NBER WORKING PAPER SERIES

BALANCE SHEETS, MULTINATIONAL FINANCIAL POLICY, AND THE COST OF CAPITAL AT HOME AND ABROAD

Rosanne Altshuler
Harry Grubert

Working Paper 5810

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
October 1996

We thank Gordon Wilson and Paul Dobbins for providing us with the data files in a convenient form and William Gentry for helpful comments. This paper is part of NBER's research program in Public Economics and NBER's project on International Capital Flows. We are grateful to the Center for International Political Economy for the support of this project. Any opinions expressed are those of the authors and not those of the U.S. Treasury Department or the National Bureau of Economic Research.

NBER Working Paper 5810
October 1996

BALANCE SHEETS, MULTINATIONAL FINANCIAL POLICY, AND THE COST OF CAPITAL AT HOME AND ABROAD

ABSTRACT

We use data from the balance sheets of controlled foreign corporations (CFCs) to study the real and financial behavior of U.S. multinational corporations. The previous literature on repatriations has, for the most part, been restricted to the choice between dividend distributions to the parent and further real investment in the CFC. The balance sheet data allows us to study a broader range of financial flows between CFCs and parents. Our theoretical work considers models that depart from the previous work in several important ways. We drop the standard arbitrage condition in which the after-tax return to equity and debt is equalized on the margin and instead impose a worldwide financial constraint consistent with a rising cost of debt finance. In our model, 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 CFCs can invest in CFCs in other foreign countries. We explain how low-tax CFCs can repatriate tax-free by investing in high-tax CFCs that are repatriating income to parent corporations.

Our theoretical results confirm that financial assets, including the equity or debt of other CFCs, are attractive alternatives to repatriation and investment in real assets. We show that if the parent can borrow against its CFC's financial assets it can achieve the equivalent of a dividend repatriation. 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.

Rosanne Altshuler
Department of Economics
Rutgers University
New Jersey Hall
New Brunswick, NJ 08903
and NBER
altshule@rci.rutgers.edu

Harry Grubert
U.S. Department of the Treasury
Office of Tax Analysis
Main Treasury Building, Room 5121
Washington, DC 20220

1. Introduction

The theoretical and empirical literature on the behavior of multinational corporations tends to focus on a limited range of financial flows between foreign affiliates and parents such as dividend repatriations (Hines and Hubbard 1990, Altshuler, Newlon and Randolph 1995, and others). The availability of firm level balance sheet data for controlled foreign corporations (CFCs) in the 1992 Treasury tax files provides the opportunity for taking a broader look at the real and financial behavior of multinationals.[1] The balance sheet data provide insight both on how a CFC is capitalized and how it uses its cash flow. It also provides the stimulus for rethinking the conceptual framework in existing models.

We look at how home and host country tax policy affect the location of multinationals' assets and liabilities. Do taxes influence the way in which a foreign affiliate is capitalized? What determines the split of the foreign affiliate's investment between real and financial assets? How do different types of financial assets differ in their tax and non-tax characteristics? This broader look at multinational behavior can clarify the relationship between real and financial transactions that has been obscure in the current repatriation literature. For example, if a foreign affiliate retains earnings, does this mean that they are investing in real assets in the host country? If it does repatriate its income, might this mean that it is simply financing its real investments with local debt?

The previous literature on multinational corporations views affiliate and parent operations virtually as if they were independent entities (Sinn 1984, Hartman 1985, and

---

[1]A 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.

others). In the standard theoretical 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 because the standard arbitrage condition assumes a constant cost of finance and is therefore consistent with 100 percent (marginal) debt financing throughout the multinational. Besides being inconsistent with the empirical evidence, imposing the normal arbitrage condition obscures many interesting aspects of multinational financial behavior. We depart from the normal arbitrage condition by assuming that the multinational faces a worldwide debt to asset constraint. We find that using this alternate worldwide financial constraint may affect both the cost of capital and optimal financial policy for affiliates. 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.

Allowing for the possibility of holding financial assets in affiliates shows how the real operations of parents and affiliates in low-tax countries can be related. 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.[2]

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

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

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 passive assets, it can achieve the equivalent of a dividend without the actual financial flow. Similarly, a high-tax 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.

For the purposes of this paper, financial assets include both passive assets such as cash and investments in the debt and equity of other affiliates in the worldwide multinational. In some respect "inside" and "outside" investments serve the same purpose because they are alternatives to repatriation or investment in real CFC assets. But as will be explained in further detail below, investments in related parties have both tax and non-tax advantages. The tax benefit is that investments in related parties are not considered passive for the purposes of the Passive Foreign Investment Company (PFIC) and "excess passive assets" legislation, which restrict CFC's holdings of financial assets. And the non-tax benefit arises because the return on passive assets may be much lower than inside equity.

