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Multinational Financial Policy and the Cost of Capital: The Many Roads Home

by

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Abstract

The previous literature on multinational financial policy has, for the most part, been restricted to the choice between dividend distributions to the parent and further real investment in the foreign affiliate. We argue that investment in financial assets such as the debt and equity of related affiliates or Eurodollar deposits, for example, offer multinationals attractive alternatives to dividend repatriation. We present theoretical models that illustrate how investment and financial incentives change when the possibility of investing in financial assets is added to the analysis. Our models depart from previous work in several important ways. We drop the standard arbitrage condition in which equity and debt are perfect substitutes from the viewpoint of the firm and instead impose a worldwide financial constraint consistent with a rising cost of debt finance. In our models, parents can borrow against financial assets held abroad and may allocate debt across locations to achieve the lowest cost of capital at home and abroad. We also consider the implications of models in which affiliates can invest in related affiliates in other foreign countries.

We use firm level balance sheet data for controlled foreign corporations (CFCs) available in the Treasury tax files to test the implications of our models. Our regression results confirm the importance of tax considerations in explaining CFC holdings of financial assets. Low-tax CFCs invest in financial assets, particularly the debt and equity of related CFCs, in order to avoid residual U.S. taxes on repatriations. CFCs in high-tax locations are much more highly leveraged than low-tax CFCs. We also find that CFCs with more debt distribute more dividends. This provides evidence that greater dividend distributions do not necessarily imply lower real investment by CFCs.

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1. Introduction

In spite of the widespread interest in globalization, the literature on the behavior of multinational corporations tends to focus on a limited range of financial flows between foreign affiliates and parents.¹ In the standard model, the multinational chooses between dividend distributions to the parent and further real investment in the foreign affiliate (see figure 1). However, real investment in the foreign affiliate is only one of many alternatives to dividend repatriation. Foreign earnings can be invested in the worldwide capital market or in the equity (or debt) of related affiliates (see figure 2). Alternatively, further investment in the affiliate and dividend repatriations can occur simultaneously if the local debt market is used to raise funds (see figure 3). We use firm level balance sheet data for controlled foreign corporations (CFCs) of U.S. parent corporations to take a broader look at the real and financial behavior of multinationals.² This data, available in the 1992 Treasury tax files, provide insight both on how a CFC is capitalized and how it uses its cash flow. They also provide the stimulus for rethinking the conceptual framework in existing models.

The previous literature on multinational corporations views affiliate and parent operations virtually as if they were independent entities (Sinn 1984 and 1993, Hartman 1985, and others). In the standard Hartman-Sinn model, an affiliate plans its investment path depending on host country tax rates and repatriation taxes. At the same time, parents make real investments at home irrespective of their worldwide financial position. This is because the standard models assume that equity and debt are perfect substitutes from the firm's viewpoint and are therefore consistent with 100 percent (marginal) debt financing throughout the multinational. We call this the "standard" arbitrage condition. Besides

¹Hines and Hubbard (1990), Altshuler, Newlon and Randolph (1995), focus primarily on dividend repatriations, for example.

²A CFC 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.

being inconsistent with the empirical evidence, we argue that imposing the standard arbitrage condition obscures many interesting aspects of multinational financial behavior.

In our theoretical work, we drop the standard arbitrage condition and instead impose a worldwide financial constraint consistent with a rising cost of debt finance. We find that using this alternative constraint has important implications for multinational behavior. For example, by shifting worldwide debt to high-tax locations, parent corporations can reduce the cost of capital on real investment in high-tax affiliates. The real operations of parents and affiliates in low-tax countries can also be related if the possibility of investing foreign earnings in financial assets is introduced to the model. For example, if the parent can borrow against financial assets held abroad in low-tax affiliates its cost of investing in real assets at home may be reduced. In other cases, the value of financial assets held abroad may increase the profitability of real investments abroad by increasing the parent's borrowing power.³

Our more general view of the multinational corporation's worldwide financial policy shows that a concentration purely on bilateral financial flows between the parent and affiliate gives a very incomplete picture of both real and financial behavior. Investing in the debt and equity of other affiliates allows parents to avoid repatriation taxes while keeping capital within the worldwide corporation. If the parent can borrow against the affiliate's financial assets, it can achieve the equivalent of a dividend without the actual financial flow (see figure 2). Similarly, an affiliate may repatriate all its net equity income but still continue to invest with a low cost of capital because it can take advantage of the multinational's worldwide borrowing capacity. There may be little relationship between financial flows to and from the parent and where real investment is taking place.

Summary statistics from the balance sheets of CFCs owned by nonfinancial parents confirm the importance of taking alternate forms of repatriation into account. We find that total financial assets,

³We have found some evidence from financial reports that U.S. multinationals use stocks of financial assets held abroad to support loans at home.

which include short-term passive assets such as cash and investments in the equity or debt of other affiliates, account for a very significant share of CFC assets (almost 60 percent). And investment in related affiliates accounts for a larger share of total assets than short-term passive assets such as cash. Even in nonfinancial CFCs, loans to affiliates and investment in affiliates account for more than eleven percent of total assets of CFCs while cash accounts for only about six percent of total assets.

We use the balance sheet data to test whether home and host country taxes are important determinants of CFC holdings of different types of financial assets and liabilities. Our regression results show that CFCs in low-tax countries invest in financial assets, particularly the debt and equity of related CFCs, in order to avoid repatriation taxes. CFCs in high-tax countries, on the other hand, use accounts receivables (trade credit) to avoid withholding taxes due upon dividend repatriation and perhaps also to transfer income to lower tax locations. On the liability side, our regression results show that local taxes are important determinants of debt holdings: CFCs in high-tax locations are much more highly leveraged than CFCs in low-tax countries. Finally, we present some suggestive evidence against the connection between repatriation and real investment in the CFC assumed in the previous literature. In particular, we find that CFCs with more debt distribute more dividends. These results are consistent with the predictions of the theoretical models we present in the first sections of the paper.

The paper is organized as follows. Section 2 begins with a brief review of the previous literature on the impact of taxes on the investment policies of foreign affiliates. We then consider the implications of models in which CFCs can invest in financial assets, including the debt and equity of affiliates, under the standard arbitrage condition and under our alternative worldwide debt to asset constraint. In section 3 we study how debt and real capital should be allocated across parent and affiliate operations under our worldwide financial constraint. Section 4 contains our empirical results and section 5 summarizes our results and concludes.

2. The implications of investment in financial assets

We start by discussing how the U.S. tax code treats the returns to real and financial investments of U.S. multinational corporations. The active business profits of CFCs are generally not subject to U.S. taxation until they are remitted to U.S. parent corporations. As explained below, when repatriations do occur they receive a credit for foreign taxes paid up to the U.S. tax rate. However, this limitation on the credit is 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) can not be used to offset the U.S. tax liability generated from another type of income (lightly taxed portfolio income, for example).

The deferral of U.S. tax until repatriation has repeatedly been attacked for encouraging U.S. firms to avoid U.S. taxes on foreign income by retaining it abroad in low-tax jurisdictions. Provisions that limit the deferral of foreign profits were added to the tax code in 1962 and have been progressively tightened through subsequent tax reforms. In general, these "anti-tax avoidance" provisions (contained in Subpart F of the Internal Revenue Code) limit deferral to earnings from active business investments abroad.⁴ Earnings from financial assets are denied deferral and taxed immediately.

