

**Where will they go if we go territorial?**

**Dividend exemption and the location decisions of U.S. multinational corporations**

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## **ABSTRACT**

We approach the question of how moving to a dividend exemption system would affect the location incentives of U.S. corporations from three different angles. We start by comparing the U.S. allocation of foreign direct investment in manufacturing across low-tax versus high-tax jurisdictions with that of two major dividend exemption countries, Germany and Canada. The second section demonstrates how the effective tax rate on the typical investment in a low-tax affiliate would change under a dividend exemption system. The final approach uses data from the tax returns of U.S. multinationals to gauge how location decisions will be affected. Taken together, the analysis provides no consistent or definitive evidence that location decisions would be significantly changed if dividends were to be exempt from U.S. corporate tax.

Under the current tax system both the domestic and foreign earnings of U.S. corporations are subject to U.S. taxation. Parent corporations pay U.S. taxes on active foreign earnings when they are remitted and receive a credit (limited to the U.S. tax liability on foreign earnings) for income taxes paid to foreign governments. This "residence" approach to the taxation of international income is not employed around the world. Many countries have "territorial" tax systems that exempt some (or all) of active earnings generated by foreign operations from home country taxation.

At first glance, one might predict that residence tax systems like the one employed by the United States would dampen the tax incentive to invest abroad in low-tax countries. This contrasts with the tax incentives of firms subject to territorial tax systems. These firms face the local tax rate when investing abroad and the home rate when investing at home. As a result, one might expect that switching from a residence to a territorial system would lead to a substantial reallocation of U.S. investment worldwide. This paper studies how the location decisions of U.S. multinational corporations (MNCs) may change if the U.S. were to adopt a system that exempts foreign dividends from home taxation. Before presenting our analysis, however, some background information on the current U.S. tax system is necessary.

If foreign operations are organized as subsidiaries (i.e., they are separately incorporated in the foreign country), then active business profits are not generally taxed at home until they are paid to the U.S. parent corporation. This delay in taxation until a subsidiary's profits are actually remitted to the U.S. is known as deferral.<sup>1</sup> Since firms are able to defer U.S. taxation on active business income, residence taxation does not create much of a barrier to investing in low-tax locations abroad. In fact, tax return data shows that the average repatriation rate from U.S. subsidiaries located in low-tax countries (those with average effective tax rates of less than ten percent) was only about seven percent of earnings in 1992 (see Grubert and Mutti 2001). Even if one adds the excess burden associated with restricting

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<sup>1</sup>The tax code contains provisions that hamper the ability of firms to avoid U.S. taxes on foreign income by retaining it abroad in low-tax jurisdictions. In general, these "anti-tax avoidance" provisions, contained in Subpart F of the tax

dividend repatriations from low-tax countries to the U.S. tax actually paid on repatriations, the overall tax burden is very small.<sup>2</sup>

Once they have been remitted to the parent, foreign profits have been subject to both host country and home country income taxes. To alleviate the double taxation of foreign source income the U.S. allows firms to claim credits for income taxes paid to foreign governments. These tax credits can be used to offset U.S. tax liability on foreign source income.

A limitation on the credit prevents American firms from using foreign tax credits to reduce U.S. tax liabilities on income earned at home. The limit is the amount of tax that would be due if the foreign income were earned in the U.S. and is calculated on a "basket" or type of income basis. A consequence is that foreign tax credits generated from one type of income (highly taxed dividends, for example) cannot be used to offset the U.S. tax liability generated from another type of income (lightly taxed portfolio income, for example). However, foreign tax credits can be averaged across foreign income in the same income basket. This means that excess credits on royalty income, for instance, can be used to offset U.S. tax liabilities on dividends paid from low-tax subsidiaries since both types of income are in the active income basket.

If a firm's foreign tax payments exceed the limitation on the credit, the firm is said to be in "excess credit." A parent in this situation pays no residual U.S. taxes on income repatriations from low-tax countries. Further, no U.S. tax is due on any royalty payments from foreign subsidiaries (which are generally deductible abroad) since they are fully offset by the firm's excess credits. Under current law, excess credits can be carried back to offset any U.S. tax payments on foreign source income made in the previous two years. Credits may also be carried forward without interest and used to offset U.S. tax liability in the following five years.

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code, limit deferral to earnings from active business investments abroad. Earnings from financial assets (such as Eurobonds and other passive financial investments) are denied deferral and taxed immediately.

<sup>2</sup>We discuss empirical estimates of the excess burden associated with repatriation taxes in a subsequent section.

Firms for which foreign tax payments are less than the limitation are said to be in “excess limitation.” These firms pay the difference between the U.S. and the foreign tax on dividends from subsidiaries located in low-tax countries. In addition, firms in excess limitation pay the full U.S. tax on royalty payments.

We approach the question of how location incentives under the current system are likely to be altered under dividend exemption from three different angles. We start by comparing the U.S. allocation of foreign direct investment (FDI) in manufacturing across low-tax versus high-tax jurisdictions with that of two major dividend exemption countries, Canada and Germany. Both Canada and Germany exempt dividends paid by foreign affiliates from home country tax by treaty.<sup>3</sup> An interesting question is whether, relative to U.S. FDI, the distribution of Canadian and German FDI is more skewed toward low-tax countries.

The second part of the paper uses effective tax rate calculations to quantify the burden of U.S. taxes on the typical investment in a low-tax affiliate under the current system and under dividend exemption. The model is an extension of the one developed in Grubert and Mutti (2001), hereafter GM. Although the small effective repatriation burden on dividends would be eliminated under dividend exemption, royalties would be fully taxed at the U.S. rate since no excess credits would be available to offset home country taxes on these payments. Whether effective tax rates increase or decrease relative to the current system depends on how firms respond to the dividend exemption system enacted.

The main focus in our effective tax rate analysis is on the role played by expense allocation rules under dividend exemption. These rules govern whether expenses incurred in the U.S. in support of investment abroad, such as headquarter charges and interest payments, are deductible against U.S. or exempt foreign income. In the absence of any expense allocation rules, parents would minimize tax payments by deducting expenses associated with investments in low-tax countries at the higher U.S. tax

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<sup>3</sup> Foreign affiliates must be at least ten percent owned by home country residents to qualify for dividend exemption under both Canadian and German tax law.

rate. This behavior could result in negative effective tax rates on investment projects placed in low-tax jurisdictions.

We assume in our analysis that if the U.S. were to adopt a dividend exemption system it would impose rules that require the parent company's overhead expenses be allocated to exempt foreign income and disallowed as deductions from U.S. taxable income. This treatment of expenses is a natural extension of Section 265 of the Internal Revenue Code which disallows deductions for expenses related to tax-exempt income. Dividend exemption may, however, be enacted with less stringent expense allocation rules. In our sensitivity analysis we calculate effective tax rates under different expense allocation rules.

Our final approach involves using data from the tax returns of multinationals to gauge how location decisions will be affected by a move towards dividend exemption. As explained above, not all parents pay tax at the U.S. rate when they receive active income from operations located in low-tax countries under the current system. The last section of the paper compares the actual behavior of firms that face no residual U.S. taxes on low-tax foreign earnings (those with excess foreign tax credits) with those that are taxed at the U.S. rate (those without excess foreign tax credits). The idea is to use the former group of firms as a control group to predict the extent to which low taxes will attract U.S. affiliate investment under dividend exemption.

We use Treasury tax return data from the 1996 files to estimate the sensitivity of investment location decisions of U.S. MNCs to host country taxes. Since firms may switch into and out of situations in which they have excess credits (and this may affect economic behavior), we use measures that indicate whether a parent is likely to be exempt from residual U.S. taxes on foreign income in any year. These measures, which include the parent's average tax rate on foreign source income and foreign tax credit carryforwards as a fraction of foreign source income, allow us to test if parents that are "deep in excess credit" are any more sensitive to differences in effective tax rates abroad.

