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INCENTIVE EFFECTS OF FOREIGN TAX CREDITS ON MULTINATIONAL CORPORATIONS

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Abstract *- The United States tax code allows multinational corporations to credit tax payments made to foreign treasuries against domestic tax obligations, up to their United States tax liability on foreign-source income. If foreign tax payments exceed the United States tax liability on foreign-source income, the corporation is said to be in excess credits. We study how the incentives for investment abroad through foreign subsidiaries change as parent corporations transit into and out of excess credits. We also examine how the presence of foreign tax credit carryforwards affects tax-related investment incentives.*

INTRODUCTION

American multinationals are taxed on the basis of their worldwide income. This "residence" approach creates the potential for the double taxation of foreign-source income. For this reason, the United States has adopted a foreign tax credit system which allows multinationals to credit tax payments to foreign treasuries against their United States tax obligations on international income.[1] To prevent multinationals from using the foreign tax credit to reduce tax liabilities on domestic income, the credit is limited to the United States tax liability on foreign-source income. Corporations that do not receive full credits for taxes paid abroad are said to be in "excess credits." This paper considers how investment incentives change as multinational corporations switch into and out of excess credit positions.

United States tax policy toward foreign-source income has traditionally attempted to provide United States investors with capital export neutrality.[2] Under this tax doctrine, income should be taxed at the same rate in the home country whether it is derived from foreign or domestic investment.[3] The foreign tax credit preserves capital export neutrality by refunding the taxes that United States multinationals pay abroad. On the other hand, since the credit is limited, United States taxes will distort the investment choices of corporations with excess credits. Capital export neutrality is violated for this group of corpo-

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rations, since an investment in a country with a low corporate tax rate will be more attractive than a similar investment in the United States or a high corporate tax rate country. Capital export neutrality is further compromised by the deferral advantages available on income earned through foreign subsidiaries, which is not subject to United States taxation until it is remitted to United States parents.[4] This feature of the tax code enhances the attractiveness of low tax locations for all United States multinationals regardless of foreign tax credit positions.[5]

The logic presented above was challenged in a seminal article by David Hartman. By taking into account future as well as current United States tax liabilities on repatriated earnings, Hartman (1985) showed that under a credit and deferral tax system the home country tax rate on foreign-source income is irrelevant to investment decisions of foreign subsidiaries if investment is financed by subsidiary retained earnings.[6] Hartman's work demonstrates that in this case credit and deferral systems do not provide capital export neutrality but instead yield capital import neutrality: United States and host country domestic investors are influenced by the same set of corporate tax parameters.

Although this benchmark result characterizes steady-state investment incentives, the model does not consider how domestic and foreign taxes impact investment decisions in settings in which foreign tax credit positions of multinationals change over time. This case is particularly relevant after the passage of the Tax Reform Act of 1986 (hereafter, TRA '86) which lowered the corporate tax rate from 46 percent to 34 percent and consequently increased the likelihood that United States multinationals will find themselves with excess foreign tax credits.[7]

Even before TRA '86, there was evidence that a significant proportion of United States multinational corporations transited into and out of excess credit positions. Altshuler and Newlon (1993) (hereafter, A&N) used a sample of United States corporate tax returns to develop estimates of the extent to which multinational corporations switched foreign tax credit states during the 1980s. Their estimates are calculated for three time periods: 1980–2, 1982–4, and 1984–6. During each of these time periods, more than one-third of parent corporations switched credit states, and this proportion increased over time to almost one-half in the 1984–6 sample.[8] This paper analyzes the investment incentives of these corporations.

We present the simplest model necessary to derive our results. Following Hartman (1985), we consider the source of both current and future funds for marginal foreign investment.[9] We discuss how domestic and foreign taxes impact the (marginal) investment decision rules for an all-equity financed foreign subsidiary. Unlike previous work, we consider parent corporations that control subsidiaries in more than one foreign location and that transit into and out of excess credits. If foreign tax credit positions change over time, we find that the Hartman result does not obtain and neither capital import nor capital export neutrality holds.[10] Marginal investment decisions are dependent on the credit position of parents, the financial policy of the subsidiary, and both domestic and foreign tax rates. We also show that parent corporations that switch foreign tax credit positions face an opportunity cost of capital that may be higher or lower, depending on the location of subsidiary investment, than that faced by subsidiaries with parents that remain in the same credit state.

