Effects of Overseas Subsidiaries on Worldwide Corporate Taxes

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Abstract

We propose and test a simple model of international tax shifting, which shows that multinational firms' abilities to engage in tax arbitrage are functions of the benefits and costs of doing so. We use a large database of publicly traded firms of over 200 countries and hand-collect tax rates for all subsidiaries for such firms. We find that firms' effective tax rates are lower if the countries in which they operate vary significantly in their statutory rates and that firms' effective rates are higher the more countries they operate in and the more subsidiaries they have.

JEL Classifications: F23, H25
Key Words: effective tax rates; international tax; tax policy; tax shifting

1. Introduction

Recent empirical evidence[1] has documented that effective corporate income tax rates vary enormously by firm and country and that such rates are declining over time. This suggests that firms are managing their tax burdens, perhaps by exploiting within-country favorable tax rates and rules or by shifting income between countries. Income shifting is profitable when statutory rates differ between the countries in which firms operate. However, shifting is neither straightforward nor costless, since most firms have numerous subsidiaries operating in various combinations of countries, each with differing tax rates.

To illuminate the complexities of tax shifting, we propose a simple model, which predicts that firms' abilities to engage in international tax arbitrage are functions of the benefits and costs of doing so. We then test the model's predictions by examining effective tax rates (ETRs) for all publicly traded companies over a four-year period (2005–2008) reported in the Osiris electronic database produced by Bureau van Dyk. To develop ETRs, we hand-collect statutory tax rates for the 200 countries in which these 552,000 firms and their over one million subsidiaries operated. Consistent with our model, we find that firms' effective tax rates are lower if the countries they operate in have high variability in statutory rates. We also find that tax shifting is lower (ceteris paribus) for firms with larger global spans, that is, those operating in more countries with more subsidiaries. This paper contributes to the literature by being the first to examine the impact of tax rates for all jurisdictions in which any particular firm operates and to then model and test the impacts of such rates on effective tax rates. Our conclusion is that tax shifting happens worldwide and is not restricted to firms based in developed countries.

2. Prior Research

Some research has examined ETRs, but none has decomposed them to the level done here, nor examined shifting across a worldwide sample of firms. What's more, few studies have attempted to measure the impact of tax arbitrage (tax shifting). The growing body of evidence on tax shifting, comprehensively analyzed by Heckemeyer and Overesch (2012), indicates that multinationals do minimize their tax obligations by shifting profits from high to low tax jurisdictions. Prior studies typically show that pre-tax profitability of affiliates is decreasing in a jurisdiction's tax rate or tax differential with economies hosting other firms in the same

[1] See for example Lee and Swenson (2008) and Loretz and Moore (2012)

multinational group. These studies focus on the profit shifting by R&D-based intangibles (Grubert, 2003), the ease of locating intangibles in low-tax subsidiary jurisdictions (Dischinger and Riedel, 2011), the ownership structure of subsidiaries (Weichenrieder, 2009), and the location of parent companies (Dischinger and Riedel, 2010). Other studies examine whether the absence of transfer pricing regulations[2] or lax enforcement of the arms' length principle for related-party transactions is likely to be associated with aggressive profit shifting (Bartelsman and Beetsma, 2003; Beuselinck et al., 2009; Lohse and Riedel, 2012). Dyreng and Lindsey (2009) focus on the effect of tax havens on the worldwide tax charges of US multinationals and find that it is small.[3] Huizinga and Laeven (2008) use subsidiary data for European Union-firms to examine the amount of taxable income shifted between countries to lower firms' tax burdens. However, as their analysis was restricted to EU companies, their primary finding was that sample companies shifted tax burdens away from Germany.

Most recently, Loretz and Moore (2012) examine international tax competition between firms. They first model the incentives for firms in the same industry and similar geographic markets to avoid reputation loss by benchmarking their ETRs to those of competitors. Empirically, they find that the positive spatial interdependence between the ETRs of firms is significant between firms in the same country. Their evidence holds for companies in the OECD, the European Union, and certain other countries.

In one of the few studies to examine subsidiary effects, Markle and Shakelford (2012) examine average effective tax rates for firms from 86 countries from 1988 through 2007. They find that such rates were lowest for firms headquartered in the Middle East and tax haven countries and highest in Japan. They also find that effective rates were much lower than statutory rates and that effective rates declined steadily over time. They restricted their examination of subsidiary effects to regressing ETRs on dummy variables for each country in which a firm had a subsidiary. They found ETRs were affected differently depending on countries in which a firm had such subs.

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[2] Several studies using U.S. data (see survey reported in Newlon, 2000) generally find evidence of profit shifting consistent with transfer pricing for U.S-based firms.

[3] Earlier multinational ETR studies include those of Nicodeme (2001), who uses firm-level data to estimate ETRs for EU, Japanese, and U.S. companies from 1990–1999. Altshuler, Grubert, and Newlon (2001) use IRS tax return data to estimate effective rates which U.S. multinationals faced while operating abroad from 1984 through 1992. Bretschger and Hettich (2001) examine data from 1967–1996 for 14 OECD countries and find that globalization reduced taxes as opportunities for multinational tax planning (e.g., transfer pricing) increased. Slemrod (2004) uses macro data and finds there is a declining dispersion of average effective rates across countries over time. Rego (2003) finds that U.S. multinationals with more extensive foreign operations have lower worldwide ETRs than do other firms.

Our study reaches beyond the work of Markle and Shackelford (2012) by explicitly considering statutory rates of all countries in which firms operate and by providing a model of how such rates (as well as the span of subsidiary operations) affect ETRs. It likewise goes beyond research by Huizinga and Laeven (2008) and Bartlesman and Beetsma (2003) by examining firms from a worldwide database.

3. Model and predictions

To more clearly examine the potential effects of tax shifting, we propose a simple model of a multinational firm where there is a difference in statutory rates between the firm's home country and those of the other countries in which it operates. Consider a multinational that operates in home country *i* and foreign country *j*. It can avail itself of a vector of international tax management techniques to maximize after-tax income. Its total tax bill (and therefore effective tax rate) is reduced by relatively lower statutory tax rates in either or both countries, whether or not shifting occurs. While this prediction that statutory rates matters seems obvious, note that prior research has examined the effects of multinationals' tax rates using only the tax rate of firms' *home countries of the parent company*; no scholars have explicitly considered the effects of statutory rates in *all of the countries in which firms operate.* Our model suggests the rates in countries subsidiaries operate in turn out to be almost as important as parent country rates.

Next, consider tax management through shifting. Assume that pretax income is measured by the same rules in both countries. The firm then decides to allocate pretax income across the two countries based on tax rates, to maximize after-tax profits. Assume that the marginal cost of shifting income increases as the amount of income shifted increases.[4] We have the following simple model:

$$Max\ \Pi = \lambda(1-\tau_i)\pi_i + (1-\lambda)(1-\tau_j)\pi_j - c_i\lambda^k\pi_i - c_i(1-\lambda^k)\pi_j \qquad (1)$$

subject to:

$$0 \le \lambda \le 1, \text{and}$$
$$k > 1,$$

where:

Π = after tax income,

[4] This can occur if increasing shifting results in the likelihood of audit increasing, increasing planning costs, and potential nontax structuring (i.e., setting of pre-tax transfer prices), etc.