The current taxation of financial income has different consequences for purely passive assets and for investments in equity or debt or other affiliates. Under the "look through" rule for CFCs, income from loans or equity in affiliates in other countries can be in the parent's general (active) income basket if the affiliate is engaged in active operations. This lightly taxed income can then be mixed in with highly taxed dividends for the purpose of the foreign tax credit. Mixing, or "averaging", income subject to high and low tax rates abroad results in lower U.S. tax liabilities on foreign income than would result if the credit were calculated separately for each type of income. In contrast, truly passive income such as Eurodollar interest would be in the parent's passive basket (which will consist mainly of lightly taxed

⁴These types of provisions also appear in the tax codes of Germany, Canada and the U.K., for example.

income) and would in all likelihood be subject to full U.S. tax.

Even though they can have differing tax consequences, which will play an important role in our empirical work, passive assets and investments in affiliates are similar in that they offer the CFC alternatives in addition to repatriation to the parent. Both can be used to avoid income from being "trapped" in the CFC's real assets. Furthermore, as we will see, even though passive investments have tax disadvantages and may yield a low real return compared to "in house" investments, the value of the passive assets can be comparable to investment inside the multinational if the assets can be used to support borrowing by the parent. The remainder of this section explores how the option of investing foreign earnings in financial assets affects the real and financial decisions of multinationals. 2.1

Investment incentives under the standard arbitrage condition

We start by reproducing the Hartman-Sinn result using the simple all-equity model presented in Grubert (1995) in which a U.S. parent corporation operates one subsidiary abroad. In period zero, the foreign affiliate receives an initial equity injection, E , from the parent. In each subsequent period, the affiliate produces using a standard production function $f(K)$ with $f_N > 0$ and $f_{NN} < 0$. For simplicity, we assume that real capital, K , does not depreciate. In period 1, the foreign affiliate earns an after-foreign-tax return of $f(E)(1-t_f)$, where t_f is the statutory corporate tax rate in the host country. At the end of period 1, the parent may retain (R) for reinvestment in the production process or pay dividends (D) which suffer a repatriation tax of t_d .⁵ In period 2, the affiliate generates after-foreign-tax earnings of $f(E+R)(1-t_f)$. At the end of period 2, the entire net worth of the affiliate is repatriated: $f(E+R)(1-t_f) + E + R$.

With the exception of the repatriation of the original equity transfer, all cash-flows from the affiliate to the parent are subject to U.S. taxation. At this point it is necessary to explain how the repatriation tax, t_d , is determined. Consider the taxes paid abroad on a dividend payment of D : $t_f D / (1-t_f)$

⁵We are implicitly assuming that at the end of the first period the affiliate has sufficient earnings to fund required retentions (in other words, the affiliate becomes "mature" at the end of the first period).

+ $\omega_d D$ where ω_d denotes the host country withholding tax rate on dividends. For the purpose of the foreign tax credit, the dividend is "grossed up" by the foreign effective tax rate which may differ from the statutory rate if, for example, the foreign government provides investment incentives such as accelerated depreciation and investment credits. Although we make a distinction between effective and statutory tax rates in our empirical work, we assume (for simplicity) in our theoretical work that effective and statutory tax rates are equal.⁶

The U.S. tax liability on the grossed up dividend payment is $tD/(1-t_f)$, where t represents the statutory U.S. corporate tax rate. Allowing a foreign tax credit for the taxes paid abroad reduces this home tax liability to $(t-t_f)D/(1-t_f) - \omega_d D$. The foreign tax credit is limited, however, to the U.S. tax liability on foreign income, $tD/(1-t_f)$.⁷ If the foreign tax rate exceeds the U.S. rate then there is no residual U.S. tax on dividend remittances. Since the parent does not receive a full credit for taxes paid abroad it is said to be in "excess credits." In this case, $t_d = \omega_d$. If, on the other hand, the affiliate is located in a low-tax country ($t > t_f$), the parent receives a full credit for taxes paid to the host country and is said to be in "excess limit" or "deficit credits." In this case, $t_d = (t-t_f)/(1-t_f)$.

As mentioned above, we impose the standard arbitrage condition that $r = i(1-t)$ where r is the required rate of return on equity at home after-corporate-tax and i is the rate of return on the world capital market. This condition, which is used by Sinn (1993) and others in the international taxation literature, assumes that companies equalize the cost of debt and equity and are indifferent to either form of finance at the margin. Although we find this condition unrealistic and restrictive, we impose it in this

⁶Papers by Leechor and Mintz (1993) and Hines (1994) show how investment incentives are affected in situations in which foreign effective tax rates differ from statutory tax rates. However, using statutory rates to represent the dividend gross-up rate does not affect our qualitative results.

⁷The limitation on the foreign tax credit operates to some extent on an overall basis. This means that credits accruing from one source of foreign income can often be used to offset U.S. tax on foreign income from another source. As noted earlier in the text, cross-crediting is only possible if the income is in the same foreign tax credit basket. In our simple theoretical model, there is no opportunity for cross-crediting.

section to replicate previous results and show how they differ when we impose our alternate financial constraint.

The parent's problem is to choose E and R to maximize the value of equity after host and home country tax subject to the cash-flow constraint given below.

$$\max -E + (1+r)^{-1}D(1-t_d) + (1+r)^{-2}[f(E+R)(1-t_f)(1-t_d) + E + R(1-t_d)]$$

subject to $D = f(E)(1-t_f) - R$.

The first-order conditions for this problem result in the following investment rules:

- (1) $f_N(E+R)(1-t_f) = r$
- (2) $f_N(E)(1-t_f)(1-t_d) = 1 + r - (1 + r(1-t_d)) / (1+r)$.

The first condition is the standard Hartman-Sinn result: the capital stock in the second period is a function of the foreign tax rate and not the repatriation tax t_d . The second condition indicates that deferral plays a role in determining the optimal equity injection. The firm injects less capital than it would in a world without deferral since it can obtain the benefits of deferral until it reaches the "target" capital stock. The initial equity injection increases as the repatriation tax and, consequently, the benefits of deferral decrease.

Now that we have reproduced the standard Hartman-Sinn results, we study the implications of allowing parents to reinvest active earnings in the world capital market. At the end of period 1, the parent decides between reinvestment in real capital, dividends and investment in passive assets (P) which earn an after-foreign-tax return of $i(1-t_f)$. Although earnings from passive assets are taxed as if they were remitted as dividends, the reinvested foreign earnings are not taxed until repatriated.

The parent's problem now becomes:

$$\max -E + (1+r)^{-1}D(1-t_d) + (1+r)^{-2}[f(E+R)(1-t_f)(1-t_d) + E + R(1-t_d) + (1 + i(1-t_f))P(1-t_d)]$$

subject to $D = f(E)(1-t_f) - R - P$.

To simplify the analysis, before solving the problem we establish the conditions under which the affiliate should pay dividends. On one hand, an additional dollar of dividends at the expense of passive assets generates $(1-t_d)/(1+r)$ after taxes. On the other hand, the after-tax return of a dollar invested in passive assets at the expense of dividends is $(1+i(1-t_f))(1-t_d)/(1+r)^2$. As long as the net of tax interest rate earned abroad, $i(1-t_f)$, exceeds the required rate of return on equity, r , investment in passive assets dominates dividend payments. Since we have assumed that r is equal to $i(1-t)$, affiliates in low-tax countries ($t < t_f$) should invest in passive assets and pay no dividends.⁸ This result, which is a direct consequence of the tax rules that allow deferral on reinvested foreign earnings, is well-known in the literature.⁹

For the remainder of this section, we assume that the foreign affiliate is located in a low-tax country. Solving the parent's maximization problem for the optimal value of E , R and P given that $D=0$ leaves us with three possible cases: (i) $R=0$ and $P>0$, (ii) $R>0$ and $P>0$, and (iii) $R>0$ and $P=0$. However, given that the affiliate is located in a low-tax country and our standard assumptions on the production function, only the first case may obtain. All returns from real investment are reinvested in passive assets. The first-order condition for investment is:

$$(3) \quad f_N(E)(1-t_f)(1-t_d) = r[(2+r)/(2+i(1-t_f))], \text{ or}$$

$$(3N) \quad f_N(E)(1-t_f)(1-t_d)(2+i(1-t_f)) = -1 + (1+r) + (1+r)(1+r-1) = r(2+r).$$

The left-hand side of equation (3N) is the after-tax marginal benefit of investment. The right-hand side represents the marginal cost: the foregone return on the equity injection (after-tax).

