

# U.S. Interest-Allocation Rules: Effects and Policy

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## ***Abstract***

In 1986, the U.S. government undertook a significant reform of its income tax system. One important change for U.S. multinational corporations is related to the allocation of interest expense. This work analyzes the impact of the new U.S. interest allocation rules on the investment and financial decisions of U.S. multinationals. We test the effect of these rules on financing behavior using data from a survey of multinationals assembled by Price Waterhouse for this project. We also calculate effective tax rates for investments at home and abroad, taking the interest allocation rules into account.

**Key words:** multinational corporations, interest allocation rules

## **1. Introduction**

In 1986, the U.S. government undertook a significant reform of its income tax system. Among the many changes were those made to the tax treatment of foreign-source income of U.S. multinational corporations. Included in the tax reform were new rules for the calculation of foreign-source income, foreign tax credits, and the allocation of costs between foreign and domestic sources.

One of the important changes of this reform is related to the allocation of domestic interest expense. Under current and prior U.S. tax law, U.S. corporations are required to allocate some part of their domestic interest expense to foreign-source income. Depending on the tax status of the parent, this allocation of U.S. interest expense could result in greater amounts of U.S. tax paid on worldwide income. Under U.S. law, a U.S. parent pays U.S. tax on remitted income (such as dividends, interest, royalties, and so on) from foreign subsidiaries and profits earned by foreign branches with a credit given for foreign income taxes paid and deemed to be paid on foreign income. If the amount of U.S. tax on foreign source income is greater than the foreign tax credit (hereafter referred to as the excess limitation case<sup>1</sup>), U.S. tax will be owing on foreign-source income. Thus, any allocation by the parent of domestic interest expense to the foreign branch or subsidiary reduces U.S. tax owing on foreign-source income by an amount equal to the increase in U.S. tax owing on domestic income (thereby resulting in no change in U.S. tax owing on worldwide income).

On the other hand, if the amount of U.S. tax on foreign-source income is less than the foreign tax credit (the excess tax credit case), no U.S. tax is owing on foreign-source income. In this case, the allocation of domestic interest expense to foreign-source income

has no impact on U.S. tax paid on foreign-source income but increases the amount of U.S. tax payable on domestic income. For example, suppose that the corporate tax rate is 34 percent and that, by the U.S. interest allocation rules, the parent corporation is required to allocate 50 percent of domestic interest expense of \$100 to foreign-source income. This allocation would therefore increase domestic taxable income by \$50, increasing U.S. taxes paid by \$17. Foreign-source income would be reduced by \$50, but there would be no change in U.S. tax owing on foreign-source income, given that the U.S. multinational is in an excess-credit position. In addition, since foreign governments do not generally allow deductions for interest expenses incurred in the United States, taxes owed to foreign governments do not change. Thus, in the excess tax credit case, the interest allocation results in greater U.S. tax paid on worldwide income. This increase in tax payments associated with debt financing may have an impact on both the investment and financial decisions of U.S. multinationals.

Prior to 1986, U.S. corporations allocated domestic interest expense incurred by their domestic members to the income of foreign affiliates on a nonconsolidated basis according to the distribution of gross income or assets (whichever was more favorable).<sup>2</sup> The 1986 Act made two major changes to the interest-allocation rules. First, multinationals must allocate domestic interest expense on a consolidated basis. Second, they must allocate domestic interest expense according to the distribution of U.S. and foreign assets.

The intent of this and other policies directed toward the tax treatment of foreign-source income was to prevent the erosion of the U.S. corporate tax revenue base that would result from multinationals shifting interest expense to the United States. Consolidation required the taxpayer to aggregate assets, liabilities, income, and expenses, including interest expense, for companies in a group. Unlike under the pre-1986 rules, it was no longer possible to shield the allocation of domestic interest expense to foreign-source income by placing debt in U.S. domestic subsidiaries that held no foreign assets or income. The requirement that only assets, rather than income, be used for determining the allocation of debt also limited options for the parent to avoid allocating interest expense to foreign income. For example, foreign-source losses incurred by foreign subsidiaries or branches resulted in no allocation of interest expense to foreign-source income prior to 1986, but, after 1986, the asset allocation rule would have required the allocation of domestic interest expense to the foreign subsidiary. As discussed below, a *netting rule* was also introduced that made it more difficult for U.S. parents to avoid the allocation of interest expense by issuing loans to subsidiaries (to reduce net foreign assets).

In addition, the 1986 U.S. tax reform put many U.S. parent corporations in excess credit positions since the U.S. tax on foreign-source income was reduced from 46 percent to 34 percent with little that would broaden the tax base for calculating foreign source income (Goodspeed and Frisch (1989) and Altshuler and Newlon (1993)). Thus, the interest-allocation rules would have a greater potential impact on the investment and financing decisions of U.S. multinationals after 1986 to the extent that more parent corporations were placed in an excess credit situation.

The United States is now one of the few countries in the world that requires its multinationals to allocate interest expense abroad based on the asset method (Norway also has an asset-allocation rule).<sup>3</sup> Countries that exempt foreign-source dividend income (with no tax credit) either allow domestic interest expense to be deducted (such as Canada, France,

Germany, Italy, New Zealand, Spain, and Sweden) or disallow the deduction of expenses traced to activities that are exempt from taxation (Australia, Luxembourg, and the Netherlands). Similar to the United States, countries that tax foreign-source dividends (with a tax credit for foreign income taxes), allow for the deduction of domestic interest expense if traced to the foreign activity (Japan, for example). If the result of the U.S. rules is to increase the U.S. tax by disallowing the deduction for domestic interest expense, the outcome of these policies can affect the cost of capital of U.S. multinationals compared to other foreign multinationals located in countries where similar rules have not been adopted.<sup>4</sup>

This work analyzes the impact of the new U.S. interest allocation rules on the financial and investment decisions of U.S. multinational corporations. The paper is divided into five additional sections. Section 2 provides a background discussion and theory related to the interest-allocation rules. Section 3 reports the results of empirical tests regarding the effect of these rules on the financing of U.S. parent and subsidiary operations. The empirical work is based on data obtained by Price Waterhouse from member corporations of the International Tax Policy Forum for the years 1986, 1988, 1990, and 1991. This data set provides financial and tax information for both parents and their foreign subsidiaries in Canada, Japan, and the United Kingdom.<sup>5</sup> These data allow us to test the impact of the interest-allocation rules on the amount of foreign and domestic debt issued by the multinationals in our sample since they include information on foreign affiliate assets and debt as well as U.S. assets and debt that is otherwise unpublished.<sup>6</sup> Section 4 examines the potential impact of interest allocation rules on the cost of capital of U.S. multinationals by measuring the effective tax rate for U.S. and foreign investments in Canada, Japan, and the United Kingdom. Section 5 compares the current rules with policy options that may better achieve objectives pursued by the U.S. government. Conclusions are contained in Section 6.

## 2. Background

As mentioned above, the Tax Reform Act of 1986 (hereafter, TRA 1986) altered the U.S. rules for the allocation of interest to domestic and foreign source income. Underlying the interest allocation rules is the view taken by authorities that the debt of multinational corporations is fungible across jurisdictions.<sup>7</sup> In this section, we review the law related to interest allocation, and discuss, in theoretical terms, its impact on the financing and investment decisions of U.S. multinationals.

### 2.1. Interest allocation rules

The interest-allocation rules contained in TRA 1986 resulted in three primary changes:<sup>8</sup>

1. *One taxpayer concept for affiliated companies.* Prior to 1986, companies in an affiliated U.S. group could apportion interest expense between domestic and foreign sources on a separate company basis. After 1986, U.S. multinationals were required to aggregate affiliated company income and interest expense to calculate interest for the purpose of taxing foreign- and domestic-source income.<sup>9</sup> An important impact of this provision is

that it is much more difficult for parents to avoid the allocation of interest expense to foreign-source income simply by isolating debt in a single affiliated domestic subsidiary. Prior to 1986, it was possible for a parent to avoid allocating interest expense to foreign-source income by creating a separate subsidiary without foreign income or assets that held domestic debt instead of the parent. After 1986, income, expenses, assets, and liabilities of companies were aggregated so any domestic interest of a subsidiary with domestic activity only would be allocated to foreign-source income.

2. *Asset allocation.* Prior to 1986, multinationals had the option to allocate domestic interest expense under either the gross-income method<sup>10</sup> (ratable to amounts of foreign-source and domestic-source income) or the asset method (ratable to amounts of foreign and domestic assets measured according to *fair market value* or *tax book value*).<sup>11</sup> Since 1986, multinationals must allocate domestic interest expense according to the distribution of assets held by the parent in domestic and foreign affiliates. Domestic assets include business assets that are held by the U.S. affiliated group and that produce U.S. source income, while foreign assets of the U.S. affiliated group include foreign-branch assets and affiliated foreign company equity (stock and accumulated earnings and profits). Therefore the ratio of foreign assets net of foreign debt to worldwide assets (also net of foreign debt) determines the percentage of interest expense that must be allocated abroad.
3. *The netting rule.* The netting rule is related to U.S. parent financing of subsidiary debt. The rule is intended to prevent taxpayers from replacing third-party debt of foreign affiliates with debt to the U.S. group, an otherwise available self-help technique for achieving worldwide fungibility. After 1986, under the netting rule, interest incurred on third-party debt issued by the U.S. members may be attributed directly to foreign-source interest on debt held by the parent in affiliated foreign companies. The amount of domestic interest expense allocated to foreign-source income is determined by the relationship of debt as a ratio of assets for the subsidiary and parent. In particular, if the parent's ratio of third-party debt to assets is more than 80 percent of the foreign affiliate group's debt-to-asset ratio, then the excess interest on debt will be allocated to foreign-source income.<sup>12</sup> Since 1986, the result of this netting rule is to make the interest-allocation rules more restrictive by requiring the domestic interest expense to be allocated to foreign income if the domestic debt-to-equity ratio becomes "too high" relative to the worldwide debt-to-equity ratio.

