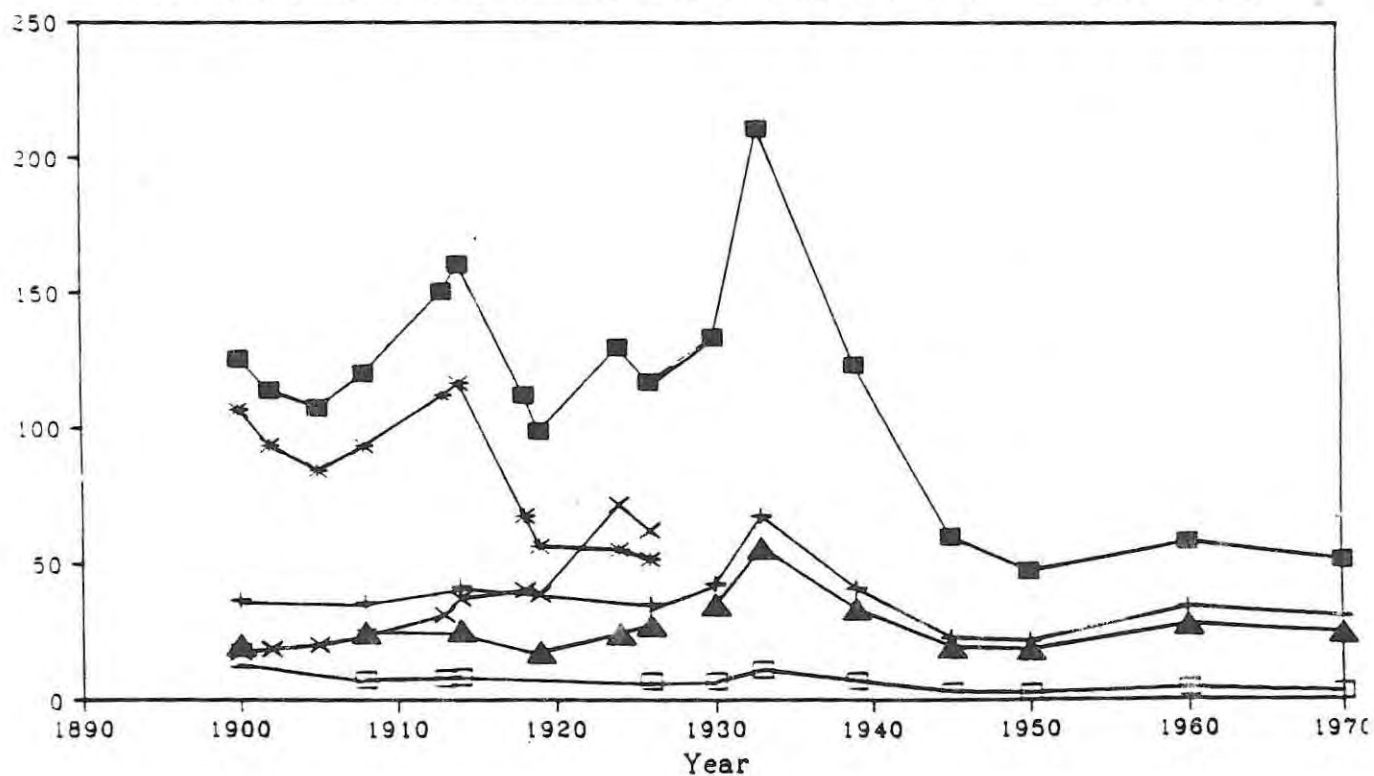
That Canada had received a large amount of foreign investment before WWI is quite familiar in the economic history literature, and the same is true for

MEXICO: FOREIGN INVESTMENT AS % OF GDP

GRAPH 5 250



CANADA: FOREIGN INVESTMENT AS % OF GNP



Australia and Argentina. Table 15 provides parallel data for foreign investment as a fraction of GNP for several countries for which such an exercise is not completely impossible, illustrating that Canada and Mexico were not unique in terms of their experiences of a high ratio of FDI to GDP early in the century, and the decline in that ratio sometime after 1930.²⁸ Because there was such widespread defaulting on bonds during the Depression (and a decade earlier, at least in the case of Mexico), our analysis will generally stick to the case of direct investment.²⁹

While any number of political factors might be called into action to explain Graph 5's decline in foreign investment compared to GDP, especially in Mexico, we would prefer to mention first some long term economic causes. A common element in the decline of foreign investment (relative to GDP) in both Canada and Mexico was the reduced importance of railroads, due to the growing use of motorcars.³⁰ In both countries there was a significant fall during the first half of this century,³¹ by perhaps one half, of the capital output ratio (K/O) - see Table 16. In a sense, this describes an optical illusion; if total capital falls with respect to total output, then foreign capital is observed to decline with respect to output, even if foreign capital is a fixed share of total capital. Indeed, our data suggests that the ratio of the stock of foreign investment to GDP fell in Mexico during the early years of the century, when the foreign share of total capital increased. The latter indicator has been much commented in the literature as indicating an increase in foreign dependence, while the former index would presumably argue the opposite. As a matter of arithmetic, these two trends can both occur if the K/O ratio is falling sufficiently.

The explanation of the falling K/O would probably focus on the capital intensity of railroads and other infrastructure which had been significantly expanded during the Porfiriato, and would subsequently facilitate the expansion of other, less capital intensive activities. In addition, mining and petroleum were significantly more capital intensive than manufacturing, so that the growth of the latter also contributed to the falling overall K/O ratio. While it is clear that the capital-land ratio grew in Mexico during the first half of this century, "technological progress" may also have reduced that sector's K/O ratio, particularly as the value of land is included in the numerator of the data available. Goldsmith (1985) reports falling capital

Table 15. Foreign Investment as Percentage of GDP in Some Latin American Countries and Australia, 1913-1938.

