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8 Is Foreign Direct Investment Sensitive to Taxes?

Jason G. Cummins and R. Glenn Hubbard

8.1 Introduction

Understanding the determinants of foreign direct investment (FDI) is important for analyzing capital flows and the industrial organization of multinational firms. Most empirical studies of FDI, however, have focused on case studies of nontax factors in overseas investment decisions or on discerning simple correlations between some measure of direct investment and variables relating to nontax and tax aspects of the investment decision. These studies have helped to assess the qualitative effects of changes in the underlying determinants on firms' investment activities. It is more difficult to use those results for policy analysis. Our interest in investigating more precisely the links between tax policy parameters and investment stems from a concern that policy-makers' consideration requires a richer empirical analysis.

At one level, this is a simple task. In theoretical studies, a number of authors have related tax parameters in "home" (residence) and "host" (source) countries to financial variables such as the cost of capital or the ratio of the market value of the firm to the replacement value of its capital stock.¹ Given such a relationship, one could apply familiar neoclassical investment models developed to explain firms' domestic investment decisions to estimate effects of tax parameters on outbound or inbound FDI.

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1. See, for example, Alworth 1988.

In practice, this exercise is far from simple. Studies of effects of tax parameters on (generally inbound) U.S. FDI rely on investment flows calculated by the Commerce Department's Bureau of Economic Analysis. These data do not distinguish between new capital investment and acquisitions of existing assets. Given our interest in the effects of tax policy on FDI, this definitional problem is potentially serious.²

We are able to mitigate this problem and apply familiar investment models by using previously unexplored (for this purpose) panel data on outbound FDI by individual subsidiaries of U.S. multinational firms, collected by Compu-stat's Geographic Segment file project.³ These firm-level data contain information on new capital investment overseas, enabling us to measure tax influences on FDI more precisely and allowing us to focus on specific models of subsidiaries' new investment decisions. These models yield measures of the sensitivity of FDI to home- and host-country tax parameters.

8.2 Some Background on Empirical Studies

Existing empirical studies of FDI reflect researchers' interest in industrial organization or taxation. Industrial organization inquiries have generally ignored tax considerations and analyzed FDI as being governed by firms' desire to exploit the value of ownership-specific assets (such as valuable intangibles) or location-specific advantages (related to sourcing or marketing). Empirical research has analyzed the roles played by ownership-specific and location-specific variables in determining FDI. Public finance inquiries have focused on the role of differential tax treatment as determining the source and location of FDI, holding constant nontax determinants.⁴

In this vein, a significant body of empirical research has emphasized effects of taxation on inbound FDI in the United States. This literature has generally examined simple relationships between capital flows and measures of after-tax rates of return or effective tax rates on capital income.

Following work by Hartman (1984), several studies have used annual aggregate data for inbound FDI financed by subsidiary earnings and parent-company transfers of funds. Hartman's approach assumes that subsidiaries' dividend payouts are a residual in firm decisions. Payout ratios do not affect firms' required rate of return on equity invested, and permanent changes in home-country tax rates do not affect dividend payouts or the cost of capital. In the context of FDI, these implications permit Hartman and others to ignore effects of (at least permanent changes in) home-country tax param-

2. In particular, Auerbach and Hassett (1993) have noted that neglecting the different tax treatments of the two forms of U.S. inbound FDI can lead to misleading results.

3. See Cummins and Hubbard 1995 for a discussion.

4. We review studies in both lines of inquiry in Cummins and Hubbard 1995.

ters on FDI in “mature” subsidiaries—that is, those paying dividends to their parent firms.⁵

Hartman estimates the effects on U.S. inbound FDI of changes in the after-tax rates of return received by foreign investors and by investors in U.S. capital generally, with the intent of measuring impacts of shifts in returns to new FDI. He finds that the FDI-GNP ratio increases as after-tax rates of return rise, and decreases as the relative tax rate on foreigners rises. These suggestive results indicate that taxes are an important determinant of FDI, and Hartman’s study provoked many subsequent rounds of replication and refinement.⁶

Such studies are important advances on our understanding of the effects of taxation on FDI. A number of concerns arise, however. An obvious one relates to problems of inference about tax effects on *firms’* decisions using such highly aggregated data. Second, nontax determinants of FDI are not modeled. Finally, the “foreign direct investment” data supplied by the Bureau of Economic Analysis suffer two drawbacks, even accepting their level of aggregation: (1) they measure financial flows rather than new capital investment *per se*; and (2) they are based on periodic benchmark surveys, raising the possibility that FDI flows are more mismeasured the further the observation is from a benchmark year.

8.3 Using Firm-Level Data to Study FDI

8.3.1 Modeling Effects of Tax Parameters on FDI

In a world of ideal data, assessing the impact of taxation on firms’ FDI decisions would be straightforward. Consider a U.S. parent firm deciding how much investment to pursue in a particular period. Intuitively, textbook neoclassical models of investment predict that the firm will invest until the value of an additional dollar of capital equals the cost of investing that dollar.