Taken together, our analysis provides no consistent or definitive evidence that location decisions would be significantly changed if dividend remittances were to be exempt from U.S. corporate taxation. However, each of our three approaches suggest that there is some possibility that U.S. MNCs will make

adjustments to the allocation of assets held in operations abroad. Although we find that U.S. investment in Asia is more skewed towards the low-tax countries with which Germany and Canada have exemption treaties, the picture that emerges for Europe is mixed. Compared to the U.S. (and Germany), Canadian investment in the European Union is heavily weighted towards Ireland. Whether U.S. firms will shift towards a similar regional distribution in Europe is an open question. However, the evidence from our cost of capital and empirical analysis does not seem to support any large outflow of U.S. investment to low-tax locations.

Our effective tax rate calculations show that expense allocation rules and the full taxation of royalties under dividend exemption play a fundamental role in determining how the relative attractiveness of low-tax countries will change. Under the current system, we estimate that the typical investment in a country with an effective local tax rate of seven percent faces an overall (home plus host country) effective tax rate of only five percent. If the U.S. were to exempt dividends and, at the same time, eliminate required expense allocations (or impose allocations that are easily avoidable), overall effective tax rates on low-tax investments abroad would fall somewhat to three percent. In contrast, if firms were required to allocate overhead expenses to exempt income under the new system, the same investment would face an overall effective tax rate of about nine percent. As a result, investment in low-tax countries would not be encouraged relative to the current system.

The results from our third approach raise the possibility that U.S. MNCs may be somewhat more responsive to differences in effective tax rates under dividend exemption. We find that the sensitivity of location choices to host country effective tax rates does not increase as the parent's average tax rate on foreign source income increases. Other alternative measures of the extent to which a firm is "deep in excess credit" also failed to distinguish an effect on tax sensitivity. However, when we use the size of foreign tax credit carryforwards as an indicator of the likelihood that dividend remittances will face residual U.S. taxation, we do uncover a differential effect. The influence of host country taxes on location choice increases as a parent's foreign tax credit carryforward grows. Although the size of the effect is not

quantitatively very significant, the results indicate the possibility that there will be an increase in investment in low-tax countries under dividend exemption.

### **A cross-country comparison of foreign direct investment patterns**

We start by discussing recent information on the distribution of foreign direct investment for the United States, Germany, and Canada. Some information on how the German and Canadian tax systems treat international income is necessary at this point. Although both Germany and Canada run worldwide tax systems with deferral and credit features, both exempt dividends received from foreign affiliates resident in countries with which they have tax treaties from home country taxation. The two countries differ in the way they treat expenses that are related to exempt dividend income. Both, however, seem to allocate much less expense than would be indicated by current U.S. practice. Under German tax law, five percent of dividends received from affiliates in treaty countries are deemed to be expenses that are directly linked to exempt income. These "expenses" are disallowed so that effectively 95 percent of the dividend is exempt from German taxation. At present, Canada does not impose expense allocation rules. Under the Canadian system, parent corporations may fully deduct interest expense associated with debt used to finance affiliate investment.

In addition to the "exemption by treaty" features of the Canadian and German tax systems, there are many other features of the U.S. tax system that may increase the relative cost of U.S. investment in low-tax jurisdictions. For instance, the U.S. tax code appears to contain more stringent rules regarding what types of income qualify for deferral. Taken together, the differences in home country tax systems may result in U.S. investors facing higher tax burdens than German and Canadian investors in low-tax countries.

Previous research on the impact of home country tax systems on foreign investment has focused on FDI in the United States (see Hines 1997 and 1999 for reviews of the literature on taxes and FDI). The results of this literature is mixed. Slemrod (1990), for example, uses time-series data to compare the tax responsiveness of FDI from exemption and foreign tax credit countries. His finds no difference between the

two groups of countries in the sensitivity of FDI to U.S. corporate tax rates. Hines (1996) tests whether the responsiveness of manufacturing FDI to state tax rates differs across exemption and foreign tax credit countries. He finds a significant difference between the two groups of countries in terms of tax effects with exemption countries, as expected, exhibiting more responsiveness than foreign tax credit countries to differences in state tax rates. Our focus, while related, is on the distribution of outward FDI across low and high tax jurisdictions worldwide.

Table 1 shows the stock of FDI in manufacturing operations in low-tax countries as a percentage of total manufacturing FDI in Asia and the European Union (excluding Germany) in 1998.<sup>4</sup> For this table, a low-tax country is one that had an exemption treaty with Canada and Germany as well as an average effective tax rate of less than ten percent.<sup>5</sup> In Asia, there are two countries with exemption treaties and low effective tax rates: Singapore and Malaysia. In Europe, only Ireland falls into our low-tax category. Note that our comparisons of the ratio of FDI in low-tax locations to all locations in a region assume that the distribution of assets in a particular region is independent of home country tax rates. This assumption would not seem to bias the results either for or against finding differences in the distribution of investment across locations for the three countries.

Our cross-country comparison gives a mixed picture of how location incentives may change under dividend exemption. In Asia, U.S. affiliates in manufacturing hold a larger share of investment in low-tax countries than Germany and Canada. Almost 27 percent of the total stock of manufacturing FDI of U.S. firms in Asia was located in Singapore and Malaysia in 1998. For Germany this percentage is only 15 percent and for Canada it is just under 7 percent. This suggests that exempting dividends from U.S. taxation may not induce a significant reallocation of investment across low-tax jurisdictions in Asia. The evidence from Europe, however, suggests a more guarded prediction.

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<sup>4</sup>The stock of foreign direct investment does not correspond directly to a measure of real assets since it excludes third party debt and includes other financial assets. We use foreign direct investment since it is the only comparable measure available. The FDI data include branches (which, at least for the U.S., accounts for a very small percentage of investment in manufacturing) and both direct and indirect holdings. The ownership threshold for inclusion in the FDI data is 20 percent for Germany, and ten percent for both the U.S. and Canada.

German affiliates hold a substantially smaller share of manufacturing FDI in Ireland (as a share of the European Union) than U.S. affiliates: 1.6 percent versus 6.7 percent. In contrast, Canadian manufacturing assets are heavily skewed to Ireland. Canadian investment in Ireland makes up 17 percent of the stock of FDI in the European Union (excluding Germany).<sup>6</sup> Further, the ratio of the investment in Ireland relative to Great Britain is 28 percent. For the United States, this ratio is only 18 percent. Thus, the Canadian experience in Europe hints that dividend exemption may have some effect on the location decisions of U.S. MNCs. Taken as a whole, however, the evidence from the FDI data presents a mixed picture. In the next section we quantify how the incentive to invest in low-tax countries like Ireland will change if the United States were to move to a dividend exemption system.

### **Effective tax rates under exemption**

Will exempting dividends paid out of active income earned abroad from U.S. taxation reduce the overall tax cost of investing in low-tax jurisdictions abroad? To answer this question, one must accurately capture the tax incentives for low-tax investment both under the current system and under a "model" dividend exemption system. Graetz and Oosterhuis (2001) stress the heightened importance of allocation rules in their analysis of the issues involved in adopting a dividend exemption system for the United States. We follow GM and assume that dividend exemption will be paired with rules that allocate parent overhead expenses, such as interest, to exempt income.

There is no international norm with respect to the deductibility of parent overhead expenses if the taxpayer earns exempt foreign income. Canada is an example of a country that provides for full interest deductibility. The Netherlands and Australia, on the other hand, deny interest deductibility on funds that are traceable to foreign direct investment if dividends from the investment are exempt from home country taxation. Some other European countries have limits on interest deductibility; however, it is not clear to us whether they are based on "tracing" methods in which an attempt is made to identify exactly which funds

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<sup>5</sup>We use the average effective tax rate of U.S. CFCs to identify "low-tax" countries. This assumes that German and Canadian affiliates face effective tax rates that are similar to the ones faced by U.S. affiliates.

are used for a specific investment. Due to the fungibility of funds, the impact of tracing rules can be easily avoided. We assume that to the extent that interest expense allocations are imposed they would require pro-rata allocations based on the ratio of exempt foreign to worldwide assets instead of tracing.

