TAXATION AND FOREIGN DIRECT INVESTMENT IN THE UNITED STATES:
A RECONSIDERATION OF THE EVIDENCE

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ABSTRACT

Foreign direct investment in the United States boomed in the
late 1980s. Some have attributed this rise to the Tax Reform Act
of 1986, which by discouraging investment by domestic firms may
have provided opportunities for foreign firms not as strongly
affected by the U.S. tax changes. We challenge this view on
theoretical and empirical grounds, finding that:

(1) While the argument applies to new capital investment, the
     boom was primarily in mergers and acquisitions;

(2) While the argument holds primarily for investment in
     equipment, there was no shift toward the acquisition of
     equipment-intensive firms, and

(3) The FDI boom in the U.S. was really part of a worldwide FDI
     boom - the U.S. share of outbound FDI from other countries
     did not increase during the period 1987-9.

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I. Introduction

In recent years, a large body of research, dating back to Hartman (1984, 1985), has focused on the effects of taxation on foreign direct investment into and from the United States. For the most part, this literature has related capital flows to some measure of an effective tax rate on capital income. The empirical results relating to inward FDI, on which we shall concentrate in this paper, have been mixed. While there is some evidence that tax rates affect investment, there has been little robustness to such findings.

We argue below that this lack of satisfactory results may be due, in part, to the fact that past efforts have typically studied financial flows rather than investment itself, and have failed to account adequately for the different methods foreign multinationals can use to invest in the United States, each of which carries its own particular tax implications. By lumping together all forms of investment, and relating this aggregate value to some measure of the U.S. tax rate, previous researchers have obscured the possible impact of taxation on foreign investment.

A foreign multinational seeking to undertake real investment in the United States can do so in three different ways: it can acquire an existing U.S. company, establish a new U.S. branch or subsidiary, or invest through an affiliate branch or subsidiary already operating in U.S. markets. The relevant tax factors affecting the decision of the multinational depend not only upon the source of funds and the home country's tax rules, two factors which previous authors have emphasized, but also critically upon the chosen method of undertaking the investment. While most authors have modelled the taxation of FDI as if it proceeded through the acquisition of new capital

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goods, the predominant channel of FDI actually has been through mergers and acquisitions. This distinction is of particular importance for the interpretation of recent FDI behavior.

In a recent and provocative paper, Scholes and Wolfson (1990) argue that the 1986 Tax Reform Act (TRA86) provided a strong incentive for foreign multinationals to increase their investment activity in the United States. Their argument rests upon the observation that foreign companies whose home countries credit U.S. taxes (those with so-called "worldwide" tax systems) are relatively unaffected by increases in U.S. taxes because any payments made are credited at home upon repatriation. Since TRA86 raised effective tax rates on certain corporate assets, the relative (to domestic U.S. investors) tax position of these selected foreign investors may have improved. Scholes and Wolfson offer stylized evidence that the boom in investment predicted by these tax effects has actually occurred, and Swenson (1989) provides some supporting evidence with respect to the recent pattern of FDI across industries and countries. We reevaluate the Scholes-Wolfson hypothesis in this paper, because we view it as a litmus test for the importance of taxes in determining FDI into the United States, and because we feel that econometric analysis in the spirit of earlier studies would be difficult to interpret given the limited sample sizes and clear nonstationarity in the variables we feel are important.

As we shall discuss below, a significant part of the FDI boom of the late 1980's came through takeovers, rather than the purchase of new assets. Yet, given the distinct tax treatment of takeovers (as opposed to new investment) and the additional provisions of TRA86 regarding takeovers, it is questionable whether the boom in FDI is really consistent with the 1986 tax

changes. In particular, it is not clear that tax factors would predict an increase in FDI generally or a relative increase in FDI from home countries following a worldwide tax system. We demonstrate this point using a model of FDI developed in Section V. In light of the model's implications, we consider the recent patterns of FDI and argue that the evidence of a tax-induced boom after 1986 is not as strong as others have suggested it to be.

II. Foreign Direct Investment in the United States

Foreign direct investment into the United States has been the subject of a burgeoning empirical literature. Table 1 suggests why. The last column of the table presents annual flows of FDI, the data series which has been studied by most of the previous empirical efforts examining inbound FDI[1]. This series grew at an average annual rate of 18% between 1980 and 1989, before dropping sharply in 1990.

One drawback of the use of capital flow data is that they are not directly related to the actual physical investment which is of interest to the researcher and on which the theoretical models used to form effective tax rates are based. For example, if a foreign company borrows in the United States in order to purchase a machine, the transaction will not appear in the capital flow data. Quijano (1990) reports that roughly 81% of debt financing of U.S. affiliates occurs through U.S. sources of funds, suggesting that this omission may be quite important.[2] While payments to cover the borrowing by the foreign parent will appear in the flow data, the timing of the investment will be obscured, and any relationship between the tax treatment of investment in a particular year and the observed flow series may be spurious.[3]

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Alternative measures of FDI that are in some respects closer to the desired measure are given in the first three columns of the table. The first is total investment in plant and equipment undertaken by foreign affiliates. The second is the total value of U.S. firms acquired by foreign companies, and the third is the value of foreign branches and subsidiaries newly established by foreign companies.[4] [5]

Each of these alternative measures also shows a striking increase in the 1980's. Affiliate investment grew approximately 13 percent a year from 1980 to 1989, while establishment investment grew at a rate of 15%. FDI through acquisition of existing U.S. assets grew approximately 23% a year over the same period, suggesting that the U.S. merger boom of the eighties was not confined to domestic parents. In our view, it is the plant and equipment investment by affiliates plus the establishment of new operations that correspond most closely to the theory on which past studies have been based, since these studies have generally ignored the special tax provisions affecting the acquisition of existing companies or their assets. Yet, by 1988, these two categories combined accounted for less foreign direct investment than did acquisitions.

III. The Tax Treatment of FDI

The tax treatment of foreign source income can be very complicated, making empirical study difficult. Countries generally treat foreign source income in one of two ways. A "territorial" or source-based approach involves taxing only home source income, essentially exempting from domestic tax the income a domestic multinational earns on its operations abroad. For companies

based in territorial countries, the relevant corporate tax provisions directly relating to investment are clearly those imposed by the host country.

At the other extreme is the "orldwide" approach that adopts the residence principle of taxation, whereby the home country attempts to tax the worldwide income of its companies, normally offering a credit for income taxes already paid on such income abroad. In principle, the income of companies based in worldwide countries faces a tax burden determined by the home country's tax provisions, since foreign taxes are simply offset by credits against the home country's taxes. This is the essence of the Scholes-Wolfson argument.

In practice, of course, there are many additional provisions that attenuate this sterilization of a "worldwide" multinational's foreign tax burden. First, if the foreign tax rate exceeds that of the home country, there will typically be excess foreign tax credits, making the marginal tax burden dependent on the foreign tax provisions, as with territorial home countries. Second, in practice the residence principle is commonly applied only upon the repatriation of income. As with the taxation of a corporation's dividends upon their payment, the additional taxes paid upon repatriation may have no effect on investment financed by retained earnings, a point first made in the foreign context by Hartman (1985).

Much of the empirical literature on FDI into the United States, beginning with Hartman's work, has focused on the distinction between retained earnings and transfers. The theory suggests that U.S. tax provisions should matter least for investment from worldwide countries financed by transfers, but the empirical evidence offers at best weak support. Indeed, Slemrod

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(1990a) finds that the transfer of funds is described well by tax and return variables, but that retention of earnings is not.

A possible problem with this literature is the dependence on flow data which, as discussed above, do not necessarily correspond to investment itself. One study, by Swenson (1989), used the acquisition and establishment data (given in the aggregate in the second and third columns of Table 1) and did find some evidence that average U.S. tax rates are positively correlated with inbound FDI, as the Scholes-Wolfson hypothesis would suggest. However, Swenson also found a negative impact of the effective marginal tax rate, a result difficult to reconcile with the apparent theory. We believe part of this puzzle may be traced to the lack of attention to the alternative modes of foreign direct investment, i.e., the effective tax rates used by Swenson should not be expected to describe acquisition activity well.

