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The Association between Book-tax Conformity and Earnings Management

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The Association between Book-tax Conformity and Earnings Management

Abstract

There is an ongoing debate in the literature about the costs and benefits of conforming book and taxable income in the US. Proponents of book-tax conformity argue that increasing book-tax conformity will lead to more truthful financial reporting because managing earnings up increases taxes and managing taxes down decreases earnings reported to shareholders. We use a panel of 141,389 firm-year observations across 35 countries over the period 1996-2007 to test whether high levels of book-tax conformity internationally are associated with less earnings management and find that higher book-tax conformity is associated with more, not less earnings management. We conclude that one of the primary claimed benefits of increasing book-tax conformity in the US, more truthful financial reporting with less earnings management, is unlikely to be as large as previously thought.

Keywords: Book-tax conformity; earnings management

JEL codes: H20, H25, M41

1. Introduction

The issue of whether the United States (US) should increase the required conformity between reported earnings and taxable income has been debated for years.¹ Proponents argue that book-tax conformity will reduce aggressive financial reporting, curtail abusive tax shelters, and minimize the costs of compliance firms currently face. Opponents of book-tax conformity counter that conformity will lead to a significant loss of financial information, as the information required by financial statement users and tax authorities differ significantly, and that the reduction in compliance costs would not be as large as proponents of book-tax conformity claim.

One of the primary arguments in favor of increased conformity in the US is that it will lead to less aggressive financial reporting, and consequently to less earnings management (Desai, 2005; Whitaker, 2005).² For example, according to Desai (2005) “A system that allows managers to characterize income differently depending on the audience legitimizes earnings manipulation... Restricting managers to one definition of profits may contain the impulse to characterize profits opportunistically more generally.” (p. 190) Proponents argue that conformity would lead managers to “tell the truth” by mitigating the incentives for opportunistic financial reporting, since any upwards earnings management would be countered by higher taxes while downwards earning manipulations to avoid taxes would be met with disapproval from investors. Another argument suggests that increased conformity would improve the quality of reported earnings by eliminating the tax accruals made for

¹ For an in-depth discussion of this debate see Hanlon and Heitzman (2010). For examples of proponents of book-tax conformity, see Desai (2003, 2005, 2006), Graetz (2005), Whitaker (2005), Murray (2002), and Chan et al. (2010). For examples of opponents of book-tax conformity see Shackelford (2006), Hanlon and Shevlin (2005), Hanlon et al. 2008, and McClelland and Mills (2007).

² Like Healy and Wahlen (1999) and Leuz et al. (2003) we define earnings management as alterations in firms' reported economic performance by insiders to either mislead stakeholders or to influence contractual outcomes.

financial reporting purposes, which can be used to either increase or smooth GAAP income without affecting taxable income (Whitaker, 2005).³

The argument that increased book-tax conformity would lead to less earnings management is rarely questioned. For example, Atwood et al. (2010) who argue that book-tax conformity reduces earnings quality, nevertheless state that: “Our results suggest that earnings quality (defined as earnings persistence and the association between current period earnings and future cash flows) is lower when book-tax conformity is higher, even though conformity may restrain managers from using their discretion to report earnings opportunistically.” (p. 112). However, there are at least three reasons to believe that increased conformity could lead to more rather than less earnings management.

First, increasing book-tax conformity increases the incentive for firms to smooth earnings. Smoothing taxable income lowers a firm’s tax burden under a progressive tax regime (Graham and Smith, 1999). Consequently, conforming book and taxable incomes might lead to more smoothing in firms’ financial accounting numbers. Second, the gap between book and taxable incomes serves as a detection mechanism, effectively constraining managers’ abilities to manage book and taxable income. Recent research findings suggest that larger temporary book-tax differences are associated with more earnings management around benchmarks (Phillips et al., 2003), and lower earnings persistence and growth (Hanlon, 2005; Blaylock et al., 2011; and Jackson, 2011).⁴ Hanlon (2005) and Blaylock et al. (2011) also provide evidence consistent with investors adjusting their expectations for future earnings downwards when temporary book-tax differences are large. If outside stakeholders of the firm can unravel earnings management, managers are less likely to manage earnings