λ = proportion of pretax income allocated to country *i*,

π_i = pretax income in country *i*,

c_i = transactions cost of moving income to country *i*, and

τ_i = Statutory tax rate of country *i*.

For simplicity, set k =2 (which should not affect the generalizability of the results). Taking the partial derivative of total profits with respect to a change in between-country income allocation gives the following:

$$\partial \Pi / \partial \lambda : \lambda = \frac{[(t_j - t_i)/2] - c_i}{c_i + c_i}. \quad (2)$$

In general, this model will result in an interior solution (i.e., some shifting but not all pre-tax income going to one or the other country). Holding constant transaction costs, an increase in the difference in statutory tax rates results in an increase in shifting. That is, even if country *i* has a low tax rate but country *j*' s rate is even lower, the firm will minimize and allocate more tax savings methods to country *i* (subject to limitations such as the ability shift operations and related transactions costs, etc.). What is also clear from (2) is that transaction costs limit this; increasing the costs of shifting means that a corner solution does not exist (i.e., all income is not allocated to the lower tax rate country) and that there is some interior solution. The total amount of tax shifting a firm can use can be thought of as follows: the greater the variation in statutory rates for countries the firm operates in, the greater the likelihood the firm can arbitrage taxes between any pair of countries. Accordingly:

Prediction 1: The higher the variability in statutory tax rates that the firm faces, the lower is its effective tax rate.

As shown in (2), *relative transaction costs* matter when the firm uses tax arbitrage-based tax management between countries. While we can observe statutory tax rates across countries, we cannot directly measure transaction costs. As discussed below, we can *assume* such costs are will rise to the extent the firm has operations involving more than a single pair of firms/subsidiaries and countries.

Consider a manufacturer that has multiple stages of production in various countries, in which production is sequential between the parent and various subsidiaries. Assume each subsidiary operates in a country with a different statutory tax rate. So long as there is a tax rate differential between any two subsidiaries, transfer prices can be adjusted to enable tax arbitrage. However, setting a transfer price between two subsidiaries then affects the transfer price to any succeeding subsidiaries in the value chain, since the input prices set by earlier transactions result in fewer "degrees of freedom" in the next entity's pricing, which may then require more complex and costly planning. Similarly, if the other subsidiaries in the value chain are in different countries, costs also increase ; each country's tax laws will differ (and the degree to which tax authorities aggressively audit transfer pricing will vary), requiring more planning and transaction costs.

Alternatively, consider the tax arbitrage situation where a parent firm (or a special purpose entity in a low tax rate jurisdiction) charges any variety of costs to its subsidiaries. The tax advantage here is that fees paid by subsidiaries are deductible at the rates these operations face, while the related fee income received by the tax haven-based operation is taxed at a zero or very low rate. Common situations are royalties for intangibles such as technology or trademarks, management fees, captive insurance company costs, etc. Here, there is a fixed amount of tax arbitrage possible—the fee charged—which is to be allocated to affiliates. Assuming the firm cannot simply allocate all such fees to the affiliate with the highest tax rate (a corner solution) to reflect some economic reality, costs of tax arbitrage are also increasing in the number of subsidiaries. Similarly, because of differing rules and tax aggressiveness across countries, tax arbitrage also increases with number of countries.[5] Another common scenario is where the firm sets up a holding company in country that imposes no tax or favorably taxes dividends. An example is the Cayman Islands. Again, the more subsidiaries and the more countries the firm operates in, the higher the total transaction costs for any arbitrage technique.[6]

The above scenarios, while not comprehensive, illustrate that more subsidiaries require larger transaction costs for each arbitrage setting. In some settings, these costs will exceed the potential benefits, and the firm will not use the technique. A corollary is that, the more countries in which the firm operates, the more different tax avoidance schemes it might use, since countries will have differing rules. Holding other factors constant we have:

[5] If the firm has only one subsidiary in a country, the effects of the country and the number of subsidiaries is empirically indistinguishable. However, many of our sample firms have multiple subsidiaries in some countries. Since each subsidiary will have a different operation and potentially a different tax structure, arbitrage (tax planning) must in principle differ across the subsidiaries, implying that transaction costs increase with the number of subsidiaries, independent of number of countries.

[6] Ibid.

Prediction 2: Ceteris paribus, the more subsidiaries the firm has and the more countries in which the firm operates, the higher its effective tax rate will be.

Of course, (1) shows, ceteris paribus, higher statutory rates in either or both home and subsidiary countries will decrease overall profitability, independent of this prediction.

4. Data and empirical approach

To test our predictions, we use firm-level financial statement data for all publicly traded companies representing 204 countries, over a four-year period (2005–2008)[7], reported in the Osiris electronic database produced by Bureau van Dyk. There are over 552,000 firms, with a total of over one million subsidiaries. This database[8] contains information on subsidiaries of each firm—size, place of incorporation, etc. The subsidiary data is critical to testing our tax shifting/arbitrage predictions. We match this firm data with statutory tax rates by country and year for each firm and also match statutory rates by country and year for each of firms' subsidiaries.

The regression model for firm *i's* effective tax rate in year *t* is:

$$ETR_{i,t} = \alpha + \beta_1 \text{STRVAR}_{i,t} + \beta_2 STR\,\text{min - max}_{i,t} + \beta_3 \text{Countries}_{i,t} + \beta_4 \text{Subs}_{i,t} + \beta_5 \text{PSTR}_{i,t} + \beta_6 \text{SSTR}_{i,t} + \beta_7 \text{SIZE}_{i,t} + \sum_{j=1}^{n} \alpha_j X_j + \sum_{k=1}^{3} \alpha_k YR_k + \varepsilon_{i,t} \quad (3)$$

where:

$\text{ETR}_{i,t}$ = Effective tax rate for firm *i* in year *t*,

$\text{STRVAR}_{i,t}$ = variance in statutory tax rates across all countries in which firm *i* operates in year *t*,

$\text{STRmin-max}_{i,t}$ = difference in minimum versus maximum statutory tax rates across all countries in which firm *i* operates in year *t*,

$\text{PTR}_{i,t}$ = Parent's home country statutory tax rate in year *t*,

[7] Hand-collection of each subsidiary's statutory tax rates for all firms is very labor intensive. Accordingly, we focus on a four-year period.

[8] The Compustat Global database does not have such subsidiary data.