Since the emphasis of our analysis is on

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the effects of the foreign tax credit limitation, we also investigate the impact of foreign tax credit carryforwards on investment incentives. Under current law, excess foreign tax credits can be carried back for two years and forward for five years to offset United States tax liabilities on foreign-source income. We find that allowing multinational corporations to claim foreign tax credit carryforwards may decrease or increase the opportunity cost of foreign investment. This is interesting given the expected post-TRA '86 increase in the number of multinationals with excess credits and in light of recent proposals to extend the carryover period for the foreign tax credit.[11]

The remainder of the paper is organized as follows. First, we briefly discuss the United States tax treatment of foreign-source income and describe our model of investment behavior. We then present decision rules, derived from our model, for marginal investment of subsidiaries with parents in different financing and foreign tax credit regimes. Following this, we examine the impact of foreign tax credit carryforwards on investment incentives. The last section of the paper offers some concluding remarks.

THE MARGINAL INVESTMENT DECISION RULE

In this section, we analyze the investment decision faced by a multinational with investment opportunities in a subsidiary located in a foreign country. For simplicity, we will assume that the subsidiary is wholly owned by the United States parent corporation and that investment projects at both the parent and subsidiary level are completely equity financed.[12] In this case, investment in the subsidiary may come either at the expense of a foregone dividend repatriation or through an equity transfer from the parent company. A consequence of this financing scheme is that the value of the subsidiary investment to the parent corporation will depend on the United States taxation of dividend repatriations. The first part of this section discusses the tax consequences of dividend remittances. The second part presents an analysis of the required rate of return for subsidiary investment projects taking repatriation taxes into account.

The Tax Consequences of Dividend Remittances

United States multinationals must pay taxes on both domestic and foreign-source income. However, the United States allows credits for foreign taxes paid directly on income as it is received by the parent corporation (*direct* credits) and for foreign income taxes paid on the income out of which a distribution is made to the parent corporation (*deemed paid* or *indirect* credits). The deemed paid credit available for a dividend distribution is calculated by first grossing up the dividend repatriation by the foreign tax deemed paid on that dividend.[13] The grossed up dividend in period t can be written as $D^i_t/(1 - \tau^i)$, where D^i_t represents the dividend remittance from a subsidiary operating in host country i and τ^i represents the corporate tax rate in host country i.[14] The United States tax liability before foreign tax credits is $\tau D^i_t/(1 - \tau^i)$, where τ is the United States corporate tax rate. The credit potentially available on the dividend remittance is equal to the sum of the deemed paid credit on the distribution, $\tau^i D^i_t/(1 - \tau^i)$, and the direct credit for withholding tax at rate t^i paid to country i on the dividend remittance, $t^i D^i_t$.[15]

As discussed in the Introduction, the amount of credit available on the dividend remittance is limited to the United States tax payable on foreign-source income. Corporations are in excess credits if foreign tax payments exceed the limitation.[16] Corporations for which the limi-

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tation is not binding receive full credits for taxes paid abroad and are said to be in "excess limitation" or "deficit credits."

The foreign tax credit limit operates to some extent on an overall basis. Under current tax law, excess credits accruing from one source of foreign income can often be used to offset United States tax on foreign income from another source.[17] This averaging can occur when United States parent corporations receive simultaneous dividend remittances from subsidiaries in high tax rate and low tax rate countries. Averaging can also occur between different types of foreign-source income and across time through foreign tax credit carryforwards. In this section, we take the first type of averaging into account. The next section considers averaging across time.

Allowing simultaneous dividend remittances from subsidiaries located in high tax rate and low tax rate countries will impact the after-tax value of dividends.[18] Let k_t^i represent the value of one dollar of dividend repatriations after home and host country taxes. Firms in excess credits pay no home country taxes on dividend repatriations, and therefore a dollar of dividends is subject only to withholding taxes in the host country. For these firms, k_t^i is equal to $1 - t^i$. On the other hand, a multinational in excess limitation must pay home country taxes on grossed up dividend repatriations but receives a full credit on withholding taxes, and thus $k_t^i = (1 - \tau)/(1 - \tau^i)$.[19]

Note that repatriations from subsidiaries located in high tax countries to parents in excess limitation reduce United States tax liabilities on foreign-source income through averaging. In this situation, the after-tax value of one dollar of dividends exceeds one, since by repatriating dividends, the parent decreases its United States tax liability on foreign-source income by $(\tau^i - \tau)/(1 - \tau^i)$. Alternatively, dividend remittances from subsidiaries located in low tax countries to parents in excess limitation have an after-tax value of less than one.[20] Deferring repatriations from low tax countries is an attractive strategy for parents in this situation.