³ According to Whitaker (2005), “By substantially eliminating deferred tax expenses, uniform accounting would reduce such opportunities for potentially misleading earnings management.” (p. 708)

⁴ Mills (1998) also shows that large book-tax differences are associated with higher IRS audit adjustments.

because the benefits of managing earnings decrease.⁵ These findings are consistent with taxable income acting as a benchmark which investors can use to detect aggressive financial reporting and therefore adjust their expectations for future earnings. However, when book-tax conformity is high, some of this information is lost. Consequently, increasing conformity might lead managers to become more aggressive in financial reporting, as the risk of getting caught managing earnings is lower. Third, with book-tax conformity there is a loss of information to equity market investors (as documented by Hanlon et al., 2005 and Hanlon et al., 2008) likely increasing the cost of equity capital due to increased information asymmetry. In this scenario firms could turn to debt for any additional financing needs. With increased use of debt firms have greater incentives to smooth earnings to reduce the perceived volatility of the earnings stream to lenders (see Trueman and Titman, 1988).

Given the above arguments, the effect of increased book-tax conformity on earnings management is an empirical question. Our study attempts to answer this question by empirically examining the association between book-tax conformity and proxies for earnings management in an international setting. Using international data provides us with substantial variation in the level of *required* book-tax conformity, which is the focus of our study. Studies of book-tax differences within the US generally capture the effects of managers' *choices* while holding the reporting regime constant.⁶ To measure required book-tax conformity, we follow Atwood et al. (2010) and calculate the amount of variation in current tax expense that cannot be explained by the variation in pre-tax earnings for all firms in a country in a given year. Our proxies for earnings management are well established in prior

⁵ If investors and other stakeholders are not fooled by managers' attempts to inflate or to otherwise manage earnings, managers are unlikely to achieve the desired effect of the earnings management. See Healy and Whalen (1999) for a review of papers in the accounting literature which provide evidence that investors are not always fooled by earnings management.

⁶ Two exceptions are Guenther et al. (1997) and Hanlon et al. (2008), who use a small sample of firms who were required to shift from cash basis tax accounting to accrual basis tax accounting around TRA 1986. Guenther et al. document these firms managed earnings downwards and Hanlon et al. find a decrease in the information content of earnings following the increase in required book-tax conformity for these firms.

literature (Leuz et al., 2003), capturing earnings management with respect to smoothing and financial reporting discretion.

Using a panel of 141,389 firm-year observations across 35 countries worldwide, we find that firms in countries with higher levels of required book-tax conformity exhibit higher levels of earnings management. Our analysis controls for several factors known to influence earnings management in international settings, including: outside investor rights, legal enforcement, ownership concentration, legal tradition, firm size, the percentage of manufacturing firms, gross domestic product, and inflation.

We also perform a series of additional tests and find that our results are not sensitive to including additional controls for a country's quality of financial reporting, conducting our analysis at the country and firm-year levels (rather than country-year), removing any single country from the analysis, or using alternative scaling variables.⁷

Finally, as argued by Leuz et al. (2003), required country-level book-tax conformity is likely correlated with other institutional features such as legal origin, the level of law enforcement, etc. To the extent we can identify these variables we include them as controls in our model (so as to test for the incremental effects of book-tax conformity on earnings management). However, because book-tax conformity is likely a choice variable for the country, we cannot be sure we have identified and included all the determinants of book-tax conformity that could also be correlated with earnings management. Thus, we address concerns over correlated omitted variables by estimating the smallest correlation such a confounding variable would have to have with both earnings management and book-tax conformity to invalidate our statistical inferences. Using the Impact Threshold for a Confounding Variable method of Frank (2000), we find that a potential correlated omitted variable would need to have a correlation of at least 0.390 with both book-tax conformity and

⁷ We also discuss the possibility that management's discretionary reporting actions affect our variable of interest, cross-country variation in required book-tax conformity, and conclude that these actions are unlikely to be driving our results.

earnings management to invalidate the conclusions of our study. Since none of our control variables, which explain close to 50% of the variation in earnings management, exhibit such strong correlation patterns, we believe that our results are reasonably robust to potential correlated omitted variables.

