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DO U.S. MULTINATIONALS FACE DIFFERENT TAX BURDENS THAN DO OTHER COMPANIES?

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EXECUTIVE SUMMARY

This paper address two policy questions: Do U.S. multinationals face a different tax burden than companies that do business only in the U.S.? Do U.S. multinationals face a different tax burden from multinationals that are incorporated in other countries? These questions are important because differences in tax burden can affect where firms incorporate (i.e., establish their legal domicile) and can entice them to relocate. Answers to these questions may shed light on current policy issues, such as inversions and responses to the World Trade Organization.

The paper reviews the extant empirical evidence related to inferences of a U.S. multinational's "tax competitiveness" and offers new evidence comparing the average tax rates of U.S. multinationals to both U.S. domestics and to non-U.S. multinationals. In assessing evidence related to

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whether the U.S. tax system results in U.S. companies becoming attractive takeover targets for non-U.S. companies, we review studies comparing the tax liabilities of U.S. companies that are foreign-controlled to those that are U.S.-controlled. We provide new data on the cost of U.S. domicile for multinationals for the years 1992 to 1997. These new data update and expand Collins and Shackelford (1995), which compared the average tax rates of U.S. multinationals to domestic only companies' average tax rates and to U.K. and Canadian multinationals' average tax rates during the 1980s. Because of substantial changes in international business and tax since the 1980s, this update enables us to test whether what tax costs of being a U.S. multinational have changed since then.

We find that companies domiciled in the U.S face higher tax burdens than U.S. domestic-only companies, higher tax burdens than Canadian multinationals, and similar tax burdens to British multinationals. Based on our review of prior evidence and the new evidence presented here, the evidence is consistent with at least some U.S. companies facing heavier tax burdens because they are globally positioned.

1. INTRODUCTION

One of today's most controversial policy debates concerns the appropriate taxation of U.S. multinationals. Although policymakers and corporate taxpayers have wrestled with this issue for decades, it has become particularly heated with the ruling by the World Trade Organization (WTO) that current U.S. tax law includes an illegal export subsidy and with the recent attention on corporate inversions, including an aborted one at Stanley Works.

Understanding international taxation is no simple task. The numerous complex rules that tax U.S.-domiciled multinationals on their worldwide income and provide a foreign tax credit offset challenge the most experienced tax experts. Some argue that these provisions are legally exploited across multiple jurisdictions to create little to no tax burden, while others argue that they create an onerous tax burden. This paper attempts to contribute to the ongoing debate by reviewing prior empirical documentation and providing new estimates of the tax cost of being a U.S. multinational.

Countries differ in their taxation of the foreign profits generated by companies domiciled within their borders. Among other things, they vary in whether they tax foreign income, their method for relieving international double taxation, the ability to offset home country taxes on income generated in one foreign jurisdiction with foreign taxes paid in another jurisdiction, the sourcing of income and expenses across countries, and their taxation of unrepatriated foreign income. These differences can af-

fect where firms incorporate (i.e., establish their legal domicile) and can entice them to relocate.

Determining the tax cost of being a U.S. multinational requires a benchmark for comparison. One comparison group is U.S. domestic-only companies. For example, do U.S. multinationals face a different tax burden than do companies conducting business only in the United States? Some claim that U.S. multinationals engage in cross-border tax arbitrage, income shifting, and other techniques that are unavailable to purely domestic companies. Through legal exploitation of inconsistencies across national tax systems, they face international nontaxation rather than double taxation. Those holding this view encourage U.S. policymakers to restrict cross-border tax savings strategies to restore equitable tax levies on U.S. multinationals.

A second comparison group is non-U.S. multinationals. Do U.S. multinationals face a different tax burden from multinationals that are incorporated in other countries? Some argue that the U.S. burden is heavier. They claim that the onerous tax burden faced by U.S. multinationals, compared with non-U.S. multinationals, places U.S. companies in a competitive disadvantage in the market for corporate control. As a result, U.S. multinationals become attractive takeover targets for non-U.S. investors, potentially leading to a loss of U.S. jobs (see, for examples, reports by Gnaedinger, Radziejewska, and Rojas, 2002). Those holding this view encourage U.S. policymakers to simplify the restrictions on foreign tax credits and lower the taxation of non-U.S. income earned by U.S. companies. For example, in explaining recent proposals from Congress to change the interest allocation rules and the foreign-based sales company rules, former chief of staff for the Joint Committee, Kenneth Keis, states, "Representative Thomas is aware of the need to make tax policy changes so that U.S. businesses are no longer attractive takeover targets" (reported by Gnaedinger, Radziejewska, and Rojas, 2002, p. 176).

Why might there be a differential tax cost for U.S. multinationals? One reason is that the United States, unlike some countries, taxes the worldwide income of companies legally domiciled in its borders. To illustrate how worldwide taxation works, Table 1 provides examples of how the foreign profits of U.S. multinationals are taxed. Any foreign affiliate of a U.S. corporation falls under the U.S. tax umbrella. If the foreign affiliate is a branch, i.e., not separately incorporated in the foreign country, all of its profits are immediately taxable by the United States. If the affiliate is structured as a subsidiary, i.e., separately incorporated abroad, then only amounts repatriated to the United States are taxable by the United States. In either case, the affiliate will pay tax, at the foreign country's prevailing tax rate, to the foreign country in which it is located.

TABLE 1
Example of U.S. Taxation of Foreign Profits

	I	II	III	IV	V	VI	VII
	Branch* in country A	Branch in country B	Branch in countries A and B	Subsidiary† in country A	Subsidiary in country B	Subsidiary in countries A and B	Branch and subsidiary in countries A and B
	35% 15%	35% 40%	35% A:15%, B:40%	35% 15%	35% 40%	35% A:15%, B:40%	35% A:15%, B:40%
U.S. corporate tax rate	500	500	1,000	—	—	—	1,000
Foreign country tax rate	—	—	—	300	300	600	600
Profits from foreign country:	—	—	—	200	200	400	400
Branch profits	75	200	275	—	—	—	275
Repatriated subsidiary profits	—	—	—	45	120	165	165
Unrepatriated subsidiary profits	—	—	—	30	80	110	110
Taxes paid to foreign country:	—	—	—	—	—	—	—
Branch profits	175	175	350	105	105	210	560
Repatriated subsidiary profits	75	175	275	45	105	165	440
Unrepatriated subsidiary profits	100	0	75	60	0	45	120
Taxes due to United States on foreign profits	0	25	0	0	15	0	0
Less: foreign tax credit	35%	40%	35%	35%	40%	35%	35%
Taxes payable to United States							
Excess foreign tax credit‡							
Tax rate on foreign profits taxable in United States							

* Branches are not incorporated separately abroad. The United States taxes their income in the year it is earned.

† Subsidiaries are incorporated separately abroad. The United States taxes their income when it is repatriated.

‡ Under U.S. tax law, a firm may carry back two years, and carry forward five years, any excess foreign tax credits.

To alleviate double taxation on this income, the United States offers a foreign tax credit to offset certain foreign taxable income. Foreign tax credits are extremely complex in practice and a thorough discussion of how they are computed is beyond the scope of this paper. Table 1 provides some simple examples, however, to show how foreign tax credits can offset U.S. taxes.