The investment rule indicates that in the presence of passive assets, there is no longer an incentive to "underinvest" in the foreign affiliate.¹⁰ Unlike in the Hartman-Sinn model, equity is no

⁸As Hines and Rice (1994) point out, this result may hold in the presence of non-uniform interest rates. The necessary condition is that the after-foreign tax interest rate exceeds the after-tax interest rate at home.

⁹See, for example, Ault and Bradford (1990), Scholes and Wolfson (1992) and Hines and Rice (1994).

¹⁰Although Hines (1994) does not explicitly model the option of investing in passive assets, he also concludes

longer "trapped" in the foreign affiliate since it may be used to invest in the world capital market. The affiliate obtains the benefits of deferral on *active* income by investing the income in passive assets. It is never optimal to reinvest any first period earnings in real foreign assets because the CFC can always earn $i=r/(1-t)$ on passive assets. Note that the initial equity injection is higher than in the Hartman-Sinn case since the multinational does not have to "underinvest" to obtain the benefits of deferral.

With a finite horizon and ultimate repatriation of all income, the cost of capital depends on the closure date of the firm since it determines the benefits of deferral. However, in an infinite horizon problem neither equity or principal would be repatriated.¹¹ As a result, the 2's would be eliminated from both sides of equation (3N) and the Hartman-Sinn result [$f_N=r/(1-t_f)$] would obtain. From the beginning, the CFC invests in real assets as if foreign income were exempt from U.S. taxation because it can always earn a normal return on its passive retained assets. This result is derived using a infinite period dynamic optimization model in Weichenrieder (1996). We present a simple version of his result here to compare with the results we obtain when we drop the standard arbitrage condition in sections 2.3 - 2.5.

2.2 *Investing in a High-Tax Affiliate as an Alternative to Passive Assets*

Even in a traditional all equity model without passive assets, the low-tax CFC can achieve the same results as in the previous section if the multinational also has another CFC in a country with a tax rate at least equal to the U.S. (home country) rate.¹² Consider, therefore, a multinational that can invest in two locations, one with zero tax and one with a corporate tax rate just equal to the U.S. rate. Under these assumptions, the multinational's optimal investment strategy is straightforward. In the first period, it invests enough equity in each affiliate so that the marginal product of capital, after local tax, is just

that there is no incentive to underinvest if firms can freely borrow and lend at world interest rates.

¹¹As the time horizon increases, the present value of the unrepatriated capital goes to zero.

¹²Using a similar dataset for 1986, Altshuler and Newlon (1993) find that almost three-quarters of the parents had CFCs in both high- and low-tax countries.

equal to r , the U.S. required after-corporate-tax return. That is, the cost of capital is r in the zero tax country and $r/(1-t)$ in the location with a tax rate equal to the U.S. rate. In the second period, the low-tax CFC invests all of its earnings in the high-tax CFC, while the latter repatriates all of its earnings plus enough of its equity injection to keep its capital stock constant. Neither of these repatriations result in a U.S. residual tax. The high-tax earnings receive a foreign tax credit equal to the U.S. tax liability before credit, and the initial equity can be repaid without any tax because there are no accumulated earnings. Note that the basic Hartman-Sinn result does not apply because the CFC with high repatriation taxes does not pay dividends.

In subsequent periods, the same process is repeated. The low-tax affiliate invests in its high-tax sibling, which repatriates all of its earnings and continues to buy back its stock from the parent corporation.¹³ In this "triangular" investment case, the low-tax CFC need not underinvest in order to get the benefits of deferral because it can always obtain a "normal" after-tax return r on its earnings by using its high-tax affiliate as a vehicle for making tax-free repatriations.¹⁴

It is necessary to be precise about the taxation of the low-tax CFC at the end of the final period. It is taxed on all of its accumulated earnings and profits including final period income and its investment in the high-tax affiliate. This makes the triangular case entirely equivalent to the passive assets case in the previous section.

Note that the solution here is different from the usual "cross-crediting" or "averaging" case. In

¹³It might be claimed that after the second period, the high-tax CFC will have to pay dividends to the low-tax affiliate as well as to the parent. But there might be different classes of stock with differing dividend policy. In addition, the high-tax CFC can always short-circuit the process by lending money to the parent, which is a direct dividend under the anti-tax avoidance rules.

¹⁴Eventually the high-tax affiliate will have repaid all of its initial equity injection, so the infinite time horizon solution is not quite applicable. In that case, the solution is similar to the finite horizon, passive assets, model in the previous section. Still, in a more realistic case where the CFC's have growing demands for capital because of economic growth or change in technology, the final payback of the high-tax CFC's initial equity may be in the distant future.

the latter, the two CFCs make simultaneously repatriations to the parent and the dividends from the high-tax CFC shield the dividends from the low-tax CFC from U.S. taxation upon repatriation. While this strategy may leave a residual U.S. tax, there would not be one in the triangular strategy outlined here.

2.3 *Dropping the standard arbitrage condition*

The standard arbitrage condition eliminates many interesting aspects of companies' financial behavior. It also raises several conceptual issues and seems clearly inconsistent with empirical evidence. First, the arbitrage condition assumes that the worldwide company can use 100 percent debt finance at the margin without increasing its financing costs.¹⁵ Second, it assumes that only companies can arbitrage after-tax costs while shareholders passively accept any difference in after-personal-tax returns on debt and equity. And finally, it implies that the real interest rate is higher than the after-corporate-tax return on equity, in contrast to the historically large discrepancy in the opposite direction.

One simple way of departing from the standard arbitrage condition and reflecting what appears to be the reality of the capital market is simply to assume that the company faces a worldwide constraint, L , on how large its debt can be as a percent of its worldwide assets.¹⁶ This is similar to assuming a rising cost of debt finance. We will also assume that $i(1-t)$ is less than r , i.e., that debt is a cheap source of finance.

To understand the implications of dropping the arbitrage condition, we start by analyzing a model that can ignore investment and financing decisions regarding projects at home. The parent funds

¹⁵There is a large finance literature based on the premise that the risk of bankruptcy makes borrowing costs rise as the company's debt increases as a percent of its total capitalization. There is also a large literature on debt "rationing" because of asymmetric information (see for example, Stiglitz and Weiss 1981).

¹⁶At this point, it is not necessary to know exactly how L is determined. For example, one question that we address in section 3 is, for a **given** worldwide L , how are debt and assets distributed in the worldwide multinational. In the $r=i(1-t)$ arbitrage condition world, the foreign subsidiary and the parent can both have 100 percent (external) debt at the same time. In the constraint we now impose, the foreign subsidiary can only issue more debt (for given capital stocks) if the parent borrows less.

the affiliate with an equity transfer which we now denote as K_f at the end of period 0. The transfer may be funded at the parent level through debt, B_0 , provided that the debt to asset ratio in period zero B_0/K_f is less than or equal to L . Note that since debt is a cheaper source of finance this constraint will always be binding. Without loss of generality, we assume that only one-period debt is issued.

