Preliminary Draft

An Economic Evaluation of Foreign Financing of Investments in Canada

by

John C. Evans

York University

and

Glenn P. Jenkins

Harvard University

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1. Introduction

Large-scale, capital intensive projects in Canada frequently rely on foreign financing and as a result the foreign-owned segment of many sectors has grown considerably. New projects either reallocate the existing foreign investment within the Canadian economy or draw incremental foreign investment into the country. In this paper we endeavour to determine a methodology for estimating the nature and magnitude of any net economic benefits which result from the foreign financing of new investments; such benefits should be included in the overall economic evaluation of a project.

Recent public concern over foreign ownership has focused on the issue of possible foreign control of the Canadian economy and interference with decision-making in Canada's best interests. Although we recognize the importance of such issues, we limit our examination to estimating the adjustment which captures the net economic benefits resulting from changes in the pool of capital resources which Canada has at its disposal. Negative externalities resulting from foreign control not only add to any net economic costs from changes in foreign investment due to a project, but also serve to cast a shadow over any net economic benefits.

The economic benefits and costs of a project should initially be examined regardless of the source of financing. A social discount rate

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[1]This paper has benefited greatly from discussions with A.C. Harberger, Don Tate, and James Howe. We are also especially grateful to Chun-Yan Kuo for his assistance with the empirical sections of the paper. Although this research has been sponsored by the Program Evaluation Division of the Department for Regional Economic Expansion, the procedures outlined do not represent Government policy. The opinions expressed are those of the authors who bear full responsibility for any errors and omissions.

of 10% has been estimated for Canada, and it measures the real opportunity cost of investment funds which a new project draws out of the available pool of capital. The 10% estimate itself allows an average for 10% of new investment to come from foreign sources.[1]

If a new investment opportunity is financed from foreign sources, the net economic benefits from the project (discounted by the social discount rate) are going to be shared not only by the Canadian government (g) and Canadian residents in general (c), but also by foreigners (f). In net present value (NPV) terms we thus have

$$B_g + B_c + B_f - C_g - C_c - C_f = NPV, \qquad (1)$$

where B and C represent gross benefits and costs respectively. Benefits realized by the government (B_g) take the form of tax revenues; costs to the government (C_g) take the form of subsidies which are initially set equal to zero in our analysis. Since we want to evaluate any project only from a Canadian perspective, it is necessary to adjust the net economic benefits for the benefits and costs realized by foreigners.

To make this adjustment in the appropriate manner, however, we must also ascertain whether our project has reallocated the existing foreign capital in Canada or attracted incremental foreign investment into the

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[1] Glenn P. Jenkins, "Analysis of Rates of Return from Capital in Canada," unpublished Ph.D. dissertation, University of Chicago, (Chicago, 1972). Table 27. For a general review of the overall methodology for project evaluation see John C. Evans, "A Financial and Economic Framework for Investment Appraisal," a paper prepared for a colloquium on Canadian Regional Planning and Development in Transition, School of Urban and Regional Planning, Queen's University, (February, 1977).

country. A normal supply function of foreign financial capital to Canada has a finite elasticity which implies that capital for a specific project makes other foreign investment more expensive to attract. Some fraction of the foreign investment for our project will thus result in a move away from foreign financing of other projects, and some fraction will likely be incremental. By taking a weighted average of the adjustments necessary to capture the net economic benefits resulting from foreign investment under the assumptions of incremental and non-incremental capital flows, we can approximate the appropriate adjustment benefits for a normal supply function.

2. The Adjustment to Capture the Net Benefit from Incremental Foreign Investment

Foreign investment can be considered incremental to Canada when it is specific to a good project, and when the project would not be undertaken unless the foreign capital were available. This definition suggests, furthermore, that there is a shortage in Canada not only of investment funds, but also of good projects in which to invest. Incremental foreign investment implies that foreigners wish to undertake this project as opposed to others available to them both now and in the future. In this sense foreign financing of the project is incremental to what foreigners would otherwise invest in Canada.

If the foreign investment is incremental, then Canadians should not be concerned over how much the foreigners put into and take out of the project. We want to ensure, however, that the Canadian resources, which are employed in the project along with the foreign capital, earn for Canada a return at least as great as that which could normally be earned in alternative uses. This is accomplished by evaluating all resources at their social opportunity

(net of withholding tax) plus interest and debt repayments is sufficient, when discounted at 10%, to permit foreigners to recapture their investment and to earn more than a 10% return. In this case Canadians would be better off to try to finance more of the project themselves rather than to rely on foreign investment.

3. The Adjustment to Capture the Net Benefit from Reallocating Foreign Investment Already Present in Canada

A normal supply function of foreign financial capital to Canada has a finite elasticity. In the previous section, we adopted the extreme assumption of allowing all foreign investment for a project to be incremental to Canada. In this section, we go to the opposite extreme by assuming that foreign investment for a project results only in a reallocation of foreign investment away from other projects in Canada. It is assumed that the project will go ahead even without the foreign investment, and all we want to know is whether Canada is better off to use foreign capital for a specific project rather than for the alternative investments which are available. By taking a weighted average of the adjustments necessary to capture the net economic benefits resulting from foreign investment under the extreme assumptions of incremental and non-incremental foreign capital flows, we can approximate the appropriate adjustment for a normal, upward-sloping supply function of foreign capital.

When none of the foreign investment for our project is incremental to Canada, but only reallocates the existing pool of foreign capital resources away from other projects, we must adjust equation (1) in a different fashion. As before, the present value of the benefits foreigners receive

cost and by discounting all relevant costs and benefits by the social discount rate. Since our evaluation of a new investment opportunity adopts a Canadian point of view, we simply want to exclude C_f and B_f from equation (1) by adding $(C_f - B_f)$ to it as follows

$$NPV + (C_f - B_f) = B_g + B_c - C_g - C_c \qquad (2)$$

Since incremental foreign capital (C_f) also represents incremental foreign exchange, additional foreign investment carries a 13% premium to reflect the social opportunity cost of foreign exchange.[1] By the same token dividend, interest, and loan repayments made to foreigners (B_f) entail a loss of foreign exchange which also carries a 13% premium. The net foreign exchange externality is earned by Canadians as a result of foreign investment and is not captured by foreigners in their return. If the foreign exchange externality from foreign investment was not previously included in the NPV of net benefits from the project, we must add $.13\ (C_f - B_f)$ to both sides of equation (2) to yield

$$NPV + 1.13\ (C_f - B_f) = B_g + B_c - C_g - C_c + .13\ (C_f - B_f) \qquad (3)$$

The total adjustment to equation (1) made necessary by incremental foreign investment, $1.13\ (C_f - B_f)$, will raise or lower the present value of net economic benefits to Canadians depending on whether $1.13\ (C_f - B_f)$ is positive or negative. If $B_f > C_f$, for example, the stream of dividends

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[1] Glenn P. Jenkins, "The Social Cost of Foreign Exchange in an Economy with Trade Distortions and Differential Rates of Domestic Taxation," a paper prepared for the Departments of Industry, Trade, and Commerce and Regional Economic Expansion, (March, 1975).

from their investment (B_f) is the stream of dividends, interest and loan repayments, discounted at 10%, that actually flows from the project. The relevant cost of the investment for foreigners, however, is not the cash flow of shareholders' equity and long-term debt which is invested, but rather the cost is the stream of benefits which foreigners would have received from the alternative investments foregone (B_f^a).