As indicated above, the theoretical discussion and empirical analysis of the impact of taxation on FDI has treated the problem as one of acquiring new capital, even though this is only one of the possible modes. The other important mode is the acquisition of an existing U.S. company. The mode of investment chosen affects tax liability differently since the choice to acquire a U.S. company will depend on the U.S. merger laws governing, for example, step up in basis and transfer of tax benefits, whereas investment in new capital will depend on the statutory tax rate, the investment tax credit and depreciation schedules. Since the tax burden incurred depends upon the method chosen and the investor doing the choosing, it makes little sense to group these forms of investment together and relate them to a single tax variable, as has frequently been done in the past.

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A firm can chose to acquire another in the United States in a number of ways. The first choice is whether to acquire with cash or in exchange for the shares of the acquirer, and the second choice is whether to acquire the shares or assets of the target. If an exchange of shares is chosen, the deal may completely avoid immediate tax consequences, with the depreciable basis of the acquired corporation being absorbed into the acquirer and, in general, the U.S. shareholder selling the stock deferring tax liability until such time as the shares received in exchange are sold. The tax basis of the new stock is the same as that of the relinquished stock, and tax is paid upon realization of any gains.[6][7]

In a sample we have constructed, virtually all foreign acquisitions were financed with cash throughout the 1980's. If the acquirer chooses to pay cash or a combination of stock and cash for the stock of the target, there will generally be no deferral of shareholder capital gains tax. However, there is still the choice of whether to acquire the company as a going concern or a collection of assets. If the acquirer chooses to perform a corporate stock acquisition, the U.S. tax attributes of the acquired company will be inherited by the corporation, without any immediate corporate level taxation.[8] Alternatively, the parent company can acquire the assets of the target, either explicitly or by electing to treat a stock acquisition as an asset acquisition via Section 338 of the Internal Revenue Code. In this case, the acquirer can step up the basis of the depreciable assets of the target, but in order to do so the liquidating corporation must pay some corporate tax on the basis step up, and no transfer of net operating losses is allowed.

To the extent that an acquiring foreign corporation is influenced only by U.S. taxes at the margin (the "territorial" case), the incentives it faces

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in deciding how to structure a deal are similar to those facing a U.S. parent. In the other extreme ("worldwide") case in which U.S. taxes are absorbed by tax credits at home, there seems less reason to opt for the basis step-up, since this provides no ultimate tax relief but does require the payment of taxes by the liquidating corporation.

IV. The Tax Reform Act of 1986

The passage of the Tax Reform Act of 1986 brought several changes in the taxation of U.S. corporate investment. The literature on FDI has focused primarily on the reduced investment incentives and the apparent advantages this offers "worldwide" countries (see, for example, Scholes and Wolfson, Slemrod 1990b, and Swenson 1989). However, TRA86 also introduced important changes in the tax treatment of mergers and acquisitions.

Prior to 1986, the General Utilities doctrine allowed firms electing to acquire the assets of the target to step up the basis of the acquired assets while paying tax only on the recaptured depreciable basis for those assets subject to recapture. For example, if the target had purchased a machine for $50 and depreciated it to $10, then the acquirer, upon purchasing the machine for $100, was allowed to claim depreciation allowances on the full $100, after paying tax on the $40 of recaptured basis. Some believed this to have provided a strong tax incentive for mergers although aggregate evidence in support of this claim is lacking (Auerbach and Reishus 1988). The repeal of this provision may have played a role in the enormous surge in acquisition activity in the final two quarters of 1986. The removal of the tax gain from basis step up should provide a powerful disincentive for FDI in the form of

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acquiring U.S. firms, at least to the extent that such acquisitions take the form of asset purchases.[9]

In addition to these provisions directly affecting mergers and acquisitions, the 1986 Act altered the structure of taxation in a way that may indirectly have influenced takeovers. In reducing investment incentives (most importantly through the elimination of the investment tax credit) and at the same time reducing the corporate rate, TRA86 sharply narrowed the distinction in the treatment of new and existing assets, providing apparently large windfalls to the value of existing firms. In theory, this represents a large tax-induced increase in the price of firms, and should have influenced the incentives to purchase such firms, particularly for the "worldwide" companies who by assumption cannot obtain the offsetting benefits of reduced domestic taxation of the existing capital it purchases.

In summary, there are three sets of U.S. tax provisions relevant to FDI: those that apply to new capital, those that apply to mergers and acquisitions, and those affecting existing assets. Quantifying the relative importance of these effects requires an explicit model of the FDI process.

V. A Model of Foreign Investment

In this section we introduce a model, drawing heavily on Auerbach (1989), which allows us to derive effective tax rates for foreign firms interested in acquiring U.S. assets. In this model, there are three types of firms: domestic, foreign "territorial" (which are subject only to U.S. taxes) and foreign "worldwide" (which, at the margin, are not affected by U.S. taxes they pay).

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The model proceeds in two stages. In stage one, the representative domestic firm acts much like the firm in Auerbach (1989), maximizing value subject to a constant-returns-to-scale production function with quadratic adjustment costs of investment and potentially changing taxes. Given the constant-returns technology, the determinacy of equilibrium is provided by an endogenous price of output, which varies inversely with the level of aggregate production. The domestic firm's optimization problem leads to a system of first order differential equations in the capital stock K and the shadow value of new capital, q, which we linearize in order to solve. The solution for the path of K and q also provides a path for the output price, p. The combination of q and U.S. tax provisions determine the price of existing capital, q^K.

In the model's second stage, the foreign firm observes the equilibrium path of q, p and q^K determined by the domestic firm and decides how much capital to acquire at each instant, in light of the tax provisions that it faces. In order to make the problem tractable, we assume that the foreign firm's decision to acquire domestic capital has no effect on domestic output or price, and that the foreign firm distributes its new purchases between existing and new capital subject to an exogenously given proportion, β.[10] This approach incorporates the idea that, in order to grow within the United States, foreign firms may need to grow extensively as well as intensively, thereby establishing a "toehold" in new markets.[11]

We model behavior as if a steady state existed in 1986, and consider the change in the rate of investment upon the passage of TRA86, which we treat as unanticipated and permanent. To obtain relatively simple expressions for the level of FDI, we make a variety of additional simplifying assumptions, which are discussed in detail in the appendix, where the following expressions are

derived for FDI by "worldwide" and "territorial" companies, respectively (with a "*" representing a steady state value around which the linearization takes place):

$$(1) \qquad \frac{\dot{K}_0^F}{K^{*F}} = -\frac{1}{\phi^F}\left\{\left(\frac{a\lambda_1\phi}{\eta}\right)\left(-\frac{\lambda_1}{\rho}+\beta\left[\frac{1-k-\Gamma}{1-k^*-\Gamma^*\left(1-\frac{\delta}{\delta'+\pi}\right)}\right]\right)+\beta B\right\}$$

$$(2) \qquad \frac{\dot{K}_0^F}{K^{*F}} = -\frac{1}{\phi^F}\left[\frac{a\lambda_1\phi}{\eta}\right](\beta-1).$$

where λ_1 (< 0) is the stable root of the domestic corporation's capital accumulation problem, ϕ is the domestic firm's adjustment cost parameter (ϕ^F being the corresponding value for the foreign firm), η is the elasticity of demand for output, ρ is the firm's real discount rate, δ ($= \delta(1-1/2 \cdot \phi)$) an adjusted rate of economic depreciation, π the rate of inflation and β the fraction of FDI done in the form of acquisition (as opposed to new capital purchases).

The remaining terms in these two equations all relate to changes in U.S. taxation, with k the investment tax credit, Γ the present value of depreciation allowances and δ' the rate at which assets are written off for tax purposes. The term a is the proportional change in the domestic effective tax rate associated with TRA86, while B is the proportional change in the relative value of old to new capital. In general, B>0 since the Act raised the relative valuation of existing assets. If the cost of capital increased, then a > 0 as well. Note that B appears only in the first expression, since territorial firms are assumed to get the benefits of the reduced taxation of

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existing assets that the price reflects. Worldwide firms, on the other hand, must pay for these benefits but do not, by assumption, receive them: the reduced U.S. tax burden simply leads to increased taxes at home.

The other major difference between the two expressions is in the sign of the term multiplying the expression $(a\lambda_1\phi/\eta)$, which relates to the decline in domestic capital accumulation. For worldwide firms, there are two effects, both of which increase investment (for $a>0$). The first, $(-\lambda_1/\rho)$, is associated with the rise in prices coming from the reduction in the scale of domestic operations. The second comes from the decline in q, and reflects the benefits of a reduction in the price of capital goods acquired through existing companies, holding the relative valuation of new and existing goods constant.

