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# Implicit Taxes of U.S. Domestic and Multinational Firms Over the Past Quarter-Century

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## **Implicit Taxes of U.S. Domestic and Multinational Firms Over the Past Quarter-Century**

### Abstract

*Recent research by Dyreng et al (2014) finds that the effective tax rates for both foreign and domestic firms have been steadily decreasing over recent decades and that multinational firms (MNEs) do not have a tax-based cost advantage relative to their domestic counterparts. This paper extends this research and examines implicit taxes for MNEs. We use the approach outlined by Jennings et al. (2014) and find that for both domestic and multinational firms, lower effective tax rates are only partially offset by implicit taxes. Further, we find that implicit taxes for MNEs are lower than domestic firms and have fallen over time, while implicit taxes on domestic firms have been rising. Implicit taxes are negatively associated with foreign earned income and size of firm, indicating MNEs may exploit firm specific tax planning strategies to shift income to low tax jurisdictions where it is more difficult for competitive market forces to equalize after-tax returns.*

## I. INTRODUCTION

Dyreng, Hanlon, Maydew and Thornock (2014) examine the time series properties of corporate effective tax rates for U.S. multinational and U.S. domestic firms over the past twenty-five years. The authors find that effective tax rates for U.S. multinational firms are generally similar, if not slightly higher, than effective tax rates for U.S. domestic firms. In addition, Dyreng et al. (2014) show that effective tax rates for both domestic and multinational firms have declined at approximately the same rate over time. These findings appear to contradict widely held beliefs by the financial press and some members of Congress that U.S. multinational firms generally have a tax-related advantage over U.S. domestic firms. It has been proposed that the growth in intangible assets (which are easier to move across international borders) along with increasingly sophisticated cross-border tax planning, have given U.S. multinational firms a tax-related cost advantage relative to their domestic counterparts. Dyreng et al. (2014) do not document conclusive evidence of a tax based cost advantage for U.S. multinational firms, and their results suggest that domestic firms have equal opportunities to reduce effective tax rates.

We extend Dyreng et al. (2014) and contribute to the literature and policy debate by examining the role of implicit taxes in the U.S. domestic versus U.S. multinational firm setting. The Dyreng et al. (2014) study suggests the focus on U.S. multinational firms and concern for the tax-related competitiveness of domestic firms by Congress and the financial press may be misplaced. Because Dyreng et al. (2014) focus on explicit tax rates and do not consider the potentially important role of implicit taxes, we argue that our understanding of the tax related competitiveness of U.S. domestic firms relative to U.S. multinational firms is not complete. To the extent that lower effective tax rates are not offset by implicit taxes, the tax savings accrue to shareholders in the firms rather than achieve policy goals normally attributed to legislated tax

incentives. If firms engaged in foreign activities enjoy higher risk adjusted after tax rates of return because of lower implicit taxes, then the U.S. tax regime may incentivize more offshore activity relative to domestic activity. The purpose of our study is to examine the extent of implicit tax on U.S. domestic firms versus U.S. multinational firms, and trends in implicit taxation within each group over time.

Implicit taxes are cross-sectional variations in pre-tax market returns that offset variations in the level of explicit taxes (Scholes et al., 2015). Economic theory holds that in a competitive economy, capital is attracted toward corporate activity that is explicitly taxed at lower rates (Jennings et al. 2012). This increases input costs, lowers output prices, and lowers the pretax rate of return as the explicit tax rate decreases. Implicit taxes tend to result in a normalization of risk adjusted after tax returns across industries (Jennings et al., 2012). Because domestic and multinational firms arguably operate in distinct competitive settings, holding explicit tax rates constant, variation in implicit taxes could impact domestic firms' overall tax-related competitiveness relative to multinational firms. Thus, even if explicit tax rates have decreased over time for both domestic and multinational firms as documented by Dyreng et al. (2014), competitive advantages gained through tax planning or favorable tax provisions targeted at domestic firms might be offset in whole or in part by implicit taxes. Documenting evidence consistent with this conjecture would suggest that while there may be increasing opportunities to reduce explicit effective tax rates on domestic income, doing so could come at a cost of lower pre-tax rates of return. Our study can further inform the policy debate and provide some evidence that the focus on U.S. multinational firms and concern for the tax related competitiveness of domestic firms by Congress and the financial press may not be misplaced after-all.

To begin our empirical tests we first replicate the findings in two recent studies. First we replicate the results of Dyreng et al (2014). Our untabulated results are qualitatively and quantitatively similar, and we find the same decrease and time-series patterns of decline in effective tax rates for U.S. domestic and U.S. multinational firms over time. This gives us comfort that we can consider implicit tax rate tests with a sample of firms exhibiting the same behavior as that in Dyreng et al. (2014). Next, we turn to Jennings et al. (2012), the most recent large sample study that examines time series differences in implicit corporate taxation. Jennings et al. (2012) focus on testing differences in explicit taxes before and after the Tax Reform Act of 1986 (TRA86). Our untabulated results replicate their findings and provide comfort that our implementations of the methods in Jennings et al. (2012) are valid.

Finally, because all firm-years in the Dyreng et al. (2014) sample are after 1986, we adapt the empirical techniques in Jennings et al. (2012) to test for differences in implicit taxes between U.S. domestic and U.S. multinational firms. We have two key findings. First, implicit taxes are higher, on average, for U.S. domestic firms than they are for U.S. multinational firms over our sample period. Second, the results suggest that implicit taxes for U.S. multinational firms have been trending down over time, while implicit taxes for U.S. domestic firms have been trending upwards over time.

We posit several potential explanations for the difference between MNEs and domestic firm implicit taxes. As explained above, implicit taxes arise when businesses respond to tax incentives by directing capital to those activities that enjoy special tax breaks from those activities that do not. MNEs have available to them several unique tax reduction strategies not readily available to domestic competitors. The most important of these are foreign operations that facilitate complicated transfer pricing strategies with substantial ownership of intangible

assets (Gravelle, 2013). MNEs also have the option of parking earnings offshore and electing when to pay U.S. taxes on those earnings by electing when they are repatriated (Blouin et al., 2012). Importantly, these types of tax reducing strategies are firm specific, rather than industry specific and arise largely because of where the profits are earned and business activity takes place. Accordingly, the tax reduction strategies may not result in a reallocation of capital that is the vehicle for implicit taxes to arise. Accordingly, MNEs that are able to achieve relative tax savings may be less likely to see those tax savings offset by higher implicit taxes.