Column I in Table 1 assumes that the corporation operates only a branch in country A, where the tax rate is 15 percent, and generates profits of \$500 (column I). It remits a tax of \$75 (15 percent of \$500) to the government of that country. The United States also taxes the same profit, which generates tax due to the United States of \$175 (35 percent of \$500). To offset the effects of the same \$500 being taxed by both countries, the United States offers a foreign tax credit equal to the lesser of the foreign tax paid or the amount of tax on foreign profits due to the United States (profits taxable in the United States times the U.S. statutory rate of 35 percent). Therefore, the company operating a branch in country A can offset its U.S. tax burden by \$75 (the lesser of \$75 or \$175), which results in an amount payable to the United States of \$100 (\$175 - \$75). Consequently, this company faces an overall tax rate equal to the U.S. statutory rate of 35 percent (\$75 of foreign taxes plus \$100 of U.S. taxes, or \$175 in total, divided by total profits of \$500).

Suppose the company operates in a country whose tax rate exceeds that of the United States: for example, country B in Table 1, which has a 40 percent corporate tax rate. In that case, the company cannot take a credit equal to the full amount of taxes paid to the foreign country (see Table 1, column II). It generates "excess foreign tax credits," which can be first carried back to offset its U.S. tax on foreign income in the prior two years and then carried forward to offset its U.S. tax on foreign income in the next five years. If the company operates a branch in both country A and country B (Table 1, column III), then the foreign tax credit can be used to offset the total tax due from all countries. Consequently, the excess foreign tax credits in one country offset the foreign tax "deficit" in another.

The same tax laws apply to subsidiaries, with one major exception—the United States taxes only the earnings repatriated to the United States.¹ Likewise, the company receives a foreign tax credit based solely on the repatriated amount, not the total amount of total foreign earnings. Columns IV–VII of Table 1 show the taxation process for subsidiaries in low-tax and high-tax countries, as well as the case when the corporation has

¹ In these simple examples, we ignore Subpart F income, which can subject foreign income to U.S. taxation before repatriation.

both branches and subsidiaries. Note that U.S. multinationals will pay tax on their worldwide income at the higher of the U.S. statutory rate or the foreign tax rate. Therefore, incorporating in a country with a tax rate lower than that of the United States could result in substantial tax savings.

Given the numerous, complex restrictions, as well as opportunities, embedded in the taxation of non-U.S. income of U.S. multinationals, the magnitude of the ultimate tax burden borne by U.S. multinationals becomes an empirical question. The purposes of this paper are to review the extant empirical evidence related to inferences of a U.S. multinational's "tax competitiveness" and to offer new evidence comparing the average tax rates of U.S. multinationals to both U.S. domestics and to non-U.S. multinationals. In assessing evidence related to whether the U.S. tax system results in U.S. companies becoming attractive takeover targets for non-U.S. companies, we review studies comparing the tax liabilities of U.S. companies that are foreign-controlled to those that are U.S.-controlled. Next, we discuss evidence related to inversions, a technique recently used by some U.S. companies to accomplish a "foreign" takeover without an acquisition. Finally, we provide new data on the cost of U.S. domicile for multinationals for the years 1992 to 1997. These new data update and expand our 1995 findings (Collins and Shackelford, 1995), in which we compared the average tax rates of U.S. multinationals to domestic-only companies' average tax rates and to U.K. and Canadian multinationals' average tax rates during the 1980s. Because of substantial changes in international business and tax since the 1980s, this update enables us to test whether the tax costs of being a U.S. multinational have changed since that time.

2. BACKGROUND

Which companies are taxed as U.S. multinationals? A company has U.S. tax residence if it is legally incorporated in the United States. Thus, a multinational's worldwide operations fall under the U.S. tax umbrella if the parent company is incorporated in the United States. Multinational companies typically integrate their worldwide operations. Thus, a multinational company with a U.S. parent likely purchases a large fraction of its inputs from non-U.S. suppliers, sells a large fraction of its output to non-U.S. buyers, and employs a large fraction of its labor and capital outside the United States. Coca-Cola, for instance, is a U.S.-domiciled firm subject to U.S. taxation on its worldwide profits, even though most of its sales, profits, property and employees are foreign-based. In short, the legal location of a multinational's headquarters can disproportionately influence its worldwide tax liability.

If a U.S. parent is purchased by a non-U.S. company, the portion of the company remaining under the former U.S. parent in the legal organizational structure also remains under the U.S. tax umbrella. However, the non-U.S. purchaser and its affiliates are outside the U.S. tax umbrella. Thus, a non-U.S. company acquisition of a U.S. multinational could yield more opportunity for restricting the reach of the U.S. tax umbrella.

U.S. multinationals can also avoid U.S. taxation on their foreign income by engaging in inversions. In an inversion, the foreign income of the U.S. parent is removed from the reach of the U.S. tax umbrella because of the creation of a new company in a tax-advantageous location (e.g., Bermuda, which has no corporate income tax) or using an existing company in such a location to acquire the stock or assets of the U.S. parent. Most inversions are taxable stock transfers where the new foreign parent company exchanges its own shares for shares of the American company, a transaction triggering capital gains to the shareholders. At the conclusion of the transfer, the shareholders own stock in the new foreign parent company, and the American operations are typically organized as a subsidiary of the new foreign parent.² To limit the reach of the U.S. tax umbrella, foreign operations owned or controlled by the U.S. parent before the inversion are transferred to a separate subsidiary of the new foreign parent company in the inversion. Thus, dividends from foreign operations, previously received by the U.S. parent (and subject to U.S. taxation), will now be received by the new foreign parent. In short, inversions are the latest innovation to avoid U.S. taxation of foreign-source income. This innovation leads us to investigate the extent to which U.S. tax policy places U.S. companies at a disadvantage in the global market.

3. DO TAXES MAKE U.S. COMPANIES ATTRACTIVE TAKEOVER TARGETS?

If the U.S. taxation of multinational business proves particularly onerous, then we would expect non-U.S. companies to acquire U.S. companies and free them from the excess burdens associated with American international taxation. In other words, does the potential for a reduction in post-acquisition taxable income (following acquisition by a non-U.S. company) place U.S. companies at a disadvantage in the market for corporate control?

² In an asset inversion, the assets of the U.S. parent and of any affiliates are transferred to the foreign entity in exchange for stock in the foreign entity. The U.S. entity recognizes taxable gains/losses equivalent to the fair market value less the basis of the assets. The U.S. entity is subsequently liquidated, and the foreign entity shares are distributed to the public shareholders.

This section reviews recent and ongoing research that attempts to answer this question.

Grubert, Goodspeed, and Swenson (1993); Grubert (1999); and Collins, Kemsley, and Shackelford (1997) compare foreign-controlled domestic (U.S.) corporations (FCDCs) to U.S.-domiciled companies. Each examines actual corporate tax returns. All find that FCDCs face lower U.S. effective rates than do similar domestic companies. Although this evidence can suggest that U.S. companies are attractive takeover targets, none documents a direct link between tax management and the domicile of the shareholders.

