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Cross-Jurisdictional Income Shifting by U.S. Multinationals: Evidence from International Bond Offerings

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ABSTRACT

We examine whether tax incentives influence where U.S. multinationals locate their interest deductions worldwide. Our sample includes international bond offerings by U.S. multinationals during 1987–1997 denominated in the currencies of Australia, Canada, France, Germany, Italy, Japan, or the United Kingdom. Our results suggest that U.S. multinationals' debt location decisions take into account the effect of jurisdiction-specific tax-loss carryforwards and binding foreign tax credit limitations on the value of debt tax shields. Our results are also consistent with U.S. multinationals locating interest deductions in different tax jurisdictions as a mechanism to achieve tax-motivated income shifting.

1. Introduction

We examine whether tax incentives influence where U.S. multinationals locate their interest deductions worldwide. Our sample includes

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international bond offerings by U.S. multinationals during 1987–1997 denominated in the currencies of Australia, Canada, France, Germany, Italy, Japan, or the United Kingdom. The tax jurisdiction within which the interest expenses on these bonds are deducted is determined by the location of the issuing entity (the U.S. versus a foreign country). Thus, we investigate tax incentives to locate interest deductions in foreign tax jurisdictions by examining whether U.S. multinationals issue international bonds through a foreign subsidiary (yielding a deduction against foreign income) or through the U.S. parent or its U.S. financing subsidiary (yielding a domestic interest deduction).

Our empirical results show that, on average, tax incentives are sufficiently strong to influence U.S. multinationals to locate interest deductions in foreign jurisdictions even though there are non-tax costs associated with doing so. Anecdotal evidence we obtained from a survey of financial officers of U.S. multinationals active in these markets suggests that they trade off tax incentives to locate bond offerings in a foreign jurisdiction against non-tax factors, such as market restrictions, interest rate premiums, and internal management control issues.

Our most pervasive finding is that foreign tax credit limitations influence the placement of international bond offerings. Approximately 54% of our sample have excess foreign tax credits that impair their ability to use domestic interest deductions. We find a strong positive relation between the likelihood of U.S. multinationals issuing bonds through a foreign subsidiary and the impact of foreign tax credit limitations on their ability to use a domestic interest deduction. Interpretation of the logistic regression coefficient for our primary model suggests that the tax effect is strong. At the sample means, a 10-percentage point increase in the mean impact of foreign tax credit limitations increases the probability of a placement through a foreign subsidiary from 45% to 54%.

Our results also indicate that U.S. multinationals' tax-loss positions relate to whether managers choose to issue international bonds through a foreign subsidiary. Specifically, U.S. multinationals reporting domestic tax-loss carryforward positions in the tax footnotes of their annual reports have a significantly higher likelihood of issuing bonds through a foreign subsidiary. This effect is not as pervasive as the influence of foreign tax credit limitations because only 5% of our sample of large, multinational companies report a domestic tax-loss carryforward. Nevertheless, approximately 10% of foreign subsidiary offerings are by U.S. multinationals with domestic tax-loss positions. Further, at the sample means, we find that there is a 94% probability of a U.S. multinational with a domestic tax-loss carryforward placing international bonds through a foreign subsidiary, compared to a 47% probability for a firm with no domestic tax-loss carryforward. We also find consistent tax status results using an alternate measure of simulated marginal tax rates developed by Graham [1996].

We test for country-level tax effects by examining differences in corporate statutory tax rate regimes during 1987–97. We find a significantly higher

likelihood of U.S. multinationals issuing bonds through a foreign subsidiary if the subsidiary is located in a country with generally high statutory tax rates compared to the United States. Further, at the sample means, we find that the probability of a foreign subsidiary bond issue is 55% if the foreign subsidiary is located in a high tax rate country, compared to 17% if the foreign subsidiary is located in a moderate tax rate country. Although these results are consistent with country-level tax incentives affecting managers' placement decisions, caution should be used in interpreting the results because they do not hold up well with a continuous measure of corporate statutory tax rate differences.

Overall, we find evidence that tax incentives influence managers' decisions regarding the location of debt. Most prior studies that examine the corporate financial policy implications of the debt tax shield find generally insignificant results (see Graham [1996] for a brief summary). However, recent studies and finance textbooks support the premise that the value of debt tax shields diminishes if corporations have tax-loss carryforwards and/or low marginal tax rates (e.g., Brealey and Myers [2000]; Graham [1996]; Dhaliwal, Trezevant, and Wang [1992]; MacKie-Mason [1990]). Our results extend this reasoning by suggesting that U.S. multinationals' debt location decisions take into account the effect of jurisdiction-specific tax-loss carryforwards and binding foreign tax credit limitations on the value of debt tax shields.

We also find evidence that U.S. multinationals source interest deductions in different tax jurisdictions to shift income. Much of the prior income-shifting research examines broad income and tax payment patterns of multinationals, particularly as they relate to the Tax Reform Act of 1986 decline in U.S. corporate tax rates (see Harris et al. [1993]; Klassen, Lang, and Wolfson [1993]; Harris [1993]; and Jacob [1996]). In addition, Collins, Kemsley, and Lang [1998] relate U.S. multinationals' foreign profit margins to their foreign tax credit positions and find results consistent with U.S. multinationals shifting income into the United States when they have binding foreign tax credit limitations. We add to this indirect evidence by exploring a specific decision with income-shifting implications—U.S. multinationals' placement decisions for international bond offerings. Our finding that tax effects are sufficiently strong to influence how U.S. multinationals place their international bonds contributes to policy discussions regarding the potential impact of the current U.S. tax system on multinationals' domestic and foreign capital structures (see Joint Committee on Taxation [1991], 248–51).

2. *Placement Incentives*

Levi [1996] and Scheirer [1994] discuss multinationals' use of foreign currency borrowings as a natural hedging mechanism, with Levi [1996, p. 525] stressing the importance of denominating some long-term payments in the same currency as foreign income. Using a survey of 392 chief financial officers (CFOs), Graham and Harvey [2001] also find that approximately

86% of the CFOs state that providing a natural currency hedge is an important or very important factor affecting their firms' decisions about issuing foreign debt.