We believe our study makes a significant contribution to the book-tax conformity debate. While there is ample evidence suggesting that book-tax conformity will lead to less informative financial statements (Hanlon et al., 2005; Hanlon et al., 2008; Atwood et al., 2010), evidence related to the potential benefits of greater conformity is scarce. Hanlon and Heitzman (2010) call for research into other potential costs and benefits of book-tax conformity by stating that “the evidence suggests there will a substantial cost in terms of the information loss in accounting earnings should book-tax conformity be adopted. We have little evidence about anything else... Further evidence on a broader set of costs and benefits would be valuable to inform this debate.” (p. 136) We respond to this call by testing whether one of the asserted benefits of book-tax conformity exists. Specifically, we examine whether higher book-tax conformity is associated with less earnings management.

Our findings are inconsistent with the claim that higher book-tax conformity limits earnings management, and suggest that one of the primary asserted benefits of higher book-tax conformity is likely to be smaller than previously thought. These findings should be of interest to academics and policy makers in considering the benefits and costs of conforming book income and taxable income. Our results may also help explain the findings in Ali and Hwang (2000), Atwood et al. (2010), and others who find that higher book-tax conformity is associated with less informative earnings and lower earnings persistence.

The remainder of the paper proceeds as follows: Section 2 discusses related literature and hypothesis development, Section 3 describes the construction of our variables, while

Section 4 describes our sample and data. Section 5 reports our findings, and Section 6 concludes.

2. Related Literature and Hypothesis Development

2.1 The book-tax conformity debate

There is a long-standing debate among academics and policy makers about the desirability of conforming book income to taxable income. The debate began in earnest in the late 1990s and early 2000s when there was considerable growth in the gap between pre-tax book income that firms reported to shareholders and taxable income that firms reported to the IRS. As noted by Hanlon et al. (2005), the ratio of pre-tax income to taxable income (calculated by the Treasury Department from confidential tax return data) increased from around 1.25 in the early 1990s to over 1.8 in the late 1990s. The reasons for this divergence between book income and taxable income are not fully known but some policymakers and academics speculated that the increase in the book-tax gap was largely the result of two forces: 1) a greater proportion of manager pay in the late 1990s was equity-based (stock and stock options) and managers responded by managing earnings upward, presumably to increase stock price and 2) a proliferation of tax shelters reduced taxable income, often with no corresponding decrease in book income (see Wilson, 2009 and Lisowski, 2010). This belief led to calls to tax firms on their financial accounting income (e.g., Desai, 2005; Whitaker, 2005), or to at least carefully consider eliminating some of the differences between book and tax reporting (Hamilton and Radziejewska, 2003). President Bush's Tax Reform Panel considered the proposal to increase the level of book-tax conformity and recommended further study (see Hanlon et al., 2008). Hanlon and Heitzman (2010) also note that when the

European Union (EU) adopted IFRS for financial reporting, the EU seriously considered also adopting IFRS as a common consolidated tax base.⁸

The academic response to proposals to increase conformity between book and taxable income has focused primarily on the issue of whether increasing conformity would result in earnings that are less informative. While financial reporting standards at times require managerial discretion, prior literature (Dechow, 1994; Subramanyam, 1996; Beaver and Engel, 1996) finds that accounting earnings do a better job of summarizing the information that goes into stock price than various measures of cash flow and that, on average, managers use their discretion to convey value relevant information to the stock market rather than to fool market participants. These findings are consistent with managers using at least some of their discretion over accounting numbers to signal value relevant information to investors. If managers were forced to report earnings based on the more rigid set of tax rules, managers would be more restricted in their ability to signal such private information to investors. Guenther and Young (2000) conclude that earnings are more informative in countries (the US and UK) with relatively powerful independent accounting standard setting bodies that differ from the taxing authority, and Hanlon et al. (2005) conclude that US financial statement based estimates of taxable income are about 50% less informative to investors than book income, so the loss of information to investors would likely be significant if tax rules were used as the basis for book income.

