

Repatriation Taxes and Dividend Distortions

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Abstract - This paper analyzes the effect of repatriation taxes on dividend payments by the foreign affiliates of American multinational firms. The United States taxes the foreign incomes of American companies, grants credits for any foreign income taxes paid, and defers any taxes due on the unrepatriated earnings for those affiliates that are separately incorporated abroad. This system thereby imposes repatriation taxes that vary inversely with foreign tax rates and that differ across organizational forms. As a consequence, it is possible to measure the effect of repatriation taxes by comparing the behavior of foreign subsidiaries that are subject to different tax rates and by comparing the behavior of foreign incorporated and unincorporated affiliates. Evidence from a large panel of foreign affiliates of U.S. firms from 1982 to 1997 indicates that 1 percent lower repatriation tax rates are associated with 1 percent higher dividends. This implies that repatriation taxes reduce aggregate dividend payouts by 12.8 percent, and, in the process, generate annual efficiency losses equal to 2.5 percent of dividends. These effects would disappear if the United States were to exempt foreign income from taxation.

INTRODUCTION

The U.S. system of taxing foreign income attracts a great deal of attention both from taxpayers and from reformers who feel that superior alternatives are available. Reform advocates point to the system's complexity, the burden it imposes on American companies, and the inefficient incentives it creates.¹ These considerations are often taken to imply that the alternative of territorial taxation, in which income earned abroad by American multinational companies would not be subject to U.S. taxation, would improve efficiency and thereby enhance the competitive positions of American firms in the world marketplace. Since American firms would then no longer pay taxes to the United States on income received from foreign affiliates, it follows that they would be free to arrange their financial and other affairs in ways that advance objectives other than avoiding repatriation taxes.

This paper analyzes the likely impact of territorial taxation on dividend repatriations from foreign affiliates. Under current U.S. law, American firms owe taxes to the United

¹ Hufbauer (1992) is a classic example.

States on all of their worldwide incomes, though they are entitled to claim credits against these tax liabilities for foreign income taxes paid. In addition, the income of separately-incorporated foreign subsidiaries, in contrast to that of unincorporated branch affiliates, is untaxed until repatriated as dividends. Since foreign tax credits attenuate, but often do not eliminate, U.S. tax liabilities on foreign income, it follows that the payment of a dividend from a foreign subsidiary to its American parent company frequently generates a tax obligation that might otherwise be deferred or potentially avoided altogether. The adoption of a territorial system would remove the incentive to delay paying dividends in order to avoid U.S. taxation.

Evaluating the impact of adopting territorial income taxation entails extrapolating from observed behavior, inasmuch as the United States does not currently tax income on a territorial basis. American-owned affiliates in foreign countries are taxed at different rates by foreign governments, thereby inducing variation in the rates at which the United States taxes dividend repatriation, since the tax rate generally equals the difference between the U.S. tax rate and the foreign tax rate. Hence a comparison of the dividend repatriation behavior of otherwise-similar affiliates located in countries with differing tax rates and with different organizational forms provides evidence of the impact of repatriation taxes on proclivities to pay dividends.

This study analyzes the behavior of a large panel of U.S.-owned affiliates over the 1982-97 period, using annual affiliate-level information reported to the Bureau of Economic Analysis (BEA) of the U.S. Department of Commerce. Three aspects of this study distinguish it from earlier studies of dividend repatriations that analyze data reported on U.S. tax forms (and that are available only for incorporated affiliates in certain even-numbered years).

The first is that it is possible to specify the dividend payout equation as a Lintner process, in which lagged dividends influence current year dividends, since the BEA data are collected every year. Second, the BEA data can be used to compare the dividend behavior of U.S.-owned incorporated affiliates to that of U.S.-owned foreign branches, which is enlightening since dividend remittances from foreign branches do not trigger U.S. tax liabilities. Third, patterns revealed in the BEA data can be compared to those appearing in the tax return data, thereby offering a check of the extent to which reporting biases, accounting conventions, and other sources of measurement variation may be responsible for results obtained by analyzing tax information.

The evidence indicates that dividend remittances from incorporated foreign affiliates are sensitive to the associated tax costs. Ten percent higher repatriation taxes are associated with 10 percent lower dividends. Remittances from foreign branches do not trigger repatriation taxes, and do not exhibit the same country patterns as do remittances from incorporated foreign affiliates. The Lintner specification of the dividend process fits observed behavior very well, with lagged dividends exerting large and statistically significant effects on current dividends, even in specifications that include parent fixed effects. The results imply that U.S. adoption of a territorial system of taxation would increase aggregate dividend payouts by 12.8 percent, the effects of course varying sharply between affiliates in different tax situations.

Repatriation taxes reduce economic efficiency by creating stronger incentives to remit dividends from some foreign affiliates than they do from others. This loss of economic efficiency has the distributional and incentive effects of an extra tax imposed on American multinational firms—effects that would disappear if the United

States were to adopt territorial taxation.² Base case estimates imply that the annual efficiency loss associated with dividend repatriation taxes equals 2.5 percent of dividends. While sizable by itself, such a figure represents only a fraction of the total welfare gains from moving to territorial taxation given the other distortions associated with the current system.

The second section of the paper reviews the economic theory of dividend remittances, paying special attention to the tax costs associated with dividend receipts from foreign sources. The second section also surveys existing evidence of the impact of repatriation taxes on propensities to pay dividends from foreign subsidiaries and introduces the Lintner framework for analyzing the influence of repatriation taxes on dividend policy. The third section describes the available information on the behavior of the foreign affiliates of American multinational firms, and analyzes the tax environments in which they operate. The fourth section presents the results of estimating the impact of repatriation taxes on repatriation behavior. The fifth section uses the results obtained from the dividend regressions to analyze the potential welfare gains from moving to a territorial tax system. The sixth section is the conclusion.

TAX MOTIVATIONS FOR DIVIDEND REMITTANCES

Dividend payments from an incorporated subsidiary abroad to its American parent may give rise to tax liabilities within the United States. Accordingly,

these potential tax liabilities may figure importantly in the determination of dividend policy for American multinationals. In order to understand these concerns, a description of some of the relevant features of the U.S. tax treatment of American multinational firms follows. Several other concerns, such as the ability to monitor managers overseas and internal capital budgeting, also might influence dividend policy within firms, and are considered separately in Desai, Foley, and Hines (2001).

*The Taxation of U.S. Multinationals*³

Almost all countries tax income generated by economic activity that takes place within their borders. In addition, many countries—including the United States—tax the foreign incomes of their residents. In order to prevent double taxation of the foreign income of Americans, U.S. law permits taxpayers to claim foreign tax credits for income taxes (and related taxes) paid to foreign governments.⁴ These foreign tax credits are used to offset U.S. tax liabilities that would otherwise be due on foreign-source income. The U.S. corporate tax rate is currently 35 percent, so an American corporation that earns \$100 in a foreign country with a 10 percent tax rate pays taxes of \$10 to the foreign government and \$25 to the U.S. government, since its U.S. corporate tax liability of \$35 (35 percent of \$100) is reduced to \$25 by the foreign tax credit of \$10.

Americans are permitted to defer U.S. tax liabilities on certain unrepatriated foreign profits until they receive such prof-

² It is possible for even a territorial tax system indirectly to discourage dividend repatriations if the system allocates expense or income items between domestic and foreign sources based on formulas that include repatriated dividends. Altshuler and Grubert (2001) consider a related example of a territorial tax system that indirectly discourages foreign investment.

³ Portions of this description are excerpted from Hines (1991, 1999a).

⁴ The United States is not alone in taxing the worldwide income of its residents while permitting them to claim foreign tax credits. Other countries with such systems include Greece, Italy, Japan, Norway, and the United Kingdom. Under U.S. law, taxpayers may claim foreign tax credits for taxes paid by foreign firms of which they own at least 10 percent, and only those taxes that qualify as income taxes are creditable.

its in the form of dividends.⁵ This deferral is available only on the active business profits of American-owned foreign affiliates that are separately incorporated as subsidiaries in foreign countries. The profits of unincorporated foreign businesses, such as those of American-owned branches in other countries, are taxed immediately by the United States. Interest, rent, and royalty income received from foreign countries also represents foreign-source income on which U.S. tax obligations cannot be deferred.

U.S. tax law contains provisions designed to prevent American firms from delaying the repatriation of lightly-taxed foreign earnings. These tax provisions apply to controlled foreign corporations, which are foreign corporations owned at least 50 percent by American individuals or corporations who hold stakes of at least 10 percent each. Under the Subpart F provisions of U.S. law, the passive income of controlled foreign corporations is “deemed distributed,” and therefore immediately taxable by the United States, even if not repatriated as dividend payments to American parent firms.⁶

Because the foreign tax credit is intended to alleviate international double taxation, and not to reduce U.S. tax liabilities on profits earned *within* the United

States, the foreign tax credit is limited to U.S. tax liability on foreign-source income. For example, an American firm with \$200 of foreign income that faces a U.S. tax rate of 35 percent has a foreign tax credit limit of \$70 (35 percent of \$200). If the firm pays foreign income taxes of less than \$70, then the firm would be entitled to claim foreign tax credits for all of its foreign taxes paid. If, however, the firm pays \$90 of foreign taxes, then it would be permitted to claim no more than \$70 of foreign tax credits.