The benefit to foreigners from alternative investments in the Canadian economy is equal to the present value of the real (net of inflation) returns these investments would have earned. Since foreign-owned capital is part of the total Canadian capital stock, it is reasonable to expect that foreign investors would earn a rate of return roughly equal to that earned on the total capital stock in Canada. One study measures the average long-run, real, net-of-tax rate of return to total capital invested in the Canadian manufacturing sector at about 6% per year.[1] In Appendix A we offer some additional empirical evidence to suggest that 6% seems like a reasonable rate of return on foreign investment as well. We shall use 6% as the private discount rate which makes the net present value of the net-of-tax net cash flow to total capital equal to zero.

The 6% average rate of return to total capital can be broken down into its debt and equity components. The average debt-equity ratio in Canada's manufacturing sector is approximately 40:60. The average real

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[1] Glenn P. Jenkins, "Analysis of Rates of Return from Capital in Canada," Table 6, pp. 42-43 (Average Private Rates of Return).

rate of return on debt capital has been estimated at approximately 4%,[1] whereas the average real rate of return to equity capital is roughly equal to 7%.[2] Given debt/equity = 40/60, the 6% average return to total capital is approximately equal to a weighted average of the real rates of return to debt and equity. In the discussion which follows, we refer only to the average return to total capital, but it should be understood that the argument holds equally well for the respective rates of return to debt and equity.

If alternative investments in Canada would yield foreigners a 6% return, the crucial question is whether our project yields them more than they would normally expect. In the case where the foreign investment is non-incremental, a greater than normal return to foreigners represents a net cost to the Canadian economy.

If by investing in a specific project foreigners were to earn a 6% real return, then the ratio of the present value (discounted at 6%) of the stream of foreign equity and debt invested in the project over the present value (discounted at 6%) of the foreign dividends, debt repayment and interest received would equal 1. If this ratio were greater than 1, then foreigners would be earning less than a 6% return by investing in the project; if the ratio were less than 1, then foreigners would be earning more than a 6% real return. By multiplying this ratio times the actual

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[1] Glenn P. Jenkins and Henry B.F. Lim, "An Estimation of the Real Interest Rate Component of the Nominal Interest Rate for Long-term Industrial Bonds," a paper prepared for the Programme Evaluation Division, Department for Regional Economic Expansion, (March, 1976).

[2] Glenn P. Jenkins, "Analysis of Rates of Return from Capital in Canada."

stream of dividends, debt repayment, and interest received from foreigners from the project, we can determine the stream of payments to foreigners which is below, above, or equal to what the normal stream would be.[1] Discounting this stream by the social discount rate of 10% yields our estimate of B_f^a, i.e.,

$$B_f^a = \left[\frac{\text{PV6\% (foreign equity + foreign debt)}}{\text{PV6\% (foreign dividends + foreign interest + foreign repayment)}}\right]B_f \quad (4)$$

where B_f represents the present value of foreign capital receipts discounted at 10%. Following the reasoning used in the previous section, the total adjustment we must make in this case is to add $1.13(B_f^a - B_f)$ to equation (1) where B_f^a and B_f are in net present value terms discounted at the social discount rate.

When the ratio of the present values (discounted at 6%) is equal to one, then $B_f^a = B_f$ and our project yields foreign investors just a normal return; since $1.13(B_f^a - B_f) = 0$, no adjustment to equation (1) is necessary.

If, however, the ratio of the present values is greater than one, then $B_f^a > B_f$ and $1.13(B_f^a - B_f) > 0$. This suggests that the project ought to receive a net benefit for paying out less to foreigners than would have occurred from alternative investments. Since this case also implies that private investors earn less than a 6% real rate of return, we must pause to consider another factor before adding this net benefit to the economic externalities attributable to the project.

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[1] The stream of dividends, debt repayment, and interest received are all measured in constant dollars.

the ratio of the present values would equal 1 and $1.13(B_f^a - B_f) = 0$, so that no net benefit from foreign investment would be forthcoming.

We suspect that it is highly unlikely, furthermore, that foreign investors would invest in a project yielding less than a 6% real return which fully allows for normal risks.[1] If we assume that foreigners would not invest in a project yielding less than 6%, our measures of economic externalities may understate the true externalities received by Canadians, but not the externalities used to determine the magnitude of government financial assistance to the project.

For these reasons, therefore, if the ratio of present values in equation (4) is greater than or equal to one, we make no adjustment to the NPV of the net economic benefits from the project in equation (1). This treatment allows us to estimate the economic externalities attributable to the project in a fashion consistent with our methodology for determining public sector participation in the form of direct financial assistance.

If, finally, the ratio of the present values in equation (4) is less than 1, then $B_f^a < B_f$, and private investors are earning larger returns from this project than they would have received from alternative investments in Canada. In this case the net cost to Canada from reallocating foreign investment away from other investments to this project is equal to $1.13(B_f^a - B_f)$. This adjustment estimates the excess returns earned by

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[1] The problem of risk is examined in John C. Evans and Glenn P. Jenkins, "Financial Leverage and the Cost of Capital," a paper prepared for the Programme Evaluation Division, Department for Regional Economic Expansion, (April, 1977).

foreign investors. Since private investors earn more than 6% real rate of return, furthermore, the project would not qualify for direct government financial assistance, so that there is no problem in counting this net cost as a negative economic externality.

4. Incremental and Nonincremental Foreign Investment

The central issue in the evaluation of the benefits or costs to Canada of the foreign financing of investments is the determination of the proportions of the inflow of foreign savings that serves as a substitute for other foreign inflows and the proportion that results in an increase in the productive resources available to Canada. Because the social cost of Canada is significantly different from the proportion of foreign investment that increases the stock of Canadian productive resources than that which does not, the size of this parameter can be a critical determinant of the economic net present value of a project.

A difficulty that plagues an empirical estimation of these proportions of the foreign investment that are incremental and nonincremental arises because the impact of today's foreign investment on the demand and supply of foreign savings need not be completed within a given period of time. In addition, the nature of the various types of financial obligations undertaken by a country will alter the impact of the inflow of foreign savings on the investment and savings decisions in the country.

Because of the serious statistical problems that arise in the derivation of reliable estimates of the long-run effects of foreign investment on capital formation, it is necessary to consider a number of potential cases and develop bounds on the magnitudes of the impact that

alternative projects will have on incremental capital formation. These bounds will be estimated by utilizing the available empirical evidence while taking into consideration the nature of the financial obligation that is being undertaken.

Before taking up the analysis of the alternative types of foreign financing, we will review some of the statistical relationships between foreign investment and economic activity in Canada.

4.(a) Statistical Evidence 1946-1973

We begin with an examination of the relationship between aggregate gross annual capital formation and the annual increase in total foreign investment in Canada. Gross capital formation is composed of gross fixed capital formation and the value of the physical change in inventories. The total foreign capital inflows include foreign direct investment plus depreciation allowances from existing fixed physical assets, the purchase of government bonds, other portfolio investment, non-resident holdings of Canadian dollars, short-term payables and miscellaneous investment.

During the 27 years from 1947 to 1973, non-residents on the average financed about 17 percent of gross capital formation in Canada. This share ranged throughout this period from 10 to 25 percent (see Table 1). The detailed breakdown of foreign financing is shown in Table 2.

Total Canadian savings are used to finance domestic investment and investment abroad. We estimate that over this same period, approximately seven percent of Canadian gross savings were invested abroad (see Table 1 and Figure 1).

