EFFECTS OF THE FOREIGN DIRECT INVESTMENTS PROGRAM

ON THE

U. S. BALANCE OF PAYMENTS

by

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TABLE OF NOTATION

b_t = The contribution to balance of payments surplus of foreign direct investment or its restriction.

A_t = The book value of direct investment outstanding.

a = The rate of increase in A_t, i.e., capital transfers plus reinvested earnings, plus or minus valuation adjustments in A_t.

r = The rate of return earned by the direct investor after host country taxes, whether remitted to the parent or not.

x = The coefficient of permanent stimulation of U.S. exports per dollar of A_t.

v = Portion of capital exports matched by exports of U.S. capital equipment.

A^*_t = Direct investors' desired stock of investment in the absence of restriction.

a^*_t = The rate of increase in A^*_t as it would have been in the absence of restriction of investment.

A_{Bt} = Stock of foreign borrowing induced by the capital control program.

a_{Bt} = The increase in such borrowings in time t.

r_B = The rate of interest paid on A_{Bt}.

X_t = The total exports from direct investors to their foreign affiliates.

X^R_t = Exports from direct investors to their foreign affiliates identified as being for resale, with or without further processing.

X^U_t = Exports from direct investors to their foreign affiliates identified as being for the affiliates' own use.

e_t = Earnings from foreign affiliates earned by the direct investor, including interest receipts, management fees, and royalty payments.

S_t = Total sales of foreign affiliates. In practice total foreign affiliates' revenues have been used for this although the latter may include some non-sales revenues.

s_t = $S_t - S_{t-1}$.

w_t = Foreign withholding taxes on dividends.

$\bar{\rho}$ = Internal rate of discount setting present value of all future balance of payments effects of investment controls equal to 0.

T_t = Total assets of foreign affiliates at end of time t.

t = $T_t - T_{t-1}$.

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I. INTRODUCTION AND BACKGROUND

On January 1, 1968, President Lyndon Johnson announced the imposition of mandatory controls on direct investment by U.S. corporations in foreign countries. At the same time, "voluntary" controls were imposed on foreign lending by U.S. banks, to be administered by the Board of Governors of the Federal Reserve System. The direct investment controls, which were to be administered by the Department of Commerce, were designed to improve the deteriorating U.S. balance of payments position by bringing about a $1 billion reduction in outflows associated with direct investment over the outflows experienced in 1967.[1] The controls were terminated on January 29, 1974, after two devaluations of the dollar and a subsequent substantial improvement in the exchange value of the dollar made them unnecessary.

Since 1968, a number of attempts have been made to estimate the effects of the Program on U.S. foreign investment. Richard Herring and Thomas Willett have estimated that the controls produced a reduction of approximately $600 million in plant and equipment investment in Europe alone during 1968. They estimated a reduction of approximately $700 million in worldwide foreign plant and equipment investment in 1968. Reductions of only

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[1] New York Times, January 2, 1968, p. 18.

slightly smaller amounts were estimated for 1969.[2] Using different techniques, Anthony Scaperlanda and Lawrence Mauer estimated that foreign investment in the original six E.E.C. countries declined by approximately $500 million a year for both 1968 and 1969.[3]

Another group of research studies have concentrated on estimating the total net contribution of foreign investment to the U.S. balance of payments. These studies have arrived at widely differing estimates, both of the overall effect of investment and of the different components of this effect. A 1968 study by G. C. Hufbauer and F. M. Adler estimated that, under certain circumstances and in certain geographic areas, investment appears to have a negative effect.[4] In these cases, it appears likely that restriction of investment will improve the U.S. balance of payments.

Another study, by Peter Lindert, using much of the same data, argued that restriction of direct investment worsens the balance of payments of the investing country under all likely circumstances.[5]

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[2] Herring, R. and Willett, T. D., "The Capital Control Program and U.S. Investment Activity Abroad," The Southern Economic Journal, Vol. XXXIX, No. 1, July 1972, pp. 64-67.

[3] Scaperlanda, A. E. and Mauer, L. J., "The Impact of Controls on United States Direct Foreign Investment in the European Economic Community," The Southern Economic Journal, Vol. XXXIX, No. 39, January 1973, pp. 420-422.

[4] Hufbauer, G. C. and Adler, F. M., Overseas Manufacturing Investment and the Balance of Payments, Washington, D.C., 1968, pp. 33-66.

[5] Lindert, Peter H., "The Payments Impact of Foreign Investment Controls," The Journal of Finance, Vol. XXVI, No. 5, December 1971, pp. 1095-1097.

The purpose of the present study is to pursue both of these empirical threads, employing data collected by the Office of Foreign Direct Investments of the Department of Commerce, which administered the controls.

A. HISTORY AND STRUCTURE OF THE FOREIGN DIRECT INVESTMENT PROGRAM

1. The Structure of the 1968 Program

The controls restricted direct investment, defined as capital transfers plus reinvested earnings of foreign affiliates, to less than a fixed percentage of the average of such investment in a base period, 1965-1966. Investment in the so-called Schedule A Countries, generally the less developed countries, was restricted to 110% of the investors' base period investment. Investment in Schedule B Countries, the United Kingdom, Ireland, Australia, Japan, New Zealand, and certain Middle East oil-producing countries, was restricted to 65% of base period investment. Investment in Schedule C Countries, primarily continental Western Europe, was limited to 35% of the base period. In Schedule C, the 35% allowable was to be used only for reinvested earnings.

The definition of transfer of capital excluded transfers involving funds borrowed by the direct investor overseas.[6] An investor could, in practice, invest any amount overseas provided that all investment in excess of his allowable was financed with

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[6] See Appendix A for additional discussion of this point.

funds borrowed abroad. In addition to the restriction on direct investment, certain not too important prohibitions were placed on holdings of liquid foreign assets by the direct investor itself.

Finally, all investors were guaranteed a minimum worldwide allowable of $200 thousand.

Investment in Canada was included in the initial restriction, but in March 1968 such investment was exempted from controls. To prevent evasion of the restriction, however, transfer from Canadian affiliates of U.S. firms to non-Canadian foreign affiliates was treated as if it were made directly from the U.S. parent. Similarly, investment transactions between affiliates in different schedules were treated as if such transactions had taken place via the U.S. parent. For example, if a transfer of capital was made from a Schedule B affiliate to a Schedule A affiliate, it was considered to be a negative transfer between the parent and the Schedule B affiliate and a positive transfer between the parent and the Schedule A affiliate. Because of the Canadian exemption, most of the statistics gathered and published by the Office of Foreign Direct Investments and all of the figures given in this paper, unless otherwise specified, exclude Canadian activity.

A more troublesome possibility is that some of the investment activity identified as U.S. foreign investment may in fact be

Canadian foreign investments in which a U.S. person or corporation has more than 10% interest.[7]

However, because majority-owned affiliates account for all but a small proportion of direct investment reported generally, it is likely that this problem is quantitatively small.

2. Program Changes 1969-1971

Persistent complaints about the inequity of the historical formula led OFDI to introduce in the 1969 program an alternative allowable equal to 30% of the investor's affiliate earnings in each schedule in the previous year. In addition, the minimum allowable was increased from $200 thousand to $1 million.

The program was again continued substantially unchanged in 1970 except for a minor modification of the minimum allowable to authorize an additional $4 million if the investment was in Schedule A, the less developed countries. In 1971, the earnings allowable was increased to 40% of the previous year's earnings.

3. Overall Objectives of the Program

The purpose of the Foreign Direct Investment Program was to bring about a substantial improvement in the U.S. balance of payments. For 1968, a goal of $1 billion was set, as mentioned above.

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[7] A ten-percent interest was the criterion separating direct from portfolio investment. Only the former was subject to these regulations. Portfolio investment was subject to the Interest Equalization Tax, however.

In succeeding years, no specific objective was set, probably in recognition of the complexity and inherent difficulty of the task. Since 1968, a number of attempts have been made to assess the effect of the Program on investment and on the balance of payments generally. The objective of the present study is to see whether, by applying econometric methodology to cross-section data on exports, earnings, investment, and foreign affiliate financial structure, it is possible to shed some light upon the overall impact of the direct investment controls on the U.S. balance of payments and to improve upon estimates which other observers have made in other studies.

B. PREVIOUS STUDIES OF THE BALANCE OF PAYMENTS EFFECTS OF INVESTMENT

1. P. W. Bell and the Categories of Balance of Payments Effects

In considering the balance of payments effect of restriction on foreign investment, it is necessary to first consider the manner in which foreign investment affects the balance of payments. In a 1962 article published by the Joint Economic Committee, P. W. Bell identified six classes of effects of foreign direct investment on the balance of payments.[8]

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[8] Bell, P. W., "Private Capital Movements and the Balance of Payments Position," in Factors Affecting the U.S. Balance of Payments, Joint Economic Committee, 87th Congress, Second Session, 1962, pp. 401-414.

(a) Capital Outflows

First, the outflow of capital itself increases the basic balance deficit ceteris paribus.[9] The basic deficit, the deficit on current account and long-term capital, is thought to measure long-term underlying movements in the U.S. international financial position.[10] As Bell points out at another point, however, the criterion for considering a transaction direct investment for accounting purposes is not fundamentally the nature of the transaction but rather with whom and by whom the transaction was made.[11] For example, increases in the extension of credit by the parent to its affiliate are treated as direct investment and, therefore, implicitly a long-term transaction although the same transaction with an unaffiliated person would be a short-term transaction. This potentially short-term nature of a transaction which is categorized in the balance of payments accounts as long-term will be important later in the interpretation of the apparent reduction in direct investment resulting from the Program.

(b) Earnings

The second category of balance of payments effects of direct

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[9] Ibid., p. 406.

[10] Devlin, David T., "The U.S. Balance of Payments: Revised Presentation," Survey of Current Business, June 1971.

[11] Bell, P. W., p. 404.

investment is the permanent stream of dividends and interest resulting from the investment.[12] Two points should be made about investment earnings. First, it is important, if only for consistency in accounting, to apply a consistent treatment to reinvested earnings. The U.S. balance of payments does not count as an outflow retained earnings of incorporated affiliates. Consequently, it recognizes as an inflow item only those incorporated earnings actually remitted as dividends to the U.S. parent. This is not consistent with the treatment of branch profits, that is, earnings of unincorporated affiliates. These are counted as an inflow item in their entirety. To maintain accounting consistency, retained branch profits are counted as a direct investment outflow in the U.S. balance of payments.

The Foreign Direct Investment Program, on the other hand, included reinvested earnings in its definition of direct investment. In large part, this was done out of regulatory necessity. Total affiliate remittances have consistently exceeded total transfers of capital in recent years by a considerable amount; it would be theoretically possible for investors as a whole (although not for every investor individually) to finance all investment internally by diverting earnings remittances to new overseas investment. This would deprive any regulatory program based solely on restriction of capital transfers of much of its effectiveness. In any case, from

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12 Ibid., p. 406.

an economic point of view, the method of financing new investment, whether internal to the foreign affiliate through reinvested earnings, or otherwise through transfers, is not particularly significant. For this reason, throughout this paper, the earnings discussed will be total affiliate earnings, not simply that part remitted to the U.S.

