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TAXES, LEVERAGE AND THE NATIONAL RETURN ON OUTBOUND FOREIGN DIRECT INVESTMENT

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ABSTRACT

The effect of outbound foreign direct investment (FDI) on the national income of the parent firm's country depends on the relative importance of two countervailing factors: the loss of tax revenue to the foreign government and the increased use of foreign debt. The present paper develops an explicit analysis of these two factors in the context of the segmented international capital market in which most national saving remains in the country in which the saving is done.

The analysis is applied with realistic parameter values for U.S. outbound foreign direct investment. The calculations imply that an increase in outbound FDI raises the present value of U.S. national income by a rather substantial amount.

Traditional analyses that conclude that the foreign tax credit causes excess outbound FDI fail to take into account the fact that firms that invest abroad increase their use of foreign debt as they increase the extent of their FDI.

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Taxes, Leverage and the National Return on Outbound Foreign Direct Investment

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Firms that invest abroad pay taxes on the profits of their foreign subsidiaries to the governments of the countries in which they invest. Outbound foreign direct investment thus causes the government of the home country to lose revenue to the governments of the countries in which the investment occurs. Because U.S. firms receive a tax credit for the taxes that they pay to foreign governments[1], the firms can be indifferent between taxes paid to foreign governments and to the U.S. government. Although the firm can maximize shareholder value by equating the after-tax return on capital at home and abroad, the loss of revenue to the foreign government means that the interest of the multinational company and of its home country need not coincide.

More specifically, the foreign tax credit causes the firm to invest abroad until the after tax rate of return on the foreign investment is equal to the after tax rate of return on investment at home. Since the United States receives the full pretax return on domestic investment (either in the form of taxes or as income of investors), but only the after-tax return on the investment

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[1]The tax credit is essentially limited to the amount of tax that would have been paid to the U.S. government on the same pretax profits. This limit is affected by a variety of rules (for measuring foreign profits and combining taxes paid to several countries) that will not be considered in the current paper.

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of U.S. foreign subsidiaries, critics of the foreign tax credit argue that it causes an excessive amount of foreign direct investment and a reduction in U.S. national income.[2]

This argument fails to take into account the fact that firms that invest abroad increase their use of foreign debt as they increase the extent of their foreign direct investment.[3] Although each firms's overall leverage may be unaffected by the extent of its overseas investments, the U.S. economy as a whole benefits from the use of the additional low cost credit supplied by foreign creditors. While such debt capital might in principle be available to the parent company and therefore to the benefit of the United States through international portfolio investments even in the absence of foreign direct investment, the evidence on the segmentation of the global capital market[4] implies that this would not occur in practice. National saving does not flow to foreign investment opportunities that offer higher rates of return. The advantage of the foreign direct investment is that it permits the U.S. firms and the United States as a whole to utilize foreign debt capital without requiring that capital to cross national borders.

There are several reasons why American firms increase their use of foreign borrowing as they expand their foreign direct investment. First, such borrowing is a way to hedge the

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[2]This criticism of the foreign tax credit was initially discussed in Richman (1963) and Musgrave (1969) and subsequently formalized by Dutton (1982). It has been widely accepted in the analysis of international tax policy; see, e.g., U.S. Joint Committee on Taxation (1991). See also Hines (1992), Horst (1977, 1980) and Feldstein and Hartman (1979).

[3]The evidence presented in section 1 below shows that U.S. firms borrow approximately one dollar from foreign sources for each dollar of equity invested in foreign subsidiaries (including reinvested retained earnings). By contrast, there is virtually no foreign source debt in the financing of U.S. firms outside their foreign affiliates.

[4]Feldstein and Horioka (1980) showed that the saving generated in a country tends to stay in that country. That result has been verified for a variety of different countries, time periods and estimation methods. See Frankel (1985, 1991) and the recent survey and analysis by Mussa and Goldstein (1994).

fluctuations in the value of foreign profits due to fluctuations in currency values. Second, interest allocation rules restrict the amount of U.S. domestic interest that firms can deduct in calculating U.S. taxable income when they have overseas operations. The use of foreign debt permits an interest deduction that would not otherwise be possible. Third, firms may be able to borrow at a lower cost in countries where collateral is available. Fourth, firms can balance the expropriation risk by using local debt to reduce the total net assets at risk in the foreign location.