As before, the parent chooses between paying dividends, reinvesting in real capital and investment in passive assets at the end of period one. The parent may also issue debt B_1 at the end of period one subject to the constraint that $B_1/(K_f+P) \leq L$. Note that in this formulation, real and passive assets are treated symmetrically in terms of increasing the parent's borrowing power. Given these financing constraints, the multinational's problem from the point of view of equity holders is:

$$\begin{aligned} \max \quad & -K_f + B_0 + (1+r)^{-1}[B_1 - (1+i(1-t))B_0 + D(1-t_d)] \\ & + (1+r)^{-2}[f(K_f+R)(1-t_f)(1-t_d) + P(1+i(1-t_f))(1-t_d) + R(1-t_d) + K_f - (1+i(1-t))B_1] \\ \text{subject to } & D = f(K_f)(1-t_f) - R - P, \\ & B_0/K_f = L, \\ & \text{and } B_1/(K_f+P) \leq L. \end{aligned}$$

Since we have dropped the standard arbitrage condition, we must take into consideration that passive assets may not be attractive before solving the multinational's problem. The condition for the subsidiary to hold passive assets is: $i(1-t)(1-L) + rL > r(1-t_d)$. The left hand side is the return per dollar on the passive assets including the amount of additional borrowing that can be returned to equity investors. The right hand side is the after-tax amount that can be returned to equity investors when the income is repatriated as dividends.

Solving this problem for the investment rule in the case in which passive assets are attractive gives us:¹⁷

¹⁷Hines (1994) shows that in the case in which this condition is not met and passive assets are not attractive,

$$(4) \quad f_N(K_f)(1-t_f)(1-t_d) = [r(1-L)+i(1-t)L] [(2+r)/(2 + i(1-t_f)(1-L) + r(1-t_f)/(1-t)L)]$$

The first term in brackets on the right-hand side reflects the cost to the parent of raising both debt and equity (at different after-tax costs) to fund the affiliate. Similarly to equation (3), our new condition (4) shows that if passive assets are attractive, then the multinational does not have to underinvest to get the benefits of deferral.

In the infinite horizon case, equation (4) reduces to

$$(4N) \quad f_N(K_f)(1-t_f) = [r(1-L)+i(1-t)L][r/(i(1-t)(1-L) + rL)] .$$

Unlike in the case with the standard arbitrage condition, investment in passive assets will reduce the steady-state real capital stock. This is because real retained earnings are worth less than under the pure arbitrage condition since $i(1-t) < r$. A dollar of passive assets will support L of additional parent borrowing which can then be returned to the equity holders. L of the passive return i will finance this borrowing. However, this only leaves $i(1-t)(1-L)$ for the remaining equity return, which is less than equity holders require.¹⁸

2.4 *Borrowing against passive assets*

At this point it is interesting to consider how the debt constraint arises. The constraint states that lenders are unwilling to go beyond a certain point in financing the company's assets. This is presumably because the company's **real** assets and operations are risky. But if some part of the worldwide company has a large balance in Eurodollar deposits, its creditors know that these financial assets can easily be liquidated in order to pay off loans elsewhere in the company if that becomes necessary. The Eurodollar deposits can be used explicitly for "back to back" loans or as collateral, or informally to give creditors a

the Hartman-Sinn underinvestment result will obtain.

¹⁸Note that to the equity investors, a dollar of foreign earnings is worth less under the "credit-deferral" system than under an "exemption" system (in which all foreign income is exempt from U.S. taxation) because the foreign earnings have to be invested in relatively low yield passive assets.

different view of the true risk in the company.¹⁹

One way to express the role of passive liquid assets in potentially increasing the company's borrowing power is to net passive assets from debt for the purposes of the debt to asset constraint. That is, creditors will base their evaluation of a company's risk of default by looking at its *net* debt in relation to its operating assets. The netting is done on a worldwide basis because financial assets in one part of the multinational can back loans elsewhere.²⁰

We build a simple model to investigate how this financing option affects investment incentives for projects at home and abroad. Unlike in the previous problem, parents can borrow 100 percent of passive assets and the parent may invest in a domestic project with profit function $g(K_d)$ at the beginning of period 2 where K_d denotes domestic capital ($g_N > 0$ and $g_{NN} < 0$). Since the parent may borrow at home against passive assets held in the affiliate, the borrowing constraint in period 2 is $(B_d - P)/(K_d + K_f) \leq L$ where B_d is domestic debt used to fund both the domestic and the foreign project. The problem for the parent is:

¹⁹Borrowing on the basis of financial assets held abroad may be more than just a theoretical possibility. Although it is difficult to test empirically, evidence from financial statements suggests that at least some companies use this financial strategy. Consider the case of Apple Computer. In 1994, they had cash and equivalents of more than \$1 billion, most of which was located abroad. In their 1994 10-K, excerpted below, they explain why they borrowed more than \$300 million after borrowing relatively little in earlier years.

"The company expects that it will continue to incur short-term and long-term borrowing from time to time to finance U.S. working capital needs and capital expenditures because a substantial portion of the company's cash, cash equivalents, and short-term investments is held by foreign subsidiaries, generally in U.S. dollar-denominated holdings. Amounts held by foreign subsidiaries would be subject to U.S. income tax upon repatriation to the United States."

²⁰One alternative possibility is that lenders only net the after-tax amount of the passive assets if repatriation becomes necessary to pay off loans.

$$\begin{aligned} & \max -K_f + B_0 - (1+r)^{-1}[(1+i(1-t))B_0 + (K_d - B_d) - D(1-t_d)] \\ & + (1+r)^{-2}[(g(K_d)-iB_d)(1-t) + f(K_f+R)(1-t_f)(1-t_d) + P(1+i(1-t_f))(1-t_d) + R(1-t_d) + K_f + K_d - B_d] \\ & \text{subject to } D = f(K_f)(1-t_f) - R - P, \\ & B_0/K_f = L, \\ & \text{and } (B_d-P)/(K_d+K_f) \neq L. \end{aligned}$$

There are two solutions to this maximization problem. Both demonstrate how operations in the parent and affiliate can be related. In the first, passive assets held abroad equal 100 percent of the domestic capital stock ($P=K_d$). The first-order conditions for domestic and foreign investment, respectively, are:

$$(5) \quad g_N = i, \text{ and}$$

$$(6) \quad f_N(1-t_f)(1-t_d) = [r(1-L)+i(1-t)L] [(2+r)/(2+i(1-t_f))].$$

Since it has a surplus of passive assets to borrow against, the parent increases investment until $g_N=i$ which is the cost of capital with 100 percent debt finance. By providing collateral, the passive assets abroad lower the cost of capital for real investment at home. At the same time, the cost of capital abroad is the same as under the arbitrage condition [equation (3)]. Unlike in the previous case in which real and passive assets are treated symmetrically in the worldwide borrowing constraint, investment in passive assets has no effect on the steady-state real capital stock in the host country. In the alternative solution, the affiliate's passive assets are smaller than the stock of domestic capital ($P < K_d$). The investment rules are:

$$(7) \quad g_N(1-t) = r(1-L) + i(1-t)L, \text{ and}$$

$$(8) \quad f_N(1-t_f)(1-t_d) = [r(1-L)+i(1-t)L] [(2+r)/(2+r(1-t_f)/(1-t))]$$

In this case, the parent's cost of capital is the standard one while the affiliate's cost of capital is lowered. Comparing (8) with (6), we see that $r/(1-t)$ has been substituted for i in the denominator of the last term.