The second point to be made about investor earnings from foreign operations is that it is not significant to the investor whether percent earnings take the form of profits from equity investment or interest payments on loans to the affiliate. In the case of a wholly-owned affiliate, it makes no difference, other than possible differences in tax treatment, whether earnings are retained, increasing equity investment, or remitted as dividends and returned as loans to the subsidiary. Similarly, it makes no difference whether an arms-length market rate of interest is charged. The earnings residual belongs to the parent in any case. Where the affiliate has stockholders other than the parent, the situation may be somewhat different. All this suggests that the U.S. balance of payments treatment, which combines interest payments with dividends and branch profits, is appropriate.

(c) Export Effects

The third balance of payments effect is the overall effect of foreign investment on U.S. exports. Bell mentioned three categories of export effects. First, new investment abroad, particularly where

it takes the form of the construction of new facilities rather than the purchase of existing facilities, may be immediately accompanied by exports of U.S. machinery or equipment. Because it partially offsets the capital effect, this once-and-for-all export should be subtracted from the amount of the investment in computing the adverse effects on the balance.

The second export effect takes the form of a permanent stimulation of U.S. exports in the form of raw materials or intermediate products sold to the newly formed or expanded affiliate.

The third effect is the substitution which may take place of subsidiary output for exports of domestically produced goods. This substitution may take place in the country where the subsidiary is located or in third-country markets. Bell argued that this last category is probably quite small, since if a U.S. subsidiary could outcompete U.S. domestic producers, foreign corporations could also outcompete U.S. domestic producers in the absence of patents or similar restraints.[13] The export-related effects, which I will investigate later in this paper, need not be confined to export from the U.S. parent and its domestic subsidiaries. The estimates in Section II will be confined to such exports because of data limitations.

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13 Ibid.

(d) Import Effects

The fourth category of balance of payments effects consists of increases in U.S. imports from foreign affiliates which displace domestic sales of U.S. firms. This is analogous to the export displacement effect mentioned above and the same a priori argument can be made that it is not likely to be quantitatively important. In the absence of any data on such imports, very little can really be said about it.[14]

(e) Management Fees and Royalties

The fifth category consists of management fees and royalties paid by the affiliates to the U.S. parent.[15] In principle, this should be analogous to exports permanently stimulated by investment, an export of services. However, there is some evidence that fees and royalties are used to extract earnings from affiliates in situations where tax laws or a desire to maintain low visibility of American operations make it advantageous.

(f) Other Capital Movements

The final category of effects listed by Bell consists of "complementary or offsetting short- or long-term movements of capital of varied kinds. For example, the establishment of production facilities overseas may lead to increased opportunities

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14 Ibid.

15 Ibid., p. 407.

to utilize foreign financial markets to finance merchandise trade from the United States."[16] Bell himself characterizes the subject as "immensely complicated" about which little can be said.

These six categories: (a) the transfer itself, (b) earnings remittances from the increased investment, (c) U.S. export effects, (d) U.S. import effects, (e) management fees and royalties to the parent, and (f) secondary capital movement, form a framework for discussions of the balance of payments effects of direct investment, and of the restriction of direct investments.

2. Hufbauer and Adler; Empirical Estimates of Payments Effects

Hufbauer and Adler's study, which was confined to manufacturing investment, revised and extended Bell's estimates, particularly of earnings remissions behavior and of trade effects, including fees and royalties under trade effects.

In considering earnings remissions, Hufbauer and Adler focused on the rate of return on direct investment. The earnings used to compute the rate of return include interest payments to the parent but not fees and royalties. By combining interest payments with earnings in computing rate of return, they avoid the question of whether "arms-length" interest is charged to subsidiaries by the parent. As to the question of the treatment of fees and royalty payments, Hufbauer and Adler state that the decision to include

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16 Ibid.

these with trade effects rather than with earnings remissions was based on consideration of form, not substance.[17]

The Hufbauer and Adler study does not explicitly deal with the problem of using the book value of investment as an economic variable. They call this category "direct investment." I shall call it, to avoid further confusion of terminology, the stock of direct investment. The usual problems of using accounting values are present. They are based on historical rather than opportunity cost. Depreciation charges are influenced more by tax laws than any other consideration. These problems are compounded in the international setting by problems of currency translations and the handling of exchange gains and losses from currency revaluation.

Using historical figures for the rate of return on investment, Hufbauer and Adler observed a decline in the rate of return shown historically from 15.9% in 1950-53, to 11.7% in 1962-65, the last period studied.[18]

Apart from this, Hufbauer and Adler raised the question of whether historical rate of return is the appropriate measure of the return on a capital outflow. If the investment could have been financed by funds borrowed abroad, the contribution of the capital outflow would be the interest payments that would otherwise be made on those borrowed funds.

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17 Hufbauer and Adler, p. 18.

18 Ibid., p. 12.

19 Ibid.

(a) Trade Effects and Substitution Assumptions

The second major contribution of the Hufbauer and Adler study to the empirical estimates of the effects of foreign investment is a consideration of the effects of investment on trade. Their major contribution to the study of trade effects is a systematic consideration of the possible substitution effects operating on foreign investment. For example, does foreign investment increase the productive capacity of the recipient country or does it merely transfer the ownership of capital which would have existed in any case, to foreigners? Similarly, does domestic output capacity decline by the amount of the transfer below what it would otherwise have been? Or does government take action to stimulate domestic income and investment and leave the domestic situation approximately as before? Does foreign investment supplement native investment or replace it? Is foreign investment a substitute for home investment or additional to home investment which will be carried on in any case?[20]

Hufbauer and Adler identified three sets of substitution assumptions. The first assumption was described as the classical assumption, "direct investment completely supplements host country investment and completely replaces home investment."[21] Under the classical assumption, plant capacity is increased in the host country and reduced in the home country by the amount of the transfer.

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[20] Ibid., p. 5.

[21] Ibid., p. 6.

The second assumption is termed reverse classical. Under the reverse classical assumption, foreign investment is a perfect substitute for investment by native firms in the host country and does not affect domestic outlays in the home country.[22] Thus, there is no net addition to foreign capacity and no net loss to home capacity as a result of the investment. The reverse classical assumption may be realistic in an environment in which active competition in both countries and full-employment government policies maintain investment at some desired level regardless of foreign leakages.

The third set of assumptions was described as anticlassical. Under anticlassical assumptions, foreign investment adds to productive capacity in the recipient country, but does not decrease capacity in the home country.[23] These conditions might describe a situation in which a firm in a developed country, under relatively full employment conditions, invested in a less-developed country.

The applicability of one or another of these assumptions varies with the state of employment in both the investing and recipient countries. It also varies with the state of development of the two countries. The fourth possibility, that foreign investment would decrease investment in the home country but not affect total investment in the recipient country, was not explicitly considered.

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22 Ibid.

23 Ibid.

The impact of the various substitution assumptions is primarily on the various trade effects resulting from investment. As only one example, Hufbauer and Adler noted that, historically, only about seven percent of plant and equipment expenditures by foreign subsidiaries are imported from the parent firm. Approximately 20% of these items are imported from other U.S. firms. If the classical substitution assumption held and investment were restricted, the U.S. would probably lose both the capital equipment export from the U.S. parent and those purchased from other U.S. firms. If the investment were not made by the U.S. firm, it would not take place at all. Approximately the same would be true under the reverse classical assumption.

The most interesting case would be the one resulting from the anticlassical assumption. Because the anticlassical assumption asserts that U.S. foreign investment merely substitutes for host-country investment or third-country investment, it is not clear what the ultimate effect will be on capital equipment exports. It appears likely that affiliates of U.S. firms will have neither greater nor less tendency to import capital goods from unaffiliated U.S. firms than will independent host-country or third-country firms. It may be that some part of the capital equipment exports purchased from the U.S. parent may be lost to the U.S. if the investment project is undertaken by a foreign firm. In any case, it is likely that, if anticlassical assumptions hold, a substantial portion of the capital equipment that appears to be associated with U.S. investment

will occur whether U.S. investment is made or not. Similar variations in the results of other trade effects also depend on the nature of the substitution assumptions that are appropriate to the particular circumstances.

(b) Payback Periods of Foreign Investment

Hufbauer and Adler also made a contribution to the development of summary measures for evaluating the effects of investment restriction over time. Using each of the investment substitution assumptions in turn, they proceeded to calculate various investment payback periods, under the assumption that historical average behavior would continue into the future and would be an appropriate estimate at the margin. The payback period is the amount of time it would take for the aggregate inflow resulting from positive and negative income and trade flows to equal the outflow directly caused by the transfer of capital. The difficulty of interpreting this summary measure led to a need to develop summary measures that would facilitate comparison with alternatives to capital controls.

3. Peter Lindert; A Model of Investment Restriction Effects Over Time

Professor Peter Lindert, in an article published in the December 1971 Journal of Finance, took issue with this payback-period approach. He argued that to assign equal weight to all balance of payments effects regardless of when they occur up to some arbitrary time horizon and to ignore those beyond that horizon, as both Bell and

Hufbauer and Adler did, can be seriously misleading.[24] On the other hand, policy makers are responsible for all the consequences of their decisions from the time their decisions are made, or not made, to the infinitely distant future.[25] In addition, replacement of a recoupment period approach with a present value or internal rate of return computation facilitates comparison with alternatives to capital control.

Lindert pointed out that obtaining an immediate improvement in a country's balance of payments position at the expense of future surplus items is tantamount to borrowing and implies a rate of discount.[26] This present borrowing against future earnings is characteristic of all foreign investment restriction. If the effect of such restriction is to prevent the formation of foreign assets by American firms, there is a loss of future earnings and export receipts. If the restriction involves only a shift of financing from domestic to foreign sources, there is a cost in the form of interest payments (if the financing is debt), or lost earnings (if the financing takes the form of a sale of equity participation). By computing either the present value or the implicit rate of return on this implicit or actual borrowing, the cost of imposing foreign investment control can be compared to alternative policies; such alternatives might involve replacing liquid liabilities to foreigners with non-

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24 Lindert, Peter H., p. 1085.

25 Ibid., p. 1083.

26 Ibid., p. 1084.

liquid liabilities carrying a higher interest rate.[27] It might even be a policy of doing nothing and allowing short-term liquid liabilities to accumulate in the hands of private foreigners and foreign official agencies and paying whatever interest such liabilities earn.

To estimate the balance of payments effects of foreign investment restrictions, Lindert uses the following equation for a short-time period effect of foreign investment on the balance of payments:[28]

$$b_t = (r + x)A_t - (1 - v)\ a_t \qquad (1)$$

where:

b_t = contribution to balance of payments surplus resulting from effects of foreign direct investment;

A_t = value of direct investment outstanding;

a_t = the rate of increase in A; i.e., capital transfer, reinvested earnings, and valuation adjustment during time t;

r = the rate of return earned by the investor after host country taxes;

x = the coefficient of permanent stimulation of U.S. exports per dollar of A_t;

v = portion of capital export matched by exports of equipment from the U.S.[29]

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27 Ibid.