Regardless of the relative importance of these specific reasons for the link between foreign direct investment and foreign borrowing, such borrowing is to the advantage of the United States whenever the real after-tax cost of the foreign borrowing is less than the after-tax return on the foreign assets acquired with those funds. The net effect of an additional dollar of outbound foreign direct investment on the national income of the United States[5] thus depends on the relative importance of the tax paid to the foreign government and of the advantage obtained by using foreign debt. The present paper presents a framework for calculating these two effects and uses the framework to estimate the effect on U.S. national income of a marginal outbound investment by a U.S. multinational company.[6]

The evidence presented below shows that the favorable leverage effect is likely to outweigh the loss of revenue to the foreign treasury. When the firm equates the after-tax rates

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[5]I use the term "national income" of the United States to include only income received in the United States. The earnings of foreign subsidiaries are not counted until repatriated.

[6]The present analysis thus ignores the possible effects of foreign direct investment on the country's terms of trade. See Kemp (1962) and MacDougall (1960) for a discussion of those issues.

of return on the domestic investment and investment in the foreign subsidiary, the national rate of return to the United States is higher on the foreign investment than on the domestic investment. This result is robust to a wide range of alternative parametric assumptions explored in section 3.

This emphasis on the relative importance of foreign taxes and foreign debt is quite different from the public debate about the desirability of foreign direct investment which has focussed on the effect of such foreign direct investment on the demand for labor in the United States. In its crudest form, the critics of outbound foreign direct investment argue that such investment "destroys American jobs" because the output of the foreign subsidiaries of U.S. firms substitutes for exports from the United States while the supporters of outbound foreign direct investment argue that such investment "creates jobs" because U.S. firms export more when they have foreign subsidiaries. Economists recognize, however, that total employment in an economy with a well-functioning labor market like that of the United States will not be affected by the volume or character of foreign direct investment.[7]

A second confused aspect of the public debate about the appropriate tax policy toward foreign direct investment has been the emphasis placed by the defenders of foreign direct investment on the high profitability of some intramarginal investments in overseas firms. It is undeniable that much foreign direct investment by U.S. multinationals is able to take advantage of the firms' opportunities to earn supernormal profits based on patents, technical know-how,

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[7]See, e.g., the comment of Graham and Krugman (1989) that "*The net impact of foreign direct investment on U.S. employment is approximately zero,* and the truth of this assertion has nothing to do with job gains and losses at the industry level." (page 49; their italics.) See also Lipsey (1994).

brand names, etc. that cannot be fully exploited by producing at home and exporting or by licensing or other means.[8] But the relevant issue is not the average return on foreign direct investment, but whether at the margin the volume of FDI is too high. That is the question that the framework developed in the current paper can answer.

Section 1 presents some basic facts about the financing of investment in the foreign affiliates of U.S. parents and about the extent to which outbound cross-border flows of foreign direct investment displace domestic investment in the United States. Section 2 then develops an analytic framework for the present value calculation and estimates the impact of a typical outbound investment on the present value of U.S. national income. The third section extends the analysis to deal with a more complex and realistic financial structure and then tests the sensitivity of the results to a number of parametric changes.

1. The Financing of Foreign Affiliates and the Displacement of Domestic Investment

Evidence developed by the U.S. Department of Commerce in the 1989 Benchmark Survey of U.S. Investment Abroad implies that only about 20 percent of the value of assets owned by U.S. affiliates abroad is financed by cross-border flows of capital from the United States. An additional 18 percent represents retained earnings attributable to U.S. investors. The rest is financed locally by foreign debt and equity.

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[8]See Froot (1993) for a recent discussion of the reasons for foreign direct investment. Payments from the foreign affiliate to parent for the use of patents, royalties, etc.. are deductible in calculating the taxable income of the subsidiary. The full pretax income is thus transferred from the foreign country to the United States.