For the territorial firm, the overall effect is negative unless $\beta = 1$, since the increase in p results from the reduced domestic incentive to invest, to which territorial firms are also subject. Indeed, when $\beta = 0$, the territorial firm's problem is essentially the same as that of the domestic firm. However, as $\beta \rightarrow 1$, the impact of the U.S. tax increase is muted by the offsetting benefit of the decline in q.

In summary, the impact of TRA86 on the FDI of "territorial" firms should go in the same direction as domestic investment, although these firms will face no disincentive to the extent that FDI occurs through the acquisition of firms rather than new capital. Hence, for assets facing a higher cost of capital, FDI should be discouraged in general but should shift toward acquisitions. The impact on the FDI of "worldwide" firms is of a more ambiguous nature for those assets for which investors face an increased cost of capital, as the reduction in domestic investment activity should encourage

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entry but the higher valuation of existing capital should discourage it. As long as the net effect of the tax reform is to increase the value of domestic firms (i.e. the terms multiplying β have a positive sum), worldwide firms will have an incentive to shift their activity away from acquisitions.[12]

The sign of the impact of TRA86 on investment by worldwide companies is an empirical question, which can be elucidated by considering several examples motivated by the tax treatment of different assets and the actual distributions of FDI among the alternative modes of investment.

Table 2 reports the results of simulations of the effect of the tax reform on FDI for various assumptions about the relevant parameters. The numbers given in the table are the initial change in the investment-capital ratio associated with the 1986 tax change, multiplied by the foreign adjustment cost parameter ϕ_F. That is, one should divide the number given by one's estimate of ϕ_F to obtain an estimated first-year change in the investment-capital ratio.

The top panel gives the results for hypothetical "worldwide'" firms and the bottom panel comparable results for "territorial" firms. For our simulations, we have considered four types of asset: equipment, structures, land and intangibles. Equipment, which depreciates relatively rapidly and received the investment tax credit before 1986, typifies the investment that should have been discouraged by TRA86 and, perhaps, been made more attractive to worldwide investors. Structures, at least those in the corporate sector, were treated relatively favorably by the 1986 Act.[13] Land is not depreciable for tax purposes, while the creation of intangibles (as, for example, through advertising), may generally be expensed.

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For each asset and country type, we have considered a range of potential values for the fraction of FDI taking the form of mergers and acquisitions (β) and for the quadratic adjustment cost term facing domestic investors (ϕ). For β, we consider values of 0 (all direct purchases of new capital), 1 (all takeovers) and .5 (a reasonable value, given the relative importance of the two methods indicated in Table 1). We consider values for ϕ of 5 and 15, meant to represent reasonably low and high levels of adjustment costs.

Let us consider first the results for territorial firms. Recall that, since the value of existing capital reflects its future productivity, the net effect of any of the tax changes is zero if $\beta=1$. For the intermediate value of β, .5, we can see that the tax reform provided a disincentive for equipment investment, and increased incentives for investment in structures and land (since $a > 0$ for these assets). For intangibles, there is no effect because our assumption of immediate expensing makes the cost of capital impervious to the corporate tax rate. When $\beta=0$ the effects of the reform are even stronger, but in the same direction. In general, territorial firms' investment in equipment should shift towards acquisition and away from new investment after 1986.

The results for worldwide firms reflect the offsetting effects described above. The results are generally opposite those of the territorial firms, as only investment in equipment may have been encouraged by the 1986 Act. Investment in land and structures was doubly discouraged, since these assets received both windfalls to the value of existing capital and reductions in the effective tax rate on new investment. Hence, these assets would have cost more (to the extent acquired via takeover) and returned less, as domestic investors were encouraged to invest. Investment in intangibles was

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discouraged because of the windfall to existing capital, with no offsetting effect coming from changes in the tax treatment of new investment. Only for equipment could the higher price of existing capital have been offset by higher returns in the future, and the table indicates that for this to occur would have required a combination of low adjustment costs (so that domestic investment would drop and before-tax returns to capital rise quickly) and a high fraction of capital purchased directly, rather than through mergers and acquisitions. Indeed, for the high-adjustment-cost case with half of all capital acquired through takeover, all types of investment by worldwide investors are discouraged, and even equipment investment is discouraged more than for territorial investors.

Hence, the notion of worldwide investors rushing in to own domestic capital requires a very particular alignment of assumptions about the type of capital being acquired, the mode in which it is acquired and the speed with which domestic investors leave the market to make foreign entry attractive. In all of the cases, however, worldwide companies should have been encouraged to shift their mode of investment from acquisitions of companies to direct purchases of new assets.

In summary, we can conclude the following from the simulations in Table 2: relative to territorial firms, worldwide firms should have shifted their investment toward equipment and utilized the takeover route less often. The overall impact on investment by territorial firms should have been negative, but, unless a preponderant share of FDI by worldwide companies took the form of purchases of new equipment, these firms' overall incentive for investment should also have decreased. We can evaluate these predictions using a variety of data on the composition and level of FDI before and after TRA86.

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VI. The Recent FDI Experience

Tables 3A, 3B and 3C, record the FDI data by country and type of investment from 1980 to 1989. Table 3A reports affiliate investment both for the major worldwide countries, the UK and Japan, and for the major territorial countries, Canada, France, Germany and the Netherlands.[14] Clearly the sharp increase observed in Table 1 is also evident here, with virtually every country experiencing growth in FDI both before and after TRA86. The growth rates from 1986 to 1989 were large for all countries. Japanese affiliate FDI grew 98% over this period; UK affiliate FDI grew 62%. The territorial countries experienced a smaller boom, with growth rates over the period ranging from 17% for the Netherlands to 46% for Germany.

Table 3B reports acquisition FDI for the same countries. These series also show an increase throughout the sample, but that by the worldwide countries, the UK and Japan, after TRA86 is truly striking. From 1986 to 1988, Japanese acquisition activity increased by nearly a factor of ten, and British acquisitions increased by a factor of nearly three. The most notable event in the territorial data is the large temporary increase in acquisitions in 1986, something consistent with the view that the suspension of the favorable tax treatment of acquisitions induced these firms to get their acquisitions in under the wire. Table 3C reports establishment FDI, which shows a solid increase for worldwide countries, but nothing striking for territorial ones.[15]

Figures 1-3 record the composition of worldwide and territorial FDI over the same period. Figure 1 indicates the proportion of total acquisitions of U.S. companies accounted for by worldwide countries leapt dramatically after 1986, with roughly 55% of all acquisitions by foreign firms being accounted

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for by those based in the UK and Japan by 1988. Figure 2 shows that the gap

in affiliate investment between territorial and worldwide countries has been

narrowing, and figure 3 indicates that worldwide countries account for roughly

60% of all establishment investment by 1988.

How do these trends mesh with the Scholes-Wolfson hypothesis and the

predictions of our model? Recall that the model predicts that if there is a

boom in investment by worldwide firms then it should occur in the form of

direct purchases of capital, not in acquisitions. While investment in new

capital has increased, as reflected in the increased affiliate and

establishment investment, acquisition activity has increased even more,

something inconsistent with tax factors.[16] In fact, as Figure 4 shows, the

proportion of worldwide investment accounted for by affiliate and

establishment investment dropped precipitously after the 1986 reform, going

from roughly 60% in 1986 to only 35% in 1988.

More consistent with the model is the shift of territorial investment

towards acquisitions, although the trend is not as clear cut. The 1987

proportion of new investment is slightly less than that in 1985, and a large

decline followed in 1988.

Figure 5 plots the share that U.S.-bound FDI has in total outflows from

the territorial and worldwide countries.[17] Quite striking is the fact that

the share of U.S. investment in total FDI from worldwide countries is roughly

constant after 1986, suggesting that the boom in investment experienced in the

United States is just part of a broader increase in foreign investment

activity by these countries. The share of the U.S. in total investment by

territorial countries shows a slight increase in 1987, followed by a decline

in 1988 and an increase in 1989. For the period 1987-89, there is no clear

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trend in either investment share. The results do not offer much support for the Scholes-Wolfson predictions of a surge in U.S.-bound tax-driven FDI.

Additional evidence comes from the industrial composition of FDI. Our model suggests that firms from worldwide countries should have faced potential tax incentives to invest in the United States only in equipment. While we do not have detailed investment data on types of assets purchased, we do know the industrial composition of FDI and the asset mix of different industries. In particular, manufacturing is the major equipment-intensive sector in which FDI occurs.