The remainder of this paper is organized as follows. Section II describes our sample and Section III describes our primary empirical tests, followed by additional analysis in Section IV. The final section provides an overall conclusion.

## **II. SAMPLE**

We select our initial sample to closely match Dyreng, et al. (2014). We begin with the firms listed in Compustat for the period spanning 1989 to 2012. Additional sample selection criteria include the following:

1. Non-regulated industry (i.e. drop financial and utility industry firm-years);
2. US incorporated;
3. Total assets greater than or equal to \$10 million;
4. Non-missing values for cash taxes paid (TXPD) and pretax income (PI);
5. Positive pretax income;
6. At least five years of data for each firm.

This set of sample selection criteria results in 54,310 firm-years which matches closely to the 54,005 firm-years in Dyreng et al. (2014). To ensure that we observe the same patterns in effective tax rates for both multinational and domestic firms, in Figure 1 we graph the time series of multinational and domestic firms' cash effective tax rates. We delineate between multinational and domestic firms consistent with Dyreng et al. (2014) by classifying a firm as multinational in

a given year if either its pretax foreign income (PIFO) is greater than zero or if its absolute value of foreign tax expense (TXFO) is greater than zero. The levels and patterns in our graph are very similar to those found in Dyreng et al. (2014). Because our tests require the empirical methodologies used in Jennings et al. (2012), the primary sample for our paper drops to 40,038 firm-years because of additional data requirements.<sup>1</sup> In Figure 2, we replicate Figure 1 and confirm that we find very similar levels and patterns in effective tax rates for multinational and domestic firms in this smaller sample. This gives us comfort that the same underlying trends in explicit tax rates documented in Dyreng et al. (2014) are present in our primary sample.

### **III. PRIMARY EMPIRICAL TESTS AND FINDINGS**

To measure differences in implicit taxes at the corporate level for domestic firms and multinational firms, we adopt the four alternative and complementary specifications used in Jennings et al. (2012). We discuss each specification and our findings in turn below. For brevity we refer to U.S. multinational firms as “MNEs” and U.S. domestic firms as “domestic.”

#### **Comparison of high and low tax preference groups**

For the first specification, we separately divide our domestic and MNE sub-samples into high and low tax preference groups. Low tax preference firms pay higher effective tax rates (i.e. have an *etr* in the top 40 percent of the annual distribution) and are labeled “high-tax.” High tax preference firms pay lower effective tax rates (i.e. have an *etr* in the bottom 40 percent of the

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<sup>1</sup> To ensure that we understand and can implement the empirical approaches taken by Jennings et al. (2012) we replicate their findings. Our untabulated results give us comfort that our implementations of the methods in Jennings et al. (2012) are valid.

annual distribution) and are labeled “low-tax” firms. By definition the low-tax firms have a tax advantage relative to the high-tax firms (i.e. *TAX* is lower for the low-tax group). If implicit tax theory is generally descriptive, this explicit tax advantage should be offset by a pretax return (*PTR*) disadvantage (Jennings et al, 2012). Table 1 results suggest that this is indeed what we find for both types of firms as *PTR* is lower for both domestic and MNE low-tax firms. However, the ratio of *PTR/TAX* for domestic firms is 0.7474, suggesting that about  $\frac{3}{4}$  of the explicit tax advantage for low-tax domestic firms is offset by a pretax return disadvantage. There is also an offset with MNEs, but it is smaller. The *PTR/TAX* ratio of 0.4812 for MNEs suggests that less than  $\frac{1}{2}$  of the explicit tax advantage is offset by a pretax return disadvantage.

To provide some additional insight we also present Figure 3 to capture the time-trends in the pretax return penalty experienced by domestic firms and MNEs. To construct the graph in Figure 3 we calculate annual *PTR/TAX* ratios and fit a line that best captures the overall trend in each group. Figure 1 suggests that implicit taxes for MNEs have been trending down, while implicit taxes for domestic firms have been trending up. In unreported univariate analysis, we find that the means of the annual *PTR/TAX* ratios underlying the trend analysis in Figure 1 are significantly different for MNEs and domestic firms over our sample period.

### **Correlation Analysis**

In Table 2 we present the correlation of effective tax rates (*etr*) with both pretax return (*PTR*) and after-tax return on equity (*ROE*) for our domestic and MNE firm samples. The first row of correlation coefficients is the average of annual correlations. The second row presents correlations for the pooled samples. If implicit taxes are higher for domestic firms, there should be a more positive correlation between *etr* and *PTR* for domestic firms than for MNEs. This



prediction is consistent with Jennings et al. (2012) and is based on the logic that implicit taxes would offset the tax benefits of firms with lower tax burdens (*etr*) to a greater extent in domestic firms, thus leading to the higher correlation coefficient. If MNEs are permitted by the market to retain more of their tax benefits in their after-tax returns relative to domestic firms then the correlation between *etr* and *ROE* should be more negative for MNEs. This is indeed what we document in both sets of correlations.

While the positive correlation coefficients between *etr* and *PTR* for MNEs suggest that MNEs bear some implicit taxes, they appear to bear less than domestic firms. In both the average of annual correlation coefficients and pooled correlation coefficients, a test for the statistical difference in coefficient magnitudes is supported at the 5% or better level using a two-tailed test. The negative correlation coefficients between *etr* and *ROE* for domestic firms suggests that they retain some of the tax benefits in after-tax returns. However, the lower coefficient magnitudes relative to those on MNEs suggest they retain less. The differences in coefficient magnitudes are statistically significant at the  $p < .05$  level (two-tailed).