Table 1

Sources of Finance of Foreign Affiliates of U.S. Parent Companies

	Dollars (billions)	Percent of Total
External equity capital provided by the U.S. parent and other U.S. investors	$203	16.4
Debt provided by the U.S. parent and other U.S. investors	47	3.8
External equity capital provided by non-U.S. investors	92	7.4
Debt provided by non-U.S. sources	567	45.8
Retained earnings of affiliates attributable to U.S. investors	226	18.3
Retained earnings of affiliates attributable to non-U.S. investors	102	8.2
Total	**$1327**	**100.0**

All figures relate to majority-owned nonbank affiliates of U.S. nonbank parents. Analysis is based on the 1989 Benchmark Survey of U.S. Investment Abroad published by the U.S. Department of Commerce (1992). See the text and Feldstein (1994) for comments on inflation adjustment and other modifications to the Benchmark data.

Table 1 shows the sources of finance of the capital stock of U.S. foreign affiliates in more detail. These figures refer to majority owned nonbank affiliates of U.S. nonbank parents. The historic cost estimates for equity capital presented in the benchmark survey have been adjusted to 1989 price levels.[9]

The total value of the capital stock of these U.S. affiliates at the end of 1989 was $1,237 billion. Of the 20.2 percent financed by U.S. investors, 16.4 percentage points were in the form of equity investments and only 3.8 percent in the form of loans from U.S. parents and other U.S. investors to these foreign affiliates. In contrast, the funds provided to U.S. overseas affiliates from foreign sources were primarily in the form of debt: 45.8 percent of the total $1,237 billion was financed as foreign debt and only 7.4 percent by foreign equity investments. The remaining 26.5 percent of the capital stock was financed by retained earnings, with more than two-thirds of this attributable to the U.S. equity investors. Section 2 of this paper uses a simplified representation of the finance of subsidiaries that ignores U.S. debt and foreign equity investments since these represent less than one-sixth of the total finance. A more complete analysis is presented in section 3.

This distribution of the sources of finance of the assets of U.S. foreign affiliates reflects an aggregation over individual foreign affiliates with different financing mixes at any point in time. A typical foreign affiliate is likely to be financed initially by a transfer of equity and debt from the parent firm combined with some local borrowing in the host country and possibly some local equity investment. After an initial period of operation, the affiliate becomes self-financing,

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[9]Feldstein (1994) discusses the price level adjustment and other smaller modifications of the Benchmark data.

using its own retained earnings and local borrowing to expand its capital stock. At first, therefore, the financing mix of such an affiliate involves no retained earnings and a relatively large share of parent debt and equity finance. As the affiliate ages, the external finance share declines and the share financed by retained earnings increases. The observed mixture of financing sources shown in Table 1 therefore reflects not only the particular leverage ratio of typical companies but also the age distribution and growth rates of the affiliates.

From the point of view of the United States, the national value of a dollar of foreign direct investment is the present value of the resulting flow of subsequent cross border payments back to the United States. The principle component of this cross border flow is dividend payments from the subsidiary to the parent; foreign affiliates of U.S. parents now repatriate dividends equal to approximately 70 percent of their total reported earnings after foreign corporate taxes.[10] The second component is the interest on the credit provided by the parent and other U.S. sources. Against these must be offset any new credit transferred to the subsidiary from the parent and other U.S. sources.[11]

If the present value of these cross-border net payments to the parent firm exceeds the

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[10] Table III.W.1 in 1989 Survey of U.S. Direct Investment Abroad (U.S. Department of Commerce, 1992) shows that nonbank affiliates of nonbank parents paid dividends equal to 74 percent of reported earnings in 1989. Hines and Hubbard (1992) discuss the reasons why foreign subsidiaries pay dividends to their U.S. parent firms despite the apparent tax advantage of postponing repatriation. They also report somewhat lower dividend payment rates for earlier years. During the most recent years for which data are available (1990 through 1992), the dividends of all U.S. foreign affiliates averaged 70 percent of reported earnings (U.S. Department of Commerce, 1993, page 88).

[11] This assumes realistically that the cross-border equity investment is made at the start of the investment and that no subsequent cross-border equity investments are made. All subsequent equity investments are in the form of retained earnings.

present value of the U.S. domestic income that is foregone because of the investment abroad, the foreign direct investment increases the present value of U.S. national income. Making that comparison requires an estimate of the extent to which a dollar of outbound foreign direct investment displaces U.S. domestic investment and of the return that would have been earned on that investment.