Table 4 presents the proportion of total FDI inflow accounted for by investment in the manufacturing sector for the major foreign investors into the United States. Consistent with the theory, the proportion of FDI in manufacturing for worldwide companies has increased dramatically since 1986, going from .452 in 1986 to .780 in 1989 for the United Kingdom, and from .129 to .292 in the same years for Japan. Contrary to the theory, the same upward trend generally occurs for territorial FDI in manufacturing as well. Taken together it is difficult to judge whether the switch to manufacturing by worldwide firms was caused by TRA86, or if the swing towards manufacturing is just part of a general trend towards increased manufacturing investment by foreign countries.

An alternative source of information about the mix of assets acquired is the balance sheets of U.S. companies themselves. For the period 1980:1 to 1990:4, we compiled a sample of 243 companies acquired by foreign parents. As a control, we also compiled a sample of 4485 companies acquired by domestic parents. For each company with available data, we calculated the fraction of equipment and structures in their overall fixed capital stock in the year

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before the acquisition. In table 5, these fractions are aggregated into the pre- and post-1986 periods for the sample of firms acquired by foreign worldwide and territorial parents, for domestic acquisitions, and for the compustat universe of firms.

As the table clearly shows, the fraction of structures rose and that of equipment fell for two of the three target groups, while the fraction for all firms changed little.[18] While the results for the different target groups are similar, we note that it was among territorial, and not worldwide firms that the share of equipment rose. The similarity across worldwide and territorial targets is consistent with our model of the effects of the 1986 Act, but it offers no support for the view that the post 1986 surge in acquisitions by worldwide firms was driven by tax induced bargains in equipment investment. For example, under the high adjustment cost scenario, assuming an adjustment cost parameter of 15, and allowing the fraction of acquisitions in total FDI to be 1, worldwide firms' investment in equipment and in structures is deterred to roughly the same degree.

VII. Conclusion.

This paper presents a model of FDI that takes into account the different tax treatments of acquisition of old and new capital in order to isolate more precisely the effects of taxation on FDI into the United States. Our simulation results suggest that the Tax Reform Act of 1986 generally decreased investment incentives for worldwide countries in all assets other than equipment, and that the sign of the effect on equipment depends upon

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assumptions about adjustment costs and the proportion of investment accounted for by acquisitions.

The model also suggests that TRA86 provided an incentive for territorial firms to invest relatively less in equipment, and relatively more in structures and land. Also, acquisitions by companies from worldwide countries were generally discouraged by the tax reform.

Examination of recent trends suggests that many of the changes in the composition of FDI predicted either by Scholes and Wolfson or our model have not occurred, casting doubt on the position that the recent boom in foreign direct investment is due to the changes in tax incentives brought about by TRA86. Other factors, such as exchange rate movements and the liberalization of capital markets (see, e.g. Froot and Stein 1989) may have played a role in the process. In future work using panel data, we hope to examine in more detail the characteristics of U.S. firms acquired by foreign multinationals in order more fully to understand the impact of taxation on FDI.

Table 1

FDI Investment in the U.S.

by year

in millions of U.S. dollars

	Iaff	Iacq	Iest	Itot	Iflow
80	16891	8974	3198	29063	16918
81	26716	18151	5067	49934	25195
82	28068	6563	4254	38885	13792
83	23179	4848	3244	31271	11946
84	25225	11836	3361	40422	25359
85	28919	20083	3023	52025	19022
86	28516	31450	7728	67694	34091
87	33035	33933	6377	73345	46894
88	44322	64855	7837	117014	58435
89	52258	59708	11455	123421	72244
90	NA	56773	7651	NA	25709

Iaff- Affiliate Investment

Iacq-Acquisition Investment

Iest- Establishment Investment

Itot-the sum of Iacq,Iest and Iaff

Iflow is the capital flow measure of FDI

NA - Not Available

Source: Survey of Current Business, various issues.

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Table 2

Changes in the Incentives for Foreign Direct Investment

Worldwide Countries

β	$\phi = 5$			$\phi = 15$		
	0	.5	1	0	.5	1
Equipment	.214	.136	.058	.034	-.103	-.240
Structures	-.171	-.222	-.273	-.121	-.190	-.258
Land	-.116	-.149	-.182	-.085	-.134	-.182
Intangibles	0	-.111	-.222	0	-.111	-.222

Territorial Countries

β	$\phi = 5$			$\phi = 15$		
	0	.5	1	0	.5	1
Equipment	-.060	-.030	0	-.042	-.021	0
Structures	.068	.034	0	.099	.050	0
Land	.065	.033	0	.096	.048	0
Intangibles	0	0	0	0	0	0

Table 2 records values of expression 1. For equipment, the parameters assumed are: $\pi=.04$, $\rho=.04$, $\delta'=2$, $\eta=1$, $\phi_F=1$. For structures, we assume the same except that $\delta=.033$, and $\delta'=.05$; for land, $\delta=\delta'=0$; for intangibles, $\delta=.09$, $\delta'=\infty$. The values of δ for equipment and structures are taken from Auerbach and Hines (1987).

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Table 3A

FDI Affiliate Investment

by country of origin,by year

in millions of U.S. dollars

	Canada	France	Germany	Neth.	Japan	UK
80	3868	1423	2317	2719	1237	2363
81	8116	1704	2658	3650	1254	4108
82	7771	1489	2317	3350	1795	5055
83	5451	1191	1950	2482	1675	4834
84	5810	1285	2183	2856	2339	4765
85	6437	1318	2715	3467	3072	5392
86	5842	1332	2920	3095	3925	4788
87	6445	1236	3186	3324	6075	5727
88	8345	1894	4251	3823	7757	7767
89	9920	2573	4734	3897	11132	7105

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Table 3B

FDI Acquisition Investment

by country of origin, by year

in millions of U.S. dollars

	Canada	France	Germany	Neth.	Japan	UK
80	1743	516	1186	783	2521	2793
81	5100	801	800	408	469	5309
82	914	359	315	139	137	2002
83	718	167	378	360	199	1448
84	2185	145	476	460	1352	2964
85	2494	593	2142	579	463	6023
86	6091	2403	1167	4406	1250	7699
87	1169	1949	4318	204	3340	14648
88	11162	3691	1849	2067	12233	22237
89	3786	2979	2300	3041	10184	20357

Table 3C

FDI Establishment Investment

by country of origin, by year

in millions of U.S. dollars

	Canada	France	Germany	Neth.	Japan	UK
80	213	83	238	867	75	273
81	984	104	349	163	147	869
82	282	124	285	191	450	1126
83	354	128	206	132	193	918
84	402	186	210	102	454	751
85	420	161	127	192	689	708
86	412	88	184	295	4166	872
87	107	96	347	188	3666	494
88	198	508	241	147	3956	321
89	141	146	253	237	4712	1611

Table 4

Fraction of FDI Flow in Manufacturing

	Canada	France	Germany	Neth.	U.K.	Japan
81	.306	1*	.159	.315	.307	.097
82	1*	1*	.062	.209	.218	.155
83	1*	1*	.299	.494	.194	.005
84	.225	0*	0*	.290	.099	.138
85	.852	1*	.628	.193	.395	.087
86	.486	1*	.541	0*	.430	.129
87	.682	.617	.641	.430	.452	.233
88	.498	1*	1*	.435	.526	.380
89	.748	.752	.448	.556	.780	.292

Items accompanied by a * indicate that the value is outside of the range of 0-1.
This can occur because the flow data are based on inbound FDI net of transfers out
of the United States.

Source: Unpublished BEA data.

Table 5

Structures and Equipment as a Share of the Capital Stock

by type of acquisition

before and after the Tax Reform Act of 1986

unweighted

by all files

	Territorial		Worldwide		Compustat Firms		Dom Acq.	
	struct.	equip.	struct.	equip.	struct.	equip.	st.	eq.
Before								
TRA86	.262	.521	.330	.527	.259	.543	.305	.519
	(.126)	(-.663)	(3.08)	(-.768)				
	((-1.64))	((.077))	((1.19)	((.048))				
After								
TRA86	.309	.553	.346	.512	.254	.549	.362	.488
	(1.41)	(.092)	(2.17)	(-.809)				
	((-1.25))	((1.34))	((-.358))	((.472))				
t aft-bef.								
	1.00	.579	.219	-.161				

the t-statistics in single parentheses test the difference from the full sample means. The t-statistics in double parentheses test the difference from the domestic acquisition means.