We start by deriving the user cost of capital for investment in a low-tax country abroad. The model assumes that firms select investment to maximize profits which entails investing in assets abroad until the present value of net returns just equals the outlay. This equality can be used to solve for the user cost of capital --- the real pre-tax return on the marginal investment that just allows the firm to cover economic depreciation and earn the required real after-tax return. The goal of our exercise is to calculate the effective tax burden under the two systems for a typical (marginal) investment in a low-tax affiliate. The (marginal) effective tax rate is the difference between the real pre-tax return,  $C$ , and the required after-tax return,  $r$ , as a percent of the real pre-tax return.

The investment abroad is comprised of both tangible and intangible assets. Tangible assets, which are financed with both equity and debt, generate a potential flow of dividend income from the affiliate to the parent. We assume that the host country allows for economic depreciation on the tangible capital and grants no investment tax credit. Therefore the host country statutory rate equals the average local effective tax rate on net equity income from tangible capital. Intangible assets generate a flow of royalty income from the affiliate to the parent. Since royalties are (usually) deductible abroad at the local rate, the local effective tax rate on intangible capital is zero.<sup>7</sup> Finally, we assume, realistically, that the investment requires “other” overhead expenses, besides interest and R&D (which is allocated to royalty income).

### ***Differences in the taxation of low-tax affiliates under the two systems***

There are four important components of the taxation of foreign investment to consider in our comparisons of the user cost of capital under the two systems: the taxation of dividend and royalty income

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<sup>6</sup>The Canadian data reported in the table for the United Kingdom does not include assets held in Northern Ireland.

<sup>7</sup>A few developing countries do not permit a deduction for royalties or impose a withholding tax that is equivalent to the basic corporate tax rate.

and the allocation of interest and "other" overhead expenses. Table 2 compares the tax treatment of these four components under the two systems and summarizes the discussion in this section.

We start with the taxation of dividend income. Although firms with excess credits currently pay no U.S. taxes on dividends, firms in excess limitation owe residual taxes to the U.S. Treasury when dividends are remitted from low-tax operations. Do these repatriation taxes have any impact on the cost of capital, and hence, location decisions? We follow GM and assume that repatriation taxes impose an additional tax burden for investment in low-tax affiliates and therefore must be incorporated in the cost of capital.<sup>8</sup> The repatriation burden in their formulation (and ours) is made up of two components: the repatriation tax itself and the deadweight loss from restructuring dividend remittances to minimize U.S. tax liabilities.<sup>9</sup> The effective repatriation tax,  $t_r$ , on net local equity income is written as follows:

$$(1) \quad t_r = p(t_{US}-t_g)/(1-t_g) + EB$$

where  $p$  equals the dividend payout ratio from foreign equity income,  $t_{US}$  is the statutory corporate tax rate in the U.S.,  $t_g$  represents the gross-up rate on dividend repatriations, and  $EB$  is the excess burden due to restricting repatriations to avoid residual U.S. taxes. The gross-up rate reflects the effective foreign tax rate on the foreign equity income underlying the dividend. The total tax rate on net local equity income is the sum of the local tax rate,  $t_f$ , and the effective repatriation tax burden,  $t_r$ . For notational simplicity we denote this rate  $\theta_f$  where  $\theta_f = t_f + t_r$ . Under dividend exemption the total tax rate on net local equity income is simply  $t_f$  since there are no residual U.S. taxes.

Like the taxation of dividend income, the taxation of royalties under the current system depends on the parent's foreign tax credit position. Firms in excess limitation pay full U.S. taxes on royalty remittances received from abroad. Firms in excess credit positions can shield U.S. taxes owed on royalty remittances

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<sup>8</sup>The "new" view of dividend repatriation taxes, which dates back to Hartman (1985), and recent work by Weichenrieder (1996) and Altshuler and Grubert (forthcoming) suggest that these taxes are irrelevant to the affiliate's long-run capital stock for investment funded at the margin with retained earnings. It will become apparent later in the analysis that our qualitative results on the difference between effective tax rates under the two systems do not depend on which view is incorporated into the model (or, put alternatively, on the marginal source of funds for foreign investment). We incorporate the excess burden to be conservative in our effective tax rate calculations.

with excess credits and therefore pay no U.S. tax on royalties. Under dividend exemption, royalties would be taxed at the U.S. tax rate since there would *never* be any excess foreign tax credits to offset the home country tax.

Next we turn to the allocation of interest expenses. For simplicity we assume in our analysis (and effective tax rate calculations) that the real interest rate equals the required after-tax return  $r$ .<sup>10</sup> The after-tax cost of debt finance is a function of where interest expense is deducted and may differ significantly under the two systems. In the absence of any interest allocation rules firms would maximize interest deductions by placing debt on the parent's (or any other high-tax affiliate's) books. Under the current system, however, interest allocation rules significantly reduce the benefit of placing debt on the parent's books if firms are in excess credit positions. According to these rules, a fraction of domestic interest expense (currently based on the ratio of foreign assets net of debt to worldwide assets net of foreign debt) is allocated against foreign source income. Since firms in excess credit positions are constrained by the foreign tax credit limitation, any decrease in foreign source income decreases the foreign tax credit that may be claimed in any year. As a result, any allocation of domestic interest expense to foreign source income is lost as a deduction.

We assume in our base case that under dividend exemption any domestic interest expense used to support the foreign project will be allocated against exempt income and therefore will not be deductible at the U.S. rate. In response to the parallel treatment of interest expense, we assume that firms under dividend exemption and firms in excess credit under the current system restructure their borrowing and deduct all interest expense at the local rate (instead of at the U.S. rate). We incorporate these behavioral adjustments into our calculations to present a realistic picture of how investment incentives will differ under the two systems. An alternative assumption, which we reject, is to assume that parents will have no response to what could be a significant increase in after-tax borrowing costs.

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<sup>9</sup>Even though firms may have many alternatives to dividend repatriation, using these strategies to avoid the tax will create an excess burden that should be included in the cost of capital. See Grubert (1998), Weichenrieder (1993), and Altshuler and Grubert (2000) for analyses of alternatives to dividend repatriation.

<sup>10</sup>We abstract from any complications resulting from inflation or from differential interest rates around the world.

Firms in excess limitation will find it attractive to carry the debt associated with marginal investments in low-tax jurisdictions on their own books (or on the books of affiliates in high statutory tax rate countries). Since the interest allocation rules currently in place are not binding for these firms, the value of the tax deduction is larger in the U.S. (or other high-tax affiliates) than in the low-tax affiliate by a factor equal to the difference in the after-tax interest rates,  $r(t_{US}-\theta_f)$ . Parents may, however, face constraints on the amount of debt that can be placed in high-tax jurisdictions. As a result, parents in excess limitation may place some debt in the low-tax affiliate. We conservatively assume that only one-half of the debt used to finance the project in the low-tax country is placed on the parent's books.

The final component of the cost of capital that may differ under the current system and exemption is the tax treatment of overhead deductions other than interest and R&D such as headquarter expenses. We assume that under the current system firms in excess limitation are able to deduct 75 percent of these "other" overhead expenses against U.S. taxable income (or taxable income in other high-tax affiliates). In contrast, firms currently in excess credit are unable to benefit from deducting "other" overhead at the higher U.S. rate (or against any other high-tax income in other foreign operations) since these deductions will reduce the (binding) foreign tax credit limitation. We assume that firms in excess credit deduct all of these expenses at the local rate to avoid losing foreign tax credits. Similarly we assume that under exemption "other" overhead expenses would be allocated to exempt income and therefore deducted at the local tax rate.

***The cost of capital for firms in excess limitation under the current system***

The cost of capital presented below,  $C_T$ , is the pre-tax required rate of return on tangible capital net of depreciation. Given the assumptions discussed above, the general formula for the cost of capital faced by excess limitation firms for a marginal investment in tangible capital can be written as follows:

$$(2) \quad C_T = \frac{r(1 - b\hat{e}_f - .5b(t_{US} - \hat{e}_f))}{1 - \hat{e}_f + .75v(t_{US} - t_f)}$$

where  $b$  equals the fraction of marginal capital funded with debt and  $v$  equals overhead expenses on the marginal investment as a fraction of the pre-tax return. The last term in the numerator,  $.5b(t_{US}-\theta_f)$ , shows the

benefit of deducting some portion of interest expense (50 percent under our assumptions) at the U.S. rate. The last term in the denominator,  $.75v(t_{US}-t_f)$ , shows the benefit of deducting 75 percent of overhead expenses at the U.S. rate.