28 Ibid., p. 1086. I have taken the liberty of making minor alterations in Professor Lindert's notation.

29 It is not obvious whether or not this item should include U.S. exports other than those directly from the parent; Lindert implies that it should. The answer would appear to rest on two questions: first, the substitution question mentioned above, and second, the difference between the propensity of U.S. foreign affiliates to buy capital equipment from non-affiliated U.S. firms and the propensity of foreign firms to buy such equipment. In practice, both questions would be very difficult to determine.

When investment restrictions are imposed, whatever their specific form, the value of both the stock and flow of investment differs from that desired by the investors. These desired stocks and flows of investment will be designated by A_t* and a_t* respectively, giving a balance of payments benefit resulting from restriction of:[30]

$$b_t = (1 - v)\ (a_t^* - a_t) - (x + r)\ (A_t^* - A_t) \qquad (2)$$

where b_t here indicates the sum of effects on the balance resulting from the restriction.

If the effect of capital controls is to cause foreign borrowing rather than to restrict foreign asset formation, equation two remains applicable but, by assuming v, x, a_t* and A_t* equal to zero, reduces to:

$$-b_t = a_{Bt} - r_B A_{Bt} \qquad (3)$$

for any time period t where

a_{Bt} = the increase in the stock of borrowed liabilities used to finance investment where such liabilities result solely from the imposition of the capital control program;

A_{Bt} = the stock of such foreign liabilities; and

r_B = the rate of interest paid on such foreign borrowing.

Still a third variation would be a situation in which response to U.S. investment restriction is a sale of equity participation in the foreign affiliate. The effect would be measured by equation (3) with r substituted for r_B, unless there were such a large foreign

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30 Ibid.

participation that the pattern of U.S. associated exports were affected. In that case, equation (2) might be more appropriate.

It is assumed throughout that all stocks and flows are dated in continuous time rather than over discrete periods. If this is the case, a calculation of the present value of the sum of all future b_t's discounted at an appropriate rate of interest yields the present value of instituting the control program.[31] More discussion of this will be presented in Section III.

The precise estimation of the various results of changes in capital movements, earnings, and trade effects, in response to foreign investment restraint, depends on a number of assumptions about the nature of the capital controls. First, are the controls flat prohibitions or fiscal disincentives; second, are they temporary or permanent; third, is the rate of relaxation of controls greater than the rate of increase in the desired level of investment; and fourth, in the event that controls are temporary and do not become redundant at some point, is adjustment upon removal instantaneous or asymptotic?[32]

I shall direct more consideration to the question of developing summary measures of balance of payments effects at the end of this paper. However, Lindert demonstrates that a fairly simple internal

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31 Ibid.

32 Ibid., pp. 1088-1099.

rate of discount computation is applicable under all likely assumptions. More discussion of this will also be given in Section III.

First, it is necessary to arrive at estimates of trade effects, earnings effects, and the impact on capital movements themselves of a restriction on foreign investment. I will include fees and royalties from foreign affiliates in the section on earnings effects for reasons that will be discussed in that section. Owing to lack of data, I will ignore the effects of investment and investment restrictions on U.S. imports from foreign affiliates, possible secondary capital movements which may be indirectly stimulated by U.S. investment or its restriction, and exports from unaffiliated U.S. firms to U.S. foreign subsidiaries.

The focus of the following section, therefore, will be on the effects of direct investment on the pattern of exports to foreign affiliates, the marginal rate of return to foreign investment, and the actual effects of the Foreign Direct Investment Program on the level of direct investment. Finally, the balance of payments effects of encouraging the use of foreign borrowing to finance investment will be considered.

II. ESTIMATES FROM DATA COLLECTED BY THE OFFICE OF FOREIGN DIRECT INVESTMENTS

A. METHODOLOGY - IN DEFENSE OF CROSS-SECTION ANALYSIS

The purpose of this section is to determine what light certain data collected by the Office of Foreign Direct Investments can shed on these questions. I shall employ certain fairly simple models to estimate: (1) the amount of reduction in the level of foreign investment; (2) the earnings effects; (3) some trade effects resulting from this reduction; (4) the amount of foreign borrowing generated by the Program as an alternative to reducing investment; and (5) the interest on this borrowing. These five elements should constitute a large portion of the total impact of the Program on the U.S. balance of payments. When these effects are estimated over time and combined using an appropriate summary measure, they should provide a basis for comparison with other policy alternatives which might have been used in place of direct investment controls.

Before continuing, it may be necessary to say a few words in defense of cross-section analysis. The chief reason for using cross-section rather than time-series analysis in this study is the short time period over which data are available. As an alternative, I have used regressions performed on cross-sections of individual company data to estimate the parameters. This technique is clearly not without its difficulty. It assumes a perfect homogeneity among companies. That is, it assumes that large companies behave as small companies

would if they were larger, that companies with low earnings behave as high-earnings companies would if their earnings were smaller, and so forth. In a time series, it is assumed, analogously, that fundamental institutional behavior remains stable over time. A priori, neither assumption appears totally unreasonable. As a practical matter, inter-temporal stability is probably more common than inter-individual homogeneity. If it is, cross-section analysis is the less desirable path. I will attempt at each step of the analysis to compare the results of my cross-section study with results from other studies using other techniques on other data sources.

B. EXPORT EFFECTS OF DIRECT INVESTMENT

1. An Export Model

Implicit in Lindert's model and in most others is a model for direct investment-related exports of the form:

$$X_t = f(A_t, a_t) \tag{4}$$

in which X_t is total exports by a direct investor to its own foreign affiliates in time t. This equation states that total parent exports to foreign subsidiaries are a function of, (1) the stock of investment (either in itself, or as a proxy for the scale of foreign operations), and (2) the capital contribution of the parent during the current period. The latter is based on the assumption that some portion of the capital contributions of the parent takes the form of a direct contribution of plant and equipment. These goods have no impact on the balance of payments, to the extent that there

are no affiliate payments for them. The capital outflow is matched by the inflow resulting from the capital equipment exports, in balance of payments accounting.

If the functional form of equation (4) is linear, then the coefficient of A_t is Lindert's x, and the coefficient of a_t is Lindert's v. In estimating the equation, I have replaced A_t by A_{t-1}. This is the stock of investment at the beginning rather than the end of the period for which data were reported. This is done in order to avoid having the coefficient of A_t pick up effects that are properly attributable to a_t. The resulting equation to be tested is:

$$X_t = f(A_{t-1}, a_t). \tag{5}$$

Alternatively, one might wish to recognize subsidiaries' final sales as an independent variable. Hufbauer and Adler take this approach. While not abandoning the stock and flow of investment as principle determinants, this would attempt to distinguish between export effects associated with the level of affiliates' final sales and export effects associated with the level of capitalization of the subsidiary. That is, if a firm had a foreign sales subsidiary and replaced it by a manufacturing subsidiary, one would expect that the value of U.S. exports would decline, final affiliate sales held constant. U.S. exports of final goods would be replaced by exported raw material or semi-finished goods. This function takes the form:

$$X_t = f(A_{t-1}, a_t, S_t) \tag{6}$$

where S_t is final sales of foreign affiliates. A priori, we would

expect the coefficients of a_t and S_t to have positive signs and that of A_{t-1} to have a negative sign. The latter measures the value of U.S. exports lost by increasing the amount of investment abroad in the absence of increases in final sales. That is to say, there are two effects of the scale of foreign affiliate operations on exports. First, there is a positive effect, associated with the final sales of foreign affiliates. Second, there is an export displacement effect, associated with the value added in the foreign affiliate in relation to the value added in the U.S. if the direct investment had not occurred. The coefficient of A_{t-1} should measure this latter effect, which is probably associated with the stock of investment in the affiliate. In fact, A_{t-1} and S_t were so strongly correlated that it was not possible to distinguish between these two measures, both of which are strongly associated with the scale of operations; I was forced back to the specification in equation (5).

The model specified in (6) was tested first using three sets of export statistics reported to the Office for 1967. Unfortunately, complete data necessary to specify equation (5) and (6) are available only for 1967. The possibility that 1967 might in some way be an anomalous year cannot be tested. The three sets of export statistics were total exports to foreign affiliates (X_t), exports identified as being for the affiliates' own use (X_t^U), and exports identified as being for resale, with or without further processing (X_t^R). The three independent variables were obtained from the survey of foreign affiliate financial structure taken in 1969 and 1971 and which covered the

years 1966-1969. Data supplied in this survey represented items only for majority-owned foreign affiliates, while the export survey covered all foreign affiliates. The error resulting from this difference in coverage is probably small because majority-owned affiliates account for by far the largest part of direct investment activity.

For A_{t-1}, I have used the book value of the parent's share in all foreign subsidiaries' equity plus net subsidiary liabilities to the parent, as of the end of 1966. For a_t, I have used actual transfers of capital and reinvested earnings (net of losses) in 1967. Therefore, I exclude valuation adjustment in A_{t-1} which Lindert includes in a_t. For S_t, I have used total affiliate revenue for 1967. This may include some non-sales revenues but the amount should be small. The model was fitted to the sample of 239 firms which filed all of the relevant forms. The data used exclude Canadian subsidiaries.

The results were as follows:[33]

$$X_t = 8.032 - \underset{(.674)}{.0238A_{t-1}} + \underset{(1.380)}{.1667a_t} + \underset{(3.574)^{**}}{.0509S_t} \qquad \bar{R}^2 = .258 \quad \overline{See} = 33.2 \tag{7}$$

$$X_t^R = 7.845 - \underset{(1.912)}{.0664A_{t-1}} - \underset{(.018)}{.0021a_t} + \underset{(4.651)^{**}}{.0651S_t} \qquad \bar{R}^2 = .188 \quad \overline{See} = 32.7 \tag{8}$$

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33 Numbers shown in parentheses are t-ratios. T-ratios marked by * are significant at the .05 level and those marked by ** are significant at the .01 level. Durban-Watson statistics are not given because serial correlation of residuals should not occur in cross-section analysis.

$$X_t^U = .1796 + .0440A_{t-1} + .1691a_t - .0150S_t \qquad \bar{R}^2 = .445 \qquad (9)$$
$$\qquad\qquad (5.517)^{**} \quad (6.192)^{**} \quad (4.655)^{**} \qquad \overline{See} = 7.51$$

In general, the results are disappointing. The overall goodness of fit is not what one would like. Many estimators are not significant and, as feared, there is strong collinearity between A_{t-1} and S_t. The simple correlation coefficient between them is .930. (See the correlation matrix in Table II.) Nevertheless, the results are interesting. All estimators in equation (7) have the correct sign. Exports associated with direct investment flows (a_t) are positively associated with total exports and with exports for the affiliates' own use, and virtually zero for exports for resale. This supports the supposition that only capital equipment exports are associated with direct investment flows.

Similarly, equations (7) and (8) both display a positive coefficient for S_t and a negative coefficient for A_{t-1} as expected. Holding the level of capitalization of the affiliate (A_{t-1}) constant, the greater the level of foreign affiliate sales (S_t), the greater the amount of U.S. exports. These are probably in the form of raw materials and semi-finished goods. Similarly, holding final sales constant, the greater the capitalization of the affiliate, the less will be the value of U.S. exports to it. In the case of exports reported for the affiliates' own use, however, this relationship is reversed. The interpretation of this reversal is not clear.