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Appendix A

A Model of FDI

This appendix presents a model in which the various effects of taxation on foreign direct investment may be measured and compared. The analysis closely follows that in Auerbach (1989). Where possible, we will use the same notation and omit steps in the derivation that follow from this earlier treatment.

We assume that U.S. firms are price-takers and invest subject to a constant returns to scale production function in capital alone, subject to quadratic adjustment costs. Foreign firms invest in the United States only via takeover (an assumption we will relax later), with these acquisitions also subject to adjustment costs. This means that one may separate the questions of investment and ownership, with the former being determined by U.S. firms and the latter by foreign firms.

Domestic Firms

The assumptions of the model give rise to a system of differential equations in the capital stock, K, and the shadow value of new capital, q. Linearizing the model and substituting for q yields:

(A1)
$$\ddot{K}_t - \rho \dot{K}_t = \frac{\rho + \hat{\delta}}{\phi} K^* \tilde{a}_t$$

where ρ is the firm's real discount rate, ϕ is the quadratic adjustment cost term, $\hat{\delta} = \delta(1 - \frac{1}{2}\delta\phi)$ is an adjusted measure of the depreciation rate δ, K^* is the steady-state capital stock, and

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(A2)
$$\tilde{a}_t = \frac{(k^*+\Gamma^*)-(k_t+\Gamma_t)}{1-k^*-\Gamma^*} - \frac{\tau^*-\tau_t}{1-\tau^*} + \frac{1}{\rho+\hat{\delta}} \cdot \frac{\dot{k}_t+\dot{\Gamma}_t}{1-k^*-\Gamma^*} - \frac{p_t-p^*}{p^*}$$

$$= a_t - \frac{p_t-p^*}{p^*}$$

where k is the investment tax credit, Γ the present value of tax savings from depreciation, τ the corporate tax rate, p then relative output price, and the superscript "$*$" indicates a steady state value.

If we assume a constant elasticity demand specification for output:

(A3)
$$\frac{p-p^*}{p^*} = -\eta\left(\frac{K-K^*}{K^*}\right)$$

then (A1) may be rewritten:

(A4)
$$\dot{K}_t - \rho\dot{K}_t - \frac{\eta(\rho+\hat{\delta})}{\phi}K_t = \frac{-\eta(\rho+\hat{\delta})}{\phi}K^*(1-\frac{1}{\eta}a_t)$$

Assuming that the economy is initially in a steady state at date zero (say 1986), and that the tax parameters shift immediately and permanently at that date ($a_t = a$), the solution for K_t and q_t ($t \geq 0$) are:

(A5.1)
$$K_t = K^*(1-\frac{1}{\eta}(1-e^{\lambda_1 t})a)$$

(A5.2)
$$q_t = 1 + \frac{\lambda_1\phi}{\eta}ae^{\lambda_1 t}$$

where λ_1 is the stable (<0) root of equation (A4). Equations (A5) provide the typical saddle-path behavior of K and q, with (for $a>0$) K steadily falling to its new level as q rises steadily back to its long run value of 1 after jumping initially at $t=0$.

Foreign Firms

The foreign firm's problem differs in two ways from that of the domestic firm. First, its acquisition policy has no impact on domestic output is the output price, p. Second, it must acquire capital in the form of firms. Specifically, we assume that increases in foreign-owned capital (as opposed to simple replacement investment) require the purchase of existing firms and their capital. Hence, the price a foreign firm faces for capital (net of adjustment costs) is not the new capital goods price, 1, but the value of the firm, say σ (the determination of which will be discussed below). Thus, if we define ρ^F and ϕ^F in a way comparable to ρ and ϕ, the foreign firm's behavior will be characterized by (compare to A1 and A2):

$$(A6) \qquad \dot{K}_t^F - \rho^F \dot{K}_t \; \dot{=} \; \frac{\rho^F + \hat{\delta}}{\phi^F} K^{*F} \hat{a}_t^F$$

where

$$(A7) \qquad \hat{a}_t^F - \bar{a}_t^F + \frac{\rho^F}{\rho^F + \hat{\delta}} \cdot \frac{\sigma_t - \sigma^*}{\sigma^*} - \frac{1}{\rho^F + \hat{\delta}} \cdot \frac{\sigma_t}{\sigma^*}$$

and $\bar{a}^F$ is defined in parallel fashion to $\bar{a}$ in (A2), $-a_t^F - \eta \left[\frac{p_t - p^*}{p^*}\right]$. The cost of capital term in (A7) includes an additional component due to the changing price of existing capital, σ.

Since the output price change included in $\bar{a}^F$ does not depend on the size of the foreign-owned capital stock, K^F, expression (A6) is a first-order equation in K, yielding the solution at t=0:

$$(A8) \qquad \frac{\dot{K}_0^F}{K^{*F}} - - \frac{\rho^F + \hat{\delta}}{\phi^F} \cdot \int_0^\infty e^{-\rho^F t} \hat{a}_t^F \, dt$$

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which may be broken up into three pieces, using the definition of $\hat{a}^F$ in (A7), due to changes in taxation (a^F), changes in output prices (p) and changes in the cost of acquiring firms (σ, δ). Only the first two effects are present for domestic firms in this model.

From (A3) and (A5.1), we have

(A9)
$$\frac{p_t - p^*}{p^*} = -(1 - e^{\lambda_1 t})a$$

which, put into (A8), provides the initial change in the rate of FDI due to price changes:

(A10)
$$\frac{-a\lambda_1(\rho^F + \hat{\delta})}{\phi^F \rho^F (\rho^F - \lambda_1)}$$

which has the same sign as a. Hence, a rise in domestic taxes, though a restriction of domestic output and a rise in domestic prices, in itself encourages FDI. However, we must also consider the impact of taxation and the cost of acquisitions. Even firms that do not face any direct tax increase at all may still face a change in the cost of acquiring capital goods.

Before proceeding with a full analysis, let us note some additional properties of the solution (A8). If we ignore changes in σ, we obtain

(A11)
$$\frac{\dot{K}_0^F}{K^{*F}} = -\left[\frac{a^F(\rho^F + \hat{\delta})}{\phi^F \rho^F} + \frac{a\lambda_1(\rho^F + \hat{\delta})}{\phi^F \rho^F (\rho^F - \lambda_1)}\right]$$

which adds to (A10) a term reflecting the direct effect of taxation on investment (negative if $a^F > 0$). If $a^F = a$, this entire term is negative (since $\lambda_1 < 0$), and may be shown to equal the investment rate for the domestic firm if, in addition, $\rho^F = \rho$

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which adds to (A10) a term reflecting the direct effect of taxation on investment (negative if $a^F > 0$). If $a^F = a$, this entire term is negative (since $\lambda_1 < 0$), and may be shown to equal the investment rate for the domestic firm if, in addition, $\rho^F = \rho$ and $\phi^F = \phi$: for common tax and economic parameters, only the behavior of the price term σ causes the foreign firm to behave differently, adding an additional term to (A11).

What will existing domestic firms cost? Absent taxes, the capital of existing firms will have a value of q per unit. If foreign firms actually paid this price, the expression for the rate of foreign investment at date zero would be the term in (A11) plus

(A12)
$$ -\frac{a\lambda_1\phi}{\phi^F\eta} $$

In this case, assuming that $(\rho^F, a^F) = (\rho, a)$ yields a solution $K^F_0 = 0$: the changes in q just offset changes in taxes and prices. This is not really surprising, since q reflects the present value of after-tax cash flows from new capital.

Even if we assume, for simplicity, that $\rho^F = \rho$ and $\phi^F = \phi$, differences in tax rules ($a^F \neq a$) and the wedge between the costs of firms and new capital ($\sigma \neq q$) will cause $K^F_0 \neq 0$.

The Costs of Acquisition

The effective price of capital to foreign firms, σ, as well as the effective tax rate on that capital, which determines a^F, depend on the nature of the acquisition itself. If we assume a competitive market for existing firms, then the owners of a firm must receive payment equal to the market value of the existing capital which is the firm's only asset. If assets are written off at rate δ' on an historical cost basis, then the value of existing capital at date t (assuming it was acquired in a steady state) equals

(A13)
$$q_t^K = q_t(1-k-\Gamma) + \frac{\delta}{\delta' + \pi}\Gamma$$

where π is the rate of inflation. Combined with (A5.2), (A13) yields:

(A14)
$$q_t^K = (1-k-\Gamma(1-\frac{\delta}{\delta' + \pi})) + \lambda_1\frac{\phi}{\eta}(1-k-\Gamma)ae^{\lambda_1 t}$$

Normally, $q^K < q$, reflecting the relatively favorable treatment of new capital. An important change in 1986 was to lessen the relative burden on existing capital, leading to an increase in q^K, given q.