TABLE 1

GROSS CAPITAL FORMATION AND CANADIAN SAVINGS
(Millions of Dollars)

	Investment			Savings		
	Gross Capital Formation	Foreign Financing	% of Foreign Financing in Canada	Gross Savings	Investment Abroad	% of Can. Savings Invested Abroad
1947	2,693	11	.41	3,345	663	19.82
48	3,154	326	10.34	2,829	1	.04
49	3,517	467	13.28	3,452	402	11.65
50	4,411	1,104	25.03	3,295	-12	-36
51	5,295	835	15.77	4,502	42	.93
52	5,595	474	8.47	5,683	562	9.89
53	6,333	1,019	16.09	5,479	165	3.01
54	5,512	1,178	21.37	4,662	328	7.04
55	6,707	1,083	16.15	5,645	21	.37
56	8,985	1,830	20.37	7,576	421	5.56
57	8,859	2,206	24.90	7,166	513	7.16
58	8,239	1,787	21.69	6,744	292	4.33
59	9,061	2,203	24.31	7,060	202	2.86
60	8,882	1,710	19.25	7,674	502	6.54
61	8,508	1,404	16.50	7,363	259	3.52
62	9,952	1,431	14.98	9,201	1,080	11.74
63	10,225	1,661	16.24	8,354	-210	-2.51
64	11,758	2,236	19.02	10,740	1,218	11.34
65	14,423	2,399	16.63	12,324	300	2.43
66	16,586	2,409	14.52	15,591	1,414	9.07
67	15,888	2,765	17.40	14,617	1,494	10.22
68	16,499	3,572	21.65	15,360	2,433	15.84
69	18,699	4,111	21.99	16,941	2,353	13.89
70	18,120	2,837	15.66	16,814	1,531	9.11
71	20,644	2,348	11.37	19,795	1,499	7.57
72	23,134	3,895	16.84	21,520	2,291	10.65
73	28,254	5,727	20.27	26,395	3,868	14.65
1947-73	-	-	17.06	-	-	7.27

Sources: Statistics Canada, National Income and Expenditure Accounts, Volume 1, Catalogue No. 13-531.

Statistics Canada, Canada's International Investment Position, 1926-1967, 1968-1970, Catalogue No. 67-202 and special tabulation from Statistics Canada.

TABLE 2

ANNUAL FOREIGN INVESTMENT IN CANADA
BY TYPE OF INVESTMENT

(Millions of Dollars)

	Direct Investment*	Portfolio Investment	Gov't Borrowing	Others	Total
1947	169	-75	-83	0	11
48	300	-45	71	0	326
49	333	-22	156	0	467
50	410	87	207	400	1,104
51	575	119	141	0	835
52	736	166	-75	-353	474
53	828	212	59	-80	1,019
54	803	312	-31	94	1,178
55	1,017	73	-187	180	1,083
56	1,202	517	-266	377	1,830
57	1,330	324	191	361	2,206
58	792	316	295	384	1,787
59	1,082	108	491	522	2,203
60	1,019	91	157	443	1,710
61	912	93	-169	568	1,404
62	973	2	299	157	1,431
63	888	-15	470	318	1,661
64	484	49	475	1228	2,236
65	1,471	341	279	308	2,399
66	1,742	550	-192	309	2,409
67	1,783	94	660	228	2,765
68	1,935	300	1,009	328	3,572
69	1,993	695	940	483	4,111
70	2,039	98	176	524	2,837
71	1,677	315	-152	508	2,348
72	1,618	682	1,307	288	3,895
73	3,504	769	516	938	5,727

Sources: Constructed from Statistics Canada, Canada's International Investment Position, 1926-1967, 1968-1970, Catalogue No. 67-202 and special tabulation from Statistics Canada.

*Direct investment in this table includes net direct investment plus depreciation allowances.

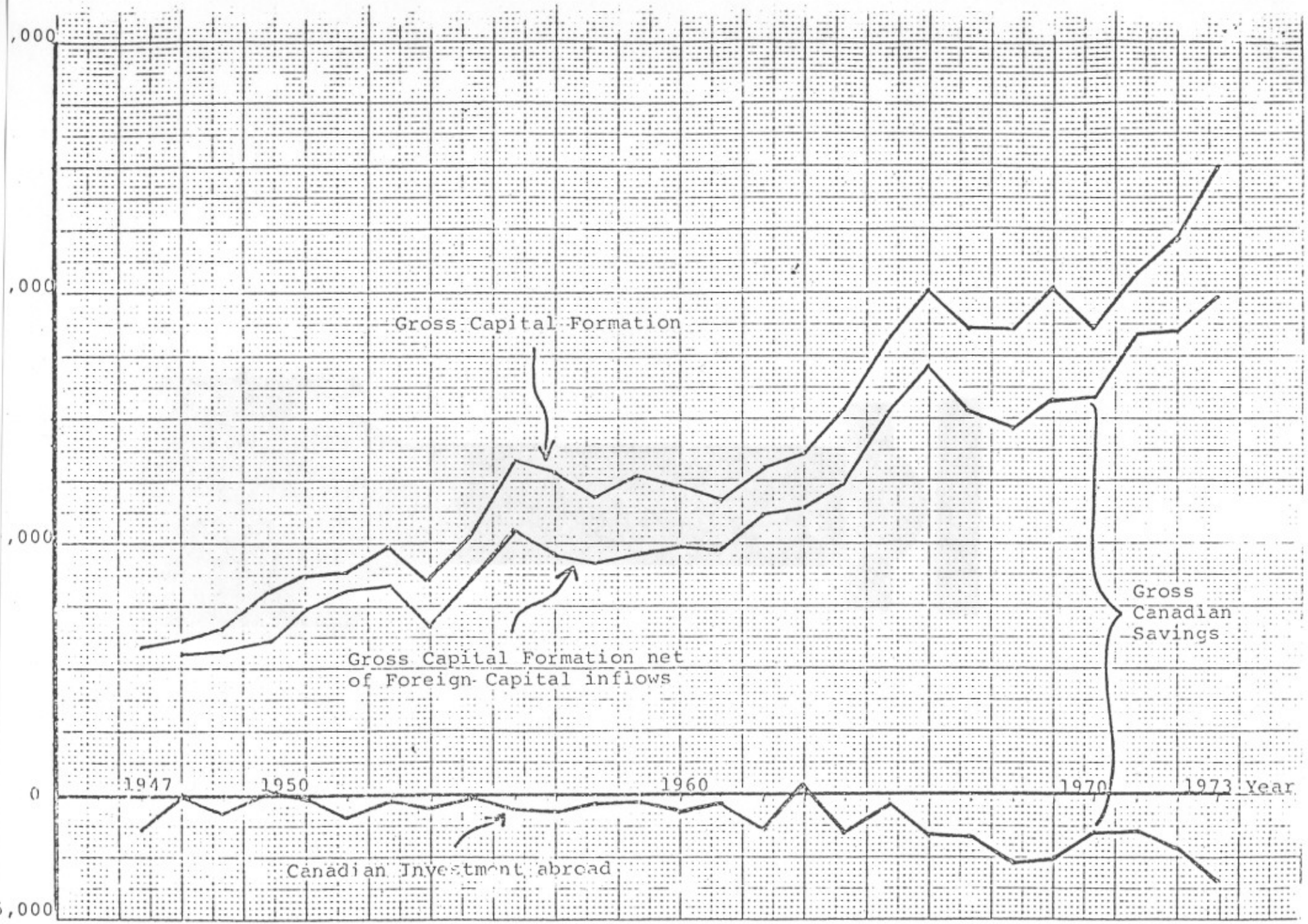

Figure 1
Capital Formation and Savings in 1971 dollars

TABLE 3

GROSS CAPITAL FORMATION IN CANADA
(Millions of Dollars)