$SSTR_{i,t}$ = Average country statutory tax rate in year *t* for every country in which parent *i* has a subsidiary,

$Subs_{i,t}$ = Number of subsidiaries owned by parent company *i* in year *t*,

$Countries_{i,t}$ = Number of countries in which company *i* has subsidiaries,

$SIZE_{i,t}$ = logarithm of total assets,

$X_{i,t}$ = Other factors affecting the ETR (explained below),

and *YR* are year indicator variables. Consistent with Loretz and Moore (2012), *ETR* is measured in two ways: current tax expense divided by pretax income and total tax expense divided by pretax income. As noted below, we also use a measure of tax avoidance as an alternative dependent variable. *X* is a number of control variables found in prior studies (see Atwood et al., 2012) to affect effective tax rates: profitability is measured through the return on assets (*ROA*, defined as operating income divided by total assets); and interest deductibility is leverage (*LEV*), which we measure as total liabilities as a share of total assets. *X* also includes capital intensity (*CAPINT* or the share of tangible fixed assets in total assets) and intangibles assets (*INTANG*), which is the share of tangible fixed assets in total assets.

Equation (3) indicates that *ETR* will be a function of at least three effects. First, it will be a mechanical function of the tax rates for the jurisdictions in which the firm operates. Put simply, if the firm operates in high tax jurisdictions, it will have higher taxes (and therefore a higher *ETR*), independent of arbitrage. We control for this with two variables: statutory tax rates by year for the country of the parent company and average statutory tax rates for its subsidiaries for all countries in which the firm has subsidiaries. Statutory rates, by year and country, were obtained from PwC *Worldwide Tax Summaries* and, where necessary, from direct correspondence with country desk officers of Big Four accounting firms.

The second factor affecting ETR is tax-shifting opportunities. Recall that we predict that firms' abilities to use arbitrage are a positive function of the variance of statutory rates for countries in which the firm operates and a negative function of the potential costs of tax arbitrage. Variation in tax rates is measured two ways. The first is variance of statutory rates, calculated using the statutory rates for year *t* for each country in which the firm has a subsidiary or where the parent is located. The second is the difference between the minimum and maximum rates in countries in which the firm operates. Potential costs of tax arbitrage are proxied by both number of countries the firm operates in and its number of subsidiaries.

The final effect relates to control variables used in prior studies. An implied importance of these variables is that, inasmuch as they represent tax base effects and matter more in explaining *ETR*s than are statutory rates, some important policy implications are indicated. A reading of PwC *International Tax Summaries* and other international tax publications indicates that trying to categorize each country's tax base rules (e.g., setting a variable to a specific value depending on the degree of accelerated depreciation allowed across multiple classes of assets) is infeasible. Instead, we examine the levels of investments in assets, debt, intangibles, etc., and let the regressions determine an average effect of these on effective tax rates.[9]

5. Results

5.1 Descriptive statistics

Table 1 shows average effective tax rates, average statutory tax rates (for each firm's home country), and number of firm-years, by country for our sample.[10] We see that effective current tax rates are, on average, well below statutory rates for the home country, but there is wide variation. For firms headquartered in tax havens, effective rates are generally *above* the statutory rates. For example, while the statutory rate in the Cayman Islands is 0, the average effective rate for firms headquartered there is 9.5%, indicating that their overseas subsidiaries cannot escape taxation abroad.

(Table 1 about here)

Table 2 reports means and standard deviations for data used in our subsequent regressions. Several things are noteworthy. The mean ETR of about 22% is considerably below the mean statutory rates (both parent and subsidiary) of approximately 31%, which points to tax management. The relatively large standard deviations of ETRs suggest a wide range of techniques and situations and suggest there has been no reversion toward some sort of mean value, across firms. Statutory rates range from 0% (tax havens) to 55%, for both parent and subsidiaries' countries of operations. The average company has about 15 subsidiaries, but the range is from one to 933. Firms operate on average in three countries, but the range is from one to 127

[9] As noted in prior studies, debt proxies for the ability of a firm to use interest expense deductions to reduce taxes. Similarly, asset levels proxy for a firm's ability to use depreciation tax shield deductions. And intangibles proxy for the firm's ability to use royalty payments between affiliates to reduce taxes.

[10] As observed in prior studies, statutory rates have been decreasing over time across countries. The model clearly predicts that this will affect effective tax rates and tax shifting. Importantly, note that we capture this reduction in rates by using statutory rates by year and by country in the period we examine.

countries. Finally, the variance in statutory rates of almost 20 percent shows there is a rich variation of rates that the average firm faces worldwide.

(Table 2 about here)

Table 3 shows the relationships between ETRs and the tax arbitrage variables. Panel A shows that, the more countries a firm has a subsidiary in, the higher its ETR, consistent with predictions. Panel B generally shows that ETRs increase with the number of subsidiaries, which supports the conjecture that tax management is more costly where there are more entities across which to manage taxes. Panel C shows that ETRs are declining in the variance in statutory rates which the firms' subsidiaries face. This result consistent with the prediction that tax arbitrage (or shifting) is more feasible where there is a larger "spread" in rates that the firm faces across jurisdictions.

(Table 3 about here)

5.2 Regression results

Since this paper *proxies* for tax avoidance by examining effective tax rates, a natural question arises about whether we should examine total or current effective rates. The former includes deferred taxes in the numerator. As noted by Rego (2003), since firms defer payment of income taxes whenever possible, excluding deferred taxes from the numerator of ETRs better reflects the time value of money. On the other hand, current ETRs may include the effect of firms that manage accounting earnings (pre-tax income) upwards, with no corresponding modification taxable income. Since income-increasing earnings management increases both the denominator (pretax income) and the numerator (deferred taxes) of ETRs, inclusion of deferred taxes in the numerator of ETRs would control for such earnings management. Accordingly, we measure ETR in terms of current and total payable amounts.

An alternative measure is given by Atwood et al. (2012), who examine reductions in ETRs in the context of "tax avoidance." They measure tax avoidance broadly as the reduction in explicit taxes paid, or the tax on pre-tax earnings computed at the home-country statutory corporate tax rate less the taxes actually paid, expressed as a percentage of pre-tax earnings. We use this same measure by firm and by year as follows: TaxAvoid = ((income before tax * parent STR) − (total tax expense − deferred taxes))/ income before tax. Since current tax expense is missing from the database, we replace it with total tax expense less deferred taxes. Table 4 shows

regression results using both measures of ETR and tax avoidance for 2005–2008.[11] Robust standard errors are reported below coefficient estimates.

(Table 4 about here)

Since not all of the firms followed IFRS, differences in accounting method may have had an influence. For example, the U.S. follows GAAP, whereas most countries during this period do not. (See the appendix for a list of which countries followed IFRS during this period.) To see whether this affected the results, regressions were run separating IFRS versus non-IFRS countries.[12] As can be seen in Table 4, results are essentially identical across the two groups of firms.

Consistent with expectations, both parent and subsidiary average statutory rates are significantly and positively associated with ETR and tax avoidance. In support of the transactions costs aspect of *Prediction 2*, the number of countries in which the firm operates is significantly and positively associated with ETR, under both ETR specifications. Consistent with our transaction cost predictions, higher effective rates are associated with greater numbers of (1) subsidiaries and (2) countries containing firm operations.