Unfortunately, this benchmark approach is not particularly useful as a practical guide to estimate effects of taxation on the levels of firms’ FDI. First, it is difficult to develop a proxy for the incremental value of investing from available data on financial market valuation, even under the best of circumstances. For FDI, a further complication arises because location-specific effects on the value of incremental investment in the subsidiary cannot be captured by using available financial data at the parent-firm level, and subsidiary-specific financial market data are, of course, not generally available.

To reduce these practical problems, we employ an empirical approach devel-

5. This approach is more suitably applied to firm-level data. The underlying model suggests that a mature subsidiary’s investment financed by retained earnings is unaffected by the home-country tax rate. This suggestion is not equivalent to a claim that *aggregate* investment out of retained earnings will not be affected by the home-country tax rate.

6. See, for example, Boskin and Gale 1987; Newlon 1987; Slemrod 1990.

oped to estimate effects on investment of after-tax returns to investing with fewer informational requirements than in conventional models.⁷ Nonetheless, the approach still allows us to ask, given a change in a tax parameter, how does a subsidiary's return on additional investment change, and how does FDI change in response?

Tax considerations can affect subsidiaries' new capital investment decisions through two channels.⁸ First, host-country corporate income tax rates, investment incentives, and depreciation rules affect the cost of capital for foreign investors. This channel has been the focus of empirical analysis of effects of tax policy on domestic investment.

A second channel through which tax policy affects FDI from countries with worldwide tax systems⁹ such as the United States is through variation over time and across firms in the "tax price" of subsidiaries' dividend repatriations to their parent firms. Within our approach, subsidiary dividend decisions and the cost of capital are not affected by permanent changes in the tax price of repatriations, though temporary changes can affect both repatriations and FDI.¹⁰

There are two sources of variation in the tax price of dividend repatriations. The first reflects variation over time in host- and home-country statutory corporate income tax rates. The second reflects variation in foreign tax credit status (that is, excess credit or excess limit positions) both across firms and over time for a given firm. Parents in an excess limit position owe residual U.S. corporate tax if the U.S. corporate tax rate exceeds the applicable foreign tax rate. Parents in an excess credit position owe no residual U.S. corporate tax.

Our empirical tests analyze effects of changes in pretax returns to investing and in the tax parameters described above on FDI by U.S. multinational firms. Execution of these tests requires firm-level data on multinationals and their subsidiaries; we describe these data briefly below.

7. For a technical description, see Cummins and Hubbard 1995.

8. A different set of tax determinants is in general relevant for investment through acquisitions. See, for example, the discussion in Auerbach and Hassett 1993.

9. By worldwide tax system, we mean that the home country taxes the worldwide income of multinational firms (generally when repatriated), but grants a foreign tax credit (subject to limitation).

10. That is, we work within a framework known as the "trapped-equity" or "tax-capitalization" view of corporate dividends. A simple example illustrates this view. Suppose that a parent firm capitalizes a wholly owned subsidiary with an initial transfer of equity capital. When the subsidiary has growth opportunities and desired investment exceeds internally generated funds, the parent transfers additional funds to it. For a mature subsidiary, equity is "trapped"—earnings exceed profitable investment opportunities, and the subsidiary repatriates the residual funds. Costly repatriation can be delayed so long as the subsidiary has active investment opportunities abroad, but once those are exhausted, the subpart F rules prevent the use of passive investments to defer U.S. tax obligations. In this trapped-equity view, subsidiary dividend payouts are unaffected by permanent changes in their tax price. While this view is controversial in the context of dividend payouts from a domestic firm to its shareholders (owing to potential information or corporate control problems), it is arguably less controversial in our application to dividends paid by majority- or wholly-owned subsidiaries to their parent firms.

Table 8.1 Number of U.S. Foreign Subsidiaries in Sample

Year	Canada	United Kingdom	Germany	France	Japan	Australia	Total
1980	225	25	12	3	4	13	282
1981	224	36	12	4	5	12	293
1982	242	45	11	5	7	14	324
1983	254	54	10	5	10	13	346
1984	272	58	13	6	15	14	378
1985	307	81	16	10	19	18	451
1986	320	94	19	11	23	24	491
1987	346	105	22	11	26	23	533
1988	362	104	21	11	24	24	546
1989	394	113	20	11	25	26	589
1990	403	121	32	15	29	32	632
1991	366	119	29	17	25	26	582

Source: Authors' calculations.

8.3.2 Constructing Firm-Level Data on FDI

The data set is constructed from the Compustat Geographic Segment file.¹¹ Approximately 6,500 companies report information from their foreign operations, segregated by geographic segment. Both U.S.- and foreign-incorporated firms report sales, operating income, and fixed assets. Up to four geographic regions are reported for seven years at a time. We combine two seven-year panels to obtain a data set on outbound FDI by U.S. multinational corporations over the period 1980 to 1991.