A remaining element of the cost of acquisition involves capital gains and recapture taxes. As nearly all FDI acquisitions use cash as a means of payment, and do not qualify as reorganizations, selling shareholders are liable for individual capital gains taxes. If the acquisition is treated as an asset purchase, with a step-up in the basis of assets, the acquired corporation is liable for recapture taxes and, since the 1986 repeal of the General Utilities doctrine, capital gains taxes as well. This change, along with the increase in individual capital gains tax rates, should have discouraged acquisitions in general, but especially asset acquisitions, for all acquiring parties.

Because we are interested primarily in the _relative_ incentives for acquirers from different countries, and whether some foreign parents may have had an _increased_ incentive to acquire U.S. firms, we shall concentrate on the most favorable assumptions for foreign acquisitions in general, supposing that shareholder capital gains taxes are unimportant and that deals were structured as acquisitions of stock to avoid corporate level taxes.

These assumptions imply that existing capital costs foreign acquirers q^K per unit, and that the tax attributes of the acquired firms carry over. For simplicity, we shall consider two polar cases: "worldwide" firms for which direct

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tax effects were not affected by the 1986 Act ($a_F = 0$), and "territorial" firms for which only U.S. tax parameters matter.

Worldwide Firms

Letting $\sigma_t = q_t^K$ and $\sigma^* = (1-k^*-\Gamma^*(1-\frac{\delta}{\delta'+\pi}))$ (see A14) yields the solution (for $a_F=0$):

$$(A15) \qquad \frac{\dot{K}_0^F}{K^{*F}} = -\frac{1}{\phi^F}\left\{\frac{a\lambda_1(\rho^F+\delta)}{\rho^F(\rho^F-\lambda_1)} + \frac{a\lambda_1\phi}{\eta}\left[\frac{1-k-\Gamma}{1-k^*-\Gamma^*\left[1-\frac{\delta}{\delta'+\pi}\right]}\right]+B\right\}$$

where

$$(A16) \qquad B = \frac{-(k-k^*)-(\Gamma-\Gamma^*)\left[1-\frac{\delta}{\delta'+\pi}\right]}{1-k^*-\Gamma^*\left[1-\frac{\delta}{\delta'+\pi}\right]}$$

The first two terms, representing the effects of increased output prices and reduced capital goods prices (for $a>0$), encourage investment. The last term, B, represents the increased cost of existing capital, and discourages investment.

Territorial Firms

Instead of computing a^F for existing capital, it is easier to note that the difference between q^K and q reflects the difference between the tax treatment of existing and new capital. Hence, buying existing capital for q^K or new capital for q results (for the _territorial_ firm) in the same present value, with the difference in future taxes just offsetting the initial difference in price. This means that we may replace q^K with q and let $a^F=a$ to obtain the solution for the territorial firm. Combining (A11) and (A12), we obtain:

$$(A17) \qquad \frac{\dot{K}_0^F}{K^{\cdot F}} = -\frac{1}{\phi^F}\left\{\frac{a(\rho^F+\hat{\delta})}{\rho^F} + \frac{a\lambda_1(\rho^F+\hat{\delta})}{\rho^F(\rho^F-\lambda_1)} + \frac{a\lambda_1\phi}{\eta}\right\}$$

$$= -\frac{a}{\phi^F}\left[\frac{\rho^F+\hat{\delta}}{\rho^F-\lambda_1} + \frac{\lambda_1\phi}{\eta}\right] = -\frac{a}{\phi^F}\left[\frac{\rho^F+\hat{\delta}}{\rho^F-\lambda_1} - \frac{\rho+\hat{\delta}}{\rho-\lambda_1}\right]$$

(where the last step uses the fact that $\lambda_1(\rho-\lambda_1) = \frac{(\rho+\hat{\delta})\eta}{\phi}$). As suggested above, if $\rho^F = \rho$ then the entire expression equals zero.

Extensions

If, more generally, we wish to assume that firms obtain a fraction $(1-\beta)$ of their new capital through the direct purchase of assets, paying a price 1 per unit (net of adjustment costs) rather than q^K, we obtain the more general expressions for investment by worldwide and territorial firms, respectively:

$$(A18W) \qquad \frac{\dot{K}_0^F}{K^{\cdot F}} = -\frac{1}{\phi^F}\left\{\frac{a\lambda_1(\rho^F+\hat{\delta})}{\rho^F(\rho^F-\lambda_1)} + \beta\frac{a\lambda_1\phi}{\eta}\left[\frac{1-k-\Gamma}{1-k^*-\Gamma^*\left[1-\frac{\hat{\delta}}{\delta'+\pi}\right]}\right] + \beta B\right\}$$

$$(A18T) \qquad \frac{\dot{K}_0^F}{K^{\cdot F}} = -\frac{1}{\phi^F}\left\{\frac{a(\rho^F+\hat{\delta})}{\rho^F-\lambda_1} + \beta\frac{a\lambda_1\phi}{\eta}\right\}$$

If $\beta=0$, investment by worldwide firms is positive if $a>0$ (since $\lambda_1<0$), while investment by territorial firms is negative. As $\beta\to1$, investment by territorial firms rises to zero, while that of worldwide firms falls, as long as q^K actually rises. The overall sign of investment by worldwide firms cannot be unambiguously determined without additional assumptions. In our numerical calculations, we assume that $\rho^F = \rho$, which allows us to simplify (A18):

$$(A19W) \qquad \frac{\dot{K}_0^F}{K^{\cdot F}} = -\frac{1}{\phi^F} \left\{ \left(\frac{a\lambda_1 \phi}{\eta} \right) \left(-\frac{\lambda_1}{\rho} + \beta \left[\frac{1-k-\Gamma}{1-k^{\cdot}-\Gamma^{\cdot} \left(1 - \frac{\delta}{\delta^{\prime}+\pi}\right)} \right] \right) + \beta B \right\}$$

$$(A19T) \qquad \frac{\dot{K}_0^F}{K^{\cdot F}} = -\frac{1}{\phi^F} \left(\frac{a\lambda_1 \phi}{\eta} \right) (\beta-1) .$$

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Appendix B

Data Sources

The FDI data are taken from various issues of the Survey of Current Business, and from floppy diskettes provided by the BEA.

The means of payment data for foreign acquisitions were constructed as follows: a list of foreign acquisitions was constructed from MLR Publishing's "Mergers and Acquisitions: The Journal of Corporate Venture". The means of payment for each acquisition was then taken from Commerce Clearing House's "The Capital Changes Reporter".

The means of payment data for domestic acquisitions were purchased from MLR publishing.

The investment outflow data were taken from the International Financial Statistics Yearbook, 1990.

The numbers reported in table 5 are the ratios of Compustat data item 156(machinery and equipment-net) and 155(buildings-net) to data item 8 (property plant and equipment-total net). Data from the Industrial,Research and Full Coverage files was used to construct the full sample means.

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1. In addition to the papers already mentioned above, the literature attempting to explain inward FDI includes Boskin and Gale (1987), Froot and Stein (1989), and Newlon (1987). For an excellent and comprehensive review of the literature see Slemrod (1990a).

2. Table 4, p. 33.

3. In addition, there are other possible shortcomings of the flow data. Firms from territorial countries (those not receiving credits for U.S. taxes at home) might have a higher incentive to borrow in the U.S. to avoid U.S. taxes, so we might expect the flow data to systematically understate their investment relative to that from worldwide countries.

4. For a useful discussion of the differences in coverage of the different measures see Quijano (1990). The balance of payments flow data and affiliate financial and operating data track the behavior of existing U.S. affiliates of foreign corporations. The acquisition and establishment data survey existing U.S. companies acquired by foreign investors, and new companies established by foreign investors. The reported affiliate investment here is affiliate investment in new plant and equipment only. If an affiliate purchases an existing U.S. firm, this shows up in the acquisition data.