Summary statistics from the balance sheets of CFCs owned by nonfinancial parents confirm the importance of taking alternate forms of repatriation into account. For example, financial assets account for a very significant share of CFC assets. CFC balance sheets seem to substantiate the advantages of financial investments in other affiliates. We find that even in nonfinancial CFCs, loans to affiliates and investment in affiliates account for more than

ten percent of total assets of CFCs while cash (short-term passive assets) account for only about five percent of total assets.

Before presenting our empirical work, we review the results from previous theoretical work on the impact of taxes on the investment and financial policies of foreign affiliates. As Weichenreider (1995) has shown, incentives for real investment are not affected by the option of investing in financial assets abroad under the standard Hartman-Sinn arbitrage condition between debt and equity. Indeed, CFCs immediately jump to the Hartman-Sinn steady-state because they do not have to underinvest in real assets initially in order to obtain the benefits of deferral on income held abroad. In section 2 we show that when we drop the arbitrage condition, investment in passive assets reduces the steady-state real capital stock in low-tax countries. However, this result does not necessarily hold if we allow parents to borrow against the stock of passive assets held abroad under a worldwide debt to asset constraint. This financial option affects the cost of capital both at home and abroad.

In section 2, as suggested earlier, we also consider the impact on the Hartman-Sinn results if the CFC can invest in affiliates in other foreign countries. This is another reason why earnings are not "trapped" in host countries as is implicit in the literature in this area, which has almost exclusively been based on purely bilateral transactions between a CFC and its parent. Consider a model in which there are investment opportunities in two foreign locations. One has no tax and the other has the same tax rate as in the United States. As will be shown later, the low-tax CFC can use its highly taxed affiliates as a vehicle for making repatriations to the parent free of any residual U.S. tax. Recognizing the existence

of several CFCs also clarifies the multinational's decision as to where to locate financial assets.

Section 3 focuses on affiliates in high-tax countries. We study how debt should be allocated across parent and affiliate operations. We show that shifting debt to high-tax countries can lower the tax cost of investing there.

The tax and non-tax advantages of holding different forms of financial assets are discussed in first part of section 4. For example, CFCs in high-tax countries have an incentive to hold financial assets, but of a type different from low-tax affiliates. In particular, accounts receivable (trade credit) is a low-cost way for high-tax CFCs to shift income to low-tax affiliates because full interest need not be accrued.[3] In addition, extending trade credit to affiliates may be a way in which CFCs can avoid the payment of the withholding taxes that apply to actual dividend and interest payments.

Our empirical results are contained in the second part of section 4. The regression results confirm the importance of tax considerations in explaining CFC holdings of financial assets. Low-tax affiliates invest in financial assets, particularly the debt and equity of related affiliates, in order to avoid residual U.S. taxes on repatriations. High-tax CFCs extend trade credit to avoid withholding taxes and perhaps also to transfer income to lower tax locations. CFCs in high-tax locations are much more highly leveraged than low-tax CFCs. Finally, the loose connection between repatriation and real investment in the CFC is illustrated by the fact that CFCs with more debt distribute more dividends.

---

[3]Even under the comparatively stringent U.S. transfer pricing rules, explicit interest does not have to be charged if the trade receivable has a maturity of less than six months.

2. Passive investment and the real and financial decisions of multinationals

We start by discussing how the U.S. tax code treats the returns to real and financial investments of U.S. multinational corporations. The 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 for foreign tax payments is on a "basket" or type of income basis so that highly taxed dividends cannot be mixed with lightly taxed passive portfolio income.

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 subpart F current inclusion of financial income can have different consequences for different types of investments, which will play an important role in the empirical work. 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

---

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

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

Financial investments in related CFCs are also treated differently from passive assets under the Passive Foreign Investment Company (PFIC) and the "excess passive assets" provisions. Under the PFIC rules, *all* of a CFC's income is currently taxable if passive income is 75 percent or more of gross income or passive assets are 50 percent or more of total assets. Under the "excess passive assets" provision in section 956A, introduced in 1993, a CFC's ability to defer additional income is restricted if its passive assets exceed 25 percent of total assets.[5] But investment in or loans to affiliates (as well as trade receivables) are not considered passive for PFIC or 956A purposes.

Even though they can have differing tax consequences, which must be kept in mind, passive assets and investments in affiliates are similar in that they can offer the CFC alternatives in addition to repatriation to the parent or investment in real assets. 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

---

[5]In our theoretical work, we will assume that neither the PFIC or section 956A limits are binding. Because the empirical analyses is confined to 1992 data, the section 956A excess passive assets rules do not apply. See Weichenreider (1995) for a theoretical analysis of the PFIC rules.

to investment inside the multinational if the assets can be used to support borrowing by the parent.