Examining tax returns from 1980 to 1987, Grubert, Goodspeed, and Swenson (1993) document that FCDCs report lower levels of taxable income than do domestic-controlled companies. They also report that the taxable incomes of FCDCs are likely to persist around zero for many years. Both findings are consistent with foreign-controlled U.S. companies managing their tax liabilities to avoid taxes more than other U.S. companies.

Grubert, Goodspeed, and Swenson (1995) attempt to explain the difference between foreign-controlled and domestic-controlled firms. They report that one-half of the difference is attributable to observable nontax factors, such as exchange rate fluctuation, firm size, and age. The remaining half cannot be assigned to any observable factor. The unaccounted-for half of the differential may arise because of transfer pricing or other manipulation of FCDCs' U.S. taxable income.

The difference also may arise, however, from one or more of several possible nontax explanations. For example, foreigners could be at a disadvantage in the market for corporate control. They could accept lower returns to garner market share. Unfamiliar with the U.S. market, they may encounter more unanticipated losses. These explanations seem as compelling as tax management.

Grubert (1999) extends Grubert, Goodspeed, and Swenson's (1995) study using tax returns from a more recent period: 1987 to 1993. Besides the issues evaluated in Grubert, Goodspeed, and Swenson (1995), Grubert (1999) considers significant minority shareholdings (25–50 percent) by foreigners, transactions with offshore affiliates, different types of income, and alternative econometric specifications. The inferences are unchanged from Grubert, Goodspeed, and Swenson (1995). FCDCs continue to report lower levels of taxable income than do domestic-controlled companies. FCDCs' taxable incomes are also more likely to persist around zero. Again approximately half of the foreign-domestic differential can be explained by observable nontax factors. One new finding is that FCDCs (most of which are 100 percent foreign-owned) exhibit levels of profitability similar to 25–50 percent foreign-controlled domestic firms, which suggests

that the role of foreign ownership in determining taxable income levels may be less clear.

Collins, Kemsley, and Shackelford (1997) also extend Grubert, Goodspeed, and Swenson (1995) by attempting to determine whether the FCDCs' persistence around zero taxable income arises from a specific tax management opportunity, transfer price manipulation. Collins, Kemsley, and Shackelford (1997) examine the U.S. tax returns of FCDC wholesale traders from 1981 to 1990. They concentrate on this sector because the wholesale trade production function is relatively simple and companies can manipulate taxable income by managing the prices charged between the foreign manufacturer and the U.S. distributor. Collins, Kemsley, and Shackelford (1997) hypothesize that if FCDCs are managing taxable income, then sales (determined by external markets) and cost of goods sold (determined by internal prices) should decouple. When the distributor's U.S. taxable income rises above (falls below) zero, then the foreign parent increases (decreases) the costs of inventory. By focusing on a sector purported to engage in transfer price manipulation and the account through which such manipulation should occur, Collins, Kemsley, and Shackelford (1997) provides a powerful test of the tax management implied in Grubert, Goodspeed, and Swenson (1995).

Collins, Kemsley, and Shackelford (1997) find that the relation between sales and cost of goods sold in the tax returns of foreign-owned U.S. wholesalers maintaining near-zero taxable income does not differ from the relation found in the consolidated financial statements of other companies. The control groups include U.S.-controlled wholesalers, foreign-domiciled wholesalers, and the parents of the sample firms. Collins, Kemsley, and Shackelford (1997) conclude that, at least for wholesalers and inventory purchases, the documented persistence around zero taxable income found by Grubert, Goodspeed, and Swenson (1995) cannot be linked to transfer price management. The failure of such a strong research design to detect manipulation raises doubts about whether any of Grubert, Goodspeed, and Swenson's (1995) and Grubert's (1999) unaccounted for differential is attributable to more aggressive tax planning by foreign-owned U.S. companies.

An inherent weakness of the settings investigated in the preceding studies is that shareholder domicile cannot be assigned randomly among firms. Without controlling for the underlying differences between FCDCs and domestic-controlled U.S. firms, differences in taxable income may be erroneously attributed to tax planning.

Blouin, Collins, and Shackelford (2002) employ a research design that better isolates the influence of domicile on taxes. Rather than comparing a large set of FCDCs with domestic-controlled firms that may differ along

many facets, they compare changes in pre- and postacquisition taxable income for U.S. firms acquired by U.S. companies to those acquired by non-U.S. companies. They are unable to find any evidence that the domicile of an acquirer affects the postacquisition taxable income of its target.

Specifically, Blouin, Collins, and Shackelford (2002) compare the actual corporate tax returns of U.S.-domiciled companies before and after their acquisition by foreign firms with the actual corporate tax returns of similar U.S.-domiciled companies before and after their acquisition by other U.S. firms. By conditioning on pre-acquisition taxable income, this difference-in-differences approach controls for firm-specific tax and nontax factors that predate the acquisition, enhancing the power of the tests to assess whether taxes vary between foreign and domestic shareholders.

Since the firms that are acquired are necessarily non-random, Blouin, Collins, and Shackelford (2002) match the tax returns of 31 firms that were acquired in 1996 by non-U.S. shareholders for more than \$50 million with the tax returns of 31 targets of similar size, industry, and compensation (stock-for-stock versus cash purchase) acquired in 1996 by U.S.-domiciled firms. Average target taxable income (as a percentage of acquisition price) in the two years following the acquisition (1997 and 1998) is compared to average target taxable income in the two years preceding the acquisition (1994 and 1995). For firms purchased by non-U.S. companies, the mean taxable income increases 3.25 percent. The mean increase for domestic targets is 0.85 percent. Thus, taxable income increases following acquisition for both foreign firms and domestic firms, a finding likely attributable to increased corporate profitability in the late 1990s. Contrary to claims that foreign acquisitions lead to lower tax revenues than do domestic acquisitions, however, the increase in taxable income for firms acquired by foreign firms exceeds the increase in taxable income for targets acquired by U.S. firms, although the difference is not statistically significant at conventional levels. Similarly, regression analyses fail to detect any significant influence exerted by domicile of the purchaser on changes in taxable income post-acquisition. No evidence is provided to support claims that foreign acquisitions result in disproportionate tax reductions compared with domestic acquisitions and thus claims that taxes make U.S. companies attractive takeover targets.

We also gathered anecdotal evidence consistent with these inferences. We conducted private discussions with tax officials at Daimler-Chrysler and with tax scholars and practitioners in Germany to assess the extent to which worldwide taxation in the United States contributed to the merged entity adopting a German parent. Leblang (1998) and others had speculated that Chrysler Corporation and Daimler-Benz AG chose Germany as the worldwide headquarters of the merged company to restrict the reach

of the U.S. worldwide tax umbrella. Unlike the United States, which taxes worldwide income, Germany is a territorial country and does not impose tax on the non-German income of its German-based multinationals.