Although there is no direct measure of the extent to which U.S. foreign direct investment displaces U.S. domestic investment, indirect evidence suggests that on average each dollar of cross-border outbound foreign direct investment flow reduces gross domestic investment by approximately one dollar (Feldstein, 1994). More specifically, the experience of the major industrial countries of the OECD indicates that an increase in the flow of cross-border outbound foreign direct investment that is sustained for a decade or longer reduces domestic investment by approximately one dollar for each dollar of outbound foreign direct investment.[12]

Although such one-for-one displacement would not be expected in a perfectly integrated world capital market, it is consistent with the capital market segmentation documented in Feldstein and Horioka (1980) and subsequent research.[13] This capital market segmentation view holds that savings generated in a country tend to remain and be invested in that country. However, when a firm transfers funds abroad to finance overseas direct investment, that transfer does appear to reduce domestic investment dollar for dollar. A simple model of corporate

[12]This conclusion is based on a cross section regression of the decade-average ratio of gross domestic investment to GDP on the same decade average ratio of outbound-foreign direct investment to GDP in an equation that also includes a national saving ratio, an inbound-foreign direct investment ratio, and several other variables.

[13]See footnote 4 above.

capital budgeting suggests why this may be true and why the reduction is not offset by a general equilibrium capital market response. Consider a company in the United States that has a fixed amount of after-tax profits. Its dividend payment is effectively determined by a dividend payout ratio that reflects the standard practice within the industry and the expectations of its shareholders. There is only very limited scope for adjusting the dividend payout ratio unless there is an exogenous change in tax rules or other factors that alter the cost of dividend payment. The combination of the retained earnings that remain after this dividend payment and the company's desired debt to capital ratio determines the amount that the company can borrow and therefore the firm's total funds available for capital investments.[14] The key point is that this capital budget calculation is done for the multinational corporation as a whole rather than for the individual subsidiaries. Any use of the firm's capital (including retained earnings and borrowing) for foreign direct investments thus reduces the amount of capital available for domestic investment within the firm.

Such a reduction in domestic investment within a single firm that makes an overseas direct investment does not imply anything about the effect of aggregate outbound FDI on the aggregate level of domestic investment within the U.S. economy as a whole. For example, the domestic investment opportunity that the firm forgoes because it invests abroad might be undertaken by another firm that would otherwise have invested those funds abroad. But when the entire business sector is aggregated, it is clear that a net increase in aggregate foreign direct investment will reduce domestic investment by an equal amount if all firms use the type of

[14]The size of this capital budget could of course be modified by issuing new equity shares, repurchasing existing shares, or selling parts of the operating business. But such actions would be unusual events and not part of the regular annual capital budget process.

capital budgeting process described above.

It is possible, however, that this description of the capital budgeting process is too restrictive. A sustained rise in total national outbound foreign direct investment could in principle leave domestic investment opportunities that induce firms to raise their debt to capital ratio with the additional funds coming from abroad. In other words, the increase in outbound foreign direct investment might in principle induce an offsetting inflow of portfolio capital. The effect of outbound foreign direct investment on total domestic investment thus depends on the extent to which portfolio capital is internationally responsive to investment opportunities. The Feldstein-Horioka type evidence on the segmentation of capital markets suggests that extent of such offsetting international flows of portfolio capital is small. This in turn implies that each dollar of aggregate foreign direct investment outflow reduces domestic investment by approximately one dollar.

If each dollar of outbound FDI does reduce U.S. domestic investment by one dollar, the effect of the foreign direct investment on U.S. national income can be calculated by comparing the value of the displaced investment with the present value of the repatriated funds, discounting at the pretax rate of return on the foregone domestic investment. The pretax rate of return is the appropriate rate for discounting the repatriated dividends because the relevant return on the displaced investment is the return to the United States as a whole, regardless of how that return is divided between investors and the treasury. If the repatriated flow from the subsidiary to the United States has a present value when discounted at the return on the displaced investment that exceeds the amount of that displaced investment, the present value of U.S. national income is increased by the substitution of foreign direct investment for the displaced domestic investment.

In practice, this calculation is more likely to understate the net advantage of outbound investment than to overstate it. Even if each dollar of outbound investment does reduce domestic investment by a dollar, some of that investment is likely to be in owner occupied housing or other forms of capital that have a lower pretax return than investment in plant and equipment. Similarly, if each dollar of outbound investment reduces domestic investment by less than a dollar, the foreign investment would exceed its opportunity cost even if the present value (when discounted at the pretax return on private investment) of the repatriated dividends per dollar of outbound investment were less than one dollar.