	Residential Construction in Business Sector	Non-Residential Construction in Business Sector	Government Sector	Total
1946	416	1,362	99	1,877
47	455	2,005	233	2,693
48	659	2,103	392	3,154
49	795	2,239	483	3,517
50	953	2,961	497	4,411
51	834	3,841	620	5,295
52	946	3,802	847	5,595
53	1,252	4,326	755	6,333
54	1,412	3,235	865	5,512
55	1,785	3,973	949	6,707
56	1,825	6,022	1,138	8,985
57	1,669	5,884	1,306	8,859
58	2,089	4,724	1,426	8,239
59	2,133	5,358	1,570	9,061
60	1,794	5,577	1,511	8,882
61	1,789	5,037	1,682	8,508
62	1,854	5,798	1,900	9,552
63	1,959	6,293	1,973	10,225
64	2,382	7,408	1,968	11,758
65	2,634	9,359	2,430	14,423
66	2,605	11,139	2,842	16,586
67	2,809	10,097	2,982	15,888
68	3,253	10,233	3,013	16,499
69	3,845	11,793	3,061	18,699
70	3,500	11,460	3,160	18,120
71	4,410	12,520	3,714	20,644
72	5,278	13,872	3,984	23,134
73	6,549	17,415	4,290	28,254

Sources: Statistics Canada, National Income and Expenditure Accounts, Vol. 1 - The annual estimates 1926-1974, Catalogue No. 13-531.

Table 3 shows the breakdown of gross capital formation into residential construction in the business sector, non-residential construction, machinery and equipment in the business sector, and the government sector. On average, residential construction made up about 21 percent of gross capital formation in Canada over the past 28 years; non-residential construction was approximately 64 percent with the remaining 15 percent made up by the government sector.

4.(b) Measuring the Reaction of Foreign Investment to Capital Formation in Canada

Our first task is to investigate the major determinants of foreign capital inflows received by Canada. In particular, we want to examine whether new investment in Canada leads to an inflow of capital from other countries.

It is readily apparent that the U.S. residents have been dominating foreign investment in Canada. During the period 1947 to 1970 about 80 percent of the annual increase in foreign long-term investment in Canada was made by residents of the United States and 8 percent by those of the United Kingdom. The difference between the long term, nominal interest rates in Canada and the U.S. is expected to have a substantial effect on the magnitude of U.S. investment in Canada.

The deviation from trend of U.S. GNP is introduced to measure the opportunities for investment in the United States. If U.S. GNP is growing faster than normal, then the investment opportunities in the U.S. are relatively more attractive and foreign investment ought to decline in Canada.

The third factor is the amount of gross capital formation in Canada. When there is an increase in investment in Canada, it is likely to have the

following effects: (a) to attract additional foreign capital inflows directly to finance the project, (b) to cause Canadians to consume less and to invest more in the project, and/or (c) to displace other investments for this project.

The regression to be tested can be written as follows:

$$F = a_o + a_1 (R_C - R_{US}) + a_2 GNP^d_{US} + a_3 I$$

where F is foreign capital inflows to Canada in 1971 dollars,

R_C is the long-term interest rate in Canada,

R_{US} is the long-term interest rate in the U.S.,

GNP^d_{US} is the deviation from trend of U.S. gross national product in 1971 dollars.

I is total gross capital formation in Canada in 1971 dollars.

The data used to estimate this equation consist of the 20 annual observations for the variables from 1954 to 1973. Over this period, non-residents financed about 19 percent of gross investment in Canada. The results from the regressions are shown below:

$$F = \underset{}{-1479.82} + \underset{(2.46)}{191000} \underset{(4.07)}{(R_C - R_{US})} - \underset{(2.35)}{7.96} GNP^d + \underset{(7.30)}{.16} I \qquad (5)$$

$$R^2 = .8030$$

The coefficients in equation (5) are all significant and are found to have the expected sign. The negative sign of the constant term indicates a reduction of capital inflows to Canada when there is no difference between Canadian and U.S. interest rates, the U.S. gross national product is equal to its trend value, and there is no investment taking place in Canada.

The amount of reduction in capital inflows to Canada is about $1,480 million per annum.

Foreign investment in Canada is strongly influenced by the difference in long-term interest rates between Canada and the U.S. An increase in Canadian long-term interest rates by one percentage point would tend to raise foreign capital inflows to Canada by $1,910 million per year. The supply elasticity of foreign funds to the interest rate differentials between the two countries is about .41.

The negative sign of GNP^{d}_{US} indicates that high economic growth in the U.S. would result in a reduction of foreign investment to Canada because of the good investment opportunities available in the U.S. When the U.S. is in a recession, by the same token, we would expect more capital inflows in Canada because of the lower return to investment in the U.S.

Canadian investment is found to have considerable influence on foreign capital inflows at the .01 level of significance. An increase in Canadian investment by one billion dollars would tend to draw about an <u>additional</u> $160 million of foreign capital inflows <u>directly</u> into Canada. The supply elasticity of foreign funds to Canadian investment is about .84.

At the same time the additional domestic investment can be expected to cause upward pressure on Canadian interest rates, and on the Canadian - U.S. interest rate differential. The bigger the difference between Canadian and U.S. interest rates, as we saw in equation (5), the larger are the foreign capital inflows into Canada. To estimate the magnitude of this <u>indirect</u> impact on foreign investment we would need to know the effect of a change in gross domestic investment in Canada on Canadian interest rates

while holding constant the effect of other important variables like the level of U.S. interest rates. Such an equation is difficult to estimate because of the simultaneity bias which exists in the relationship between Canadian interest rates and investment, namely: a greater volume of investment in any year usually results in higher interest rates, but higher interest rates also tend to discourage investment. Although we do not tackle this thorny empirical problem in the present paper, we can be reasonably certain that an increase in Canadian investment by one billion dollars would draw directly and indirectly more than $160 million of additional foreign capital inflows into Canada. Additional foreign investment roughly equal to 20 percent of the increased domestic investment seems like a reasonable order of magnitude.[1]

When an investment project is totally financed by domestic funds, therefore, it could be expected to attract incremental foreign capital roughly equal to 20 percent of the total investment. If an investment project is financed completely in foreign capital markets, however, it is reasonable to expect that the proportion of foreign investment which is considered incremental would exceed 20 percent.

There are two problems with the above empirical results. First, the data used for gross capital formation in equation (5) are net figures in the sense that the displacement of investment in other projects due to

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[1] There is a theoretical argument concerning the general equilibrium repercussions of foreign capital inflows which suggests that foreign financing for a project could lower the rate of return to capital, and thereby induce an offsetting capital outflow. This argument is reviewed in Appendix B.

any new investment project has been deducted. This is because accurate data on total intended gross investment are not available. Since intended gross investment undoubtedly exceeds actual gross capital formation, using the latter in equation (5) probably gives a_3, the coefficient of the I variable, an upward bias. For this reason our estimate of 20 percent incremental foreign investment is probably biased upward. Second, the above analysis dealt with the general capital market only, not with the specific arrangements associated with the foreign capital financing of a specific project. We shall next examine a number of possible financial arrangements in order to see how they could affect the proportion of foreign investment which is considered to be incremental.

4.(c) Financial Obligations and Incremental Foreign Investment

Our analysis up to this point suggests that if a new project is completely financed in Canada, then 20 percent of the project's total investment represents an upward biased estimate of the amount of incremental foreign investment which can be expected. As we noted in section 2 of the paper, incremental foreign financing of a project must be in addition to what foreigners would otherwise invest in Canada; foreigners wish to undertake this project in addition to others available to them both now and in the future. When the financing is carried out completely in foreign capital markets, the proportion considered incremental probably exceeds 20 percent of total investment.