In this section, we explore how financial assets held abroad affect the real and financial decisions of parents and affiliates. Even under the subpart F rules, there is an incentive for parent corporations to retain income abroad in low-tax jurisdictions. This distortion arises because the provisions apply only to *earnings* on passive assets: retained active earnings invested in passive assets do benefit from deferral. Deferring repatriation of real income means that passive income can be earned on a larger base.

Previous work has studied investment incentives under the subpart F rules. We begin in section 2.1 by reviewing results obtained by Hines (1994), Weichenreider (1995), and others using a simple two-period model. We impose the usual arbitrage condition used (either implicitly or explicitly) in previous work under which the after-tax cost of equity and debt are always equalized. We also explore the incentives to invest in high-tax affiliates as an alternative to passive assets. In section 2.2, we depart from previous work by dropping the arbitrage condition. Instead we link the financial policy of the parent and affiliate through a worldwide debt to asset constraint which limits the use of debt finance. This allows us to consider, in section 2.3, how real investment decisions at home and abroad are affected if the parent can borrow using passive assets held abroad as collateral.

In section 2.4, we consider an alternative form of financial investment which is empirically significant in our empirical work: investments in lower-tier affiliates. As mentioned in the introduction, we study a "triangular" investment problem under which the

parent can invest in both high- and low-tax affiliates which may in turn invest in each other.

2.1 Real and financial incentives under the usual arbitrage condition

2.1.1 Real incentives

We start with the simple two-period 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 $f' > 0$ and $f'' < 0$. For simplicity, we assume that real capital, K, does not depreciate.[6] 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. 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: $f(E+R)(1-t_f) + E + R$. We 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). The parent is assumed to maximize its return to equity net of host and home country taxation. With the exception of the original equity transfer, all cash-flows from the affiliate to the parent are subject to U.S. taxation. To prevent the double taxation of foreign earnings, the U.S. provides a foreign tax credit. At this point it is necessary to briefly explain how the credit operates. Consider the taxes paid abroad on a dividend payment of

---

[6]This is equivalent to assuming that firms can deduct economic depreciation.

D: $t_f D/(1-t_f) + \omega_d D$ where ω_d denotes the host country withholding tax rate on dividends. In practice, 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.[7]

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, $tD/(1-t_f)$.[8] If the foreign tax rate exceeds the U.S. rate then there is no residual U.S. tax on dividend remittances. The parent does not receive a full credit for taxes paid abroad and 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 usual 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

---

[7]Papers 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.

[8]The 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.

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 therefore indifferent to either form of finance at the margin. Although we find this condition unrealistic and restrictive, we impose it in this section to replicate previous results.

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.

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

$$\text{subject to } D = f(E)(1-t_f) - R.$$

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

(1) $f'(E+R)(1-t_f) = r$

(2) $f'(E)(1-t_f)(1-t_d) = 1 + r - (1 + r(1-t_d)) / (1+r)$.

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 with our simple model, 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 $i(1-t_f)$. As mentioned above, 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:

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

$$\text{subject to } D = f(E)(1-t_f) - R - P.$$

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.[9] This result, which is a direct consequence of the tax rules that allow deferral on reinvested foreign earnings, is well-known in the literature.[10]

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:

---

[9]As 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.

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

(i) $R=0$ and $P>0$,

(ii) $R>0$ and $P>0$, and

(iii) $R>0$ and $P=0$.

However, under our standard assumptions on the production function, only the first case may obtain. This means that all returns from real investment are reinvested in passive assets and therefore $P=f(E)(1-t_f)$. Making this substitution yields the following maximization problem:

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

The middle term in brackets is the return to real investment, $f(E)(1-t_f)(1-t_d)$, plus the return to passive investment $f(E)(1-t_f)(1-t_d)(1 + i(1-t_f))$. Maximizing the value of the firm gives the following optimizing condition:

(3) $f'(E)(1-t_f)(1-t_d) = r[(2+r)/(2+i(1-t_f)]$, or

(3′) $f'(E)(1-t_f)(1-t_d)(2+i(1-t_f)) = -1 + (1+r) + (1+r)(1+r-1) = r(2+r)$

The left-hand side of equation (3′) 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. The initial equity injection is the "steady-state" (in our model, the second period) real capital stock. It is never optimal to reinvest any first period earnings in <u>real</u> foreign assets because the CFC can always earn $i=r/(1-t)$ on passive assets. Unlike in the Hartman-Sinn model, equity is no longer "trapped" in the foreign affiliate since it may be used to invest in the world capital market. The affiliate can obtain the benefits of deferral on *active* income by investing the income *in*

passive assets. Since the multinational does not have to underinvest to get the benefits of deferral, the initial equity injection is higher than in the Hartman-Sinn case. But 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.