The implicit return to passive assets is now $r/(1-t)$ instead of i because the parent can borrow against them, saving the cost of equity finance compared to debt.²¹

Recall that when passive assets could only support L percent of additional debt, there was a threshold return on passive assets, i , below which passive assets were unprofitable. However, if the multinational can borrow 100 percent against passive CFC assets, the CFC will always hold some passive assets irrespective of how low i is relative to r . To see this, assume that the CFC has no (or very little) passive assets. In this case, the second solution must hold because any passive assets are usable and the effective return on them is r , the equity return, which is, of course, above any threshold. In a multi-period model, the CFC would first invest in K_f consistent with this higher implicit return on passive assets. After passive assets are large enough to finance all of domestic capital with debt (which is unlikely in the real world), the CFC will repatriate all subsequent earnings because the implicit return falls below the threshold for holding passive assets mentioned earlier [$i(1-t) < r(1-t_d)$].

2.5 *Investment in Affiliates*

Section 2.2 demonstrated that even in an all equity (or standard arbitrage condition) model, it is optimal for a low-tax CFC to invest in a high-tax sibling as a means of making tax-free repatriations when the multinational is in excess limit.²² This provides the same benefits as passive assets in a standard model because $r=i(1-t)$. That is, the after-foreign-tax return in the high repatriation tax sibling, r , is equal to the after-tax return on passive assets. But in the context of a world in which the standard

²¹Note that borrowing allows the multinational to invest as it would under an exemption system.

²²This analysis assumes that the IRS could not attack this strategy by requiring that the transactions be integrated. It would obviously depend on the specific facts of each multinational and the IRS's ability to monitor a complicated series of transactions. The evidence in this paper suggests that multinationals are able to follow the strategy outlined here. The 1992 tabulations indicate that CFCs in high-tax countries (effective tax rates above 35 percent) have accumulated earnings and profits equal to about 20 percent of total assets. This would appear to provide extensive opportunities for engaging in the triangular strategy without exhausting high-tax retained earnings, the point at which the more serious compliance issues seem to arise.

arbitrage condition does not hold and passive asset yields may be low, investing in (or lending to) other affiliates becomes more advantageous compared to investing in passive assets. Now $i(1-t)$ is less than r . Investing within the worldwide multinational keeps the equity in the company, which can support the normal amount of low cost borrowing. Investing in passive assets is only as good as investing within the multinational if the passive assets increase the worldwide borrowing constraint by an equivalent amount.

3. The allocation of debt and its consequences for the cost of capital

Introducing a worldwide debt to asset constraint may also affect the financing and investment decisions of multinationals with affiliates in high-tax countries.²³ To see this we analyze a simple model in which the parent can borrow both at home and on the local market to fund investment projects.

However, as before, we assume that the multinational's worldwide debt to asset ratio may not exceed L .

We also assume that the affiliate (parent) can not borrow more than the capital stock abroad (at home).

The firm chooses B_d , B_f , K_d , and K_f to solve the following problem subject to the constraints described above:

$$\max (g(K_d) - iB_d)(1-t) + (f(K_f) - iB_f)(1-t_f) - r(K_f + K_d - B_d - B_f)$$

$$\text{subject to } (B_d + B_f)/(K_d + K_f) \leq L,$$

$$B_f \leq K_f, \text{ and } B_d \leq K_d$$

where B_f represents debt from the foreign (host) country market. Faced with this problem, the firm will allocate as much debt abroad in the high-tax country as possible ($B_f = K_f$ and $B_d < K_d$). The first-order conditions are:

²³Altshuler and Mintz (1995) solve a similar debt allocation problem in the presence of the recent U.S. rules requiring that parents allocate a portion of interest expense to foreign income. These allocations reduce allowable foreign tax credits and reinforce the incentive for shifting (unrelated) debt to high-tax foreign affiliates that is the subject of this section. We plan to address the interest allocation issue in a separate paper.

$$(9) \quad g_N(1-t) = (1-L)r + Li(1-t)$$

$$(10) \quad f_N(1-t_f) = (1-L)r + Li(1-t_f) - (1-L)i(t_f-t) .$$

The cost of capital in the affiliate is lower than the standard one since extra investment in real assets increases the parent's worldwide debt capacity. The affiliate could always borrow L and deduct interest costs at the tax rate t_f even without any debt reallocation. This is indicated by the second term in equation (10). But with debt reallocation, the affiliate borrows $1-L$ in addition, which would ordinarily be financed with equity. Its cost of capital is therefore reduced by $1-L$ times the increased interest deductions from the reallocation.

4. Empirical Results

Our theoretical results show that financial assets, including the equity or debt of other CFCs, are attractive alternatives to repatriation and investment in real assets. In fact, tax-free repatriations are possible if parents use our "triangular" investment strategy. Furthermore, if the parent can borrow against its CFC's financial assets it can achieve the equivalent of a dividend repatriation without the actual financial flow. In this section we use the balance sheet data from CFCs to test some implications of our conceptual models. In particular, we use simple regression analysis to investigate whether, as suggested in section 2, host country and repatriation taxes influence CFC holdings of various categories of financial assets. We also explore the empirical importance of tax considerations in explaining CFC debt holdings. The analysis in section 3 suggests that CFC debt should increase with local statutory tax rates. Although previous work has pointed out the advantages of locating debt in high-tax countries, the balance sheet data available in the Treasury tax files is the only dataset we are aware of that provides information on the location of CFC debt for a large set of U.S. multinationals.

4.1 The data

The 1992 corporate tax files compiled by the Statistics of Income (SOI) division of the Internal

Revenue Service form the basis for our study of affiliate balance sheets. This data set is constructed from information from three sets of forms filed by U.S. parent corporations: the basic corporate tax form (Form 1120), the form used to claim a foreign tax credit (Form 1118), and Form 5471 which reports on the activities of each CFC of a U.S. parent.

Most of our analysis is confined to the largest 7,500 CFCs in terms of assets because many of the critical variables are only edited by SOI for these companies. The sample was further reduced by limiting the analysis to nonfinancial parents. This left us with about 5,700 CFCs, approximately 4,500 of which are nonfinancial.

Several types of tax variables appear in the empirical work. Country statutory tax rates and withholding taxes on dividends and interest were obtained from the Price Waterhouse Guides.²⁴ The statutory tax rate used in the analysis, unless otherwise specified, is the rate on manufacturing income.²⁵ In some countries, such as Ireland and Canada, manufacturing receives a special low tax rate, which may not apply to interest and other investment income.

We also calculated an average effective tax rate for each country (in manufacturing) using information from the Form 5471 file. This rate, when compared to the statutory tax rate, indicates the importance of incentives such as tax credits and accelerated depreciation for real investment. As explained further below, in our regressions we use the country average effective tax rate as an indicator of the CFC's long-run foreign tax credit position for the purpose of calculating tax credits and repatriation taxes.

4.2 *Balance sheet information*

²⁴The U.S. treaty rate, if any, for the withholding taxes were used.

²⁵In countries with exemption systems, foreign dividend income is exempt from tax. CFCs organized in these jurisdictions could therefore receive income from lower-tier affiliates free from local tax irrespective of the statutory corporate tax rate that applies to other income.