The user cost of capital for investment in an intangible asset,  $C_I$ , is straightforward:  $C_I = r/(1-t_{US})$ . Since the effective tax rate is simply the U.S. rate there is no tax advantage to exploiting the intangible in the low-tax affiliate. The user cost of capital for a marginal investment that is comprised of both tangible and intangible assets is a weighted average of the two user costs:

$$(3) \quad C = kC_T + (1-k)C_I = k \left[ \frac{r(1 - b\hat{e}_f - .5b(t_{US} - \hat{e}_f))}{1 - \hat{e}_f + .75v(t_{US} - t_f)} \right] + (1-k) \left[ \frac{r}{1 - t_{US}} \right]$$

where  $k$  equals the percentage of the marginal investment that is made up of tangible assets.

***The cost of capital for firms in excess credit positions under the current system***

Firms in excess credit positions receive both dividend and royalty remittances free of U.S. tax. However, as discussed above, these firms lose the ability to deduct interest and other overhead expenses against high-tax income and therefore are assumed to deduct all interest expense associated with the project at the local rate. As a result, the benefit of deducting expenses at the U.S. rate is completely lost and the last terms in the numerator and denominator of equation (2) vanish. On the other hand, however, there is no residual tax on dividends and thus the tax rate applied to net local equity income is  $t_f$  instead of  $\theta_f$ . Therefore, the cost of capital for a marginal investment in tangible capital for the excess credit case is:

$$(4) \quad C_T = \frac{r(1 - bt_f)}{1 - t_f}.$$

Comparing (4) with (2) reveals that the firms in excess credit positions may actually face a higher cost of (marginal) tangible capital in the low-tax country than those in excess limitation.

The user cost for an investment in intangible capital,  $C_i$ , is simply  $r$  since royalties paid to the parent are shielded from any U.S. tax by excess credits. Thus, the cost of capital for a marginal investment made-up of both tangible and intangible capital is:

$$(5) \quad C = k \left( \frac{r(1 - bt_f)}{1 - t_f} \right) + (1 - k)r .$$

***The cost of capital under exemption with expense allocations***

It is easy to adjust the cost of capital formulas to capture the dividend exemption system we have described. Recall that we have assumed that under exemption all expenses are allocated against exempt income and, in response, firms will deduct all interest expense at the local rate. In addition, the benefit of deducting "other" overhead expenses at the high-tax rate vanishes. Therefore the user cost of capital for tangible investment is the same as in the excess credit case. Since there are no excess credits to shield U.S. taxes on royalties, the user cost of intangible capital equals  $r/(1-t)$  as in the excess limitation case.

Therefore, the weighted average cost of capital under exemption for a marginal investment abroad is:

$$(6) \quad C = k \left( \frac{r(1 - bt_f)}{1 - t_f} \right) + (1 - k) \left( \frac{r}{1 - t_{US}} \right) .$$

***Effective tax rates under the two systems***

Table 3 presents effective tax rate calculations for investment in a low-tax country under the two systems. Our effective tax rate calculations assume that the low-tax affiliate is located in a country with a seven percent effective tax rate,  $t_f$ , which is the average effective tax rate faced by U.S. subsidiaries in countries with average effective tax rates below ten percent (see GM).<sup>11</sup> The U.S. statutory rate,  $t_{US}$ , is set at 35 percent. To calculate the average effective repatriation tax,  $t_r$ , we use parameter values for  $t_g$ ,  $p$ , and  $EB$  that are based on GM's estimates from Treasury data. Repatriation rates from manufacturing affiliates in

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<sup>11</sup>Recall that since the low-tax country is assumed to offer no investment incentives the effective tax rate equals the statutory rate,  $t_f$ .

low-tax countries are quite low, about seven percent or less for firms located in countries with effective tax rates below ten percent in 1992.<sup>12</sup> Accordingly we set  $p$  equal to .07 in our effective tax rate calculations. Evidence from tax returns suggests that firms are able to time repatriations to occur when they face effective tax rates that are temporarily high thus resulting in higher dividend gross-up rates for the purpose of the foreign tax credit and lower repatriation taxes (see Grubert, Randolph, and Rousslang 1996 and GM). We use a gross-up rate,  $t_g$ , of .15, which is conservative based on estimates from Treasury data. Finally, the excess burden parameter (EB) is .017, GM's estimate of the ratio of the efficiency loss associated with restricting repatriations to pre-tax earnings and profits of foreign affiliates with effective tax rates less than ten percent. Using these parameter estimates from Treasury data, we calculate (using equation 1) an overall effective repatriation tax burden for income earned in low-tax countries of just 3.3 percent of pre-tax earnings on equity income. This very small repatriation burden on dividend income substantially reduces the effective tax rate of investing abroad under the current residence-based system.

Table 3 shows effective tax rates for investments in tangible assets, intangible assets, and for a “typical” investment. The typical investment is made up of 15 percent intangible and 85 percent tangible assets.<sup>13</sup> We assume that tangible assets are financed two thirds with equity and one third with debt ( $b=1/3$ ). Data from tax returns indicates that overhead expenses are, on average, approximately ten percent of the pre-tax return.<sup>14</sup> Accordingly, we set  $v$  equal to .10. Notice that the effective tax rate for the current system is a weighted average of the excess limit and excess credit rates based on the observation from the Treasury tax files that about 25 percent of the manufacturing income of U.S. affiliates abroad was associated with firms in excess credit positions in 1994.

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<sup>12</sup>The 1996 data shows even lower dividend repatriation rates. We continue to use the GM estimate of a seven percent dividend payout rate to be conservative.

<sup>13</sup>The importance of intangible assets is based on Commerce Department data. According to the 1994 Commerce Benchmark Survey of US investment abroad, majority-owned manufacturing affiliates of non-bank parents paid \$10.3 billion of royalties to their parents. This is 15.5 percent of the total pre-tax capital income base (net income + foreign income taxes + royalties+ interest paid). Using royalties based on tax returns, which are reported on the Form 1118, would yield a higher ratio.

<sup>14</sup>Other (non-R&D, non-interest) allocations in the general active non-financial basket were \$14.04 billion in 1994. This is 12.7 percent of the total pre-tax capital income base reported in the 1994 Commerce benchmark for majority-owned non-financial affiliates of non-bank parents. Since some of the allocation is attributable to non-exempt income like sales source income, we assume ten percent.

The first column of Table 3 shows that effective tax rates are higher under exemption than under the current system for a marginal low-tax investment abroad in tangible assets. This is not at all surprising given the low estimated effective tax rate on dividend remittances combined with the ability of excess limit firms to deduct some portion of interest and overhead expenses at the 35 percent tax rate. In fact, effective tax rates for tangible investments in low-tax countries are lower for firms in excess limitation under the current system than for firms in excess credit which pay no residual U.S. taxes on dividend income!

Our calculations show that for the typical investment in a low-tax country abroad, dividend exemption with expense allocations is likely to increase effective tax rates relative to the current system. This result reflects that the majority of firms are in excess limitation and that the typical investment is weighted towards tangible assets. As the first column clearly shows, firms in excess limitation face very low effective tax rates on tangible capital placed in low-tax locations.

It is interesting to consider how sensitive our estimate of the current effective tax rate is to the repatriation burden parameter. As mentioned above, the 3.3 percent repatriation burden we use in our calculations is based on GM's estimates from tax return information. GM's prediction of how exemption would affect repatriations from low-tax countries is based on a dividend equation that includes a range of variables that may influence repatriation behavior. The independent variables include non-tax parent and subsidiary characteristics along with tax parameters that may influence dividend payments. Both the excess limit and excess credit tax price of dividends are included since credit positions may be uncertain. While the excess limit tax price on dividends has a coefficient that is highly significant, the projected increase in dividends resulting from exemption (setting the repatriation tax to zero) is not enormous. Dividends (net of subpart F income) in the less than ten percent effective tax rate group more than double but from a low base.