Taxpayers whose foreign tax payments exceed the foreign tax credit limit are said to have “excess foreign tax credits;” the excess foreign tax credits represent the portion of their foreign tax payments that exceed the U.S. tax liabilities generated by their foreign incomes. Taxpayers whose foreign tax payments are smaller than their foreign tax credit limits are said to be in “excess limit” or to have “deficit foreign tax credits.” American law permits taxpayers to use excess foreign tax credits in one year to reduce their U.S. tax obligations on foreign source income in either of the two previous years or in any of the following five years.⁷

In practice, the calculation of the foreign tax credit limit entails certain additional complications, notable among which is

⁵ Deferral of home-country taxation of the unrepatriated profits of foreign subsidiaries is a common feature of systems that tax foreign incomes. Other countries that permit this kind of deferral include Canada, Denmark, France, Germany, Japan, Norway, Pakistan, and the United Kingdom.

⁶ Subpart F income consists of income from passive investments (such as interest and dividends received from investments in securities), foreign base company income (that arises from using a foreign affiliate as a conduit for certain types of international transactions), income that is invested in United States property, money used offshore to insure risks in the United States, and money used to pay bribes to foreign government officials. American firms with foreign subsidiaries that earn profits through most types of active business operations, and that subsequently reinvest those profits in active lines of business, are not subject to the Subpart F rules, and are therefore able to defer U.S. tax liability on their foreign profits until they choose to remit dividends at a later date.

⁷ Foreign tax credits are not adjusted for inflation, so are generally the most valuable if claimed as soon as possible. Barring unusual circumstances, firms apply their foreign tax credits against future years only when unable to apply them against either of the previous two years.

Firms paying the corporate alternative minimum tax (AMT) are subject to the same rules, with the added restriction that the combination of net operating loss deductions and foreign tax credits cannot reduce AMT liabilities by more than 90 percent. It is noteworthy that, since the AMT rate is only 20 percent, firms subject to the AMT are considerably more likely to have excess foreign tax credits than are firms that pay the regular corporate tax.

that total worldwide foreign income is used to calculate the foreign tax credit limit. This method of calculating the foreign tax credit limit is known as “worldwide averaging.” A taxpayer has excess foreign tax credits if the sum of worldwide foreign income tax payments exceeds this limit. The combination of worldwide averaging and selective repatriation of dividends from subsidiaries located in countries with differing tax rates implies that the average foreign tax rate used to calculate the foreign tax credit limit need not equal the average foreign tax rate faced by a firm’s foreign affiliates.⁸ The ability of multinational firms to adjust the amount of foreign income received in non-dividend forms (such as interest and royalties) contributes to their control over whether or not they have excess foreign tax credits.

For firms with deficit foreign tax credits, dividend remittances from foreign subsidiaries to their American parents generate U.S. tax liabilities that are functions of differences between foreign tax rates and the U.S. corporate tax rate. Generally speaking, firms owe U.S. taxes based on the difference between the applicable foreign tax rate and the U.S. rate; if the U.S. tax rate exceeds the foreign tax rate, then the effective repatriation tax equals the difference between the two.⁹ If, instead, the foreign tax rate exceeds the U.S. tax rate, then dividends trigger no additional U.S. tax liability, and taxpay-

ers can apply any difference against U.S. tax liabilities on other foreign income. Dividend remittances from unincorporated foreign branches do not have any U.S. tax consequences (since U.S. taxes are due on branch profits whether or not dividends are paid), and therefore provide a useful control group against which to measure the impact of repatriation taxes for incorporated foreign subsidiaries. Dividend payments from foreign subsidiaries whose parent companies have excess foreign tax credits that would otherwise go unused also generate no U.S. tax liabilities. Since in practice it is difficult to identify such parent companies, and since foreign tax credit situations are endogenous to repatriation behavior and to other behavior that is jointly determined with repatriations, the empirical work that follows does not attempt to adjust repatriation taxes for parent foreign tax credit situations. As a result, the estimates measure the average responsiveness of the whole sample, including the behavior of any affiliates whose parents have chronic excess foreign tax credits.

Implications for Dividend Remittances

The potential tax liability due upon dividend repatriation need not influence the dividend policies of American multinationals. Applying the “new view” or “trapped equity” view of dividend taxation as elaborated by King (1977),

⁸ Average foreign income tax rates paid by foreign affiliates reflect investment decisions as well as transfer pricing practices that affect the location of reported taxable income. There is ample evidence, surveyed by Hines (1999a), that both types of decisions are sensitive to their tax implications.

⁹ Foreign governments may also impose withholding taxes on dividend payments. Withholding taxes do not change the repatriation tax liabilities of firms with deficit foreign tax credits, since they necessitate payments to foreign governments for which such American parents are eligible to claim immediate offsetting foreign tax credits. For firms with excess foreign tax credits, withholding taxes represent net tax liabilities, but since withholding taxes have permanent characteristics (rates very seldom change), they cannot be avoided and therefore are unlikely to influence repatriation patterns. An appropriate treatment of withholding taxes in a repatriation equation requires an understanding of the time-varying nature of parent and affiliate tax situations, which is beyond the scope of this paper; as a result, the empirical work omits consideration of withholding taxes. This may not be an important omission, since these withholding taxes are typically imposed at very low rates. The BEA benchmark data indicate that, in 1994, majority-owned nonbank affiliates of nonbank U.S. parents paid a total of \$1.075 billion in withholding taxes on \$37.989 billion of dividends, for an average tax rate of 2.8 percent.

Auerbach (1979), and Bradford (1981) in the case of purely domestic companies, Hartman (1985) demonstrates that repatriation taxes represent unavoidable costs faced by mature subsidiaries that finance their investments out of retained earnings. If the repatriation tax rate is constant over time, then dividend payout policies that maximize the present discounted value of pre-tax flows from foreign subsidiaries also maximize after-repatriation-tax receipts by their parents. Conversely, transitory changes in the repatriation tax rate, including changes in the excess or deficit foreign tax credit status of parents, will affect dividend behavior and firm valuation. As a result, some empirical studies emphasize the distinction between temporary and permanent changes in repatriation taxes and the associated effects of those changes on dividend payouts.

Hines and Hubbard (1990) analyze a cross-section of U.S. multinationals using tax return data from 1984 in an effort to determine the sensitivity of multinational dividends to tax costs. In their sample, Hines and Hubbard note that large aggregate payouts are the result of selective and infrequent dividend payments by affiliates. Using this cross-section of data, they conclude that a 1 percent decrease in the repatriation tax is associated with a 4 percent increase in dividend payout rates.¹⁰ The evidence provided in Hines and Hubbard suggests that tax considerations are very important determinants of the timing of dividend repatriations.

The cross-section used by Hines and Hubbard makes it impossible to distinguish the effects of transitory and permanent changes in repatriation taxes. Altshuler, Newlon, and Randolph (1995) attempt to identify permanent and transitory tax costs by creating an unbalanced

panel of subsidiaries using tax returns from 1980, 1982, 1984, and 1986. Permanent repatriation tax costs for subsidiaries are constructed from a first-stage regression that uses as explanatory variables statutory withholding tax rates and average tax rates of other subsidiaries in the same country. Altshuler, Newlon, and Randolph find, as predicted by Hartman (1985), that transitory tax costs influence dividend payments while permanent tax costs do not. The effort to disentangle the permanent and temporary tax costs of dividends is limited, however, by the very small number of annual observations for each firm.

Grubert (1998) and Grubert and Mutti (2001) report that dividends are sensitive to tax costs in their analyses of cross-sections of tax returns for 1990 and 1992, respectively. Hines (1994, 1995) and Grubert (1998) offer evidence that the use of alternatives to dividends, such as interest and royalty payments, likewise respond to the tax costs associated with repatriation. Grubert (1998) presents somewhat anomalous results suggesting that levels of retained earnings are insensitive to tax costs. This evidence is consistent with the sensitivity of dividends to repatriation taxes under Grubert's interpretation that repatriation taxes do not affect net investment by subsidiaries, since firms can substitute alternatives to dividends in order to repatriate income to parents.¹¹

The complexity of the existing system of taxing American multinationals has prompted renewed interest in the adoption of a system of territorial taxation characterized by the exemption from taxation of dividends received from foreign affiliates. Evaluation of a potential transition to dividend exemption, as envisioned by Grubert and Mutti (2001) for example, re-

¹⁰ Dividend payout rates are calculated as dividends over assets. In the Hines and Hubbard sample, only 16 percent of subsidiaries with parents filing returns report paying dividends. Altshuler and Newlon (1993) find similar patterns in a related sample with a slightly reduced elasticity of dividends to tax costs.