Weichenreider (1995) obtains a similar investment rule using a dynamic optimization model. His first-order condition is $f' = i(1-t)/(1-t_f)$. If we allowed for an infinite time-period, equation (3) would reduce to this expression and the Hartman-Sinn result would hold. 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.[11] Although Hines (1994) does not explicitly model the option of investing in passive assets, he also concludes that there is no incentive to underinvest if firms can freely borrow and lend at world interest rates.

2.1.2 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

---

[11]In an infinite horizon problem there would be no repatriation of equity or principal. This would eliminate the 2's on both sides of equation (3'). Substituting (1-t) for $(1-t_f)(1-t_d)$ and $r = i(1-t)$ gives us Weichenreider's first-order condition.

[12]Using 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.

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 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. In the "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.[13]

---

[13]Eventually 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.

2.1.3 Financial incentives

The option of investing in passive assets through foreign affiliates may also impact the optimal financial strategy of the affiliate. In particular, both the incentive to use inside and outside debt to finance the foreign affiliate may be affected. We start with the parent's decision of whether to finance the affiliate with injections of equity or inside debt (B_{in}). As before, we ignore how these capital injections are financed at the parent level. We assume that the inter-company interest rate equals the world interest rate i.[14]

Since loans between related parties trigger interest payments, the tax consequences of debt and equity injections will differ. Interest payments to the parent on inter-company loans are deductible against foreign taxes (at rate t_f) but are taxable as interest income at home (at rate $t > t_f$). Although host countries may impose withholding taxes on interest payments, parents in excess limit receive full credits for these taxes. Taking these tax considerations into account, the parent's problem becomes:

$$\max -(E+B_{in}) + (1+r)^{-1}[D(1-t_d) + iB_{in}(1-t)] +$$

$$(1+r)^{-2}[f(E+B_{in}+R)(1-t_f)(1-t_d) + iB_{in}(1-t) + E + B_{in} + R(1-t_d) + (1 + i(1-t_f))P(1-t_d)]$$

$$\text{subject to } D = (f(E+B_{in}) - iB_{in})(1-t_f) - R - P \, .$$

If passive assets are deleted from the model, the first set of solutions [equations (1) and (2)] obtain and the parent is indifferent between injecting equity and debt to fund marginal

[14]The Internal Revenue Service leaves some discretion to the parent company in the determination of the interest rate on intercompany loans, however the rate imposed must satisfy "arms-length" rules.

investment. In this case, debt repatriations will dominate dividends.[15] Introducing passive assets changes this result. Since debt payments are made at the expense of passive investment, debt is no longer attractive and equity becomes the optimal source of funds on the margin.

Affiliates may also be funded through local borrowing. To investigate this financing option, we modify our model by allowing the foreign affiliate to borrow B_ℓ on the local (or external[16]) debt market in the beginning of period one at interest rate i. As before, we assume that the parent initially funds the affiliate with an equity transfer (since we have shown that debt injections are not attractive). The problem is:

$$\max -E + (1+r)^{-1}D(1-t_d)$$

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

$$\text{subject to } D = (f(E+B_\ell) - iB_\ell)(1-t_f) - R - P.$$

As before, we first consider the model without passive investment opportunities. In this case, marginal investment is financed with a combination of debt and equity under the investment rule $f'(E+B_\ell) = i$.[17] Now consider what happens to the incentive to use local debt when a passive investment opportunity exists. As was the case with inside debt, once

---

[15]Hines (1994) shows that in this case, the firm may be financed with both equity and debt initially. However, since debt may be repatriated at zero tax cost, the affiliate's first repatriations will be in the form of debt. In the steady-state there is no debt and dividends are repatriated. We need to add more time periods for this result to obtain in our model. In our empirical work, however, we study how taxes affect debt repatriations.

[16]Affiliates may borrow from affiliates. We include this option in our empirical work.

[17]For this interior solution to hold, however, R must be zero.

investment in passive assets is allowed, local debt is no longer an optimal source of funds since the marginal productivity of capital falls short of the market rate of interest:

$$f'(E) = [r/(1-t)][(2+r)/(2+i(1-t_f)] = i[(2+i(1-t))/(2+i(1-t_f)] < i.$$

Weichenreider (1995) also considers the case of local debt finance and obtains this result.

2.2 *Dropping the usual arbitrage condition*

The arbitrage condition that we have imposed up to this point, $i(1-t)=r$, eliminates many interesting aspects of companies' financial behavior. It also raises several conceptual issues and seems clearly inconsistent with empirical evidence. First, this arbitrage condition assumes that the worldwide company can use 100 percent debt finance at the margin without increasing its financing costs.[18] 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 normal 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. This is similar to

[18]There 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).

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.[19]

For the purposes of this paper, it is not, at this point, 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.