Table 1 gives the average asset and liability shares reported on Form 5471 by all CFCs in the sample that are owned by nonfinancial parents. Overall, holdings of financial assets seem very significant. Cash accounts for about six percent of total assets. Loans to affiliates and investment in affiliates are quantitatively much more important, accounting for more than twenty percent of total CFC assets when financial CFCs are included, and still more than eleven percent when financial CFCs are excluded. Short-term passive investments and investments in assets of affiliates are alternatives to repatriation that have not received much attention in the previous empirical literature.

4.3 *Regression Analysis*

In our first set of regressions, we focus on four major components of financial assets: cash, accounts receivable, loans to related affiliates, and investments in related affiliates. Although holdings of these financial assets are in part influenced by similar tax considerations (for example, high dividend repatriation taxes and low host country taxes make these assets more attractive), there are some important differences between them. While cash (i.e., Eurodollar deposits or something similar) and investments in and loans to affiliates may all be motivated by the avoidance of repatriation taxes, the discussion in section 2.5 pointed out that "in house" investments in the form of debt or equity will tend to earn a higher financial return than cash. There are also tax advantages to "in house" investments. Any income from equity and debt in affiliates that is currently taxable under Subpart F will be in the general (active) tax credit basket if the affiliate is invested in operating assets.²⁶ The interest income earned on cash will instead be in the passive basket and, as a result, will face a higher residual U.S. tax. Furthermore, equity and debt in affiliates are not considered passive assets for the purpose of the Passive Foreign Investment Company (PFIC) rules. A foreign company is considered a PFIC if 75 percent or more of gross income

²⁶In fact only about 13 percent of the subpart F income of manufacturing parents was in the passive basket in 1992. About 79 percent was in the general basket. This would include sales income routed through CFCs and income from active affiliates. This is consistent with our view that "true passive" income is not very desirable.

or passive assets account for 50 percent or more of total assets, in which case all of its income, including active business income, is currently taxable.²⁷

Loans and equity in affiliates also have different tax consequences since they differ in the extent to which income has to be currently accrued. While interest has to be paid annually, equity income can be deferred through the non-payment of dividends. Note that CFCs in high-tax countries should not be the ones who lend since the interest income they receive would incur a host country tax. Indeed, loans might be used as a vehicle to "strip" income out of high-tax affiliates.²⁸

Accounts receivable frequently yield very little explicit or implicit interest²⁹ and therefore are likely to be a high-tax country phenomenon.³⁰ Furthermore, extending trade credit to related parties is a way of avoiding withholding taxes on dividend payments. A final tax consideration in the low-tax case is that trade credit extended to the U.S. parent may cause a current inclusion of income under the "investment of earnings in U.S. property" rules in subpart F if the trade credit exceeds "normal" unrelated party levels.

Before proceeding with the regression analysis, we review the independent variables used in the analysis. Both tax and non-tax variables were included. Certainly the tax price of dividend repatriations

²⁷In our theoretical work, we will assume that the PFIC limits do not bind. See Weichenrieder (1996) for a theoretical analysis of the PFIC rules.

²⁸In a previous version of this paper, we included a regression of total CFC subpart F income (in relation to total assets) on the financial asset shares. We found that cash results in a high rate of subpart F income while, as expected, investment in affiliates and accounts receivable accrue much less per dollar of assets, presumably because they do not necessarily yield current investment income. We also regressed CFC receipts of interest and dividends (in relation to total assets) on financial asset shares. Most notable was the high rate of interest income associated with loans to affiliates which is consistent with their use to strip income out of affiliates in high-tax countries.

²⁹When we regressed CFC receipts of interest and dividends on financial asset shares we found a low yield on accounts receivable.

³⁰Borrowing from related parties can achieve the same goal and, as table 3 will show, also increases with local tax rates.

should appear as an explanatory variable. As explained in section 2, the repatriation tax is a function of the foreign tax credit position of the parent. However, in the empirical work, we do not use the multinational's actual foreign tax credit position to construct tax prices for dividend repatriations since it is the endogenous result of the multinational's financing and repatriation decisions.³¹ For example, a multinational that might be in excess credit without the financial rearrangements discussed in this paper may end up in excess limit after them.³² And, even after planning financial and repatriation strategies, a multinational may be uncertain about its future credit position for a variety of reasons.³³ These considerations led us to use both the tax price for an excess credit company (the withholding rate on dividends) and the tax price for an excess limit company (explained below) as separate variables in our regression analysis.³⁴ In addition, we include the country statutory tax rate to reflect the tax benefit of deductible payments in the host country.

As mentioned in section 2, the dividend gross up required to calculate the repatriation tax for firms in excess limit is determined by the CFC's effective tax rate (ETR). In particular, in 1992, when the U.S. corporate rate was 34 percent, the excess limit tax price on dividends was the tax on the grossed up

³¹Introducing the actual excess credit position is not notably successful in any case.

³²It may go beyond the zero excess credit knife edge because of the possibility of audit adjustments or simply may not be able to forecast its position absolutely accurately each year.

³³A company may be uncertain about its future position because of uncertainty about earnings in various locations or even about when investment (and merger) opportunities will arise in the future. Uncertainty about future foreign tax credit positions may be particularly significant when the multinational is choosing where to accumulate financial assets. Consider a multinational with two low-tax affiliates (among others) with equal repatriation taxes if the multinational is in excess limit. Assume that one has a high withholding tax on dividends, and in addition, has a higher statutory tax rate (which applies to financial income on the margin). This CFC would be avoided as a financial asset location because of the possibility of larger uncreditable foreign taxes should the multinational be in excess credit in the future.

³⁴In some respects the consequences of uncertainty over excess credit positions are predictable. It may be similar to having repatriation taxes vary over time in a basic Hartman-Sinn model. For example, a company now in excess limit would retain income in a Hartman-Sinn equilibrium if there is a possibility that it will be in excess credit (with low repatriation taxes) in the future. But, in any case, the repatriation taxes under each possibility would be relevant for its strategy.

dividend after the credit, or $(.34-ETR)/(1-ETR)$.³⁵ Instead of using CFC specific effective tax rates, we use the country average effective tax rate in manufacturing to calculate the excess limit tax price. This allows us to focus on responses to permanent as opposed to transitory tax rate differences.

The research and advertising intensity of the parent were used as explanatory variables as indicators of the intangible assets the CFC might enjoy, which may have an effect on the company's capital structure. These were measured by the ratio of R&D to sales and the ratio of advertising to sales.³⁶ We also included a measure of the parent's net borrowing position to reflect the parent's cost of capital. As indicated above, a parent with a high cost of capital may find passive deposits an unattractive asset unless they can be used to back additional borrowing. To measure the parent's net borrowing position, we calculated net interest expense after subtracting interest income, as reported on the multinational's U.S. tax return (and, therefore, referring to its expenses and not its CFC's), and scaled by dividing by total parent assets reported on its Form 1120 balance sheet.

Table 2 presents the regression results for the ratio of CFC financial assets to total CFC assets. Total financial assets, which make up (on average) almost 60 percent of total assets, include cash, loans to affiliates, investment in affiliates, accounts receivable, other investments, and other current assets.³⁷

³⁵Under the Tax Reform Act of 1986, the CFC's dividend gross up depends on the relationship between the dividend and the pool of post-1986 accumulated earnings and profits (after-tax retained earnings). Prior to 1986, the calculation was based on a year-by-year tax calculation, with the dividend coming out of the most recent year's earnings first. The purpose of the pooling provision was to move the incentive to manipulate credits by pushing deductions into years when no repatriations were planned (which was sometimes referred to as the rhythm method of dividend payments).