A wide variety of financial arrangements and obligations is possible when it comes to the foreign financing of a project. The Government of Canada, for example, could guarantee any interest payments to foreign

lenders. Since there is always a risk of default, which increases with financial leverage,[1] the Government cannot overextend its use of debt guarantees. If called upon to honour the guarantee because of default, the Government would have to borrow on the Canadian capital market to finance the necessary payments. At one extreme, therefore, we can think of a Government debt guarantee as being equivalent to Government borrowing on the Canadian capital market for the purpose of investing in the project.[2] This assumption puts us back into the model discussed in the previous section where all the project's financing came from Canadian sources. Under these circumstances our estimate of the proportion of incremental foreign investment would be 20 percent of total invested capital in the project. We would then consider the remaining 80 percent of the Government-guaranteed foreign debt to be nonincremental.

At the other extreme is the possibility that any interest payments to third-person, foreign debt-holders would be guaranteed by the foreign assets of foreign equity investors. If the project is in default of its debt obligations, then foreign, and not Canadian, capital markets would be affected. Since we are generally unaware of the foreign investment intentions of specific foreign lenders, the presumption is that foreign-equity guaranteed foreign debt is 100 percent incremental. Lacking further specific information, we assume that any foreign equity investment itself is also 100 percent incremental. That is to say, were it not for this specific project the equity funds would never have found their way

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[1] John C. Evans and Glenn P. Jenkins, "Financial Leverage and the Cost of Capital."

[2] Similar to government equity investment.

into Canada at any time, and, furthermore, that no other foreign equity investment in Canada has been discouraged as a result of the foreign investment in our project.

Between the two extremes of Government guaranteed and foreign-equity guaranteed foreign debt with their associated 20 percent and 100 percent incrementality, there lie numerous variations in the type of financial obligation. Foreign debt might carry no special guarantee other than first claim on the project's assets. If foreign debt-holders are prepared to lend to investors in a project in Canada with no guarantee other than the project's assets, then we ought to assign a greater percentage as incremental foreign capital. Since we simply do not know what other investment plans the specific foreign lender might have, i.e., whether he is postponing or cancelling other investments in Canada, we can arbitrarily assume that 60 percent of his debt investment in the project is incremental. The 60 percent figure has the desirable attribute of lying half-way in between 20 percent and 100 percent. This implies that by borrowing abroad with no guarantees from other Canadians, we have been able to obtain three times as much foreign capital than if we had borrowed domestically.

Another possibility is that domestic equity investors might use their own assets to guarantee the interest payments on foreign debt. This case is closer to that of the Government of Canada guarantee except for the fact that the Government guarantee probably carries a firmer obligation. If the domestic equity investor is guaranteeing the debt payments, we can assume that roughly 40 percent of the foreign debt financing is incremental and 60 percent nonincremental. The 40 percent figure was chosen because

it lies half-way in between 20 percent and 60 percent.

To the extent that foreign investment is incremental the pool of resources available to Canada is enlarged; nonincremental foreign financing for a project simply reallocates the existing foreign capital in the country away from alternative investments. The degree of incrementality can vary with the financial obligation associated with a specific project. The examples we discussed are summarized in Table 4.

The estimates and assumed percentages in Table 4 can be used as weights in order to calculate a weighted average of the adjustments to equation (1) which measure the net economic benefit (cost) of incremental and nonincremental foreign financing for investments in Canada. The appropriate adjustments were discussed in sections 2 and 3.

Table 4

Financial Obligations and Incremental Foreign Investment[1]

Type of Obligation	Incremental Foreign Investment	Nonincremental Foreign Investment
Foreign Equity Investment	100%	0%
Foreign Debt Guaranteed by Foreign Equity Investor	100%	0%
Foreign Debt with No Guarantee[2]	60%	40%
Foreign Debt Guaranteed by Domestic Equity Investor	40%	60%
Foreign Debt Guaranteed by Government of Canada	20%	80%

1. Projects financed solely with Canadian capital can claim to have induced incremental foreign investment equal in amount to 20% of the total investment.

2. No guarantee except for first claim on the project's assets.

5. Conclusion

Investment projects in Canada often rely on foreign capital markets as a source of finance. Under some circumstances it is legitimate to think of this foreign investment as being incremental to Canada and increasing the financial resources of the country. Under other circumstances, however, a new investment project has the effect of only reallocating the existing foreign investment away from other investments. We have argued that the extent to which either of these possibilities occurs depends at least to some degree on the type of financial arrangements and obligations associated with the project. Our estimates suggest that at the very minimum 20 percent of total invested capital can be considered incremental foreign investment.

When foreign investment is incremental and adds to Canada's available pool of financial resources, our only concern is whether the Canadian resources employed along with the foreign capital are yielding the country a net economic benefit (in present value terms discounted by the social discount rate). Our analysis suggests that the appropriate adjustment in the case of incremental foreign investment is to add $1.13\ (C_f - B_f)$ to the project's net present value calculated regardless of the source of financing.

To the extent that foreign financing is considered nonincremental, the appropriate adjustment is to add $1.13\ (B_f^a - B_f)$ to the project's net present value. The difference between the two adjustments lies in the fact that the cost of the investment to foreigners is not the invested capital as in the incremental case, but rather the cost is the foregone return from alternative investments in Canada. We have estimated the

normal real rate of return[1] to total capital invested in Canada at 6 percent.[2] If the specific project under examination yields foreign investors more than a 6 percent real rate or return, then there is net cost to Canada which must be weighted appropriately and included in the overall evaluation of the project.

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[1] At a 40/60 debt-equity ratio.

[2] There is a normal real rate or return to debt of 4% and to equity of 7%.

Appendix A

Rates of Return from U.S. Direct Investment in Canada

We would like to reinforce our assertion that a 6% real rate of return is a reasonable estimate or what foreign investors could normally expect to earn by investing in Canada.

The data used for estimating rates or return from U.S. direct investment in Canada for the period 1951-73 are based on unofficial estimates derived from unpublished records of the Bureau of Economic Analysis, U.S. Department of Commerce.[1] These series yielded annual estimates of the following variables in terms of nominal dollars:

(a) Total adjusted earnings (gross of withholding taxes) = Branch profits + Reinvested earnings + Common dividends + Interest payments + Preferred dividends + Withholding taxes[2]

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[1] These data were obtained from the Data Retrieval and Analysis Branch, International Investment Divison, Bureau of Economic Analysis, U.S. Department of Commerce. At the time these data were obtained, we were told that no plans existed to publish them, but were historical data to be published later, our numbers could be revised further. Our series may also differ in some instances from published BEA direct investment data. We are indebted to Chun-Yan Kuo for supervising the calculations included herein.

[2] Definitions of each item are taken from Bureau of Economic Analysis, U.S. Department of Commerce, "Technical Notes," Survey of Current Business, vol. 54, no. 8 (August, 1974).

Branch profits are earnings of Canadian branches of U.S. direct investors after provision for Canadian income taxes, but before depletion charges or provision for U.S. taxes. Also included is the U.S. share in the net earnings of other types of unincorporated affiliates.

Reinvested earnings are net earnings of Canadian incorporated affiliates less gross dividends on common stock. Net earnings of Canadian-incorporated affiliates after provision for foreign income taxes and preferred dividends, but before provision for U.S. taxes.

Common dividends are dividends on common stock credited to a U.S. direct investor by its Canadian-incorporated affiliates after deduction of Canadian withholding taxes.

Interest payments are net interest payments on net intercompany accounts and long-term debt received by or credited to the U.S. direct investor or other non-bank U.S. investor on Canadian affiliates, after the deduction of Canadian withholding taxes.

Preferred dividends are dividends credited to a U.S. direct investor on its preferred shares in its Canadian-incorporated affiliates, after deduction of foreign withholding taxes.