### **Regression analysis of effective tax rates on economic determinants**

In Table 3, we present results from the following multivariate regression:

$$etr_{it} = \beta_0 + \beta_1 Size_{it} + \beta_2 Lev_{it} + \beta_3 CAP_{it} + \beta_4 INV_{it} + \beta_5 RD_{it} + \beta_6 PTR_{it} + \sum Years + e_{it}$$

For ease of interpretation we choose to run the regression separately for domestic and MNEs firms as opposed to the fully interacted model in Jennings et al. (2012). We also omit the variable *FOR* because domestic firms have zero foreign income by construction. In Table 3 we present results with and without year fixed effects. Our variable of interest is *PTR*. A positive and significant  $\beta_6$  coefficient would suggest the presence of implicit taxes because it would

provide evidence that lower effective tax rates (i.e. higher explicit tax preferences) are offset by lower pretax returns. A higher  $\beta_6$  coefficient for the regression of domestic firms would provide additional evidence that these firms are subject to greater implicit taxes relative to MNEs. We find that  $\beta_6$  is positive and statistically significant in all rows suggesting the presence of implicit taxes for both domestic and MNEs. In all cases,  $\beta_6$  is greater in magnitude for domestic firms than it is for MNEs suggesting higher implicit taxes for domestic firms.

The final rows in Table 3 summarize the results of a Student's t-test statistic for the difference in  $\beta_6$  coefficients across regressions.<sup>2</sup> While the magnitude of the  $\beta_6$  coefficient is consistently higher for the sample of domestic firms, the difference in magnitude is only statistically significant when we include year fixed effects. These tests provide some additional support for the assertion that domestic firms bear higher implicit taxes than MNEs. The results in Table 3 also provide some support for the notion that MNEs are able to reduce their tax burdens through different mechanisms than domestic firms. For domestic firms, SIZE positively impacts effective tax rates, but negatively affects effective tax rates for MNEs. This is consistent with the notion that larger, more sophisticated MNE firms are best positioned to leverage resources and expertise to both design and implement tax savings strategies and to defend the strategies during audits. LEV is also negative for domestic firms, indicating some positive tax benefits from borrowing, but positive for MNEs. CAP (with year fixed effects) is negative for both subsamples, but the coefficient for domestic firms is double that for MNEs, indicating domestic firms rely more heavily on investments in PP&E in achieving tax savings.

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<sup>2</sup> We calculate our test statistic as the difference in coefficients divided by the square root of the sum of the squared standard errors for each coefficient.

## Estimating the extent of implicit taxes

Our results in Table 4 are based upon the Jennings et al. (2012) extension and modification of the empirical approach in Wilkie (1992). Jennings et al. (2012) adapt the method used in Wilkie (1992) to measure the extent of implicit taxes at the corporate level before and after TRA86. As noted in Jennings et al. (2012), the research design underlying these tests controls for variation across industries in risk and accounting measurement errors (that may be associated with tax preferences) and results in a nonlinear relation between a measure of explicit tax preferences, a parameter that captures the extent of implicit taxes, and a measure of after-tax returns.<sup>3</sup> Estimates of the extent of implicit taxes are measured annually and are captured in the “ $\delta$ ” or “delta” parameter (see Jennings et al. (2012) equation (11)).

Table 4 summarizes the average of the annual realizations of the “delta” parameter that captures the extent of implicit taxes separately for domestic firms and MNEs. Higher delta realizations indicate higher implicit taxes. Consistent with the assertion that domestic firms bear higher implicit taxes, the average delta realization for domestic firms is approximately 62 percent higher than that for MNEs (.3182 vs. .5139). As noted in Table 4, this difference is statistically significant. Per Jennings et al. (2012) the delta measure can be interpreted as the percentage of corporate tax preferences that are reversed or eliminated by implicit taxes. Thus, for domestic firms, about half, or 51.39 percent of their tax preferences are eliminated by implicit taxes. While MNEs also face implicit taxes, they are lower with only 31.82 percent of their tax preferences being reversed or eliminated by implicit taxes.

Because the delta is measured annually, in Figure 4 we show the extent of implicit taxes for domestic and MNEs over time. Consistent with the evidence in Figure 3, the extent of

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<sup>3</sup> Readers wanting more detail should refer to Jennings et al. (2012) equations (4) through (11).

implicit taxes faced by MNEs appear to be trending down over time and trending up over time for domestic firms.

#### **IV. CROSS-SECTIONAL TESTS AND ADDITIONAL ANALYSIS**

In this section we present some cross-sectional and additional analysis. Our intention is to corroborate our primary findings and provide some initial evidence documenting potential sources of the differences in implicit taxes between MNEs and domestic firms.

##### **Cross-sectional tests**

###### ***Firms with high foreign income***

In this section we reproduce the results summarized in Tables 1-4 comparing our full sample of MNEs to a subsample of MNEs that derives a high proportion of their pretax income from foreign sources. If our argument that MNEs and domestic firms arguably operate in distinct competitive settings, then our results should get stronger as the distinction between domestic and MNE increases. All else equal, as the proportion of total pretax income derived from foreign sources increases, MNEs are less like domestic firms. Accordingly, we form a partition of MNEs based upon the highest annual tercile of the ratio of foreign pretax income to total pretax income (Compustat data items #PIFO/#PI). Table 5, Panels A-D summarize our results. In all panels we compare the results from our full set of MNEs to our partition of high foreign income multinational firms (“HFMNEs”).

Panel A presents the results of our *PTR/TAX* ratio analysis, which compares the amount of the explicit tax advantage that is offset by a pretax return disadvantage. The *PTR/TAX* ratio

is .4812 for MNEs and .0623 for the HFMNEs. The results suggest that, relative to all MNEs, a much smaller proportion of the tax advantage for HFMNEs is offset by a PTR disadvantage.

The correlation analysis presented in Panel B is consistent with the results in Panel A. Specifically, we find that the correlation coefficients on (*PTR*, *etr*) for HFMNEs is smaller than that for the full sample of MNEs. This suggests HFMNEs have relatively lower implicit taxes as they do not have to trade off their *etr* advantage for a *PTR* disadvantage. The correlations coefficients on (*ROE*, *etr*) for HFMNEs are more negative than those for the full sample of MNEs suggesting that HFMNEs are permitted by the market to retain more of their tax benefits in after-tax returns. In all cases (i.e. annual and pooled) correlation coefficient differences are statistically significant at a two-tailed level.