5. The total of these three investment series, given in the fourth column of Table 1, is roughly double the flow series given in the last column. This reflects both the absence of domestically financed capital from the flow series and the fact that some of the domestic affiliates are only partially owned by foreign investors. Moreover, the flow data net out sales of domestic firms back to domestic parents. Still, we view the affiliate, acquisition and establishment data as more closely related to business fixed investment activity.

6. This is generally the case if the acquisition qualifies as a "B" or "C" reorganization, so designated because the relevant code is Section 268 (a) (1) (B) or (C) of the Internal Revenue Code.

7. Since 1986, the tax losses of the acquired firm will be available only for restricted use, subject to the annual limitation that the losses claimed not exceed the value of the target multiplied by the federal long term tax exempt rate, provided that the acquirer can show that the acquired firm is an "ongoing" enterprise. If the acquired firm is liquidated within two years of the acquisition, the net operating losses cannot be used.
    This limitation on the use of losses applies to stock acquisitions generally, regardless of whether they qualify for treatment as a tax-free reorganization.

8. Scholes and Wolfson (1990) argue that these transactions might also provide a way for foreign corporations to avoid taxes on an eventual basis step up by transferring assets initially acquired by a U.S. subsidiary in a stock transaction from the subsidiary to a foreign parent. However, this type of

transaction is taxable under section 367 (e) (2) of the Internal Revenue Code.
There was some uncertainty as to whether the IRS could enforce this section.
Notice 87-5, issued at the end of 1986, argued that this treatment violates
some tax treaties, but eventually the IRS withdrew this notice (Notice 87-66),
making clear its commitment to impede such tax avoidance strategies.

9. Good information on the fraction of transactions by foreign parents taking
this form is not available.

10. When a foreign firm purchases old capital, i.e., an existing U.S. firm,
the transaction is simply a change in ownership, and should obey our
assumptions. When a foreign firm purchases new capital, however, this could,
in principle, change domestic output and price, unless the foreign investment
is quite small relative to domestic investment.

11. While β may range in the model between 0 and 1, it does not vary over time.
Thus, we have not incorporated the possibility that β may depend upon a foreign
corporation's domestic experience, with relative newcomers perhaps more likely
to weigh takeovers heavily at first. We return to this issue below. (see
footnote 16).

12. We note, however, that this conclusion regarding the relative shift toward
acquisitions by territorial companies ignores the possibility that worldwide and
territorial companies' acquisitions may also have been affected by the repeal of
the General Utilities doctrine, the effects of which our model does not include.

13. The effect of lengthened depreciation lifetimes was more than offset by the
reduction in the corporate tax rate. We have not attempted to quantify the
impact of other provisions, such as the strengthened corporate minimum tax.

14. These characterizations are taken from Slemrod (1990a). We note, however,
that the distinction is not so clear in reality. Territorial countries do not
necessarily exempt all types of foreign source income. On the other hand,
investors in worldwide countries may face no effective tax rate on foreign source
income, either because of excess foreign tax credits, or the use of retained
earnings as the marginal source of finance (see section III above).

15. It might be argued that the general increase in FDI over the late 1980's
simply reflects exchange rate movements. To control for this effect, we
recalculated the figures in tables 3A, 3B and 3C in units of the home currency.
Indeed, this did reduce the measured growth rate in FDI from 1986 to 1988. The
explosion in acquisitions by worldwide countries stands out even more.
Denominated in Yen, Japanese acquisitions grew by a factor of 7.5 from 1986 to
1988, while UK acquisitions, stated in pounds, grew by a factor of 2.5.

16. The merger boom might be less damaging if it reflected a choice by new
foreign parents to acquire existing U.S. firms in order to gain a foothold in the
U.S. market and facilitate further expansions through the purchase of new
equipment. In terms of our model, this would reflect a shift over time from a
very high to a very low value of β. If this effect were powerful, then the boom

in foreign merger activity could have been a signal of intended further expansion through purchases of new equipment.

To examine this hypothesis we calculated the percentage of acquisitions by new acquirers, for each year in a sample described below, of U.S. firms acquired by foreign parents. The ratio of new entrant to total acquisitions is uniformly high throughout the eighties, and increases from roughly .7 in 1985 to .99 in 1986 and .93 in 1987. Thus, the jump appears a year too early to be consistent with this view.

17. Unfortunately, data on the breakdown of these flows among the various modes of investment (acquisition, establishment and direct capital purchase) are not available.

18. The ratios were not significantly different from the full sample means when weighted averages were used, because of the huge influence of a small number of very large targets.

Figure 1

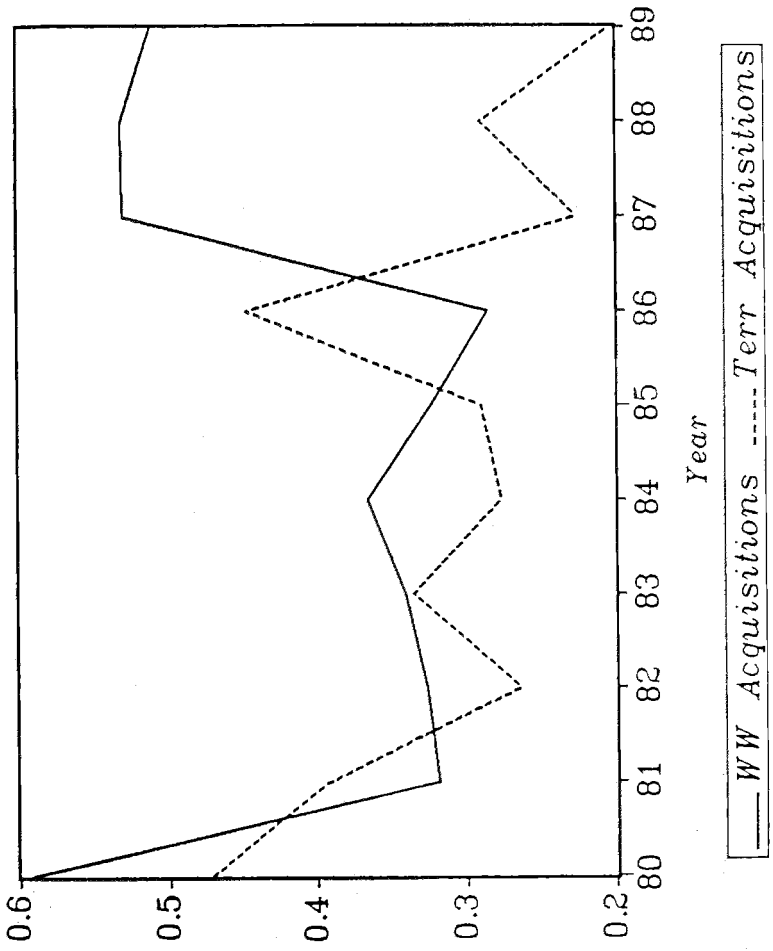Fraction of Total Foreign Acquisitions in the U.S.