The tax shifting variables are also consistent with predictions. Effective rates are significantly reduced by higher variances in statutory tax rates that the firm faces (*Prediction 1*). That is, firms can better reduce their taxes when given a greater variation of statutory rates, thanks to operating in more countries. Similarly, regression results indicate that the greater the spread between the highest and lowest statutory rates the firm faces, the lower its ETR. Finally, consistent with prior ETR studies, the tax base variables are generally significantly associated with ETR: ROA and size increase ETRs, and ETRs are reduced by the firm's ability to deduct interest (leverage), depreciation (capital intensity), and royalties (intangibles).[13]

The number of countries in which a firm operates may be far more important than number of subsidiaries—and if firms have a single subsidiary in a country the effects of these two would be confounded. As it turns out, many firms have more than one subsidiary in a number of countries. Nonetheless, to test for this, we run separate regressions excluding number of

[11] Observations with ETRs above 1.00 or below −1.00 were eliminated as were firms with no subsidiaries and other outliers.

[12] Accounting rules for the home country of each firm were used. Financials for firms, including all subsidiaries, were assumed to use (or not use) IFRS consistently.

[13] We have omitted accruals as an explanatory variable here. Unfortunately, the all of the variables necessary to estimate accruals (e.g., using the Jones model) are not present in the Osiris database. Such variables are available in the Compustat Global database. We constructed accruals for multinationals from Compustat Global; unfortunately, when we matched accruals, by firm, to the firms in our Osiris database, we were left with very few observations. Regressions using these two combined databases are shown in Table A1 of the appendix; while accruals is significant and negative, other variables are not significant due to very large standard errors resulting from the small sample size. Note that Global Compustat does not have subsidiary data and, in general, is not suited for test of the predictions posed in this paper.

subsidiaries (but including number of countries). Table 5 shows that results are essentially unchanged from those shown in Table 4. Thus, both number of countries operated in and number of subsidiaries increase transaction costs and reduce tax arbitrage.[14]

(Table 5 about here)

To see whether multicolinearity could have affected results, correlations are reported in Table 6. An eigenvalue analysis indicated no effects of colinearity on the regressions. Untabulated robustness checks, allowing for country fixed effects, clustering standard errors on industry, and the exclusion of the country with the largest number of observations (Japan) using both total and current effective tax rates indicated no major change from the results shown in Table 4.

(Table 6 about here)

5.3 Effects of international intensity

Table 7 reports regressions result for current ETRs when we separate firms depending on international intensity. The left column shows results for firms reporting no overseas subsidiaries, and the right column reports results for firms with one or more international subsidiaries. The assumption here is that the latter group of companies is more likely to engage in international tax shifting, and, accordingly, the shifting variables are in included only for these firms. Results in fact show that the coefficients for number of countries, number of subsidiaries, variance in ETRs, and difference in minimum versus maximum statutory rates are larger and more significant than those reported in Table 4, supporting our tax shifting predictions.

(Table 7 about here)

Table 8 provides additional insight about differences between firms, based on international intensity. The table gives descriptive statistics for the two types of firms. While such firms are very similar on most dimensions, internationally intensive firms have much higher growth rates (in terms of ROA) and have much higher leverage and levels of investments in intangible assets. The latter suggests that such firms can shift taxes more through charging royalty fees for use of intangibles in such a ways as to shift taxes. To investigate this, internationally intensive firms were separated based on whether they were in the top 50th percentile of intangible

[14] In some cases, multiple subsidiaries in the same country can increase costs if they are sequential in the production process such that the transfer price set to one of them affects the price set to the second or if the subsidiaries have very different income levels so that different transfer prices (especially for intangible royalties) would need be set.

asset intensity. Regression results shown in Table 9 indicate that, for the intangible-heavy firms, there is a significant effect for number of subsidiaries, variance in statutory rates, and min-max difference in rates, but for the less intangible-intensive firms, these variables are not significant. Table 9 also shows that the coefficients for the actual statutory rates (for both parent and subsidiaries) have a much smaller impact for the intangible-intensive firms. These results suggest that such firms more effectively shift taxes than firms with fewer intangible assets.

(Tables 8 and 9 about here)

6. Conclusion

This paper contributes to the literature by being the first to examine the impact of tax rates for all jurisdictions in which any particular firm operates. Examining a worldwide sample of publicly traded firms and hand-collected tax rates for such firms' subsidiaries, we find that firms' effective tax rates are functions of the variance of statutory tax rates that they face, the number of countries in which they have a taxable presence, and their number of subsidiaries. Interestingly, the levels of statutory tax rates that firms face at home countries explain only slightly less than 38% of effective rates. This suggests that, while statutory rates matter, other factors significantly influence the taxes that firms pay—including their abilities to suppress their taxes through arbitrage and by taking advantage of favorable rules affecting the tax base.

The results come with caveats. First, our evidence only suggests tax shifting. To prove it, we would need actual firm inter-company transfer data. Second, we do not consider other structural changes in any one country's tax laws. Finally, special individual aspects of country tax laws such as credits and special deductions are also not considered.[15] Future research may examine specific tax management methods and their effectiveness; this study only establishes that firms that have greater opportunities to use tax arbitrage enjoy lower effective rates.

[15] Nor do we consider the impact of worldwide versus territorial tax systems. A clean categorization of countries is difficult because many countries exhibit aspects of both, e.g., the US system claiming to tax worldwide earnings but not taxing income from overseas subsidiaries until earnings are repatriated. Also, since any firm may operate in several countries, each of which may be worldwide or territorial (or some blend) in its tax regime, categorizing any firm as worldwide or territorial is problematic.