## 2.2. *Tax impact of the interest-allocation rules*

As discussed in the introduction, the allocation of interest to foreign-source income need not affect the amount of U.S. tax paid by the U.S. multinational. The impact depends on the position of the U.S. multinational regarding its payment of tax on foreign-source income. U.S. multinationals are subject to taxation on both U.S. and foreign-source income. A parent corporation is subject to U.S. taxes on actual and deemed dividends from its foreign subsidiaries but is allowed a credit, subject to limitation, for withholding taxes paid and income taxes deemed to be paid with respect to these dividends. If the foreign tax credit is less than the U.S. tax on remitted income, the U.S. parent will pay U.S. tax equal to the difference between the two amounts (the excess limitation case).<sup>13</sup> If the potential foreign

tax credit is more than the U.S. tax liability, there is no U.S. tax owing on foreign-source income<sup>14</sup> (the parent is in an excess tax credit position because it has more available credits than it can use in a given year).

The foreign tax credit thus is limited to the lesser of foreign income tax paid on foreign-source income (in the excess limitation case) or U.S. tax due before the foreign tax credit (in the excess-tax-credit case). As a result of this limitation on the use of foreign tax credits, the impact of the interest-allocation rules depends on the foreign tax credit position of the U.S. multinational. In particular, the interest-allocation rule has no impact when the U.S. multinational is in an excess limitation position. Although allocated U.S. source interest may decrease foreign-source income, the reduced U.S. tax liability on foreign-source income compensates for the increased U.S. tax liability on domestic-source income. However, when the company is in an excess-credit situation, the allocation of U.S.-source interest expense to foreign-source income decreases the U.S. tax paid on foreign-source income (the limitation) and thus increases the amount of tax paid on domestic-source income.<sup>15</sup>

This argument can be presented more formally as follows. Let  $u^*Y^*$  be foreign tax paid at the rate  $u^*$  on foreign-source income defined by the foreign authority ( $Y^*$ ).<sup>16</sup> Let  $uF$  be the U.S. tax paid at the rate  $u$  on foreign-source income  $F$  as defined under U.S. rules. As discussed above, the U.S. multinational is given a foreign tax credit equal to the lesser of  $u^*Y^*$  or  $uF$ . Further, let  $D$  be domestic source income (before the deduction of interest) and  $I$  be domestic (U.S.-source) interest expense.

The U.S. company pays taxes on worldwide income when there is no allocation of interest, equal to the following:

$$T = u(D - I) + \max\{uF - u^*Y^*, 0\}, \quad (1)$$

whereby  $uF - u^*Y^* > 0$  is the excess-limitation case and  $uF - u^*Y^* \leq 0$  is the excess-credit case. When interest is allocated abroad, a portion is deductible against domestic-source income and the balance against foreign-source income as defined by the U.S. authorities (note that only the U.S. tax liability, not the foreign tax paid to other authorities, is affected by the amount of interest allocated abroad). Let  $\alpha$  be the portion of interest expense allocated to foreign-source income. Thus, for excess limitation corporations, total tax paid with interest allocation remains constant:

$$T = u[D - (1 - \alpha)I] + \max\{u(F - \alpha I) - u^*Y^*, 0\}. \quad (2)$$

The increase in U.S. tax paid on domestic source income (by the amount  $u\alpha I$ ) is offset by the reduction in U.S. tax paid by the same amount ( $u\alpha I$ ). Thus, as long as the U.S. multinational maintains its excess-limitation position after the allocation of interest, there is no impact of interest allocation on the tax paid by the parent company. On the other hand, if the U.S. multinational is in an excess-credit position, the amount of tax paid increases with interest allocation: the U.S. tax paid on domestic income increases by  $u\alpha I$  but there is no compensating reduction in U.S. tax paid on foreign-source income. Effectively, the role of the interest allocation rules and their tightening in 1986 is to reduce the amount of domestic interest expense that corporations in excess-credit positions can deduct against total income. For the U.S. multinational, the objective is to minimize the amount

of interest to be allocated to foreign-source income and, hence, taxes when it is in an excess-credit position.

To what extent do the interest-allocation rules impact U.S. multinationals? Earlier work using tax return data from the U.S. Treasury Department suggests that many U.S. multinationals were in excess credit positions in the mid-1980s. Goodspeed and Frisch (1989) report that 32 percent of foreign-source income in the manufacturing sector belonged to firms with excess credits in 1984. Altshuler and Newlon (1993) found that 69 percent of foreign-source income in this sector was in excess credits in 1986. More recent tax return data indicate that this percentage was 63 percent in 1990.<sup>17</sup>

Almost all of the seventeen large multinationals surveyed by Price Waterhouse for this project indicated that the interest-allocation rules had some impact on their decisions. All of the multinationals reported (1) being in excess credits for at least one of the four years surveyed and (2) that the interest-allocation rules reduced their foreign-tax-credit limitation.<sup>18</sup> The survey also included a question on the relative impact of the three changes in the rules discussed above. Twelve multinationals reported that the one-taxpayer rule had a major impact, while three multinationals reported a moderate impact. This suggests that prior to TRA 1986 these firms may have been using domestic financing subsidiaries to avoid the consequences of the interest-allocation rules. The asset-apportionment rule had a major impact on nine multinationals and a moderate impact on five multinationals. The netting rule had a major impact on two multinationals, a moderate impact on three multinationals and no impact on eight multinationals. Thus, the one-taxpayer and asset-apportionment rules were the most important in their impact on the surveyed multinationals.

### *2.3. Impact on behavior: Theory*

There are a number of expected effects of the interest-allocation rules on the behavior of the U.S. multinational when it is in the excess-tax-credit case. One obvious response to the new rules is to reduce U.S. interest expense to mitigate the direct effects of interest allocation. This can be achieved in a number of ways, including substituting preferred equity for debt, deconsolidating highly leveraged domestic subsidiaries, and reducing parent debt.

Alternatively, the U.S. multinational can shift financing offshore by reducing debt of the U.S. group and increasing borrowing by foreign affiliates.<sup>19</sup> Moreover, since only the equity held by foreign affiliates is included in the allocation formula, a shift to foreign debt reduces the percentage of remaining interest expense allocated to foreign-source income.<sup>20</sup> At the same time, a shift to debt held by subsidiaries reduces foreign-source income and corporate taxes paid to foreign jurisdictions. Depending on corporate tax rates, interest rates, and other factors, this may result in the multinational moving from an excess-tax-credit position to an excess-limitation position so that interest-allocation rules no longer matter.

Moreover, the interest-allocation rules can affect investment. More U.S. interest expense is allocated to foreign-source income when the subsidiary undertakes new investments abroad. Similarly, foreign subsidiaries can divest ownership of assets and reduce the amount of allocated interest expense.

To show how interest-allocation rules based on asset apportionment affect domestic and foreign investment and financing, we provide the following theoretical model, which is

similar to Auerbach (1979) and Gordon (1985) in terms of modeling debt decisions. The model is based on a two-period formulation of investment and financing decisions of the multinational. It is assumed that the multinational invests in productive opportunities in the United States and a foreign country (as above, \* will denote foreign values). Either the parent or subsidiary may borrow debt. It is assumed that parent and subsidiary debt are not perfect substitutes or fully fungible. This assumption arises from the performance and regulation of national capital markets, which result in lenders looking at the parent and foreign affiliate on their own terms even though the subsidiary may have guarantees of the parent. The implication of this assumption is that bankruptcy and other attendant transaction costs associated with debt financing depends on the parent and foreign affiliate's own leverage. In addition, the multinational pays taxes to the U.S. and foreign countries on income generated by investments. It is assumed for U.S. tax purposes that interest is allocated abroad and the multinational is in an excess-credit position.

In the first period, the multinational invests in capital in the United States, equal to  $K$ , and abroad, equal to  $K^*$ . It is assumed that the price of capital in each country is unity in the initial period. By investing in capital, the firm will obtain a stream of capital-cost deductions that reduces the effective purchase price of capital. Let  $Z$  and  $Z^*$  be the present value of capital-cost deductions in the United States and a foreign country, respectively. The tax value of capital-cost deductions is  $uZ$  in the United States and  $u^*Z^*$  in the foreign country. The multinational borrows funds in the United States equal to  $B$  and in the foreign country equal to  $B^*$ .

In the second period, the multinational earns income and sells off its investment in each country. Foreign values are converted into U.S. dollars by using the exchange rate, denoted by  $x$ . The foreign currency is expected to appreciate relative to the U.S. dollar according to purchasing price parity. This implies that  $x = (1 + \pi)/(1 + \pi^*)$ ,  $\pi$  and  $\pi^*$  denoting the rate of inflation in the United States and the foreign country, respectively.

Second-period returns earned on U.S. investments are equal to nominal revenues,  $(1 + \pi)F[K]$ , net of interest expense on U.S. debt,  $i[\gamma]B$ , and U.S. taxes,  $T$ . The production function for output,  $F[K]$ , is strictly concave. The nominal interest rate on debt,  $i[\gamma]$  is a rising function of the debt-to-asset ratio of the U.S. parent, to be explained more fully below. In addition, the firm cashes in the value of its capital at the end of the second period. The value of the firm is the undepreciated replacement cost of capital. Letting  $\delta$  denote the percentage amount of capital that has physically depreciated, the replacement price of capital is  $(1 - \delta)K(1 + \pi)$ , assuming the price of capital rises with the general rate of inflation,  $\pi$ .<sup>21</sup> Debt is also retired. Similar assumptions apply to the subsidiary with all values denoted by \* and converted into U.S. dollars.