In Panel C we summarize results from our regressions of effective tax rates (*etr*) on economic determinants. As before, PTR is our variable of interest, and a positive coefficient on PTR ( $\beta_6$ ) would suggest the presence of implicit taxes. A smaller magnitude  $\beta_6$  for HFMNEs would suggest lower implicit taxes relative the full group of MNEs. Without the inclusion of year fixed-effects the difference in  $\beta_6$  between HFMNEs and all MNEs is not statistically significant. However,  $\beta_6$  for MNEs is not statistically significant. After including year fixed effects, the difference in  $\beta_6$  between HFMNEs and all MNEs is statistically significant while in  $\beta_6$  for HFMNEs continues to be insignificant. These results suggest that HFMNEs bear less implicit tax relative to all MNEs.

Panel D summarizes our delta analysis where we separately estimate the extent of implicit taxes separately for our sample of HFMNEs. Consistent with the notion that HFMNEs bear lower implicit taxes, we find that implicit taxes eliminate less than 10 percent of the explicit tax savings at HFMNEs compared to approximately 32 percent at MNEs.

Because we find that our results get stronger as the distinction between domestic and MNE increases, our cross-sectional analyses support the argument that MNEs and domestic firms arguably operate in distinct competitive settings.

## **Additional Analysis**

### ***Exploring the role of tax planning and tax sheltering***

In this section we explore additional attributes of tax preferences within domestic and MNEs. Doing so allows us to jointly test and explore two things. First, we can identify tax preference attributes that would be associated with variation in implicit taxes and variation in the ability to retain the benefits of tax preferences. Second, we can test the proposition that MNEs bear lower implicit taxes because of their relatively greater use of tax shelters and aggressive tax planning.<sup>4</sup>

While domestic firms also have opportunities for aggressive tax planning, MNEs can take advantage of transfer pricing techniques as well as tax havens. It could be more likely that MNEs are taking advantage of the sophisticated and complex tax products sold by tax specialists discussed by Bankman (1999). Accordingly, tax sheltering and tax planning could be fundamentally different in the MNE and domestic firm environments and thus be a source for differences in implicit taxes. More importantly it could be the case that tax planning techniques by MNEs are more transitory, and are less observable or replicable by other market participants. Similar to the logic in Jennings et al. (2012) regarding planning post TRA86, tax planning by MNEs could make it more difficult for competitive market forces to equalize after-tax returns relative to tax planning by domestic firms.

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<sup>4</sup>These results are available from the authors.

To empirically test the proposition MNEs bear lower implicit taxes because of their relatively greater use of tax shelters and aggressive tax planning, we use two methods from Jennings et al. (2012). In the first analysis we examine the persistence of tax preferences of MNEs relative to domestic firms (Schmidt, 2006). In the presence of implicit taxes, firms that experience an increase in tax preferences will also experience a decrease in pre-tax returns. Decreases in pre-tax return result from increasing input and output price pressure as capital flows to increased tax preferences.

In our first test we estimate the following regression separately for MNEs and domestic firms:

$$\Delta\lambda_{it} = \beta_0 + \beta_1\Delta PTR_{it} + \beta_2\Delta PTR_{it+1} + \beta_3\Delta PTR_{it+2} + e_{it}$$

Where  $\Delta\lambda$  represents the change in a firm's tax preference or burden. The  $\beta_1$  coefficient on the change in contemporaneous pretax return is our variable of interest. In the presence of implicit taxes this coefficient will be negative, consistent with increases in tax preferences being offset by decreases in pretax returns. For our sample of domestic firms this is indeed what we find, although the coefficient loading is not statistically significant at conventional levels ( $\beta_1 = -0.018$ ,  $t\text{-stat} = -1.57$ ). Consistent with pretax returns actually rising with tax preference increases (positive  $\Delta\lambda$ ), we find a positive and statistically significant  $\beta_1$  coefficient in our sample of MNE firms ( $\beta_1 = 0.030$ ,  $t\text{-stat} = 2.24$ ).<sup>5</sup>

Per Jennings et al. (2012) the results for MNEs that pretax returns rise with tax preference increases combined with evidence of less persistence in tax preferences for MNEs could also reflect tax preferences that are less integrated into the ongoing business activities of the firm. Such tax preference are more likely to arise from tax planning and sheltering that is less likely to

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<sup>5</sup> Our results for both domestic and MNE firms are quantitatively and qualitatively similar when we include year fixed effects.

be offset by shifts in resources thus lowering the implicit tax burden (Jennings et al. 2012). One example is a company's choice to park foreign profits offshore to delay U.S. taxes upon repatriation. This strategy only delays rather than avoids tax on the profits, and so for each firm is a temporary strategy but one that in aggregate is growing over time, with untaxed offshore profits estimated to be at record highs. To test for differences in tax preference persistence, we estimate the following regression separately for MNEs and domestic firms:

$$\lambda_{it+1} = \beta_0 + \beta_1 \lambda_{it} + e_{it}$$

For these regressions  $\lambda$  is the average absolute change in tax preferences, and  $\beta_1$  is the persistence parameter and our variable of interest. We find that the persistence parameter is 0.132 smaller for MNEs than for domestic firms. This difference is also statistically significant ( $t\text{-stat} = 6.64$ )<sup>6</sup> Because tax preferences with lower persistence are less likely to be bid away by competitive forces (Jennings et al. 2012) these tests provide evidence of another attribute of tax planning and sheltering used by MNEs that reduce their relative implicit tax burden.

## V. SUMMARY AND CONCLUSION

The findings that implicit taxes decline for MNE's is plausibly explained by two related mechanisms. In essence, implicit taxes will arise as firms enter into markets that enjoy explicit tax breaks, ultimately driving up demand for inputs, and prices, and reducing after tax, risk-adjusted returns to a more normal level. Inherent in this process is an important assumption that the tax savings mechanisms are broadly available to new entrants into the market. For example, tax preferences such as accelerated depreciation and special tax credits for engaging in tax-favored activities such as manufacturing incentivize new and existing firms to engage in more

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<sup>6</sup> Our results are quantitatively and qualitatively similar when we include year fixed effects.



qualifying activities. And over time, market adjustments tend to erode the benefits of these explicit tax breaks and ultimately equalizing risk adjusted rates of returns across industries.

This assumption is evaluated in Jennings et al. (2012). They document that after the TRA 86, firms with low effective tax rates saw much less of the tax savings offset by implicit taxes than in previous years. The authors speculated that the ability of firms to retain the benefits of tax savings arose because of an expansion of complex tax shelters that were non-transparent, difficult to implement, and transitory, rather than tax savings strategies central to and incorporated into ongoing operations, such as depreciation deductions or R&D credits.