2. The Net Present Value of Repatriated Dividends

This section presents a model of the foreign direct investment process and uses it to calculate the net present value of repatriated dividends with a realistic set of parameter values. The model presented in this section is simplified to make the analysis more transparent by ignoring the debt provided from U.S. sources (3.8 percent of the total capital of foreign affiliates) and the equity investments of foreign investors (15.6 percent of total affiliate capital, including retained earnings). These are reintroduced in the analysis of section 3 together with a variety of sensitivity analyses of the current section's results.[15]

Consider a U.S. parent firm that at time $t=0$ makes an initial equity investment, E_0, in a new foreign subsidiary. The subsidiary then borrows locally an amount B_0. After this initial investment, there is no additional transfer from the parent to the affiliate. Instead, the affiliate

[15]This model is thus a stylized version of the analyses by Penrose (1956), Robbins and Stobaugh (1973) and Sinn (1990).

divides its annual earnings between dividends and retained earnings. The capital stock at the end of the year grows by the investment of these retained earnings and of the additional debt that is incurred in proportion to these additional retained earnings. Such a system evolves according to the following system of equations:

If K_t is the capital stock of the affiliate at the end of period t, the gross pretax earnings before interest expenses can be written

(1) $G_t = r K_{t-1}$

The rate of return on foreign subsidiary capital (r) will be taken to be the same as the pretax return on such capital in the United States[16] and will be approximated by $r = 0.12$.[17]

The interest payments of the firm are

(2) $I_t = i B_{t-1}$

where B_{t-1} is the real debt of the firm at the end of period t-1. The calculation in this section will assume a nominal interest rate $i = 0.08$ and an inflation rate of $\pi = 0.04$. The resulting four percent real interest rate is in line with experience for medium term debt of high quality business borrowers.

The foreign government levies a tax on the income of this subsidiary at a statutory rate of t_1. The actual tax on the profits generated by an additional unit of capital depends on depreciation rules and on any investment tax credit as well as on the statutory tax rate. This tax

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[16]A firm that equalizes the after-tax return in the parent company and the subsidiary will also equalize the pretax returns if tax rates and leverage are the same in both countries.

[17]See Feldstein, Poterba and Dicks-Mireaux (1983) for evidence about the pretax real return on capital.

rate on the profit generated by an additional until of capital will be denoted t_2.[18] The total tax levied on the subsidiary by the foreign government is thus:

$$(3)\ T_t = t_2\ r\ K_{t-1} - t_1\ i\ B_{t-1}$$

since the full nominal interest expense is deductible at the statutory tax rate. The analysis that follows will assume that the statutory tax rate levied by the foreign government is $t_1 = 0.40$ and the tax rate on the return to capital is $t_2 = 0.30$.[19]

The net accounting profit of the subsidiary (before recognizing the inflation erosion of the subsidiary's debt) is therefore

$$(4)\ N_t = r\ K_{t-1} - i\ B_{t-1} - T_t$$
$$= (1-t_2)\ r\ K_{t-1} - (1-t_1)\ i\ B_{t-1}.$$

The subsidiary pays a fraction, d, of its accounting profits in dividends and retains the rest:[20]

$$(5)\ D_t = d\ N_t.$$

Based on recent experience, the current analysis assumes $d = 0.7$.

The real retained earnings of the subsidiary is the sum of the nominal accounting earnings

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[18]Note that t_2 would be the effective tax rate in the absence of debt finance.

[19]See Organization for Economic Cooperation and Development (1991) and Jun (1994) for evidence on the statutory and effective tax rates.

[20]The dividend payout rate might instead be stated as a fraction of net economic profits defined by adding the inflation erosion of the debt to the nominal accounting profits. In practice firms appear to base dividends on accounting profits. Since this paper is not concerned with the effect of variations in inflation, the payout rate could be redefined relative to the economic income measure by changing the value of d without any substantial effect on the numerical results.

that are not repatriated as dividends and the inflation erosion of the debt. [21]

(6) $RE_t = (1\text{-}d)\, N_t + \pi\, B_{t-1}$.