¹¹ See also the evidence reported by Altshuler and Grubert (forthcoming), who examine methods used by foreign subsidiaries to defer repatriation taxes.

quires estimating the revenue consequences of such a change, the responses of multinational firms to changed investment incentives, and the efficiency costs of the existing system. Grubert and Mutti (2001), along with Grubert (2001a), suggest that U.S. government revenue would actually increase under a territorial tax regime, as current revenues are minimal and the revenue consequences of changed expense allocation under dividend exemption would more than offset any losses. Regarding investment incentives, Grubert and Mutti (2001) and Altshuler and Grubert (2001) project a limited change in the investment patterns of multinationals under dividend exemption given the low repatriation taxes currently paid by U.S. multinationals investing in low-tax countries. The analysis that follows complements these efforts by employing a Lintner framework to estimate the efficiency consequences of the current system of repatriation taxation and the likely response of dividend policies to moving to a territorial tax regime.

The Lintner Analysis of Dividend Policy

In order to estimate the impact of repatriation taxes on intrafirm dividends, it is useful to begin with a framework that incorporates the variety of tax and non-tax factors that influence dividend policy. Lintner (1956) provides such an analytic framework for the determinants of dividends paid by domestic firms to their common shareholders. Using interviews and case studies, Lintner hypothesizes that firms construct targets based on current earnings, and that they adjust their actual dividends gradually to targets over time.¹² Letting target dividends be linear

functions of earnings, $D_{it}^* = \mu + k_{it}E_{it}$, in which D_{it}^* is target dividends, μ is a constant term, E_{it} is after-tax earnings, k_{it} is a possibly time-varying desired rate of payout from marginal earnings, the subscript i indexes firms and the subscript t indexes time, this relationship can be summarized in an estimating equation as:

$$[1] \quad \Delta D_{it} = \alpha(D_{it}^* - D_{it-1}) + \varepsilon_{it}.$$

In equation [1], ΔD_{it} is the change in firm i 's dividends between $t - 1$ and t , α is an adjustment parameter, and ε_{it} is an error term. Substituting for the definition of target dividends and combining terms yields:

$$[2] \quad D_{it} = \alpha\mu + \alpha k_{it}E_{it} + (1 - \alpha)D_{it} + \varepsilon_{it}.$$

Equation [2] suggests that if firms pay their target dividends every period, then the coefficient on lagged dividends will equal zero as the adjustment parameter is unity. If, however, annual adjustment is only partial, then lagged dividends will enter the payout equation with a positive coefficient, and target payout ratios can be inferred from the estimated constant term and the coefficients on lagged dividends and current earnings.¹³

This framework can usefully be extended to the relationship between foreign affiliates and their American parents in order to isolate the importance of repatriation taxes in influencing dividend payments. As developed in Desai, Foley, and Hines (2001), the Lintner equation represented in equation [2] corresponds to a manager setting a target affiliate payout rate from marginal earnings, k_{it} , in response to the tax cost associated with paying out earnings. Actual dividend pay-

¹² While the model developed in Lintner (1956) was based on case studies of dividend policy, the accompanying empirical work employed aggregate time-series data for the U.S. economy. Beginning with Fama and Babiak (1968), several studies have implemented Lintner models with firm-level data to understand the determinants of dividend policy.

¹³ Estimating variants of equation [2] without constant terms (as in Desai, Foley, and Hines, 2001) produces results that are very similar to those obtained by estimating equation [2] with constants.

ments reflect partial adjustment (governed by the parameter α) to that target rate in response to a variety of non-tax concerns. For example, managers might reduce target payout rates in response to higher repatriation taxes and adjust their ratios based on non-tax factors—such as monitoring or liquidity concerns—that dictate how dividends are used within a firm.

Since target payout rates reflect tax penalties associated with paying dividends, variations in repatriation taxes can be used to estimate the responsiveness of dividends to repatriation taxes in the Lintner framework. In particular, variations arising from organizational form—dividends from incorporated affiliates trigger a repatriation tax while dividends from branches do not—and from local country tax rates can be employed to estimate the behavioral response to such taxes. The analysis below estimates Lintner equations separately by organizational form, interacting local tax rates with current earnings in order to assess the responsiveness of payout rates to repatriation taxes.

DATA AND DESCRIPTIVE STATISTICS

The Bureau of Economic Analysis (BEA) Annual Survey of U.S. Direct Investment Abroad from 1982 through 1997 provides data on the financial and operating characteristics of U.S. firms operating abroad. These surveys require respondents to file detailed financial and operating items for each foreign affiliate and provide information on the value of transactions between U.S. parents and their foreign affiliates. The International Investment and Trade in Services Survey Act governs the collection of the data and the Act ensures that “use of an individual company’s data for tax, investigative, or regulatory purposes is prohibited.” Willful noncompliance with the Act can result

in penalties of up to \$10,000 or a prison term of one year. As a result of these assurances and penalties, BEA believes that coverage is close to complete and levels of accuracy are high.¹⁴

U.S. direct investment abroad is defined as the direct or indirect ownership or control by a single U.S. legal entity of at least 10 percent of the voting securities of an incorporated foreign business enterprise or the equivalent interest in an unincorporated foreign business enterprise. A U.S. multinational entity (MNE) is the combination of a single U.S. legal entity that has made the direct investment, called the U.S. parent, and at least one foreign business enterprise, called the foreign affiliate. In order to be considered as a legitimate foreign affiliate, the foreign business enterprise should be paying foreign income taxes, have a substantial physical presence abroad, have separate financial records, and should take title to the goods it sells and receive revenue from sales. In order to determine ownership stakes in the presence of indirect ownership, BEA determines the percentage of parent ownership at each link in the ownership chain and then multiplies these percentages to compute the parent’s total effective ownership.

BEA collects sufficient information to link affiliate level data through time to create a panel. By checking the status of all affiliates that filed forms in the previous year and are expected to fall within reporting requirements, BEA identifies which enterprises leave the sample. By monitoring news services for information on mergers, acquisitions, and other activities of U.S. companies, BEA identifies which new enterprises should be included in the sample. To check the integrity of reported data, BEA accountants confirm that information satisfies certain integrity checks. For example, BEA checks whether

¹⁴ Mataloni (1995) provides a detailed description of the BEA data.

the owner's equity at time t is roughly equal to the owners' equity at time $t - 1$ plus any retained earnings, plus additional paid-in-capital, plus unrealized gains and losses, and plus any translation adjustments that account for changes in the value of foreign currencies that are not picked up in net income calculations.

The foreign affiliate survey forms that U.S. MNEs are required to complete vary depending on the year, the size of the affiliate, and the U.S. parent's percentage of ownership of the affiliate. The most extensive data are available for 1982, 1989, and 1994, when BEA conducted Benchmark Surveys. In these years, all affiliates with sales, assets, or net income in excess of \$3 million in absolute value, and their parents, were required to file reports. In non-benchmark years between 1982 and 1997, exemption levels were higher. From 1983–88, all affiliates with an absolute value of sales, assets, or net income less than \$10 million were exempt, and this cutoff increased to \$15 million from 1990–93 and \$20 million from 1995–97. While the BEA does estimate data in order to arrive at universe totals, the following analysis excludes estimated data.¹⁵

To classify the industrial activities of parents and affiliates, BEA assigns each domestic and foreign entity to an international surveys industry (ISI) classification code that is based on the Standard Industrial Classification (SIC) scheme. A typical ISI code roughly covers the same scope of activities as a three-digit SIC code. The classification of foreign affiliate data tends to be precise because parents can consoli-

date foreign affiliate operations for BEA reporting only if they are in the same country and the same three-digit ISI industry or if they are integral parts of the same business operation. Since the internal financial policies of firms primarily engaged in financial services is likely to differ substantially from that of other firms, all affiliates of multinationals that have a parent in financial services and all affiliates in such industries are excluded.¹⁶

Figure 1 illustrates the changing organizational forms of the foreign affiliates of American multinationals from 1982 to 1997. Figure 1 illustrates the growing importance of majority-owned incorporated affiliates relative to both minority-owned incorporated affiliates and branch affiliates over the period. Over the period from 1982 to 1997, majority-owned incorporated affiliates grew from 71.5 percent to 86.3 percent of the universe, while minority-owned incorporated affiliates declined from 15.3 to 8.8 percent,¹⁷ and branch affiliates declined from 11.4 to 4.4 percent of the universe.