Our sources indicated that taxes were a secondary consideration in the decision. The dominant factor was that the German labor unions threatened to veto the merger unless the resulting entity was German-based. In fact, the most important tax consideration did not involve corporate income taxation. Instead, it related to shareholder taxes. The swap of Daimler-Benz shares for an American-domiciled parent would have been a taxable event for German shareholders. Conversely, the swap of Chrysler shares for a German-domiciled parent was not a taxable event for U.S. investors. By exchanging shares for a German-domiciled parent, the Daimler-Benz shareholders deferred taxation on the appreciation in their shares. Although reportedly of marginal importance, the territorial tax structure provided under German law apparently was perceived to have some value. Subsequent to the merger, DaimlerChrysler reorganized the company and stripped Chrysler of its foreign subsidiaries to avoid U.S. repatriation taxes.

4. INVERSIONS: FOREIGN DOMICILE WITHOUT AN ACQUISITION

Desai and Hines (2002) examine inversions, the most recent technique for U.S. companies to accomplish a "foreign" takeover and thus remove their foreign operations from the reach of the U.S. tax umbrella. Inversions (or corporate expatriations) are a visible symbol of the tax cost of being a U.S. multinational and have created considerable political attention. In fact, Congress is currently considering legislation that would deny to companies the tax benefits of expatriating and the right to bid on U.S. government contracts.

Desai and Hines (2002) find only seven members of the Standard & Poor's 500 index have expatriated or announced plans to expatriate. Stanley Works, the company they examine in-depth, announced plans to expatriate in February 2002. On August 1, 2002, however, Stanley Works announced that, in response to criticism from employees, investors, and public officials, they were abandoning their plans to acquire a Bermuda address. Desai and Hines (2002) also find that larger companies—those with extensive foreign assets, those with considerable debt, and those operating in low-tax foreign jurisdictions—are the most likely to expatriate. They suggest that this evidence is consistent with inversions motivated by the U.S. policy of taxing worldwide income and foreign tax credit restrictions, such as the interest allocation rules. Desai and Hines (2002)

conclude that, while the limited number of companies engaging in inversions likely saves substantial taxes, most companies do not find the potential corporate-level tax savings sufficient to offset shareholder-level capital gains tax liabilities on the transaction.

It is worth noting that, as with DaimlerChrysler, some of the companies engaging in inversions may have nontax incentives. Insurance companies, for example, may benefit from less restrictive regulation if they domicile outside the United States. In short, the small number of inversions to date and the potentially mixed incentives of those that have expatriated are consistent with the U.S. worldwide tax system being not burdensome enough to motivate widespread inversions if no legislation is enacted.

5. THE TAX COST OF U.S. DOMICILE: NEW EVIDENCE

5.1 Motivation

The remainder of this paper estimates and compares the tax costs attributable to domiciling in the United States with four other leading industrial countries: Canada, Germany, Japan, and the United Kingdom. In the spirit of Grubert's (1999) update of Grubert, Goodspeed, and Swenson (1995), we assess whether these costs changed during the 1990s by comparing our new estimates with the ones we computed in our 1995 study (Collins and Shackelford, 1995) using data from the 1980s.

An update is warranted because sweeping economic, political, and technological changes occurred in the 1990s. The changes include, among others, increased globalization, computerization, deregulation, the spread of democracy and market economies, multinational trade affiliations, and cross-border corporate mergers and acquisitions. North American and European capital markets boomed; Japan suffered recession. Countries altered their tax laws and enforcement, and talked of a major overhaul of the taxation of multinationals. Firms responded with unprecedented global tax planning. As a result, these changes raise doubts that empirical evidence from the 1980s is useful in constructing tax policy today.

The results presented here are intended to contribute to the ongoing policy discussions. Legislation seems imminent, if only to respond to the WTO's ruling that the Extra-Territorial Income Exclusion (ETI) is an illegal export subsidy. No consensus has emerged, however, for reforming the U.S. international tax system. Some advocate fundamental international tax reform, including shifting to a territorial system. However, even incremental changes, such as the current bill introduced by Chairman Bill Thomas of the House Ways and Means Committee, have met heavy criti-

cism. The Bush administration, which favors change, has committed to a comprehensive study of U.S. international tax competitiveness next year (Johnston, 2002). The findings from this study should contribute to that debate.

Because this paper is an update and extension of Collins and Shackelford (1995), a review of that paper seems appropriate first. In 1995, we estimated the costs of domicile by regressing average effective tax rates (ATRs) on variables that indicate domicile in Canada, Japan, the United Kingdom, and the United States. The coefficient on the individual country variables is interpreted as an estimate of the marginal impact of a company's domicile on its worldwide tax burden, conditional on industry and year. Data are collected from firm-level financial statements from 1982 to 1991. We concluded in 1995 that (1) domiciliary tax costs are ordered from highest to lowest during this time period as follows: Japan, the United Kingdom, the United States, and Canada; and (2) U.S. and U.K. multinationals face higher domiciliary tax costs than their domestic-only counterparts.

To facilitate determining whether the domiciliary landscape has changed in the last decade, we adopt an estimation procedure that follows our 1995 study. Specifically, we regress ATRs on the original four countries, plus Germany, for 1992 to 1997, with controls for industry and year.

5.2 Measurement Challenges

Both Collins and Shackelford (1995) and this study face at least two major challenges in developing reliable estimates. The first concerns the appropriate tax rate. The second concerns the use of financial statements as proxies for corporate tax return information. We discussed each of the hurdles in detail in Collins and Shackelford (1995). We provide an abbreviated review here.

With regard to the appropriate tax rate, marginal effective tax rates capture incentives to employ new capital, while average effective tax rates measure distributional burdens [see Fullerton (1984) and Bradford and Fullerton (1981) for a more detailed discussion]. Neither method is without fault, but we opt for average because of the following limitations associated with marginal effective tax rates.

Marginal rates require numerous simplifying assumptions, including assumptions about the tax status of shareholders; firm financing policies; firm asset purchase decisions; and the reflection of inflation in asset prices, interest rates, and economic depreciation rates. Simulated marginal effective tax rates are sensitive to the assumed discount rate and the effect of inflation on nominal interest (Bradford and Fullerton, 1981). Furthermore, simulated marginal tax rate methodologies are too broad to capture the

important legal complexities in corporate tax systems and must combine, via weighted average or some other technique, asset-specific marginal effective tax rates to yield inter-industry or other aggregated comparisons. Slemrod and Timbers (1990) add that simulated marginal effective tax rates provide only rough guidelines for tax policy analysis in complex environments.

The other major challenge in the research design is our reliance on financial statement disclosures to estimate corporate tax positions. Ideally, we would examine the actual tax filings in all countries for a large set of multinationals around the globe. Unfortunately, such data are not available. Thus, consistent with Collins and Shackelford (1995), this analysis depends on an imperfect source, income tax information contained in the footnotes of financial statements, as provided by Standard & Poor's Global Vantage international financial database.

Estimating ATRs with financial statement data is problematic. As has been widely publicized in the recent accounting scandals, such as those involving Enron and WorldCom, U.S. generally accepted accounting principles (GAAP), which govern financial statement disclosures, can differ substantially from the tax accounting rules provided in the Internal Revenue Code. In the United States, corporations prepare two sets of books—one tax and one financial. Under such a system, book–tax differences inevitably arise. The book–tax gap appears to be increasing (Manzon and Plesko, 2002) and, according to Mills et al. (2002), is most pronounced for multinationals.