	1913	1929	1938
Argentina	100-196	62-95	67
Brazil	64-100	65-107	48
Chile		80	136
Colombia		34	
Cuba	110	200	196
Australia	99		59

Note: Data refer to totals near the indicated years. In most cases, the GDP total was calculated by this author, using published estimates of price and output changes with respect to a later year when official estimates were available. Different estimates of quantities in the earlier years for Brazil are the main cause of the wide range of estimates. For Argentina in 1913 and 1929, Diaz Alejandro (1970) reports UN-ECLA estimates of foreign investment which are much larger than those of the sources indicated below. Other foreign investment data refer to totals (excluding government bonds) from the U.S. and U.K., and, for Argentina and Brazil, from France. German investment in the region in 1914 was about \$US 900, or 10% of the total; its breakdown by country is not available.

Sources: Foreign investment data from US Dept of Commerce (1960), and Lewis (1938). For the U.K., data from Stone (1987), Rippey (1959), Bank of England (1950), and UN (1955). French investment in Argentina and Brazil from UN (1955). GDP estimates calculated or presented: for Argentina, Diaz Alejandro (1970); Brazil, Chile, Cuba, Mitchell (1983); Colombia CEPAL 197; Australia Butlin ().

Table 16. Twentieth Century Capital Output Ratios in Canada and Mexico

CANADA

	1926	1930	1939	1951	1954	1960	1965	1970
Capital (billion \$C)	10.6	12.9	11.9	20.8	28.2	45.6	60.0	90.9
GNP (billion \$C)	5.1	5.7	5.6	21.6	25.9	38.4	55.4	85.7
K/O ratio	2.06	2.26	2.12	0.96	1.09	1.19	1.08	1.06

Sources: Capital from various years of CIIP, GNP from Historical Statistics. This measure of capital does not include agriculture nor residential or governmental buildings.

Note: While this author does not know of earlier estimates of the capital stock if $a=K/O$, b =rate of growth of GNP, and c =the (net) investment ratio, then the capital output ratio will decline if $c-ab<0$. For the early decades of this century, $b=.04$, and $c=.05$ (Firestone, 1958), hence for any reasonable a , the condition for a declining K/O would have been met.

MEXICO

	1902	1911	1930	1935	1940	1950	1960	1970
Author's Estimates	4.80	3.76	2.19	3.45	1.80	2.83	2.84	1.02
Capital	7.6	11.0	9.6	14.8	14.0	112.3	428.2	429.0
GDP	1.6	2.9	4.4	4.3	7.8	39.7	150.5	418.7
Reynolds's estimates			4.2		3.3	2.3	2.2	
Goldsmith's estimates			2.9		2.4	1.8	2.2	2.6

Sources: GDP from Solis (1988, p. 92). Capital stocks from Table 16a. Reynolds (1970, p. 50); first year is 1925. Goldsmith (1985, p. 39), for the years 1930, 1940, 1948, 1965, 1978

Note: While items included may vary, each author maintains consistency over time.

output ratios for a number of countries in early stages of industrialization, with increasing K/O more recently (a finding robust to different specifications of capital/assets), but that author does not attempt an explanation of this phenomenon, and indeed only comments on changing factoral distribution of income as a possible cause. What differentiates our two countries was the decline in Mexico of foreign investment in mining, petroleum, and certain services, which did not occur in Canada. It is clear that those changes in Mexico were the direct result of government actions. What is interesting in this regard, however, is how little government policies appear to have influenced foreign investment in manufacturing. In this sector, the philosophy of "Mexicanization" was frequently overlooked, and 100% foreign ownership was permitted in areas such as automobiles and electronics.

We turn now to a simple exercise comparing a disaggregation of the changes in foreign ownership of the two economies. An overall view of the trends in Canadian capital can be seen in Table 17. As discussed earlier in the paper, foreign ownership traces an inverted U in both manufacturing and mining, with the declines coming rather more quickly after the mid-1970s. The sectoral distribution of capital remained relatively constant over the century, with the exception of an increase in petroleum and mining, which mirrored the decline in railroads. The Table shows, using a traditional shift/share analysis, that the overall change in the weight of foreign investment is roughly split evenly between changing foreign ownership in each sector, and the changing weight of capital stock of the individual sectors.

While the available data on capital stock in Mexico is not nearly as good as that for Canada, an attempt at depicting broad trends can still be attempted on the basis of the data in Table 14, and is also presented in Table 17. As in Canada, the decline in railroads in Mexico is a major occurrence. The sources for Mexico include estimates of agricultural capital (including land, which according to the censuses, accounted for 2/3 of the total), which has also declined in relative terms. While mining has fallen, petroleum has risen, a trend that would be even stronger if calculations for more recent years were feasible. In contrast to the Canadian case, it would appear that the major factor "explaining" the overall change in foreign ownership is changes in ownership of individual sectors, and that changes in the relative weights of the sectors were less important in Mexico.

Table 17. Disaggregation of Changes in Foreign Ownership in Canada and Mexico.

CANADA	1926	1930	1939	1951	1954	1960	1970	1982	1986
Foreign Ownership (%)	37	39	38	31	32	32	35	34	31
	1926-1954		1954-1970		1970-1986				
Due to Sectoral Changes in Foreign Ownership									
Manufacturing		3		2		-2			
PetrolMining&Gas		2		0		-4			
Petrol&Gas		NA		0		-2			
Mining&Smelting		NA		0		-1			
Services&Merchandising		-11		-1		3			
Railroads		-3		-3		4			
OtherUtilities		-3		1		2			
Merchandising&Constructio		-0		1		-1			
Due to Changing Sectoral Weights in Production									
Manufacturing		2		-1		-1			
PetrolMining&Gas		3		3		1			
Petrol&Gas		NA		3		3			
Mining&Smelting		NA		0		-1			
Services&Merchandising		-2		-1		-0			
Railroads		-6		-3		-1			
OtherUtilities		1		1		1			
Merchandising&Constructio		0		0		-0			
MEXICO	1910	1930	1940	1950	1960	1970			
Foreign Ownership (%)	31	33	21	14	9	8			
	1910-1930		1930-1950		1950-1970				
Due to Changes in Sectoral Foreign Ownership									
Total		1.7		-6.8		-0.6			
Agriculture		-0.5		0.0		0.0			
Mineria		0.0		-0.5		-0.4			
Petroleo		0.0		0.0		0.1			
Industria &Construcc		0.0		-0.9		-0.2			
Servicios		0.7		-2.5		-0.0			
Transporte		0.0		-6.7		0.0			
Luz&GasTelef&Teleg		0.0		-1.8		0.0			
Comercio		0.0		0.1		0.0			
Otros.		0.0		0.1		0.0			
Due to Changing Sectoral Weights in Production									
Agriculture		-0.4		-0.1		-0.0			
Mineria		-1.0		-2.4		0.0			
Petroleo		1.0		0.0		0.0			
Industria &Construcc		0.5		4.4		0.0			
Servicios		0.5		-0.4		0.0			
Transporte		0.0		-2.4		-0.1			
Luz&GasTelef&Teleg		2.0		3.2		0.1			
Comercio		-0.1		-0.1		-0.1			
Otros		0.1		0.0		0.0			

Source: Author's calculations, based on Canada's International Investment Position, various years.