Using equation (5) to specify the export relationship, rather than (6), gives the following results:

$$X_t = 8.083 + \underset{(4.978)^{**}}{.0868A_{t-1}} + \underset{(1.017)}{.1253a_t} \qquad \bar{R}^2 = .221,\ \overline{See} = 34.0 \qquad (10)$$

$$X_t^R = 7.911 + \underset{(4.306)^{**}}{.0751A_{t-1}} + \underset{(.447)}{.0551a_t} \qquad \bar{R}^2 = .117,\ \overline{See} = 34.1 \qquad (11)$$

$$X_t^U = .1949 + \underset{(2.862)^{**}}{.0115A_{t-1}} + \underset{(6.394)^{**}}{.1813a_t} \qquad \bar{R}^2 = .397,\ \overline{See} = 7.83 \qquad (12)$$

This specification has the advantage that the coefficients of A_{t-1} and a_t can be used to estimate the desired variables x and v directly in equations (1) and (2). As expected, the coefficient of A_{t-1} in this specification is positive, indicating that x, the permanent stimulation of exports resulting from foreign investment, is positive. The coefficient of a_t in this specification is not significant when applied to total exports, although it is significant, and of approximately the same magnitude, when applied to exports for the affiliates' own use. Using equations (10) through (12), it is possible to derive a fairly good estimate of x, and a poor but probably usable estimate of v. These are needed to estimate the overall trade effect of restriction of direct investment.

There is still a problem of multicollinearity. The correlation coefficient between a_t and A_{t-1} is .723. This does not appear to have substantially distorted the results, however, Table II gives the regression coefficient of each of the variables in equations (10) through (12) on each other variable individually. It appears from

these coefficients that the values of the coefficients in (10) through (12) do not arise solely from the collinear relationship among the independent variables. The principle result of multicollinearity, then, is to increase the standard error and reduce the value of the t-ratio.

It should be reemphasized that the foregoing estimates include only direct investor exports to their own subsidiaries. They neglect U.S. exports from non-affiliated U.S. firms to U.S. subsidiaries as well as import effects.

These two effects may or may not be important. If the alternative to U.S. investment is the expansion of either host-country firms or foreign subsidiaries of third-country firms, then it may be that these two effects should be ignored. Although they are associated with U.S. foreign investment, these effects would continue to exist even in the absence of U.S. foreign investment. If the alternative is a reduction in total investment in the host country (Hufbauer and Adler's classical and anticlassical assumptions), then these two effects may be important.

2. Comparison With Other Estimates

Table I gives the comparable trade effects estimated by Hufbauer and Adler under their three substitution assumptions, and those estimated by Bell.

Clearly, the different studies have arrived at a wide variety of estimates of the effect of foreign direct investments on exports. Lindert in his study uses the estimates shown in column (2) of the

table from Hufbauer and Adler's reverse classical case. Overall, my rather weak estimate of .1253 for v is not inconsistent with the estimates given in column (1), considering that European investment accounts for a relatively large part of the total. My estimate of trade effects resulting from the stock of outstanding foreign investment (x) of .0868 is not inconsistent with Bell's estimates given in column (3), again given that European investment tends to dominate the total of all investment. The chief difference between my estimate of these effects and Hufbauer and Adler's is that I have not been able to measure, first, the effect of increased imports from U.S. subsidiaries, and second, the effect of investment on the exports of other U.S. firms. It is largely as a result of these two effects that the estimates of x given in column (1) are negative. Their estimates of effects resulting from the stimulation of parts and components exports alone are: .059 for Latin America; .031 for Europe; and .051 for the rest of the world.[34] More discussion of the Hufbauer and Adler estimates is given in Appendix B.

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[34] Hufbauer, G. C., and Adler, F. M., Tables 5-2 through 5-5, Column 5.

Table I

COMPARISON OF FOREIGN INVESTMENT TRADE EFFECTS ESTIMATES

	Hufbauer and Adler Assumptions		Bell	Present Study
(a) Capital Equipment Exports (v) in:	Classical and Anticlassical (1)	Reverse Classical (2)	(3)	(4)
Latin America	.215	.000	-	-
Europe	.082	.009	-	-
Rest of World	.147	.050	-	-
Worldwide, except Canada	-	-	-	.1253
(b) Permanent Stimulation of Exports Resulting from Investment (x) in:				
Latin America	-.334	.083	.415	-
Europe	-.130	.097	.041	-
Rest of World	-.810	-.214	.478	-
Worldwide, except Canada	-	-	-	.0868

Sources: Hufbauer, G. C., and Adler, F. M., Tables 5-2 to 5-12; (a) portion of table is from column (4), (b) portion is sum of first entry in columns (5), (7), and (8), (following Lindert, I have left out Hufbauer and Adler's estimate of multiplier effects). Bell, P. W., Table 3.

3. An Alternative Model; Exports and Foreign Affiliate Assets

Before leaving the subject of trade effects, I wish to examine one further question. Does the effect of changing the pattern of financing by U.S. subsidiaries themselves from U.S. to foreign sources alter the trade patterns associated with the investment? Are the exports measured above associated with the physical investment or the pattern of financing? To test this, I fitted equation (6) to total foreign affiliate assets (T) and the change in those assets (t) rather than to the book value of the parent's share in those assets as was done above. The variables T and t will typically be of the same magnitude as A and a. A substantial difference between the coefficients of T and t and the coefficients of A and a would suggest that the export pattern is associated with the source of financing.

$$X_t = 8.6779 - \underset{(1.677)}{.0418T_{t-1}} + \underset{(.248)}{.0069t_t} + \underset{(3.776)^{**}}{.0794S_t} \quad \bar{R}^2 = .265 \quad \overline{See} = 33.1 \tag{13}$$

$$X_t^R = 7.9778 - \underset{(3.063)^{**}}{.0747T_{t-1}} - \underset{(.938)}{.0255t_t} + \underset{(4.731)^{**}}{.0972S_t} \quad \bar{R}^2 = .205 \quad \overline{See} = 32.3 \tag{14}$$

$$X_t^U = .3399 - \underset{(5.106)^{**}}{.0333T_{t-1}} + \underset{(4.609)^{**}}{.0336t_t} - \underset{(3.350)^{**}}{.0184S_t} \quad \bar{R}^2 = .264 \quad \overline{See} = 8.65 \tag{15}$$

Here again, the results although not good, are interesting. The substantial difference between the coefficient of t_t in equation (15) and that of a_t in equation (7) is much greater than can be accounted for by the fact that a_t will typically be somewhat smaller than t_t. It suggests that if the financing of investment in an existing

Table II

MATRICES OF SIMPLE REGRESSION AND CORRELATION COEFFICIENTS, EXPORT DATA

Regression Coefficients - Dependent Variables

	X_t	X_t^R	X_t^U	S_t	a_t	T_{t-1}	t_t	A_{t-1}
X_t	-	.905	.090	5.46	.257	3.92	.614	2.25
X_t^R	1.02	-	.025	4.86	.168	3.28	.489	1.78
X_t^U	1.32	.327	-	16.9	1.59	14.8	2.71	9.93
S_t	.048	.038	.010	-	.041	.768	.087	.413
a_t	.569	.329	.240	10.3	-	8.57	1.96	5.11
T_{t-1}	.053	.039	.014	1.19	.053	-	.071	.539
t_t	.105	.074	.032	1.71	.152	.891	-	.569
A_{t-1}	.100	.069	.030	2.09	.102	.018	.147	-

Correlation Matrix

	X_t	X_t^R	X_t^U	S_t	a_t	T_{t-1}	t_t	A_{t-1}
X_t	1							
X_t^R	.963	1						
X_t^U	.346	.091	1					
S_t	.511	.427	.414	1				
a_t	.383	.235	.617		1			
T_{t-1}	.457	.359	.451	.957	.672	1		
t_t	.254	.190	.294	.386	.545	.251	1	
A_{t-1}	.473	.351	.546	.930	.723	.974	.289	1

subsidiary is diverted from U.S. to foreign sources, the capital equipment expenditures may be diverted to foreign sources also.

C. EARNINGS FROM FOREIGN INVESTMENT

1. Definition of Earnings

There are two problems which must be considered when evaluating the rate of return (r) earned on foreign investment, and implicitly lost if foreign investment is restricted.

The first is the proper definition of earnings to be included in the rate of return computation. Branch profits and earnings of incorporated subsidiaries could simply be divided by total equity in the affiliates. This would be satisfactory except that direct investment may also take the form of loans to the subsidiary. If these loans were transacted under the same conditions as those to unaffiliated firms, at "arm's-length," they could be ignored in the rate of return computation, or rather they would have to be treated separately. However, there is considerable evidence that such loans are not extended on "arm's-length" terms but rather that loans to subsidiaries are sometimes used as a device for extracting earnings in the form of before-tax subsidiary expenses, from affiliates in high-tax areas rather than in the form of after-tax subsidiary earnings. The precise extent of this is difficult to determine.

Similarly, management fees and royalties may represent real exports of services from the parent to the subsidiary, but equally, the charges for these items may represent a way of extracting earnings from the subsidiary without paying host-country income taxes

Table III

ALTERNATIVE RATE OF RETURN COMPUTATIONS
FOR 1968 WORLDWIDE; EXCLUDING CANADA

(Millions of Dollars)

	(1) Equity Only	(2) Equity Plus Net Liabilities to the Parent	(3) With Fees and Royalties Added
Earnings	5,141	5,303	6,283
Investment	25,107	34,907	34,907
r = Earnings/ Investment	.205	.152	.180

Sources: Data reported to OFDI-102 for 1968 and FDI-105 for 1969. 1968 investment is estimate of mid-year stock. Earnings shown in column (2) add to earnings in column (1) interest payments on loans from the parent to the subsidiary.

on them. Table III shows the differences in rate of return resulting from each of these three alternative methods of computation.

If management fees and royalties are not included in earnings in computing r, they must be treated separately, perhaps as Hufbauer and Adler did, as an additional trade effect.[35] In the remainder of this paper, I will use the rate of return from column (3) of Table III.

2. The Average and Marginal Rates of Return; A Test

The second of the two issues associated with earnings and the rate of return on direct investment is whether the marginal rate of return on new investment is the same as the average rate of return measured as a percentage of the book value of investment. There are a number of reasons for suspecting that it will differ.

First, book value of investment, combining historical cost and depreciation schedules which are dictated by tax laws, may be a poor proxy for the current value of the stock of investment in place. Even if book value is a good measure, there are good reasons why marginal return to new investment might be greater or less than average return on older investment. Investment decisions made in the past may have been based on expectations which did not prove correct. One might also say in this case that the rate of return is correctly measured but that the opportunity cost of the investment, as opposed to the book value, has declined. This amounts to the same thing. The measured rate of return based on a percentage

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[35] Ibid., p. 10.

of book value would be too low. Similarly, average rate of return measurements may overstate the marginal rate. This would be the case if investors face a declining marginal efficiency of capital schedule in the Keynesian sense.