In the United States, a primary source of the increasing spread is the exercise of nonqualified stock options, which typically generates a tax deduction but no charge to book earnings (Desai, 2002; Hanlon and Shevlin, 2002; Graham, Lang, and Shackelford, 2002). Other causes for the book–tax difference include consolidation differences and tax shelters (McGill and Outslay, 2002), inconsistent accounting choices across firms, timing differences between tax and financial filings that result in tax estimates being used in financial statements, and changes due to IRS audits (Plesko, 2003).

The book–tax differences vary across countries, which confounds our attempts to compare cross-country data. For example, book–tax distinctions are less important in Germany, where a single set of books are maintained for both financial reporting and tax at the individual company level. Even in Germany, however, the book–tax conformity does not extend to the consolidation of separate company books into a single set of consolidated financial statements.

Besides book–tax differences, ATRs computed using accounting disclosures cannot incorporate shareholder-level taxation on capital income.

This limitation prevents us from incorporating differences in shareholder and corporate tax integration. Despite the difficulties involved with using financial statement disclosures to estimate tax burdens, we follow innumerable studies in concluding that financial statement information is at least somewhat informative in estimating corporate tax burdens [see Shackelford and Shevlin (2001) for a more detailed discussion]. The alternative is no firm-level analysis because large samples of tax returns from companies and countries is not available and likely will not be for the foreseeable future.

5.3 Comparative Average Effective Tax Rates

Ideally, we would measure average effective tax rates as current and discounted future worldwide explicit and implicit income taxes divided by current worldwide economic income. Unfortunately, neither the numerator nor denominator of this ideal measure is observable. Following our 1995 study, we approximate the numerator (taxes) using current income taxes paid or payable for the year on earnings as determined for financial accounting purposes. This amount is computed from Global Vantage data as total tax provision (TXT) less deferred income taxes (TXDI) and less other taxes (TXO). The total tax provision is the tax expense based on financial statement income.

No accounting earnings computation perfectly measures true economic income. We estimate the effective tax rate denominator using two alternative measures from Collins and Shackelford (1995). The first is net income before taxes, appropriations to untaxed reserves, minority interest income, and extraordinary items (NIBT), which is the Global Vantage data item pretax income (PI). This measure is tainted, however, by intercountry differences in financial reporting practices and accounting methods used to measure items such as depreciation, goodwill amortization, pension expense, and research and development expense.³

To achieve greater comparability across countries, we compute a second effective tax rate measure using adjusted net income (ADJNI) in the denominator. Adjusted net income is NIBT plus depreciation and amortization (Global Vantage data item DP), goodwill write-offs (Global Vantage data item GWO), pension expense (Global Vantage data item XPR), and research and development expenses (Global Vantage data item XRD).⁴

³ See Collins and Shackelford (1995) for an extensive discussion of these differences in financial reporting practices in Canada, Japan, the United Kingdom, and the United States.

⁴ We also estimated effective tax rates in 1995 (Collins and Shackelford, 1995) using total revenue (Global Vantage data item REVT) in the denominator. We conclude that, while the total revenue measure eliminates intercountry differences in accounting for expenses, its implicit assumption that true profit margins are constant across firms from five different

The sample includes all Global Vantage companies domiciled in Canada, Germany, Japan, the United Kingdom, and the United States from 1992 to 1997 with positive net revenues; any nonzero value (positive or negative) for net income before taxes; and nonnegative values for depreciation, goodwill write-offs, pension expense, and research and development expense. Companies are also excluded if current taxes or the industry code (SIC) are missing. The resulting sample comprises 22,880 company-years: 1,436 in Canada, 1,858 in Germany, 3,372 in Japan, 4,660 in the United Kingdom, and 11,554 in the United States.

Table 2 provides summary statistics for certain income statement and balance sheet items across countries. Sample firms vary considerably across countries. As we documented for the 1980s in Collins and Shackelford (1995), Japanese companies report higher revenues and lower profit margins than did companies from the other countries. The mean revenue (REV) for a Japanese company is \$5.5 billion, over one and a half times as large as the mean revenue of firms domiciled in Germany and three to seven times as large as the mean revenue of firms domiciled in the other countries. On average, U.S. companies' revenues are larger than U.K. companies' revenues, which are larger than Canadian companies' revenues.

Mean NIBT for Japanese companies is \$126 million, less than the \$142 million average for U.S. companies and only slightly larger than the mean for German and British companies. This dollar amount compares with a \$196 million Japanese mean in our 1995 study, which was more than double the income from any other country. Japanese profit margins (NIBT/REV) trail other countries' profit margins. The mean NIBT/REV for Japanese companies is 2.3 percent, compared to 6.6 percent for Canadian, 3.8 percent for Germany, 8.5 percent for British, and 7.4 percent for U.S. companies. After-tax profit margins differ even more. The mean (NIBT-TAX)/REV for Japan is 0.9 percent, far less than the 4.2 percent in Canada, 2.4 percent in Germany, 5.6 percent in the United Kingdom, and the 4.7 percent in the United States.

Consistent with their larger size, Japanese companies report larger tax payments per firm. The mean of current domestic plus foreign income taxes (TAX) for Japanese companies is \$77 million, 1.5 to 4 times the amount for companies from the other countries. Conversely, Japanese companies report the lowest mean current plus deferred foreign income taxes (i.e., foreign tax provision, or FORTAX). FORTAX as a percentage of ADJNI ranges from 0.2 percent for Japanese companies to 7.5 percent

countries and a host of industries produces unreliable estimates. We reach the same conclusion in this paper and thus exclude results using REVT from this paper.

TABLE 2
Descriptive Statistics by Country (All Dollars in Millions)*

	Canada (n = 1,436)		Germany (n = 1,858)		Japan (n = 3,372)		United Kingdom (n = 4,660)		United States (n = 11,554)	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
REV	756	1,759	3,134	8,151	5,529	16,715	1,158	3,615	1,922	6,939
NIBT	50	174	119	406	126	396	98	387	142	595
ADJNI	125	409	394	1,454	437	1,517	156	599	288	1,195
TAX	18	55	43	152	77	207	33	129	52	195
FORTAX	2	16	4	39	0	3	12	69	13	105
DEPR/AMORT	56	160	208	839	222	932	48	215	94	440
GOODWILL	0	0	0	0	0	0	0	0	0	0
PENEXP	4	17	0	0	0	0	0	0	12	70
RDEXP	14	127	67	441	88	427	10	78	40	277
ASSETS	1,209	3,588	2,811	8,983	5,536	13,202	1,186	3,825	2,021	8,649
EQUITY	427	959	655	2,120	1,433	3,735	491	1,864	653	1,906

*Notes:

REV is the net revenues.

NIBT is the net income before taxes.

ADJNI is net income before taxes, depreciation, amortization, goodwill write-off, pension expense, and research and development expense.

TAX is current foreign and domestic income taxes.

FORTAX is current and deferred income taxes.

DEPR is depreciation expense.

GOODWILL is the goodwill write-off against income.

PENEXP is pension expense.

RDEXP is research and development expense.

ASSETS is total assets.