(b) Total adjusted earnings (net of withholding taxes) = Total adjusted earnings (gross of withholding taxes x $(1 - t_w)$ where t_w is the effective rate of withholding tax[1]

$$t_w = \frac{\text{Withholding Taxes}}{\text{Common dividends + Withholding Taxes}}$$

(c) Income (net of withholding taxes) = Branch profits + Interest payments + Common dividends + Preferred dividends

(d) Broad Income (net of withholding taxes) = Income + Royalties, fees, and film rentals.[2]

(e) Book value of U.S. direct investment in Canada

We have these estimates for five sectors, mining and smelting,[3] petroleum,[4] other manufacturing, trade, other industries and the total for all industries for the years 1951-1973.

In order to estimate real (net-of-inflation) rates of return to capital, it is necessary to divide the annual nominal dollar returns by the net replacement value of the capital stock. Since the data from the Bureau of

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[1]The effective rate of withholding taxes is calculated by sector by year so as to incorporate any changes in the application of the tax, e.g., reduced rates of withholding tax for firms with substantial Canadian ownership.

[2]Fees and royalties are net receipts by a U.S. direct investor from its Canadian affiliates for professional, administrative, and managements services and for use of tangible and intangible property or rights (patents, techniques, trademarks, copyrights, etc.)

[3]When estimating the capital stock of the mining and smelting sector we include mining, quarries, oil wells, and primary metals.

[4]When estimating the capital stock of the petroleum sector, we include petroleum and coal products.

Economic Analysis provided us estimates of only the book value of U.S. owned assets in Canada, we had to construct our own capital stock series. The value of the mid-year U.S. owned net capital stock in current dollars MYUSNS(C$), in year k can be estimated for each sector as

$$MYUSNS(C\$) = \frac{(BV_{k-1} + BV_k)}{2} \frac{MYNS\ (C\$)_k}{MYNS\ (OC\$)_k} \qquad (A.1)$$

where BV_k = book value of U.S. owned assets in Canada at the end of year k (BEA data)

MYNS(C$) = mid-year total net capital stock in Canada in current dollars (Statistics Canada, Fixed Capital Flows and Stocks)

$$= \sum_i \sum_j MYNS(C\$)ij$$

where j = components of the capital stock for each 3-digit S.I.C.

i = 3-digit industries in each of our five sectors

MYSN(OC$) = mid-year total net capital stock in Canada in original cost dollars (Statistics Canada, Fixed Capital Flows and Stocks)

$$= \sum_i \sum_j MYNS(OC\$)ij$$

where j = components of the capital stock for each 3-digit S.I.C.

i = 3-digit industries in each of our five sectors

Expressed verbally, equation (A.1) indicates the following: the mid-year U.S. owned net capital stock in Canada in current dollars in year k is equal to the book value of the U.S. owned assets at mid-year multiplied by a ratio which translates values in original cost dollars into current dollars. The ratio equals the mid-year total Canadian net capital stock in current dollars over the same thing in original cost dollars. This method of translating the book value of assets into current dollar terms assumes that the time profile of U.S. gross investment in Canada is similar to the profile of total gross investment in Canada.

Using this method to estimate the net replacement value of the U.S. owned capital stock in Canada, we can then generate four measures of the real rate of return from U.S. direct investment in Canada based on

(a) total adjusted earnings gross of withholding tax
(b) total adjusted earnings net of withholding tax
(c) income net of withholding tax
(d) broad income net of withholding tax.

These rates of return for each sector appear in Table A.1 for the years 1952-73 and for the sub-period 1964-73. Also calculated for each sector is the payout ratio which is defined as income divided by total adjusted earnings net of withholding tax.

These rates of return are subject to a number of biases, one of which is changes in the U.S.-Canadian exchange rate. The current dollar return expressed in U.S. dollars in the numerator, on the one hand, should fall when the American dollar is revalued and rise when it is devalued. The capital stock figures also measured in U.S. dollars, on the other

hand, do not change as the result of changes in the exchange rate. We thus expect the rates of return to be biased downwards for the recent period of fixed exchange rates (1962-1970) and possibly upwards following the depreciation of the U.S. dollar vis-a-vis the Canadian dollar since 1970. It is not possible to say at this stage which bias dominates.

The rate of return for (b) adjusted earnings net of withholding tax is of most interest to us. It represents the real rate or return to total U.S. direct investment net of any withholding tax if all the adjusted earnings were repatriated each year, i.e., if the payout ratio each year were equal to 100%. Although the real rate of return does appear to lie above 6% in some sectors, an average rate of 6% is still a reasonably good overall estimate. When the actual payout ratio is incorporated, however, the real rate or return falls well below 6% for all sectors (row (c)); this remains generally the case even when other returns like royalties, fees and film rentals are taken into account (row (d)).

Given these estimates of the real rates of return to U.S. direct investment in Canada, therefore, we believe that foreigners could normally expect to earn about 6% by investing in Canada. This 6% rate of return thus provides the basis for calculating the benefit to foreigners from alternative investment in the Canadian economy (B_f^a) in the case when the foreign investment is considered to be non-incremental (see section 3 of the paper). Note also that because it reflects realized values this measure of the expected real rate of return to foreign investment in Canada includes a return for normal risks incurred.

Table A.1

Rates of Return and Payout Ratios for U.S. Direct Investment in Canada
(percent)

	Mining & Smelting[2]	Petroleum[3]	Other Manufacturing	Trade	Other Industries	All Industries
1952-1973						
Rates of Return for[1]						
(a) gross adjusted earnings	7.21	4.57	8.30	7.90	6.71	7.14
(b) net adjusted earnings	6.08	3.87	7.34	7.01	5.93	6.23
(c) net income	4.30	1.74	3.52	2.17	4.63	3.38
(d) net broad income	4.46	2.09	4.87	3.33	6.42	4.43
Payout Ratio	71.98	10.79	49.32	31.51	78.30	55.07
1964-1973						
Rates of Return for						
(a) gross adjusted earnings	7.74	5.86	8.06	8.32	7.09	[illegible]
(b) net adjusted earnings	6.56	4.90	6.77	7.04	5.95	6.11
(c) net income	4.88	2.79	3.24	2.42	4.73	3.52
(d) net broad income	5.18	3.11	5.10	3.51	6.40	4.77
Payout Ratio	77.47	59.80	48.50	34.16	79.80	57.14