To shed some light on the relationship of marginal and average rate of return, and in addition to measure the effect of foreign taxes, I have developed equation (16):

$$e_t = f(A_{t-1}, a_{t-1}, w_t). \tag{16}$$

The form of the equation is rather unorthodox. In this equation e_t is earnings in time t, including interest payments, fees, and royalties. Variable w_t is the amount of foreign withholding taxes paid.

In this equation a, as well as A, is lagged one time period. The reason for this is that investment (especially the reinvested earnings portion of it) may be a function of current period earnings. It is expected that earnings will be primarily a function of A_{t-1}, the stock of investment at the end of the previous time period.

The variable a_{t-1} is introduced to determine if earnings associated with recent investment differ significantly from earnings associated with the total book value of investment. That is, if the marginal rate of return on new investment is higher than the average, earnings associated with recent investment (a_{t-1}) should be somewhat higher than earnings associated with total investment (A_{t-1}). The coefficient of a_{t-1} should be positive. If the marginal rate of return is lower than the average, the coefficient of a_{t-1} should be

negative. Finally, w_t, the amount of foreign withholding taxes paid on dividends from the subsidiary to the parent, was included for what explanatory power it could offer. Equation (16) was fitted to data reported by a sample of 349 companies for 1968.[36] The results are given in equation (17):

$$e_t = -2.408 + \underset{(51.217)^{**}}{.2295A_{t-1}} - \underset{(.179)}{.0057a_{t-1}} + \underset{(.193)}{1.9039w_t} \quad \bar{R}^2 = .914 \quad \overline{See} = 20.2 \qquad (17)$$

Clearly only A_{t-1} is significant. Even if the t-ratio associated with a_{t-1} were larger, the value of the estimator is sufficiently small to be ignored. The fact that a_{t-1} does not have a significant estimator suggests that the marginal rate of return on investment does not differ significantly from the average rate of return measured as a percentage of book value. This in turn suggests that historical rates of return measured as a percentage of book value may be a good estimate of the marginal rate of return on new investment. The variable w_t has no explanatory power.

The relationship between e_t and A_{t-1} is so powerful that the moderate collinearity between a_{t-1} and A_{t-1} does not influence the coefficient of A_{t-1} in equation (17). When e_t alone is regressed on A_{t-1}, the coefficient is .229. (See Table IV.)

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36 This equation and the remaining equations in the next section were fitted to a sample of 349 companies that was not confined to those companies filing the export report form in 1968. Similar results, not reported here, were obtained for the years 1969-1971.

Table IV

MATRICES OF SIMPLE REGRESSION COEFFICIENTS
AND CORRELATION COEFFICIENTS

Earnings Data

Regression Coefficients
Dependent Variables

		A_{1967}	a_{1967}	w_{1968}	e_{1968}
Independent Variables	A_{1967}	-	.076	.000	.229
	a_{1967}	.038	-	.000	.872
	w_{1968}	-.009	-.085	-	-.002
	e_{1968}	.040	.303	.000	-

Correlation Matrix

	A_{1967}	a_{1967}	w_{1968}	e_{1968}
A_{1967}	1			
a_{1967}	.540	1		
w_{1968}	-.035	-.023	1	
e_{1968}	.956	.514	-.031	1

Table V

RATE OF RETURN ESTIMATES

(Total Earnings as Percentage of Book Value of Investment, Including Fees and Royalties as Earnings)

	Hufbauer and Adler	Bell	From Table III Column (3)
Latin America	.113	.106	-
Europe	.146	.183	-
Rest of World	.197	.211	-
Worldwide, Except Canada	-	-	.180

Sources: Hufbauer, G. C., and Adler, F. M., Table 2-2, and 5-2 to 5-4, and Bell, P. W., Table 3. Computations for both include total earnings and are not confined to remitted earnings.

3. Comparison With Other Estimates

Similar rate of return computations (including fees and royalties) developed by Bell and Hufbauer and Adler are given in Table V. The method of arriving at these estimates is discussed in Appendix B.

D. REDUCTION IN LEVEL OF DIRECT INVESTMENT, 1968-1971

1. The Model

The preceding two sections have dealt with the most important secondary effects of a restriction of foreign direct investment. These were the effect on earnings and on trade of a unit reduction in investment. I now turn to the problem of estimating the reduction in investment itself which resulted from the introduction of capital controls.

It is not immediately obvious that the mandatory controls reduced the level of direct investment (defined as capital transfers plus reinvested earnings). Spokesmen for the Office of Foreign Direct Investments have frequently claimed that the Program has had no effect on the amount of direct investments but merely diverted the financing of such

investment from U.S. to foreign sources.[37] However, as Scaperlanda and Mauer have pointed out, the requirement imposed on U.S. firms to finance a portion of their investment from foreign sources, presumably at a higher cost than that available from U.S. financing sources, would lead one to expect, ceteris paribus, a reduction of the level of U.S. foreign investment.[38]

The amount of the reduction in foreign investment must be determined empirically. I will estimate the amount of the reduction by means of a flexible accelerator model used by Professor Anthony Scaperlanda in a recent paper.[39] This will be applied first to a

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[37] This point had been the subject of considerable confusion. If the parent borrows funds from foreigners (e.g., by issuing bonds to foreigners or by borrowing from a foreign bank) and transfers the proceeds of the borrowing to its subsidiary, the transaction creates a liability to the parent and, both under the Program and in the U.S. balance of payments accounts, is treated as a direct investment. Under the Program, proceeds so "allocated" were subtracted from direct investment in computing the investor's compliance position. In U.S. balance of payments accounts, the direct investment entry would be accompanied by an offsetting entry under long- or short-term liabilities to private foreigners or sales of securities to foreigners. If, on the other hand, the subsidiary borrows funds itself, even subject to a guarantee by the parent, the transaction is not counted as direct investment. This financial substitution by the subsidiary is, in practice, difficult to distinguish from a reduction in investment resulting from a reduction in the scale of activity in subsidiaries overall. The trade and earnings effects of such substitution may be quite different, of course.

[38] Scaperlanda, A. E. and Mauer, L. J., p. 420.

[39] Scaperlanda, A. E., The Financial Structure of the Foreign Affiliates of U.S. Direct Investors, OFDI, U.S. Department of Commerce, Washington, D.C., April 1974, pp. 23-47.

cross section of data for 1967, the last year before the imposition of mandatory investment controls. The same model will then be fitted to successive cross sections for each of the first four years after imposition of the mandatory controls. If one assumes that 1967 was a normal year and that the only important structural changes over the next four years resulted solely from imposition of investment controls, the changes in the model's estimators can be taken as a measure of the effect of the control program on investment. Furthermore, the difference between observed and computed values of the dependent variable a_t, for all firms, should provide a measure of the difference between the amount of foreign investment actually made and that which would have been made in the absence of restriction.

This entire procedure is not without considerable peril. First, 1967 may not have been a "normal year." During the period 1965-1967, the U.S. Government had a voluntary foreign investment control program whose purpose also was to reduce the supposed negative effects of foreign investment on the U.S. balance of payments. In general, empirical evidence from published studies suggests that the effects of the voluntary program were fairly small, although the evidence for 1967 is mixed.

Specifically, the Scaperlanda and Mauer study of investment behavior in the E.E.C. found that dummy variables assigning a value of 1 to 1967-1968 and zero to all earlier years provided only a slightly better fit than a dummy variable which assigned zero to 1967. Nevertheless, the fit was better for the first dummy variable. This

suggests that there may have been some reduction (the coefficient of the dummy variable was negative).[40]

On the other hand, Herring and Willett, in a study of the effects of controls on plant and equipment expenditure in European affiliates of U.S. firms, found that a dummy variable assigning zero to 1967 and previous years and 1 to the mandatory program years had a lower t-ratio than a dummy variable designed to measure the differential impact of the voluntary and mandatory programs. The reverse, however, was true where only manufacturing subsidiaries were included.[41]

The question of the amount of reduction in U.S. investment activity during 1967 resulting from the voluntary investment program must remain an open one, with a strong probability that some reduction did occur. To the extent that U.S. foreign investment was already depressed below what it would have been in the absence of any controls, the findings that follow may understate somewhat the total reduction in U.S. investment activity resulting from capital controls generally during the period 1968-1971.

If the data were available, it might be possible to fit the equation for the years 1964 or earlier, before any U.S. government direct investment controls were instituted. Even if data were

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40 Scaperlanda, A. E. and Mauer, L. J., pp. 420-421.

41 Herring, R. and Willett, T. D., p. 66.

available, however, there would be an increasing danger that other institutional changes would obscure the results. The ceteris paribus assumption is crucial.

This brings us to a further difficulty in interpreting the results of this section. The assumption implicitly made in the results that follow is that all changes in the estimators from their 1967 values result from the mandatory capital control program. To the extent that other unrelated and unspecified institutional changes may have occurred, the changes in estimators will reflect this also.

In spite of all the potential pitfalls associated with their interpretation, the results are interesting. The single-equation flexible accelerator model, based on the Scaperlanda study mentioned above,[42] is:

$$a_t = f(S_{t-1}, s_t, a_{t-1}, w_t, e_t) \tag{18}$$

Where S_t is the total of foreign affiliate sales in the previous year (in practice, total foreign affiliate revenues, which may include some non-sales revenues), s_t is the change in sales in the current year, and a_t, w_t, and e_t are, as previously, the flow of investment, withholding taxes, and earnings, during time t.

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[42] The basic flexible accelerator model, used primarily in connection with studies of plant and equipment investment, assumes that current period investment is a function of the size of the market (S), the rate of growth of the market (s), and the previous period's investment. The latter's coefficient includes both replacement and speed of adjustment effects. To this basic model I have added affiliate earnings and foreign withholding taxes as explanatory variables. See Scaperlanda, A. E., pp. 23-24.

2. Fitting the Direct Investment Model

The results of fitting equation (18) to successive cross sections of 349 firms for 1967 through 1971 are summarized in Table VI.

Two rather startling results are apparent as we move from 1967 to 1968. First, the earnings coefficient, which was so powerful in 1967, dropped substantially. Second, the change in sales variable assumed a powerful explanatory role in 1968, while it had a virtually zero coefficient in 1967. A possible explanation for the latter could be the Office's specific authorization policy. In order not to damage exports inadvertently, the Office granted specific authorizations for increases in the extension of export credits. These increases in export credits to foreign affiliates are likely to be highly dependent on increases in final sales by the affiliates themselves. Unfortunately, export data for 1968 that might test this hypothesis are unavailable.

The general deterioration of the model in 1969 is somewhat surprising. The overall fit declined sharply from both of the previous years. It recovered to approximately its earlier overall level in 1970 and 1971. The powerful impact of the earnings variable is again apparent in 1969 and subsequent years. The value of the estimator remains close to 50% for 1969-1971. In this sense, the most important of the underlying structural relationships appears to have been restored to its pre-Program level fairly quickly after the first year of the Program.