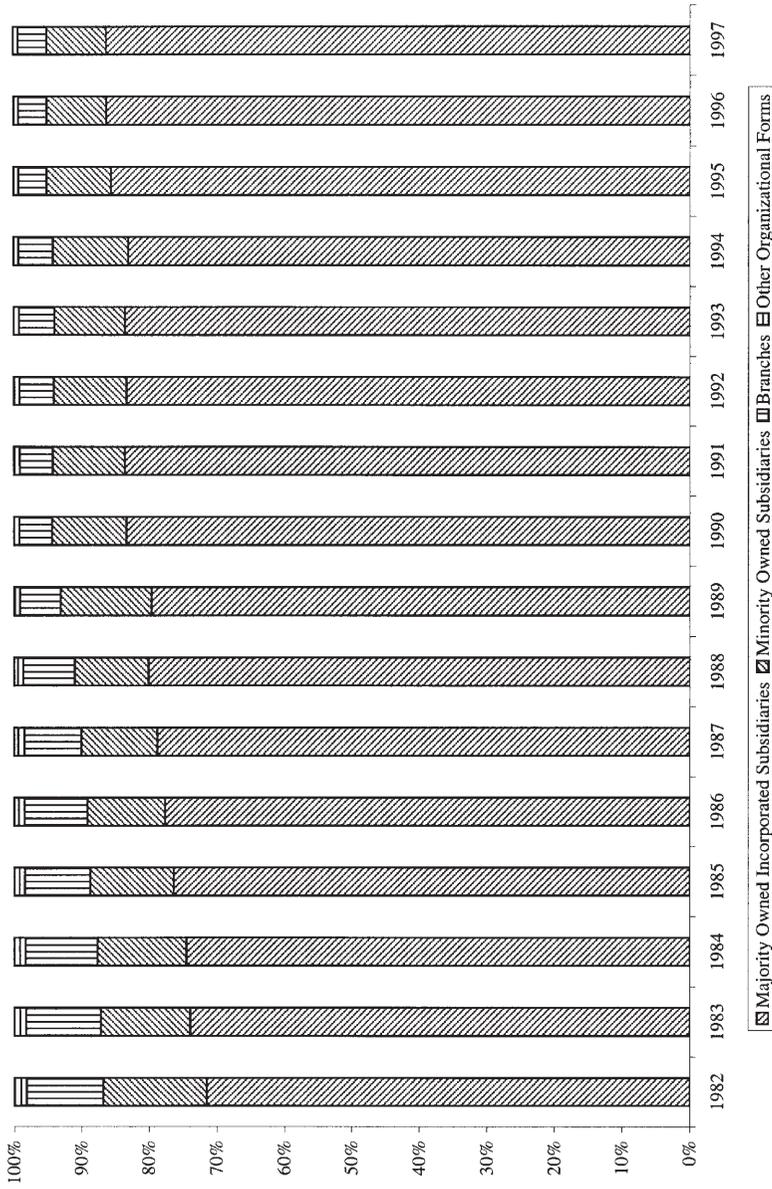
Table 1 provides descriptive statistics for the panel data employed in the empirical work that follows. For both majority-owned incorporated affiliates and for branches, this table first reports information on the number of affiliates in the sample and the frequency and size of payout ratios for the years 1985, 1990, and 1995. As seen in Figure 1, the number of majority-owned incorporated affiliates increases over the sample period while the number of branches decreases. As a result of changes in reporting requirements, the

¹⁵ BEA uses reported data to estimate universe totals when surveys cover only larger affiliates or when only certain affiliates provide information on particular survey forms. Estimated data is unlikely to have a significant impact on the BEA's published data at the industry or country level as data based on actual reports exceed 90 percent of the estimated totals of assets and sales in each of the years between 1982 and 1997. To avoid working with estimated data, only affiliates required to provide all the information associated with a particular analysis are considered.

¹⁶ Specifically, all affiliates primarily operating in, or with parents that are classified as primarily operating in, ISI codes 600 through 679 are excluded. This includes affiliates classified as holding companies.

¹⁷ Desai and Hines (1999) offer evidence that the declining share of minority-owned incorporated affiliates is at least in part attributable to U.S. tax law changes.

Figure 1. The Changing Organizational Form of U.S. Direct Investment Abroad, 1982-97



Note: The figure presents the share of affiliates of U.S. parents operating as majority owned incorporated subsidiaries, minority owned incorporated subsidiaries, branches and as other organizational forms from 1982 to 1997.

TABLE 1
DESCRIPTIVE STATISTICS FOR THE PANEL OF MULTINATIONAL AFFILIATES

Majority-Owned Incorporated Subsidiaries			
<i>Cross Sectional Data</i>	1985	1990	1995
Number of entities	5,343	7,168	7,389
Number of entities reporting dividends	5,343	7,168	4,263
Number of associated parent organizations	823	1,154	765
% of affiliates reporting positive dividends	35.9	29.7	29.0
Median ratio of dividends to net income for payers (%)	67.7	72.3	72.2
			Standard
<i>1982-97 Panel Summary Statistics</i>	Mean	Median	Deviation
Assets	99,785	31,611	294,484
Net income	6,296	1,573	21,380
Dividends	3,821	—	20,189
Interaction of country tax rate and net income	1,926	469	6,847
Interaction of affiliate tax rate and net income	2,357	588	7,099
Branch Affiliates			
<i>Cross Sectional Data</i>	1985	1990	1995
Number of entities	676	409	359
Number of entities reporting dividends	676	409	172
Number of associated parent organizations	72	49	31
% of affiliates reporting positive dividends	27.4	20.0	30.2
Median ratio of dividends to net income for payers (%)	91.3	94.5	83.1
			Standard
<i>1982-97 Panel Summary Statistics</i>	Mean	Median	Deviation
Assets	79,499	22,817	187,654
Net income	6,629	1,132	28,312
Dividends	5,014	—	26,540
Interaction of country tax rate and net income	1,890	256	9,680
Interaction of affiliate tax rate and net income	3,270	398	12,297

Note: The top panel provides cross sectional data for 1985, 1990, and 1995 and panel summary statistics for incorporated affiliates. The bottom panel provides cross sectional data for 1985, 1990, and 1995 and panel summary statistics for unincorporated branch affiliates. All dollar figures are in thousands.

number of affiliates reporting dividends declines substantially in 1994.¹⁸ The percent of affiliates paying a positive dividend is around 30 percent over the entire sample, and the prevalence of pay-

ers is higher among incorporated than unincorporated affiliates in 1985 and 1990. Payout ratios of incorporated affiliates also appear to be slightly lower than payout ratios of branches.¹⁹ Table 1 also dis-

¹⁸ The sample of foreign affiliates reporting dividends varies from year to year. In the non-benchmark years before 1994, all surveyed majority-owned incorporated affiliates and branches report dividends. In the non-benchmark years after 1994, BEA introduced a long and short form for majority owned affiliates, and only those surveyed affiliates that filed the long form, or those with an absolute value of sales, assets, or net income in excess of \$50 million, reported dividend information. The details of reporting requirements are more complicated in benchmark years. In 1982, all surveyed affiliates report total dividend payments. In 1989, all surveyed affiliates report dividends paid directly to the U.S. parent. This figure is converted to total dividends simply by dividing it by the fraction of an affiliate owned by its parent—under the realistic assumption that dividends are distributed pro rata to all owners. In 1994, all surveyed affiliates with an absolute value of sales, assets, or net income greater than \$50 million report total dividends and all other surveyed affiliates report dividends paid directly to the U.S. parent. For these smaller affiliates, total dividends are again calculated by dividing parent dividends by the parent's ownership fraction. Some affiliates are owned indirectly by their parent companies through chains of foreign subsidiaries; since parents receive dividends only indirectly from such foreign affiliates, it is impossible to calculate total dividends from distributions to parents. The sample excludes observations of such affiliates in 1989, and those small affiliates for which total dividend information is not available in 1994.

¹⁹ The survey forms specifically distinguish between net income and remittances for incorporated and unincorporated affiliates. In particular, the forms classify dividends paid by unincorporated affiliates as the "amount of current- and prior-period net income remitted to owners."

plays summary statistics for the entire 1982–97 panel for incorporated affiliates and branches. Incorporated affiliates tend to be larger than branches, as measured by mean and median assets.

Analysis of the responsiveness of affiliates to varying tax costs requires an estimate of the relevant tax rate facing an affiliate. Table 2 provides weighted means and standard deviations by year for the “country” tax rates and “affiliate” tax rates that are employed in the regression analysis described below. Both measures are computed using the sample of affiliate observations with positive net income. Tax rates are first constructed for each affiliate in every year as the ratio of foreign income taxes paid to the sum of foreign income taxes and net income. The country tax rate measure represents the median of these affiliate tax rates for all American affiliates operating within a country.²⁰ The means and standard de-

viations of those medians, weighted by affiliate after-tax net income for affiliates with positive net income, are presented in the first two columns of Table 2. Regressions using these country tax rates as independent variables base their findings on cross-country variation that obscures intra-country variation in tax rates. The alternative affiliate tax rates, annual weighted means of which are reported in column 3 of Table 2, capture the intra-country variation in tax rates; this measure is simply the tax rate calculated above by affiliate after trimming tax rates at 0 and 100 percent.²¹ Unsurprisingly, the standard deviation of affiliate tax rates over the sample period is 20.9 percent, or nearly twice the standard deviation of country tax rates. The decline in affiliate tax rates presented in Table 2 corresponds to the decline in average foreign tax rates documented in Grubert (2001b).