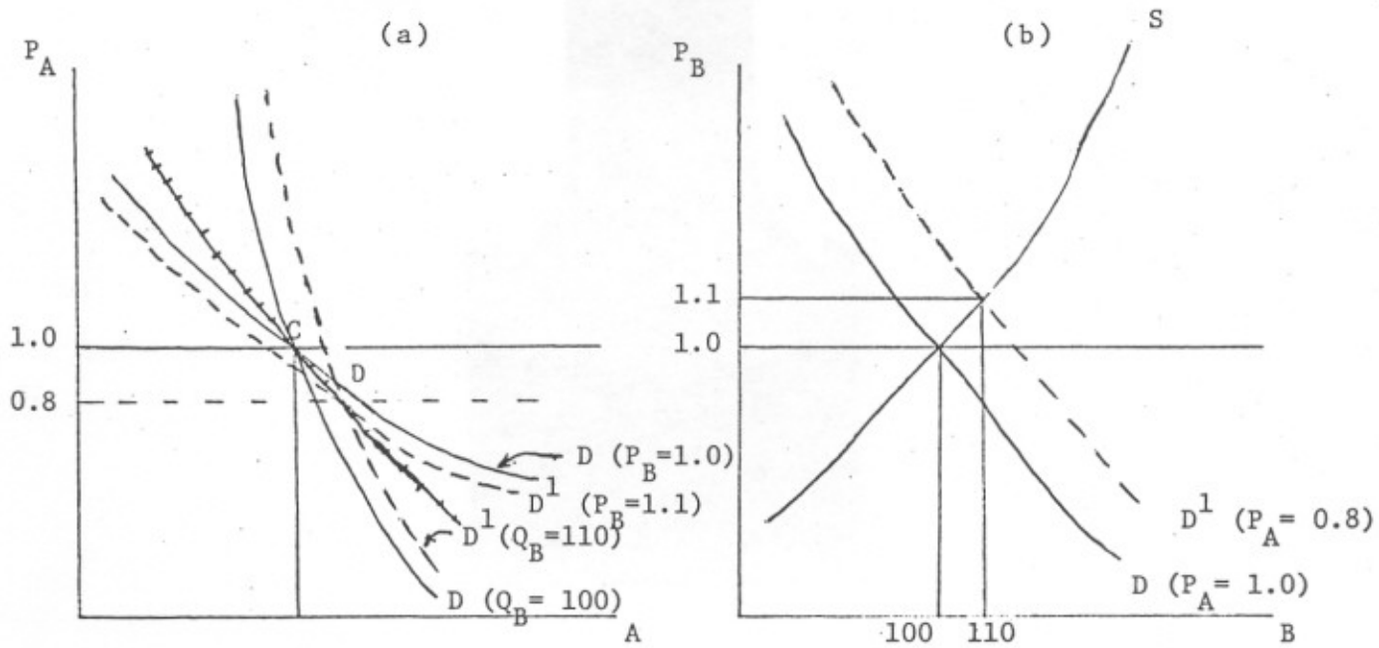
1. Definitions
   (a) Branch profits + Reinvested earnings + Common dividends + Interest payements + Preferred Dividends + Withholding taxes
   (b) Total adjusted earnings gross of withholding taxes less calculated withholding taxes.
   (c) Branch profits + Interest payments + Common dividends + Preferred dividends (all net of withholding taxes).
   (d) Income net of withholding tax + Royalties, fees and film rentals.
   Pay-out ratio is equal to income divided by total adjusted earnings net of withholding tax
   All rates of return are averages calculated from the annual returns divided by the estimated mid-year U.S.-owned net capital stock in that year.
2. The capital stock of the mining and smelting sector includes mining, quarries, oil wells and primary metals.
3. The capital stock of the petroleum sector includes petroleum and coal products.

Appendix B

The Impact of Foreign Investment on Canadian Resource Markets[1]

One effect of foreign investment might be the bidding up of the prices of other Canadian resources like labour. As the price of labour rises, output and employment fall. Labour and capital are released and when the capital is thrown on to the market, the rate of return would fall slightly. The lower rate of return would then cause some other foreign investment to leave Canada, the net result being that not all the foreign investment associated with the project can be considered incremental. The extent to which this argument is valid depends on the degree of complementarity between foreign capital and other Canadian resources.

The following analysis provides a theoretical framework to facilitate understanding of the problem of what happens when foreign capital enters the country and bids up the price of labour. Assume that there are two factors of production A and B.



[1] We are especially grateful to A.C. Harberger for setting us straight on this issue.

The demand curve for factor A can be drawn holding either $Q_B = 100$ or $P_B = 1.0$ as in figure (a). The demand curve for factor B is drawn holding $P_A = 1.0$. The supply curve for factor B is upward sloping.

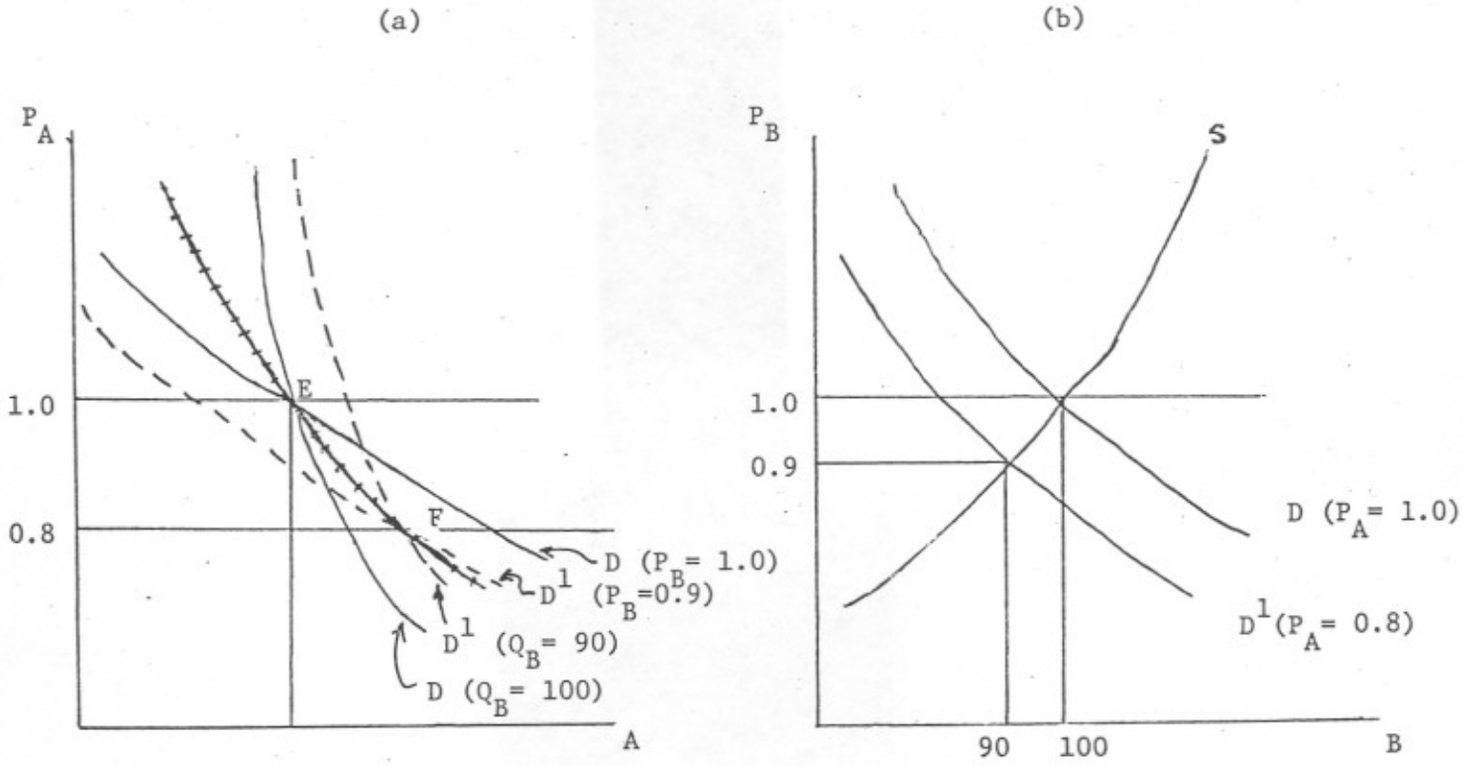
B.1. Assume factors A and B are complements

Assume that for some reason the price of factor A falls to 0.8. If factors A and B are complements, then $\partial Q_{B/\partial P_A} < o$ and the demand curve for factor B shifts to the right to D^1. The price and quantity of factor B rise. The higher price of factor B causes the demand curve for factor A holding $P_B = 1.0$ to shift to the left because the factors are complements and $\frac{\partial Q_A}{\partial P_B} < o$. The higher quantity of factor B causes the demand curve for factor A holding $Q_B = 100$ to shift to the right because as complements $\frac{\partial Q_A}{\partial Q_B} > o$.