We could ignore all the other variables in GM's repatriation equation such as withholding taxes, which become more significant under exemption, and use the simple relationship between repatriation rates and local effective tax rates reported in GM to calculate the overall effective repatriation burden. To do this we assume that in the absence of any repatriation tax subsidiaries located in countries with

effective tax rates below ten percent repatriate the same percentage of after-tax earnings and profits as subsidiaries located in countries with effective tax rates between 20 and 30 percent. The latter group of subsidiaries had a repatriation rate of about 43 percent of (positive) earnings and profits in 1992 which is significantly larger than the (about) seven percent repatriation rate of the former group (see Table 2 of GM).<sup>15</sup> This exercise gives an efficiency loss of about five percent. If we use an efficiency loss estimate of five percent rather than 1.7 percent, the effective tax rate under the current system increases to 7.3 percent which is still below the exemption rate of 9.4 percent.

At the aggregate level, our deadweight loss and dividend change estimates appear to be similar to the ones estimated in Desai, Foley, and Hines (2001) using information from the Bureau of Economic Analysis Annual Survey of U.S. Direct Investment Abroad. These authors estimate that repatriation taxes reduce aggregate dividends by 12.8 percent. The repatriation equation we use projects about a 15 percent overall decrease. Desai, Foley, and Hines report an overall efficiency loss of 2.5 percent of dividends. But when this is expressed in relation to total pre-tax income by adding back retained earnings and foreign taxes it appears to be about 1 percent which is only slightly larger than the GM estimate of about .7 percent.

An important difference, besides expense allocations and dividend repatriation taxes, between the two systems is the taxation of the royalties generated from intangible assets. Table 3 shows that the advantage of placing intangible capital in low-tax locations will be significantly higher under exemption for firms in excess credit. For instance, the effective tax rate under exemption for an investment made up of fifteen percent intangible capital is more than two times the effective tax rate currently faced by a parent in excess credit.

As Grubert stresses in his companion piece on dividend exemption and tax revenues, it is likely that firms facing increased tax burdens of investing abroad will make adjustments to their operations in an

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<sup>15</sup>We do not consider the repatriation behavior of the group of subsidiaries with effective tax rates above 30 percent since this category includes those with 'excess' dividends because of negative tax prices. The dividend repatriation rate for this group of subsidiaries was 54 percent which is not much larger than the group facing effective tax rates between 20 and 30 percent (again, see Table 2 of GM).

attempt to lower their effective tax rates (see Grubert 2001). For instance, as we have already assumed, parents may shift the portion of debt currently on their books to the foreign affiliate where it can obtain a full interest deduction at the local tax rate. Parents also face strong incentives to reduce royalty payments (and substitute them with dividends, for example). Grubert (2001) suggests that there may be a significant decline in royalty payments that would have a substantial effect on the revenue cost of switching to a dividend exemption system. And Hines (1995), Grubert (1998), and Grubert (2001) have found that royalty payments received by U.S. MNCs from affiliates are responsive to tax prices. Using our formulas, we can calculate how effective tax rates would change if firms substituted dividends for royalty payments. For instance, if the royalty payout rate from intangible assets was decreased from 100 to 75 percent, the effective tax rate on the “typical” investment under exemption would fall by about 1.3 percentage points. This suggests that even a substantial switch from royalties to dividends may still leave firms with greater tax incentives to place capital in low-tax countries under the current system than under exemption *with expense allocations*.

What if exemption were passed without any expense allocation rules? Table 4 shows effective tax rates for the typical investment under exemption systems that do not require all overhead expenses to be allocated against exempt income. If allocation rules only for interest expense (and not “other” overhead expenses) are imposed the effective tax rate falls to 7.4 percent. This scenario, in which the parent deducts all interest at the local rate and 75 percent of “other” overhead at the U.S. rate, is shown in the second row of Table 4. Consider, on the other hand, a scenario in which firms are not required to allocate high-tax (or parent) *interest* expense used to finance investment in the low-tax affiliate against exempt income. Assume that under this system firms behave exactly as they did under the current system when the interest allocation rules do not bind and deduct one-half of interest expense at the U.S. rate. Assume further that no allocation rules for “other” overhead expenses are imposed and, as in the excess limitation scenario, firms deduct 75 percent of these expenses at the U.S. tax rate. In this case, shown in the third row of table 4, the effective tax rate falls to 5.3 percent which is almost identical to our estimate of the effective tax rate under the

current system.<sup>16</sup> If exemption were passed with *no* expense allocations, the effective tax rate would fall even further. The last row of the table considers the case in which firms are able to make the same expense allocations as excess limit firms under the current system --- 50 percent of interest expense and 75 percent of "other" overhead is deducted at the U.S. rate.<sup>17</sup> In this case, the effective tax rate falls to 3.2 percent and investment in the low-tax affiliate becomes even more attractive.

Our effective tax rate calculations make three noteworthy points. First, the treatment of allocations is a primary determinant of how investment incentives will change under dividend exemption. Second, the taxation of royalties has an important impact on the cost of capital abroad. Firms that locate relatively large fractions of intangible capital in low-tax countries will face relatively higher effective tax rates under exemption. These firms will have strong incentives to substitute dividends for royalties (which has revenue consequences for the U.S. Treasury). Finally, it is interesting to note that under the current system, firms that do pay residual taxes on dividend remittances --- those in excess limitation --- face effective tax rates on typical low-tax investments abroad that are substantially less than the U.S. rate (and, depending on the fraction of intangible assets, the host country rate). As stressed above, this is a result of the tax minimizing repatriation behavior of U.S. MNCs and their ability to deduct overhead expenses at the U.S. tax rate.

### **Exploring the location decisions of U.S. MNCs under dividend exemption**

Economists have provided ample empirical evidence that the assets held in U.S. multinational corporations are responsive to variations in effective tax rates across foreign locations.<sup>18</sup> In fact, Altshuler, Grubert, and Newlon (2001), hereafter AGN, find that the investment location choices of U.S. manufacturing parents have become more responsive to taxes in recent years. To measure the sensitivity of location decisions to host country tax rates, AGN regress a measure of real capital held in each of the 58 countries in their sample on tax variables and measures of nontax characteristics of countries. These

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<sup>16</sup>The cost of capital in this case is  $k*r[1-bt_f-.5b(t_{US}-t_f)]/(1-t_f) + (1-k)*r/(1-t_{US})$ .

<sup>17</sup>The cost of capital in this case is  $k*r[1-bt_f-.5b(t_{US}-t_f)]/[1-t_f+.75v(t_{US}-t_f)] + (1-k)*r/(1-t_{US})$ .

<sup>18</sup>For recent evidence see, for example, Grubert and Mutti (1991, 2000, 2001), Hines and Rice (1994), and Altshuler, Grubert, and Newlon (2000).

regressions yield an elasticity that measures the sensitivity of demand for capital in a country to changes in after-tax returns (for a given pre-tax return). Their elasticity estimates suggest that a one percent increase in after-tax returns led to a 1.5 percent increase in the real capital stock of manufacturing affiliates in 1984 and an almost three percent increase in 1992.

What does the recent empirical work say about moving to the type of dividend exemption system considered in this paper? The country-level analysis in the recent literature, and the effective tax rate calculations presented above, suggests that the current system provides similar tax incentives to the ones we would expect under a system in which dividends are exempt from home country taxation. However, one critique of this interpretation of the literature is that the empirical tests do not explicitly test the impact of residual home country taxes on location behavior. The empirical specification in AGN, for example, includes measures of host country effective tax rates only, not the combined effect of host and home country rates.<sup>19</sup>

The most recent work on this topic using country-level data appears in GM. They add measures of repatriation taxes to their asset location regressions and find that these taxes do not seem to affect the choice among investment locations abroad. GM also presents some interesting new evidence on the relevance of U.S. repatriation taxes to location decisions derived from firm-level data from the 1992 Treasury tax files. Their results, which are the starting point for our analysis, suggest that parents that pay no U.S. repatriation taxes on dividend remittances (those in excess credit positions in 1992) are not any more sensitive to differences in host country tax rates than parents that do pay residual U.S. taxes on foreign source income (those in excess limitation). In what follows, we extend this firm-level analysis to further explore the consequences of moving towards a dividend exemption system.