As for taxes paid to the U.S. government, the corporate tax base is equal to revenues net of interest expense and depreciation. Thus, the after-tax revenues are equal to  $(1 - u)(1 + \pi)F[K]$ , and the after-tax cost of interest expense, without interest allocation, is equal to  $i(1 - u)$ . However, since interest is allocated to the foreign subsidiary, only  $i(1 - \alpha)$  of interest expense is deductible from U.S. tax with  $\alpha$  denoting the proportion of allocated interest expense based on the ratio of foreign net assets to total worldwide assets of the parent:  $\alpha = (K^* - B^*)/(K^* - B^* + K)$ . Since we have included the present value of depreciation deductions in the first period, we note that, when the firm sells off its assets, it loses the value of the future stream of tax depreciation. Thus, the liquidating value of the firm is  $L = (1 + \pi)(1 - \delta)K(1 - uZ)$ .<sup>22</sup>

As mentioned above, the interest rate is assumed to be a rising function of the debt-to-asset ratio ( $\gamma$ ) of the company. If the firm is liquidated, the value of assets is equal to  $K(1 - uZ)$  (after replacement of depreciated capital with income). We therefore assume that the interest costs on debt rise in each country depending on the corresponding debt-to-asset ratio where  $\gamma = B/(K(1 - uZ))$  and  $\gamma^* = B^*/(K^*(1 - u^*Z^*))$ .

The multinational chooses the optimal amount of capital and debt to issue in the United States and the foreign country to maximize the value of its investment. Letting  $\rho$  equal the shareholders' nominal discount rate, we can state the value of the firm as follows:

$$V = (Y^P + xY^f)/(1 + \rho) - [K(1 - uZ) + K^*(1 - u^*Z^*) - B - B^*], \quad (3)$$

with

$$Y^P = (1 - u)(1 + \pi)F[K] - i[\gamma](1 - u(1 - \alpha))B + (1 - \delta)(1 + \pi)K(1 - uZ) - B,$$

$$Y^f = (1 - u^*)(1 + \pi^*)F[K^*] - i^*[\gamma^*](1 - u^*(1 - \alpha^*))B^* + (1 - \delta)(1 + \pi^*)K^*(1 - u^*Z^*) - B^*.$$

The first-order conditions for  $\gamma$ ,  $\gamma^*$ ,  $K$ , and  $K^*$  yield the following results, respectively:

**2.3.1. Choice of financing.** The firm issues debt in the United States until the after-tax cost of interest is equal to the opportunity cost of equity ( $\rho$ ):

$$\rho = (i + i'\gamma)(1 - u(1 - \alpha)) \quad (\text{with } i' = \partial i/\partial \gamma). \quad (4)$$

Foreign debt is issued until its after tax cost is equal to opportunity cost of equity:

$$\rho = (i^* + i'^*\gamma^*)(1 - u^*(1 - \alpha^*)) - ui(1 - \alpha)^2(B/Kx). \quad (5)$$

Note that the first term in (5) is the after-tax cost of debt (in absence of interest allocation). The second term is the tax savings arising from issuing debt in the foreign country rather than the United States. This term reduces the cost of debt finance in the foreign country. If domestic interest is fully allocated abroad ( $\alpha = 1$ ), there is no advantage to issuing debt in the foreign country to reduce the impact of the interest allocation rule faced by the parent.

**2.3.2. The investment decision in the United States.** The cost of capital for the parent's investment in the United States is the following:

$$F' = \frac{(\delta + r_f)(1 - uZ)}{(1 - u)}, \quad (6)$$

where

$$r_f = (1 - \gamma)r + [\gamma/(1 + \pi)][i(1 - u(1 - \alpha^2)) - \pi].$$



The cost of capital is similar to the usual one found in the literature (Jorgenson 1963), the only difference being that the cost of debt finance is higher resulting from the allocation of U.S. interest expense to the foreign subsidiary. If no interest is allocated ( $\alpha = 0$ ), the U.S. company would be able to deduct the full cost of interest expense from taxable income. The term  $1 - \alpha^2$  reflects the overall impact of the capital investment on interest allocation. When the firm raises one unit of capital stock, it finances investment by  $\gamma$  units of debt with tax relief equal to  $(1 - \alpha)ui$ . On the other hand, by increasing capital stock, the proportion of U.S. interest allocated abroad declines. The combination of the two effects results in the tax value of interest deductions being equal to  $ui(1 - \alpha^2)$ .

**2.3.3. The investment decision in the foreign country.** The cost of capital for the foreign affiliate is determined as follows:

$$F^{*'} = \frac{(\delta + r_f^*)}{(1 - u)} (1 - u^*Z^*) + R, \quad (7)$$

where

$$r_f^* = (1 - \gamma^*)r + [\gamma^*/(1 + \pi^*)][i^*(1 - u^*) - \pi^*] \text{ and}$$

$$R = \frac{ui\gamma(1 - \alpha)^2(1 - uZ)}{(1 + \pi)(1 - u^*)} [1 - B^*/K^*].$$

The cost of capital for the foreign affiliate is adjusted by adding on the term,  $R$ , which is the interest-allocation tax penalty resulting from additional capital expenditure made by the foreign affiliate. The amount of domestic interest expense that is allocated to the foreign affiliate depends on net assets of the foreign affiliate. When the foreign affiliate increases its capital expenditure, it increases U.S. interest expense allocated abroad. On the other hand, part of the foreign affiliate's capital expenditure is financed by additional debt ( $B^*/K^*$ ), which reduces the amount of allocated U.S. interest. However, given that  $B^*$  is likely less than  $K^*$ , then  $R > 0$ .

### 3. Empirical results on financing decisions

The previous section shows that the interest-allocation rules raise the cost of financing operations by U.S. debt for multinationals in excess credit positions. This increased cost of U.S. debt provides multinationals with incentives to alter their financial structure and investment decisions. Previous work has used Compustat data to study the impact of the new interest-allocation rules on firm behavior. Collins and Shackelford (1992) provide evidence that firms increased their issuance of preferred stock in response to TRA 1986. Froot and Hines (1995) provide evidence that the new interest-allocation rules have reduced overall borrowing and investment by multinationals in excess credit positions. In this section, we use data from the Price Waterhouse survey mentioned above to explore whether the interest-allocation rules have affected both the level and location of multinational debt.

### *3.1. Data description*

Data on the location of the debt of U.S. multinationals are extremely difficult to obtain. Although data from Compustat do contain some information on the foreign operations of corporations, they do not contain information on debt held abroad in foreign affiliates.<sup>23</sup> Tax returns contain more complete information but are difficult to access and are not entirely adequate for our project. The information returns filed with parent tax returns for controlled foreign corporations (Form 5471) do contain some balance-sheet information.<sup>24</sup> However, information on the ratio of foreign to worldwide assets (which is necessary to calculate the percentage of U.S. interest expense that must be allocated abroad) and foreign to worldwide debt (which is necessary to determine the impact of the tax rules on the location of borrowing) is not recorded on the data set assembled by the Internal Revenue Service from tax return information.<sup>25</sup>

We were able to obtain much of the information necessary for our analysis from the Price Waterhouse survey, which contains information from corporate tax returns, subsidiary information returns, and annual reports provided by member corporations of the International Tax Policy Forum. The information from corporate tax returns allows us to calculate foreign-tax-credit positions. In addition, the information from the subsidiary information forms allow us to calculate debt-to-asset ratios for operations in three countries: Canada, Japan, and the United Kingdom. The information from the annual reports provide us with a breakdown of U.S. and foreign debt and assets. The data appendix contains a more detailed description of the data set.

The drawback of this data set is its size. The survey was completed by seventeen corporations, all of them extremely large and hence not representative of the population of U.S. multinationals.<sup>26</sup> Thirteen of these firms were in the nonfinancial sector.<sup>27</sup> Corporations were asked to provide information for four years: 1986, 1988, 1990, and 1991. Since the interest-allocation rules discussed above did not take effect until after 1986, we can use this data to study how the financial structure of parents and subsidiaries has changed since 1986.

Table 1 presents some summary statistics taken from the annual reports of the nonfinancial corporations in our sample. As mentioned above, these firms are extremely large in terms of asset size: in 1991, they reported average worldwide assets of \$63 billion (68 percent of which were U.S.). Worldwide debt-to-asset ratios range from about 23 percent in 1986 to about 36 percent in 1991. U.S. debt-to-asset ratios were quite similar to worldwide debt-to-asset ratios ranging from approximately 18 percent in 1988 to 36 percent in 1991. An increasing fraction of the pretax income of these firms is from foreign sources: from 55 percent in 1986 to 83 percent in 1991.<sup>28</sup> Tax payments on worldwide income averaged about \$1 billion per year, while U.S. tax payments averaged about \$325 million per year over the sample period.

Finally, note that the U.S. interest expense of our sample firms more than doubled from 1986 to 1991 while worldwide interest expense tripled. The faster growth of worldwide relative to domestic interest expense could be due to a number of factors such as changing tax and interest rates at home and abroad. The drop in the U.S. corporate tax rate relative to foreign tax rates in itself would contribute to more debt being issued in foreign countries. The interest-allocation rules may also be at least partially responsible. On the other hand, the weakness of the U.S. dollar during this period would increase the incentive to

Table 1. Annual report information.