The two new demand curves intersect at point D where the price of factor A is equal to 0.8. A generalized demand curve for factor A, which allows for equilibrium to prevail in other factor markets, would pass through points C and D and lie in between the two initial demand curves, (drawn as a crossed line).

B.2. Assume factors A and B are substitutes

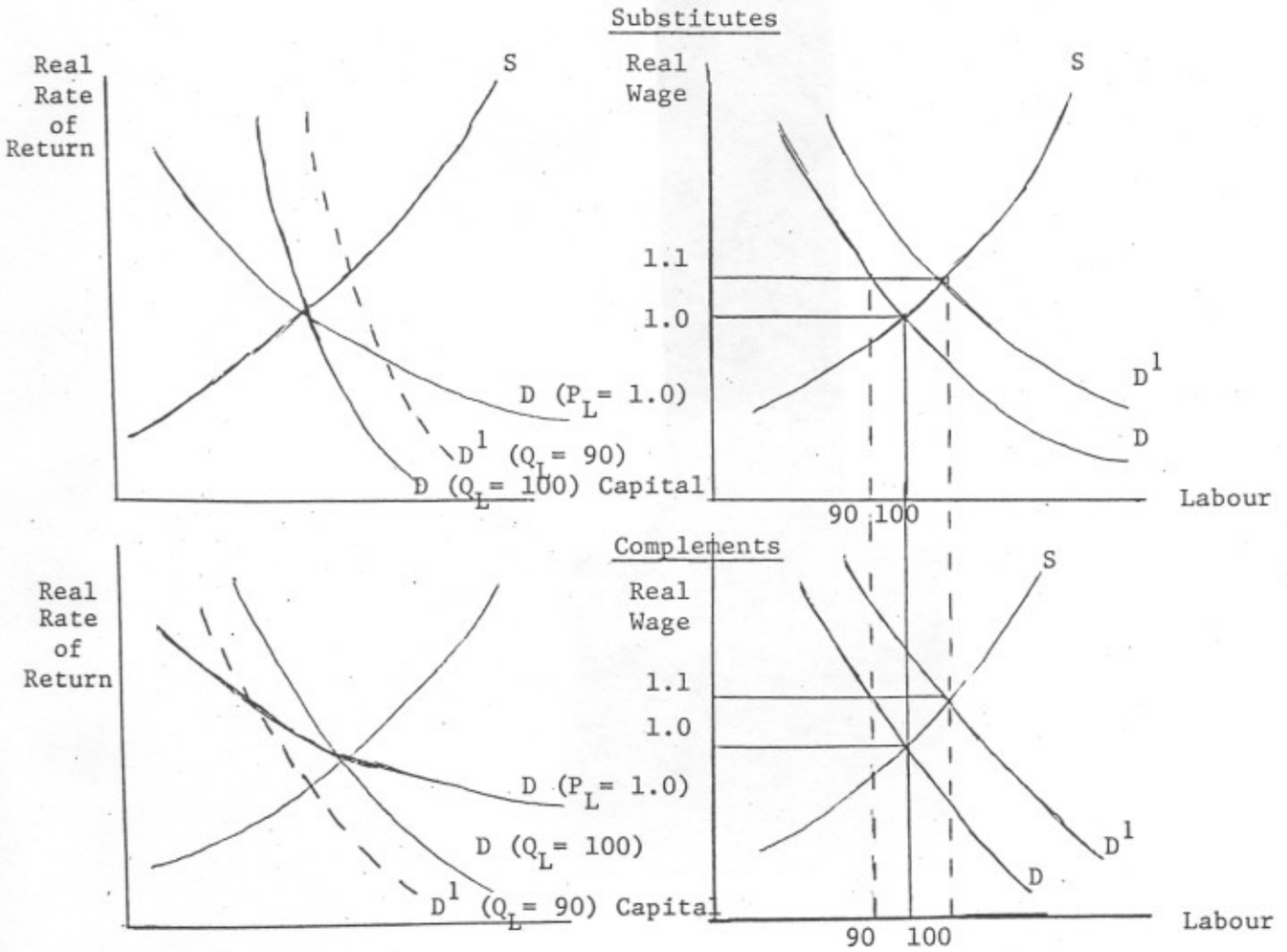
Assume that for some reason the price of factor A falls to 0.8. If factors A and B are substitutes, then $\frac{\partial Q_B}{\partial P_A} > 0$ and the demand curve for factor B shifts to the left to D^1 ($P_A = 0.8$). The price and quantity of factor B fall. Because $\frac{\partial Q_A}{\partial P_B} > 0$, the demand curve for factor A holding the price of factor B constant will shift to the left. Because they are substitutes, furthermore, $\frac{\partial Q_A}{\partial Q_B} < 0$ and the demand curve for factor A holding constant the quantity of factor B will shift to the right.



The two new demand curves intersect at point F where the price of factor A is equal to 0.8. A generalized demand curve for factor A, which allows for equilibrium to prevail in other factor markets would pass through points E and F and lie in between the two initial demand curves.

B.3. The Impact of Foreign Capital Flows on the Markets for Canadian Resources

As foreign capital flows into Canada with no accompanying increase in the supply of other Canadian factors of production (e.g. through immigration), then the price of labour, land, etc. will rise as these factors are bid away to work with the foreign capital. In the diagrams the price of labour rises from 1.0 to 1.1.



Assume that Canada faces an upward sloping supply curve of capital. If capital is a substitute for labour, then $\frac{\partial Q_K}{\partial Q_L} < o$. The smaller quantity of labour services demanded by other employers (i.e. excluding project employment) will cause the demand curve for capital (drawn holding the quantity of labour constant) to shift to the right, the rate of return to capital will rise, and more foreign capital will be attracted into the country.

If capital is a complement to labour, then $\frac{\partial Q_K}{\partial Q_L} > o$. The smaller quantity of labour services demanded by other employers will cause the demand curve for capital to shift down and to the left. The rate of return to capital will fall, and some foreign capital will be induced to leave the country.

The question of whether Canada will get more or less foreign capital as a result of an initial foreign investment in a project depends on the substitutability or complementarity of capital and labour. No doubt, rates of return will rise in some industries and fall in others. The overall magnitude of any effects will also depend on the elasticity of demand of Canadian resources.

B.4. Elasticities of factor demand for composite goods

The cross-price elasticity of a factor of production (i) is made up of a scale effect and a substitution effect.

$$\eta_{io} = \alpha_o (\eta x + \sigma_{io})$$

where η_{io} = cross-price elasticity of factor i with respect to the price of factor o

α_o = factor o's share of total cost ($\alpha_o = 1 - \alpha_i$)

ηx = the elasticity of demand of the composite good x where factors i and o are employed; defined to have a negative sign

σ_{io} = the elasticity of substitution between factor i and other factors of production (o); defined to have a positive sign.

Note that the elasticity of demand for a composite good which has fewer constitutent goods is generally higher than for a composite good with more constituents. The elasticity of substitution is not generally affected by the size of the composite good.

If we are drawing labour etc. from only a few other industries, then ηx would be large and would dominate σ_{io}; η_{io} would then be negative and the two factors would be complements. If we are drawing labour from <u>all</u> other industries, however, then ηx should be small and hence η_{io} would be positive. In this case the two factors are substitutes. Since we would expect foreign investment in a project to attract labour from many different industries, we would generally expect to see $\eta i_o > o$ and, therefore, the rate or return to capital should rise as a result of the foreign investment.

B.5. Conclusion

When foreign capital flows cause a bidding up in the price of labour which causes other employment and output to fall, it is unlikely that capital will end up earning a lower rate of return thus inducing a capital outflow.