There are few important issues to address before using the Treasury data to make predictions of how firm location behavior will change under dividend exemption. The first concerns the extent to which firms that are currently in excess credit positions face the same incentives as firms that operate under

territorial tax systems. Since our focus is on the consequences of moving to a tax system in which firms will *never* face residual U.S. taxes on dividends, it is important to distinguish firms that expect to persistently find themselves with excess credits from those who may temporarily transit into excess credit positions. It is possible that an important fraction of the firms in excess credit positions in any year are only temporarily exempt from residual taxes on dividends. These firms will behave as if they are in excess limitation if they expect that through carrybacks or carryforwards they will be able to claim their excess foreign tax credits.<sup>20</sup> In the analysis presented below we develop measures of excess credit positions that attempt to identify those firms that are "deep in excess credit."

Another difficulty in conducting the type of policy experiment we have in mind is a familiar one. Firms that are more sensitive to differences in host country tax rates are more likely to invest in low-tax countries and therefore are more likely to end up in excess limitation. This suggests that we control for factors that may be correlated with mobility. Further, it points out an econometric problem --- credit positions are, to some extent, endogenous to location decisions. We have tried to correct for this potential endogeneity problem by using exogenous predictors of credit position in our regressions and through instrumental variable techniques.

We use a probit analysis to examine the determinants of location choice. This allows us to measure the impact of host country taxes and expected foreign tax credit positions on the probability that an affiliate is located in a particular country. By interacting our host country effective tax rate measure with our foreign tax credit measure we can test whether the location decisions of firms that expect to be in excess credit are more responsive to differences in host country tax rates. Before turning to a discussion of our tax variables, we describe the data and the non-tax independent variables. Summary statistics for all of the variables used in the regressions are included in an appendix table.

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<sup>19</sup>However, one could argue that since the repatriation tax for excess limit firms is highly correlated with host country tax rates, the regressions suggest that U.S. taxes on income repatriations are not significant determinants of investment location choices.

<sup>20</sup>In fact, in any given year, firms may view their foreign tax credit status as uncertain. For this reason, Grubert (1998), GM, and Altshuler and Grubert (forthcoming), for example, include both excess limit and excess credit repatriation taxes as independent variables in their regressions.

The data is formed from the 1996 Treasury tax files which link information from parent tax forms and subsidiary information forms. The basic corporate tax form, Form 1120, provides information on the parent's income, expenses, and assets (as well as the parent's date of incorporation). Information on foreign source income, allocable and "not directly allocable" expenses, foreign tax credits, and the foreign tax credit limitation comes from the form filed to claim a foreign tax credit, Form 1118.<sup>21</sup> Since we are interested in how taxes affect the location of real business activity we have limited our analysis to the manufacturing affiliates of manufacturing parents. Affiliate level information is provided on the Form 5471 which presents information on income and balance sheet items of controlled foreign corporations (CFCs) of U.S. parents.<sup>22</sup>

The parents in our sample, taken as a group, had affiliates in 60 different locations in 1996. Each observation in our analysis therefore consists of parent information linked to country information for each of the 60 potential locations. The dependent variable for each observation is set equal to one if the parent has at least one CFC in a country and zero otherwise. There are 365 parent firms in our dataset which gives us  $365 \times 60 (=23,200)$  observations.<sup>23</sup>

### ***The non-tax control variables***

We control for both parent and country non-tax characteristics that may affect a firm's decision to locate an operation in a particular country using the same variables as GM. Starting with parent characteristics, we include information on both advertising and R&D expenditures (scaled by sales) to control for the possibility that these firms are more mobile internationally.<sup>24</sup> Firms with relatively large expenditures on these items are likely to possess a technology that can easily be exported and exploited outside the U.S. We also control for the labor and capital intensity of the parent under the presumption that

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<sup>21</sup>We include only those parent firms that had a positive foreign tax credit limitation in our analysis. This eliminates about a third of parent firms from the analysis.

<sup>22</sup>A controlled foreign corporation is a corporation that is at least 50 percent owned by a group of U.S. shareholders each of whom hold at least a ten percent interest in the company.

<sup>23</sup>The probit analysis treats each parent-country observation as an independent observation. It is possible that there is a country effect that induces correlation of errors across different companies. We experimented with random effects estimation and found no substantial effect on our results.

labor-intensive firms are more mobile than capital-intensive firms. Labor intensity is measured by wage compensation as a fraction of sales; capital intensity is measured as expenditures on tangible capital (real plant and equipment) as a fraction of sales. We include the age of the parent to control for the effect of maturity on mobility --- for any level of R&D and advertising expenditures, older firms may be more likely to be in a location if age is positively correlated with the presence of profitable intangible assets. Finally, we control for the size of parents under the assumption that larger firms, all else equal, may be more likely to find it profitable to set-up operations abroad. The log of operating assets measures the size of parents.

Country characteristics include GDP and GDP per capita as well as a trade variable that is constructed to measure the degree of openness of each country's economy. GDP and GDP per capita (obtained from the *World Development Report*, 1996) are included to control for differences in country demand and supply characteristics. The trade variable, obtained from the *World Development Report* (World Bank 1987), runs from 0 (most open) to 3 (most restrictive).<sup>25</sup> This openness indicator is interacted with our host country tax variable to control for the possibility that the benefit of locating in a country with low tax rates may be smaller in more restrictive trade regimes. We also include regional dummy variables to control for any region-specific effects that may impact location decisions.

### ***The tax variables***

The basic measure of the host country tax rate is the country average effective tax rate (hereafter, ETR) which is calculated by dividing total taxes paid by all CFCs in a particular country by their earnings and profits (using only those CFCs with positive earnings and profits to avoid a downward bias in the ETR). Both variables are available on the Form 5471. Following previous work we use the log of (1-ETR) as the local tax measure. In this way, the estimated coefficient gives the impact of variation in the after-tax rate of return in a country (for a given pre-tax return) on the probability of locating a CFC in that country.

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<sup>24</sup>The R&D variable comes from the form firm's file to claim the research and experimentation tax credit. In some cases it is supplemented with data from Compustat.

<sup>25</sup>This measure is based on observations from 1973 to 1985 of (i) the country's effective rate of protection, (ii) its use of direct controls such as quotas, (iii) its use of exports, and (iv) the extent of any overvaluation of its exchange rate.

Our focus is on the location decisions of firms that are unlikely to face any U.S. residual tax on active income earned abroad --- firms that are "deep in excess credit." We experimented with several different methods of measuring a parent's likelihood of being in excess credit in 1996. These credit position measures are described in turn with our regression results. The key variable from our standpoint is the interaction between log of (1-ETR) and the foreign tax credit measure. The estimated coefficient on this variable will indicate whether firms that are effectively exempt from U.S. taxes on active income remittances are more sensitive to differences in host country tax rates.

### ***Regression results***

Table 5 presents the results of our probit analysis. Our discussion of the results will focus on the foreign tax credit position and interaction terms since results from this type of location regression have been presented elsewhere in the literature using similar datasets (see GM and the working paper version of Grubert and Mutti 2000). Before turning to our main discussion, we note that the estimated coefficients on the parent and country control variables have the expected signs and economic significance. Further, the results in Table 5 continue to confirm the results in the literature that host country tax rates are extremely significant determinants of firm location choice. In addition, the trade-tax interaction variable is always negative and highly significant. More restrictive trade regimes lessen the influence of low host country taxes on the probability of attracting U.S. affiliate location.

In column (1), we use the average tax rate on foreign source income, hereafter FSI, to gauge the extent to which a parent is in excess credit. The average tax rate on FSI, hereafter FATR, is measured using information from the foreign tax credit form.<sup>26</sup> To calculate the firm's FATR, we subtract any foreign tax credit carryovers from total foreign taxes paid (including withholding taxes and gross-up taxes on dividends) and divide by net FSI.<sup>27</sup> This gives us a measure of the average foreign tax rate paid on *current* FSI. As the FATR increases, parents become less likely to face U.S. residual taxes on FSI due to the

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<sup>26</sup>We calculate the FATR for the "active" income basket which includes remittances of earnings on active business investments abroad and contains the majority of foreign source income for manufacturing affiliates.

presence of excess credits that soak up any residual U.S. tax liability. Interestingly, the estimated coefficient on the FATR is negative and statistically significant. Firms become *less sensitive* to host country tax rates as the average tax rate on foreign source income increases.