EQUITY is total shareholders' equity.

for U.K. companies. However, these numbers appear suspect. The percentage of companies reporting nonzero foreign tax provisions varies greatly by country: 13.9 percent of the Canadian companies, 1.9 percent of German companies, 0.2 percent of Japanese companies; 52.7 percent of U.K. companies; and 36.6 percent of U.S. companies. In 1995, we detected similar variation, which we attributed to differences in financial statement practices across countries rather than actual foreign tax payments.

The sample firms are similar across countries in depreciation expense, consistent with our 1995 study. Unlike companies domiciled in the other three countries, Japanese and German companies are required to expense for financial accounting purposes the same amount of depreciation that they deduct on their tax returns. If they adopt the most accelerated depreciation method available for tax purposes, their book depreciation likely will exceed the book depreciation expenses reported in other countries. However, the mean depreciation as a percentage of mean revenues for Japanese companies is 4.0 percent and for German companies it is 6.6 percent, which is comparable with the ratios in the other countries: 7.4 percent (Canada), 4.2 percent (United Kingdom), and 4.9 percent (United States).

Table 3 provides summary statistics on the sample companies by one-digit SIC codes. Over half the companies are manufacturers (SICs 2 and 3), the predominant industry for all countries. The next most common industry is trade (SIC 5), comprising 14 percent of the sample. Countries are not represented equally across industries. Compared with other countries, disproportionate industry concentrations include Canadian mining and construction firms (26 percent of all Canadian companies), Japanese and German manufacturers (63 and 67 percent, respectively), and British traders (18 percent). Companies from the United States form a plurality in every industry.

Table 4 provides summary statistics of average tax rates from 1992 to 1997 by country. ATR_{NIBT} (or ATR_{ADJNI}) is total current income taxes, TAX, divided by NIBT (or by ADJNI). To exclude unrealistic measures, average effective tax rate observations are truncated from below at zero, and from above at 70 percent.

Mean average effective tax rates in panel A of Table 4 are strikingly similar to the estimates in Collins and Shackelford (1995). For example, U.S. mean ATR_{NIBT} is 0.26 from 1992–1997 versus 0.25 from 1982–1991. Similarly, U.S. mean ATR_{ADJNI} is 0.16 from 1992–1997 versus 0.17 from 1982–1991. Japanese companies remain the most heavily taxed (mean $ATR_{NIBT} = 0.44$ and $ATR_{ADJNI} = 0.22$), while Canadian companies continue to face the lowest average effective tax rates (mean $ATR_{NIBT} = 0.18$ and $ATR_{ADJNI} = 0.11$). Mean ATR_{NIBT} and ATR_{ADJNI} for the other countries are

TABLE 3
Descriptive Statistics by One-Digit SIC

SIC description	Number of company years				
	Canada (<i>n</i> = 1,436)	Germany (<i>n</i> = 1,858)	Japan (<i>n</i> = 3,372)	United Kingdom (<i>n</i> = 4,660)	United States (<i>n</i> = 11,554)
0 Agriculture	6	6	11	42	60
1 Mining and construction	372	101	383	386	696
2 Manufacturing*	271	486	856	944	2,417
3 Manufacturing†	286	768	1,256	1,114	3,732
4 Transportation and utilities	179	195	254	376	1,344
5 Trade	95	198	452	824	1,596
6 Finance, insurance, and real estate	92	28	41	164	271
7 Services	93	46	86	596	997
8 Health and other services	34	30	33	214	425
9 Other	8	0	0	0	16

* SIC 2 includes companies manufacturing food, tobacco, textiles, apparel, lumber and wood, paper, printing and publishing, chemicals, and petroleum refining products.

† SIC 3 includes companies manufacturing rubber and plastic, leather, stone, clay, glass, concrete, primary or fabricated metal, industrial or commercial machinery, computers, electrical transportation equipment, measuring instruments, photographic equipment, jewelry, and recreational products.

TABLE 4
Average Effective Tax Rates by Country (1992-1997)

	Panel A—all companies					Panel B—multinational companies*				
	Canada (n = 1,401)	Germany (n = 1,858)	Japan (n = 3,372)	United Kingdom (n = 4,660)	United States (n = 11,554)	Canada (n = 200)	Germany (n = 36)	Japan (n = 8)	United Kingdom (n = 2,458)	United States (n = 4,225)
ATR _{NIBT} †	0.18	0.28	0.44	0.26	0.26	0.18	0.35	0.54	0.30	0.30
Mean	0.19	0.21	0.23	0.17	0.20	0.17	0.15	0.09	0.17	0.19
Standard deviation	0.00	0.06	0.38	0.16	0.04	0.00	0.28	0.48	0.23	0.18
25th percentile	0.10	0.31	0.50	0.30	0.29	0.16	0.37	0.56	0.31	0.33
Median	0.33	0.44	0.59	0.35	0.39	0.31	0.44	0.59	0.37	0.41
75th percentile	0.11	0.14	0.22	0.19	0.16	0.12	0.16	0.27	0.21	0.18
ATR _{ADJN} ‡	0.13	0.13	0.15	0.13	0.14	0.12	0.11	0.08	0.12	0.12
Mean	0.00	0.03	0.11	0.10	0.03	0.03	0.07	0.23	0.15	0.09
Standard deviation	0.06	0.12	0.21	0.20	0.16	0.10	0.14	0.24	0.21	0.17
25th percentile	0.20	0.22	0.31	0.26	0.25	0.18	0.21	0.29	0.27	0.25
Median										
75th percentile										

Notes:

* A company is classified as a multinational if it reports a nonzero value for the foreign tax provision (current plus deferred foreign taxes).

† ATR_{NIBT} is total current income taxes scaled by net income before taxes.

‡ ATR_{ADJN} is total current income taxes scaled by net income before taxes, depreciation, goodwill amortization, pension expense, and research and development expense.

similar: 0.28 and 0.14, respectively for German firms and 0.26 and 0.19, respectively, for British firms.

Panel B of Table 4 reports the same statistics for our selection of multinational companies, those that report nonzero amounts of foreign current and deferred income taxes (FORTAX). Unfortunately, multinational companies are not identified by Global Vantage. Thus, following our 1995 study, we assume that the 6,927 company-years with nonzero values for FORTAX are multinationals. Although we are aware of no other indicator of foreign activity that is commonly reported across most countries (e.g., foreign sales or assets), this assumption is problematic for at least two reasons: (1) multinationals need not pay or recover foreign taxes, and (2) many German and Japanese financial statements exclude foreign subsidiary operations and reflect only the parent companies' operations, likely contributing to the fact that only 2 percent (0.2 percent) of German (Japanese) companies report nonzero foreign taxes. Consequently, we restrict the discussion of multinationals to those U.S., British, and Canadian firms that report foreign tax information in their financial statements, although these companies may not comprise the entire population of multinational firms.

The relative cross-country tax burdens for the multinationals in panel B are similar to the patterns documented in the full sample in panel A and in the 1982–1991 analysis in our 1995 study. Canadian multinationals report lower effective tax rates than do U.S. and British multinationals. Mean effective tax rates from U.S. and U.K. multinationals are greater than for domestic-only companies. For example, U.S. multinationals (domestics) report mean ATR_{NIBT} and ATR_{ADJNI} of 0.30 (0.23) and 0.18 (0.15), respectively.⁵ Thus, this univariate analysis of effective tax rates suggests that U.S. multinationals face heavier tax burdens than do U.S. companies without foreign operations.