Note: Foreign control of Canadian railroads, as calculated by Statistics Canada, was less than 3% during this period.

CURRENT SITUATION OF MNCs IN MEXICO

The 1990 OECD study by Peres Nuñez has a brief summary of the recent evolution of government policy on FDI, as well as a review of recent studies. Investment by MNCs is shown to be sensitive to cycles in both home and host countries. Fajnzylber and Martínez Tarragó (1976:247) indicate that MNCs grew relative to national firms in the 1960s, which helped motivate the tougher stance on FDI taken by the government in 1973. However, the weight of MNCs in sales of Mexican industry remained relatively constant at about 28% between 1970 and 1980, according to Casar et al. (1990), repeated in Table 18. This is the net response to such factors as the 1973 law, the expansion of parastatals, and the continued growth and technological domination of MNCs in several areas. As suggested in Table 1 at the beginning of this paper, and documented in detail in Dunning & Cantwell (1987), the relative size of MNCs in Mexico's economy is about average for the region. The United States dominates FDI in Mexico more than in other countries, especially in the southern cone, but the share of the US has fallen from 75% in 1974 to 64% in 1981.

While of course there are many ways in which the role of MNCs will be different in Mexico and Canada, the OLI theory discussed above, and as applied to Canada and the US does provide some potentially fruitful parallel lines of inquiry for Mexico. First of all, there is ample evidence that profit rates, capital labor ratios, import propensities, foreign payments for licensing and royalties, etc. all tend to be higher among MNCs than in national firms in Mexico.³² MNCs tend to be located in the more dynamic sectors. Moreover, the basic distribution of MNCs inside Mexican industry is quite similar to that of other countries, concentrating in sectors with barriers to entry, especially those created by economies of scale and by technological requirements. This is consistent with the theory of MNCs described earlier. In a series of papers, Blomström expands on the above discussion of the impact of MNCs in Mexico, focusing on concentration and technological advantages. After allowing for scale, K/L ratios, etc., Blomström and Persson (1983) demonstrate that the presence of MNCs has positive effects on labor productivity, to a degree which is apparently larger than that seen in the papers referred to above on Canada. Casar et al. (1990) find that while wage levels are positively related to foreign presence, the growth of labor

Table 18. Foreign Firms' Percentage of Manufacturing Production:
Mexico, 1970 and 1980

	1970	1980
Total	28.7	27.2
Foodstuffs	11.1	11.0
Beverages	29.6	29.8
Tobacco	96.8	78.0
Textiles	12.0	8.8
Clothing and Footwear	4.9	7.9
Wood and Cork Products	4.3	5.7
Furniture and other Wooden Art	3.8	11.2
Cellulose and Paper	32.9	23.1
Printing and Publishing	7.9	9.7
Leather Goods	2.5	11.7
Rubber Products	66.9	66.6
Chemicals	46.8	35.2
Pharmaceuticals and Cosmetics	55.9	72.5
Oil by-products	75.0	55.6
Non-Metallic Mineral Products	17.7	11.9
Basic Metals	46.6	14.1
Metallic Products	20.6	19.5
Non-Electrical Machinery	52.1	48.6
Electrical Machinery	50.1	57.9
Transport Equipment	64.0	68.9
Miscellaneous	33.1	40.0

SOURCE: Peres Nuñez (1990) p. 19, reporting data from Casar (1987).

productivity has a mixed response, depending on econometric specification.³³ Blomström and Wolff (1999) use a relatively similar formulation and find that MNCs do contribute to the process of productivity convergence between Mexico and the US, an aspect which has been receiving increasing attention of (Willmore; Dollar, 1991). There is also some evidence that the MNCs initially speed up the concentration process inside Mexican industry (Blomström, 1986b).

Some recently published data (INEGI, 1988) permit further analysis of the role of MNCs and industrial concentration. Industrial sectors specified at the four digit level were classified by percentage foreign ownership, and, as reported in Table 19, most of Mexican production had a small ratio. Furthermore, most of the foreign capital was in majority foreign owned industries. There is a strong positive correlation between concentration and percentage foreign ownership, and, comparing the data for 1970 and 1980, that positive correlation is also true for changes in concentration versus changes in percentage ownership by foreigners. Recalling the finding of Meller (1978) that a number of Latin American countries had parallel industrial concentration ratios, it could be noted that the Mexican data looks quite similar to the Canadian numbers in this regard.

One other study on FDI in Mexico (Shah and Slemrod, 1990), studies the importance of tax rates as a determinant of FDI. These authors report that both the (Mexican) regulatory climate, and tax rates in the host and source country have clear impacts on FDI flows. In their regressions, protectionism in Mexico, as indicated by the effective rate of protection, has mixed effects on FDI inflows.

MNCs, TECHNOLOGICAL CHANGE, AND PRODUCTIVITY

There are a number of ways MNCs can affect productivity. To the extent that the decision to invest results from the firm's technological superiority (an organization advantage), its investment will increase technology in the host country, and may also lead to spillovers, both intra- and inter-industry. The presence of the MNCs may affect the amount of R&D in the country. There may be an increase in x-efficiency, due to the greater competition.