As U.S. multinationals rely more on international bond offerings in foreign currencies as a source of debt capital, a key decision is the placement of the offering—whether the bond is issued by the U.S. parent or by its foreign subsidiary.[1] While issuances of foreign currency bonds by U.S. parent companies or their U.S. subsidiaries yield domestic interest deductions for U.S. tax purposes, issuances by foreign subsidiaries (in our sample countries) yield interest deductions against foreign income. This means that U.S. multinationals have a tax incentive to place international bonds through a foreign subsidiary if a foreign interest deduction is more valuable than a domestic interest deduction. We use this placement decision to test for the influence of tax incentives on where U.S. multinationals locate their interest deductions (in the U.S. or in a foreign tax jurisdiction).

Placement decisions would not be important to tax planning if U.S. multinationals could rely solely on inter-company loans to transfer interest deductions from the issuing entity. However, there are restrictions on the use of such internal transfers. For example, many foreign countries impose withholding taxes on interest payments and/or have instituted thin capitalization rules that disallow interest deductions on related party debt. Australia, Canada, France, and Japan all specify related party debt-to-equity ratios that cannot be exceeded, while Germany and the United Kingdom use an arms-length standard that incorporates related party debt-to-equity comparisons.[2] Also, if U.S. multinationals with excess foreign tax credits attempt to use internal loans to shift interest deductions to foreign subsidiaries, U.S. netting rules can apply to insure there is no benefit in terms of foreign tax credit usage.[3] In our study, we would not generally expect the reverse scenario (where U.S. multinationals use inter-company loans to shift an otherwise foreign deduction to the U.S. parent) because tax incentives typically favor a foreign deduction. Nevertheless, attempts to shift deductions to the U.S. parent with a subsidiary loan could result in a deemed dividend payment

[1] Our placement decision model assumes that debt is relatively fungible. This assumption is consistent with evidence that multinationals focus primarily on their worldwide consolidated debt ratios, with individual debt offerings placed where it is the most advantageous (e.g., Shapiro [1988], Lessard and Shapiro [1983], and Shapiro [1982]). It is also consistent with the Mills and Newberry [2001] finding that tax incentives influence foreign multinationals' debt location decisions.

[2] Australia, Canada, and Japan generally impose a 3 to 1 debt-equity ratio standard during our sample period, while France imposes a 1.5 to 1 standard for foreign parent loans (Andrus, Dilworth, and O'Donnell [1990], Sultan [1994], and Richardson, Hanlon, and Nethercott [1998]). In addition, Germany uses a minimum equity ratio defined by industry standards, while the United Kingdom uses a 1 to 1 related debt-to-equity ratio standard (Godbee [1993]).

[3] When the netting rules under Reg. 1.861-10T(e) are applied, the U.S. multinational allocates an additional amount of domestic interest expense (equivalent to the interest income received on the loan) against foreign source income for purposes of computing the foreign tax credit limitation.

subject to U.S. corporate tax and foreign withholding tax. The Internal Revenue Service could potentially use its broad allocation powers under Code Section 482 to disallow an interest deduction to the U.S. parent and characterize the "loan" as a taxable dividend. To the extent U.S. multinationals are willing to absorb costs associated with inter-company loans and they use such loans to shift interest deductions from the issuing entity, it will be harder for us to detect the following predicted tax effects.

2.1 TAX INCENTIVES

U.S. multinationals have incentives to source interest deductions in foreign jurisdictions with higher tax rates.[4] In our sample period, the U.S. corporate statutory tax rates are lower than statutory rates in many other industrialized countries. In addition, firms with domestic losses have incentives to source interest deductions in a foreign jurisdiction, even if the foreign country would not normally be viewed as having relatively high statutory tax rates.

Our research design includes tests of the effect of U.S. multinationals' domestic tax-loss positions and country-level differences in corporate statutory tax rate regimes during 1987–1997 on the placement of foreign currency bond offerings. We predict that U.S. multinationals are more likely to place international bond offerings through foreign subsidiaries if they have domestic tax-loss carryforwards and/or if the foreign subsidiary is located in a high statutory tax rate country. For our sample, Australia, Canada, France (before 1991), Germany, Italy, and Japan have generally higher corporate statutory tax rates than the United States over the sample period, while France (since 1991) and the United Kingdom have similar statutory tax rates.

As Appendix A reflects, foreign tax credit limitations in the post-Tax Reform Act of 1986 period can also impair U.S. multinationals' ability to use domestic interest deductions. For U.S. multinationals with excess foreign tax credits, the tax benefit of domestic interest deductions can be significantly reduced or even eliminated (Andrus, Dilworth, and O'Donnell [1990], Collins and Shackelford [1992], and Newberry [1998]). We test the prediction that U.S. multinationals are more likely to issue international bond offerings through foreign subsidiaries if binding foreign tax credit limitations impair their ability to use domestic interest deductions.[5]

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[4] It would be optimal to know the foreign subsidiary's marginal tax rate so that a difference in marginal tax rates measure could be constructed. However, financial data on the foreign subsidiaries are not available.

[5] Prior studies test for a foreign tax credit effect by examining whether the debt ratios of foreign subsidiaries increased after the Tax Reform Act of 1986 (TRA86). Hogg and Mintz [1993] detect little change in aggregate debt-to-asset ratios of Canadian subsidiaries pre- and post-TRA86, while Altshuler and Mintz [1995] find some evidence that subsidiary debt increased with parent companies' proportion of foreign assets. Smith (1997) also finds evidence of increased debt levels for foreign subsidiaries after 1986.