TABLE 2
FOREIGN TAX RATES, 1982–97

Year	Country Tax Rates (%)		Affiliate Tax Rates (%)	
	Mean	Standard Deviation	Mean	Standard Deviation
1982	38.6	12.7	37.9	22.0
1983	34.1	14.1	34.0	24.3
1984	35.5	11.9	35.2	23.9
1985	34.1	15.3	33.7	24.3
1986	34.5	14.1	29.9	21.5
1987	34.4	14.0	28.5	21.4
1988	34.0	13.1	27.4	20.2
1989	34.0	12.2	28.9	19.3
1990	31.8	13.7	25.3	21.7
1991	31.8	12.6	23.7	19.7
1992	30.6	12.5	24.0	19.9
1993	29.4	11.6	21.7	20.1
1994	28.2	11.2	22.0	18.7
1995	28.2	12.3	22.6	19.0
1996	28.6	13.2	22.2	19.1
1997	27.8	12.5	21.1	18.5
1982–97	31.3	13.2	25.7	20.9

Note: Tax rate calculations are based on all affiliates reporting foreign income taxes paid and positive net income. The affiliate tax rate is the ratio of foreign income taxes paid to the sum of net income and foreign income taxes paid for a particular affiliate in a particular year. The country tax rate is the median of this ratio among all affiliates in a particular country during a particular year. Tax rates are trimmed at 0 and 100 percent. Means and standard deviations are weighted by after-tax affiliate income.

²⁰ Country tax rates are trimmed to lie between 0 and 100 percent, which requires adjustments to 112 of the 131,358 affiliate-year observations.

²¹ Out of 95,779 observations on tax rates, 4,723 negative tax rates are trimmed at 0 percent and 890 tax rates above 100 percent are trimmed to 100 percent.

RESULTS

This section presents the results of estimating dividend payout equations on subsets of the 1982–97 panel described above. Separate equations are estimated for incorporated and unincorporated affiliates. Distinguishing by organizational form offers a check of whether any observed sensitivity of dividend payout ratios to repatriation taxes (as captured by foreign tax rates) among incorporated affiliates also appears for unincorporated affiliates.²² If sensitivity to taxes were present across both organizational forms, the results might be interpreted as reflecting something other than tax incentives. The data are fit to Lintner specifications and are estimated both by OLS and Tobit procedures, the latter motivated by the relatively small fraction (roughly 30 percent) of the sample paying nonzero dividends. Fixed effects for American parent companies are included in some specifications in an effort to control for the effect of unobserved parent characteristics that may be correlated with affiliate tax rates. Since the Lintner framework requires information on dividends and lagged dividends, the regression analysis only uses observations of affiliates that also report data for the previous year. As a result, all affiliates that report data only once, and all observations of affiliates reporting for the first time, are excluded.²³

The estimation results consistently indicate that higher repatriation taxes

reduce target payout ratios. Table 3 presents the results of estimating Lintner equations on the sample of separately-incorporated foreign affiliates, using country tax rates as proxies for the relevant creditable taxes available upon repatriation. Column 2 reports coefficients from a simple OLS specification. In order to calculate target steady-state payout ratios in the Lintner framework, it is necessary to sum the estimated coefficient on net income and the ratio of the constant term to net earnings; this sum is then divided by one minus the estimated coefficient on lagged dividends. Using the sample mean income of \$6,296 (in thousands), the estimated constant term of 273, the 0.33 coefficient on net income, and the 0.26 coefficient on lagged dividends together imply that incorporated affiliates with mean income in zero-tax locations set target payout ratios of 0.51 [$0.51 = (0.04 + 0.33)/(1 - 0.26)$]. The 0.27 coefficient on the interaction of Country-Tax Rates and net income implies that incorporated affiliates in locations with 30 percent tax rates instead set target payout ratios of 0.62 [$0.62 = (0.04 + 0.33 + 0.27*0.3)/(1 - 0.26)$]. The 0.26 coefficient on lagged dividends implies an adjustment parameter of 0.74. As with the firms studied by Lintner, incorporated affiliates partially adjust their dividends to targeted payouts.

The results are robust to alternative specifications explored in the regressions

²² This exercise takes an affiliate's organizational form to be independent of its repatriation policy. Multinational firms choose whether to make their affiliates foreign branches or foreign subsidiaries; to the extent that these choices are dictated by anticipated future repatriation rates, then a comparison of repatriation rates between affiliates with different organizational forms will overstate the impact of tax rate differences. Other characteristics differ between branches and subsidiaries that could be correlated with tax rates and repatriation proclivities. Branch affiliates are concentrated in certain industries, including petroleum, wholesale trade, and services, though not entirely; in the 1997 sample, 26.4 percent of branch affiliates were in non-petroleum manufacturing, compared with 52.1 percent of incorporated affiliates. While the geographic distributions of branches and subsidiaries were not identical, the median foreign tax rate paid by branch affiliates in 1997 was 30.4 percent, compared to 31.1 percent for incorporated affiliates. Based on this information there is no strong reason to suspect that a comparison of the repatriation patterns of branches and subsidiaries would encounter difficulties due to spurious correlation with local tax rates.

²³ In order to ensure the robustness of the results, the sample excludes affiliates in top 0.5 percent and bottom 0.5 percent of net income each year in each regression.

TABLE 3
LINTNER DIVIDEND SPECIFICATIONS FOR INCORPORATED AFFILIATES, COUNTRY-MEDIAN TAX RATES

Dependent Variable: Dividend Payments by Majority-Owned Incorporated Affiliates						
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	298.4515 (97.1920)	273.2120 (98.1784)	350.0693 (106.3705)	327.2801 (107.6823)	-23,283.7300 (1241.0240)	-23,308.5600 (1242.4130)
Net Income of Affiliate	0.4107 (0.0220)	0.3334 (0.0401)	0.4113 (0.0227)	0.3435 (0.0422)	0.5967 (0.0301)	0.4499 (0.0445)
Lagged Dividend Payments	0.2673 (0.0297)	0.2638 (0.0293)	0.2515 (0.0295)	0.2490 (0.0292)	0.3251 (0.0359)	0.3177 (0.0352)
Interaction of Country-Tax Rate and Net Income		0.2725 (0.1217)		0.2382 (0.1286)		0.5196 (0.1292)
Parent Fixed Effects? Tobit or OLS?	No OLS	No OLS	Yes OLS	Yes OLS	No Tobit	No Tobit
R-Squared	0.3610	0.3625	0.3705	0.3716		
Log-Likelihood					-324,776	-324,681
Sigma					29,535	29,466
No. Obs	77,766	77,766	77,766	77,766	77,766	77,766

Note: The dependent variable in all specifications is the dollar value of dividend payments by majority-owned incorporated affiliates. "Net Income of Affiliate" is the after-foreign tax net income of the affiliate in the same year. "Lagged Dividend Payments" is the dollar value of dividend payments by the affiliate in the previous year. "Interaction of Country Tax Rate and Net Income" is the product of the country tax rate, as defined in the text, and "Net Income of Affiliate." Columns 1 and 2 present OLS specifications without fixed effects. Columns 3 and 4 present OLS specifications with parent fixed effects. Columns 5 and 6 present Tobit specifications. Heteroskedasticity-consistent standard errors are presented in parentheses.

reported in columns 3–6.²⁴ Columns 3 and 4 report regressions that add fixed effects that are specific to parent companies and that therefore remain unchanged across time and between affiliates belonging to the same parent group. Inclusion of these fixed effects does not substantially change the estimated coefficients on lagged dividend payments, net income, and net income interacted with tax rates. Columns 5 and 6 report coefficients estimated with a Tobit procedure that controls for the nonnormality of the residuals induced by the fact that dividend payments

cannot be negative. The estimated Tobit coefficients are generally larger than their OLS counterparts. The estimated coefficients in column 6 suggest that the difference in steady-state desired dividend payout ratios for incorporated affiliates in zero-tax locations and those in 30 percent tax rate locations is 0.23 [$0.23 = (0.52 \cdot 0.3) / (1 - .32)$].