If the subsidiary has a constant marginal ratio of debt to capital equal to b, these retained earnings will induce an increase in the subsidiary's debt equal to

(7) $B_t - B_{t-1} = [b/(1\text{-}b)]\, RE_t$.

Since the evidence of section 1 suggested that the parent firm's initial investment plus the associated retained earnings total about 40 percent of the finance of the capital stock of the foreign affiliate, the simplified analysis of this section will assume that the remainder represents the debt supplied by foreigners: b=0.6. Section 3 extends the analysis by including the debt capital supplied by the parent firm and the equity participation by the foreign firm.

Finally, the capital stock of the subsidiary grows by the accumulation of retained earnings as augmented by the increased debt:

(8) $K_t = K_{t-1} + [1/(1\text{-}b)]\, RE_t$.

The model can be consolidated to yield a two-variable first order difference equation system in terms of K_t and B_t with initial conditions $K_0 = E_0$ and $B_0 = [b/(1\text{-}b)]\, K_0$. This system is then used to calculate the time path of dividends and therefore the present value of those dividends discounted at the rate of return on capital, r = 0.12.

With these parameter values [r = 0.12; i= 0.08; π = 0.04; t_1 = 0.4; t_2 = 0.3; d = 0.7 ; and b = 0.6], the present value of the repatriated dividends (discounting at r = 0.12) is

[21]The erosion of the debt increases the value of the equity owners at the expense of the creditors.

5.16.[22] The present value of the repatriated dividends thus exceeds the displaced capital by a multiple of more than 5 to 1. The present value of U.S. national income rises by more than $4 for every dollar of U.S. foreign direct investment.

More relevant perhaps is the calculation that the present value of repatriated dividends (discounting at 12 percent) exceeds the value of the displaced capital before the end of 13 years, indicating that the longer term growth assumptions of the model are not relevant to the basic conclusion that the national value of the foreign direct investment exceeds its opportunity cost. Other measures confirm that the foreign direct investment has a high return to the United States. The crudest method is the simple payback period: the undiscounted sum of accumulated repatriated dividends per dollar of initial foreign investment exceeded one within eight years. The internal rate of return that discounts the repatriated dividends to the initial investment is a very high 19.7 percent.

3. Sensitivity to Alternative Specifications

This section extends the analysis of section 2 to a more realistic model in which foreign firms provide equity capital as well as debt finance and in which U.S. firms provide debt finance as well as equity capital. The parameters of the basic case are chosen to reflect the experience of U.S. foreign affiliates that was described in Table 1. The key parameters of this model are

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[22] The present value is calculated numerically by discounting the dividends to a horizon of 300 years. The present value is still rising at that point, although very slowly. The series converges since the largest latent root of the system that determines D_t is 1.09 and therefore less than the discount factor (1.12). This is also clear from the behavior of the present value which rises from 4.77 with a 150 year horizon to 5.01 with a 200 year horizon and 5.16 with a 300 year horizon.

then varied to show the sensitivity of the results to changes in leverage ratios, taxes, inflation, the real rate of return on capital and the dividend payout rate. In all of the specifications with realistic leverage ratios, the advantage of leverage outweighs the loss of tax revenue and the outbound foreign direct investment raises the present value of U.S. national income.

The basic specification of the full financial structure model starts with the same key parameter values used in the simpler model of section. The real pretax return on the capital stock of the foreign affiliate is $r = 0.12$. The affiliate borrows at a nominal interest rate of $i = 0.08$ and there is an inflation rate of $\pi = 0.04$. The statutory tax rate imposed by the foreign government is at $t_1 = 0.40$ and the effective tax rate on incremental returns to unleveraged equity capital is $t_2 = 0.30$. The affiliate pays 70 percent of its net income in dividends.

The two key differences between the full financial structure model and the simpler model of section 2 are in the specification of the sources of equity and debt capital. The evidence presented in Table 1 shows that U.S. parent companies and other U.S. investors provided $203 billion of external equity capital of U.S. affiliates while non-U.S. investors provided $92 billion of external equity capital. This division will be modeled as 70 percent U.S. equity and 30 percent foreign equity. The retained earnings and dividends are therefore divided in this same ratio, implying that equation 5 of section 2 is replaced by

$$(9) \qquad D_t = 0.7\, d\, N_t$$

where D_t is the dividend payment to U.S. investors.