2.2 NON-TAX FACTORS

While U.S. multinationals generally have tax incentives to issue bond offerings through a foreign subsidiary during our sample period, the international finance literature suggests that non-tax factors favor U.S. parent placements. After we identified foreign currency bond offerings for Canada, Japan, and the United Kingdom, we mailed surveys to the financial officers of these U.S. multinationals to obtain anecdotal evidence on factors that influenced their placement decisions. The managers were asked to indicate the importance of both tax and non-tax factors. Their responses showed that managers who ranked tax planning as an important factor followed issuance patterns that were generally consistent with income-shifting predictions. For example, a large multinational with no excess foreign tax credits used foreign subsidiary placements in Canada (a high tax rate country) and U.S. parent placements in the United Kingdom (a moderate tax rate country), while a company with excess foreign tax credits used foreign subsidiary placements in both countries. For non-tax factors, market characteristics that favor U.S. parent placements, a preference for centralized control of the finance function, and potential interest rate premiums on foreign subsidiary debt were identified as non-tax costs affecting managers' placement decisions. This anecdotal evidence suggests that managers trade off tax incentives to locate bond offerings in a foreign jurisdiction against non-tax factors.

One non-tax factor that we include as a control in our empirical model is whether the foreign subsidiary is located in a country that is market-oriented or bank-oriented. Prior studies find that companies in countries where banks dominate the financial system are less likely to use bond offerings as a financing source than companies located in market-oriented countries (see Berglof [1990] and Rajan and Zingales [1995]). Thus, we predict a positive relation between whether the foreign subsidiary is located in a market-oriented country and the likelihood of a foreign subsidiary bond offering.

Another non-tax factor that could affect managers' placement decisions is interest rate differences associated with U.S. parent versus foreign subsidiary offerings. Levi [1996, p. 528] and Andrus, Dilworth, and O'Donnell [1990] posit that higher interest rates are associated with foreign subsidiary debt because a subsidiary is viewed as riskier than the parent corporation. However, other researchers (e.g., Shapiro [1988], Lessard and Shapiro [1983], and Shapiro [1982]) argue that any attachment of risk to subsidiaries as separate borrowing entities is illusory unless parent companies are willing to allow their subsidiaries to default. Further, they cite survey evidence that multinationals generally honor the obligations of their subsidiaries, even when there are no formal loan guarantees. These conflicting arguments suggest that the effect of interest rates is not clear. We include a measure of financial condition in our empirical model that proxies for the U.S. parent's ability to obtain a favorable interest rate. We also report aggregated descriptive data on interest rates for foreign subsidiary versus U.S. parent bond offerings in our sample.

Andrus, Dilworth, and O'Donnell [1990] suggest that the attractiveness of foreign subsidiary debt is less if managers want to maintain a centralized Treasury function. Although we cannot test this argument empirically, our anecdotal survey evidence suggests that internal control incentives can influence managers of U.S. multinationals to rely more on U.S. placements.

3. Data and Sample

We obtain data on international bond offerings from databases licensed by the Securities Data Company (SDC). The SDC data are obtained from various sources, including prospectuses for the offering, wire services (such as Dow Jones Retrieval), and surveys of investment banks. Fields in the SDC databases identify international bond offerings by U.S. companies or their foreign subsidiaries, together with information about the terms of the offerings. We obtain information on the ownership structure of U.S. multinationals from directories of corporate affiliations. Finally, we obtain financial data to compute our tax measures and control variables from the *Compustat* PST files and annual reports.

Our sample includes international bond offerings by U.S. multinationals that are not financial institutions or public utilities denominated in the currencies of Australia, Canada, France, Germany, Italy, Japan, or the United Kingdom. Thus, our sample includes bond offerings for all the G-7 countries (except the United States) and Australia.[6] The bonds are issued during 1987–1997 either through a foreign subsidiary in that country or through the U.S. parent, with placements by a wholly owned U.S. financing subsidiary attributed to the U.S. parent. Initially, our sample includes 285 firm-year observations. We then exclude 19 firm-year observations where the U.S. company did not have subsidiary operations in the applicable country (i.e., there is no option to issue the bond through a foreign subsidiary), and 22 firm-year observations missing the necessary data to compute the explanatory variables. Finally, we exclude 17 firm-year observations that are dual placements by both the U.S. parent and the foreign subsidiary, and seven firm-year observations where the bonds are not interest bearing. The 17 firm-years with dual placements appear to reflect debt capacity limits with the foreign subsidiary issuing most of the debt. In later sensitivity tests, we obtain similar results when we include these 17 observations as a foreign subsidiary offering. Our final sample includes 220 firm-year observations, with 103 foreign subsidiary bond offerings and 117 U.S. parent bond offerings. Table 1 provides statistics for the number and amount of international bond offerings in our sample by country and placement decision.

[6] We found little activity in international bond offerings by U.S. multinationals or their foreign subsidiaries in other currencies. Some of the bonds trade on exchanges other than the local exchange indicated by the currency. The empirical results are unchanged if a control for whether the bonds trade on other exchanges is included in the model.

TABLE 1

Sample Statistics for the Number and Amount (in Millions) of U.S. Multinationals' International Bond Offerings by Country and Placement Decision. The Sample Includes Interest-Bearing, International Bond Offerings of U.S. Multinationals (That are not Financial Institutions or Public Utilities) Denominated in the Currencies of Australia, Canada, France, Germany, Italy, Japan, or the United Kingdom. The Bond Offerings are Placed Either Through a Foreign Subsidiary in that Country (Yielding a Foreign Interest Deduction), or Through the U.S. Parent (Yielding a Domestic Interest Deduction). Placements Through a Wholly Owned U.S. Financing Subsidiary are Attributed to the U.S. Parent. The Sample Period is 1987–97, with Bond Offerings Identified Using Databases Licensed by the Securities Data Company.

	Foreign Subsidiary		U.S. Parent		Totals	
Country	Number of Offerings	$ Amount (millions)	Number of Offerings	$ Amount (millions)	Number of Offerings	$ Amount (millions)
Australia	27	$2,940	13	$1,145	40	$4,085
Canada	55	$8,377	13	$1,774	68	$10,151
France	0	$0	12	$4,871	12	$4,871
Germany	1	$44	22	$6,878	23	$6,922
Italy	0	$0	15	$2,771	15	$2,771
Japan	1	$192	24	$8,098	25	$8,290
United Kingdom	19	$3,671	18	$4,757	37	$8,428
Totals	103	$15,224	117	$30,294	220[a]	$45,518

[a] Of the 220 firm-year observations in the sample, 22 are private placements that are sold to qualified lenders. The private placements include 13 U.S. parent offerings for Japan, and foreign subsidiary offerings for Australia (1 placement), Canada (6 placements), Germany (1 placement), and the United Kingdom (1 placement).