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Table 1

ETR and STR mean by country

Country (number of observations)	ETR mean	STR mean	Country (number of observations)	ETR mean	STR mean
UNITED ARAB EMIRATES (80)	0.0403	0.55	FRANCE (2359)	0.2111	0.33
NETHERLANDS ANTILLES (30)	0.1763	0.34	UNITED KINGDOM (5262)	0.1570	0.29
ARGENTINA (265)	0.3084	0.35	GHANA (4)	0.1366	0.25
AUSTRALIA (2617)	0.1555	0.30	GIBRALTAR (8)	0.0374	0.30
BARBADOS (19)	0.1313	0.25	GREECE (710)	0.2073	0.25
BANGLADESH (3)	0.2449	0.30	HONG KONG (485)	0.1202	0.17
BELGIUM (446)	0.1830	0.34	CROATIA (43)	0.1812	0.20
BULGARIA (6)	0.1396	0.10	HUNGARY (62)	0.0872	0.16
BAHRAIN (6)	0.0102	0	INDONESIA (115)	0.2253	0.30
BERMUDA (1282)	0.0930	0	IRELAND (251)	0.0904	0.12
BOLIVIA (7)	0.1314	0.25	ISRAEL (692)	0.1248	0.28
BRAZIL (752)	0.2204	0.34	INDIA (1259)	0.2001	0.34
BAHAMAS (8)	-0.0007	0	ICELAND (53)	0.1395	0.16
BOTSWANA (5)	0.2975	0.25	ITALY (903)	0.2646	0.34
CANADA (4784)	0.1383	0.35	JAMAICA (61)	0.2678	0.33
SWITZERLAND (732)	0.1624	0.21	JORDAN (77)	0.0876	0.25
COTE D' IVOIRE (3)	0.1995	0	JAPAN (19998)	0.3332	0.41
CHILE (675)	0.1669	0.17	KENYA (22)	0.2895	0.30
COLOMBIA (124)	0.1527	0.34	KOREA REPUBLIC OF (5314)	0.1797	0.28
COSTA RICA (20)	0.2275	0.3	KUWAIT (119)	0.0146	0.35
CYPRUS (55)	0.1215	0.1	CAYMAN ISLANDS (1069)	0.0955	0
CZECH REPUBLIC (55)	0.1542	0.22	KAZAKHSTAN (18)	0.2337	0.30
GERMANY (2462)	0.1932	0.34	LIECHTENSTEIN (4)	0.1556	0
DENMARK (422)	0.1867	0.26	SRI LANKA (34)	0.1829	0.35
ECUADOR (2)	0.0853	0.25	LIBERIA (6)	0	0.35
ESTONIA (57)	0.0796	0.22	LITHUANIA (104)	0.1581	0.15
EGYPT (71)	0.1178	0.2	LUXEMBOURG (119)	0.1848	0.30
SPAIN (510)	0.1928	0.31	LATVIA (30)	0.1826	0.15
FINLAND (485)	0.1912	0.26	MOROCCO (102)	0.2666	0.30
FIJI (4)	0.0723	0.31	MONACO (7)	0.1755	0
MARSHALL ISLANDS (31)	-0.0474	0	PALESTINIAN TERRITORY (9)	0.0562	0
MACEDONIA (FYROM) (3)	0.1776	0	PORTUGAL (173)	0.1585	0.25
MALTA (3)	-0.0172	0.35	QATAR (20)	-0.0022	0.35
MAURITIUS (8)	0.0735	0.19	ROMANIA (18)	0.1705	0.16
MALAWI (2)	0.3095	0.30	SERBIA (6)	0.1093	0.10
MEXICO (379)	0.2271	0.28	RUSSIAN FEDERATION (603)	0.2775	0.24
MALAYSIA (1255)	0.1549	0.26	SAUDI ARABIA (98)	0.0728	0.20
NIGERIA (2)	0.2737	0.30	SERBIA (6)	0.1093	0.10

Table 1

ETR and STR mean by country

Country (number of observations)	ETR mean	STR mean	Country (number of observations)	ETR mean	STR mean
NETHERLANDS (553)	0.1785	0.26	SUDAN (3)	0.0805	0.35
NORWAY (549)	0.1559	0.28	SWEDEN (1227)	0.1404	0.28
NEW ZEALAND (363)	0.2148	0.32	SINGAPORE (1000)	0.1487	0.19
OMAN (64)	0.0847	0.12	SLOVENIA (51)	0.1842	0.22
PANAMA (29)	0.1180	0.30	SLOVAKIA (33)	0.1968	0.19
PERU (176)	0.2810	0.30	THAILAND (300)	0.1645	0.30
PAPUA NEW GUINEA (5)	0.3140	0.30	TUNISIA (70)	0.1327	0.30
PHILIPPINES (186)	0.1699	0.35	TURKEY (498)	0.1473	0.20
PAKISTAN (55)	0.2434	0.35	TRINIDAD AND TOBAGO (24)	0.1587	0.25
POLAND (237)	0.1686	0.19	TAIWAN (5686)	0.1325	0.25
PHILIPPINES (186)	0.1699	0.35	UKRAINE (9)	0.3410	0.25
PAKISTAN (55)	0.2434	0.35	UNITED STATES OF AMERICA (12501)	0.1836	0.35
POLAND (237)	0.1686	0.19	VENEZUELA (14)	-0.0133	0.34
PALESTINIAN TERRITORY (9)	0.0562	0	VIRGIN ISLANDS (BRITISH) (57)	0.1386	0
PORTUGAL (173)	0.1585	0.25	VIETNAM (28)	0.1055	0.28
QATAR (20)	-0.0022	0.35	SOUTH AFRICA (657)	0.2534	0.36
ROMANIA (18)	0.1705	0.16	ZAMBIA (1)	0.1339	0.35

Table 2

Descriptive data

Variable	Mean	Median	Std. Deviation	Quartile 1.	Quartile 3.
ETR_{total}	0.2070	0.2394	0.2396	0.0297	0.3671
$ETR_{current}$	0.2269	0.2534	0.1956	0.0822	0.3576
Parent STR	0.3239	0.3400	0.0881	0.2800	0.4000
Sub. Avg. STR	0.3156	0.3091	0.0744	0.2800	0.3833
Subs	17.5	6	44.9	2	14
Countries	3.8	1		1	3
Variance in STRs	19.7081	3.5513	37.5266	0	26.6182
Max-Min STR	-7.3977	0	11.4822	-12	0
SIZE	13.9235	13.9354	2.9445	11.7061	16.1221
ROA	0.0414	0.0505	0.5310	0.0012	0.1185
LEV	0.3174	0.1484	0.7098	0.0429	0.3372
INTANG	0.1887	0.0254	0.5780	0.0041	0.1555
CAPINT	1.4267	0.9956	2.7297	0.7861	1.1663

See text for variable definitions.

Table 3
Average current effective tax rates and characteristics of overseas operations

Panel A: ETR and number of countries with subsidiaries

	1–5 countries	**6–10 countries**	**11–20 countries**	**21–30 countries**	**> 30 countries**
$ETR_{current}$	0.225	0.247	0.249	0.270	0.265

Panel B: ETR and number of subsidiaries

	1–5 countries	**6–10 countries**	**11–20 countries**	**21–30 countries**	**> 30 countries**
$ETR_{current}$	0.210	0.240	0.240	0.250	0.255

Panel C: ETR and variance of subsidiaries' statutory tax rates

	Variance<10	**10<Variance<20**	**20<Variance<50**	**50<Variance**
$ETR_{current}$	0.230	0.165	0.170	0.150

See text for variable definitions.

Table 6

Correlations between study variables

Panel A Correlations between ETR total and other variables

Variables	*ETRtotal*	*Parent* $STR_{i,t}$	*Subsidiary Avg.* $STR_{i,t}$	*Number of* $Subsidiaries_i$	*Number of* $Countries_i$	*Variance in* $STRs_{i,t}$	*Max-Min* $STR_{i,t}$	$Size_{i,t}$	$ROA_{i,t}$	$LEV_{i,t}$	$INTANG_{i,t}$	$CAPINT_{i,t}$
ETRtotal	1.0000											
Parent $STR_{i,t}$	0.2114*	1.0000										
Subsidiary Avg. $STR_{i,t}$	0.1847*	0.6921*	1.0000									
Number of $Subsidiaries_i$	0.0477*	0.0141*	-0.1095*	1.0000								
Number of $Countries_i$	0.0337*	-0.0160*	-0.1613*	0.6963*	1.0000							
Variance in $STRs_{i,t}$	-0.0620	-0.1145*	-0.3013*	0.1288*	0.0087*	1.0000						
Max-Min $STR_{i,t}$	-0.0004	0.0755*	0.2666*	-0.4936*	-0.6993*	-0.6985*	1.0000					
$Size_{i,t}$	0.1892*	0.0256*	0.0313*	0.0972*	0.0531*	-0.0448*	-0.0192*	1.0000				