Table VI

SUMMARY OF RESULTS FOR DIRECT INVESTMENT EQUATION 1967-1971

Year	Constant	S_{t-1}	s_t	a_{t-1}	w_t	e_t	$\bar{R}^2$	$\overline{See}$	
1967	+1.263	+.0021 (.672)	-.0016 (.162)	+.2052 (4.556)**	-1.878 (3.711)**	+.4989 (14.788)**	.820	12.3	(19)
1968	+1.069	-.0083 (1.962)	+.1363 (11.859)**	+.3632 (6.252)**	-1.040 (1.835)	+.1300 (3.103)**	.730	15.9	(20)
1969	+1.402	-.0235 (2.785)**	+.1180 (3.036)**	+.0060 (.069)	-1.263 (.671)	+.5203 (6.933)**	.424	35.2	(21)
1970	+2.193	-.0016 (.274)	+.1256 (7.517)**	-.2411 (5.216)**	-6.095 (7.872)**	+.6462 (14.369)**	.713	30.0	(22)
1971	+.8635	+.0298 (9.441)**	-.0696 (3.764)**	-.0933 (3.343)**	-1.279 (3.656)**	+.4535 (19.715)**	.909	16.6	(23)

Similarly, after two years in which the withholding tax variable had a non-significant estimator, it returned to values which were significant at the 99% level and carried the expected sign in the years 1970 and 1971. For the remaining three variables, however, the situation is rather different. As might have been expected, the relationship with the lagged dependent variable in 1969 was not significant. In succeeding years, however, the size of the lagged dependent variable became negative and significant at the 99% level. This suggests that the duration of investment projects, or the investment planning horizon, had been shortened to less than one year, rather than spreading over periods of more than a year, as a positive sign would suggest. The distinctly smaller absolute value of the 1971 estimator may indicate that this effect had begun to decay.

The most perplexing aspect of the behavior of the flexible accelerator model in 1969 through 1971 is the behavior of lagged sales and current period change in sales. These two variables were not significant in the pre-Program year 1967. As suggested above, the behavior of the change-in-sales variable in the Program years is possibly explained by the special treatment given to increases in export credit extensions to subsidiaries under the Program. Why this coefficient should carry a negative sign in 1971, albeit with a fairly small value for the coefficient, is not clear.

As with the previous equations, there is a problem throughout with multicollinearity. The regression and correlation matrices are given in Table VII. The most serious case of collinearity is between e_t and S_{t-1}. The correlation coefficient is approximately .9 for every year.

However, the coefficients of both S_{t-1} and e_t do not differ substantially in their relative size, when a_t is regressed on them individually. This suggests that the error is small. Substantial collinearity also exists between e_t and a_t in every year. Here the situation is less clear. It is possible that e_t picks up part of the influence properly attributed to a_t.

3. The Shortfall of Investment

As suggested at the beginning of this section, one can compute the shortfall of the actual from the computed values based on 1967 coefficients. This will give an estimate of the effect of the mandatory Program on the total amount of foreign investment in each year. This assumes that the base year 1967 is "normal" and that all changes in estimators result from capital controls. As mentioned earlier, this may not be so.

The estimated reductions for each of the four years resulting from the computation are given in Table VIII. The decline in the shortfall of investment from $1,285 million below the unconstrained level in 1968 to a mere $383 million in 1971 may be attributed to a number of causes. The Program had been repeatedly liberalized in each year since 1969. Perhaps as investors acquired knowledge about

Table VII

MATRICES OF SIMPLE REGRESSION AND CORRELATION COEFFICIENTS
FOR EACH CROSS SECTION - DIRECT INVESTMENT

1967

Regression Matrix - Dependent Variables

		a_{1967}	S_{1966}	s_{1967}	a_{1966}	w_{1967}	e_{1967}
	a_{1967}	-	13.6	-.185	.541	.021	1.45
	S_{1966}	.049	-	-.043	.029	.001	.087
Independent Variables	s_{1967}	-.029	-1.86	-	.054	.001	-.066
	a_{1966}	.998	14.9	.627	-	.031	1.65
	w_{1967}	9.36	159.	3.19	7.45	-	18.9
	e_{1967}	.558	9.26	-.159	.344	.017	-

Correlation Matrix

	a_{1967}	S_{1966}	s_{1967}	a_{1966}	w_{1967}	e_{1967}
a_{1967}	-					
S_{1966}	.817	-				
s_{1967}	-.073	-.282	-			
a_{1966}	.735	.659	.184	-		
w_{1967}	.448	.740	-.043	.484	-	
e_{1967}	.899	.899	-.102	.753	.689	-

Table VII (Continued)

1968

Regression Matrix

	a_{1968}	S_{1967}	s_{1968}	a_{1967}	w_{1968}	e_{1968}
a_{1968}	-	10.8	2.70	.743	.016	1.54
S_{1967}	.046	-	.161	.052	.002	.119
s_{1968}	.236	3.30	-	.203	.006	.459
a_{1967}	.823	13.4	2.58	-	.022	1.86
w_{1968}	6.54	157.	25.7	7.93	-	19.1
e_{1968}	.397	7.15	1.34	.432	.012	-

Correlation Matrix

	a_{1968}	S_{1967}	s_{1968}	a_{1967}	w_{1968}	e_{1968}
a_{1968}	-					
S_{1967}	.707	-				
s_{1968}	.799	.730	-			
a_{1967}	.782	.832	.724	-		
w_{1968}	.327	.513	.380	.417	-	
e_{1968}	.783	.923	.779	.897	.485	-

Table VII (Continued)

1969

Regression Matrix

	a_{1969}	S_{1968}	s_{1969}	a_{1968}	w_{1969}	e_{1969}
a_{1969}	-	7.37	.721	.414	.014	.962
S_{1968}	.041	-	.065	.049	.001	.106
s_{1969}	.304	4.88	-	.244	.015	.539
a_{1968}	.590	12.6	.826	-	.014	1.47
w_{1969}	13.0	234.	32.6	9.05	-	25.6
e_{1969}	.412	8.10	.548	.442	.012	-

Correlation Matrix

	a_{1969}	S_{1968}	s_{1969}	a_{1968}	w_{1969}	e_{1969}
a_{1969}	-					
S_{1968}	.551	-				
s_{1969}	.468	.562	-			
a_{1968}	.494	.788	.449	-		
w_{1969}	.429	.579	.701	.358	-	
e_{1969}	.629	.925	.543	.806	.554	-

Table VII (Continued)

1970

Regression Matrix

	a_{1970}	S_{1969}	s_{1970}	a_{1969}	w_{1970}	e_{1970}
a_{1970}	-	8.28	.697	.300	.020	1.30
S_{1969}	.059	-	.042	.040	.003	.126
s_{1970}	.168	1.42	-	.154	.014	.221
a_{1969}	.440	8.09	.939	-	.036	1.23
w_{1970}	6.84	125.	19.0	8.26	-	19.7
e_{1970}	.478	6.48	.390	.309	.022	-

Correlation Matrix

	a_{1970}	S_{1969}	s_{1970}	a_{1969}	w_{1970}	e_{1970}
a_{1970}	-					
S_{1969}	.702	-				
s_{1970}	.342	.245	-			
a_{1969}	.363	.566	.381	-		
w_{1970}	.374	.581	.510	.547	-	
e_{1970}	.789	.905	.316	.617	.654	-

Table VII (Continued)

1971

Regression Matrix

	a_{1971}	S_{1970}	s_{1971}	a_{1970}	w_{1971}	e_{1971}
a_{1971}	-	11.2	2.19	.726	.033	.185
S_{1970}	.070	-	.181	.058	.003	.136
s_{1971}	.335	.044	-	.316	.012	.698
a_{1970}	.704	.090	.020	-	.021	1.53
w_{1971}	8.91	120.	20.2	5.73	-	18.9
e_{1971}	.478	5.62	1.18	.408	.018	-

Correlation Matrix

	a_{1971}	S_{1970}	s_{1971}	a_{1970}	w_{1971}	e_{1971}
a_{1971}	-					
S_{1970}	.885	-				
s_{1971}	.856	.895	-			
a_{1970}	.715	.721	.796	-		
w_{1971}	.546	.581	.484	.346	-	
e_{1971}	.940	.874	.907	.791	.587	-

Table VIII

SHORTFALL OF ACTUAL FROM COMPUTED INVESTMENT
USING 1967 ESTIMATORS

(Millions of Dollars)

Year	Shortfall
1968	1,285
1969	1,084
1970	927
1971	343

the Program itself or the Eurodollar and Eurobond markets, the implicit cost to them may have declined. That is, a knowledge of unfamiliar institutional arrangements is not free. It requires an investment of management time if nothing else. For practical purposes, acquiring such knowledge is a once-and-for-all cost. Early in the Program it may be that some American managers (particularly of smaller firms) estimated the cost of foreign borrowing, including the cost of acquiring a knowledge of institutional arrangements, to be more than the cost of reducing investment. This would be especially true if the control program should turn out to be of short duration. In later years, when it became clear that the Program would be of longer duration, the estimate of that cost, spread over a number of years' investment projects, would be reduced.

In passing, it is interesting to compare these estimates to those arrived at by Herring and Willett for 1968 and 1969. Their estimates are confined to plant and equipment expenditures which normally would be expected to be about half of all foreign investment. They found a shortfall of $581 million in 1968, decreasing to $565 million in 1969 for all U.S. direct investment in Europe.[43] Since the Program was most restrictive in Western Europe, we would expect any decrease in investment to be concentrated there. The Scaperlanda and Mauer estimate suggests a reduction in all investment, depending on the exact specification of the dummy variable, of $492 million to

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[43] Herring, R. and Willett, T. D., p. 67.

$589 million in the E.E.C. alone, for 1968 and 1969.[44] This would not be inconsistent with my estimates above for a decrease in world-wide investment of $1,285 million in 1968 and $1,084 million in 1969. More discussion of these studies is given in Appendix B.

E. FOREIGN BORROWING BY U.S. FIRMS AND INTEREST COSTS

Undoubtedly the largest balance of payments effect of the Foreign Direct Investments Program was the amount of foreign borrowing by direct investors which it induced. As mentioned earlier, under the Program, foreign borrowings by a direct investor could be "allocated" to positive foreign investment and subtracted from transfers of capital and reinvested earnings in computing the direct investor's "program direct investment." Program Direct Investment was required to be within the direct investor's "allowable" or ceiling for each scheduled area for each year. It was required that the proceeds of the borrowing either be transferred to a foreign affiliate or repatriated to the United States. The borrowings to be "allocated" were required to be continuously outstanding for at least twelve months. Their repayment would constitute a transfer of capital for compliance purposes at the time of repayment.

It has generally been assumed, probably correctly, that most foreign borrowings made by direct investors, particularly in the first years of the Program, were made solely to comply with the

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[44] Scaperlanda, A. E., and Mauer, L. J., p. 421.