Table 1 also shows that the U.S. and other U.S. investors provided $47 billion of debt while non-U.S. sources provided $567 billion of debt. Taken together, the debt represents 49.6 percent of the capital stock. This will be approximated by a U.S. debt to capital ratio of $b_{us} =$

0.04 and a foreign source debt to capital ratio of $b^* = 0.46$. Interest payments will be divided so that U.S. creditors receive 8 percent of the interest payments and foreign creditors receive 92 percent of the interest payments.

The effect of foreign direct investment on the annual value of U.S. national income is the sum of the dividend repatriations and the U.S. interest receipts reduced by the incremental lending from U.S. sources:

$$D_t + [b_{us}/(b_{us} + b^*)]iB_{t-1} - [b_{us}/(b_{us}+b^*)]\ RE_t$$

These annual net flows to the United States are discounted at the real return on the foregone U.S. investment, assumed again to be equal to the real return on the capital of the foreign affiliate (r). The foreign direct investment increases the present value of U.S. national income if the present value of the dividends and interest exceeds the value of the U.S. cross border capital outflow that financed that investment. Since the debt to capital ratio is taken to be 0.5 and the U.S. investors finance 70 percent of the equity and 8 percent of the debt, the U.S. external investment is 39 percent of the initial capital.

With this specification, the analysis shows that each dollar of U.S. capital outflow adds $1.72 in present value to U.S. national income. Thus each dollar of outbound foreign investment increases the present value of U.S. national income by nearly 72 cents. The internal rate of return on the foreign investment from the point of view of the United States is 15.1 percent or 3.1 percentage points higher than the 12 percent assumed opportunity cost of the capital. The accumulated value of the interest and dividend receipts (net of the additional lending from U.S. sources) exceeds the initial investment in the tenth year and the present value of the interest and dividend receipts exceeds the initial investment in the 22nd year.

The full financial structure analysis confirms the implication of the simpler model of section 2 that outbound foreign direct investment raises U.S. national income because the advantage of using foreign capital exceeds the loss of revenue to the foreign government. The extent of the advantage is lower with this full specification than in the simpler analysis of section 2 because the full specification recognizes that some of the foreign capital invested in the U.S. affiliate is equity capital rather than debt. Raising the debt to capital ratio of the affiliate to the same 60 percent share that was assumed in the model of section 2 (while keeping the U.S. fraction of that debt unchanged at 8 percent) increases the present value of U.S. receipts per dollar of initial U.S. investment to $4.23, nearly as high as the $5.16 in the calculation of table. This analysis is summarized as case 2 in Table 2. The present value exceeds the initial investment in the 16th year (in contrast to the 13th year in section 2) and the internal rate of return is nearly as high at 18.5 percent (in contrast to 19.7 percent).

This case shows that it is the extent of the leverage (the overall debt to capital ratio) and not the presence of foreign equity or U.S. debt that accounts for the substantial decline between the simpler analysis of section 2 and the full financial specification. The same point is made even more dramatically in case 3 which assumes no leverage at all. Since the foreign government taxes 30 percent of the return to capital and there is no offsetting leverage advantage, the foreign investment lowers U.S. national income. The present value per dollar of outbound investment is only 62 cents and the internal rate of return is 8.4 percent (the 12 percent pretax return reduced by the 30 percent effective tax rate, t_2).

Table 2

Parameter Sensitivity with Full Financial Structure

Case	Parameter Specification	Present Value per Dollar of Initial U.S. Investment ($)	Present Value Exceeds Initial U.S. Investment (year)	Accumulated Interest and Dividends Exceed Initial Investment (year)	Internal Rate of Return
1.	Basic specification*	1.72	22	10	15.1
2.	Increased leverage (b= 0.048 b*= .552)	4.23	16	9	18.5
3.	No leverage (b=b*=0)	0.62	---	---	8.4
4.	No foreign taxes ($t_1 = t_2 = 0$)	3.12	14	8	18.9
5.	No leverage or taxes (b=b*= $t_1 = t_2 = 0$)	1.00	---	11	12.0
6.	Higher inflation ($\pi = 0.06$ i = 0.10)	2.49	21	10	16.0
7.	Higher real interest rate ($\pi = 0.04$ i = 0.10)	1.48	26	11	14.3
8.	Lower real return (r = 0.10)	1.82	28	12	12.6
9.	Equal foreign tax rates ($t_1 = t_2 = 0.35$)	1.36	30	11	13.7
10.	Lower dividend payout (d= 0.5)	2.58	28	12	15.2

Base case parameters: r = 0.12 i= 0.08 π = 0.04 b = 0.04 b = 0.46 $E_0 = 0.7$ $E_0^* = 0.3$ $t_1 = 0.40$ $t_2 = 0.30$ d = 0.7. Present values calculated at discount rate r. See text for definitions.