The Required Rate of Return on Subsidiary Investment Projects

We assume that the investment projects of foreign subsidiaries are chosen so as to maximize the wealth of parent company stockholders.[21] This means that at any given time period, the objective of the firm is to choose an investment plan maximizing the after-tax, cum-dividend market value of the shares of the parent company. Auerbach (1979) shows that under these assumptions, the required rate of return on a marginal investment (the "cost of capital") will depend on its marginal source of funds at the time investment is made and in all future periods in which the project has a positive payoff. This implies that if the marginal source of funds for the parent company in the current and in all future dates is retained earnings, the appropriate rate to discount after-corporate-tax cash flow is $R = \rho/(1 - \tau_G)$, where ρ is the discount rate on tax-free income and τ_G is the accrual equivalent tax rate on capital gains.[22]

To simplify the exposition, we will assume that the subsidiary has access to investment projects with the following cash flow pattern. A project undertaken by subsidiary i at, say, $t = 0$, requires an initial investment of I. After that, in every future period, $t = 1, \ldots, \infty$, the project will require a fixed level I of reinvestment and will provide a gross return of $I + F_i(I)$, with $F_i'(I) > 0$ and $F_i''(I) < 0$. We will also assume that the United States and host countries allow full deductions for these investment expendi-

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tures against the gross income earned one period later.[23] Under these assumptions, a project requiring an initial investment level of I will generate, after host country taxes, a net cash flow equal to $(1 - \tau^i)F_i(I)$ in every future period.

The profitability of an investment project will depend on its impact on the after-tax cash flow of the parent company. This, in turn, will depend on the source of financing for the subsidiary and on the foreign tax credit position of the parent company.[24] To simplify the exposition, we will assume that at the time the project is initiated, a fraction λ_0^i of investment in subsidiary i is financed by retained earnings and the residual fraction $1 - \lambda_0^i$ is financed by equity transfers from the parent company. Similarly, we assume that in all future periods, investment projects in the subsidiary are financed for a fraction μ_t^i by retained earnings and for the residual fraction $1 - \mu_t^i$ by equity transfers. Under these assumptions, an initial investment of a dollar will decrease dividend repatriations by λ_0^i, decreasing the parent's after-tax cash flow by $k_0^i\lambda_0^i$, and will require an increase of equity transfers by $1 - \lambda_0^i$. Therefore, the total effective cost to the parent company of one dollar of investment will be $k_0^i\lambda_0^i + 1 - \lambda_0^i$. In a similar way, at all future dates, a dollar of income from the project, after host country taxes, will increase dividend repatriations by μ_t^i and will allow the parent to decrease equity transfers to the subsidiary by $1 - \mu_t^i$. The value to the parent company of one dollar of project cash flow is then $k_t^i\mu_t^i + 1 - \mu_t^i$.

We may now discuss the expression for the minimum required rate of return on investment in a subsidiary. For simplicity, we will assume here that the parent credit state and the financing regimes of the subsidiary are stationary for all periods after the one in which the initial investment is made; that is, $\mu_t^i = \mu^i$, and $k_t^i = k^i$ for all $t = 1, \ldots, \infty$.[25] In this case, the share value of the parent company is maximized when the present discounted value of the marginal product of investment, after all corporate taxes, is set equal to the current after-tax cost of a marginal investment; that is, when the return on the marginal investment, $F_i'(I)$, satisfies:

$$(k^i\mu^i + 1 - \mu^i)\frac{(1 - \tau^i)F_i'}{R} = k_0^i\lambda_0^i + 1 - \lambda_0^i.$$

As long as dividend repatriation policies and credit states are stationary ($\mu^i = \lambda_0^i$ and $k^i = k_0^i$), the Hartman result obtains since the marginal condition for investment becomes

$$\frac{(1 - \tau^i)F_i'}{R} = 1.$$

The tax system provides capital import neutrality in the sense that investment is affected only by the host country corporate tax rate and not by the home country corporate tax rate. Marginal investment decisions are not impacted by United States taxes due upon repatriation, because these taxes reduce the opportunity cost of investment and the present discounted value of the return to investment by the same amount, since credit positions are constant over time for these companies.[26] However, if credit positions change, the United States taxes due upon repatriation will reduce the opportunity cost and return to investment by different amounts and capital import neutrality will not obtain.