Table 8.1 indicates the number of U.S. foreign subsidiaries reporting information in the Compustat data. Countries for which Compustat reports data are Canada, the United Kingdom, (the former West) Germany, France, Japan, and Australia. While the number of subsidiaries reporting information varies from year to year (generally growing over the period), we are able to obtain investment and operating information on between 282 and 632 U.S. foreign subsidiaries.

8.3.3 Estimating Effects of Tax Parameters on FDI

In Cummins and Hubbard 1995, we estimated a model of investment by subsidiaries of U.S. multinationals that is derived from recent studies of determinants of domestic business fixed investment. Using the panel data described

11. Geographic segment disclosures are mandated by *Statement of Financial Accounting Standards No. 14: Financial Reporting of Segments in a Business Enterprise (SFAS 14)*, issued in 1976. *SFAS 14* was designed to provide information useful for evaluating the nature of the firm's investment and production decisions. *SFAS 14* requires firms to disclose information about foreign sales, income, and fixed assets if foreign operations account for at least 10 percent of a firm's revenue or assets.

above on investment by U.S. subsidiaries in Canada, the United Kingdom, Germany, France, Australia, and Japan, we tested the hypothesis that host- and home-country tax parameters should be included in the model, and estimated the responsiveness of subsidiary investment to pretax returns and tax parameters.

Our results can be described straightforwardly in two steps. First, we reject conclusively the simple notion that “taxes don’t matter”—both host- and home-country tax parameters should be included in the correct specification of the subsidiary’s investment model. Second, we estimate a significant responsiveness of firm-level FDI to the tax-adjusted cost of capital. Our results suggest that each percentage-point increase in the cost of capital leads to a 1–2 percentage-point decrease in the annual rate of investment (investment divided by the beginning-of-period capital stock).¹² Changes in the cost of capital can reflect, among other things, the host- and home-country tax variables we discussed in section 8.3.1.

Our findings are consistent with the hypothesis that permanent changes in the tax price of subsidiary dividend repatriations do not affect the cost of capital or FDI by dividend-paying subsidiaries. This result allows us to offer some observations about the extent to which the U.S. system of taxing multinationals’ income corresponds to norms of capital-export neutrality or capital-import neutrality.¹³ Hartman (1984) and others have noted that, for dividend-paying subsidiaries, permanent changes in the home-country (U.S.) corporate tax rate should have no effect on FDI financed out of subsidiary retained earnings—a “capital-import neutral” result for these firms. This finding does not carry over precisely in our framework, since changes in the parent firm’s foreign tax credit status also affect the tax price of repatriations. Hence, Hartman’s result holds in the case for which the parent’s foreign tax credit position is not expected to change. With expected changes in foreign tax credit status, capital-export neutrality may prevail. Similar examples can be constructed for “immature” subsidiaries, those financing initial investment using parent equity transfers.¹⁴ To summarize, the U.S. tax system creates potentially complex effects of tax parameters on overseas investment decisions, and those effects can vary significantly across firms.

12. These estimates are broadly consistent with those reported for firm-level fixed investment in the United States (see Cummins, Hassett, and Hubbard, 1994a) and with those for firm-level domestic fixed investment in other OECD countries (see Cummins, Harris, and Hassett, 1995; Cummins, Hassett, and Hubbard 1994b).

13. Capital-export neutrality results when the home country’s tax parameters do not distort a domestic investor’s decision between investing at home or abroad. Capital-import neutrality results when domestic and foreign investments in a country have equivalent overall investor tax treatment. In practice, no industrialized country’s tax system corresponds precisely to the norms of capital-export neutrality or capital-import neutrality. The U.S. Treasury has generally argued for capital-export-neutral policy benchmark, though the U.S. system’s allowance for deferral of tax on overseas profits until repatriated (among other considerations) is inconsistent with capital-export neutrality.

14. We review such examples in detail in Cummins and Hubbard 1995.

8.4 Conclusions and Directions for Future Research

Our study represents a first step in a research program to use microdata on multinational firms' overseas investment decisions to study the determinants of FDI, especially those related to tax policy. The panel data that we use on FDI of subsidiaries of U.S. firms permit us to focus on "new investment," a focus not possible with studies that use aggregate data. These data allow us to test models of investment decisions that yield informative estimates of effects of tax parameters on FDI.

We believe we have been successful in two respects. First, we have extended conventional investment models to accommodate a wide range of tax influences on FDI decisions. Second, our empirical results cast significant doubt on the simple notion that taxes don't matter for U.S. firms' FDI decisions. Indeed, tax parameters influence FDI in precisely the ways indicated by standard models of investment.

We are pursuing three extensions. First, we are adapting our analysis to study effects of tax policy on FDI in the United States by foreign firms. Second, we plan to examine whether, as a result of exchange rate shifts, revaluations of firms' profits in terms of host-country currency affect their FDI. Finally, we will incorporate imperfect competition and intangible assets more explicitly in our approach.

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