Table 4 presents estimated coefficients from the same specifications but for the sample of unincorporated affiliates. Before considering the differential impact of taxes on the dividend behavior of incor-

²⁴ The results are likewise robust to alternative specifications not reported in Tables 3–6. The regression equation specification takes responses to repatriation taxes to be the same every year. Since the time-varying nature of variables such as the U.S. tax rate influences the fraction of American firms with excess foreign tax credits, it follows that responsiveness to repatriation taxes are likely to differ over time, in which case the regression estimates represent something like sample averages. As a check of the importance of time variation, the regressions reported in Table 5 were re-run adding interactions between the affiliate tax rate and income variable and a dummy variable for the post-1986 period. Despite a greater fraction of firms with excess foreign tax credits after the 1986 U.S. tax reduction, only one of these regressions offers any evidence of reduced sensitivity of dividends to repatriation taxes in the post-1986 period. Estimated coefficients from that (Tobit) specification imply that higher repatriation taxes in the post-1986 period continue to reduce dividend payouts, though the implied coefficient is 0.71 instead of the 0.75 reported in column 5 of Table 5.

TABLE 4
LINTNER DIVIDEND SPECIFICATIONS FOR BRANCHES, COUNTRY-MEDIAN TAX RATES

Dependent Variable: Dividend Payments by Branch Affiliates						
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	396.2181 (260.3451)	397.0999 (256.5044)	472.9865 (299.3231)	480.6146 (299.5311)	-28,637.4900 (2971.3050)	-28,615.9100 (2974.9200)
Net Income of Affiliate	0.4461 (0.0645)	0.4108 (0.0978)	0.4528 (0.0656)	0.4238 (0.1055)	0.6519 (0.0772)	0.6170 (0.1071)
Lagged Dividend Payments	0.3282 (0.0927)	0.3272 (0.0927)	0.3041 (0.0940)	0.3037 (0.0939)	0.3461 (0.1050)	0.3449 (0.1052)
Interaction of Country-Tax Rate and Net Income		0.1257 (0.2434)		0.0991 (0.2709)		0.1247 (0.2311)
Parent Fixed Effects? Tobit or OLS?	No OLS	No OLS	Yes OLS	Yes OLS	No Tobit	No Tobit
R-Squared	0.5482	0.5489	0.5650	0.5654		
Log-Likelihood					-24,547	-24,546
Sigma					33,547	33,522
No. Obs	6,373	6,373	6,373	6,373	6,373	6,373

Note: The dependent variable in all specifications is the dollar value of dividend payments by unincorporated branch affiliates. "Net Income of Affiliate" is the after-foreign tax net income of the affiliate in the same year. "Lagged Dividend Payments" is the dollar value of dividend payments by the affiliate in the previous year. "Interaction of Country Tax Rate and Net Income" is the product of the country tax rate, as defined in the text, and "Net Income of Affiliate." Columns 1 and 2 present OLS specifications without fixed effects. Columns 3 and 4 present OLS specifications with parent fixed effects. Columns 5 and 6 present Tobit specifications. Heteroskedasticity-consistent standard errors are presented in parentheses.

porated and unincorporated affiliates, it is instructive to compare estimated coefficients from the basic Lintner specifications in columns 1, 3, and 5 of Table 3, with their counterparts reported in columns 1, 3, and 5 of Table 4. The results are very similar across the incorporated and unincorporated subsamples. The estimated target payout ratios of incorporated affiliates in column 1 of Table 3 is 0.63 [$0.63 = (0.05 + 0.41)/(1 - 0.27)$], while this estimated ratio for branches in column 1 of Table 4 is 0.75 [$0.75 = (0.06 + 0.45)/(1 - 0.33)$]. The estimated adjustment parameters for incorporated and unincorporated affiliates are 0.73 and 0.67 respectively. Of course, examining the data at this level of aggregation across tax rate environments masks the heterogeneity related to differences in the tax treatments of incorporated and branch affiliates.

Since American taxpayers owe U.S. taxes on the foreign incomes of unincorporated affiliates, whether or not that income is repatriated, it follows that host-

country tax rates should have no effect on dividend payment rates to the extent that these tax rates capture the impact of repatriation taxes. The coefficient estimates reported in Table 4 confirm the absence of a significant effect of host country tax rates on the dividend payout ratio of unincorporated foreign affiliates. The 0.13 coefficient on the interaction of country tax rates and net income, reported in column 2 of Table 4, is not statistically significant and is much smaller than its counterpart reported in column 2 of Table 3. Similar results appear in the fixed effects regressions reported in column 4. Even in the Tobit specification reported in column 6 of Table 4 the estimated coefficient on the interaction of country tax rates and net income remains small and insignificant. The 0.12 coefficient on country tax rates interacted with net income, reported in column 6 of Table 4, is particularly small compared with the estimated 0.52 coefficient on the same interaction in the incorporated affiliate regression reported in

column 6 of Table 3. This result suggests that country tax rates have little if any impact on payout ratios of unincorporated affiliates while they do affect payout ratios of incorporated affiliates.

Tables 5 and 6 report the results of regressions that parallel those reported in Tables 3 and 4, but that employ different methods for estimating the relevant tax costs associated with repatriation. Instead of the country tax rate measures used in the regressions reported in Tables 3 and 4, the regressions reported in Tables 5 and 6 employ the affiliate tax rates described above. In Tables 5 and 6, either the affiliate tax rate is simply substituted for the country tax rate or the country tax rate is used as an instrument for the affiliate tax rate. Use of these tax rates reduces the sample size from 77,766 observations to 60,477 observations for incorporated affiliates, since

the affiliate tax rate is defined only for affiliates reporting positive net incomes.

The results reported in column 1 of Table 5 are similar to those reported in column 2 of Table 3, with one difference: the estimated coefficient on the interaction of the tax rate and net income is much larger in the regression reported in Table 5. The coefficient on this interaction is 0.56 in the regression reported in Table 5 that uses the affiliate tax rate, while the same coefficient is 0.27 in the equivalent regression reported in Table 3 using country median tax rates. Estimated coefficients on net income without tax rate interactions are 0.33 both in Table 3 and in Table 5, while estimated coefficients on lagged dividends are 0.26 in Table 3 and 0.23 in Table 5.

The different results stemming from the use of country and affiliate tax rates are consistent with two alternative explana-

TABLE 5
LINTNER DIVIDEND SPECIFICATIONS FOR INCORPORATED AFFILIATES, AFFILIATE TAX RATES

	Dependent Variable: Dividend Payments by Majority-Owned Incorporated Affiliates					
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-607.0329 (154.6309)	-581.9756 (165.0086)	-609.1335 (175.9349)	-572.7080 (190.1521)	-20,351.0100 (1,126.0550)	-20,323.7500 (1070.787)
Net Income of Affiliate	0.3286 (0.0294)	0.3473 (0.0413)	0.3398 (0.0312)	0.3638 (0.0444)	0.3973 (0.0333)	0.4143 (0.0437)
Lagged Dividend Payments	0.2250 (0.0296)	0.2306 (0.0308)	0.2094 (0.0293)	0.2161 (0.0305)	0.2851 (0.0356)	0.2910 (0.0370)
Interaction of Affiliate-Tax Rate and Net Income	0.5635 (0.0903)	0.4690 (0.1787)	0.5479 (0.0949)	0.4260 (0.1957)	0.7519 (0.0991)	0.6644 (0.1841)
Parent Fixed Effects?	No	No	Yes	Yes	No	No
Tobit or OLS?	OLS	OLS	OLS	OLS	Tobit	Tobit
IV with Country Tax Rates?	No	Yes	No	Yes	No	Yes
R-Squared	0.3907		0.4011			
Log-Likelihood					-299,995	-300,025
Sigma					29,316	29,310
No. Obs	60,477	60,477	60,477	60,477	60,477	60,477

Note: The dependent variable in all specifications is the dollar value of dividend payments by majority-owned incorporated affiliates. "Net Income of Affiliate" is the after-foreign tax net income of the affiliate in the same year. "Lagged Dividend Payments" is the dollar value of dividend payments by the affiliate in the previous year. "Interaction of Affiliate Tax Rate and Net Income" is the product of the affiliate tax rate, as defined in the text, and "Net Income of Affiliate." Columns 1 and 2 present OLS specifications without fixed effects. Columns 3 and 4 present OLS specifications with parent fixed effects. Columns 5 and 6 present Tobit specifications. Tobit IV estimates are obtained using the procedure recommended by Newey (1987). In columns 1 through 5, heteroskedasticity-consistent standard errors are presented in parentheses. In column 6, bootstrapped standard errors are presented in parentheses. The number of bootstrap repetitions is chosen following Andrews and Buchinsky (2000) so that the percentage deviation in standard error estimates from using an infinite number of bootstraps is less than 10 percent with probability 0.95.