We propose that the tax savings accomplished by MNEs are similar in nature to tax shelters. Successful transfer pricing strategies are highly complex arrangements specific to individual firms and the products or services exchanged between related companies. The strategies are not easily replicated and to survive audits must be exhaustively documented and supported by firm specific economic analysis prepared by highly trained specialists. Furthermore, the revenue generating assets most easily sited in low tax jurisdictions is also the result of often lengthy and expensive R&D that often cannot be replicated by competitors, consisting of valuable patents, trademarks or other company specific intangibles. And to the extent that the tax savings strategies can be replicated, they are not unique to industries, but are available based on where activity takes place. For example, a domestic firm that owns valuable intangible assets of any kind and in any industry can elect to transfer that asset abroad to low-tax jurisdiction and attempt to use the income derived from the intangible asset to lower worldwide tax burdens. Whether a company does so or not has no effect on the demand for inputs or output prices in the domestic or foreign markets. Furthermore, if a company elects to hold foreign

earnings offshore to delay the U.S. taxes due upon repatriation, that strategy involves timing rather than the amount of tax paid and is available to any business able to keep earnings offshore.

While the Jennings results adequately explain how post TRA 86 that implicit taxes only partially offset lower effective tax rates, the question remains why MNEs appear to have a persistent and growing advantage over domestic firms. IRS and Congress have increasingly targeted many of the tax shelters that arose post TRA 86.<sup>7</sup> A number of legislative changes explicitly target well-known tax shelters, increase penalties for firms caught engaging in abusive transactions, and levy financial and possible criminal penalties against tax professionals promoting abusive tax shelters.<sup>8</sup> The success of Congress and IRS in successfully getting ahead of abusive tax shelters, appears to be reflected in the gradually increasing implicit taxes observed for domestic firms.

However, implicit taxes are decreasing for MNEs and the extent of the decrease is greater as firms increase their foreign earned income. These results suggest that currently IRS has been less successful challenging tax planning mechanisms available to MNEs. The IRS has targeted MNEs for transfer pricing audits, but they are very complex, expensive to litigate on both sides, and often take years to resolve. For example, in 2006, IRS settled a transfer pricing case involving Glaxo Smithkline Holdings, Inc. (GSK) for tax years 1989-2005.<sup>9</sup> The settlement cost GSK a reported \$3.4 billion including interest, versus the companies claim for refund of \$1.8 billion, reflecting a total difference between the parties of \$5.2 billion. While the IRS won an important case, the size of the settlement and the huge difference between taxpayers and IRS

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<sup>7</sup> See, for example, IRS Commissioner's Remarks Regarding LILO/SILO Settlement Initiative – August 6, 2008. "A major part of this has been the IRS' stepped up efforts to detect and deter aggressive tax shelters. We have been particularly effective in rooting out these tax shelter transactions." <http://www.irs.gov/Businesses/IRS-Commissioner%E2%80%99s-Remarks-Regarding-LILO-SILO-Settlement-Initiative-August-6-2008>

<sup>8</sup> See e.g. IRC Sec. 6662 (taxpayer penalties) and Sec. 6694 (preparer penalties).

<sup>9</sup> IR-2006-142, September 11, 2006, "IRS Accepts Settlement Offer in Largest Transfer Pricing Dispute."

illustrates the potential effect of successful transfer pricing strategies on reducing effective tax rates. A number of MNEs are engaged on long running and unresolved IRS disputes, and while the actual amount at stake is not known, the amounts are estimated to be in the billions of dollars for the largest firms.<sup>10</sup> The totals mentioned for these high profile cases provides a clue to the tax savings available to firms that choose to aggressively pursue tax reduction strategies with transfer pricing mechanisms and the ability to park foreign growing amounts of earned income offshore to avoid the tax on repatriation. Further research is warranted into the exact mechanism for the difference between MNEs and domestic firm implicit taxes.

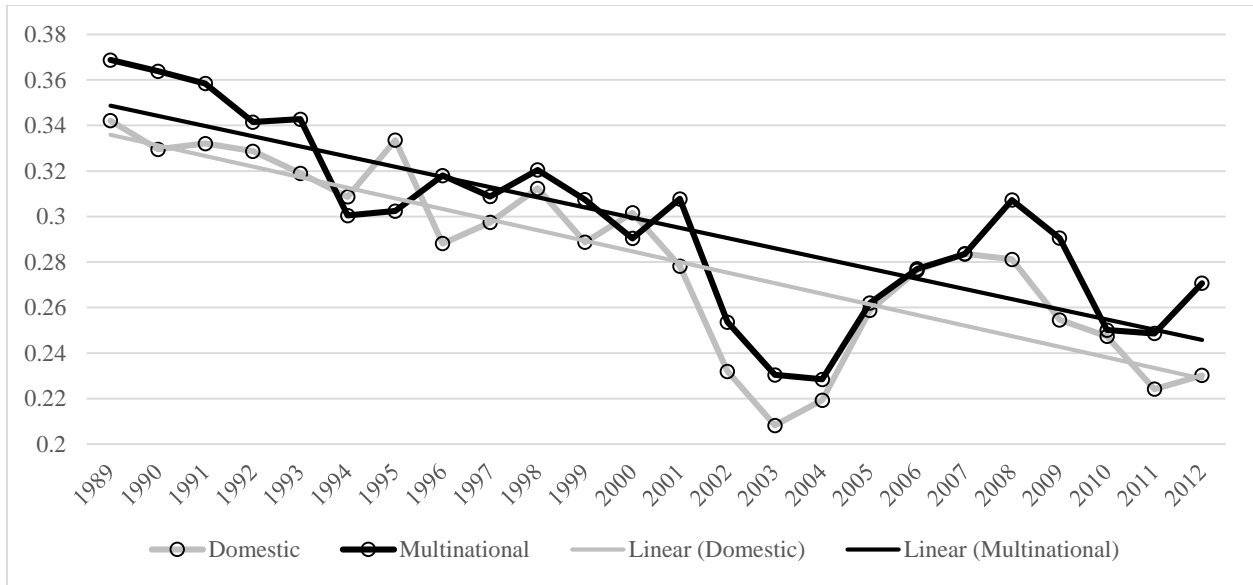
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<sup>10</sup> For example, the IRS is quoted as saying the transfer pricing methods used by Microsoft “have billions of dollars of impact on Microsoft’s taxable income in 2004, 2005 and 2006.”  
<http://www.politico.com/story/2015/01/microsoft-irs-taxes-114202.html>