—— WW Acquisitions ----- Terr Acquisitions

Figure 2

Fraction of Total U.S. Affiliate Investment

—— WW Aff. Investment ---- Terr Aff. Investment

Figure 3

Fraction of Total Establishment Investment

— WW est. investment ---- Terr est. investment
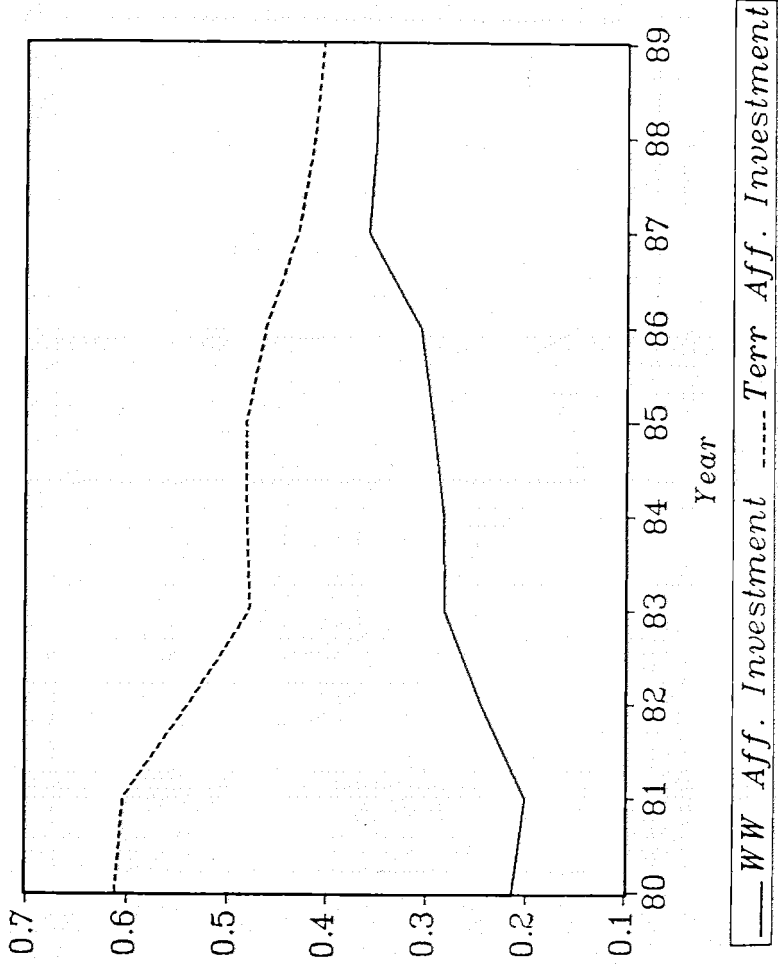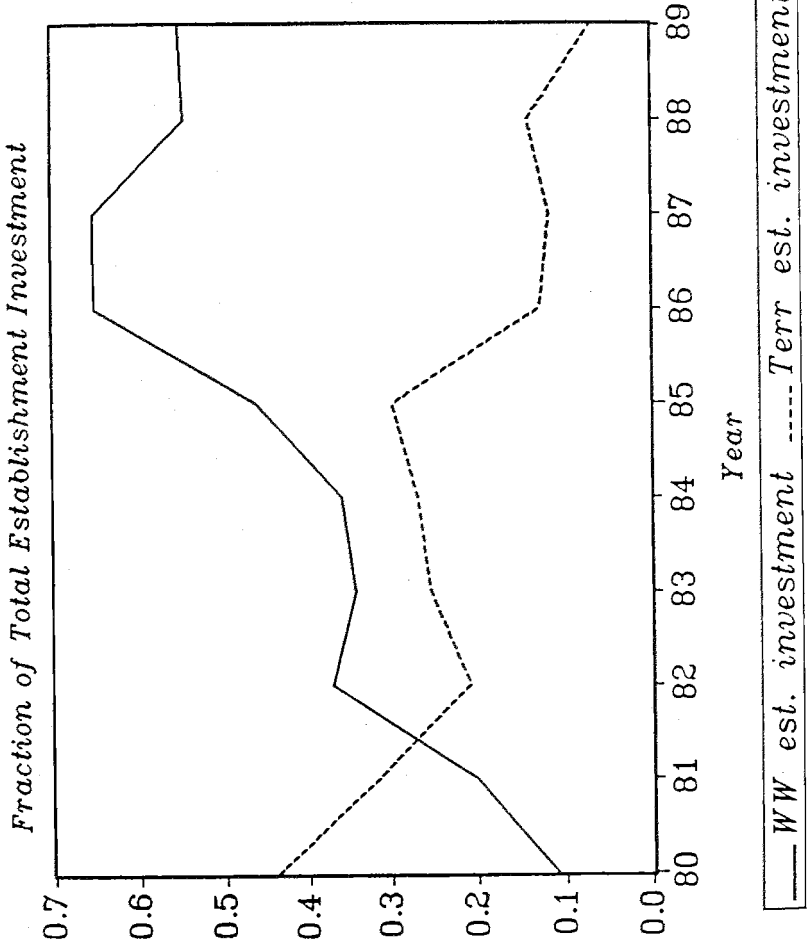
Figure 4

Affiliate and Establishment FDI Relative to Total
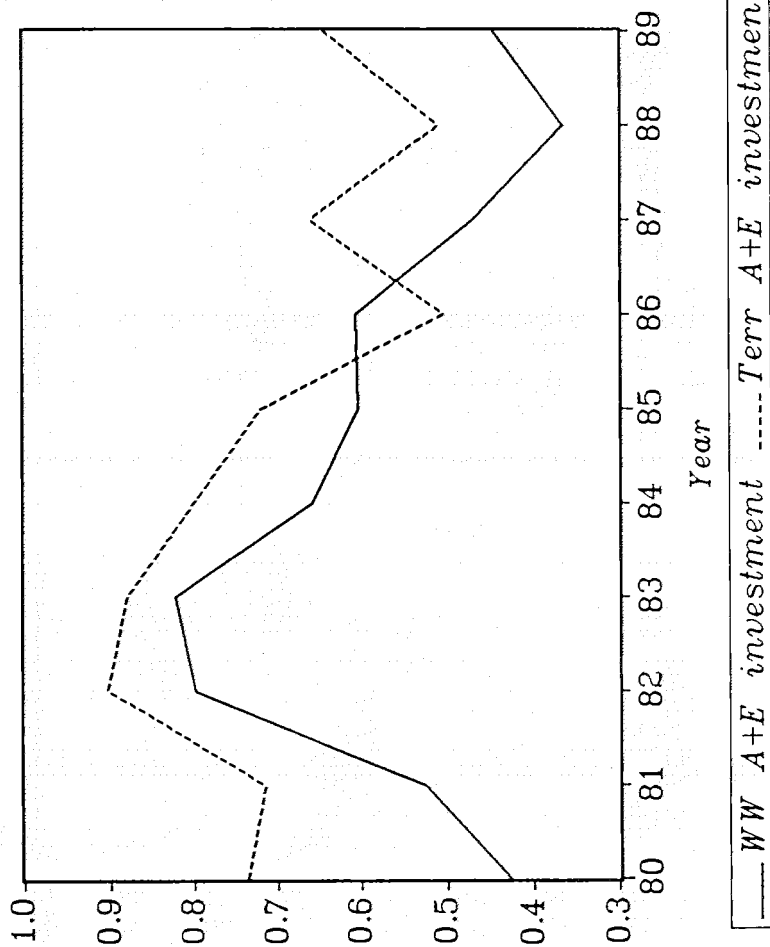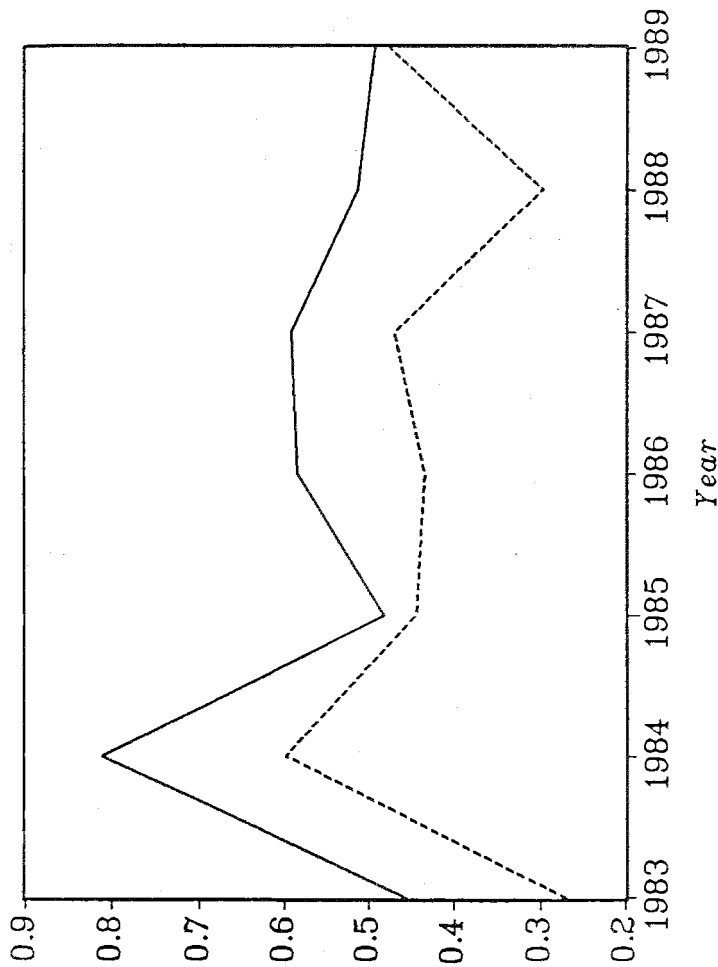
Figure 5

U.S. Inflow as Fraction of Foreign Outflows

——— Worldwide U.S. Investment   ------Terr. U.S. Investment