As mentioned above, the firm's FATR (and credit position) are endogenous to its location decisions. This endogeneity could lead to biased estimates of our credit position measure and interaction term. To find an exogenous indicator of expected credit positions, we regressed variables taken from the foreign tax credit form (Form 1118) on FATR. We found that the most significant determinants of FATR are “not directly allocable” expenses as a share of gross FSI, the share of dividends in total gross FSI, and the dividend gross-up rate (gross-up taxes on the foreign equity income underlying the dividend divided by total grossed-up dividends). The latter two measures are endogenous to firm location choice and repatriation behavior and, as a result, will not be appropriate instruments. The first measure, “not directly allocable” expenses, include overhead expenses such as interest, R&D, and headquarters charges. Although any economic variable like R&D spending or how leveraged a firm is may be endogenous to firm behavior, “not directly allocable” expenses seem to be an appropriate exogenous predictor of the extent to which a parent is “deep in excess credit.” The higher are a parent's “not directly allocable” expenses the lower is the foreign tax credit limitation. Given a level of foreign taxes paid, this means that higher “not directly allocable” expenses are associated with an increase in the likelihood of being in excess credit.

Column (2) of Table 5 uses “not directly allocable” expenses (as a percent of gross foreign source income) as a measure of the extent to which firms expect to face repatriation taxes on dividend remittances. The estimated coefficient on the key interaction term,  $\log(1-ETR) * \text{“not directly allocable” expenses}$ , is now positive but is not statistically different from zero.<sup>28</sup>

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<sup>27</sup>This variable is truncated at one. Our results are not sensitive to this truncation.

<sup>28</sup>The size and magnitude of this estimated coefficient is unaffected by the addition of interaction terms that allow tax sensitivity to differ according to the R&D or advertising intensity of the firm. These interaction terms test whether intangible asset intensive firms are more (or less) responsive to taxes. If there is a correlation between “not directly allocable” expenses and intangible capital, the interaction term could be biased. Our estimates, however, do not seem to be affected by this bias.

We also used “not directly allocable” expenses as an instrument for FATR. The results from the instrumental variables estimation (not reported) produced similar estimates to those in column (1) on our key interaction term. The coefficient on the fitted average tax rate interacted with the log of (1-ETR) was negative and not statistically different from zero.

The remaining columns in Table 5 use measures of credit positions that incorporate foreign tax credit carryovers. Since parents are allowed to carryback any excess foreign tax credits for two years, we can assume that any firm claiming a carryover in 1996 had been in an excess foreign tax credit position for at least three years.<sup>29</sup> Including foreign tax credit carryovers (which average seven percent of net FSI) should produce a more accurate measure of the probability that a firm will pay U.S. taxes on dividend remittances. By netting carryovers from our FATR calculation in column (1), we have failed to distinguish between firms that may have the ability to absorb current excess credits through carrybacks and those that cannot. It is possible that this latter set of firms is more sensitive to differences in host country taxes.

In column (3), we include carryforwards in the foreign average tax rate calculation. Adding carryovers to the FATR increases the coefficient on the tax interaction term relative to the estimate in column (1), but makes it statistically no different from zero. The sensitivity of location choices to after-tax rates of return abroad does not change as the average tax rate *including carryovers* on FSI increases.

In column (4) we measure excess credit positions simply by the size of the foreign tax credit carryforward as a percentage of net FSI. It seems reasonable to assume that the higher is the carryforward, the less likely the parent is to transit out of an excess credit position in the future. This formulation results in a positive and statistically significant coefficient on the interaction term. Increases in the size of carryforward (relative to net foreign source income) do increase the sensitivity of location choice to host country taxes. This suggests that firms that do not expect to pay repatriation taxes are more attracted by low-tax rates abroad.

Column (5) breaks our measure of FATR into two components: current foreign taxes paid on FSI as a percent of net FSI and carryforwards (past taxes) as a percent of net FSI. This allows us to control for

both the size of the parent's foreign tax credit carryforward and its foreign average tax rate on current income. The interaction term of interest is now between three variables, carryforwards/net FSI \* FATR net carryforwards \* log (1-ETR), and is positive and statistically different from zero. To gauge the economic significance of the coefficient consider the effect of an increase in the interaction term on the probability of investing in a low-tax relative to a high-tax location. At the means of the variables, with the interaction term set at zero, the ratio of the probability of a firm investing in a country with an effective tax rate of five percent, for example, relative to one with an effective tax rate of 40 percent is 1.80. Consider a CFC associated with a parent that has a FATR of 50 percent and carryforwards as a percentage of net FSI equal to 20 percent. This gives an interaction of .1 ( $=.5*.2$ ) and applies to about six percent of CFCs in our sample. Increasing the interaction term from zero to .1 increases the ratio of the probabilities of investing in the low-tax relative to a high-tax jurisdiction to 1.86. The effect is about a three percent increase in the likelihood of investing in the low-tax relative to the high-tax location. Although small, this suggests that low-tax rates are more attractive to firms that are effectively exempt from dividend taxation. If firms without foreign tax credit carryforwards (or small amounts) behave similarly under dividend exemption, there may be some reallocation of foreign direct investment to low-tax jurisdictions.

## **Conclusions**

We have looked at the issue of dividend exemption on location incentives in several ways. The cost of capital analysis indicates that investment in low-tax countries is not likely to be encouraged as long as U.S. companies have to allocate overhead expenses to exempt income. The data on foreign direct investment in manufacturing by two major dividend exemption countries, Germany and Canada, revealed modest investment in low-tax countries in Asia. In Europe, Germany also has a relatively small share of its European investment in Ireland. But Canada has a substantially larger share than the United States. The analysis of the location choices by U.S. companies under current law also presents a somewhat

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<sup>29</sup>About seven percent of affiliates were associated with parents that claimed foreign tax credit carryforwards in 1996.

inconsistent picture. Most of our attempts to identify the tax sensitivity of "deep in excess credit" companies failed to find any excess responsiveness to local tax rates. But companies with large carryforwards of tax credits do seem to have a greater investment in low-tax countries although the size of the effect was not very significant. Overall we cannot make any firm prediction of how location behavior would change if the U.S. were to adopt a dividend exemption system. However, the analysis provides no consistent or definitive evidence that dividend exemption would induce a large outflow of investment to low-tax locations.

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Table 1  
**U.S., German, and Canadian Foreign Direct Investment in  
 Manufacturing in 1998**

	U.S.	Germany	Canada
<b><u>Asia</u></b>			
Singapore and Malaysia as a share of total Asia	0.269	0.153	0.066
<b><u>Europe</u></b>			
Ireland as a share of European Union (except Germany)	0.067	0.016	0.170
Ratio of Ireland to U.K.	0.181	0.095	0.278

Sources: Survey of Current Business (Sept. 2000), Deutsche Bundesbank: Kapitalverflechtung mit dem Ausland (May 2000), and data released by request from Statistics Canada, Balance of Payments Division.

Table 2  
**Comparison of Tax Features of the Current System and a Dividend Exemption System**

	<b>Current System</b>		<b>Dividend Exemption System</b>
	<b>Excess limitation firms</b>	<b>Excess credit firms</b>	
<b>U.S. tax on dividend remittances</b>	Pay residual U.S. tax plus cost of avoiding dividend repatriation.	No residual U.S. tax.	No residual U.S. tax.
<b>U.S. tax on royalty payments</b>	Taxable at U.S. rate.	No U.S. tax paid since U.S. tax liability absorbed by excess credits.	Taxable at U.S. rate.
<b>Allocation of interest expense</b>	The interest allocation rules have no impact on the parent's foreign tax credit. Thus, the allocation of domestic interest against foreign income has no effect on domestic interest deductions.	The interest allocation rules are binding. The allocation of domestic interest expense against foreign source income reduces the foreign tax credit limitation and therefore decreases foreign tax credits. Similarly, interest deductions in high-tax countries reduce foreign source income.	Interest expense must be allocated against exempt income.
<b>Allocation of "other" overhead expenses</b>	Same impact as above for interest expense.	Same impact as above for interest expense.	"Other" overhead must be allocated against exempt income (as above for interest expense).