A continuous flow of attention has yielded a number of stylized facts about MNCs and technological change in Canada: 1) Canadian productivity is lower than that of the U.S. (Baldwin and Gorecki, 1986); 2) Canada spends

Table 19. Mexican Industrial Firms by Degree of Foreign Ownership, 1980

Degree of Foreign Ownership, Percent				
	75-100	50-75	25-50	0-25
Average Concentration Ratio (Cr4)				
	74.8	59.9	46.3	37.1
Percentage of Total Industrial Capital in Mexico				
	12.3	10.8	13.9	61.2
Value of Production, by Degree of Foreign Investment (billion pesos				
(estimated)	208	131	100	149
(reported)	-- 384 --	--	-- 148 --	--

Source: INEGI Estadísticas Industriales. Información por tipo de empresa e índices de concentración

Note: For the calculations of the average concentration ratio and value of production, for each of the four groups it was assumed that the actual degree of foreign ownership were 87.5, 62.5, 37.5, and 12.5 %, respectively.

relatively less on research and development than the other major industrial countries, and its private sector finances a smaller fraction of those expenditures than most any other country (OECD, 1986); 3) the fraction of patents granted to foreigners in Canada is higher than in the other large OECD countries, while Canadians obtain a relatively small fraction of patents in other countries (Ellis and Waite, 1985); 4) subsidiaries of US MNCs in Canada do less R&D than do their parent companies at home (Benchmark Surveys); 5) the rate of diffusion through MNCs in Canada is about as fast as that of subsidiaries of MNCs in other developed countries (Mansfield, 1985).

Over the years, many Canadian observers have used these facts to argue that the presence of US MNC subsidiaries tends to lower Canadian R&D, and therefore technological progress and overall growth. Typical phrases are the syndrome of "truncated" or "stunted" growth, associated with a "branch plant" economy, wherein the amount of domestic R&D is reduced when a firm (or market niche) is absorbed by an MNC subsidiary which does its research in its home country. The ensuing debate can be characterized as a free market/interventionist issue, which in the Canadian context tend to be the positions of the Economic Council and the Science Council, respectively. Indeed, the Canadian government has responded to this perception of insufficient technological competitiveness, by providing incentives for local R&D. Not surprisingly, free market advocates view these as having low productivity.

Table 20 shows that Canada spends roughly half the level of R&D (compared to GNP) as do some other big countries, although the difference is lessened when defence expenditures are discounted. The data in Table 21 indicate that domestic firms in Canada spend more on R&D than do US subsidiaries there, although even then the Canadian firms are significantly below the levels of the competitors; additionally, the ratio of R&D to sales is rising, as is the gap between domestic and foreign firms. Additionally, Blomström cites an unpublished paper by Ari Kokko which notes that US MNCs do more R&D in host countries which have higher incomes, greater competitive pressure, and higher performance requirements.

In addition to spending on R&D, MNCs contribute to technological advancement by diffusion of results achieved in the home country. It is clear that new techniques spread more quickly inside an MNC.³⁴ But the overall

Table 20. Comparisons of R&D in Different Countries.

	R & D as % of GDP					R&D Intensity in Industry: Expenditure as % of Value Added				
	1965	1970	1975	1980	1985	1969	1975	1979	1981	1983
U.S.	2.8	2.7	2.3	2.4	2.8	7.4	6.9	6.8	8.1	9.3
Japan	1.6	1.9	2.0	2.2	2.6	2.9	3.8	4.2	4.9	5.7
Germany	1.6	2.1	2.2	2.4	2.7	3.3	4.1	4.9	5.4	
United Kingdom	2.3	2.2	2.0	2.2	2.3	4.7	4.4	4.8	6.6	
Italy	0.7	0.9	0.9	0.9	1.3	1.6	1.5	1.4	1.7	1.8
Canada		1.4	1.1	1.2	1.4	2.1	1.3	1.9	2.6	3.1
Australia		1.2	1.1	1.0	1.1		0.8	0.9	0.8	
Netherlands		2.0	2.0	1.9	2.0	4.1	4.0	4.8	5.6	
Sweden						2.9	4.1	5.5	6.3	7.4

R&D/GDP	Non-Defense R&D as % of GDP	
	1975	1984
Mexico	1984	0.6
Brazil	1985	0.4
South Korea	1988	1.9
	U.S.	1.7
	U.K.	1.3

SOURCE: OECD Economic Studies ??, and OECD Science and Technology Indicators, No. 2, 1986, p. 82, and, for Mexico, Brazil, and South Korea, UNESCO Statistical Yearbook, 1990 Table 5.18

Domestic Patent Applications per 100,000 Population

	1965	1970	1975	1980	1983
United States	37	37	30	27	25
Japan	62	97	121	142	191
Germany	65	54	49	50	52
United Kingdom	45	45	37	35	35
Canada	9	9	8	7	8
Spain	13	9	5	5	4
Netherlands	20	19	14	14	15
	1988				
Mexico		1			
South Korea		13			

Source: OECD, p. 91
Patent Applications from World Intellectual Property Organization,

Table 21. Current Intramural R&D Expenditures as a Percentage of Canadian Company Sales, by Country of Control

	1973	1979	1983	1985	1988
Total	0.9	0.9	1.2	1.3	1.4
Canadian	0.9	0.9	1.4	1.5	1.6
United States	0.8	0.7	0.9	1.0	1.2
Other Foreign	1.1	0.5	1.0	1.3	1.4

1988 Current R&D Expend. as % of Sales, by Industry and Country

	Total Can. Foreign				Total Can. Foreign		
Total All Industries	1.4	1.6	1.2				
Total Manufacturing	1.5	1.7	1.3	Total Services	1.4	1.5	1.1
				Transportation	0.4	0.4	0.5
Total Mining	0.5	0.6	0.4	Electrical Power	1.1	1.1	0.0
Mining	0.5	0.6	0.5	Computer Services	12.3	12.5	10.0
Crude Petrol & Gas	0.6	0.8	0.4	Engin. Services	16.5	14.5	42.0
				Other Non-Manuf.	1.1	1.7	0.7

Source: Basic data from Statistics Canada Industrial Research and Development 1988, p. 77

issue of MNCs and technological advancement is clearly not settled.³⁵ Much current research in Canada emphasizes the role of scale, so that Baldwin and Gorecki (1986) attribute a third of the total factor differential between Canada and the US to the former's non-achievement of economies of individual plant scale. In their residual, they do find that MNCs have a small but positive effect on relative productivity. One is well advised to accept Globerman's (1985) conclusion that the relationship going from foreign ownership to technological change is positive and modest.