	Average Values (in millions of U.S. dollars)			
	1986	1988	1990	1991
<b>Assets:</b>				
Worldwide	\$37,515	\$52,356	\$60,067	\$62,716
U.S.	21,900	37,214	40,549	42,897
Ratio U.S./worldwide	0.58	0.71	0.67	0.68
<b>Debt (short- and long-term):</b>				
Worldwide	8,644	18,217	21,065	22,541
U.S.	7,758	6,674	11,118	15,647
Ratio U.S./worldwide	0.85	0.34	0.49	0.65
<b>Pretax income:</b>				
Worldwide	2,409	3,399	2,835	1,559
U.S.	1,077	1,476	1,077	181
Ratio U.S./worldwide	0.45	0.43	0.38	0.17
<b>Income tax:</b>				
Worldwide (U.S. and foreign)	888	1,233	1,203	771
U.S. (on worldwide income)	238	432	432	196
Ratio U.S./worldwide	0.27	0.35	0.36	0.27
<b>Interest expense:</b>				
Worldwide	745	1,855	2,347	2,258
U.S.	647	657	1,164	1,656
Ratio U.S./worldwide	0.82	0.33	0.46	0.68

Source: Price Waterhouse Survey.

issue debt in the United States relative to countries like Canada, Japan, and the United Kingdom, which had stronger currencies during this time. The remainder of this section examines the extent to which the new interest-allocation rules have impacted financing decisions.

### 3.2 The geographic distribution of borrowing after TRA 1986

Since the interest-allocation rules affect only those multinationals in excess credit positions, it is natural to separate the firms by credit position and look for differences in financial structure after 1986. At least eight of our firms were in excess-credit positions in each sample year: nine in 1986, eight in 1988, nine in 1990, and ten in 1991. None of the parent corporations were in excess-limitation positions for all four sample years, only two firms were in excess-limitation positions for three of the four years. Two firms were in excess limitation for two of the sample years, six for three of the sample years, and three for all four sample years. This distribution suggests that all of the firms in our sample were impacted at some point in our sample period by the changes in the interest-allocation rules.<sup>29</sup>

Table 2 presents foreign-subsidiary and parent-specific debt and asset information averaged over the four sample years. Due to the increased cost of U.S. debt we expect that multinationals with excess credits should have lower levels of U.S. debt and higher levels of foreign

Table 2. Summary statistics.

	Number of Observations	Mean	Standard Error
$D_{U.S.}/\text{worldwide debt:}$	84	0.719	0.020
Parents in excess credits	66	0.706	0.024
Parents in excess limitation	18	0.767	0.037
$D_{\text{Canada}}/\text{worldwide debt:}$	52	0.091	0.014
Parents in excess credits	36	0.106	0.019
Parents in excess limitation	16	0.058	0.013
$D_{\text{Japan}}/\text{worldwide debt:}$	52	0.075	0.013
Parents in excess credits	36	0.081	0.016
Parents in excess limitation	16	0.061	0.026
$D_{U.K.}/\text{worldwide debt:}$	52	0.115	0.020
Parents in excess credits	36	0.138	0.028
Parents in excess limitation	16	0.064	0.015
$(D_{\text{Canada}} + D_{\text{Japan}} + D_{U.K.})/\text{worldwide debt:}$	156	0.094	0.009
Parents in excess credits	108	0.108	0.012
Parents in excess limitation	48	0.061	0.011
$\alpha:$	96	0.346	0.017
Parents in excess credits	72	0.377	0.021
Parents in excess limitation	24	0.255	0.021

Source: Price Waterhouse Survey.

Note: U.S. debt figures are only available for eight parent corporations. Observations for which U.S. debt exceeded worldwide debt were not used in the U.S.-to-worldwide-debt ratio computations.

debt relative to worldwide debt than those in excess-limitation positions. This table presents some supportive evidence. To construct the table we first calculated the average proportion of total debt accounted for by debt in the United States, Canada, Japan, and the United Kingdom for all of the firms in the sample. We then partitioned the data by credit states: all observations associated with parents in excess credit (limitation) positions are averaged separately. Unfortunately, only eight of the thirteen nonfinancial corporations reported information on U.S. debt.<sup>30</sup>

Table 2 shows that U.S. debt accounts for almost three-quarters of worldwide debt (71.9 percent). The three countries for which data were available make up, on average, from 7.5 percent (Japan) to 11.5 percent (United Kingdom) of overall debt. Notice that, on average, debt in these three countries accounts for about one third of non-U.S. debt. These country-specific averages show an interesting pattern. U.S. debt makes up a lower proportion of overall debt for parents with excess credits. Similarly, these parents hold a higher proportion of debt in each of the three countries than those parents in excess-limitation positions.<sup>31</sup> Although these results are consistent with the predictions of our model, they do not offer conclusive evidence of an impact of interest-allocation rules on financial behavior. The results may simply be due to a positive correlation between excess-credit status and assets abroad: in other words, firms with excess credits may have higher levels of assets and debt abroad for reasons that are unrelated to interest allocation.

Table 2 also presents statistics on the ratio of foreign assets net of foreign debt to worldwide assets net of foreign debt used to determine  $\alpha$ . Foreign debt is calculated by subtracting

U.S. debt from worldwide debt. Therefore we can calculate this ratio only for the eight firms in our sample that reported figures for U.S. debt. The average value of  $\alpha$  for these firms is almost 35 percent. Parents with excess foreign tax credits tend to have a higher fraction of assets located abroad—about 38 percent.<sup>32</sup> This suggests that an additional dollar of U.S. interest generates a deduction of only sixty-two cents for these firms.

Averaging over the four years of data may hide adjustments in financial structure influenced by changes in the interest-allocation rules. In Table 3, we present debt ratios by year. In our discussion we compare 1986 with 1990 since the 1991 data contain only two parents in excess limitation.<sup>33</sup> Recall that the 1990 data contain three parents in excess limitation and is therefore better suited to our analysis.

Table 3 shows that the ratio of U.S. to worldwide debt increased from 1986 to 1990 for all parents. However, the increase in U.S. debt relative to worldwide debt was smaller for those parents with excess credit.<sup>34</sup> During the same time period the fraction of debt in Japan grew for excess-credit firms and decreased for excess-limitation firms. The fraction of debt in the United Kingdom decreased for both sets of firms but more so for those firms in excess-limitation positions. While these results are suggestive, we have not yet controlled for other factors besides interest allocation (such as corporate tax and interest rates) that may explain the changes in the distribution of debt across these three countries. We do this in the regression analysis below.

Table 3. Debt and asset ratios by year.

	1986	1988	1990	1991
1. Debt in U.S./worldwide debt:				
Parents in excess credits	0.603	0.730	0.694	0.780
Parents in excess limitation	0.736	0.752	0.902	0.560
2. Debt in Canada/worldwide debt:				
Parents in excess credits	0.063	0.112	0.122	0.125
Parents in excess limitation	0.037	0.035	0.072	0.095
3. Debt in Japan/worldwide debt:				
Parents in excess credits	0.035	0.144	0.077	0.075
Parents in excess limitation	0.169	0.022	0.019	0.024
4. Debt in U.K./worldwide debt:				
Parents in excess credits	0.163	0.141	0.127	0.124
Parents in excess limitation	0.109	0.034	0.060	0.039
5. [(2) + (3) + (4)]/worldwide debt:				
Parents in excess credits	0.087	0.132	0.109	0.108
Parents in excess limitation	0.105	0.030	0.050	0.052
6. $\alpha$				
Parents in excess credits	0.327	0.335	0.445	0.406
Parents in excess limitation	0.328	0.135	0.277	0.284

Source: Price Waterhouse Survey.

Note: U.S. debt figures are only available for eight parent corporations. Observations for which U.S. debt exceeded worldwide debt were not used in the U.S.-to-worldwide-debt ratio computations.

The focus so far has been on the allocation of debt across countries. Tables 4 and 5 give information on the capital structure of operations abroad, at home, and worldwide, and present calculations of the growth of debt between 1986 and 1991 relative to assets in 1986. In contrast to the previous tables, in Table 4 we divide firms based on their four-year history of foreign-tax-credit positions.<sup>35</sup> We contrast the three parents that were in an excess-credit position for all four years with the ten parents that were in an excess-limitation position for at least one year.

Table 4 presents evidence that growth rates of debt at home and abroad differed for these two groups of multinationals. The growth rate of U.S. debt relative to assets in the U.S. in 1986 was 31 percent for all multinationals. This rate was only 15 percent for firms in excess credits in all four years.<sup>36</sup> A higher cost of U.S. debt due to the interest-allocation rules could be partially responsible for this result. In addition, the growth rate of worldwide debt for parents in excess credits for all four years is 11 percent as compared to the 31 percent growth rate for our alternative group of parents.<sup>37</sup> This difference in growth rates suggests that the interest-allocation rules may have led to an increase in the use of other nondebt sources of finance.<sup>38</sup>

We next focus on the growth rates of debt abroad. The theory suggests that, *holding all other factors constant*, the growth rate of debt in each of the three countries should be higher for those firms that are always in excess-credit positions. However, Table 4

Table 4. Debt growth rates by foreign tax credit status.

	Debt-to-Asset Ratios:		Debt in 1991- Debt in 1986 Assets in 1986
	1986	1991	
For all parents:			
Canada	0.19	0.44	5.77
Japan	0.43	0.47	0.57
United Kingdom	0.45	0.43	1.59
United States	0.26	0.37	0.31
Worldwide	0.24	0.30	0.26
For parents in excess credits in all four years:			
Canada	0.14	0.48	1.88
Japan	0.42	0.56	1.05
United Kingdom	0.62	0.53	0.31
United States	0.20	0.32	0.15
Worldwide	0.25	0.29	0.11
For parents in excess limitation for at least one year:			
Canada	0.21	0.42	6.94
Japan	0.43	0.44	0.41
United Kingdom	0.40	0.40	1.97
United States	0.28	0.40	0.39
Worldwide	0.24	0.30	0.31

Source: Price Waterhouse Survey.