These estimates are consistent with U.S. multinationals facing higher tax burdens than domestic-only firms. This situation could occur because the tax law inadvertently taxes multinationals more heavily. For example, the provisions governing foreign tax credits may not achieve their purpose of fully eliminating double taxation. However, we cannot rule out at least two other explanations for multinationals facing higher effective tax rates. First, the foreign profits could arise in countries with higher tax

⁵ The domestic-only statistics are computed by subtracting the multinational figures in panel B from the overall figures in panel A. For example, domestic-only ATR_{NIBT} of 0.23 is:

$$\frac{[(11554 \times 0.26) - (4225 \times 0.30)]}{(11,554 - 4,225)}$$

rates than in the United States. Second, multinationals may inherently be better-managed firms and thus have higher profits. If so, this characteristic would explain why their tax burdens are heavier (they are more profitable) and also why they can expand into foreign markets successfully when their domestic peers cannot.

5.4 Regression Results

To assess further the relation between average effective tax rates and the country of domicile, the following pooled, cross-sectional regression equation is estimated:

$$\begin{aligned} \text{ATR}_{it} = & \Sigma\beta_{0j} \text{COUNTRY}_{it} + \Sigma\beta_{1j}(\text{COUNTRY}_{it} \times \text{MN}_{it}) \\ & + \Sigma\beta_{2k} \text{INDUSTRY}_{it} \\ & + \Sigma\beta_{3p} \text{YEAR}_{it} + \beta_4 \text{UNCON}_{it} + \epsilon_{it} \end{aligned} \quad (1)$$

where

ATR_{it} = total current income taxes (TAX) for company i in year t divided by INCOME, where INCOME is measured as: (1) net income before taxes (NIBT) or (2) net income before taxes plus depreciation, amortization, goodwill write-offs, pension expense, and research and development expense (ADJNI);

COUNTRY_{it} = categorical variable that equals 1 if company i in year t is domiciled in country j , where $j = 1$ to 5 for Canada, Germany, Japan, the United Kingdom, and the United States;

MN_{it} = categorical variable equal to 1 if the foreign tax provision (current plus deferred foreign taxes) for company i for year t is not equal to 0;

INDUSTRY_{it} = categorical variable equal to 1 if the two-digit SIC for company i in year t is the two-digit SIC for industry k , where $k = 1$ to m , encompassing all two-digit SICs spanned by companies $i = 1$ to n ;

YEAR_{it} = categorical variable equal to 1 if year t for company i is the same as year p , where $p = 1992$ to 1997;

UNCON_{it} = categorical variable equal to 1 if the income statement for company i in year t is unconsolidated.

Note that the intercept term is suppressed in the regression equation. Thus, the coefficients on the COUNTRY variables are designed to mea-

sure the marginal cost of domiciling in a specific country. For example, the difference between the United States and the Japan coefficient represents the difference in tax rates that a given firm would expect to face if it changed domicile.

Of course, this interpretation ignores any nontax considerations in domicile choice. Suppose the cost of capital is lower for Japanese companies because of the high savings rate in Japan, but its tax burdens are no different. If this assumption is true, Japanese-domiciled companies may have an inherent advantage compared with multinationals from other countries. This advantage could translate into higher profitability and thus higher tax payments. We could interpret these findings erroneously as a heavier tax burden on Japanese companies, although Japanese tax burdens might be no different from other countries' burdens. If this were the case, a U.S. company could relocate to Japan, gain access to this cheaper capital source, improve its profitability, and soon appear to face heavier taxation, when in reality Japanese and U.S. taxes are not different. Therefore, the regression coefficient estimates may fail to capture the intended tax cost of domicile. We attempt to address this potential omitted-correlated-variable problem by including control variables for industry, years, and whether or not the financials are consolidated. As with most empirical work, however, the risk remains that an important correlated determinant has been omitted from the regression.

Similarly, the estimated coefficients for $\text{COUNTRY} \times \text{MN}$ are designed to reveal whether domicile for multinationals within a country is more costly than domicile for domestics in that country. The sum of the COUNTRY and $\text{COUNTRY} \times \text{MN}$ coefficients measure the average percentage of income taxes paid by a multinational in a particular domicile.

Table 5 reports the estimates of the regression coefficients for the variables of interest in equation (1). The results are consistent with Japanese companies facing higher domiciliary tax costs than do companies from other countries. When ATR_{NIBT} is the dependent variable, domicile in Canada increases average effective tax rates by 17 percent; in Germany, by 25 percent; in Japan, by 41 percent; in the United Kingdom, by 19 percent; and in the United States, by 20 percent. Similarly, when $\text{ATR}_{\text{ADJNI}}$ is the dependent variable, Japanese domicile results in a greater increase to the effective rate than domicile in any of the other countries (20 percent for Japan versus 11–15 percent for the other countries).

The incremental tax cost associated with Japanese domicile—41 (or 20) percent, using ATR_{NIBT} (or $\text{ATR}_{\text{ADJNI}}$)—is down slightly from our 1995 estimate of 43 (or 21) percent. Canada, the United Kingdom, and the United States, however, experienced increases. For example, the cost of

TABLE 5
Pooled Cross-Sectional Regression Results from Estimating Equation
(1) for All Countries and Years

	COUNTRY* <i>estimated regression</i> <i>coefficients (t-statistics)</i>		COUNTRY × MN† <i>Estimated regression</i> <i>coefficients (t-statistics)</i>	
	ATR _{NIBT} ‡	ATR _{ADJNI} §	ATR _{NIBT} ‡	ATR _{ADJNI} §
Canada	0.166 (20.9)	0.115 (21.0)	0.011 (0.7)	0.016 (1.6)
Germany	0.247 (32.4)	0.126 (23.9)	0.075 (2.3)	0.029 (1.3)
Japan	0.413 (58.2)	0.199 (40.9)	0.111 (1.6)	0.087 (1.9)
United Kingdom	0.186 (25.5)	0.145 (28.8)	0.082 (14.3)	0.055 (13.9)
United States	0.202 (31.2)	0.143 (32.1)	0.074 (19.0)	0.031 (11.8)
Adjusted R ²	0.70	0.64		
n	22,880	22,880		

* Estimated coefficients on the COUNTRY variables measure the marginal cost of domiciling in a specific country.

† Estimated coefficients for COUNTRY × MN indicate whether domicile for multinationals within a country is more costly than domicile for domestics in that country.

‡ ATR_{NIBT} is total current income taxes scaled by net income before taxes.

§ ATR_{ADJNI} is total current income taxes scaled by net income before taxes, depreciation, goodwill amortization, pension expense, and research and development expense.

U.S. domicile increased from 15 percent to 20 percent using ATR_{NIBT}, and from 8 percent to 14 percent using ATR_{ADJNI}.