There is very little data on R&D in Mexico. Table 20 would suggest that these expenditures are only 25% to 50% of levels in industrial countries. Although the Mexican totals are larger than those of Brazil, they are well behind those of South Korea.³⁶ While there apparently is no recent official tabulation in Mexico of the ratio of R&D to sales, an important work by Unger (1983) analyzes some data on this variable for over 100 Mexican firms.³⁷ As shown in Table 22, the ratio R&D/Sales is comparable to that for firms in Canada, is nearly the same for domestic and foreign firms, and is higher for production goods. A contrary finding occurs from comparing the estimate of the levels of industrial R&D in Mexico (from UNESCO; see Table 23) the amount of R&D reported for US MNCs in that country. To the extent that the latter finding is more accurate, it suggests that the prospect of undertaking an autoctonous technological development will be much more difficult for Mexico than for Canada. An alternative to R&D expenditures is the purchase of technology via licensing and patenting. As indicated in Table 24, most countries in the world are importers of technology in this way, and most licensing takes place via MNC subsidiaries.³⁸

Rough calculations using the total factor productivity data for Mexico in Hernández Laos and Velasco Arregui (1990), Blomström and Wolff (1989), and Samaniego Breach (1984) would suggest a positive correlation between MNC share of production and TFP growth, strengthening the results mentioned above. There is a clear echo of the results for Canada of Baldwin and Gorecki.

One is tempted to suggest that "late industrializers" must choose between two paths for acquisition of technology; importing it via patents and licensing, or generating it via a more local R&D apparatus. MNCs certainly help the first process, but their contribution to the second one may well be in doubt. Moreover, because of its low level of scientific infrastructure,

Table 22. R&D Patterns in Mexican Industries, 1978

	All Firms		Mexican		Foreign	
	Number	%	Number	%	Number	%
Total Number	119	100	43	100	76	100

Firms Carrying out R&D Expenditures

All	52	44	18	42	34	45
Producer Goods	31	47	13	54	18	43
Consumer Goods	21	39	5	26	16	47

Ratio of R&D to Sales among R&D Performing Firms, 1978

	All Firms	Mexican	Foreign
All	1.4	1.4	1.3
Producer Goods	1.7**	1.6	1.8*
Consumer Goods	0.9	1.0	0.9

Significant difference between firms producing consumer and producer goods at the 5% level (**) and 10% (*) level, using one tail tests.
 Note. The firms were selected from the most important in a number of priority industrial classes.

Source: Unger (1983), pp. 213, 214.

Table 23. Indicators of R&D Expenditures in Mexico

	1970	1975	1980	1985	1986
Goverment Expenditures for R&D as Percentage of GDP	0.60	0.83	1.12	0.83	0.68

Source: Lustig et al. (1989), which is based on official data.

Note: Whiting (1981:328) cites a 1967 study by the INIC which estim total R&D as a percentage of GNP at 0.13%.

1984 Total R & D 159,391 million pesos (0.6% of GNP)

Current Expenditures 134,635

Capital Expenditures 24,696

R & D in the Productive Sector, by Branch

Total	48277
Agric., Fish, Forest.	10911
Extractive Industries	9211
Manufacturing	4871
Utilities	4630
Construction	1688
Trasport&Commun.	579
Other	16387

Source: UNESCO Statistical Yearbook, 1989

Table 24. Technology Payments Compared to R&D Expenditures

Technology Payments as a % of Business R&D

Payments	1971	1981	Receipts	1971	1981
U.S.	1.3	1.3	U.S.	13.0	13.2
Japan	15.0	7.2	Japan	3.0	4.8
U.K. ('72)	14.8	10.5	U.K. ('72)	16.3	1.7
Canada	23.7	24.6	Canada	6.7	7.3
Netherlands	26.3	41.9	Netherlands	23.9	27.3
Spain	235.2	158.2	Spain ('73)	26.0	50.4

1977 1987

South Korea 26.0 23.0

SOURCE: OECD Science and Technology Indicators, No. 2, 1986; p. 56 and, for South Korea, Kiroshi Kakazu, "Industrial Technology Capabilities and Policies in Selected Asian Developing Countries," Asian Development Bank Economic Staff Paper # 46. 1990. Numerator is Royalty payments.

1984

Mexico about 40, considering royalties and commissions
about 100 considering royalties, commissions and
repatriated profits

SOURCE: For R&D, UNESCO Statistical Yearbook, Table 5.18. For technology payments, Peres Nuñez (1990), p. 28.

NOTE: Technology payments include royalties, commissions, license fees.

Mexico may well be limited only to the first option, in which case it should encourage investment by MNCs.

MNCs AND FREE TRADE AGREEMENTS

The recent signing of the free trade agreement (FTA) between Canada and the U.S. was accompanied by significant popular debate, and indeed the issue became the key issue in a national election.³⁹ One notes in the debate in Canada two mutually inconsistent fears; that the FTA will bring in more MNCs, and that it will cause them to leave. The former position essentially reflects a belief that the barriers to foreign control of Canadian culture activities, as well as other service industries, are being reduced. The opposite position is held by those who feel that the tariff continues to be important, and judge MNCs contributions to be positive.⁴⁰

It is still very early to evaluate the overall impact of the FTA on either economy. Many critics in Canada blame a significant increase in unemployment on the agreement, although others point out that a number of macroeconomic factors are also potential causes -- critics are also fond of claiming that this is the first recession "made in Canada." Moreover, it is clear that the initiators of the agreement hope that effects would be felt before the actual signing and coming into power of the agreement, while other aspects of the agreement involve a closer relation with their southern neighbor whose benefits would be long term. Specifically, perhaps a majority of the changes were in terms of reduction of NTBs and the arrangement of a trade dispute mechanism, rather than the reduction in tariffs per se. As noted above, the dominant view among economists in Canada is that the effect on FDI of (further) lowering tariffs will be small. It should also be noted that there have not yet been significant changes in FDI flows, in either direction.