In what follows, we discuss the opportunity cost of capital for parent corporations in two credit regimes that are defined by the credit position in the year in which investment takes place and in

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the following years. The first group of parents are in excess limitation when marginal investment is initialized, transit to an excess credit position in the next period, and remain in this regime for all future periods. The second group contains parents that are in excess credits when marginal investment is initialized, transit out of the credit constrained state in the next period, and remain in excess limitation for every future period.

These cases are interesting since there are several reasons why parent companies may anticipate a change in credit positions. Multinationals may switch credit states as a result of changes in statutory United States or host country tax rates or because of revisions in the tax law, such as those governing the averaging of foreign-source income. An anticipated switch may also be due to adjustments of repatriation strategies. In the remainder of this section, we study how investment incentives are affected by such anticipated changes in credit positions.

Following Hartman (1985), we examine the cost of capital for subsidiaries in two financing positions that we identify as mature and immature. At the margin, a mature subsidiary finances current and future investment through retained earnings ($\mu^i = \lambda_0^i = 1$). On the contrary, current investment in an immature subsidiary is financed through equity transfers ($\lambda_0^i = 0$). In the future, immature subsidiaries may be financed through retained earnings ($\mu^i = 1$), continued equity transfers ($\mu^i = 0$), or some combination of the two ($1 > \mu^i > 0$).

Mature Subsidiaries

Consider a subsidiary initially in excess limitation that transits to excess credits in the period immediately following the marginal investment. By substituting the appropriate values of μ^i, λ_0^i, k^i, and k_0^i into expression 1, the marginal condition on investment becomes

3

$$\frac{(1 - t^i)(1 - \tau^i)F_i'}{R} = \frac{1 - \tau}{1 - \tau^i}.$$

In contrast to the stationary credit regime, both the home and host country tax rates affect the marginal investment decision. Since earnings are repatriated while the parent is in excess credits, withholding taxes are not creditable and reduce the marginal benefit to investment. The marginal cost of investment is the after-tax value of the foregone dollar of dividend repatriations while in excess limitation, which depends on whether the investment is made in a high or low tax country.

For investments located in high tax subsidiaries, the marginal cost of investment is greater than one dollar because the additional investment expenditure induces a dividend payment that reduces the credit available to the parent. Since the marginal cost of investment increases and the marginal benefit decreases, the cost of capital in this regime is increased relative to the stationary credit regime. All else equal, investment in high tax countries is less attractive for parent corporations that expect to transit into excess credit positions than for those that expect to stay in excess limitation.

Alternatively, the cost of capital for a marginal investment in a low tax country may be lower for this case relative to the stationary case. Now the after-tax cost of investment is less than one, since additional investment in a low tax subsidiary reduces the current tax liabilities of the parent. If withholding taxes are sufficiently low, $(1 - \tau)/(1 - \tau^i) < (1 - t^i)$, the cost of capital will fall relative to the stationary case.

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Now consider the case in which parents invest while in excess credits but transit out of this state in the next period. The marginal condition on investment is:

4

$$\frac{(1-\tau)F_i'}{R} = 1 - t^i.$$

Since the initial investment occurs when the parent is in excess credits, the opportunity cost of one dollar of investment is $1 - t^i$. However, in all future periods, the parent is in excess limitation and thus the effective tax rate on the income from the project is the domestic tax rate τ. Note that capital import neutrality does not hold and capital export neutrality only obtains when withholding tax rates are zero.

In this credit regime, the cost of capital is higher than in the stationary case if $(1 - \tau^i)(1 - t^i) > (1 - \tau)$. To see this, compare this case to one in which the parent company is always in excess credits. Since both parents are in excess credits when the project is initialized, the effective after-tax cost of current investment is the same in the two cases. If the parent is in excess credits also in the future, income from the project will be effectively taxed at τ^i and will face withholding taxes t^i. If, on the other hand, the parent is in excess limitation in the future, the effective tax rate will be the statutory home country rate τ. If τ^i exceeds τ, the return on investment is taxed at a lower rate than in the stationary excess credit case, and therefore, investments in high tax rate countries are more attractive. By a similar argument, investment in projects located in low tax countries (with sufficiently low withholding tax rates) face a higher cost of capital than in the stationary case.