$ROA_{i,t}$	0.1558*	-0.0529*	-0.0585*	0.0540*	0.0667*	0.0198*	-0.0775*	0.1915*	1.0000			
$LEV_{i,t}$	-0.0100*	0.0007	-0.0168*	0.0744*	0.0601*	0.0198*	-0.0745*	0.0539*	-0.1314*	1.0000		
$INTANG_{i,t}$	-0.0405*	-0.0044	-0.0188*	0.0501*	0.0774*	0.0479*	-0.0903*	-0.1314*	0.0540*	0.4257*	1.0000	
$CAPINT_{i,t}$	0.0036	-0.0492*	-0.0422*	0.0087*	0.0117*	0.0186*	-0.0239*	0.0538*	0.3304*	0.6447*	0.3430*	1.0000

* denotes significance at the 5% level.

Panel B Correlations between ETR current and other variables

Variables	*ETRcurrent*	*Parent* $STR_{i,t}$	*Subsidiary Avg.* $STR_{i,t}$	*Number of* $Subsidiaries_i$	*Number of* $Countries_i$	*Variance in* $STRs_{i,t}$	*Max-Min* $STR_{i,t}$	$Size_{i,t}$	$ROA_{i,t}$	$LEV_{i,t}$	$INTANG_{i,t}$	$CAPINT_{i,t}$
ETRcurrent	1.0000											
Parent $STR_{i,t}$	0.1931*	1.0000										
Subsidiary Avg. $STR_{i,t}$	0.1660*	0.6921*	1.0000									
Number of $Subsidiaries_i$	0.0459*	0.0140*	-0.1096*	1.0000								
Number of $Countries_i$	0.0326*	-0.0161*	-0.1615*	0.6962*	1.0000							
Variance in $STRs_{i,t}$	-0.0550*	-0.1140*	-0.3009*	0.1286*	0.3077*	1.0000						
Max-Min $STR_{i,t}$	-0.0025	0.0754*	0.2666* -	0.4935*	-0.6995*	-0.6980*	1.0000					
$Size_{i,t}$	0.1766*	0.0258*	0.0315*	0.0971*	0.0527*	-0.0450*	-0.0186*	1.0000				
$ROA_{i,t}$	0.1446*	-0.0527*	-0.0583*	0.0540*	0.0666*	0.0198*	-0.0774*	0.1908*	1.0000			
$LEV_{i,t}$	-0.0096*	0.0002	-0.0169*	0.0746*	0.0600*	0.0346*	-0.0739*	0.0544*	0.1659*	1.0000		

INTANG $_{i,t}$	-0.0370*	-0.0047	-0.0191*	0.0502*	0.0776*	0.0479*	-0.0905*	-0.1314*	0.0538*	0.4252*	1.0000	
CAPINT$_{i,t}$	0.0010	-0.0496*	-0.0424*	0.0088*	0.0117*	0.0185*	-0.0237*	0.0541*	0.3286*	0.6449*	0.3425*	1.0000

* denotes significance at the 5% level.

Panel C Correlations between TAXAVOID and other variables

Variables	*TAXAVOID*	*Parent STR*$_{i,t}$	*Subsidiary Avg. STR*$_{i,t}$	*Number of Countries*$_i$	*Variance in STRs*$_{i,t}$	*Max-Min STR*$_{i,t}$	*Size*$_{i,t}$	*ROA*$_{i,t}$	*LEV*$_{i,t}$	*INTANG* $_{i,t}$	*CAPINT*$_{i,t}$
TAXAVOID	1.0000										
Parent STR$_{i,t}$	0.2374*	1.0000									
Subsidiary Avg. STR$_{i,t}$	0.1525*	0.7154*	1.0000								
Number of Countries$_i$	0.0513*	-0.0465*	-0.2058*	1.0000							
Variance in STRs$_{i,t}$	-0.0432*	-0.1830*	-0.3563*	0.3235*	1.0000						
Max-Min STR$_{i,t}$	-0.0264*	0.1370*	0.3427*	-0.7174*	-0.6951*	1.0000					
Size$_{i,t}$	0.1074*	0.0467*	0.0567*	0.0255*	-0.0278*	0.0082	1.0000				
ROA$_{i,t}$	0.1130*	-0.0557*	-0.0666*	0.0513*	0.0248*	-0.0567*	0.0552*	1.0000			
LEV$_{i,t}$	0.0321*	-0.0392*	-0.0631*	0.0678*	0.0439*	-0.0883*	0.0484*	0.3323*	1.0000		
INTANG $_{i,t}$	-0.0108*	-0.0262*	-0.0498*	0.0900*	0.0535*	-0.1075*	-0.1196**	0.2003*	0.4807*	1.0000	
CAPINT$_{i,t}$	-0.0008	-0.0670*	-0.0617*	0.0122*	0.0223*	-0.0260*	0.0433*	0.5429*	0.7041*	0.3728*	1.0000

* denotes significance at the 5% level.

Table 4

Regression results for countries following IFRS vs. Not

	ETR_{total}		$ETR_{current}$		TaxAvoid	
	IFRS	**Non-IFRS**	**IFRS**	**Non-IFRS**	**IFRS**	**Non-IFRS**
Constant	-0.0331 *** (0.0079)	-0.0614** (0.0183)	0.0330*** (0.0070)	-0.0010 (0.0162)	0.0513* (0.0269)	0.1167** (0.0404)
Parent $STR_{i,t}$	0.2967*** (0.0136)	0.6959*** (0.0616)	0.2467*** (0.0121)	0.5664*** (0.0545)	N/A	N/A
Subsidiary Avg. $STR_{i,t}$	0.0370* (0.0199)	0.0741 (0.0747)	0.0055 (0.0176)	0.0681 (0.0661)	1.2375*** (0.0548)	1.3222*** (0.0900)
Number of $Subsidiaries_i$	0.0001* (0.0001)	0.0002** (0.0001)	0.0001** (0.0001)	0.0002** (0.0001)	0.0005*** (0.0001)	0.0009*** (0.0002)
Number of $Countries_i$	0.0008*** (0.0002)	-0.0016** (0.0008)	0.0006*** (0.0002)	-0.0011 (0.0007)	-0.0003 (0.0005)	-0.0037** (0.0016)
Variance in $STRs_{i,t}$	-0.0003*** (0.0001)	-0.0003** (0.0001)	-0.0003*** (0.0001)	-0.0002* (0.0001)	-0.0007*** (0.0001)	-0.0010*** (0.0002)
Max-Min $STR_{i,t}$	-0.0008*** (0.0001)	-0.0009* (0.0005)	-0.0007*** (0.0001)	-0.0006 (0.0004)	-0.0032*** (0.0004)	-0.0082*** (0.0010)
$Size_{i,t}$	0.0080*** (0.0004)	0.0059*** (0.0006)	0.0068*** (0.0003)	0.0050*** (0.0006)	0.0176*** (0.0013)	0.0110*** (0.0014)
$ROA_{i,t}$	0.0660*** (0.0019)	0.1692*** (0.0083)	0.0542*** (0.0017)	0.1457*** (0.0073)	0.1474*** (0.0068)	0.1940*** (0.0163)
$LEV_{i,t}$	0.0011 (0.0017)	-0.0032 (0.0057)	0.0007 (0.0015)	0.0015 (0.0050)	0.0288*** (0.0045)	-0.0076 (0.0108)
$INTANG_{i,t}$	0.0028* (0.0016)	-0.0783*** (0.0137)	0.0031** 0.0014	-0.0673*** (0.0122)	-0.0077** (0.0026)	0.0202 (0.0127)
$CAPINT_{i,t}$	-0.0040*** (0.0005)	-0.0096*** (0.0014)	-0.0035*** (0.0004)	-0.0090*** (0.0012)	-0.0122*** (0.0009)	-0.0060*** (0.0012)
Year Indicators	Yes	Yes	Yes	Yes	Yes	Yes
Model R^2	0.0559	0.0584	0.0474	0.0521	0.0586	0.0384
N	54,134	18,553	54,522	18,706	29,827	14,160