Let us now turn to some speculative observations about a North American Free Trade Agreement (NAFTA), made while the agreement is still being negotiated. The first comment is that Mexico has already taken a giant step at reducing its tariffs and NTBs, in accordance with its accession to the GATT. This may well have a larger impact on the country's economy over, say, the next five to ten years, than would a NAFTA.⁴¹

It may be of some use to estimate, however crudely, the potential

increase in FDI. Three projections of increases in FDI will be presented, which hinge on two estimates; the actual (1985) value of capital stock,⁴² and the projected percentage increase in foreign ownership. It is clear that any actual increase in the capital stock will occur over a period of years in the inverted 'V' pattern typical of accelerator models.

Available data on the non-residential capital stock in Mexico was summarized in Table 14. Some aspects of that Table which are important for this section are: 1) census estimates for capital stocks are only available for a few sectors from 1980 to the present, and for no sector after 1985; 2) the last evaluation of agricultural stock was 1970; 3) depreciation and inflation make many current valued annual series suspect; 4) non-governmental services account for perhaps half the total. While the lack of census data after 1985 weakens the estimates to follow, there is information from other sources, and, moreover, we saw earlier that the distribution of investment has not changed much in recent years. Our estimated total value of Mexican non-residential capital stock is \$30 billion, based on the values reported in the censuses of 1985 for mining, petroleum and manufacturing, and the sectoral distribution discussed earlier.⁴³ With regard to foreign ownership, we used the values for the industrial sector which appear in Peres Nuñez (1990:19), the values for agriculture, mining and petroleum which are reported in Table 14, and for the service sector, we compare disaggregated figures on the share of FDI in Mexico reported by Baillet and Cisneros (1988), with the estimated capital stock from Table 14a.

A number of variables, which the OLI perspective asserts are important determinants of FDI, will not change in the short run -- R&D, advertising, concentration ratios, economies of scale. Moreover, the reduction of tariffs inside Mexico should not have a large effect. Thus, there are two major variables which will change; governmental restrictions on FDI, and the size of the market for Mexican products, both due to internal growth and, more importantly, due to greater openness in the US economy. Three different scenarios are considered. The first - which might be called the investment liberalization scenario, simply assumes that Mexican productive sectors achieve the ratio of foreign ownership which Canada had in 1987. The second scenario analyzes Mexico's unilateral elimination of tariffs in a context of increasing returns to scale and international mobility of capital, and uses

estimates from Sobarzo (1991, version three). To a significant degree, these two scenarios both refer to actions which Mexico has already taken. The third case, referred to as the NAFTA scenario, attempts to incorporate the effects of a partial opening of the U.S. economy on Mexican production and capital stock, under the assumption that all of Mexican industry obtains the level of import penetration into the U.S. which Mexican automobile production currently enjoys (1.5%), and that there is no response of Mexican investment. Rather than model a free trade scenario, the underlying hypothesis here is that the access which will be reached by producers in Mexico is essentially a political question, and that the automobile case approximates an upper limit.

As can be seen in Table 25, the first two scenarios involve increases in FDI of US\$ 14 and 32 billion, respectively. The trade scenario involves an increase in \$15 billion. While there is significant overlap in the situations assumed to underly the first two scenarios, they, especially the second, are conceptually separable from the third one. Two obvious points of comparison are the current level of Mexican exports -- about US\$ 30 billion, and the total capital stock, which was estimated at \$262 billion. A generous assumption would be a time frame for completion of the investments of seven years; this would imply an annual increase in the availability of foreign exchange of about 10-30% for these scenarios. The eventual increase of the capital stock under the combined scenarios, almost \$70 billion, would increase capital by over one quarter. This is certainly a significant impact, but the reader is reminded that these rough exercises are designed to test the upper bounds of the impact of the NAFTA, not the lower ones.

A different type of message in the estimates in Table 25 concerns the sectoral distribution of the impact of the different scenarios. In particular, with "unilateral liberalization" there is the largest inflow of capital into the service activities. Moreover, by definition, greater access into the US market will not directly generate any FDI into services in Mexico, as investors will be initially attracted to industry. Furthermore, the differences between levels of foreign ownership of services in Canada and Mexico are not large enough to have the "investment scenario" predict capital inflows which are significant at the macroeconomic level. It is this type of consideration which leads to the conclusion that the eventual signing of a NAFTA will not be as important for the country as the unilateral trade and

Table 25. Estimated Changes in Mexican Capital Stock, Different Scenarios

	Initial Conditions		Investment Scenario		Unilateral Trade		NAFTA Scenario	
	Capital Stock (billion \$US)	Percentage Foreign Ownership	Assumed Foreign Control %	Increase Capital Stock \$US	Percent Increase Capital Stock	Increase Capital Stock \$US	Growth Output %	Increase Capital Stock \$US
Total	262	8	16	14	12	32	6	15
Agriculture	90	1	2	1	7	6	0	0
Mining	6	8	27	1	22	1	0	0
Petroleum Extra	15	0	0	0	0	0	0	0
Industry	60	27	49	11	19	11	24	15
Construction	9	1	5	0	53	5	0	0
Services	82	4	10	1	11	9	0	0
Breakdown of Industry								
Foodstuffs	5.20	11	27	1	6	0	73	4
Beverages	2.75	30	38	0	7	0	0	1
Tobacco	0.20	78	99	0	8	0	0	0
Textiles	2.76	9	46	1	11	0	15	0
Clothing &Food	0.44	8	8	0	9	0	0	1
Wood and Cork	1.36	6	22	0	21	0	78	1
Furniture&Other	0.29	11	12	0			72	0
Cellulose&Paper	2.84	23	12	0	11	0	52	1
Printing&Pub.	0.70	10	27	0			141	1
Leather Goods	0.12	12	16	0	10	0	0	0
Rubber Product	0.69	67	87	0	15	0	150	1
Chemical Prod.	8.24	35	76	3	12	1	7	1
Pharmaceutical	0.68	73		0			0	1
Oil By-Product	0.24	56	74	0			0	0
Non-Metallic	5.35	12	55	2	24	1	7	0
Basic Metals	10.06	14	26	1	29	3	0	0
MetallicProduct	2.25	20	18	0	25	1	80	2
Non-Electrical	1.59	49	53	0	37	1	50	1
Electrical Mach	2.53	58	58	0	26	1	40	1
Transport Equip	5.67	69	85	1	25	1	0	0
Miscellaneous	0.28	40	35	0	14	0	369	1
Basic Petroche	7.05	(assumed not to change)						
Breakdown of Services								
Transport	14	1	5	1	10	1		
Light and Gas	23	1	1	0	13	3		
Telephone&Teleg.	3	7	12	0				
Commerce	6	14	20	0	10	1		
Others	12	14	8	0	10	1		
Gove ment	24	0						