Combining the results of these cases gives us a complex picture of investment incentives. To start, as Hartman (1985) and others have pointed out, the current United States tax system does not provide capital export neutrality to all United States multinationals. In addition, we find that parent companies that anticipate changing credit positions face different costs of capital than those that do not. An anticipated switch to excess credits makes investments in low tax countries more attractive and investments in high tax countries less attractive than they are when credit states are stationary. The opposite is true when parents transit into excess limitation positions.

These results are similar to those found in the literature on net operating losses (NOLs). Domestic corporations that are always taxpaying face different costs of capital (and different effective marginal tax rates) than those that are not taxpaying in some years as a result of NOLs.[27] Consequently, the investment incentives of domestic corporations depend on whether they switch into and out of taxpaying periods. The same is true of multinationals that transit in and out of excess credit states. In our case, investment in some countries is more attractive (all else equal) than in others, depending on foreign tax credit positions. In the next section, we study the investment incentives of immature subsidiaries that switch both credit positions and financing regimes.

Immature Subsidiaries

If subsidiary investment is continually financed through equity transfers throughout the life of the project, the cost of capital is given by expression 2. Capital import neutrality holds and the marginal condition for investment is independent of the foreign tax credit position of the parent since dividend repatriations never occur. However, this result may not hold for immature subsidiaries

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that mature and finance future projects through retained earnings.

Consider an immature subsidiary that finances a fraction $1 - \mu^i$ of future investment projects with retained earnings. Since equity transfers are the initial source of funds for a marginal investment, the effective cost of funds is independent of the credit position of the parent. As a result, there are only two possible cost of capital expressions that are functions only of future credit positions. This means that parents that switch into excess credit positions from excess limitation face the same investment incentives as those that are continuously in excess credits. And parents that transit to excess limitation from excess credits face the same cost of capital as those that are continuously in excess limitation.

The required rate of return on subsidiary investment for a corporation in excess limitation in all future periods is given by

5

$$\frac{(1 - (\mu^i \tau + (1 - \mu^i)\tau^i))F_i'}{R} = 1.$$

Since initial investment is financed through equity transfers, the effective cost to the parent of one dollar of current investment is exactly one dollar. Furthermore, only a fraction μ^i of the future earnings from the project are repatriated and, with the parent in excess limitation, are effectively taxed at the United States tax rate. The remainder, $1 - \mu^i$, is retained in the host country and taxed at the local rate. The effective corporate tax rate is an average of home and host country tax rates weighted by the payout ratio μ^i. Note that an equivalent expression was obtained in Horst (1977) but without explicit reference to a tax capitalization framework. Note also that capital export neutrality obtains if all future financing is accomplished through retained earnings ($\mu^i = 1$).

Alternatively, if the parent is in excess credits in all future periods, we have the following marginal investment rule:

6

$$\frac{(1 - \mu^i t^i)(1 - \tau^i)F_i'}{R} = 1.$$

Withholding taxes on remittances are not offset by foreign tax credits, and the opportunity cost of funds is adjusted to include this tax cost. Capital import neutrality obtains if withholding taxes are zero.

A comparison of expressions 5 and 6 shows that a subsidiary located in a high tax country will have a lower cost of capital if the parent company is in excess limitation rather than in excess credits in all future periods. If withholding taxes are sufficiently low, the opposite is true for a subsidiary located in a low tax country. These results apply to all parents regardless of whether they switch credit regimes. As was true of the mature subsidiary case, investment incentives vary across multinationals in different credit positions. Whether these results are desirable from a policy perspective is an open question.

FOREIGN TAX CREDIT CARRYFORWARDS AND INVESTMENT INCENTIVES

By lowering the top statutory rate on corporate income, TRA '86 may have placed an increased number of multinational corporations in excess credit positions.[28] These corporations may generate foreign tax credit carryforwards, which currently expire after five years. The most recent figures on the empirical significance of foreign tax credit carryforwards may be found in A&N. Of the $4

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billion worth of foreign tax credit carryforwards reported by firms in their sample in 1986, A&N estimate that 40 percent were claimed in that year. Although the fraction of carryforwards that are claimed after the Act may differ from this figure, it is of interest to study how the ability to claim credit carryforwards affects the investment incentives of multinational corporations.[29]

In this section, we consider the case of a subsidiary with a parent in excess credits in the period in which marginal investment occurs that remains in excess credits for $T - 1$ years. At year T, the parent switches to excess limitation and claims all of the credit carryforwards available at that moment. The difference between the previous analysis and this one is that the impact of the marginal investment on the market value of equity must now include the effect on the cumulative tax credit that is claimed in period T. This is analogous to taking into account the impact of investment on tax loss carryforwards in the NOL case.[30]