Table 3  
**Effective Tax Rates for Investment Abroad in a Low-tax Country**

	Investment comprised of:		
	All tangible assets	All intangible assets	85% tangible and 15% intangible assets
<b>Dividend exemption</b>	<b>4.8%</b>	<b>35.0%</b>	<b>9.3%</b>
<b>Current system</b> (assuming 25% of firms in excess credit)	<b>1.7</b>	<b>26.3</b>	<b>5.4</b>
Excess limitation firms	0.7	35.0	5.8
Excess credit firms	4.8	0.0	4.1

**Assumptions**

Statutory and effective tax rates:

- the U.S. statutory tax rate is 35 percent
- the host country statutory tax rate and effective tax rate is 7 percent

Investment:

- tangible capital receives economic depreciation allowances and no investment tax credits
- intangible capital generates royalty income which is deductible in the host country but taxable in the United States
- "other" overhead expenses (expenses besides interest and R&D) account for ten percent of the pre-tax required rate of return (net of depreciation) on capital

Financing:

- marginal tangible investment is funded one third with debt and two thirds with equity
- the required after-tax rate of return on capital equals the real interest rate
- firms repatriate 7 percent of net of host tax earnings on marginal tangible capital and gross-up dividends for the purpose of the foreign tax credit at 15 percent
- the deadweight loss from restricting dividend repatriations for firms in excess limitation is 1.7 percent of net of host tax earnings on marginal tangible capital

Interest and "other" overhead deductions:

- Under the current system, firms in excess limitation deduct 50 percent of interest expense and 75 percent of "other" overhead expenses against U.S. or other high-tax income. Firms in excess credit deduct 100 percent of interest expense at the 7 percent rate and lose the advantage of deducting overhead at the 35 percent rate.
- Under exemption, allocation rules require that all expenses be allocated against exempt income. Firms deduct 100 percent of interest expense at the 7 percent rate and lose the advantage of deducting overhead at the 35 percent rate.

Table 4  
**Effective Tax Rates under Dividend Exemption  
for Various Expense Allocation Assumptions**

	Effective tax rate for an investment made up of 15% intangible and 85% tangible assets
Base case <sup>1</sup>	9.3%
Exemption system with interest allocation rules <sup>2</sup>	7.4
Exemption system with no interest allocation rules <sup>3</sup>	5.3
Exemption system with no expense allocation rules <sup>4</sup>	3.2

Notes:

1. Allocation rules require all expenses (interest and "other" overhead) to be allocated against exempt income. Same assumptions as in Table 3.
2. Assumes that interest expense must be allocated against exempt income. Seventy-five percent of all "other" overhead expenses, however, are assumed to be deducted at the U.S. rate.
3. Assumes that one half of interest expense is deducted at the local 7 percent rate and one half is deducted at the U.S. rate. All "other" overhead expenses are allocated against exempt income.
4. Assumes that one half of interest expense is deducted at the local 7 percent rate and one half is deducted at the U.S. rate and that 75 percent of "other" overhead expenses are deducted at the U.S. rate.

Table 5  
**Probit analysis of the effect of foreign tax credits on affiliate location**  
(Sample consists of manufacturing CFCs of U.S. manufacturing parents)<sup>1</sup>

	(1)		(2)		(3)		(4)		(5)	
	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
Intercept	-5.80	(25.32)	-5.91	(25.85)	-5.88	(25.65)	-5.86	(25.77)	-5.88	(25.81)
<b><i>Host country variables<sup>2</sup></i></b>										
Log of GDP	0.36	(34.42)	0.36	(34.41)	0.36	(34.39)	0.36	(34.41)	0.36	(34.44)
Log of GDP per capita	-0.00	(0.07)	-0.00	(0.12)	-0.00	(0.09)	-0.00	(0.09)	-0.00	(0.09)
Trade regime	-0.14	(4.88)	-0.15	(4.94)	-0.14	(4.91)	-0.14	(4.90)	-0.15	(4.90)
<b><i>Parent variables</i></b>										
R&D/sales	7.19	(11.14)	6.13	(9.42)	7.12	(11.01)	6.63	(10.34)	7.22	(11.14)
Advertising/sales	4.51	(11.31)	4.94	(12.35)	4.68	(11.75)	4.68	(11.73)	4.41	(11.00)
Labor costs/sales	0.42	(3.22)	0.47	(3.59)	0.47	(3.60)	0.45	(3.42)	0.38	(2.85)
Capital/sales	-0.50	(7.94)	-0.47	(7.66)	-0.50	(8.04)	-0.51	(8.22)	-0.50	(8.00)
Log of operating assets	0.21	(20.32)	0.21	(21.08)	0.21	(20.95)	0.21	(21.33)	0.21	(20.37)
Age	0.01	(21.63)	0.01	(22.04)	0.01	(21.73)	0.01	(22.16)	0.00	(21.59)
<b><i>Host country tax variables</i></b>										
Log (1- ETR)	1.51	(8.19)	1.18	(7.18)	1.32	(7.34)	1.19	(9.22)	1.22	(9.64)
Trade regime * log (1- ETR)	-0.24	(2.53)	-0.25	(2.61)	-0.25	(2.57)	-0.25	(2.56)	-0.25	(2.59)
<b><i>Foreign tax credit position measures</i></b>										
Average tax rate on FSI <sup>3</sup>	0.25	(1.79)			0.23	(2.10)			0.56	(8.47)
Average tax rate on FSI * log(1-ETR)	-0.94	(1.94)			-0.22	(0.58)				
“Not directly allocable” expenses/gross FSI			0.42	(3.12)						
“Not directly allocable” expenses/gross FSI * log(1-ETR)			0.28	(0.59)						
FTC carryforwards/net FSI							0.11	(1.07)	0.03	(0.41)
FTC carryforwards/net FSI * log(1-ETR)							0.83	(2.14)		
FTC carryforwards/net FSI * log(1-ETR) * average tax rate on FSI									1.30	(2.89)
Log-Likelihood	-7,939		-7,953		-7,953		-7,965		-7,931	

Notes:

1. Number of observations for all regressions equals 23,220 (= 365 parents \* 60 potential locations).
2. All regressions include regional dummies (see appendix table for details).
3. Average tax rate on FSI equals total taxes paid abroad on foreign source income. In columns (1) and (5), this average tax rate is calculated net of foreign tax credit carryforwards. In column (3), the average tax rate calculation includes foreign tax credit carryforwards.

Appendix Table  
Sample Statistics

	Mean	Standard deviation
<b><i>Host country variables</i></b>		
Log of GDP	4.48	1.81
Log of GDP per capita	8.64	1.52
Trade regime (runs from 0 = most open to 3 = most restrictive)	2.11	1.14
North America dummy	0.03	0.18
Asia dummy	0.20	0.40
EEC dummy	0.20	0.40
Latin America dummy	0.28	0.45
<b><i>Parent variables</i></b>		
R&D/sales	0.01	0.02
Advertising/sales	0.02	0.03
Labor costs/sales	0.17	0.09
Capital/sales	0.27	0.23
Log of operating assets	13.52	1.21
Age	41.59	32.17
<b><i>Host country tax variables</i></b>		
Log (1- ETR)	-0.25	0.13
ETR	0.22	0.10
Trade regime * log (1- ETR)	-0.29	0.37
<b><i>Foreign tax credit position measures</i></b>		
Average tax on FSI	0.32	0.23
Average tax on FSI net carryforwards	0.26	0.18
*Average tax on FSI net carryforwards* log(1-ETR)	-0.07	0.06
FTC carryforwards/net FSI	0.07	0.24
Percent with value greater than .50	0.04	0.19
FTC carryforwards/net FSI * average tax on FSI	0.03	0.17
Percent with value greater than .25	0.02	0.12
FTC carryforwards/net FSI * log(1-ETR) * average tax on FSI	-0.01	0.05
“Not directly allocable” expenses/gross FSI	0.22	0.19
“Not directly allocable” expenses/gross FSI * log(1-ETR)	-0.05	0.06