Note: U.S. debt figures are only available for eight parent corporations. Observations for which U.S. debt exceeded worldwide debt were not used in the U.S. debt-to-asset ratio computations.

Table 5. Debt growth rates by foreign-to-worldwide asset ratios.

	Debt-to-Asset Ratios:		Debt in 1991- Debt in 1986
	1986	1991	Assets in 1986
For parents with $\alpha$ above median in 1986:			
Canada	0.16	0.29	16.05
Japan	0.30	0.48	0.84
United Kingdom	0.38	0.46	0.40
United States	0.20	0.32	0.15
Worldwide	0.15	0.21	0.13
For parents with $\alpha$ below median in 1986:			
Canada	0.25	0.47	0.66
Japan	0.45	0.43	0.21
United Kingdom	0.28	0.28	0.02
United States	0.28	0.40	0.39
Worldwide	0.32	0.34	0.25

Source: Price Waterhouse Survey.

Note: The data consists of four parents with  $\alpha$  above the median and four below the median for 1986. Observations for which U.S. debt exceeded worldwide debt were not used in the U.S. debt-to-asset ratio computations.

presents evidence that this is the case only for Japan. As mentioned above, we attempt to control for some country-specific effects in our econometric work.

Up to this point the analysis has ignored the impact of the ratio of net foreign to worldwide assets ( $\alpha$ ) on the tax advantage of U.S. debt. Recall that the increase in the cost of U.S. debt is an increasing function of  $\alpha$ . This suggests that the interest-allocation rules will have a differential impact on multinationals with high versus low ratios of  $\alpha$ . Table 5 presents evidence that is consistent with this prediction. We divide parents into two groups based on  $\alpha$ . Debt-to-asset ratios and growth rates of debt are then calculated separately for parents above and below the median value of  $\alpha$  in 1986. Parents above the median experienced higher growth rates of debt in all three countries. In addition, these parents had growth rates of U.S. debt and worldwide debt that were significantly lower than those below the median.<sup>39</sup>

The results presented in Table 5 are quite strong. As mentioned above, all of the multinationals in our sample were adversely affected by the changes in the interest-allocation rules at some point during our sample period. As a result it is difficult to divide the sample based on whether the interest-allocation rules are relevant. However, there is variation in the ratio of net foreign to worldwide assets. Table 5 makes use of this variation and demonstrates that there is a negative correlation between growth rates of U.S. debt and  $\alpha$  and a positive correlation between growth rates of foreign debt and  $\alpha$ .

### 3.3. Regression analysis

In this section we attempt to measure the impact of the interest-allocation rules on the location of debt issues while controlling for cross country differences in the after tax cost

of debt. In the regression analysis that follows we treat the country data reported for subsidiaries located in Canada, Japan, and the United Kingdom by each parent corporation as an observation. This means that for each year there are three observations for every parent. Since there are eight parents with information on  $\alpha$ , three countries, and four years, this procedure leaves us with ninety-six observations.<sup>40</sup>

In principle, our dependent variable should be a measure of  $\gamma^*$ , the debt-to-asset ratio of the foreign subsidiary. However, due to difficulties in measuring foreign assets at market value, this measure of the dependent variable was problematic. Instead we use the ratio of local debt in a particular host country to worldwide debt. The book value of debt provides a measure of how debt shifts between countries that is less subject to measurement error. Our theoretical model suggests that for parent corporations with excess credits the percentage of overall debt held in a particular host country should be an increasing function of  $\alpha$ , all else equal. This variable ( $\alpha$ ) should have less of an impact on the debt location decisions of parents in excess limitation.<sup>41</sup>

The model in Section 2.3 shows that host-country borrowing may also be sensitive to differences between home and host-country tax rates and nominal interest rates (nominal interest rates are in turn influenced by anticipated devaluation or appreciation of currencies). A marginal dollar of debt abroad lowers the tax bill in country  $j$  by  $i_j u_j$  where  $i_j$  equals the nominal interest rate and  $u_j$  is the corporate statutory tax rate in country  $j$ .<sup>42</sup> The same increase in debt at home decreases taxes in the U.S. by  $iu$ . This intuition suggests that local borrowing in host country  $j$  should be an increasing function of  $i_j u_j - iu$ . This relationship does not hold for multinationals that are not tax paying either at home or abroad, however. Consider a parent corporation that has a zero tax bill in host country  $j$ . Additional interest deductions have a tax value that is less than  $i_j u_j$  since interest deductions are written off only when the firm becomes tax paying through carry-forward provisions. The present value of interest deductions is also less than  $iu$  for parents that do not pay taxes at home due to losses. This suggests that we treat parents with losses at home or abroad differently in our regression equation.<sup>43</sup> We do this by calculating the following explanatory variable for each country-specific observation of parent  $k$ :

$$\text{Benefit}_{k,j} = u_j i_j (1 - T_{k,j}) - iu(1 - T_k),$$

where<sup>44</sup>

- $j$  = a subsidiary location subscript ( $j$  = Canada, Japan, or the United Kingdom),
- $k$  = a parent subscript,
- $T_{k,j}$  = a dummy variable that takes the value of 1 if taxes paid in country  $j$  by subsidiaries of parent  $k$  are less than or equal to zero and takes the value of 0 otherwise,
- $T_k$  = a dummy variable that takes the value of 1 if taxes paid in the United States by parent  $k$  are less than or equal to zero and takes the value of 0 otherwise,

Note that the benefit variable takes into account changes in statutory tax rates and interest rates (resulting from shifts in anticipated inflation rates across countries). Tax and interest rates for each of the four sample years are presented in the appendix.<sup>45</sup>



We estimate the following equation:

$$D_{k,j}/WWD_k = \beta_1 \text{Benefit}_{k,j}(EC_k) + \beta_2 \text{Benefit}_{k,j}(1 - EC_k) + \beta_3 \alpha_k EC_k \\ + \beta_4 \alpha_k (1 - EC_k) + \beta_5 NMAN_k + \epsilon_{k,j}, \quad (8)$$

where

- $D_{k,j}$  = debt holdings of subsidiaries located in country  $j$  by parent  $k$ ,
- $WWD_k$  = worldwide debt of parent  $k$ ,
- $EC_k$  = a dummy variable that takes the value of 1 if parent  $k$  is in an excess-credit position and zero otherwise,
- $NMAN_k$  = a dummy variable that takes the value of one if parent  $k$  is in the nonmanufacturing sector and zero otherwise, and
- $\epsilon_{k,j}$  = a random error term.

For expositional ease, we suppress parent subscripts in the following discussion.

This formulation takes into account that the tax benefit term may have a different impact on firms depending on their foreign-tax-credit status. Recall that firms in excess credit positions do not pay U.S. taxes on foreign earnings. Higher deductions in countries with corporate tax rates that exceed U.S. tax rates could decrease worldwide taxes. This points to a positive relationship between the tax-benefit variable and the dependent variable for firms in excess credit positions. Therefore we predict a positive sign for the coefficient  $\beta_1$ . However, this is not necessarily the case for firms in excess-limitation positions. Consider the tax bill of a subsidiary of a parent in excess limitation located in a high-tax country. An increase in interest deductions will decrease foreign after-tax income and foreign tax credits that would no longer be used to shelter other sources of low tax income being remitted to the United States.<sup>46</sup> This argument points to a negative relationship between  $\text{Benefit}_j$  and  $D_j/WWD$  for parents in excess-limitation positions. We therefore predict a negative sign for the coefficient  $\beta_2$ .

By interacting  $\alpha$  with our excess-credit dummies we allow  $\alpha$  to impact the local borrowing decisions of subsidiaries with parents in both credit positions. We expect both  $\beta_3$  and  $\beta_4$  to have positive signs. However, our theoretical work points to a larger positive value for  $\beta_3$ . The remaining independent variable in equation (8),  $NMAN$ , is designed to control for factors explaining debt-location decisions that differ across industries. This specification is meant to capture differences in the riskiness of foreign debt for manufacturing and nonmanufacturing firms arising from the interaction between uncertain operating income and bankruptcy costs or potential tax losses (see Kim, 1978).

Our regression results appear in Table 6. Most of the variables in this equation are significantly different from zero at at least a 5 percent confidence level. Notice that our interest-allocation variables ( $\alpha EC$  and  $\alpha(1 - EC)$ ) are both significant.<sup>47</sup> To interpret our results on the impact of the interest-allocation ratio  $\alpha$  on local debt holdings, consider a one-point increase in  $\alpha$  (which is on average .38 in the excess-credit case). For parents in excess-credit positions, this increase would lead to a .53 point increase in the ratio of foreign subsidiary debt to worldwide debt. This would imply an elasticity of the foreign to worldwide

Table 6. Interest allocation rules and the location of debt.

	Dependent Variable: Debt in Country $j$ / Worldwide Debt where $j$ = Canada, Japan, and United Kingdom
Intercept	-0.0659 <sup>++</sup> (0.0285)
[Benefit]*EC	1.2287 <sup>+</sup> (0.7059)
[Benefit]*(1-EC)	-3.1386 <sup>++</sup> (1.5052)
$\alpha$ *EC	0.5276 <sup>++</sup> (0.0718)
$\alpha$ *(1-EC)	0.5673 <sup>++</sup> (0.1241)
NMAN	-0.0821 <sup>++</sup> (0.0344)
Adjusted $R^2$	.3881
$F$ statistic	13.053
Number of observations	96

Source: Price Waterhouse Survey.