³⁶Sales and parent advertising expense were taken from the Form 1120 corporate tax return. For parent R&D, the qualified amount for purposes of the U.S. research and experimentation credit (reported on Form 1120) was used if available. In the approximately 20 percent of cases in which companies did not report qualified R&D because they didn't claim a credit, it was imputed from Compustat.

³⁷"Other investments" and "other current assets" are included in total financial assets but are not represented by separate regression equations in table 2. As can be seen in table 1, other investments tend to be small on average, but the regression do indicate that high local statutory rates do not act as a significant deterring influence. "Other current assets" are highly responsive to both local statutory tax rates and to high withholding tax rates on dividends. High repatriation taxes in the low-tax excess limit case are not significant, perhaps because this asset

The second row includes all financial assets except accounts receivable, which, as we will see, seem to behave differently from the others. It is perhaps convenient to examine the behavior of the different types of financial assets before summing up the overall picture.

Loans to affiliates and investment in affiliates, which are highly desirable financial assets compared to purely passive assets, are significantly higher when the excess limit repatriation tax is high. This is particularly true for investment in affiliates, which seems to be a highly effective alternative to repatriation. Holding the statutory rate constant, a decline in the effective tax rate by 10 percentage points (which increases the excess limit repatriation tax by approximately the same amount) increases the share of assets accounted for by investment in affiliates by 17 percent (at the mean). A high dividend withholding tax seems to discourage the accumulation of financial assets in affiliates, apparently because the multinational does not wish to risk uncreditable taxes if it should find itself in an excess credit position in the future.³⁸ These results confirm the logic of our triangular investment case.

The choice between loans to affiliates and investment in affiliates is influenced by the local statutory tax rate which is negative and significant in the loans regression and positive and significant in the investments regression. Loans fit the normal pattern in which interest income and the financial investment that generate them are discouraged by a high local statutory tax rate. (This is the mirror image of debt which is encouraged by a high local statutory rate.) But investment in lower-tier affiliates need not bear the local statutory tax rate to the same extent. Income can be retained in the affiliate and no current income need be accrued in the host country.³⁹

category has tax and non-tax characteristics similar to cash.

³⁸A high withholding tax on outgoing dividends in a location might also suggest that the country has a limited tax treaty network, so incoming payments also bear high withholding taxes.

³⁹In fact, the lower-tier affiliate can avoid the upper-tier taxes by simply acquiring the parent's debt, which triggers a dividend inclusion by the parent under the subpart F rules.

Since only 32 percent of CFCs made loans to affiliates and 41 percent invested in affiliates we also ran Tobit regressions which are also reported in table 2. The results are generally similar, although as usual the Tobit coefficients are much larger in absolute value. The elasticities are comparable once the probability of being above the threshold is factored into the calculation.

Turning now to cash, which is clearly passive, the local statutory tax rate and dividend withholding rates have a significant negative effect similar to loans to affiliates. Current interest is received so that a high statutory tax rate may be costly. On the other hand, the low-tax excess limit repatriation tax has a negative (and insignificant) sign. As suggested above, cash is a less effective alternative to repatriation than within company investment. The insignificant sign on the excess limit repatriation tax could be the result of the correlation between statutory and effective rates. In fact, when we drop the statutory rate from the regression, the excess limit tax price is significant.

Accounts receivable seem to respond differently from other types of financial assets to tax variables, perhaps because they are more closely related to real assets.⁴⁰ Accounts receivable increase with the local withholding tax on dividends, presumably because credit can be extended to offshore affiliates and is the equivalent to a dividend without incurring a withholding tax. The highly significant negative coefficient for the excess limit repatriation tax requires further explanation. Since trade credit to unrelated parties is a less attractive financial asset than inside investments, the negative coefficient may reflect the choice of these other assets. More importantly, trade credit seems to be motivated by high taxes, unlike other financial assets. Recall that the excess limit tax price on dividends is a (negative) function of the average effective tax rate. The statutory tax rate is a more correct indication of the benefit of shifting income, but statutory tax rates and average effective rates are highly correlated, which makes it difficult to identify the independent role of each. When the excess limit tax price is removed

⁴⁰More than 88 percent of sample CFCs reported having accounts receivable, reducing the importance of presenting a Tobit estimate. In the Tobit equation, the statutory rate did, however, become much more significant.

from the receivable regression, the statutory tax rate has a positive coefficient with a t value in excess of seven.

To summarize, tax considerations have a quantitatively significant effect on CFC holdings of financial assets. For example, a reduction of both the statutory tax rate and the withholding rate on dividends by 10 percentage points, increases the share of financial assets by about 20 percent. Increasing the tax price on dividend repatriations in the excess limit case by 10 percentage points increases the share of financial assets by about 7 percent. We also estimated all of the equations with industry dummies for the parent. Although some of the industry dummies were significant, the tax effects were hardly changed.

Table 3 presents regressions on the relationship between CFC debt and tax and non-tax variables. In the bottom three rows we separate accounts payable from the clearly identifiable loans from affiliates and unrelated debt. As expected, a higher host country statutory tax rate, which indicates the benefits of a deduction on the margin, has a highly significant positive effect on local debt. Furthermore, this is true for each of the debt categories listed. An increase in the statutory rate of 10 percentage points increases the ratio of total CFC debt to assets by 7.5 percent (at the mean).

The withholding tax rate on interest has the expected negative and significant effect on debt. Somewhat surprisingly, this result holds for both related and unrelated debt, even though the specific withholding rate used is for payments to a U.S. affiliate. In some countries, including the United States, interest payments abroad on portfolio debt are exempt (or taxed at a lower rate) while payments to offshore related parties are subject to a significant withholding rate. This distinction is evident when financial affiliates are excluded from the regressions: the effect of the withholding rate becomes much weaker for unrelated debt.

As far as the other tax variables are concerned, the excess limit dividend tax price has a negative effect on overall debt. A low effective tax rate, which is the source of a high repatriation tax, can offset

the effect of a high statutory tax rate because incentives such as accelerated depreciation can result in losses, limiting the value of interest deductions.

Turning to non-tax variables, higher parent debt, as reflected in net interest expense, does not seem to be associated with increased CFC debt. In fact, the highly significant negative coefficients for unrelated debt and accounts payable is consistent with the worldwide debt to asset constraint assumed in our theoretical analysis.⁴¹ High parent debt seems to be related to lower CFC debt.

Another way of seeing the importance of tax-induced shifts in debt is by estimating the extent to which debt explains the common observation that profits are higher in locations with high statutory tax rates (see Grubert 1995 for example). When parallel regressions on the ratio of profits before tax to assets and the ratio of interest expense to assets are run on the tax variables, the statutory tax rate coefficient in the interest expense equation is about half the coefficient in the profits equation, so allocation of debt accounts for half of the profit response. When the CFC debt-asset ratio is simply put in as an independent variable in the profits equation, the statutory tax rate coefficient becomes small and insignificant.

Table 4 presents some suggestive analysis of the relationship between CFC dividend repatriations and the composition of balance sheets. We present both OLS and Tobit regressions since only 20 percent of CFCs paid dividends to the U.S. in 1992. We are aware that these have econometric limitations because the balance sheet items are endogenous themselves. On the asset side, dividends seem to be positively related to cash, which may not be surprising if liquid cash is held in the anticipation of paying dividends. Cash is not statistically significant in the Tobit, however. Investment in affiliates is positively related with current dividends. This may represent the passing on of lower-tier dividends and may also indicate that only limited real investment opportunities are available to the CFC.

⁴¹Note that loans from affiliates are inside debt and would not count against the constraint.