Program. However, the amount of borrowings actually "allocated" was less than the total amount of borrowing outstanding for every year. (See Table IX.) It may be that it was less costly for a firm to make one large borrowing than a number of smaller ones; to make two or three years' borrowings at one time. On the other hand, it may be that some firms found it advantageous, in spite of the apparent cost differential, to make foreign borrowings unrelated to the capital control program. SEC registration requirements might prompt this, for example. Since some foreign borrowings may have been made for purposes other than Program compliance, the amount of foreign borrowing actually generated by the Program is likely to be somewhat smaller than the amount shown in column (5). It is also possible that some of the borrowings reported as used for Program compliance (column 2) would have been made in any case. It seems unlikely that substantial amounts of borrowing were made for other than Program compliance purposes, given the fairly substantial differential in European and American interest rates during this period.

Table IX

BORROWING AND INTEREST RATE DATA

1968-1971

Year	New Borrowing (1)	Borrowings Allocated For Compliance Purposes Net Of Repayments (2)	Interest Payments (3)	Weighted Interest Rate (4)	Cumulative Foreign Debt Outstanding (5)
1968	3,737	2,181	118	6.23%	3,727
1969	2,261	2,243	313	7.06%	5,788
1970	3,479	2,463	556	8.21%	9,467
1971	1,774	2,146	646	7.23%	11,241

Source: Foreign Direct Investment Program, Selected Statistics, December 1973, and summaries of reports filed with the office.

Table X

SUMMARY OF BALANCE OF PAYMENTS EFFECTS

1968-1971

(Millions of Dollars)

Year	Reduction in Investment (1)	Cumulative Reduction in Investment (2)	Reduction in Earnings* (3)	Reduction in Exports** (4)	Net Foreign Borrowing (5)	Interest on Foreign Borrowing (6)
1968	1,285	1,285	231	273	3,727	118
1969	1,084	2,369	426	342	2,061	313
1970	927	3,296	593	402	3,679	556
1971	343	3,639	655	359	1,774	646

* 18% of column (2).
** 12.53% of column (1) plus 8.68% of column (2).

Sources: Column (1) Table VI; Column (5) and Column (6): Table VII, Columns (1) and (3); earnings coefficient is from Table III, Column (3); export coefficients are from Equation (10).

III. CONCLUSIONS

From the results of Section II D and II E, some conclusions are clear. The program induced a reduction in the level of direct investment of something over $1 billion in the first two years of its existence. This declined somewhat thereafter. In addition, the Program induced perhaps as much as $11.2 billion in foreign borrowing in the first four years of its existence. Table X summarizes possible estimates of the four classes of effects considered thus far: exports from parent to affiliate, earnings, reduction in the level of investment, and the two effects associated with foreign borrowing.

To arrive at the total balance of payments effect for a given year, one could take the sum of columns (1) and (5), less the sum of columns (3), (4) and (6). As has been emphasized repeatedly throughout, such a summation should be considered with the utmost caution. However, the Program was, and was always intended to be, of a temporary nature. Therefore, we must take into account the fact that the inflows associated with columns (1) and (5) are of a temporary nature and will, presumably, be reversed at some future date after the elimination of controls. A summary measure is required which permits us to compare inflows in 1968 and 1969 with outflows in 1974 and later.

A. THE PRESENT VALUE OF INVESTMENT CONTROLS AND THE INTERNAL RATE OF DISCOUNT

There are two summary measures of the impact of the controls on the balance of payments over all time periods. One approach is to sum the discounted present value of all effects over all time periods from the initial year to the infinitely distant future. There are a number of reasons for not adopting this approach.[45] The results are sensitive to the choice of interest rate. The computation requires a knowledge of the adjustment path after removal of controls, and the computation requires a comprehensive measure of Program restrictiveness which the nature of the Foreign Direct Investment Program rendered extremely difficult. Lindert showed that a relatively simple computation of an internal rate of discount would apply equally under all likely assumptions. This computation is:

$$\bar{\rho} = \frac{x + r}{1 - v} \tag{24}$$

Although it has a more formal derivation,[46] one can think of $\bar{\rho}$ as a rate of return to the U.S. balance of payments on capital outflows, adjusted to take into account that only (1-v) of direct investment is an actual balance of payments outflow. Moreover, Lindert showed that $\bar{\rho}$ is unique, having only one finite value which sets each

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45 For a detailed discussion of the evaluation of both the present value and the internal rate of discount approaches, the interested reader is advised to consult Lindert, P., pp. 1080-1093.

46 Ibid., p. 1093.

alternative present value computation equal to zero.

In many ways the internal rate of discount is likely to be more useful than the present-value approach for policy evaluation purposes because, in fact, the realistic alternatives to introducing mandatory investment controls (other than devaluation, of course) were various types of borrowing by the United States. One was the replacement of liquid U.S. liabilities with non-liquid government bonds.

Another alternative would have been simply to allow short-term liabilities to accumulate, earning for foreigners whatever interest such short-term U.S. liquid liabilities would earn. A comparison can be made of the rate of interest to be paid on these instruments with the internal rate of discount implicit in the Foreign Direct Investments Program. This would indicate whether the government in 1968 made a wise or unwise choice among the various policy alternatives available.

B. THE INTERNAL RATE OF DISCOUNT ASSOCIATED WITH FOREIGN ASSET FORMATION

Using the estimates derived from equation (10) to estimate trade effects and the rate of return (r) calculated in Table III, column (3), gives the following estimate of $\bar{\rho}$, the internal rate of discount associated with restricting foreign investments:

$$\bar{\rho} = \frac{.0868 + .180}{1 - .1253} = .305 \qquad (25)$$

The cost -- the implicit balance of payments rate of return measured by $\bar{\rho}$ -- is over thirty percent. This cost of restricting the growth of U.S. foreign affiliates would appear to be much greater than the cost of alternatives such as the sale of government securities to non-residents of the United States.[47] There are two reasons for suspecting that $\bar{\rho}$ overstates the true internal rate of discount, however. First, some part of the reduction in direct investment resulting from the mandatory program represents a substitution of foreign for U.S. source funds on the part of foreign subsidiaries themselves. To the extent that this is so, r in the internal rate of discount computation should be the rate of interest paid by these subsidiaries on their foreign financing. Second, even if the reduction in direct investment represents an actual decline in the scale of operation of foreign subsidiaries, the projects likely to have been foregone are those whose anticipated rates of return did not justify the increased cost of capital associated with foreign borrowing. That is, r in equation (25) may be overstated. Applying the average rate of return on all investments to such projects may be seriously misleading.

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[47] For example, the over-the-counter bid yields on Treasury bills with 90 days or less to maturity on the last trading day of the month ranged from 4.38% to 6.61% in 1968. Treasury Bulletin, June 1968, p. 75, and January 1969, p. 75.

C. THE INTERNAL RATE OF DISCOUNT ASSOCIATED WITH FOREIGN BORROWING

The internal rate of discount associated with the foreign borrowing alternative would be given by the weighted interest rate paid on such borrowings (assuming, as seems likely, that such borrowing in no way affects trade patterns or the profitability of investment projects).

This weighted interest rate, repeating from Table IX, is $\bar{\rho} = 6.23\%$ for 1968. Clearly the decision to permit use of foreign borrowing for compliance, rather than simply restricting foreign asset formation by U.S. firms, was an extremely sound one. However, it would appear that the internal rate of discount associated with foreign borrowing was still higher than the rate of interest paid on government securities during this period. To the extent that foreign asset formation was restricted by the Program, as Section II D indicated that it was, the impact on the balance of payments relative to alternatives available seems negative in the extreme. To the extent that the interest rate on foreign borrowing was greater than the interest rate on alternatives, the Program would still have been an inferior policy choice. Concentrating on non-liquid government securities, Table XI gives the range of interest rates paid on dollar-denominated non-marketable securities issued to foreign official institutions.

Given the wise range of interest paid on such non-liquid U.S. Treasury borrowings, the advantage of making such borrowings as an alternative to requiring long-term foreign borrowing by direct investors is less clear.

Table XI

RANGE OF INTEREST RATES ON NON-MARKETABLE U.S. GOVERNMENT DOLLAR-DENOMINATED SECURITIES VS. OFDI FOREIGN BORROWING INTEREST RATES

Year	(1) OFDI Weighted Interest Rate	(2) Treasury Non-Liquid Minimum	(3) Treasury Non-Liquid Maximum
1968	6.22%	4.85	6.40
1969	7.06	5.50	8.10
1970	8.21	4.75	8.10
1971	7.23	3.35	7.60

Sources: Treasury Bulletin, Table 9, February 1969; Table PDO-9, February 1970; Table PDO-8, February 1971; and Table PDO-8, February 1972; Column (1) from data reported to OFDI.

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APPENDIX A

DEFINITIONAL PROBLEMS AND DATA SOURCES

Much of the discussion of Foreign Investment is complicated by variations in terminology and differences in definitions of key variables. The purpose of this appendix is to consider these questions and also the data used in the estimates given in Section II.

A. DEFINITIONAL QUESTIONS

1. Transfers of Capital

The term transfer of capital has been used in three distinct ways in connection with the foreign investments program. In the first sense, it includes transfer of funds and goods and services by the parent to incorporated affiliates (net of payment for such goods and services) plus the net increase in the parent's share of assets of unincorporated affiliates. In this use, transfer of capital corresponds to Direct Investment as shown in the U.S. balance of payment statistics, a source of some further confusion. It is generally in this first sense that transfer of capital has been used in this paper. In the second sense, transfer of capital includes the above plus repayment of foreign borrowings which have previously been used to offset direct investment and bring the investor within his allowable. In the third sense, transfer of capital includes the second, less foreign borrowed funds which have been transferred to a foreign affiliate. This last was called net transfers of capital, although the first two are net of reverse flows. It was net transfers of capital which were prohibited to Schedule C countries during 1968.

2. Earnings Remitted

Throughout this paper total affiliate earnings rather than remitted earnings have been treated as if they were an inflow to the United States. This treatment differs from that used in many early studies in this field. Many of these studies have focused solely on remitted earnings.

There is no reason why investors should distinguish between new investment financed internally within the foreign affiliate through reinvested earnings, and new investment financed, in one way or another, through the parent, apart from considerations of the relative cost of capital. Depending on the relative cost of capital among the various potential means of financing new investment and the expected profitability of new investment at home and abroad, all foreign affiliate earnings are potentially positive items in the U.S. balance of payments. To illustrate the point in another context, if a person buys an annuity, and uses the first year's receipts from the annuity to buy a second annuity, one would not normally say that his first year's receipts from the first annuity were zero, nor that the second annuity cost him nothing. Yet the focus on transfers of capital, ignoring reinvested earnings, and on remitted earnings rather than total earnings, takes this approach. In my analysis, reinvested earnings have been included as an outflow in direct investment and all of the parent's share of earnings have been included as an inflow.

If the subsidiary is wholly owned by the parent, it would make no difference to the parent whether its earnings from the subsidiary were received as interest payments or as dividends, apart from tax or similar considerations. Moreover, there is little reason to suppose that the choice, in the case of a parent dealing with a wholly-owned subsidiary, between receiving interest payments and receiving dividends is significantly affected by the accounting nature of its capital contribution to the affiliate, whether it is an equity contribution or a loan.