We adjust our model as follows. Before investment abroad is considered, we assume that the parent is operating at home satisfying the constraint that $B_d/K_d \leq L$ with equality where B_d and K_d represent domestic debt and domestic capital respectively. The parent funds 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 $(B_d + B_0)/(K_d + K_f)$ is less than or equal to L. B_0 is domestic debt issued to finance capital transfers abroad, K_f. For simplicity we assume that only one-period debt is issued.[20] Note that since we have assumed that $B_d = LK_d$ we can rewrite the worldwide constraint as $B_0/K_f \leq L$. As before, the parent chooses between paying dividends, reinvesting in real capital and investment in passive assets at the end of period

---

[19]As explained in greater detail below, in this case investment in passive assets may not be an attractive alternative. Recall that passive assets dominate dividend repatriations if $i(1-t_f)$ exceeds r. In the case in which this condition is not met and passive assets are not attractive, our result on inside debt does not hold. The Hartman-Sinn underinvestment result will obtain and, as is shown in Hines (1994), the subsidiary will be financed with equity and debt injections. Since debt may be repatriated at zero tax cost, remittances of debt will dominate dividend repatriations.

[20]This assumption has no effect on our results.

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 problem is:

$$\max -(1-L)K_f - (1+r)^{-1}[(1+i(1-t))B_0 - B_1] + (1+r)^{-1}D(1-t_d) - (1+r)^{-2}i(1-t)B_1$$

$$+ (1+r)^{-2}[f(K_f+R)(1-t_f)(1-t_d) + (1-L)K_f + P(1 + i(1-t_f))(1-t_d) + R(1-t_d) + B_1 - B_0]$$

subject to:

$$D = f(K_f)(1-t_f) - R - P,$$

$$B_0/K_f \leq L$$

$$\text{and } B_1/(K_f+P) \leq L.$$

Since we have dropped the 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:

$$(4) \qquad f'(K_f)(1-t_f)(1-t_d) = [r(1-L)+i(1-t)L]\,[(2+r)/(2 + i(1-t_f)(1-L) + r(1-t_f)/(1-t)L)]$$

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. However, unlike in the case with the usual 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. 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.[21]

2.3 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

[21]Countries with exemption systems include Canada, France, Germany, Italy, New Zealand, Spain and Sweden.

be used explicitly for "back to back" loans or as collateral, or informally to give creditors a different view of the true risk in the company.

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.[22]

We build a simple model to investigate how this financing option affects investment incentives for projects at home and abroad. We allow the parent to fund a domestic investment project through borrowing on the basis of passive assets held abroad subject to a worldwide debt to asset constraint. 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 ($g' > 0$ and $g'' < 0$). Since the parent may borrow at home against passive assets held in the affiliate, the borrowing constraint in period 2 is $(B_1 + B_d - P)/(K_d + K_f) \leq L$ where B_d is domestic debt used to fund the domestic project. The first period borrowing constraint is the same as before: $B_0/K_f \leq L$. We also impose the constraint that the parent can not borrow more than the capital stock at home ($B_d \leq K_d$).

The problem for the parent is:

---

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

$$\max -(1-L)K_f - (1+r)^{-1}[(1+i(1-t))B_0 - B_1 + (K_d - B_d)] - (1+r)^{-2}[i(1-t)B_1 - (K_d - B_d)]$$

$$+ (1+r)^{-1}D(1-t_d)$$

$$+ (1+r)^{-2}[(g(K_d)-iB_d)(1-t) + f(K_f+R)(1-t_f)(1-t_d) + (1-L)K_f + P(1+i(1-t_f))(1-td) + R(1-t_d) +$$

$$B_1 - B_0]$$

subject to:

$$D = f(K_f)(1-t_f) - R - P,$$

$$B_0/K_f \leq L,$$

$$(B_1+B_d-P)/(K_d+K_f) \leq L,$$

and $B_d \leq K_d$.

One solution to our new maximization problem is for the parent to borrow at home up to the limit $B_d=K_d$ which is accomplished by borrowing against passive assets abroad. The first-order conditions for domestic and foreign investment, respectively, are:

(5) $g' = i$, and

(6) $f'(1-t_f)(1-t_d) = [r(1-L)+i(1-t)L]\ [(2+r)/(2+i(1-t_f))]$.

Since it has a surplus of passive assets to borrow against, the parent increases investment until $g'=i$ 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.

The alternative solution is the one in which the affiliate has insufficient passive assets to finance the entire domestic capital stock and $B_d < K_d$. The investment rules are:

(7) $g'(1-t) = r(1-L) + i(1-t)L$, and

(8) $f'(1-t_f)(1-t_d) = [r(1-L)+i(1-t)L]\ [(2+r)/(2+r(1-t_f)/(1-t))]$

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. Borrowing allows the multinational to invest as it would under an exemption system.

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.

Borrowing 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."

2.4 Investment in Affiliates

Section 2.1.2 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. 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 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, even when the latter are available. 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.