What is probably most notable about table 4 is the positive relationship between CFC debt and dividend distributions. The coefficients for accounts payable and unrelated debt are highly significant. This underlines the fact that increased dividend distributions are not necessarily associated with lower real investment by the CFC. It may simply finance more of its operations with debt.

5. Summary and Conclusions

The previous literature on multinational financial behavior has been restricted to a very limited range of options - largely the choice between distributions to the parent and further real investment in the CFC. Our conceptual analysis demonstrates that there are many effective alternatives to repatriation and investment in real assets. Financial assets provide the opportunity for avoiding the repatriation tax and earning a return on the larger unrepatriated base. The most attractive financial investments are the equity or debt of other affiliates since they earn a higher return than passive assets and have tax advantages under current law.

We show the importance of recognizing the existence of CFCs in more than one location for the analysis of multinational behavior. A low-tax affiliate can invest in a high-tax affiliate that is repatriating its income and thereby effectively repatriate tax-free, using the high-tax affiliate as the vehicle. Similarly, if a multinational has alternate CFCs to use as locations for the accumulation of financial assets, it would choose the one with a low dividend withholding rate. The advantages of investing in related affiliates is not apparent in simple bilateral models of parents and CFCs.

We find that imposing a worldwide financial constraint has interesting implications for investments in both high-tax and low-tax affiliates. If the parent can borrow against the CFC's passive assets, it can achieve the equivalent of a dividend distribution without incurring a repatriation tax. In high-tax countries, multinationals can use the reallocation of debt to achieve a lower cost of investing.

The empirical analysis indicates that CFCs' holdings of financial assets are motivated by tax

considerations. Multinationals avoid the accumulation of financial assets in locations with high withholding and statutory tax rates. As suggested by the theoretical analysis in which the standard arbitrage condition is dropped, a CFC's investment in affiliates is strongly influenced by the dividend repatriation tax. CFCs also use accounts receivable to avoid dividend repatriation taxes and (possibly) to transfer income to low-tax affiliates. On the liability side, we find that tax considerations play an important role in the allocation of CFC debt. There is a very significant increase in debt in high-tax CFCs which is consistent with our worldwide financial constraint. Our finding that high dividend repatriations seem to be associated with greater CFC debt underlines the fact that greater dividend distributions do not necessarily imply lower real investment by CFCs.

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Table 1
Asset and Liability Shares of CFCs
CFCs of Nonfinancial Parents

Ratio of items to total CFC assets:	Nonfinancial CFCs	All CFCs
Assets		
Cash	.058	.056
Accounts Receivable	.256	.227
Other Current Assets	.067	.070
Loans to Affiliates	.057	.092
Investment in Affiliates	.056	.114
Other Investments	.015	.022
Intangible Assets	.029	.026
Net Plant and Equipment	.247	.207
Land and Depletable Assets	.016	.015
Inventories	.156	.127
Other Assets	.043	.044
Liabilities		
Accounts Payable	.180	.156
Other Current Liabilities	.182	.167
Loans from Stockholders	.104	.112
Other Liabilities	.122	.127

Notes: This information is taken from the 5471 forms of the controlled foreign subsidiaries filed by nonfinancial parents. Number of observations = 5,680.

See the text for details.

Table 2
Financial Assets Held by CFCs
All CFCs of Nonfinancial Parents

<u>Asset item</u>	Statutory tax rate	Withholding tax rate on dividends	Tax price on dividends in excess limit	CFC age	R&D	Advertising	Parent's net interest expense
Total CFC assets							
Total financial assets	-.290 (6.88)	-.219 (6.34)	.079 (2.13)	-.186 (7.52)	.301 (2.33)	.133 (1.42)	-.278 (1.26)
Total financial assets except accounts receivables	-.349 (7.31)	-.339 (8.66)	.253 (6.03)	-.273 (9.77)	.510 (3.49)	.091 (.860)	.356 (1.43)
Cash	-.122 (7.30)	-.032 (2.33)	-.024 (1.61)	-.0001 (.050)	.093 (1.81)	.048 (1.29)	-.331 (3.79)
Loans to affiliates	-.172 (5.45)	-.134 (5.26)	.083 (2.97)	-.114 (6.10)	-.143 (1.47)	.014 (.200)	.358 (2.16)
Tobit	-.244 (2.76)	-.383 (5.21)	.336 (4.01)	-.146 (2.79)	-.289 (1.06)	.044 (.224)	1.21 (2.65)
Investment in affiliates	.108 (2.98)	-.078 (2.62)	.204 (6.41)	-.107 (5.03)	-.443 (3.99)	.160 (1.99)	.731 (3.86)
Tobit	.298 (3.78)	-.160 (2.48)	.510 (7.07)	.155 (3.37)	-1.50 (5.89)	.276 (1.58)	1.46 (3.57)
Accounts receivable	.058 (1.81)	.120 (4.53)	-.174 (6.14)	.087 (4.62)	.811 (8.21)	.042 (.590)	-.634 (3.76)

Notes:

1. t values are in parenthesis.
2. Number of observations = 5,680.
3. The withholding rate on dividends is the tax price on dividends if the multinational is in excess credits.

Table 3
CFC Liabilities
All CFCs of Nonfinancial Parents

<u>Liability item</u>	Statutory tax rate	Withholding tax rate on dividends	Withholding rate on interest to related parties	Tax price on dividends in excess limit	CFC age	R&D	Advertising	Parent's net interest expense
Total CFC debt	.425 (9.42)	-.031 (0.72)	-.245 (5.48)	-.108 (2.73)	-.144 (5.46)	-.077 (0.56)	-.448 (4.49)	-.907 (3.87)
Unrelated debt	.208 (5.48)	.021 (0.57)	-.107 (2.85)	-.071 (2.14)	-.008 (0.38)	-.081 (0.71)	-.269 (3.19)	-1.00 (5.05)
Loans from affiliates	.143 (4.47)	-.060 (1.98)	-.091 (2.87)	.062 (2.20)	-1.61 (8.59)	-1.08 (1.10)	-1.05 (1.05)	.291 (1.75)
Accounts payable	.073 (2.61)	.050 (1.87)	-.047 (1.67)	-.099 (3.97)	.025 (1.53)	.113 (1.32)	-.105 (1.69)	-.200 (1.37)

See notes to table 2.

Table 4
Dividends and the CFC's Balance Sheet
Dependent Variable = Dividends to U.S./CFC Assets

..... Independent Variables	OLS	TOBIT
Current E&P/Assets	.188 (21.36)	.703 (29.47)
Accumulated E&P/Assets	.065 (16.02)	.258 (17.07)
Withholding Rate on Dividends	-.040 (3.62)	-.166 (3.84)
Withholding Rate on Interest	.009 (.78)	.032 (.73)
Tax Price on Dividends in Excess Limit	.002 (.23)	-.122 (3.27)
Statutory Tax Rate	.001 (.05)	-.047 (1.06)
Cash	.034 (3.56)	.051 (1.49)
Accounts Receivable	-.006 (1.14)	-.004 (.16)
Investment in Affiliates	.025 (5.30)	.088 (4.59)
Loans to Affiliates	-.002 (.30)	-.023 (1.04)
Accounts Payable	.033 (5.14)	.102 (3.76)
Unrelated Debt	.031 (6.40)	.088 (4.40)
Loans from Affiliates	.023 (4.26)	-.021 (.79)
CFC Age	.015 (2.10)	.202 (7.37)
R&D	.015 (.41)	.166 (1.23)
Advertising	.044 (1.71)	.114 (1.21)
.....		

See notes to table 2.