Table 1 indicates the largest number and amount of bond offerings for Canada, followed by Australia by number of offerings and the United Kingdom by amount of offerings. These countries also reflect the most variation in the placement decision, with both U.S. parent and foreign subsidiary offerings. For the remaining countries, the bond offerings are predominately placed through the U.S. parent.

4. Empirical Model

Our study examines an empirical model of the following general form:

Placement Decision = f (firm-specific tax attributes, differences in corporate statutory tax rate regimes, and non-tax control variables)

We code the dependent variable, *Placement Decision*, as one if the international bond offering is issued by a foreign subsidiary of a U.S. multinational (yielding a foreign interest deduction), or zero if the offering is issued by the U.S. parent or its U.S. financing subsidiary (yielding a domestic interest deduction). We measure the explanatory variables at the end of the prior year to capture the U.S. multinationals' attributes before the offering and to avoid simultaneity bias.

4.1 TAX VARIABLES

One of our measures of firm-specific tax attributes is *NOL*, which equals one if the U.S. multinational reports a domestic tax-loss carryforward for

tax purposes, or zero otherwise. We obtain data on whether U.S. multinationals have domestic tax-loss carryforwards from the tax footnotes of their annual reports. Because U.S. multinationals with domestic tax-loss carryforwards have incentives to shift interest deductions to foreign jurisdictions, we predict a positive relation between *Placement Decision* and *NOL*. As suggested by Wang [1991] and Graham [1996], we also include controls (discussed below) for the U.S. multinationals' size and financial condition to separate these potential non-tax effects from their tax-loss positions.

We do not use a *Compustat*-based measure of tax status in our primary model because *Compustat* reports both foreign and domestic tax-loss carryforwards and, as Klassen, Lang, and Wolfson [1993] discuss, only domestic tax-loss carryforwards create incentives to shift income into the United States. However, we do find similar empirical results in later sensitivity tests with Graham's [1996] continuous measure of marginal tax rates.

Our second measure of firm-specific tax attributes (*FTC*) reflects the impact of foreign tax credit limitations on the marginal tax benefit of a domestic interest deduction. Similar to Newberry [1998], we define *FTC* as a continuous measure with zero equaling no effect and one equaling a maximum effect (i.e., the marginal tax benefit of a domestic interest deduction is zero). U.S. multinationals with foreign tax credit limitations that impair their ability to use domestic interest deductions have incentives to source interest deductions against foreign income. Thus, we predict a positive relation between *Placement Decision* and *FTC*.

Appendix A reports a simple derivation of the impact of foreign tax credit limitations on the marginal tax benefit of domestic interest deductions. If a firm is not in an excess foreign tax credit position (*scenario a* in appendix A), there is no impact on the tax benefit of a domestic interest deduction and we code *FTC* as zero. We also code *FTC* as zero if a firm pays no foreign income taxes, or if a firm has worldwide losses and pays no U.S. income taxes. For firms in an excess foreign tax credit position, we code *FTC* as one if domestic-source income is negative and there is positive worldwide income (*scenario c*). Otherwise, *FTC* equals the foreign assets to worldwide assets ratio (computed from geographic segment data) to reflect the impact of the interest allocation rules (*scenario b*). To classify firms into these scenarios, we use information from the tax footnotes of firms' annual reports. For *scenario b*, we identify U.S. multinationals as having excess foreign tax credits if the tax reconciliation states that foreign income is taxed at a higher rate than domestic income, or if the average foreign tax rate exceeds the U.S. statutory tax rate. Our use of average foreign tax rates to determine foreign tax credit positions is consistent with Hines [1991] and Kemsley [1998]. For *scenario c*, we identify U.S. multinationals as having excess foreign tax credits if foreign income taxes exceed U.S. income taxes.

Our measure of differences in corporate statutory tax rate regimes is a dummy variable, *Highrate*, that equals one for a generally high tax rate

country (Australia, Canada, France before 1991, Germany, Italy, and Japan), or zero for a moderate tax rate country (France since 1991 and the United Kingdom). This variable provides a general indicator of how corporate statutory tax rates in the foreign country compared to U.S. corporate statutory rates over the sample period. We predict a positive relation between *Placement Decision* and *Highrate*.

4.2 NON-TAX CONTROL VARIABLES

We include *Market* as a control variable to separate country-level tax incentives from differences in the market orientation of the country where the foreign subsidiary is located. *Market* is a dummy variable that equals one for a market-oriented country (Canada and the United Kingdom), or zero for a bank-oriented country (Australia, France, Germany, Italy, and Japan). We rely on Rajan and Zingales [1995] to classify Canada, France, Germany, Italy, Japan, and the United Kingdom as market-oriented or bank-oriented. The classification of Australia as a bank-oriented country is less clear, but stems from descriptions of the Australian finance market as dominated by the banking sector, with lending transactions carried out mainly by bank and non-bank financial institutions (Kenwood [1995]). In later sensitivity tests, we find similar results with Australia classified as market-oriented. Because companies located in market-oriented countries are more likely to use bond offerings as a financing source, we predict a positive relation between *Placement Decision* and *Market*.

Other control variables in the model include *Issue Amount*, *Size*, and *Bankruptcy*. *Issue Amount*, measured as the bond amount in millions, controls for potential differences in the debt capacity of the U.S. parent versus the foreign subsidiary. To the extent foreign subsidiaries have lower relative debt capacities, we predict a negative relation between *Placement Decision* and *Issue Amount*. *Size*, measured as the natural log of the U.S. multinationals' total assets (in millions), provides an overall control for firm size. *Bankruptcy* controls for the financial condition of the U.S. multinational using Altman's [1968, 1993] *Z*-Score predictor, with lower values indicating a greater risk of bankruptcy. To the extent *Bankruptcy* proxies for the U.S. parent's ability to obtain favorable interest rates relative to the foreign subsidiary, we predict a negative relation between *Placement Decision* and *Bankruptcy*. The *Size* and *Bankruptcy* variables also control for firm-specific characteristics that could relate to firms' tax-loss positions and debt policy. Wang [1991] finds that smaller firms are more likely to incur net operating losses, while Graham [1996] suggests the need to control for firms' financial condition in tests that relate tax status to debt policy.