As mentioned earlier, inside investments have tax advantages as well. Any subpart F inclusion by the parent triggered by the CFC's receipt of investment income would be in the general (active) foreign tax credit limitation basket if the "lower-tier" CFC earns active income. In addition, investments in affiliates are not counted as passive for the purpose of the PFIC and "excess passive asset" rules.

3. The real and financial decisions of high-tax affiliates under worldwide debt to asset constraints

Introducing a worldwide debt to asset constraint may also affect the decisions of multinationals with affiliates in high-tax countries. In this section we first consider how tax incentives affect the location of debt and the cost of capital at home and abroad for parents in excess credit positions. We then briefly discuss the implications of uncertainty over excess credit positions for the empirical work that follows.

3.1 The debt allocation problem under a worldwide debt to asset constraint[23]

We allow the parent to borrow both at home and abroad 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). Using the same variable definitions as in section 2, these constraints can be expressed as follows:

$$(B_d + B_f)/(K_d + K_f) \leq L$$

$$B_f \leq K_f$$

$$B_d \leq K_d .$$

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

---

[23]Altshuler 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.

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

where $g(K_d)$ is the production function at home, as in section 2.3.

We find that 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:

(9) $\quad g'(1-t) = (1-L)r + Li(1-t)$

(10) $\quad f'(1-t_f) = (1-L)r + Li(1-t_f) - (1-L)i(t_f-t)$.

The cost of capital in the affiliate is lower 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.

3.2 Uncertainty About Future Excess Credit Positions

Up to now, in the discussion of alternative models, we have assumed that multinationals are bifurcated in terms of excess credit positions. Either they are certain to be in excess limit or they are certain to be in excess credit. But in a more realistic model, a 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. This may have important implications for the empirical analysis that follows.

In 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.

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.

4. Empirical Results

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] In addition, an average effective tax rate for each country (in manufacturing) was computed 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.

The statutory tax rate used in the analysis, unless otherwise specified, is the rate on manufacturing income. 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.[25]

---

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

[25]In 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.

4.2 Balance sheet information

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 five 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 ten percent when financial CFCs are excluded. These two categories of assets, short-term passive investments and investments of debt and equity in affiliates, are alternatives to repatriation that have not received much attention in the previous literature.

4.3 Regression Analysis

4.3.1 Introduction

We begin with regressions for the various categories of financial assets held by CFCs. In particular, we focus on four major components: 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 and non-tax factors, there are 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 2.4 pointed out that "in house" investments in the form of debt or equity have several advantages. Investments in company operating assetsCash will tend to earn a higher financial return compared to cash. In addition, any subpart F inclusion from income from

equity and debt in affiliates will be in the general (active) tax credit basket if the affiliate is invested in operating assets. In contrast, the interest income earned on cash will 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 PFIC and "excess passive assets" rules.

Loans and equity in affiliates differ in the extent to which income has to be currently accrued. Interest has to be paid annually while equity income can be deferred through the non-payment of dividends. Indeed, loans might be used as a vehicle to "strip" income out of high-tax affiliates.[26] Note that CFCs in high-tax countries would presumably not be the ones who lend since the interest income they receive would incur a host country tax.

Accounts payable are likely to be a high-tax country phenomenon. These assets frequently yield very little explicit or implicit interest and therefore can be used to shift income out of high-tax CFCs.[27] 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 regressions for the various types of financial assets, we can gain further insight into the differences among them by seeing the extent to which they generate financial income and subpart F income. The first column of table 2 gives the

---

[26]As we will see, related borrowing increases in high statutory tax rate countries.

[27]Borrowing from related parties can achieve the same goal and, as table 4 will show, also increases with local tax rates.

regression for total CFC subpart F income (in relation to total assets) on the financial asset shares. 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. The second column in table 2 gives a parallel regression for CFC receipts of interest and dividends on the asset shares. The low yield on accounts receivable is apparent.[28] What is perhaps most notable is the high rate of interest income associated with loans to affiliates. This is consistent with their use to strip income out of affiliates in high-tax countries.[29]

Before proceeding with the asset and liability regressions, we review the independent variables used in the analysis.

The Tax Variables

(a) The country statutory corporate tax rate (on manufacturing). This indicates the tax saving from an additional deduction such as interest.

(b) The withholding tax rate on dividends. This is the tax price of dividend distributions if the company is in an excess foreign tax credit position.

(c) The tax price on dividends if the company is in an excess limit position. As explained in section 2, the dividend gross up for the foreign tax credit is determined by the CFC's effective tax rate (ETR). In particular, in 1992, when the U.S. corporate rate was 34

---

[28]The subpart F income associated with accounts receivable may also include "foreign base sales income" attributable to reselling goods to an offshore affiliate. This would be in the general (active) basket.