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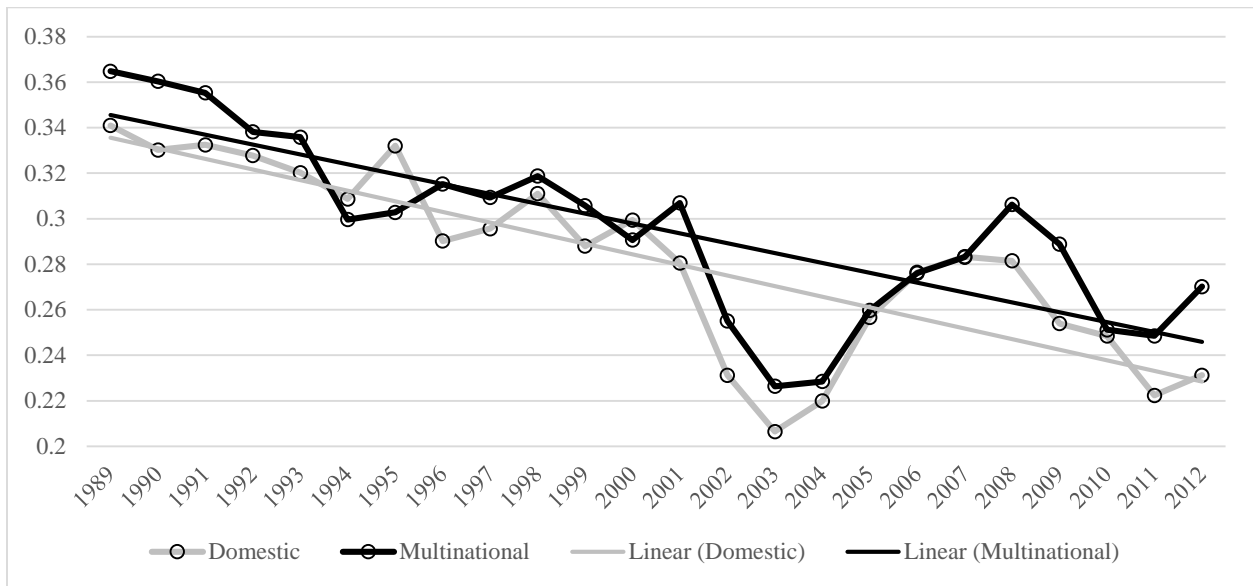
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**Figure 1**



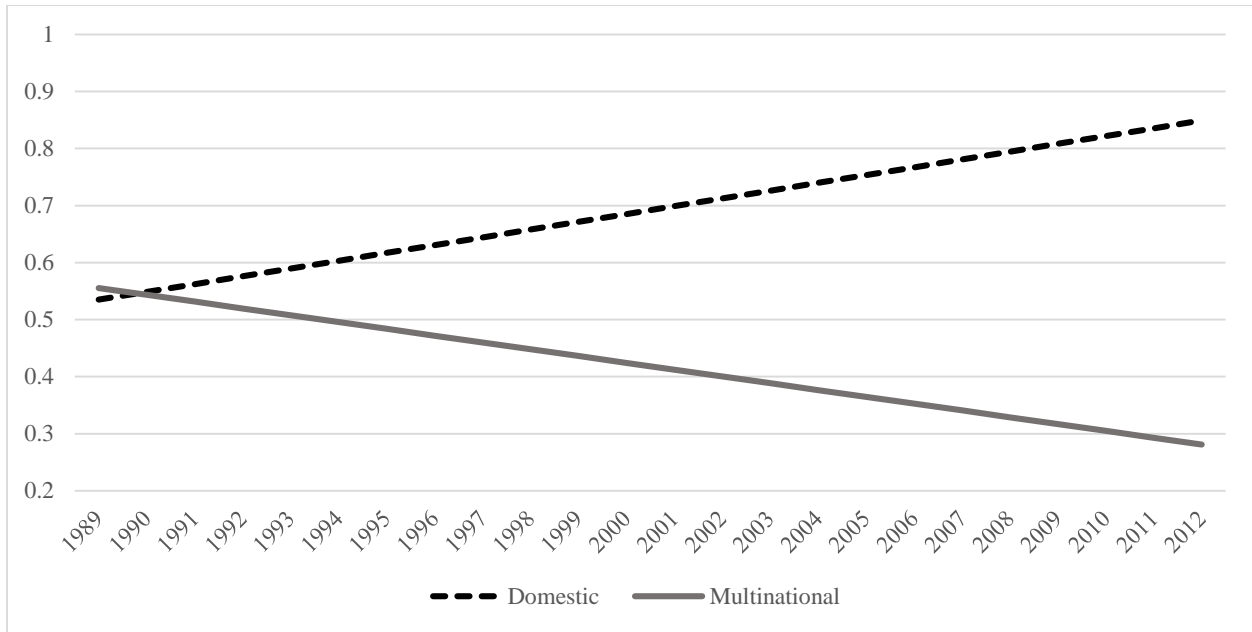
**Figure 2**

*Replicating Dyreng, et al. (2014) for the Jennings et al. (2012) sample: Mean annual Cash ETR*