While we do not include other terms of the bond offerings in the empirical model because they are likely simultaneously determined with *Placement Decision*, we report descriptive data and univariate tests of differences by placement decision. The bond offering terms include interest rate percentage (*Interest Rate*), years to maturity (*Maturity*), a private placement with a qualified lender indicator (*Private*), and a call option indicator (*Call Option*).

5. *Empirical Results*

5.1 DESCRIPTIVE STATISTICS

In table 2, we report descriptive statistics and univariate tests of differences in means or proportions by placement decision. For our measures of firm-specific tax attributes, we find that U.S. multinationals using foreign subsidiary bond offerings have a higher proportion of domestic tax-loss carryforwards (*NOL*) and more binding foreign tax credit limitations (*FTC*). For our measures of country characteristics, we find an insignificant relation for *Highrate* and a positive effect for *Market* (i.e., there is a higher proportion of foreign subsidiary bond offerings for subsidiaries located in market-oriented

TABLE 2

*Descriptive Statistics by Placement Decision and Univariate Tests of Differences. The Univariate Tests Use t-Statistics for Tests of Differences in Means and z-Statistics for Tests of Differences in Proportions, with *** and ** Indicating Significance at the 0.01 and 0.05 Levels (Two-Tailed Tests), Respectively. The Sample Includes Interest-Bearing, International Bond Offerings of U.S. Multinationals (That are not Financial Institutions or Public Utilities) Denominated in the Currencies of Australia, Canada, France, Germany, Italy, Japan, or the United Kingdom. The Bond Offerings are Placed Either Through a Foreign Subsidiary in that Country (Yielding a Foreign Interest Deduction), or Through the U.S. Parent (Yielding a Domestic Interest Deduction). Placements Through a Wholly Owned U.S. Financing Subsidiary are Attributed to the U.S. Parent. The Sample Period is 1987–97, with Offerings Identified Using Databases Licensed by the Securities Data Company.*

	Foreign Subsidiary n = 103		U.S. Parent n = 117		Tests of Differences
	Mean	Std. Dev	Mean	Std. Dev	*t* or *z*-statistic
Variables[a]					
NOL	0.097	0.298	0.009	0.092	2.99***
FTC	0.268	0.285	0.129	0.182	4.23***
Highrate	0.816	0.390	0.744	0.439	1.28
Market	0.718	0.452	0.265	0.443	6.72***
Issue Amount	147.8	117.6	258.9	275.4	−3.97***
Size	10.90	1.107	10.72	1.418	1.06
Bankruptcy	2.068	1.316	2.481	1.585	−2.11**
Terms[b]					
Interest Rate	9.911	2.423	7.956	3.334	4.91***
Maturity	5.954	4.065	4.902	2.262	2.33**
Private	0.087	0.284	0.111	0.316	−0.59
Call Option	0.116	0.322	0.017	0.130	3.01***

[a] *NOL* is a dummy variable that equals one if the U.S. multinational reports a domestic tax-loss carryforward or zero otherwise. *FTC* is a continuous measure of the impact of foreign tax credit limitations on the marginal tax benefit of domestic interest deductions with zero equaling no impact and one equaling maximum impact (i.e., the marginal tax benefit is zero). *Highrate* is a dummy variable that equals one for a generally "high" corporate statutory tax rate country during the period (Australia, Canada, France before 1991, Germany, Italy, and Japan), or zero for a "moderate" corporate statutory tax rate country (France since 1991 and the United Kingdom). *Market* is a dummy variable that equals one if the subsidiary is located in a market-oriented country (Canada and the United Kingdom), or zero for a bank-oriented country (Australia, France, Germany, Italy, and Japan). *Issue Amount* is the bond amount in millions. *Size* is the natural log of the U.S. multinationals' total assets (in millions). *Bankruptcy* is Altman's [1993] *Z*-Score for the U.S. multinationals, with lower values indicating a greater risk of bankruptcy. *NOL*, *FTC*, *Size*, and *Bankruptcy* are all measured at the end of the year prior to the bond offering.

[b] Offering terms are the interest rate percentage (*Interest Rate*), years to maturity (*Maturity*), a dummy variable that equals one for a private offering (*Private*), and a dummy variable that equals one for a call option (*Call Option*).

countries). In addition, we find that bond offerings issued through a foreign subsidiary are smaller in amount (*Issue Amount*), and that U.S. multinationals using foreign subsidiary bond offerings have a greater risk of bankruptcy (*Bankruptcy*).

Our descriptive statistics for the other bond offering terms indicate that foreign subsidiary bond offerings have a higher interest rate percentage (*Interest Rate*), a longer maturity term (*Maturity*), and a higher proportion of call options (*Call Options*). The *Interest Rate* result is consistent with the assertions of Levi [1996, p. 528] and Andrus, Dilworth, and O'Donnell [1990] that higher interest rates are a non-tax cost associated with foreign subsidiary debt. However, this result is only suggestive because we are aggregating international bond offerings over different currencies in each placement decision category.