B. DATA USED

A general difficulty with using OFDI data is that, with certain exceptions, the data were obtained for administrative or regulatory purposes rather than for purposes of economic analysis. This leads to two sorts of sub-difficulties. First, the definition of various items may not be precisely the ones desired for economic analysis. In particular, definitions of specific items differed slightly from those used by the Commerce Department's Bureau of Economic Analysis in its official balance of payments statistics. In most cases, the Office took care to collect sufficient information on its report forms to be able to derive, as nearly as possible, definitions of key balance of payments items consistent with the official balance of payments statistics, even where the regulatory definition differed. The second sub-difficulty is that various surveys and report forms differed in coverage.

In general, OFDI data covering earnings, capital transfers, and dividend behavior were collected in 1968 for the years 1965, 1966, and 1967. Thereafter, data were collected for the same items quarterly. Data for the foreign affiliate financial survey, covering balance sheet and income statement items consolidated for all majority-owned foreign affiliates, are available annually beginning with 1966. A survey covering direct investor exports and extensions of credit to foreign affiliates, conducted in 1968, collected annual data for 1965 through 1967.

Various surveys also differed in coverage. Specifically, the Base Period Report (Form FDI-101) giving investment and earnings data for the period 1965-1967 was filed by all 3,417 firms which were subject to the program in 1968. Similarly, the 1968 Annual Report (FDI-102) was filed by all 3,290 firms which were direct investors at the end of 1968. The same was true for the FDI-102 for subsequent years until 1973. Most small direct investors, however, filed an abbreviated form. Most other surveys were gathered from only a sample of direct investors. The form AFN (Affiliated Foreign National) Financial Structure and Related Data (FDI-105) was collected from 440 large direct investors. One other survey used in this study, Direct Investor's Exports and Export Credits (FDI-104), was collected once, in 1968. This survey was voluntary and only 239 of the reporters filing FDI-105 also filed FDI-104.

Details of long-term foreign borrowing were collected on Supplement F of the FDI-102 for 1970 and later years. This form collected information on individual borrowings by direct investors. Items collected included amounts originally borrowed and amounts outstanding as of the date of the report. Data were also collected on month and year of borrowing and interest rates. This data forms the basis for the computations in Section II E.

APPENDIX B

PREVIOUS EMPIRICAL ESTIMATES OF THE BALANCE OF PAYMENTS EFFECTS OF THE U.S. DIRECT INVESTMENT CONTROLS

A number of attempts have been made since 1968 to assess the balance of payments effects of the Foreign Direct Investments Program. These studies have employed a variety of techniques and have been applied to a variety of data sources. The purpose of this appendix is to consider in some detail the principle previous attempts to arrive at these empirical estimates. The focus here will be on studies of effects of restricting foreign investment. Of necessity, this will involve studies dealing with the broader question of the balance of payments effects of foreign investment itself.

These studies have generally been divided into two types. First are those that focus on the amount of reduction in foreign investment resulting from the controls. In general, these studies have not dealt directly with the secondary effects on trade and earnings resulting from this reduction. Second are those studies concerned with the balance of payments effects of any reduction in investment. These studies have tended to concentrate on trade, earnings, and similar effects of a reduction in investment without actually attempting to estimate the reductions that have taken place.

One of the earliest studies of the first type was one undertaken by Richard Herring and Thomas D. Willett. Their study attempted to estimate the amount of reduction in plant and equipment

expenditure resulting from the Program in 1968 and 1969. They used three different approaches to estimate this reduction.

First, they compared actual plant and equipment expenditures in 1968 with those that firms had projected to the Department of Commerce, Office of Business Economics, in June 1967. They found that in Schedule C countries, continental Western Europe, actual plant and equipment expenditures were only 82% of what had been forecast in June 1967. In Schedule B, these expenditures were actually 3% higher than had been forecast. In Schedule A, the less developed countries, actual expenditures were equal to the forecast. In contrast, in 1967, plant and equipment expenditures were within 4% of the June 1966 forecast in all three Schedules. The 1968 pattern would be consistent with the actual structure of the Program which was most restrictive in Schedule C. These projections would translate into a reduction of plant and equipment expenditures of approximately $700 million in Schedule C in 1968.[48]

The second technique used by Herring and Willett involves a relationship they observed in the course of another study. They observed a very close empirical relationship between plant and equipment expenditures in the United States and similar expenditures abroad. Based on this, they fitted an equation explaining foreign plant and equipment expenditures by domestic expenditures and a time trend. The equation was fitted to eleven observations for 1957-1967.

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[48] Herring, R. and Willett, T. D., pp. 62-64.

Based on the estimators derived, and the value of domestic expenditures in 1968 and 1969, they forecast a level of expenditures $581 million higher than that actually observed for investment in all industries in Europe in 1968. The forecast for manufacturing investment worldwide was $686 million greater than was observed. Slightly smaller reductions were derived, using the same technique, for 1969.[49]

Third, Herring and Willett fitted the same equation to data for 1957-1969, with a dummy variable used to measure the impact of controls. Depending on the exact specification of the dummy variable, they estimated a reduction of $532 million to $624 million for all plant and equipment in Europe and a reduction of $617 million to $810 million for all investment in manufacturing worldwide.[50]

The second major attempt to estimate the reduction in investment was made by Anthony Scaperlanda and Lawrence Mauer. They had determined in an earlier study that market size was the major influence on U.S. direct investment in the original E.E.C. They then fitted a model in which investment expenditure was the dependent variable and E.E.C., GNP and a dummy variable were the independent variables. The model was tested on a time series of data for 1952-1969. A variety of specifications for the dummy variable were employed to measure the effects of capital controls. One test assigned zero to the years prior to 1967 and one to 1967-1969. This actually produced

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49 Ibid., pp. 64-67.

50 Ibid., pp. 66-68.

the highest t-statistic. Using this specification for the dummy variable produced an estimate of the reduction of all U.S. investment in the E.E.C. of $512 million for 1968-1969. Alternative specifications produced estimates of $492 million to $589 million.[51]

Turning to the second major type of empirical study, the following have attempted to estimate the total effect on the balance of payments of an increase or decrease in U.S. foreign investments. The Bell study discussed in Section I of this paper arrived at estimates of earnings remittances and trade effects based on historical averages of earnings as a percentage of book value of investment, the historical percentage of earnings remitted, and historical trade ratios.[52]

The Hufbauer and Adler study attempted a comprehensive estimation of the balance of payments effects of foreign investment. They identified nine balance of payments effects in addition to that caused by the initial capital outflow. These effects were then computed for four geographic areas, Canada, Latin America, Europe, and Rest of World, under their three investment substitution assumptions. These substitution assumptions were discussed in some detail in Section I.

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51 Scaperlanda, A. E. and Mauer, L. J., pp. 420-422.

52 Bell, P. W., pp. 401-414.

For the most part, these effects were calculated from averages of recent historical experience. The exception to this was their estimate of the export displacement effect. This was estimated by fitting an equation with imports from the United States as a percentage of market activity (domestic production plus imports) as the dependent variable. The independent variables were sales by U.S. subsidiaries divided by total market activity and sales by other firms divided by total market activity. A time trend was also added. This equation was fitted to two sets of data. The first consisted of observations for all manufacturing for 14 countries over a seven year period. The second consisted of observations for eight product groups for three geographic areas for the same seven year period.[53]

The Hufbauer and Adler estimates vary widely from one geographic area to another and depend crucially on the substitution assumptions adopted. In this sense, their study enumerates the possible investment effects without arriving at a conclusion about which set of estimates is most probable.[54]

In many cases, the Hufbauer and Adler estimates of overall balance of payments effects show that the overall effect is negative. The investment outflow gives rise to further outflows in subsequent years. According to these estimates, investment unambiguously worsens

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[53] Hufbauer, G. C. and Adler, F. M., pp. 33-66.

[54] Ibid.

the balance of payments. Their conclusion results from the very large export displacement effect. According to their estimates, a unit increase in the market share of U.S. foreign subsidiaries (under classical and anticlassical assumptions) results in a .79 reduction in the market share of U.S. exports to Canada, a .406 reduction to Latin America, a .108 reduction to Europe, and a .758 reduction to the rest of the world.[55] If investment worsens the balance of payments, investment restriction would appear to improve the balance.

The Lindert study discussed in Section I attempted a limited empirical estimation of its summary measure, $\bar{\rho}$, the internal rate of discount associated with foreign investment or its restriction. Lindert employed estimates from the Hufbauer and Adler study with certain modifications and also estimates from the Reddaway Report for United Kingdom foreign investment. Calculations were made for the same four geographic areas as in the Hufbauer and Adler study. For his estimates of the three components used to calculate $\bar{\rho}$, Lindert employed data using their reverse classical substitution assumption. This assumption is that foreign investment makes no net addition to host-country productive capacity and makes no net reduction in home-country capacity.

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55 Ibid., p. 46.

Lindert included fees and royalties in earnings remissions (r).[56] All of the Hufbauer and Adler multiplier effects are excluded on the assumption that governments will take action to cancel out such effects. The resulting estimate of earnings remittances ranged from 10.9% in Canada to 19.7% in the rest of the world.[57]

In his estimates of the trade effects associated with the capital flow (v), Lindert simply employed the Hufbauer and Adler net capital equipment effect which was derived from a historical ratio. The estimates ranged from zero percent in Latin America,[58] to 12.1 percent in Canada. His estimate of the permanent stimulation of U.S. exports by U.S. foreign investment (x) was the sum of the Hufbauer and Adler estimates of net parts and components effects, net import effects in the U.S., and the export displacement effect. The first two were based on historical ratios. These estimates ranged from 4.3% in Canada to a minimum 21.4% in the rest of the world.

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56 Lindert, P., pp. 1095-1097.

57 Ibid., Table 2, p. 1096.

58 The Hufbauer and Adler report found that U.S. exports, as a percentage of plant and equipment expenditures, were the same for U.S. subsidiaries as for native firms in the 1957-1964 period on which the estimates were based. Assuming a reverse classical framework, the plant and equipment effect (v) is based on the difference between U.S. subsidiary and host-country-firm propensity to import from the U.S.; Hufbauer, G. C. and Adler, F. M., Table 3-3 and 3-5.

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THE EFFECT OF THE FOREIGN DIRECT INVESTMENT PROGRAM
ON THE U.S. BALANCE OF PAYMENTS

by

Robert Vincent Burke

(ABSTRACT)

This study evaluates the effect of the Foreign Direct Investment Program on the U.S. balance of payments. It fits several simple models to cross-section data reported to the Office of Foreign Direct Investments by U.S. multinational firms. With these, estimates of earnings and exports associated with direct investments were made. The reduction in the level of direct investment itself was estimated, using a flexible accelerator model. Finally, the amount of foreign borrowing and associated interest payments induced by the Program were calculated.

It appears that the Program produced a reduction of about $1 billion in each of its first two years. The reduction in subsequent years was substantially less. The internal rate of discount, a key summary measure of the effect of controls, is discussed. Evidence is presented showing that the internal rate of discount associated with reductions in investment is quite high, suggesting that the Program was an inferior policy choice to the extent that it reduced investment itself.

The internal rate of discount associated with foreign borrowing was substantially less. To the extent that the Program induced foreign borrowing, it appears neither clearly better nor clearly worse than policy alternatives.