Notes: U.S. debt figures are only available for eight parent corporations. Explanatory variables are defined in the text. Standard errors are in parenthesis.

<sup>+</sup> indicates that the coefficient is statistically significant from zero at least at the 10 percent level of significance.

<sup>++</sup> indicates that the coefficient is statistically significant from zero at least at the 5 percent level of significance.

debt ratio to the interest allocation ratio of about 1.7 given the average value of .117 for  $D_j/WWD$  for subsidiaries with parents in excess credits. The interest-allocation rules may not be the only factor explaining a relationship between  $\alpha$  and our dependent variable. If foreign assets grow more quickly than U.S. assets, one might expect a positive correlation between foreign debt and  $\alpha$  (assuming that debt-to-asset ratios are constant across countries). On the other hand, if firms were increasing foreign debt held abroad (holding gross assets constant), we would expect the dependent variable to rise as  $\alpha$  declines (since net foreign assets fall).<sup>48</sup> This makes it difficult to isolate the impact of the interest-allocation rules on our dependent variable.

Our benefit variables are also significant and have the predicted signs. To interpret these results consider a tax reform in the United States that increases the corporate tax rate by 5 percent. All else equal, this will lead to a .06 increase in debt abroad as a proportion of worldwide debt for excess-credit firms.

These regression results strengthen the story that emerged from our univariate analysis of the data set. This is because we use the benefit variable to control for cross-country differences in the tax advantage of holding debt abroad relative to the United States. Our

results suggest that after controlling for differences in corporate tax rates and nominal interest rates across countries, the local debt holdings of subsidiaries as a fraction of parent worldwide debt increase with the parent's ratio of foreign to worldwide assets. This provides some evidence of an impact of interest allocation on debt location decisions. Future work with larger data sets is clearly needed.

#### 4. Impact on the cost of capital

With global economic integration, the impact of government tax policies on the ability of U.S. multinationals to invest in domestic and foreign markets is an important consideration. To determine the impact of interest-allocation rules on investment, we estimate the effect of these rules on the effective tax rate of foreign or domestic investments undertaken by U.S. multinationals.<sup>49</sup> These comparisons also allow one to examine the impact of interest-allocation rules on the competitiveness of U.S. and foreign firms, assuming that the firms have similar investment projects and debt-to-equity ratios. Foreign multinationals operating in either the United States as subsidiaries or their own country are less likely to face restrictions on their ability to deduct interest incurred to finance domestic or foreign investments.<sup>50</sup> Thus, the effective tax rate for foreign firms would be the one calculated below for the no-interest-allocation case.

In Section 2.3, we derived expressions for the cost of capital on U.S. domestic and foreign investments in the presence of interest-allocation rules.<sup>51</sup> It is assumed that the U.S. multinational is in an excess-tax-credit position so that interest-allocation rules would reduce the amount of domestic interest expense that can be taken against domestic income. We also assume that the U.S. parent or subsidiary operating in a foreign country invests in depreciable capital (machinery and buildings) using either equity (retentions or new equity) or debt as finance. Debt is assumed to be fungible across countries; however, parent and subsidiary bonds are not perfect substitutes as there are country-specific transaction and bankruptcy costs that affect corporate bond rates. Inflation rates differ across countries, which in turn influences the appreciation or devaluation of the exchange rate of a country relative to that of the United States.

The estimates of effective tax rates are based on 1993 tax provisions, interest, and inflation rates in the United States, Canada, Japan and the United Kingdom (see the data appendix for further details on parameters).<sup>52</sup> The amount of U.S. interest allocated to foreign sources is taken to be 34.6 percent, based on the average amount of interest allocated by the nonfinancial multinationals in our data set.

In Table 7, we provide estimates of effective tax rates on U.S. multinational investments that are made in either the United States, Canada, Japan, or the United Kingdom. In the first column, we calculate the effective tax rates assuming that interest is allocated. The second column provides the effective tax rate when interest is not allocated. The difference in the two columns is presented in the third column.

As is illustrated in Table 7, the requirement to allocate interest expense has a significant impact on the effective tax rate faced by U.S. multinationals. For U.S. domestic investments, the interest allocation rules increase the U.S. effective rate from 17.6 percent to 21.9 percent. For foreign investments, the effect of the interest-allocation rules is even more dramatic.

Table 7. Impact of U.S. interest-allocation rules on effective tax rates for U.S. multinationals.

Country	(1) ETR with Interest Allocation	(2) ETR without Interest Allocation	(3) Difference (1)-(2)
United States	21.9%	17.6%	4 <del>7.3%</del>
Canada:			
Manufacturing	34.1	25.9	8.2
Nonmanufacturing	41.5	33.9	7.6
Japan	28.3	18.0	10.3
United Kingdom	26.5	17.4	9.1

The interest-allocation rules increase the effective tax rate on Canadian investment made by U.S. multinationals by almost eight percentage points for both manufacturing and non-manufacturing multinationals. The effective tax rate on Japanese investment for U.S. multinationals increases from 18.0 percent to 28.3 percent. And the effective tax rate on U.K. investments rises from 17.4 percent to 26.5 percent. If it is assumed that foreign governments do not require domestic firms to allocate interest, then U.S. multinationals can be significantly disadvantaged from a tax point of view.

## 5. Policy

If the point of the U.S. interest-allocation rules is to recognize the fungibility of debt, it is recognized only in a restrictive sense. Global fungibility would recognize that both parent and affiliate debt, not just parent debt, would be allocable. Thus, in principle, the foreign interest expense of subsidiaries should be allocated to the parent, reducing U.S. interest expense. However, the rules allocate U.S. parent interest expense only to foreign source income and not vice-versa.

It is clear that one of the motivations for the new U.S. interest-allocation rules was to protect U.S. corporate tax revenues. Since allocated interest reduces the ability of the parent to deduct domestic interest expense when financing foreign investment, U.S. multinationals have incentives to shift interest deductions to foreign affiliates. This response to the interest-allocation rules would increase corporate tax payments to the U.S. government and reduce corporate tax payments to foreign treasuries. In fact, the empirical work in Section 3 suggests that multinationals with high ratios of foreign to worldwide assets have reduced the value of net assets held in foreign affiliates (through local borrowing) since 1986 in order to decrease the amount of U.S. interest allocated to foreign-source income.

Revenue raising is not, however, the sole objective for tax policy. Governments set tax policies to raise a given level of revenue with the intent of choosing a system that achieves an efficient allocation of resources, improves equity among taxpayers, and minimizes administrative and compliance costs involved with the collection of taxes. The interest-allocation rules are rather complex.<sup>53</sup> They may also be inefficient and unfair since interest-allocation rules increase the effective tax rate imposed on U.S. multinational investment to a rate greater

than those faced by foreign companies or U.S. companies with only domestic operations. We are not in a position to measure equity, efficiency, and compliance cost effects of the interest-allocation rules. However, we are able to suggest some possible means by which the U.S. government could reduce the impact of the interest-allocation rules on the effective tax rate for U.S. multinational investment. Three suggestions for tax policy come to mind.

### 5.1 *Fat capitalization rule*<sup>54</sup>

Instead of requiring interest to be allocated according to the current rules, it is possible for governments to protect their revenue by using a *fat capitalization* rule for interest deductions. Conceptually, this rule would require that a parent be financed by a minimum amount of equity relative to assets.<sup>55</sup> Otherwise, a portion of interest expense would be disallowed. For example, excess-interest deductions may be determined by the amount of debt that is greater than a specified ratio of debt to equity finance (for example, a ratio of \$1 of equity for \$2 of debt may be required for interest expense to be deducted). The rule, moreover, could apply to all firms including those that only invest in the U.S. economy.

As with interest allocation rules, the fat capitalization rule, to the extent that it limits firms in their ability to raise debt, could result in a high effective tax rate on investment. For those firms below the limit, the fat capitalization rule would have no impact, unlike the current interest-allocation rules. For those above the limit, the fat capitalization rule could disallow all interest deductions incurred for marginal investments.

### 5.2 *A general netting rule*

An alternative policy would be to limit interest deductions on debt issued by the U.S. parent if the parent's debt/asset ratio is in excess of the debt/asset ratio of foreign affiliates<sup>56</sup> or the aggregate debt/asset ratio of the parent and foreign affiliates on a consolidated basis. In the case of the former rule, the formula for allocating interest expense would be:

$$\text{Allocated interest} = \text{U.S. interest expense} \times \max\{(\text{U.S. debt-to-asset ratio} \\ - \text{Foreign debt-to-asset ratio}), 0\}.$$

If the foreign debt-to-asset ratio is more than the U.S. debt-to-asset ratio, no U.S. interest expense would be allocated.

The advantage of the general netting rule is that the U.S. parent would be able to fully deduct interest as long as it keeps its debt-to-asset ratio below that of its foreign affiliates. However, compared to the fat capitalization rule, there may be circumstances under which some U.S. multinationals may find they are either better off or worse off. For example, a U.S. company with relatively low amounts of debt may find the netting rule is more restrictive than the fat capitalization rule if it is difficult to issue debt in foreign countries.<sup>57</sup> The netting rule could impact these firms while no interest may be allocated if the fat capitalization rule has a sufficiently high threshold. On the other hand, multinationals that tend to

be highly levered (such as real estate) may find that the netting rule may be a better option compared to the fat capitalization rule since foreign debt-to-asset ratios may be similar to the domestic debt-to-asset ratio.

### 5.3. General tax reform

The allocation of interest expense is only one of several policy issues associated with the taxation of corporate income. One could take the view that policies directed toward interest-expense deductions should instead depend on the overall approach taken by the U.S. government toward the taxation of domestic and foreign-source income.