5.2 LOGISTIC REGRESSION RESULTS

In table 3, we report logistic regression results for the likelihood of U.S. multinationals issuing international bond offerings through a foreign subsidiary rather than the U.S. parent or its U.S. financing subsidiary. We report

TABLE 3

Logistic Regression Results for U.S. Multinationals' Decision to Issue an International Bond Offering Through a Foreign Subsidiary (Placement Decision Equals 1), or Through the U.S. Parent (Placement Decision Equals 0). The Logit Model Estimates the Log Odds of a Foreign Subsidiary Placement as Log $(\pi/1-\pi)=\alpha+\beta X_I$. *While Model 1 Captures Country Characteristics Using Measures of Corporate Statutory Tax Rate Regimes and Market Orientation, Model 2 Includes Separate Country Intercepts with Canada as the Comparison Country. Asymptotic t-Statistics for Each Parameter are Reported in Parentheses, with ***, **, and * Indicating Significance at the 0.01, 0.05, and 0.10 Levels, Respectively (One-Tailed Test With a Predicted Sign). The Sample Includes Interest-Bearing, International Bond Offerings of U.S. Multinationals (That are not Financial Institutions or Public Utilities) Denominated in the Currencies of Australia, Canada, France, Germany, Italy, Japan, or the United Kingdom. The Bond Offerings are Placed Either Through a Foreign Subsidiary in That Country (Yielding a Foreign Interest Deduction), or Through the U.S. Parent (Yielding a Domestic Interest Deduction). Placements Through a Wholly Owned U.S. Financing Subsidiary are Attributed to the U.S. Parent. The Sample Period is 1987–97, with Offerings Identified Using Databases Licensed by the Securities Data Company.*

Variable[a]	Predicted Sign	Model 1 (n = 220)	Model 2 (n = 220)
Intercept		−8.763 (−2.96)***	−2.824 (−1.02)
NOL	+	3.213 (2.58)***	3.457 (2.57)***
FTC	+	3.771 (4.17)***	4.500 (3.67)***
Highrate	+	1.742 (3.43)***	
Market	+	3.314 (6.53)***	
Australia	−		−1.550 (−2.60)***
France	−		−16.035 (−0.05)
Germany	−		−5.342 (−4.40)***
Italy	−		−17.009 (−0.06)
Japan	−		−5.951 (−4.15)***
United Kingdom	−		−1.811 (−3.30)***
Issue Amount	−	−0.005 (−3.45)***	−0.004 (−2.30)**
Size	?	0.546 (2.30)**	0.467 (1.87)*
Bankruptcy	−	−0.058 (−0.32)	−0.210 (−1.06)

TABLE 3—*Continued*

Variable[a]	Predicted Sign	Model 1 (n = 220)	Model 2 (n = 220)
Goodness of Fit Statistics[b]			
% of Correct Subsidiary Debt Issue Predictions		78.6%	90.3%
% of Correct U.S. Parent Debt Issue Predictions		76.1%	76.9%
% of Correct Total Predictions		77.3%	83.2%

[a] *NOL* is a dummy variable that equals one if the U.S. multinational reports a domestic tax-loss carryforward or zero otherwise. *FTC* is a continuous measure of the impact of foreign tax credit limitations on the marginal tax benefit of domestic interest deductions with zero equaling no impact and one equaling maximum impact (i.e., the marginal tax benefit of a domestic interest deduction is zero). *Highrate* is a dummy variable that equals one for a generally "high" corporate statutory tax rate country during the period (Australia, Canada, France before 1991, Germany, Italy, and Japan), or zero for a "moderate" corporate statutory tax rate country (France since 1991 and the United Kingdom). *Market* is a dummy variable that equals one if the subsidiary is located in a market-oriented country (Canada and the United Kingdom), or zero for a bank-oriented country (Australia, France, Germany, Italy, and Japan). *Issue Amount* is the bond amount in millions. *Size* is the natural log of the U.S. multinationals' total assets (in millions). *Bankruptcy* is Altman's [1993] *Z*-Score for the U.S. multinationals, with lower values indicating a greater risk of bankruptcy. *NOL*, *FTC*, *Size*, and *Bankruptcy* are all measured at the end of the year prior to the bond offering.

[b] If the 22 private bond offerings to qualified lenders are excluded from the sample, the correct prediction rates for foreign subsidiary issues, U.S. parent issues, and total issues, respectively, are 74.5%, 74.0%, and 74.2% (for model 1), and 87.2%, 75%, and 80.8% (for model 2). Comparable prediction rates are also found using logistic regression models for those countries with a sufficient number of U.S. parent and foreign subsidiary offerings to estimate a separate model (i.e., Australia, Canada, and the United Kingdom).

the results for two models. Model 1 captures country characteristics using our *Highrate* and *Market* variables. Thus, model 1 provides tests of both firm-specific tax attributes (*NOL* and *FTC*) and differences in corporate statutory tax rate regimes (*Highrate*). Model 2 provides additional tests of firm-specific tax attributes after controlling for country effects with separate intercepts. We use Canada as the comparison in model 2 because it represents the country for which U.S. multinationals should be most likely to use foreign subsidiary bond offerings (i.e., it is a market-oriented country with "high" corporate statutory tax rates). Thus, we generally expect negative coefficients on our country intercepts.

Goodness-of-fit statistics suggest a "good" fit for our empirical models with correct prediction rates for model 1 ranging from 76.1% to 78.6%, and correct prediction rates for model 2 ranging from 76.9% to 90.3%. The somewhat higher predictive power of model 2 reflects the stronger controls for country characteristics. Correlation diagnostics suggest no harmful collinearity in either model.

The logistic regression results in model 1 suggest that both firm-specific tax attributes (*NOL* and *FTC*) and differences in corporate statutory tax rate regimes (*Highrate*) affect placement decisions. Consistent with our predictions regarding firm-specific tax attributes, we find that: 1) U.S. multinationals are more likely to issue international bonds through foreign subsidiaries if they have domestic tax-loss carryforwards; and 2) the likelihood of foreign subsidiary bond offerings relates positively to the impact of binding foreign

tax credit limitations on the marginal tax benefit of domestic interest deductions. The coefficient for *NOL* indicates that (at the sample means) there is a 94% probability of a placement through a foreign subsidiary if the U.S. multinational has a domestic tax-loss carryforward, compared to a 47% probability for a firm with no domestic tax-loss carryforward.[7] A similar interpretation of the *FTC* coefficient indicates that a 10-percentage point increase in mean *FTC* from approximately 0.19 to 0.29 increases the probability of a placement through a foreign subsidiary from 45% to 54%. For country effects, we find that U.S. multinationals are more likely to place international bond offerings through foreign subsidiaries in "high" tax rate countries. Interpretation of the *Highrate* coefficient shows that (at the sample means) there is a 55% probability of a placement through the foreign subsidiary if the subsidiary is located in a "high" statutory tax rate country. This is in comparison to a 17% probability if the subsidiary is located in a "moderate" statutory tax rate country. Although these results are consistent with country-level tax incentives affecting managers' placement decisions, caution should be used in interpreting the results because they do not hold up well with a continuous measure of corporate statutory tax rate differences (discussed below).