Following a procedure similar to the one leading to expression 1, it may be shown that the marginal condition for investment in a subsidiary is[31]

7

$$\frac{(K^i\mu^i + 1 - \mu^i)(1 - \tau^i)F_i'}{R} + \theta^i = (1 - t^i)\lambda_0^i + 1 - \lambda_0^i,$$

where

8

$$K^i = R\left(\sum_{t=1}^{T-1} \frac{1 - t^i}{(1 + R)^t} + \sum_{t=T}^{\infty} \frac{1 - \tau}{1 - \tau^i}\frac{1}{(1 + R)^t}\right) = \left(1 - \frac{1}{(1 + R)^{T-1}}\right)(1 - t^i) + \frac{1}{(1 + R)^{T-1}}\frac{1 - \tau}{1 - \tau^i}$$

and

9

$$\theta^i = (1 + R)^{-T}\left[t^i + \frac{\tau^i - \tau}{1 - \tau^i}\right]\left[-\lambda_0^i + \sum_{t=1}^{T-1} \mu^i(1 - \tau^i)F_i'\right].$$

The term K^i is the equivalent of the factor k^i but is modified to account for the fact that the parent company is in excess credits for $t < T$ and switches to the excess limitation regime at T. This term is the weighted average of the values that k^i would take in the excess credit and excess limitation regimes, where the weighting factors depend on the discount rate R and the date T of the switch.

The term θ^i measures the impact of marginal investment on the present value of cumulated net foreign tax credits that will be claimed by the parent company at time T. The first term of θ^i is the discount factor. The second term measures the total value of foreign tax credit carryforwards generated by one dollar of dividends. Note that if the subsidiary is in a high tax country, the value of this term is always positive. If the subsidiary is in a low tax country, the term can be positive or negative, and it is always negative if the withholding tax rate is zero. The last term in θ^i measures the cumulated change in dividend payments between periods 0 and $T - 1$ due to the marginal investment and is made up of two components. The first component, $-\lambda_0^i$, represents the decrease in dividend repatriations due to the marginal investment, while the second component represents the cumulated increase in dividend repatriations generated by the marginal investment.

Expression 7 combines these terms and generalizes the cost of capital to the case of corporations that are able to claim credit carryforwards before they

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expire. It requires that the present value of the perpetual stream of after-tax income generated by the marginal project plus the present value θ^i of the foreign tax credit available at year T be equal to the after-tax cost of the marginal project. Since in the absence of a carryforward system, $\theta^i \equiv 0$, by comparing expressions 7 and 1, it can immediately be seen that the sign of θ^i will determine whether allowing parent corporations to claim carryforwards will decrease or increase the cost of capital for a subsidiary investment.

Consider first an investment by an immature subsidiary. In this case, the entire amount of investment is financed by an equity transfer, and therefore $\lambda_0^i = 0$. The sign of θ^i now depends on the sign of the middle term. This sign is positive if the subsidiary is located in a high tax country, and therefore $\theta^i > 0$. Hence, allowing the parent to use credit carryforwards increases after-tax profits and consequently decreases the cost of capital. This result may be reversed if the subsidiary is located in a low tax country. If withholding taxes are sufficiently low, so that $t^i + (\tau^i - \tau)(1 - \tau) < 0$, then $\theta^i < 0$ and the presence of a carryforward system will increase the cost of capital. This result depends on the fact that the additional dividend repatriations from a marginal project located in a low tax country while the parent is in excess credits will absorb credits. This will reduce the value of the total carryforwards that the parent is able to claim when it eventually switches to excess limitation, decreasing in this way the marginal benefits of investment.

In the case of mature subsidiaries, it is difficult to unambiguously sign θ^i for a given project. The sign of the third term in expression 9 depends on the proportion of the project's cash flow that is paid out in the first $T - 1$ years. Since F_i' must satisfy condition 7, this sign will in turn depend on the interest rate and all the tax parameters affecting the cost of capital. However, if the discount rate R is sufficiently low, the F_i' that solves expression 7 will tend to be low as well, and the third term in θ^i is likely to be negative. This means that an additional investment will decrease the cumulated dividend repatriated between $t = 0$ and $t = T - 1$. This negative third term reverses the results discussed above in the immature subsidiary case. If the subsidiary is located in a high tax country, the middle term of θ^i is positive. Therefore, the decrease in dividends due to the new project will reduce the total value of the credit carryforwards that are available to the parent company when it eventually switches to the excess limitation state. As a result, the ability to claim carryforwards in the future increases the opportunity cost of current investment, increasing the cost of capital to the parent company. A similar argument, but in the opposite direction, applies to mature subsidiaries in low tax countries with sufficiently low withholding taxes.