For example, suppose that the U.S. government decided to tax all sources of foreign income, including income retained abroad, as in the case of *accrual taxation*. If full accrual taxation were adopted, the deduction of U.S. interest expense may not matter if the U.S. company pays tax on the aggregate of all sources of income with a credit for foreign taxes paid. However, this scheme could imply that, if foreign taxes are more than U.S. tax liabilities on foreign-source income, the foreign tax credit would be fully refundable. In the interest of preventing a revenue loss, the U.S. government would restrict the U.S. foreign tax credits by imposing a limitation similar to the current system. It is less clear, however, whether an interest-allocation rule is desirable if accrual taxation were used.

Alternatively, the U.S. government could follow the Dutch, German, or Canadian systems and allow certain types of foreign source income, particularly dividends paid by foreign affiliates, to be exempt from income (with no foreign tax credit). In this case, interest deductions taken by the U.S. parent to finance the acquisition of assets in a foreign affiliate are used to finance operations that generate profits that are taxed by host countries. The U.S. government could continue to require the allocation of U.S. interest expense. Although, in the interest of preserving their competitiveness,<sup>58</sup> a number of countries that exempt dividends received from qualifying foreign corporations allow deductions for interest incurred to acquire shares in foreign subsidiaries (such as Canada, France, Belgium, Sweden, Brazil, and Germany) (see Arnold, 1994, p. 524).

Neither of these policies seem to limit the desirability of using some sort of rule to restrict interest deductions. However, there is one policy that could result in significant changes. In particular, suppose the U.S. decided to move toward a cash-flow tax on corporations whereby investment would be expensed and no interest deductions would be permitted (foreign assets could be treated on the same basis with a tax credit given for foreign taxes). The implication of the cash-flow tax approach would be to eliminate the need for interest-allocation rules altogether. However, this proposal takes us too far afield to properly evaluate it in this paper.

## 6. Conclusions

The results of our empirical work suggest that the interest-allocation rules have had an impact on the financing of U.S. multinationals. We also find that these rules have had a substantial impact on the effective tax rates of U.S. multinationals, particularly for foreign

investments. Compared to foreign corporations that do not have to allocate interest expense, U.S. corporations face a tax disadvantage when undertaking new investments since some of the debt costs may not be deductible.

We conclude with some proposals to change the current allocation rules. The intention of the proposals is to recognize better the fungibility of debt in an international world. We suggest that either a fat capitalization or general netting rule would reduce the degree to which U.S. multinationals would be required to allocate interest abroad. In addition, there is always the option (taken in some countries) of not allocating interest expense at all in order to maintain the competitiveness of multinationals in a global economy.

## **Data Appendix**

Much of the data used in this paper were assembled from a survey conducted by Price Waterhouse for this project. In the first section of this appendix we provide information on the survey data. Notes on the data used to calculate effective tax rates appears in the second section. The final section contains notes on data used in the regression analysis.

### *A. The Price Waterhouse survey*

As mentioned in the paper, the survey data come from tax forms and annual reports. Price Waterhouse collected information from these forms by country. Multinationals were instructed to aggregate information for their ten largest subsidiaries if more than one Form 5471 was filed for a particular country. The multinationals were asked to provide information for Canada, Japan, and the United Kingdom. The following list describes the source of the data used in Tables 1 through 5.

1. Information from the tax form filed to claim a foreign tax credit (Form 1118)
  - a. Total taxable income from all sources (this variable was used to determine whether the parent corporation was taxable in the year in question),
  - b. Foreign tax credit limitation,
  - c. Foreign tax credit (to determine the credit position of the parent, we compared the foreign-tax-credit claimed to the foreign-tax-credit limitation; if the foreign tax credit equalled the limitation, the parent was in excess credits in the year in question).
2. Information from the information form filed for controlled foreign corporations of U.S. parent corporations (Form 5471)
  - a. Taxes (this variable was used to determine whether subsidiaries were taxable in the year in question),
  - b. Assets,
  - c. Short- and long-term debt.
3. Information from the annual report
  - a. Worldwide assts,
  - b. Worldwide debt,
  - c. U.S. assets,

- d. U.S. debt,
- e. U.S. interest expense.

This information was used to calculate the ratio of foreign to worldwide assets for the purpose of interest allocation. The formula is:

$$\alpha = (\text{worldwide assets} - \text{U.S. assets} - \text{foreign debt}) / (\text{worldwide assets} - \text{foreign debt})$$

where foreign debt = worldwide debt - U.S. debt.

### *B. Effective tax rates*

Data used for effective tax rate calculations included the following:

- *Corporate tax rates.* Includes tax rates on income at federal, state or provincial, and local government levels. Primary source of information was taken from Finance Canada for Canada and the United States and Coopers & Lybrand (1994) for Japan and the United Kingdom. Corporate tax rates for 1983 were taken to be 36 percent (manufacturing) and 42 percent (nonmanufacturing) in Canada, 52 percent in Japan, 39 percent in the United States, and 33 percent in the United Kingdom.
- *Tax depreciation rates.* Data on average tax depreciation rates for machinery and structures are based on OECD (1991) (information for updating rates were taken from the International Bureau of Fiscal Documentation (various issues) or Mintz and Tsiopoulos (1993)). Present-value calculations include adjustments for the half-year convention in Canada and United States.
- *Economic depreciation rates.* Economic depreciation rates for structures are assumed to be 4 percent (exponential) and for machinery 16 percent (exponential) (taken from Mintz and Tsiopoulos, 1993).
- *Cost of finance.* Corporate long-term interest rates and consumer price inflation rates were taken from IMF statistics. The real riskless cost of equity finance was assumed to be 3 percent in all countries. The risk component associated with equity finance was assumed to reflect "income risk" (Gordon, 1985).
- *Debt-to-asset ratio.* The debt-to-asset ratio, prior to an adjustment for tax depreciation recapture was 38.4 percent for all investments in all countries (taken from U.S. and Canadian data) (see Mintz and Tsiopoulos, 1993).
- *Capital stock weights.* Proportion of investments in structures (35 percent) and machinery (65 percent) were assumed to be the same for all countries. Data taken from Mintz and Tsiopoulos (1993) for manufacturing corporations.

### *C. Regression analysis*

Data used includes data cited above in Section A. In addition, one variable was calculated as follows:



- *Benefit ratio.* Data used for measuring the benefit ratio based on anticipated corporate tax rates and interest rates. Corporate tax rates are taken from sources outlined above and interest rates are long-term interest rates taken from IMF statistics. Table A1 provides year by year calculations.

Table A1. Country tax rates and nominal interest rates.

	1986	1988	1990	1991
Canada: <sup>a</sup>				
Overall tax rate <sup>b</sup>	42.73	39.66	37.65	37.05
Nominal tax rate	9.54	10.23	10.79	9.81
Japan:				
Overall tax rate <sup>b</sup>	58.56	57.20	52.49	52.49
Nominal interest rate	4.94	4.27	7.36	6.53
United Kingdom:				
Overall tax rate <sup>b</sup>	36.25	35.00	35.00	34.00
Nominal interest rate	9.87	9.36	11.08	9.92
United States:				
Overall tax rate <sup>b</sup>	49.46	38.23	38.23	38.23
Nominal interest rate	8.14	8.97	8.73	8.16

Note: Long-term interest rates are reported.

- Tax rates for Canada apply to manufacturing firms. Nonmanufacturing firm tax rates are about 5 to 6 points higher, depending on the year.
- Overall tax rates include state or provincial and local income taxes.

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## Notes

1. The foreign tax credit is limited to the U.S. tax payable on foreign-source income. Therefore, if foreign taxes are less than the U.S. tax on foreign-source income, the foreign tax credit received is less than the limitation. In this sense, the firm has excess limitation. The foreign tax credit mechanism is further discussed in Section 2.2.
2. The apportionment of U.S. interest expense against foreign-source income under the gross income method could not be less than 50 percent of what the apportionment would have been if the parent corporation used the asset method.
3. See Brian Arnold (1994) for an excellent survey of various countries in terms of their rules used for determining the deduction of domestic interest expense incurred for investments in foreign activities.