[29]There are several reasons why investment income does not end up as an equal amount of subpart F income. Expenses such as interest can be allocated to the income. There are also exclusions for income received from an affiliate in the same country or earned in a CFC with an effective tax rate at least 90 percent of the U.S. corporate tax rate.

percent, the excess limit tax price on dividends was the tax on the grossed up dividend after the credit, or (.34-ETR)/(1-ETR).[30] Instead of using CFC specific effective tax rates, we use the country average effective tax rate in manufacturing to focus on permanent responses.

(d) The withholding tax rate on interest paid to related parties.

In the empirical work, we do not generally use the multinational's actual excess credit position (in the general basket) 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, as discussed in section 3, even after planning financial and repatriation strategies, a multinational may be uncertain about its future credit position for a variety of reasons. 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 (calculated using country average ETRs) as separate variables in our regression analysis. In addition, we include the country statutory tax rate to reflect the tax benefit of deductible payments in the host country.

---

[30]Under 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).

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

[32]It 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.

The Non-Tax Variables

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. Sales 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.

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.

4.3.2 Financial Asset Regressions

Table 3 presents the regression results for the ratio of CFC financial assets to total CFC assets. Total financial assets are defined to include all the items identified in the last six rows. 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 each type 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 in this case. On the other hand, 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.[33]

The choice between loans to affiliates and investment in affiliates is influenced by the local statutory tax rate. 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.[34]

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

---

[33]A 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.

[34]In 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.

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. Because of the correlation between statutory and effective rates, the excess limit repatriation tax is significant if the statutory tax rate is dropped from the regression.

As suggested earlier, accounts receivable seem to respond differently from other types of financial assets to tax variables. Perhaps they are more closely related to real assets. 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 in the accounts receivable equation 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 from the receivable regression, the statutory tax rate has a positive coefficient with a t value in excess of seven.

Table 4 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.

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.[35] High parent debt seems to be related to lower CFC debt.

---

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

Table 5 presents some suggestive analysis of the relationship between CFC dividend repatriations and the composition of balance sheets. 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.

What is probably most notable about table 5 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

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:

(1) 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.

(2) 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.

(3) The financial options available to a CFC permit it to fully exploit a low-tax location without having to "underinvest" to get the benefits of deferral.

(4) In high-tax countries, multinationals can use the reallocation of debt to achieve a lower cost of investing.

(5) Recognizing the existence of CFCs in more than one location is important for the analysis of multinational behavior. This goes beyond the usual "averaging" (or "cross-crediting") of tax rates. 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. This is not apparent in simple bilateral models of parents and CFCs.

The empirical analysis indicates that:

(1) CFCs' holdings of financial assets are motivated by tax considerations. As suggested by the theoretical analysis, when the standard arbitrage condition on interest and equity returns are dropped, a CFC's investment in affiliates is strongly influenced by the dividend repatriation tax.

(2) Multinationals avoid the accumulation of financial assets in locations with high withholding and statutory tax rates.

(3) CFCs use accounts receivable to avoid dividend repatriation taxes. A larger pool of accounts receivable is also motivated by high taxes, apparently because they seem to be a way of transferring income to low-tax affiliates.

(4) There is a very significant increase in debt in high-tax CFCs.

(5) High dividend repatriations seem to be associated with greater CFC debt. This underlines the fact that greater dividend distributions do not necessarily imply lower real investment by CFCs.

References

Altshuler, Rosanne and Jack Mintz. 1995. "U.S. Interest Allocation Rules: Effects and Policy," *International Taxation and Public Finance*, volume 2, number 1, 7-35.

Altshuler, Rosanne and T. Scott Newlon. 1993. "The Effects of U.S. Tax Policy on the Income Repatriation Patterns of U.S. Multinational Corporations," in A. Giovannini, G. Hubbard, and J. Slemrod, *Studies in International Taxation*, University of Chicago Press.

Altshuler, Rosanne, T. Scott Newlon and William C. Randolph. 1995. "Do Repatriation Taxes Matter? Evidence from the Tax Returns of U.S. Multinationals," in M. Feldstein, J. Hines, and G. Hubbard, *The Effects of International Taxation on Multinational Corporations*. Chicago: University of Chicago Press, 253-272.

Ault, Hugh and David Bradford. 1990. "Taxing International Income: An Analysis of the U.S. System and its Economic Premises," in A. Razin and J. Slemrod, editors, *Taxation in the Global Economy*. Chicago: University of Chicago Press, 11-46.

Froot, Kenneth and James R. Hines. 1995. "Interest Allocation, Financing Patterns, and the Operations of U.S. Multinationals, " in M. Feldstein, J. Hines, and G. Hubbard, editors, *The Effects of Taxation on Multinational Corporations*. Chicago: University of Chicago Press, 277-312.

Grubert, Harry. 1995. "Taxes and the Division of Foreign Operating Income among Royalties, Interest, Dividends and Retained Earnings," mimeo, U.S. Department of Treasury.