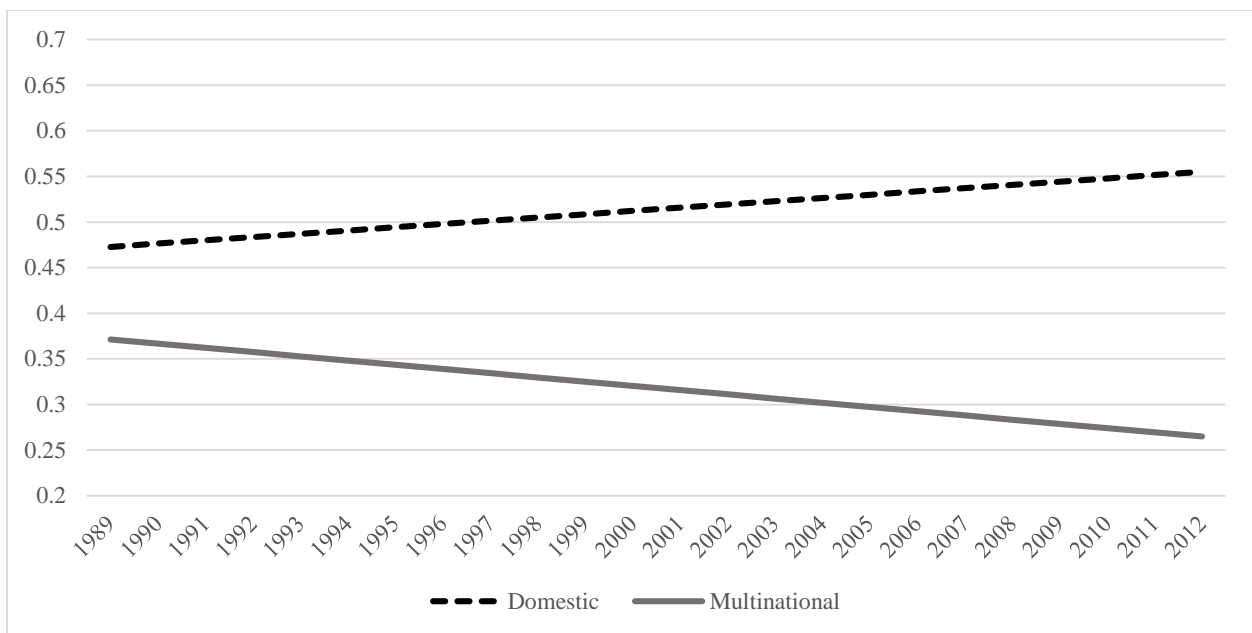
Figures 1 and 2 graph the time-series realization of the cash effective tax rate (CETR) for domestic and multinational firms. Figure 1 is based upon the replicated sample of Dyreng, et al. (2014). Figure 2 is based upon the primary sample of firm-years used in the tests summarized in this manuscript. CETR is the ratio of current-year cash taxes paid (TXPD) to current year pretax income (PI). Firms are classified as multinational in a given year of either its pretax foreign income (PIFO) is greater than zero or if its absolute value of foreign tax expense (TXFO) is greater than zero.

**Figure 3**  
*Annual PTR/TAX Ratio Analysis*



This figure displays the time trend in annual realization of the *PTR/TAX* difference ratio separately for domestic and multinational firms. The *PTR* difference is the difference between the high and low tax preference groups' average pre-tax return, where pretax return is measured as pretax income divided by owner's equity. The *TAX* difference is the difference between the high and the low tax preference groups' average effective tax rate, where effective tax rate is measured as total tax expense divided by pretax income before special items. High (low) tax preference firms are those in the lowest (highest) 40 percent of the annual effective tax rate distribution.

**Figure 4**  
*Annual Delta Analysis*



This figure presents the time trends in the annual realization of the extent of implicit taxes (i.e. delta) separately for domestic and multinational firms. The estimation of delta is described in more detail in the text and in Jennings et al. (2012) equations (4) through (11).

**TABLE 1**  
*PTR/TAX Difference Ratio Analysis*

	<i>Domestic Firms</i> (A)	<i>Multinational Firms</i> (B)	<i>Difference</i> (A) - (B)
High-Tax Group			
<i>PTR</i>	0.2596	0.2718	-0.0123
<i>TAX</i>	0.1044	0.1067	-0.0023
Low-Tax Group			
<i>PTR</i>	0.2265	0.2501	-0.0242
<i>TAX</i>	0.0608	0.0616	-0.0008
Difference			
<i>PTR</i>	0.0331	0.0217	
<i>TAX</i>	0.0437	0.0451	
Ratio ( <i>PTR/TAX</i> )	0.7574	0.4812	

This table summarizes *PTR/TAX* difference ratio analysis separately for domestic and multinational firms. The *PTR* difference is difference between the high and low tax preference groups' average pre-tax return, where pretax return is measured as pretax income divided by owner's equity. The *TAX* difference is the difference between the high and the low tax preference groups' average effective tax rate, where effective tax rate is measured as total tax expense divided by pretax income before special items. High (low) tax preference firms are those in the lowest (highest) 40 percent of the annual effective tax rate distribution.

**TABLE 2**  
*Correlation Analysis*

Correlation	<i>Domestic Firms</i> (A)	<i>Multinational Firms</i> (B)	<i>Comparison of</i> (A) and (B)	
	Mean	Mean	Difference	z-statistic
<i>Average of Annual</i>				
<i>(PTR, etr)</i>	0.0689	0.0375	0.0314***	3.14
<i>(ROE, etr)</i>	-0.1034	-0.1379	0.0345***	3.49
<i>Pooled</i>				
<i>(PTR, etr)</i>	0.0720	0.0505	0.0215**	2.16
<i>(ROE, etr)</i>	-0.1054	-0.1289	0.0235**	2.38

This table reports the Pearson correlations between *PTR* and *etr* and between *ROE* and *etr* separately for domestic and multinational companies. Both the average of annual correlation coefficients and the pooled correlation coefficients are summarized. *ROE* is the after-tax return on equity defined as pretax income before special items less total tax expense divided by beginning of the year owners' equity. *PTR* is measured as pretax income divided by owners' equity. The effective tax rate (*etr*) is measured as total tax expense divided by pretax income before special items. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% levels respectively using two-sided tests.