4. As discussed below, the U.S. allocation rules for interest deductions have raised the cost of financing operations by U.S. debt and the cost of capital for U.S. multinationals making them less competitive relative to domestic corporations. It may also be noted that capital importing countries may limit U.S. and other foreign subsidiaries from deducting interest expense under their *thin capitalization* or *earnings stripping* rules.
5. Since our data come from foreign subsidiaries of U.S. parent corporations, we focus on the interest-allocation rules concerning this form of foreign affiliate organization. Special rules apply to the allocation of interest expense for foreign branches.
6. However, this data set cannot be used to determine how companies calculated their allocation of interest or tax status prior to 1986.
7. Note that the rules do not recognize full fungibility after 1986. Debt of the U.S. group, and interest thereon, is allocated to income received from foreign affiliates even if the foreign affiliates are self-financed—that is, the debt of foreign affiliates is disregarded.
8. A good reference of the changes in the U.S. tax law is available in U.S. Congress, Joint Committee on Taxation (1987).
9. A company is affiliated to a group if 80 percent of its voting stock or 80 percent of the total value of outstanding stock is held directly or indirectly by includible corporations.
10. Both prior to and after 1986, interest expense on certain nonrecourse debt could be allocated entirely against the income generated by the secured asset.
11. Tax book value is generally equal to the original cost of assets less depreciation allowed for tax purposes. Parent corporations who used the fair market value could not switch to the tax book value method without consent of the Internal Revenue Service.
12. This ratio test was the second iteration of the rule, since replaced by a third version that triggers if there has been an increase in U.S. group debt *and* an increase in U.S. group loans to foreign affiliates.
13. Alternatively, this is called the deficient-tax-credit case.
14. Foreign tax credits can be carried back for two years and carried forward for five years. However, under current U.S. tax law, unused credits are not carried forward at a rate of interest.
15. This loss of foreign tax credits may only be temporary due to credit carryforwards. However, since foreign tax carryforwards do not earn interest, they are worth less than foreign tax credits that can be claimed either in the current period or through carrybacks.
16. Under U.S. rules, companies pool sources of foreign income into *baskets*. Thus,  $u^*$  may be thought of as an average tax rate imposed on aggregate foreign-source income in the basket in question. Before TRA 1986, there were five separate baskets: (1) one for investment interest income, (2) one for domestic/international sales corporation dividend income, (3) one for the foreign-trade income of a foreign sales corporation, (4) another for distributions from a foreign sales corporation, and (5) one for all other foreign-source income. TRA 1996 increased the number of separate limitations baskets to nine by adding (6) one for shipping income, (7) one for high-withholding-tax income, (8) one for financial-services income, and (9) one for dividends received from each noncontrolled Section 902 corporation (a foreign operation that is not a controlled foreign corporation (see note 24)).
17. This information was obtained through a phone conversation with Harry Grubert of the U.S. Treasury Department.
18. Section 3 contains a description of the data set assembled from this survey.
19. Both the interest allocation rules and the lowering of the U.S. statutory corporate tax rate creates an incentive for firms to shift debt out of the United States. Other considerations aside, high-tax-rate countries are attractive locations for debt since interest payments are generally deductible from taxable income. The incentive to locate debt in a foreign country instead of in the United States is therefore related to the difference in tax rates (and interest rates). Both before and after the passage of TRA 1986, the three countries in our sample enacted tax reforms that also lowered corporate tax rates. We control for differences in corporate tax and interest rates across the countries in our sample (Canada, Japan, and the United Kingdom) in our econometric work.
20. Note, however, that assets rather than equity are used for allocating interest expense for branches. Even foreign corporations operating in the United States with branches must allocate U.S. interest expense abroad in calculating U.S. tax liabilities.
21. It is trivial to allow the capital good price to rise by a rate different than the general rate of inflation. One could instead think of  $\delta$  as the rate of physical depreciation net of real capital gains earned by holding the asset  $K$ .

22. In principle, recapture of depreciation rules may result in the gain or loss to be treated as income and fully taxed rather than a reduction in a future stream of capital cost deductions. However, we are using this static model to capture in a simple way the dynamic one in which firms operate over a long period of time. The model outlined here provides the same results as the dynamic one.
23. In addition, for many corporations the few foreign variables that are reported are aggregated by geographic region.
24. A controlled foreign corporation is a foreign corporation that is at least 50 percent owned by a group of U.S. shareholders, each of whom have at least a 10 percent interest in the company.
25. Starting in 1990, the Internal Revenue Service has begun to record more information from the subsidiary balance sheets.
26. As we discuss below, average worldwide assets of the multinationals in our sample in 1986, for example, was \$37.5 billion. The average assets of nonfinancial multinationals in the sample used by Altshuler and Newlon (1993) was \$5.7 billion in 1986.
27. Since financial corporations generally face different tax rules we eliminated them from our analysis.
28. Pretax income is net of interest expense.
29. Recall that taxpayers are permitted to carry excess foreign tax credits back up to two years to offset U.S. tax on foreign-source income. This means that the true foreign-tax-credit position of a firm in a given year may differ from what it appears to be. In other words, some of our firms with excess credits in a given year may have received full refunds for their excess-foreign-tax credits and as a result were not really in excess credits in the year in question. Unfortunately we do not have complete information on carryovers and as a result do not know the extent of this misclassification for our firms. However, we expect that the eleven firms that were in excess credits for at least two of the four sample years were classified correctly.
30. As a result, it is difficult to compare the information on U.S. debt in Tables 1 and 2. In addition, there were three observations for which the ratio of U.S. debt to worldwide debt was greater than one. These observations were dropped from the analysis in Tables 2 through 5.
31. The difference between the means for the parents in the two credit positions was statistically significant at a 10 percent confidence level for debt in the United Kingdom as a fraction of worldwide debt and the sum of debt in the three countries as a fraction of worldwide debt.
32. The difference in means of  $\alpha$  for the parents in the two credit positions was statistically significant at the 5 percent confidence level.
33. Furthermore, only one of the two firms in excess limitation in 1991 had appropriate data to calculate the ratio of U.S. to worldwide debt. One of the firms reported U.S. debt in excess of worldwide debt and as a result was dropped from the analysis (see note 30).
34. In 1990, the difference between the mean value of U.S. debt as a fraction of worldwide debt for parents in the two credit positions was significant at the 5 percent confidence level.
35. Recall that the four sample years are not consecutive.
36. The difference in the growth rates between firms in the two groups is statistically significant at a 5 percent confidence level.
37. The difference in growth rates is statistically significant at at least a 5 percent confidence level.
38. See Collins and Shackelford (1992) for an investigation of the impact of interest allocation on the issuance of preferred stock (as a substitute for debt). Using Compustat data, they find that the percentage of worldwide assets domiciled abroad is positively related to increases in preferred stock from 1986 to 1989.
39. The difference in mean growth rates of debt for parents with  $\alpha$  above and below the median was statistically significant at the 10 percent level for U.S. and worldwide debt.
40. By treating the data in this way, we are assuming that each parent has only one subsidiary in each of the three countries for which data is reported. In fact, the parent companies were asked to aggregate information from their ten largest subsidiaries in each of the three countries.
41. The interest allocation rules may impact excess-limitation firms that expect to transit to excess-credit positions.
42. The true cost of debt finance in foreign country  $j$  is  $d_j = i_j(1 - u_j) - \pi_j$  with  $\pi_j$  denoting the rate of inflation. With the assumption of purchasing power parity, real interest rates are the same across countries. This implies that  $i_j - \pi_j = r$  for all countries. By substitution, we obtain  $d_j = r - i_j u_j$ . Subtracting this expression from a similar one obtained for the United States, we obtain the expression  $i_j u_j - i u$ . Note that if nominal interest parity conditions hold (so that nominal interest rates are only different by anticipated devaluation or appreciation of the currency in the short run), the benefit ratio would be similar.

43. Since we do not have information on tax loss carryforwards of the parent corporations at home or of subsidiaries abroad, we assume that firms receive no refunds for tax losses. This is equivalent to assuming that losses cannot be carried back and carryforwards expire unused. In principle, tax losses can be carried forward but not at a rate of interest so that the tax value of interest deduction depends on how many years the firm anticipates not to be paying taxes. An alternative formulation would have required the benefit ratio to be split in two parts to allow for dummy variables attached to each corporate tax rate when the firm is earning losses either at home or abroad. This formulation made little difference to the results obtained.
44. For simplicity, we suppress subscripts for time.
45. The foreign and U.S. tax rates used in our regression are inclusive of state and local corporate income taxes.
46. This argument depends on the ability of U.S. multinationals to average high- and low-tax income for the purpose of the foreign tax credit. For a theoretical derivation of the debt decision in the case of excess limitation, see Leechor and Mintz (1993) and Hines (1994).
47. In the excess limitation case, the coefficient was not only significant but slightly higher than the excess credit case (.57 compared to .53, respectively). Recall that all firms were in excess credit in at least one year. This implies that years in which the firm was in excess limitation would allow firms to carryback future excess credits or use up prior years' excess credits. Thus, years with excess limitation reduce some of the impact of the interest allocation rules but not necessarily at the margin.
48. Note that we would have the same interpretation problem if we had used the country debt-to-asset ratio as our dependent variable.
49. The methodology follows Boadway, Bruce and Mintz (1984) for an open economy. A similar methodology may be found in King and Fullerton (1984), Auerbach (1983), and more recently Bovenberg, Anderson, Aramhi, and Chand (1990) and OECD (1991).
50. The United States, similar to a number of other jurisdictions such as Canada, has a *thin capitalization* rule that restricts the ability of a foreign-owned corporation to deduct interest expense against U.S. taxable income when interest deductions surpass a certain limit.
51. The effective tax rate is calculated as the gross return to capital minus the net of corporate tax return to capital divided by the gross return to capital.
52. The effective tax rates are sensitive to various parameters such as inflation rates and real rates of interest. Although we calculate only one year's effective tax rate, the qualitative conclusions regarding the impact of interest-allocation rules on the effective tax rate are unaltered by other calculations.
53. Twelve multinationals reported that the interest-allocation rules enacted in 1986 increased their compliance costs by an average of \$187,000 per multinational compared to the current system with the absence of such rules.
54. We are indebted to David Holland, who suggested this point.
55. The concept is similar to thin capitalization or earnings stripping rules under which firms are not able to deduct interest expense if debt is more than some maximum debt-to-equity ratio. In many countries, thin capitalization rules are used to limit deductions for non-arm's-length interest expense that apply to inbound investment.
56. A general netting rule is suggested in H.R. 5270, The Foreign Income Tax Rationalization and Simplification Act of 1993. We are indebted to William Laitinen for pointing out the formula below.
57. For example, some countries may have foreign-exchange controls and a banking system that limits a U.S. subsidiary from borrowing debt locally or from offshore lenders.
58. For example, see the reply by the Department of Finance, Canada, to the Auditor-General of Canada, who questioned the exemption given for dividends received from multinationals. Finance argued in favor of preserving the international competitiveness of Canadian corporations. See *Tax Notes International* (1993).

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