Hartman, David. 1985. "Tax Policy and Foreign Direct Investment," *Journal of Public Economics*, volume 26, 107-21.

Hines, James R. and R. Glenn Hubbard. 1990. "Coming Home to America: Dividend Repatriations by U.S. Multinationals," in A. Razin and J. Slemrod, editors, *Taxation in the Global Economy*. Chicago: University of Chicago Press, 161-200.

Hines, James R. 1994. "Credit and Deferral as International Investment Incentives," *Journal of Public Economics*, volume 55, 323-347.

Hines, James R. and Eric Rice. 1994. "Fiscal Paradise: Foreign Tax Havens and American Business," *Quarterly Journal of Economics*, volume 109, 149-182.

Horst, Thomas. 1977. "American Taxation of Multinational Firms," *American Economic Review*, volume 67, 376-389.

Leechor, Chad and Jack Mintz. 1993. "On the Taxation of Multinational Corporate Investment When the Deferral Method is Used by the Capital Exporting Country," *Journal of Public Economics*, volume 51, 75-96.

Price Waterhouse. 1992. *Corporate Taxes: A Worldwide Summary*, New York.

Newlon, T. Scott. 1987. "Tax policy and the multinational firm's financial policy and investment decisions." Ph.D. dissertation, Princeton University.

Scholes, Myron and Mark Wolfson. 1992. *Taxes and Business Strategy: A Planning Approach*, Englewood Cliffs, New Jersey: Prentice Hall.

Sinn, Hans Werner. 1984. "Die Bedeutung des Accelerated Cost Recovery System fur den internationalen Kapitalverkehr," *Kyklos*, volume 37, 542-576.

Sinn, Hans Werner. 1993. "Taxation and the Birth of Foreign Subsidiaries," in *Trade, Welfare, and Economic Policies: Essays in Honor of Murray C Kemp*, edited by H. Herberg and N.V. Long. Ann Arbor: University of Michigan Press, 325-352.

Stiglitz, Joseph and Andrew Weiss. 1981. "Credit Rationing in Markets with Imperfect Information." *American Economic Review*, volume 71, 393-410.

Weichenreider, A. J. 1995. "Anti Tax-avoidance Provisions and the Size of Foreign Direct Investment," manuscript, University of Munich.

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
Subpart F Income and Financial Income as a Share of CFC Assets
All CFCs of Nonfinancial Parents

Independent Variables	Subpart F income	Interest and dividends
Cash	.053	.078
	(12.03)	(4.74)
Investment in Affiliates	.012	.054
	(5.15)	(6.49)
Loans to Affiliates	.025	.122
	(9.82)	(13.13)
Accounts Receivable	.012	.041
	(4.34)	(4.22)
Other Current Assets	.023	.052
	(6.27)	(3.90)
Other Investments	.022	.050
	(4.73)	(2.84)
Other Assets	.017	.072
	(3.67)	(4.32)

Notes: t values are in parenthesis.
Number of observations = 5,680.

Table 3
Financial Assets Held by CFCs
All CFCs of Nonfinancial Parents

Asset item Total CFC assets	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	Mean of dependent variable
Total financial assets	-.290 (6.88)	-.219 (6.34)	.079 (2.13)	-.186 (7.52)	.301 (2.33)	.133 (1.42)	-.278 (1.26)	.589
Total financial assets except receivables	-.349 (7.31)	-.339 (8.66)	.253 (6.03)	-.273 (9.77)	.510 (3.49)	.091 (.860)	.356 (1.43)	.395
Cash	-.122 (7.30)	-.032 (2.33)	-.024 (1.61)	-.0001 (.050)	.093 (1.81)	.048 (1.29)	-.331 (3.79)	.056
Loans to affiliates	-.172 (5.45)	-.134 (5.26)	.083 (2.97)	-.114 (6.10)	-.143 (1.47)	.014 (.200)	.358 (2.16)	.093
Investment in affiliates	.108 (2.98)	-.078 (2.62)	.204 (6.41)	-.107 (5.03)	-.443 (3.99)	.160 (1.99)	.731 (3.86)	.114
Accounts receivable	.058 (1.81)	.120 (4.53)	-.174 (6.14)	.087 (4.62)	.811 (8.21)	.042 (.590)	-.634 (3.76)	.233
Other investments	-.054 (3.45)	-.006 (.500)	.008 (.580)	-.025 (2.73)	.023 (.470)	-.024 (.700)	.224 (2.96)	.022
Other current assets	-.0185 (1.00)	-.101 (5.91)	-.018 (1.00)	-.270 (2.21)	-.039 (.620)	-.107 (2.30)	-.646 (5.91)	.070

Table 4
CFC Liabilities
All CFCs of Nonfinancial Parents

Liability item Total CFC assets	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 5
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)