TABLE 6
LINTNER DIVIDEND SPECIFICATIONS FOR BRANCHES, AFFILIATE TAX RATES

	Dependent Variable: Dividend Payments by Branch Affiliates					
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-1,036.1550 (453.2230)	-1,028.5280 (457.8351)	-983.8666 (554.3380)	-995.0818 (565.0190)	-24,297.9700 (2,476.2230)	-24,222.1900 (2485.687)
Net Income of Affiliate	0.4294 (0.0872)	0.4768 (0.1004)	0.4403 (0.0940)	0.5017 (0.1183)	0.4891 (0.0987)	0.5586 (0.1088)
Lagged Dividend Payments	0.2566 (0.0921)	0.2726 (0.0966)	0.2322 (0.0943)	0.2482 (0.0990)	0.3268 (0.1082)	0.3511 (0.1180)
Interaction of Affiliate-Tax Rate and Net Income	0.3633 (0.1585)	0.1624 (0.2679)	0.3595 (0.1760)	0.1157 (0.3364)	0.4257 (0.1716)	0.1265 (0.2610)
Parent Fixed Effects?	No	No	Yes	Yes	No	No
Tobit or OLS?	OLS	OLS	OLS	OLS	Tobit	Tobit
IV with Country Tax Rates?	No	Yes	No	Yes	No	Yes
R-Squared	0.5695		0.5885			
Log-Likelihood					-22,778	-22,779
Sigma					34,260	34,125
No. Obs	4,602	4,602	4,602	4,602	4,602	4,602

Note: The dependent variable in all specifications is the dollar value of dividend payments by unincorporated branch affiliates. "Net Income of Affiliate" is the after-foreign tax net income of the affiliate in the same year. "Lagged Dividend Payments" is the dollar value of dividend payments by the affiliate in the previous year. "Interaction of Affiliate Tax Rate and Net Income" is the product of the affiliate tax rate, as defined in the text, and "Net Income of Affiliate." Columns 1 and 2 present OLS specifications without fixed effects. Columns 3 and 4 present OLS specifications with parent fixed effects. Columns 5 and 6 present Tobit specifications. Tobit IV estimates are obtained using the procedure recommended by Newey (1987). In columns 1 through 5, heteroskedasticity-consistent standard errors are presented in parentheses. In column 6, bootstrapped standard errors are presented in parentheses. The number of bootstrap repetitions is chosen following Andrews and Buchinsky (2000) so that the percentage deviation in standard error estimates from using an infinite number of bootstraps is less than 10 percent with probability 0.95.

tions. If different affiliates in the same country face distinct effective income tax rates then using country tax rates as a proxy for the tax rates affiliates face would be a source of measurement error. Measurement error would explain why the coefficient on the interaction of country tax rates and net income is lower than the coefficient on the interaction of affiliate tax rates and net income. While this explanation favors the use of affiliate tax rates, sensitivities measured from affiliate tax rates might instead reflect a particular behavioral relationship. If affiliates target fixed values of dividends then payout ra-

tios would mechanically appear high when an affiliate faces a high tax rate since that affiliate would then have to pay out a larger fraction of net income. Use of the country tax rate to instrument for the affiliate tax rate overcomes the limitations of using either of the tax rates on its own. This procedure captures within-country heterogeneity in affiliate tax rates but reduces the impact of behavioral mechanics associated with fixed payout targets. These concerns recommend the use of country-tax rates as instruments for affiliate tax rates, as performed in the regressions reported in columns 2, 4, and 6 of Table 5.²⁵

²⁵ The first stage equation, in which net income interacted with affiliate tax rates is regressed on net income interacted with country tax rates (as well as other independent variables), exhibits an excellent fit. In the first stage regression for incorporated affiliates, the coefficient on the net income-country tax rate variable is 0.69 with a t-statistic of 18, and the first stage F-statistic (3, 60,477) is 606, which is significant at any desired confidence level. In the first stage regression for branch affiliates, the coefficient on the net income-country tax rate variable is 0.89 with a t-statistic of 14, and the first stage F-statistic (3, 4,598) is 63, which is significant at any desired confidence level.

Use of country tax rates as instruments for affiliate tax rates reduces the estimated coefficient on the interaction of tax rates and net income from 0.56 to 0.47, but this coefficient remains large compared to its counterpart in Table 3. The introduction of parent fixed effects in the regressions reported in columns 3 and 4 has very little impact on the estimated coefficients other than those on the net income and tax rate interactions, which fall slightly (e.g., from 0.47 in column 2 to 0.43 in column 4). The results of the Tobit equation reported in column 5 of Table 5, in which uninstrumented affiliate tax rates are interacted with net income, differ somewhat from the results of the equivalent regression reported in column 6 of Table 3. While the net income and lagged dividend coefficients are moderately smaller in the Table 5 Tobit regression than they are in its Table 3 counterpart, the most important difference appears in the effect of the interaction of tax rates and affiliate income. The estimated 0.75 coefficient on this variable reported in column 5 of Table 5 is significantly larger than the 0.52 coefficient reported in column 6 of Table 3. Column 6 of Table 5 reports the results of instrumenting for affiliate tax rates in the Tobit specification;²⁶ these results are very similar to those appearing in column 5.

Table 6 reports the results of conducting the analysis presented in Table 5 on the unincorporated affiliate subsample. Construction of the affiliate tax rate variable reduces the sample size from the 6,373 observations reported in Table 4 to 4,602 observations. Despite this smaller sample, a comparison of the results reported in Tables 5 and 6 indicates that payout ratios of unincorporated affiliates exhibit significantly less sensitivity to local tax rates relative to payout ratios of incorporated affiliates.

Column 1 of Table 6 reports results of the simple OLS specification of the branch payout equation that interacts affiliate- and year-specific tax rates with net income. Although incorporated and unincorporated affiliates exhibit similar adjustment parameters, their estimated payout ratios vary with tax rates in distinct ways. Moving from a zero-tax location to a 30 percent tax rate location increases an incorporated affiliate's target payout ratio from 0.30 [$0.30 = (0.33 - 0.10) / (1 - 0.23)$] to 0.52 [$0.52 = (0.33 - 0.10 + 0.56 \cdot 0.3) / (1 - 0.23)$], but the change for a branch affiliate is only from 0.37 [$0.37 = (0.43 - 0.16) / (1 - 0.26)$] to 0.51 [$0.51 = (0.43 - 0.16 + 0.36 \cdot 0.3) / (1 - 0.26)$]. While the use of uninstrumented affiliate tax rates produces results in which tax interaction terms have positive and significant coefficients for unincorporated affiliates, instrumenting for affiliate tax rates with country tax rates (to address the problems discussed above) removes this result. The estimated coefficient on the interaction of the tax rate and net income falls to 0.16 in the regression reported in column 2 of Table 6, and does not differ significantly from zero. This 0.16 coefficient is significantly smaller than the 0.47 coefficient on the same variable in the incorporated affiliate regression reported in column 2 of Table 5.

Columns 3 and 4 of Table 6 present results of specifications that add parent fixed effects to the same regressions reported in columns 1 and 2. The results are generally similar to those appearing in columns 1 and 2, though the estimated coefficient on the net income and tax rate interaction falls still further to 0.12 in the instrumental variables regression reported in column 4. Column 5 of Table 6 reports the results of a Tobit specification of the dividend payout equation that in-

²⁶ The instrumental variables Tobit estimation is based on a technique detailed by Newey (1987). The analysis uses bootstrap methods to estimate standard errors. The number of bootstrap repetitions was selected using a procedure recommended by Andrews and Buchinsky (2000). Their procedure yields a number of repetitions such that the percentage deviation from using an infinite number of bootstraps is less than 10 percent with probability 0.95.

teracts uninstrumented affiliate tax rates with net income. The 0.43 estimated coefficient on this interaction is positive and differs significantly from zero, though it is also significantly smaller than the 0.75 estimated coefficient for incorporated affiliates reported in column 5 of Table 5. Column 6 of Table 6 reports the instrumental variables Tobit results, in which all other coefficients are similar to those in column 5, but the estimated effect of the interaction of net income and tax rates is much smaller (0.13) and does not differ significantly from zero.

Comparison of the behavior of incorporated and unincorporated affiliates, together with the evidence obtained by estimating the behavior of the sample of incorporated affiliates, consistently indicates that higher repatriation taxes are associated with reduced payout ratios. With the exception of the use of uninstrumented affiliate tax rates, the results indicate that incorporated affiliates are sensitive to repatriation taxes in a way that unincorporated affiliates are not.

Taking the estimated effect of the interactions of tax rates and net income for incorporated affiliates as reported in column 2 of Table 5, one percent tax rate differences are associated with 0.61 [$0.61 = 0.47 / (1 - 0.23)$] percent differences in payout ratios. Since the ratio of mean dividend payments to mean net income for incorporated affiliates equals 0.61, this corresponds to a 1.0 percent difference in total dividend payments. This estimated effect exceeds the estimated tax rate sensitivities reported by Mutti (1981), Hines and Hubbard (1990), Altshuler and Newlon (1993), and Altshuler, Newlon, and Randolph (1995), all of whom analyze tax return data.²⁷ A lower bound on the estimated tax rate effect is available by subtracting the estimated 0.16 coefficient on the interaction of tax rates and net income

for branches (as reported in column 2 of Table 6), thereby yielding that 1 percent tax rate differences are associated with 0.40 [$0.40 = 0.31 / (1 - 0.23)$] percent differences in payout ratios, or 0.66 percent differences in total dividend payments.