In summary, allowing parent companies to claim carryforwards in the future has opposite effects on investment incentives of subsidiaries located in high tax countries and those located in low tax countries (if withholding taxes are sufficiently low). Claiming carryforwards may increase (decrease) the cost of capital of subsidiaries located in high (low) tax countries, if they are mature, and decrease (increase) the cost if they are immature.

Conclusions

Taxes affect both the cost and the benefit of investing in foreign subsidiaries. In this model, the cost of investing a dollar abroad for a mature subsidiary is the value of the foregone dollar of dividend repatriations and the benefit is the after-

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tax present discounted value of the stream of returns generated by the marginal investment. If credit positions and dividend policies of parents and subsidiaries are stationary, taxes due upon repatriation will decrease the benefit and the cost of foreign investment by equal amounts and the Hartman result will obtain. The assumption that credit positions are stationary may not adequately reflect the experience of United States multinational corporations, however. For example, TRA '86 may have forced a substantial set of parents into excess credit positions. These parents may eventually switch back into excess limitation positions. We have shown that when credit positions change, both United States and foreign tax parameters impact marginal investment decisions. Furthermore, whether investment abroad is more or less costly than in the stationary credit position case depends on the location of marginal investment and whether parents switch from excess credit positions to excess limitation positions or *vice versa*. Whereas one set of parent corporations may find it attractive to invest in a low tax country, for example, another set will be indifferent between investing abroad or in the United States. This makes it difficult to predict how the investment, financing, and location choices of United States multinational corporations will respond to tax regime changes.

ENDNOTES

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1 Foreign tax credits are available for income and related taxes paid to foreign treasuries.

2 See Hufbauer (1992) for an excellent presentation of the history of United States international tax policy.

3 Capital export neutrality therefore results in the most efficient allocation of worldwide income.

4 Multinational corporations may invest abroad through branches or subsidiaries. Unlike subsidiaries, branches are not separately incorporated in foreign countries and are taxed when income is earned. Since the emphasis of this work is on the interaction between deferral and the foreign tax credit, we ignore investment in foreign branches and concentrate instead on subsidiary investment.

5 In 1962, Congress enacted the Subpart F provisions, which restrict deferral on certain types of unrepatriated income. Under Subpart F, income that arises from a subsidiary's passive ownership of assets is denied deferral and taxed immediately. Income earned from the conduct of a business is generally not subject to the Subpart F provisions and is allowed deferral.

6 Alworth (1988) extends this approach to consider a spectrum of financing policies.

7 Other provisions included in TRA '86, such as the increase in the number of separate limitation baskets for the purpose of the foreign tax credit, are likely to place United States multinationals in excess credits.

8 The authors also report that at least 37 percent of assets and 41 percent of foreign-source income were associated with multinationals that switched credit positions.

9 This approach is analogous to the "tax capitalization" or "new view" of how taxes affect decisions made by firms or shareholders developed by Auerbach (1979), Bradford (1981), and King (1977). Jun (1987) presents a similar model to ours but does not explicitly model parent foreign tax credit positions.

10 Recent work by Keen (1990), Leechor and Mintz (1993), and Hines (1992) has also focused on the conditions under which the Hartman result obtains. Keen introduces the integration of goods markets to the analysis and finds that this breaks the Hartman proposition. Leechor and Mintz show that tax bases across countries, adjusted for inflation, must be proportional for the Hartman result to hold. Hines derives a similar result but does not take inflation into account.

11 The Foreign Income Tax Rationalization and Simplification Act of 1992 (H.R. 5270) would extend the carryback period on foreign tax credits from two to three years and the carryforward period from five to fifteen years. These extensions would make the carryover periods available for foreign tax credits identical to those available for tax loss carryovers.