Capital Stock is author's adaptation of Table 14. Ownership of Industrial capital from Wilson Peres (1990). Foreign ownership of Services from Baillet and Cisneros (1988). Foreign Ownership in Canada from CALURA 1987, p. 109; percentage ownership for industry, services, and total reflect Mexican sectoral weights. Trade scenario from Sobarzo (1991), version 3. NAFTA scenario utilizes trade penetration, see the text.

foreign investment liberalizations of the 1980s.

Given that there will not be free trade, one is led to assert that the outcome of the negotiations depends on the bargaining abilities of the three countries' representatives. There are three areas of obvious importance. Tariff reduction; opening up of sectors to FDI, and local content limits. As was noted for the so-called auto pact between the US and Canada, the initial situation was one of the countries splitting up the production of world class auto firms, all from the US. Now, both Mexico and Canada have an incentive to invite in investors from other countries who are world class, and wish to sell into the US, whose producers have lost their competitive edge. In automobiles, this is currently happening with Honda in Canada, and is effectively occurring with Mitsubishi via Ford in Hermosillo. It must be recalled that there is a tremendous overcapacity of automobile production in North America. While the investments of the US companies in Mexico have made an impact on the country's balance of payments, it is unclear that the firms will wish to continue making such investments, as well, of course, as there being a question of the ultimate impact on Mexico, due to imported inputs. With regard to services, the most visible area is banking, which is already being acted on, and which an FTA would not affect directly,. Furthermore, Mexico's incentive is clearly to seek to broaden its prospects as an export platform for FDI from other countries, which will certainly not appeal to its northern neighbors. The Mexican negotiating team faces a difficult challenge.

N O T E S

1. This approach has had a number of contributors; the names Dunning, Casson, Buckley, and Caves are at the forefront. Our brief description will follow that of Dunning (1988). The contrasts are with the Hobson/Lenin theories of imperialism, and a version of the Heckscher Ohlin model, in which interest rate differentials lead to international capital flows.
2. Many economists, including, apparently, Vernon, now believe that the product cycle analysis is quite out of date; see Vernon (1979) and Giddy (). If so, it is because of oversuccess. There are differing rates of loss of organizational advantages compared to those which are locational, and in both cases the speed of diffusion is rising. Furthermore, the traditional centers of technological advancement have lost their hegemony, so that, for example, Hong Kong and Korea are the initiators of new techniques in textiles.
3. There are major differences in the ways in which different countries report inward or outward FDI, with reinvested profits being the biggest area of inconsistency. The United Nations Center on Transnational Corporations (UNCTC) has made significant advances in overcoming this.
4. While it is clear that price changes severely bias the data, this author knows of no other work which has attempted to correct for this by deflating by a price index. This procedure effectively assumes constancy of real exchange rates, which has been less true recently. Of course, the calculation is most problematic when considering the "Direct Investment Position", which is simply the straightforward sum of inflows of FDI, without adjustment for depreciation, price changes, etc. Calculations presented below suggest a certain consistency between "real" values of assets and sales, and observed indices of employment, especially when account is taken of productivity changes.
5. This decline is even present in the nominal data.
6. The available data on US FDI sums previous outflows of equity, reinvested earnings, and long term intra-company loans; no adjustments are made for depreciation or inflation, much less changes in quality. The US Department of Commerce has recently initiated some efforts at improving the data (Landenfeld and Lawson, 1991). The deflation of the nominal data -- which is reported in US dollars -- by the GNP deflator is a simple attempt to shortcut some of these problems. That the data on employment follows the same trend as deflated salaries or assets is supportive of this methodology, as is the data from Canada reported below.
7. Blomström et al. (1988) suggest that this is less true for investment from Japan than it is for investment from the United States (and Sweden). A model of FDI which is sometimes viewed as better than the OLI as an explainer of Japanese investment is presented in Kojima (1978).
8. This is well documented in the official Canadian source CALURA, which will be discussed below.

9. The comparison of the evolution of US FDI in Canada and Europe suggests that the divestment out of Canada of which McFetridge (1989) speaks is specific to that country.
10. This regression will be updated when the data on industrial concentration from the 1987 census become available.
11. The importance of reinvested earnings in US MNC behavior has been much discussed in the literature, see Droucopoulos (1984) and Razin and Slemrod (1990). The latter collection of essays gives much attention to the "trapped equity" hypothesis, according to which US tax laws provide strong incentives to MNC managers to avoid repatriating earnings.
12. Petroleum is a counterexample to this trend, as are certain services, such as transportation and utilities.
13. See Table 34 of the 1982 Benchmark Survey. This refers to majority owned firms.
14. The United States and Canada signed an agreement in 1965? according to which the value of automotive sector exports into Canada was to be limited by the value of production/sales?
15. See Culem (1988), Ray (1989), Woodward (n.d.), and Scaperlanda (1990). Some factors which were not significant include tariffs and nontariff barriers, exchange rate instability, and defensive foreign investment. Woodward's paper studying the locational distribution of Japanese investment in the US emphasizes low unionization and tax rates, and achievement of minimal educational and infrastructural levels.
16. A longer version of this paper will describe the two versions of the "Canadian Political Economy." The earlier one, led by Harold A. Innis, emphasized the importance of exported staple products in the growth and settlement of Canada. The "New" version builds on Innis's emphasis on staples, and argues that foreign investment has inhibited the development of a mature industrial structure. The links with the Dependency school are very clear. See Levitt (1970), and Clement and Williams (1989). The Gray Report (Government of Canada, 1972), brought this analysis into public policymaking.
17. See Statistics Canada, Fixed Capital Flows and Stocks, 1985. With a total capital stock of C\$939 billion in 1981, and a GNP of \$344 billion, the overall capital output ratio was 2.7; when limited to "productive sectors, it was 1.14
18. An authoritative discussion of the phases of governmental regulation and deregulation of Canadian oil and gas is found in Helliwell et al. (1989).
19. The implication of these items is that the OLI may not be as strong as was originally thought.
20. A similar message is of course revealed by statistics on Canadian industrial exports, which are severely slanted towards products like automotive goods which are not freely traded.