**TABLE 3**  
*PTR Regression Analysis*

**Model:**  $etr_{it} = \beta_0 + \beta_1 Size_{it} + \beta_2 Lev_{it} + \beta_3 CAP_{it} + \beta_4 INV_{it} + \beta_5 RD_{it} + \beta_6 PTR_{it} + \sum Years + e_{it}$

	<i>Domestic</i> (1)	<i>Multinational</i> (2)	<i>Domestic</i> (3)	<i>Multinational</i> (4)
Intercept	0.3239 (47.93)***	0.0370 (53.73)***	- -	- -
<i>Size</i>	0.0064 (6.17)***	-0.0047 (-5.64)***	0.0076 (7.06)***	-0.0015 (-1.76)*
<i>Lev</i>	-0.0172 (-1.75)*	0.0361 (4.16)***	-0.0239 (-2.40)**	0.0190 (2.18)**
<i>CAP</i>	-0.0504 (-5.76)***	0.0014 (0.16)	-0.0531 (-5.99)***	-0.0271 (-2.89)***
<i>INV</i>	0.0197 (2.20)**	-0.0317 (-2.56)**	0.0146 (1.58)	-0.0549 (-4.42)***
<i>RD</i>	-0.4011 (-9.52)***	-0.3670 (-13.00)***	-0.4080 (-9.64)***	-0.3980 (-14.13)***
<i>PTR</i> ( $\beta_6$ )	0.0357 (4.99)***	0.0277 (4.48)***	0.0337 (4.69)***	0.0149 (2.44)**
Year fixed effects	No	No	Yes	Yes
R <sup>2</sup>	0.0377	0.0451	0.9118	0.9107
Nobs	18,345	21,408	18,345	21,408
Test: ( $\beta_{6\_Domestic} - \beta_{6\_Multinational}) = 0$ ( <i>t-statistic</i> )	0.0079 (0.84)		0.0187** (1.99)	

This table presents results of the regression model summarized above with standard errors clustered by firm. (*etr*) is measured as total tax expense divided by pretax income before special items. *Size* is the natural log of total assets. *Lev* is the ratio of long-term debt to total assets. *CAP* is ratio of net PP&E to total assets. *INV* is the ratio of inventory to total assets. *RD* is the ratio of R&D expense for the current year to sales for the current year (set to zero if missing). *PTR* is measured as pretax income divided by owner's equity. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% levels respectively using two-sided tests.

**TABLE 4**  
*Delta Analysis*

	Mean	Variance
<i>Domestic Firms</i>	0.5139	0.1075
<i>Multinational Firms</i>	0.3182	0.0531
Difference ( <i>t-statistic</i> )	0.1957*** (2.56)	

This table summarizes the means and variances of annual realizations of the Jennings et al. (2012)  $\delta$  or delta, separately for domestic and multinational firms. The estimation of delta is described in more detail in the text and in Jennings et al. (2012) equations (4) through (11). \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% levels respectively using two-sided tests.

**TABLE 5**  
*Cross-Sectional Results with High Foreign Income Multinational Firms*

<b>Panel A: PTR/TAX Difference Ratio Analysis</b>			
	<i>Multinational Firms (A)</i>	<i>High Foreign Income Multinational Firms (B)</i>	<i>Difference (A) - (B)</i>
High-Tax Group			
<i>PTR</i>	0.2718	0.2520	0.0198
<i>TAX</i>	0.1067	0.0947	0.0120
Low-Tax Group			
<i>PTR</i>	0.2501	0.2494	0.0007
<i>TAX</i>	0.0616	0.0531	0.0085
Difference			
<i>PTR</i>	0.0217	0.0026	
<i>TAX</i>	0.0451	0.0416	
Ratio ( <i>PTR/TAX</i> )	0.4812	0.0623	

**Panel B: Correlation Analysis**

	<i>Multinational Firms (A)</i>	<i>High Foreign Income Multinational Firms (B)</i>	<i>Comparison of (A) and (B)</i>	
Correlation	Mean	Mean	Difference	z-statistic
Average of Annual				
( <i>PTR, etr</i> )	0.0375	-0.0171	0.0546***	6.45
( <i>ROE, etr</i> )	-0.1379	-0.2063	0.0684***	9.67
Pooled				
( <i>PTR, etr</i> )	0.0505	0.0084	0.0421***	4.80
( <i>ROE, etr</i> )	-0.1289	-0.1926	0.0640***	3.09

**TABLE 5, continued...**  
*Cross-Sectional Results with High Foreign Income Multinational Firms*

<b>Panel C: PTR Regression Analysis</b>				
	<i>Multinational Firms</i>	<i>High Foreign Income Multinational Firms</i>	<i>Multinational Firms</i>	<i>High Foreign Income Multinational Firms</i>
	(1)	(2)	(3)	(4)
Intercept	0.0370 (53.73)***	0.3340 (22.41)***	- -	- -
<i>Size</i>	-0.0047 (-5.64)***	-0.0056 (-3.32)***	-0.0015 (-1.76)*	-0.0002 (-0.13)
<i>Lev</i>	0.0361 (4.16)***	0.0635 (3.64)***	0.0190 (2.18)**	0.0294 (1.75)*
<i>CAP</i>	0.0014 (0.16)	0.0623 (3.19)***	-0.0271 (-2.89)***	0.0035 (0.17)
<i>INV</i>	-0.0317 (-2.56)**	-0.0010 (-0.03)	-0.0549 (-4.42)***	-0.0586 (-1.99)**
<i>RD</i>	-0.3670 (-13.00)***	-0.3239 (-6.18)***	-0.3980 (-14.13)***	-0.3755 (-7.77)***
<i>PTR</i> ( $\beta_6$ )	0.0277 (4.48)***	0.0105 (0.78)	0.0149 (2.44)**	-0.0194 (-1.45)
Year fixed effects	No	No	Yes	Yes
R <sup>2</sup>	0.0451	0.0539	0.9107	0.8796
Nobs	21,408	7,140	21,408	7,140
Test: ( $\beta_{6\_Domestic} - \beta_{6\_Multinational}) = 0$ ( <i>t-statistic</i> )	0.0172 (1.17)		0.0343** (2.33)	

**TABLE 5, continued...**  
*Cross-Sectional Results with High Foreign Income Multinational Firms*

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**Panel D: Delta Analysis**

	Mean	Variance
<i>Multinational Firms</i>	0.3182	0.0531
<i>High Foreign Income Multinational Firms</i>	0.0633	0.0644
Difference ( <i>t</i> -statistic)	0.2549*** (6.98)	

This table reproduces the results summarized in Tables 1-4 comparing our full sample of multinational firms to a subsample of multinational firms that derives a high proportion of their pretax income from foreign sources. The high foreign income multinational firm partition is based upon the highest annual tercile of the ratio of foreign pretax income to total pretax income (PIFO/PI). Panels A-D summarize our results. In all panels we compare the results from our full set of MNEs to our partition of high foreign income multinational firms. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% levels respectively using two-sided tests.