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12 The financing of foreign investment may involve a complicated flow of funds between parent corporations and foreign subsidiaries. For example, subsidiaries may be financed through retained earnings, equity transfers from the parent, intercompany loans, or local borrowing. Similarly, investment funds channeled from the parent may be raised by retaining earnings, new share issues, or debt. In an earlier version of this paper (Altshuler and Fulghieri, 1990), we derive the cost of capital for projects that are financed with both equity and debt.

13 For tax years beginning in 1987, the amount of foreign tax credit associated with a dividend payment is based on the accumulated value of earnings and profits. Taking this law change into account would complicate the analysis without altering the qualitative results.

14 This expression assumes that both the United States and the host country use the same tax base definition. As mentioned in endnote 10, papers by Hines (1992) and Leechor and Mintz (1993) have shown that differences in tax base definitions across home and host countries may affect investment decisions. In this model, we focus on how credit positions impact investment decisions, ignoring the distortions caused by differences in tax base definitions.

15 We have assumed that host countries use classical corporate tax rate systems. As a result, the only host country tax consequence of a dividend remittance is the withholding tax liability generated.

16 A firm is considered to be in an excess credit position if, after carrybacks, foreign tax payments exceed the limitation.

17 Different types of foreign income are placed in separate foreign tax credit baskets. Averaging is not permitted across foreign tax credit baskets. However, averaging is permitted across different income types within baskets. We concentrate on income placed in the active income basket, which includes dividends, interest, rents, and royalty payments. See A&N for a more detailed discussion of averaging and estimates of the extent to which United States multinational corporations use averaging to reduce tax liabilities on overseas income.

18 Assuming that a parent corporation controls both high and low tax subsidiaries is not unrealistic. For example, almost 75 percent of A&N's sample of United States parent corporations owned both high and low tax subsidiaries in 1986. About 54 percent of the parents receiving dividends in their sample received them from both high and low tax subsidiaries simultaneously, and these parents accounted for almost 94 percent of dividend remittances.

19 These formulas ignore foreign tax credit carryforwards, which may also change the after-tax value of dividends. For example, the after-tax value of a dividend repatriation may increase if foreign tax credit carryforwards can be claimed in the future. As mentioned above, we examine the effect of these carryforwards on investment incentives in the next section.

20 A&N estimate that in 1986, about 51 percent of dividend payments in their sample had after-tax values of less than one, 13 percent had after-tax values of one, and 36 percent had after-tax values that exceeded one.

21 We assume here that all of the stockholders in the parent corporation are United States residents.

22 Capital gains are taxed on realization, not on accrual. The rate τ_G represents the expected value of the tax liability associated with a capital gain accruing today.

23 Allowing for depreciation over a longer period of time would complicate the analysis without changing our qualitative results.

24 Since we consider the cost of capital for a "marginal" investment project, we take the credit state of the parent company as given. In a more general setting, the credit state of the parent company will depend on the interaction of its financing and investment decisions, given the cash-flow available in every subsidiary. This more articulated optimization problem must account for the impact of changes of credit states on the cost of capital, as examined in this paper.

25 Our analysis could be extended to the case in which financial policies and credit regimes are not stationary in the future. In the next section, we present an example in which a credit regime switch occurs at a date $T > 1$.

26 This result is due to the fact that equity is "trapped" in the foreign subsidiary, since it must be repatriated in the current period or in the future. This is equivalent to the argument made for domestic corporations under the "new view" of dividend taxation.

27 See, for example, Auerbach (1983), Altshuler and Auerbach (1990), and Mintz (1988).

28 Other provisions in TRA '86, such as changes in the foreign tax credit basket system, may also increase the percentage of multinationals in excess credits. Unfortunately, tax return data on the credit positions of United States

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multinationals after 1986 are not available yet. A recent paper by Hines (1993) provides some evidence from Compustat on the foreign tax credit positions of United States corporations during the late 1980s. He constructed a sample of 116 United States parent corporations that in every year from 1987 to 1989 (1) reported both domestic and foreign income and sales, (2) reported research expenditures, and (3) were not involved in a major merger. Of the 116 firms, he estimates that only 21 were continuously in excess limitation over the time period under consideration. This suggests a large set of United States parent corporations may have generated foreign tax credit carryforwards after TRA '86.

[29] Similar work has analyzed the effect of tax loss and investment tax credit carryforwards on investment incentives. For example, see Auerbach (1986) or Altshuler and Auerbach (1990).

[30] See Auerbach (1986) for an analysis of investment incentives in the presence of tax loss carryforwards.

[31] See Altshuler and Fulghieri (1990) for a full derivation of these expressions.

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