For the control variables in model 1, we find the expected positive relation between *Placement Decision* and *Market* and the expected negative relation between *Placement Decision* and *Issue Amount*. These results suggest that U.S. multinationals are more likely to issue bonds through a foreign subsidiary if the subsidiary is located in a market-oriented country, and that they are less likely to issue bonds through a foreign subsidiary as the offering amount increases. This latter result is consistent with the notion that subsidiaries have relatively limited debt capacity. We also find a positive relation between *Placement Decision* and *Size*, and no relation between *Placement Decision* and *Bankruptcy*. The *Bankruptcy* result suggests that, after controlling for the other explanatory variables in the model, financial condition does not significantly influence placement decisions.

In model 2, we find consistent results for the firm-specific tax attributes (*NOL* and *FTC*). We also find negative and generally significant coefficients on the country intercepts, which is consistent with the prediction that U.S. multinationals are more likely to use foreign subsidiary bond offerings in Canada than in the other countries in our sample. Finally, we find similar results for the control variables except that the significance levels are lower for *Issue Amount* and *Size*.

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[7] Interpretation of the magnitude of the coefficients is complicated by the nonlinear nature of the logistic regression model. For continuous variables, such as *FTC*, a common approach is to compare the probability of an event at the mean of the sample data to the probability given a reasonable change in the variable of interest. For dichotomous variables, *NOL* or *Highrate*, alternate probabilities of an event are computed at the mean of the sample data with the variable of interest coded either as zero or one.

5.3 SENSITIVITY ANALYSES

Sensitivity analyses indicate that our results are generally robust to tests of our measures and sample specification. Our *NOL* measure is a dummy variable (obtained from the tax footnotes of firms' annual reports) that indicates whether U.S. multinationals are in domestic tax-loss carryforward positions. As previously mentioned, we conduct sensitivity tests using a *Compustat*-based measure (Graham's [1996] simulated marginal tax rates) that incorporates the magnitude of the carryforward, but has the disadvantage of including both domestic and foreign net operating loss carryforwards. We estimate our models with Graham's [1996] simulated marginal tax rates (*MTR)* and find similar results, with the tax variables (*MTR*, *FTC*, and *Highrate* in model 1) remaining significant at the 0.01 level. Thus, we find consistent tax effects with either an indicator measure of firms' domestic tax-loss carryforward positions, or with Graham's continuous measure of simulated marginal tax rates.

As a sensitivity test of our foreign tax credit limitations result, we exclude observations where *FTC* is coded one (six of the 220 firm-year observations). *FTC* equals one if a firm's domestic earnings are negative, but its foreign income is of a sufficient magnitude to result in positive worldwide income and U.S. taxes. We exclude these observations as a sensitivity test because their unique income patterns could have a separate effect on foreign subsidiary debt decisions. We find similar results with these observations excluded from the sample.

As a sensitivity test of our country-level tax result, we use a continuous measure of corporate statutory tax rate differences as an alternative to the *Highrate* measure. The continuous measure yields insignificant results in a full model that includes the amount of the bond offering. Given the sensitivity of our country-level tax results to a "high" or "moderate" statutory tax rate country specification, we explore alternate ways to control for differences across countries that could relate to financing decisions in our primary models. First, because the classification of Australia as a bank-oriented country is less clear than for Italy, France, Germany, and Japan, we estimate the model with Australia coded as market-oriented with similar results. Second, we estimate a variation of model 1 with a control for legal system origins of a country's Company Law or Commercial Code because La Porta et al. [1997] suggest that legal orientation may affect financing decisions. We follow the classification scheme of La Porta et al. [1997] where Australia, Canada, and the United Kingdom are classified as English-origin systems, Germany and Japan are classified as German-origin systems, and France and Italy are classified as French-origin systems. We find that our tax results for *Highrate*, *NOL*, and *FTC* are unchanged, and that the English-origin systems report significantly more foreign subsidiary bond offerings than either the German- or French-origin systems.

As a sensitivity test of our financial condition control, we use the domestic bond rating of the U.S. parent as an alternative to our *Bankruptcy* control.

It could be argued that our *Bankruptcy* control relates to the consolidated entity, whereas the appropriate control is a measure of the debt costs of the U.S. parent. Using the domestic bond rating of the parent company as reported by Moody's, we find similar tax results except that *NOL* becomes significant at the 0.05 level rather than the 0.01 level. In addition, we find that U.S. multinationals with lower domestic bond ratings are more likely to issue international bonds through a foreign subsidiary. This relation is consistent with a lower interest rate differential between parent and subsidiary placements for U.S. multinationals with lower domestic bond ratings.

In our final sensitivity tests, we explore the sample specification. First, we include the 17 additional firm-year observations for dual placements through both the foreign subsidiary and the U.S. parent as a foreign subsidiary offering. These dual placements primarily consist of foreign subsidiary debt and likely reflect the more limited debt capacity of the foreign subsidiary. We find similar results with these additional observations included in the sample. Second, because we use pooled cross-sectional data, we estimate the model with only one country observation (the year with the largest issuance amount) for each U.S. multinational. This more restricted sample, with 90 firm-year observations, yields similar but somewhat less significant results (i.e., *FTC* remains significant at the 0.01 level, while *Highrate* and *NOL* become significant at the 0.05 level). Third, because prior research by Blackwell and Kidwell [1988] suggests that firms using private offerings to qualified lenders differ from firms using public offerings, we estimate both models with the 22 firm-year observations for private offerings excluded and find similar results.