21. These limitations are spelled out in Banco de México (1991).

22. Patiño was head of the Dirección Nacional de Estadística. The 1930 calculation is based on official censuses; the 1902 number assumes ("forma optimista") that the national capital stock in a number of areas were equal to those of 1930. Ceceña Gamez (1970) used data from the 1912 Mexican Yearbook on the 170 largest corporations, which were 77% foreign owned. Patiño is cited by Womack (1978), and by Goldsmith (1966), who in turn is cited by Freeman (1974) and many others. Vernon (1963) appears to be based on the same ultimate source as Ceceña Gamez; they are cited by Bohrisch and Konig (1968), Villa Real (), Whiting (1981) and many others.

23. Meyer (1977:10). The firms were eventually to receive payments of much smaller magnitudes, during WWII.

24. After World War II, the foreign mining companies turned their attention towards Chile and Peru, thereby repeating for Mexico the post World War I experience of the flight from an aggressive Mexico to a more hospitable Venezuela.

25. Ceceña Gamez (1969) reports that 84% of the capital of industrial corporations was held by foreigners, a finding starkly at odds with the breakdown by nationality of capital invested in corporate industry (1886-1910) cited by Rosenzweig (1965:453), and included in Table 14. Cárdenas (1987:174) used the 1935 census to estimate that 70% of the "large" (annual sales over 500 thousand pesos) companies were controlled by foreigners.

26. Note that the data which are based on industrial censuses suggest higher foreign ownership than do those based on annual surveys; moreover, the ratios calculated from book values are lower than the annual surveys.

27. While the data in Table 14c hardly show an increase in the relative ownership of foreigners, the comparison of the absolute amounts of FDI stocks with GNP data after 1970 show a significant increase, which, presumably, is now not outweighed by a changing capital output ratio.

28. Other related items, not elaborated on here, but discussed in United Nations (1955), are: 1) the strong short-term instability of U.K. investments; 2) the fact that, in addition to Mexico and Canada, the only other country in the hemisphere to received significant investment from the US prior to World War I was Cuba; 3) the decline in French and German investments as a result of that war; 4) the stagnation of British investments during the inter-war period, and their abrupt fall afterwards, apparently through the purchase of their assets by nationals, rather than other foreigners; 5) French investments followed the British pattern in emphasizing railroads and government bonds, while the German investments were more directed towards industry and primary production.

29. A very useful treatment of portfolio capital flows is Stallings (1987). The best study of the main source of overseas capital before World War I is Edelstein (1982).

30. It might also be noted that the distinction between direct and portfolio investment is particularly weak in the case of railroads, and that the value of motor vehicles and highways is often not included in reported totals of capital stock, thus imposing a downward bias on more recent estimates of capital and the capital output ratio.

31. For a discussion of a falling capital output ratio Mexico over this period, see Cossio Izquierdo (1962).

32. See Sepulveda and Chumacero (1973), Fajnzylber and Martínez Tarragó (1976). Blömstrom (1983), Casar et al. (1990).

33. Casar et al. do not regress labor productivity on foreign presence. On their Cuadro 11.4 reporting regressions with the dependent variable the rate of growth of labor productivity, the inclusion of the rate of growth of output changes the sign of the MNC variable from positive (and statistically insignificant) to negative and highly significant. There are clear econometric dangers in single equation estimations of what are presumably systems of interactions, a problem the OLI literature for Canada or anywhere else has not resolved. More importantly, Casar et al. focus on reductions in inter-industrial dispersion of labor productivity, a dynamic consideration on which OLI has relatively little to say. In addition, note that these papers on Mexico refer to labor productivity, while some of the Canadian work mentioned above treats total factor productivity.

34. This was shown by data from the Harvard project, as well as many individual case studies, as well as aggregated data provided by the U.S. Department of Commerce, analyzed by McFetridge (1987).

35. A negative effect running from foreign ownership to either R&D or growth was obtained by Globerman (1972) and Saunders (1980), while positive influences were reported by Globerman (1979), Caves et al. (1980), and weakly in Hewitt (1983).

36. As described by Dollar (1991), South Korea has high R&D levels and very impressive technological progress, but the mode of impacting productivity varies considerably across industries, depending on the degree of embodiedness of the new technology. That country also has a relatively low level of direct foreign investment, as we saw in Table 1.

37. The author notes that this was not a randomly selected group of firms.

38. This is discussed in detail in Fajnzylber and Martínez Tarragó (1976).

39. Some very important socio-political issues remain outside the purview of this paper, such as the maintenance of a distinct Canadian culture, the different legal institutions of the two countries, the question of federalism, and a more purely political independence, expressed in terms such as extraterritoriality.

40. There appears to be a clear division in Canada between political scientists and economists on the issue of a free trade agreement with the US. See Young (1989). In contrast, in Mexico many economists are against such an agreement, while in the US many political scientists are in favor.

41. In light of that comment, it is of some interest to note the strength of the discussion on NAFTA, which contrasts to the discussion of the government's steps of entering the GATT and liberalizing foreign investment rules. Recalling that these actions were taken in the depths of the debt crisis, and were widely perceived as unavoidable requirements for debt relief, this author would suggest that the current discussion on NAFTA is really a deferred but broader debate on trade liberalization, and, indeed, modernization.

42. Attention is called to the large gap between the Banco de México's estimate of industrial capital in 1985, and the datum from that year's Industrial Census. Were these sources closer, the calculations that follow could have been based on the very accessible, and inevitably more authoritative, Banco de México data.

43. This corresponds to a capital output ratio of 1.8, which is well within the range of values offered in Table 16.

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