Examination of the estimated COUNTRY × MN coefficients suggests that U.S. and British multinationals face higher average tax burdens than domiciled firms in those countries that avoid foreign activities.⁶ Using ATR_{NIBT} as the dependent variable, the COUNTRY × MN estimates for the United States and the United Kingdom are positive and significant, indicating that the tax burden levied on the NIBT of U.S. multinationals is 7 percentage points higher than that levied on their domestic counterparts and 8 percentage points higher for U.K. multinationals than for U.K. domestics-only. In other words, on average, U.S. multinationals pay 37 percent more of their NIBT (or 22 percent of ADJNI) in taxes than do domestic-only U.S. corporations.⁷

⁶ Recall that the data are incapable of identifying most Japanese and German multinationals, so the discussion centers on multinationals in the other countries.

⁷ This percentage increase is computed by dividing the coefficient for COUNTRY × MN by the coefficient for COUNTRY.

Conversely, the regression coefficients suggest that Canadian multinationals face insignificantly different tax burdens than do Canadian domestic-only companies. This finding may reflect the fact that Canada operates a territorial tax system (thus alleviating any potential double taxation) with regard to foreign direct investment in large trading partner countries, such as the United States.

The U.S. and U.K. multinational tax differential has increased since the 1980s, when we found in our 1995 study that U.S. and U.K. multinationals face 4 percentage point higher average effective tax rates than their domestic counterparts, suggesting U.S. (U.K.) multinationals paid 30 (23) percent more of their NIBT in taxes from 1982–1991. We infer from the regression results that U.S. and U.K. multinationals are shouldering an increasingly disproportionate percentage of corporate tax burdens.

The $US \times MN$ ($UK \times MN$) coefficients imply that the annual tax bill of the average American (British) company in this study would increase from \$9 to \$18 (from \$8 to \$10) million if it were a multinational rather than a domestic corporation. These estimates are up from the \$3 to \$4 million increase for the multinationals in both countries in our 1995 study.

5.5 Variation Across Industries

We also estimated pooled, cross-sectional regression coefficient estimates for each one-digit SIC numbered 1–7 (results are untabulated). When the dependent variables are ATR_{NIBT} and ATR_{ADJNL} , Japanese domicile indicates higher effective tax rates in every industry. We also find that the overall lower average tax rates in Canada are largely attributable to three industries: mining and construction; finance, insurance, and real estate; and services (SICs 1, 6, and 7, respectively).

The variability of tax burdens across sectors may be a useful measure of within-country variation in industry tax incentives. If so, the United Kingdom would appear to be the most successful at maintaining a level playing field across industries. Using ATR_{NIBT} , U.K. rates range from 0.18 (finance, insurance, and real estate) to 0.23 (trade), a spread of only 5 percent. U.S. rates range from 0.11 (mining and construction) to 0.26 (trade), a spread of 15 percent. German rates range from 0.20 (mining and construction) to 0.37 (transportation and utilities), a spread of 17 percent. Japanese rates range from 0.31 (finance, insurance, and real estate) to 0.49 (transportation and utilities), a spread of 18 percent. Canadian rates range across sectors from 0.06 (mining and construction) to 0.24 (transportation and utilities), a spread of 18 percent. Similarly, using ATR_{ADJNL} , the U.K. range is only 4 percent, while other countries range from 10–13 percent.

Comparing U.S. ATR_{NIBT} and ATR_{ADJNL} sector measures in this period to the findings in our 1995 study, mean effective tax rates have declined

in every sector except transportation and utilities. From 1982 to 1991, the regression coefficient for transportation and utilities was 0.15 (0.09) percent using ATR_{NIBT} and ATR_{ADJNI} , respectively. From 1992 to 1997, it was 0.24 (0.14) percent.

Using ATR_{NIBT} (and ATR_{ADJNI}), U.S. multinational average effective tax rates exceed domestic-only tax rates in every sector and are significantly larger everywhere except for trade (and for transportation and utilities when using ATR_{ADJNI}). U.S. multinationals in the finance, insurance, and real estate sector face the largest differential tax rate compared to their domestic counterparts. Using ATR_{NIBT} (ATR_{ADJNI}), the regression coefficient implies effective tax rates are 12 (10) percentage points higher for U.S. finance, insurance, and real estate multinationals than they are for U.S. domestics. This finding contrasts with the 1 (4) percentage point spread in our 1995 study, when multinationals in mining and construction faced the largest differential.

Using ATR_{NIBT} and ATR_{ADJNI} , U.K. multinational average effective tax rates exceed domestic-only tax rates in every sector and are highly significantly greater in all except mining and construction. Excluding mining and construction, the differentials range from 6–11 (3–8) percentage points using ATR_{NIBT} (ATR_{ADJNI}). U.K. multinational spreads are up in every sector. We reported in 1995 that the maximum differential in any sector was 6 (3) using ATR_{NIBT} (ATR_{ADJNI}).

5.6 Robustness Checks

The findings in this study are robust when subjected to a battery of specification tests, with the exception of the final test reported below. Conclusions previously reported are unchanged when UNCON is deleted, average effective tax rates are allowed to exceed 70 percent, the multinational categorical variable is deleted, revenues are added as an explanatory variable to capture company size differences, and all observations with negative income are excluded. In the last sensitivity test, we exclude all observations for which there is not a positive tax payment. Conclusions drawn from the coefficients on the COUNTRY variable are unchanged. However, results differ from the prior multinational estimates. The $US \times MN$ and $UK \times MN$ coefficients are less than one-third of the coefficients reported in Table 5, and the $US \times MN$ coefficient is insignificant when ATR_{ADJNI} is the dependent variable. Thus, the U.S. multinational tax differential is quite sensitive to the inclusion of companies receiving tax refunds or generating net operating loss carryforwards. This finding suggests that domestic net operating losses are largely responsible for the prior inferences that U.S. multinationals pay significantly higher taxes than their domestic-only counterparts. This finding is consistent with the difference

between multinationals and domestics being one of profitability, not taxation. Multinationals face higher taxes because they are inherently more profitable firms.

6. CONCLUSIONS

Few areas of public policy are under as much pressure from changing technology and a global capital market as the U.S. system of taxing multinational corporations. This unraveling has been recently highlighted by WTO decisions and corporate inversions, but the entire area of taxation has long needed careful rethinking. This paper attempts to estimate the tax costs of being a U.S. multinational.

We find that companies domiciled in the U.S. face higher tax burdens than do U.S. domestic-only companies, higher tax burdens than do Canadian multinationals, and tax burdens similar to those of British multinationals. Our prior evidence and the new evidence presented here is consistent with at least some U.S. companies facing heavier tax burdens because they are globally positioned.

Given the many changes in business and taxes during the 1990s, we find remarkably similar results to our 1995 study. The trend is increased tax burdens outside Japan and particularly so for U.S. and British multinationals. Japanese companies continue to have higher average effective tax rates, but less so than in the 1980s. Canada continues to have the lowest tax rates. U.S. and British multinationals face increasingly greater tax burdens than their domestic counterparts, particularly in the finance, insurance, and real estate industry.

We close with two important caveats that are discussed in detail above. First, these estimates are only as good as the ability of financial statement disclosures to capture the tax position of firms. We use book numbers because a multinational study of this nature cannot be conducted using tax returns. Second, taxes are a function of profitability. To the extent our analysis excludes variables that are correlated with profitability and thus taxes, it is possible that we have misinterpreted the results.

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