6. *Conclusions*

Our study provides evidence that tax incentives influence where U.S. multinationals locate their interest deductions worldwide. We examine international bond offerings by U.S. multinationals denominated in the currencies of Australia, Canada, France, Germany, Italy, Japan, or the United Kingdom. Our sample includes international bonds issued during 1987–1997 either through a foreign subsidiary in that country (yielding a deduction against foreign income), or through the U.S. parent or its U.S. financing subsidiary (yielding a domestic interest deduction).

Consistent with income-shifting predictions, we find that U.S. multinationals are more likely to place bonds through a foreign subsidiary when they have binding foreign tax credit limitations that impair their ability to use domestic interest deductions, or when they are in domestic tax-loss carryforward positions. We also find some evidence that U.S. multinationals are more likely to issue bonds through a foreign subsidiary if the subsidiary is located in a country with generally high corporate statutory tax rates compared to the United States. Our results suggest that U.S. multinationals' debt location decisions take into account the effect of jurisdiction-specific tax-loss carryforwards and binding foreign tax credit limitations on the value

of debt tax shields. Our results are also consistent with U.S. multinationals locating interest deductions in different tax jurisdictions as a mechanism to achieve tax-motivated income shifting.

APPENDIX A

Foreign Tax Credit Limitations and the Marginal Tax Benefit of a Domestic Interest Deduction

Calculation of Allowable Foreign Tax Credits

U.S. multinationals are subject to U.S. income taxes on their worldwide income. In addition, earnings from foreign countries are likely subject to foreign income taxes. The U.S. attempts to eliminate the double taxation of foreign-source income by allowing a tax credit for foreign income taxes. Thus, the total tax liability is computed as follows:

$$TAX = USTAX + FORTAX - FTC, \tag{1}$$

where: TAX equals total income tax liability,
USTAX equals U.S. income taxes on worldwide income,
FORTAX equals foreign income taxes, and
FTC equals the foreign tax credit.

FTC is limited to a proportion of USTAX as follows:

$$FTC\ Limitation = \frac{Foreign\ taxable\ income\ (FTI)}{Worldwide\ taxable\ income\ (WTI)} \times USTAX, \tag{2}$$

where FTI/WTI is not allowed to exceed one.

The interest allocation rules under the Tax Reform Act of 1986 (TRA86) impact the computation of the foreign tax credit limitation. The post-TRA86 tax laws require that interest expenses be allocated, based on assets, as if an affiliated group of corporations were a single corporation. The interest allocation is reflected in the foreign tax credit limitation formula by changing the FTI term to [FTI- (FA/WA)*INT], where FA/WA is the ratio of foreign to worldwide assets and INT equals the amount of allocable interest.

FTC is the lesser of foreign taxes paid or the limitation amount; however, the amount of the credit cannot be less than zero. The FTC equation does not take into account the present value of foreign tax credit carryovers or firms' ability to deduct foreign taxes rather than claiming a credit. Thus, FTC is calculated as follows:

$$FTC = max\ (0,\ min\ \{FORTAX,\ [FTI - (FA/WA)^{*} INT]t_{cm},\ USTAX\}), \tag{3}$$

where t_{cm} is the U.S. corporate tax rate.

Impact on Marginal Tax Benefit of Domestic Interest Deductions

The calculation of the marginal tax benefit of domestic interest deductions follows Collins and Shackelford [1992]. The impact of foreign tax credit limitations on the marginal tax benefit of a domestic interest deduction depends on which equation (3) constraint applies. Assuming FTC is not equal to zero, FTC equals the minimum of FORTAX, [FTI- (FA/WA)*INT]t_{cm}, or USTAX.

Scenario a: FTC = FORTAX. Scenario *a* can occur when: (1) t_{cm} exceeds the average foreign tax rate, and (2) there are no significant domestic losses. Under scenario *a*, the total tax liability equals USTAX and the marginal tax benefit of a domestic interest deduction is based on the U.S. corporate tax rate (t_{cm}). Thus, foreign tax credit limitations have no impact on the marginal tax benefit of a domestic interest deduction. The relation can be shown in terms of the total tax calculation as follows:

$$TAX = [USTAX - INT(t_{cm})] + FORTAX - FORTAX \tag{4a}$$

$$\partial TAX/\partial INT = -t_{cm}. \tag{4b}$$

Scenario b: FTC = [FTI-(FA/WA) INT]t_{cm}.* Scenario *b* can occur when: (1) the average foreign tax rate exceeds t_{cm}, and (2) domestic-source income (net of interest allocated to domestic-source income) is positive. Under scenario *b*, an increase in allocable domestic interest results in a corresponding decrease in FTC of INT*[(FA/WA)t_{cm}]. This means that foreign tax credit limitations reduce the marginal tax benefit of a domestic interest deduction by the FA/WA ratio. The relation can be shown in terms of the total tax liability calculation as follows:

$$TAX = [USTAX - INT(t_{cm})] + FORTAX - [FTI - (FA/WA)^{*} INT]t_{cm} \tag{5a}$$

$$\partial TAX/\partial INT = -t_{cm} + (FA/WA)t_{cm} = -t_{cm}(1 - FA/WA). \tag{5b}$$

Scenario c: FTC = USTAX. Scenario *c* occurs when: (1) domestic-source income (net of interest allocated to domestic-source income) is less than or equal to zero, and (2) FORTAX is greater than or equal to USTAX. If net domestic income is less than or equal to zero, the foreign tax credit limitation is equal to USTAX, and the limitation is binding if FORTAX is greater than or equal to USTAX. Under scenario *c*, foreign tax credit limitations reduce the marginal tax benefit of a domestic interest deduction to zero. The relation can be shown in terms of the total tax liability calculation as follows:

$$TAX = [USTAX - INT(t_{cm})] + FORTAX - [USTAX - INT(t_{cm})] \tag{6a}$$

$$\partial TAX/\partial INT = -t_{cm} + t_{cm} = 0. \tag{6b}$$

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