(tlfdi.4)

At the opposite extreme, maintaining the base case debt ratio ($b_{us} + b^* = 0.5$) but eliminating the foreign taxes (case 4 of Table 2) raises the rate of return to the U.S. to 18.9 percent and the present value per dollar of outbound capital flow to $3.12.

Of course, when there are neither taxes nor leverage (case 5), the U.S. receives exactly the full 12 percent pretax return and the present value of the dividends is exactly one.

An increase in the rate of inflation with a corresponding rise in the nominal interest rate that keeps the real interest rate unchanged raises the gain to the U.S. from foreign direct investment (case 6). This occurs because the deductibility of nominal interest payments reduces the overall effective rate of tax levied by the foreign government, i.e., because the real tax deduction associated with the same real interest payments is increased.[23]

Raising the rate of interest paid by the affiliate to foreign (and U.S.) providers of debt finance from 8 percent to 10 percent without raising the rate of inflation (case 7) does, of course, lower the advantage of U.S. outbound foreign direct investment to the United States. But even in this case of a very high 6.0 percent real interest rate, the observed leverage is sufficient to offset the taxes paid to the foreign government and to cause the U.S. investment to raise the present value of U.S. national income.

Another feature of the basic specification and of actual experience in the international economy is that the statutory tax rate exceeds the effective tax rate on new equity investments in plant and equipment because of accelerated depreciation, investment credits, and other special

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[23]This favorable effect could be offset to the extent that a higher rate of inflation reduced the present value of the depreciation allowances and thereby increased t_2. See Feldstein (1983) for an analysis of the several ways in which inflation can affect the return to investors in a closed economy.

features. This is reflected in the analysis in a relatively conservative way by the specification that the statutory rate is 40 percent while the effective rate on the return to equity capital is only 30 percent ($t_1 = 0.40$ and $t_2 = 0.30$). The analysis of case 9 shows eliminating the difference between the statutory and the effective tax rates and setting both rates to 35 percent ($t_1 = t_2 = 0.35$) reduces the advantage of outbound investment but still leaves a net gain and internal rate of return of 13.7 percent.

The final analysis (case 10) reduces the dividend payout rate from 70 percent to 50 percent. This lower payout rate substantially increases the advantage of outbound investment because it causes a greater amount of capital accumulation in the affiliate per initial dollar of outbound capital flow. With the reduced dividend payment it takes a bit longer to achieve a present value equal to the outbound investment flow (28 years instead of 22 years) but the eventual present value is substantially higher.

4. Concluding Comments

This paper has developed a framework for evaluating the impact of outbound foreign direct investment on the present value of the national income of the home country and used that framework with realistic parameters based on the experience of U.S. majority-owned affiliates. The resulting calculations imply that a dollar of cross-border investment outflow raises the present value of U.S. national income by a rather substantial amount. In the base case, each outbound dollar of investment adds $1.72 cents to the present value of national income, nearly double the opportunity cost of those funds.

This estimate assumes that each dollar of outbound foreign direct investment reduces the

gross domestic investment in the United States by a dollar, i..e, that there is no net offsetting change in the net flow of international portfolio investment or in U.S. domestic saving. If either of those occur, the opportunity cost of the outbound investment would be lower and the relative advantage higher.

Similarly, the calculation assumes that the displaced private investment in the United States would have earned the same real pretax rate of return as the capital in the affiliate. In practice, some of the displaced outbound investment may come from housing and other types of investment that are favored by U.S. tax laws in a way that causes their pretax rates of return to be lower than the return on new plant, equipment, and inventories. This would also cause the current calculation to understate the national income gain by the United States of this incremental outbound foreign direct investment.

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