WELFARE CONSEQUENCES OF REPATRIATION TAXES

These findings carry several implications for the debate on the transition to an exemption system. Given that dividend payments by foreign affiliates appear to be highly sensitive to repatriation taxes, the adoption of a territorial tax regime would be associated with liberated financial flows between parent companies and their foreign subsidiaries. Part of the efficiency cost of the current foreign tax credit and deferral system can be imputed from dividend repatriation distortions in this system. In particular, it is possible to estimate the deadweight loss associated with repatriation-based taxation of foreign income from the degree to which firms change their payout ratios in response to the presence of repatriation taxes.

In order to estimate the effect of a transition to an exemption regime it is necessary to calculate the likely impact of removing repatriation taxes on the mean level and distribution of dividend payments from foreign affiliates. Table 2 reports that the average foreign tax rate facing American affiliates in 1997 was 21.1 percent; the weighted mean tax rate facing the subsample of separately-incorporated foreign subsidiaries was 22.2 percent, and its standard deviation was 18.6 percent. The U.S. federal income tax rate that year was 35 percent. Repatriation taxes would have no effect on repatriations whenever the timing and magnitude of dividend payments from foreign sub-

²⁷ The results reported by Grubert (1998), based on an analysis of tax return data, could imply a greater sensitivity of dividends to repatriation taxes, but differences in method and description make such a comparison infeasible.

subsidiaries does not influence the present value of total tax liabilities. As a practical matter, this occurs in situations when foreign tax rates equal the U.S. tax rate, treaties reduce cross-border withholding taxes to zero, and the recognition of additional foreign income for U.S. tax purposes does not increase tax liabilities through income and expense allocations. Taking the last two considerations roughly to net each other out, it follows that foreign tax rates of 35 percent would remove incentives to adjust dividend payments in anticipation of associated domestic tax liabilities. Since the average foreign tax rate for foreign subsidiaries was 22.2 percent in 1997, this change corresponds to a 12.8 percent higher foreign tax rate, which in turn is associated with 12.8 percent greater dividend payments from foreign subsidiaries. The econometric estimates imply that home country exemption of foreign income would increase annual dividend flows from foreign affiliates by this amount, roughly 12.8 percent.

The average effect of repatriation taxation conceals a great deal of variation between affiliates, since the tax system simultaneously encourages some affiliates to distribute much greater dividends than they would in the absence of tax incentives, while discouraging others from paying dividends. Much of the inefficiency associated with repatriation taxes stems from this variation, which is masked in the aggregate figures.

In order to estimate the efficiency costs associated with repatriation taxes it is helpful to consider the simple Harberger triangle associated with the distortions introduced by home-country taxation of repatriated income.²⁸ Letting β denote the impact of repatriation taxation on proclivity to pay dividends out of net income, it follows that the effect of repatriation taxation on payments of dividends from affiliate i is: $\beta y_i(\tau_i - \tau_{US})$, in which y_i is the after-foreign-tax income of affiliate i , τ_i is the tax rate it faces in the foreign country, and τ_{US} is the home country tax rate. The efficiency cost of this distortion equals $1/2$ times the product of this induced dividend flow and the tax wedge.²⁹ Aggregating this figure for all affiliates yields the following expression for the total inefficiency:

$$[3] \quad \Omega = \frac{1}{2} \sum_{i=1}^n \beta y_i (\tau_i - \tau_{US})^2 = \frac{\beta}{2} \sum_{i=1}^n y_i [(\tau_i - \bar{\tau})^2 + 2\tau_i(\bar{\tau} - \tau_{US}) + \tau_{US}^2 - \bar{\tau}^2],$$

in which Ω is the measure of the loss of economic efficiency, and $\bar{\tau}$ is any constant.

Equation [3] can be evaluated most conveniently by setting $\bar{\tau}$ equal to the mean tax rate facing foreign affiliates, weighted by their after-tax incomes. The magnitude of Ω in 1997 can be calculated by taking τ_{US} to equal 0.35 (its 1997 value), using the estimated value of 0.61 for β , and using 0.222 and 0.035 for the mean and variance of the tax rates facing foreign subsidiaries in 1997. This calculation yields that the

²⁸ Hines (1999b) and Auerbach and Hines (2001) review the application of Harberger triangles to calculate the magnitudes of inefficiencies due to taxation.

²⁹ A critical aspect of this welfare calculation is that tax distortions be properly measured. To the extent that dividends respond to transitory and not permanent tax rate differences, as argued by Hartman (1985) and Altshuler, Newlon, and Randolph (1995), then the tax rate differences on which the estimates reported in Tables 3-6 are based reflect the impact of transitory tax rate differences. The relevant tax wedge for the welfare calculation then is the anticipated difference between transitory and permanent tax rates, or, to express the same idea a different way, the difference between the present value of the cost of paying a dividend this year and the cost of paying a dividend next year. Unless the anticipated cost of paying future dividends is zero—either because firm conditions are expected to change, or the policy environment is expected to change—then the relevant tax wedge for paying dividends this year will be less than the measured wedge that ignores future costs. Consequently, the welfare calculations that follow produce upper bounds on actual welfare costs.

total inefficiency in repatriation patterns due to repatriation taxes equals 1.55 percent of the net income of foreign subsidiaries. The inefficiency associated with dividend repatriation taxes (expressed as a fraction of subsidiary net income) has not changed markedly over time, since the same calculation using 1984 values (including a statutory U.S. tax rate of 46 percent) produces a Harberger triangle equal to 2.0 percent of net income. To put the 1997 number in perspective, it corresponds to 2.5 [$2.5 = 1.55/0.61$] percent of total dividends.

This Harberger triangle figure—2.5 percent of dividends—represents the efficiency loss due to the incentives created by repatriation taxes. This loss in efficiency occasioned by repatriation taxes equals approximately 15.2 percent of the home-country tax revenue generated by repatriation taxes, since, at an average home country tax rate of 35 percent and an average foreign tax rate of 22.2 percent, firms pay home country taxes equal to 16.5 percent of dividends.³⁰ The total burden of repatriation taxes equals the sum of the efficiency cost, 2.5 percent of dividends, and the tax obligation, 16.5 percent of dividends, for a total of 19.0 percent. It is noteworthy that these estimates correspond to inefficiencies in dividend policies conditional on investment; since repatriation taxes also affect investment patterns, corporate finance, and a host of other decisions, the associated inefficiency, and ultimate burden, is greater still.³¹

CONCLUSION

This paper demonstrates that the repatriation taxes imposed by current U.S. tax rules reduce the volume and efficiency of financial flows between affiliates and their

American parents. Evidence from a large continuous panel of foreign affiliates of American firms indicates that yearly dividend payouts are determined by gradual adjustment to desired long-run dividends conditional on earnings. Highly taxed foreign affiliates have higher desired payout rates than do more lightly taxed subsidiaries, reflecting the lower repatriation taxes associated with receiving dividends from heavily taxed affiliates. Unincorporated foreign affiliates, from whom receipt of dividends does not trigger repatriation taxes, do not exhibit the same large and significant association between tax rates and dividend payout ratios. Comparison of tax sensitivities across organizational forms implies that U.S. repatriation taxes reduce aggregate dividend repatriations by 12.8 percent annually. The annual efficiency loss associated with tax-motivated dividend repatriation behavior equals 2.5 percent of dividends.

This paper employs the Lintner dividend model, initially developed to understand corporate dividend payments to common shareholders, to analyze dividend payouts from foreign affiliates to their parents. This model has not previously been used to explain payments between foreign affiliates and their parent companies, due in part to the lack of continuous annual data, and in part to an assumption that the same control and other non-tax issues that motivate dividend payments to common shareholders are unimportant in the case of dividend payments from foreign affiliates. The ability of the Lintner framework to describe the pattern of affiliate-parent dividends suggests that non-tax motivations also guide the dividend policies of foreign affiliates. As is more fully explored in Desai, Foley, and Hines (2001), the evidence of partial adjustment in the formulation of

³⁰ The tax due upon repatriating a dollar of dividends equals the difference between the U.S. and foreign tax rates, grossed up in order to reflect the underlying foreign income out of which the dividend is paid, or: $(\tau_{US} - \tau^*) / (1 - \tau^*)$, in which τ_{US} is the U.S. tax rate and τ^* is the foreign tax rate.

³¹ See Hines (1999c) for a general welfare analysis of the impact of repatriation taxes.

dividend policy and the explicitly tax-penalized behavior of many affiliates suggests that internal monitoring problems may contribute significantly to the formulation of dividend policies governing payments from affiliates to parents. These non-tax motives for dividend policy within the firm illuminate the determinants of dividend policy more generally, and are likely to persist under proposed alternative tax systems such as an exemption regime.

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