***Significant at 0.01 level; **Significant at 0.05; *Significant at 0.1 level. See text for variable definitions.

Table 5

Regression results **without the subsidiaries variable** for countries following IFRS vs. Not

	ETR_{total}		**$ETR_{current}$**		**TaxAvoid**	
	IFRS	**Non-IFRS**	**IFRS**	**Non-IFRS**	**IFRS**	**Non-IFRS**
Constant	-0.0334**	-0.0602**	0.0326***	0.0001	0.0442	0.1240**
	(0.0079)	(0.0183)	(0.0070)	(0.0162)	(0.0269)	(0.0404)
Parent $STR_{i,t}$	0.2989***	0.7009***	0.2486***	0.5708***	N/A	N/A
	(0.0136)	(0.0616)	(0.0120)	(0.0544)		
Subsidiary Avg. $STR_{i,t}$	0.0347*	0.0627	0.0035	0.0578	1.2287***	1.2812***
	(0.0198)	(0.0746)	(0.0176)	(0.0660)	(0.0548)	(0.0898)
Number of $Countries_i$	0.0009***	-0.0005	0.0007***	-0.0002	0.0018***	0.0014
	(0.0002)	(0.0006)	(0.0001)	(0.0006)	(0.0001)	(0.0013)
Variance in $STRs_{i,t}$	-0.0003***	-0.0003**	-0.0003***	-0.0002**	-0.0008***	-0.0012***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0002)
Max-Min $STR_{i,t}$	-0.0009***	-0.0010**	-0.0007***	-0.0006	-0.0036***	-0.0086***
	(0.0001)	(0.0005)	(0.0001)	(0.0004)	(0.0004)	(0.0010)
$Size_{i,t}$	0.0080***	0.0060***	0.0068***	0.0051***	0.0183***	0.0116***
	(0.0004)	(0.0006)	(0.0003)	(0.0006)	(0.0013)	(0.0014)
$ROA_{i,t}$	0.0661***	0.1692***	0.0543***	0.1457***	0.1467***	0.1913***
	(0.0019)	(0.0083)	(0.0017)	(0.0073)	(0.0068)	(0.0163)
$LEV_{i,t}$	0.0013	-0.0021	0.0009	0.0025	0.0303***	-0.0035
	(0.0017)	(0.0056)	(0.0015)	(0.0050)	(0.0045)	(0.0108)
$INTANG_{i,t}$	0.0028*	-0.0789***	0.0031**	-0.0679***	-0.0075**	0.0198
	(0.0016)	(0.0137)	0.0014	(0.0121)	(0.0026)	(0.0127)
$CAPINT_{i,t}$	-0.0040***	-0.0098***	-0.0035***	-0.0091***	-0.0123***	-0.0061***
	(0.0005)	(0.0014)	(0.0004)	(0.0012)	(0.0009)	(0.0012)
Year Indicators	Yes	Yes	Yes	Yes	Yes	Yes
Model R^2	0.0559	0.0582	0.0474	0.0519	0.0568	0.0364
N	54,192	18,553	54,580	18,706	29,827	14,160

***Significant at 0.01 level; **Significant at 0.05; *Significant at 0.1 level. See text for variable definitions.

Table 7

Regression results for total effective tax rates: some versus no overseas subsidiaries

	Firms with no overseas subsidiaries (1)	**Firms with overseas subsidiaries (2)**
Constant	-0.1854*** (0.0090)	-0.1401*** (0.0089)
Parent $STR_{i,t}$	0.4561*** (0.0344)	0.4104*** (0.0145)
Subsidiary Avg. $STR_{i,t}$	N.A.	0.2161*** (0.0262)
Number of $Subsidiaries_i$	0.0002** (0.0001)	0.0001*** (0.0001)
Number of $Countries_i$	N.A.	0.0006*** (0.0002)
Variance in $STRs_{i,t}$	N.A.	-0.0003*** (0.0001)
Max-Min $STR_{i,t}$	N.A.	-0.0005*** (0.0001)
$Size_{i,t}$	0.0115*** (0.0005)	0.0113*** (0.0004)
$ROA_{i,t}$	0.0816*** (0.0030)	0.0671*** (0.0024)
$LEV_{i,t}$	-0.0161*** (0.0028)	-0.0031 (0.0020)
$INTANG_{i,t}$	-0.0071** (0.0029)	-0.0024 (0.0020)
$CAPINT_{i,t}$	-0.0011 (0.0007)	-0.0042*** (0.0005)
Year Indicators	Yes	Yes
Model R^2	0.1125	0.0900
N	29,279	42,958
Coefficient equality tests:		
Parent STR vs. SSTR	F(1, 29716) = 4.98 Prob > F = 0.0256	F(1, 42943) = 27.38 Prob > F = 0.0000
Parent STR vs. Subs	F(1, 29716) = 175.95 Prob > F = 0.0000	F(1, 42943) = 800.39 Prob > F = 0.0000
Parent STR vs. Countries	N/A	F(1, 42943) = 798.59 Prob > F = 0.0000
Parent STR vs. STRVAR	F(1, 29716) = 176.59 Prob > F = 0.0000	F(1, 42943) =801.62 Prob > F = 0.0000
Parent STR vs. STRmin-max	N/A	F(1, 42943) = 804.76 Prob > F = 0.0000
PTR-(SSTR+Subs+Countries +STRVAR+STRmin-max)=0	N/A	F(1, 42943) = 27.44 Prob > F = 0.0000

***Significant at 0.01 level; **Significant at 0.05; *Significant at 0.1 level. See text for variable definitions.

Table 8

Descriptive statistics, some versus no overseas subsidiaries

	firms having no overseas subsidiaries		**firms with overseas subsidiaries**	
	Mean	**Median**	**Mean**	**Median**
ETR_{total}	0.2118	0.2396	0.2022	0.2393
$ETR_{current}$	0.2308	0.2535	0.2230	0.2533
Parent STR	0.3362	0.3500	0.3116	0.3300
Sub. Avg. STR	0.3326	0.3500	0.2985	0.2975
Subs	5.9988	3	28.9840	12
Countries	1	1	6.5976	3
Variance in STRs	0.0193	0	33.3365	20.86
Max-Min STR	N/A	N/A	-14.8321	-12
SIZE	13.9838	14.2131	13.8630	13.7334
ROA	0.0020	0.0407	0.0810	0.0608
LEV	0.2847	0.1264	0.3502	0.1739
INTANG	0.1509	0.0155	0.2268	0.0440
CAPINT	1.3573	1.0038	1.4963	0.9857

See text for variable definitions.

Table 9

Regression results for total effective tax rates, intangible-intensive firms with overseas subsidiaries

	Intangible-asset intensive firms (1)	**Less intangible-asset intensive firms (2)**
Constant	-0.1320***	-0.1684***
	(0.0097)	(0.0081)
Parent $STR_{i,t}$	0.3692***	0.4731***
	(0.0181)	(0.0200)
Subsidiary Avg. $STR_{i,t}$	0.1355***	0.3651***
	(0.0281)	(0.0246)
Number of $Subsidiaries_i$	0.0008**	0.0005
	(0.0002)	(0.0005)
Number of $Countries_i$	0.0002	0.0010**
	(0.0002)	(0.0005)
Variance in $STRs_{i,t}$	-0.0003***	-0.0001
	(0.0004)	(0.0001)
Max-Min $STR_{i,t}$	-0.0009***	0.0003
	(0.0001)	(0.0002)
$Size_{i,t}$	0.0127***	0.0091***
	(0.0004)	(0.0004)
$ROA_{i,t}$	0.0637***	0.1076***
	(0.0021)	(0.0042)
$LEV_{i,t}$	-0.0033*	0.0243***
	(0.0018)	(0.0039)
$INTANG_{i,t}$	-0.0017	-0.0471
	(0.0017)	(0.0609)
$CAPINT_{i,t}$	-0.0032	0.0018
	(0.0005)	(0.0011)
Year Indicators	Yes	Yes
Model R^2	0.0847	0.1195
N	37,184	35,503
Coefficient equality tests:		
Parent STR vs. SSTR	F(1, 37169) = 30.58 Prob > F = 0.0000	F(1, 35488) = 6.64 Prob > F = 0.0100
Parent STR vs. Subs	F(1, 37169) = 414.94 Prob > F = 0.0000	F(1, 35488) = 556.67 Prob > F = 0.0000
Parent STR vs. Countries	F(1, 37169) = 414.87 Prob > F = 0.0000	F(1, 35488) = 553.08 Prob > F = 0.0000
Parent STR vs. STRVAR	F(1, 37169) = 415.93 Prob > F = 0.0000	F(1, 35488) = 557.02 Prob > F = 0.0000
Parent STR vs. STRmin-max	F(1, 37169) = 418.34 Prob > F = 0.0000	F(1, 35488) = 556.41 Prob > F = 0.0000
PTR-(SSTR+Subs+Countries +STRVAR+STRmin-max)=0	F(1, 37169) = 30.89 Prob > F = 0.0000	F(1, 35488) = 6.48 Prob > F = 0.0109

***Significant at 0.01 level; **Significant at 0.05; *Significant at 0.1 level. See text for variable definitions.

Table A1: IFRS Adoption

Country	IFRS adoption	Country	IFRS adoption
UNITED ARAB EMIRATES		FRANCE	
NETHERLANDS ANTILLES		UNITED KINGDOM	
ARGENTINA	N	GHANA	
AUSTRALIA		GIBRALTAR	
BARBADOS		GREECE	
BANGLADESH	N	HONG KONG	
BELGIUM		CROATIA	
BULGARIA		HUNGARY	
BAHRAIN		INDONESIA	N
BERMUDA		IRELAND	
BOLIVIA		ISRAEL	
BRAZIL		INDIA	
BAHAMAS		ICELAND	
BOTSWANA		ITALY	
CANADA		JAMAICA	
SWITZERLAND		JORDAN	
COTE D' IVOIRE	N	JAPAN	N
CHILE		KENYA	
COLOMBIA	N	KOREA REPUBLIC OF	
COSTA RICA		KUWAIT	
CYPRUS		CAYMAN ISLANDS	
CZECH REPUBLIC		KAZAKHSTAN	
GERMANY		LIECHTENSTEIN	
DENMARK		SRI LANKA	
ECUADOR		LIBERIA	N
ESTONIA		LITHUANIA	
EGYPT	N	LUXEMBOURG	
SPAIN		LATVIA	
FINLAND		MOROCCO	
FIJI		MONACO	
MARSHALL ISLANDS		PALESTINIAN TERRITORY	
MACEDONIA (FYROM)		PORTUGAL	
MALTA		QATAR	
MAURITIUS	N	ROMANIA	
MALAWI	N	SERBIA	
MEXICO		RUSSIAN FEDERATION	N
MALAYSIA		SAUDI ARABIA	
NIGERIA		SERBIA	
NORWAY		SWEDEN	
NEW ZEALAND		SINGAPORE	N
OMAN		SLOVENIA	
PANAMA		SLOVAKIA	
PERU		THAILAND	N
PAPUA NEW GUINEA		TUNISIA	N
PHILIPPINES		TURKEY	
PAKISTAN		TRINIDAD AND TOBAGO	
POLAND		TAIWAN	
PHILIPPINES	N	UKRAINE	N
PAKISTAN	N	UNITED STATES OF AMERICA	N
POLAND		VENEZUELA	N
PALESTINIAN TERRITORY		VIRGIN ISLANDS	
PORTUGAL		VIETNAM	N
QATAR		SOUTH AFRICA	
ROMANIA		ZAMBIA	N

Table A2: Regressions with ACCRUALS

	ETR_{total}
Constant	-0.1956***
	(-4.78)
Parent $STR_{i,t}$	0.1539***
	(3.50)
Subsidiary Avg. $STR_{i,t}$	0.3649***
	(4.01)
Number of $Subsidiaries_i$	-0.0001
	(0.42)
Number of $Countries_i$	0.0019
	(1.07)
Variance in $STRs_{i,t}$	0.0002
	(1.58)
Max-Min $STR_{i,t}$	-0.0015**
	(-2.36)
$Size_{i,t}$	0.0195***
	(6.08)
$ROA_{i,t}$	-0.0001
	(-0.18)
$LEV_{i,t}$	-0.0104
	(-1.07)
$INTANG_{i,t}$	-0.0009
	(-1.17)
$CAPINT_{i,t}$	-0.0001
	(-0.54)
$ACCRUAL_{i,t}$	-0.0087***
	(-3.10)
Year Indicators	Yes
Model R^2	0.0759
N	1,640

***Significant at 0.01 level; **Significant at 0.05; *Significant at 0.1 level. See text for variable definitions.