Another way to achieve higher book-tax conformity would be to use book income as the tax base that firms use to calculate taxable income and to allow for some slight deviations to achieve tax policy goals. The loss of information to investors would likely be smaller in such a scenario because the accounting rules could still be set by accounting regulators such

⁸ The EU considered a common consolidated corporate tax base (CCCTB) to be used by all members. One proposal was to link the CCCTB to the common adoption by all EU members of IFRS. However, this proposal met opposition by members who did not want to secede control of their tax base to a foreign entity such as the International Accounting Standards Board.

as the FASB rather than by politicians. However, Hanlon and Shevlin (2005) argue that politicians are unlikely to cede their authority to determine taxable income to accounting standard setters and financial reporting rules in such a regime may end up being similar to the original tax rules. Furthermore, taxing book income would increase firms' incentive to report lower income to avoid taxes (e.g., many firms use LIFO accounting for inventory even though it generally results in lower book income), which adds bias to the reported earnings number as a measure of economic income. Hanlon et al. (2008) consider a small sample of firms that were forced to change from cash basis to accrual basis for tax purposes as a result of the Tax Reform Act of (1986). They find that firms required to change accounting methods had less informative earnings after the change relative to a group of similar firms that continued to use the accrual-basis for tax purposes. They conclude that requiring firms to pay taxes on book income leads to less informative earnings even holding accounting standards constant because firms' responses to tax incentives increase the amount of noise in earnings as a measure of a firm's true economic income.

2.2 Book-tax conformity in an international setting

A stream of literature considers the effects of book-tax conformity on financial reporting decisions in an international setting. For example, Ali and Hwang (2000) compare earnings informativeness across several country-specific factors including the level of book-tax conformity and find that earnings are less informative in countries where book-tax conformity is higher. Guenther and Young (2000) find that earnings are more closely related to economic activity in the US and the UK, than in Germany, France and Japan. They argue, among other things, that the US and UK have powerful accounting standard setting bodies that are distinct from the tax authority. They hypothesize and find that earnings more closely reflect economic behavior in the US and UK because the accounting standards are relatively

independent of the tax standards, thus allowing managers to better convey private information.

Most closely related to our study are Atwood et al. (2010) who develop a new measure of book-tax conformity based on the proportion of current tax expense that cannot be explained by pre-tax book income. They continue to focus on the effect of high book-tax conformity on the properties of earnings. Specifically, they test whether earnings exhibit higher or lower persistence and whether the ability of earnings to predict future cash flows is higher or lower in countries where book-tax conformity is high. They find that earnings are less persistent and less predictive of future cash flows when book-tax conformity is high and conclude that increased book-tax conformity may reduce earnings quality.

Our study is also related to Leuz et al. (2003), who focus on the relation between investor protection and earnings management. In studying this relation, Leuz et al. (2003) include a binary dummy as a control for the degree of a country's book-tax conformity, but find that this variable loads insignificantly. Atwood et al. (2010), however, find this measure of book-tax conformity to be inadequate. They find that the correlation between this traditional binary measure of book-tax conformity and a common law indicator variable is very high (Spearman = -0.927). Atwood et al. (2010) also find that their continuous measure subsumes the explanatory power of the traditional measure in empirical tests. Therefore, we extend Leuz et al. (2003) by using a more comprehensive and refined measure of book-tax conformity and find that greater conformity is associated with higher levels of earnings management.

To our knowledge, no other paper has tested the assumption that higher book-tax conformity is related to less earnings management. Given that less earnings management is one of the primary asserted benefits of increasing book-tax conformity, it is important to assess the extent to which increasing book-tax conformity would actually decrease earnings

management. If increasing book-tax conformity has a small or no effect on earnings management, or even increases earnings management, then conforming book income with taxable income is less desirable from a policy perspective. Thus, we add to the book-tax conformity debate by considering whether one of the asserted primary benefits of higher book-tax conformity indeed exists.

2.3 Hypothesis development

We hypothesize that there are two reasons why higher book-tax conformity should be associated with lower levels of earnings management. First, high levels of book-tax conformity might mitigate the incentive to manage earnings by forcing upwards earnings management to be met with higher taxes and forcing downwards management of taxes to decrease earnings reported to investors. Consequently, we expect managers to have weaker incentives to manage earnings when book-tax conformity is high, *ceteris paribus*. Second, assuming tax rules are ultimately used as the basis for reported income due to the political pressures noted by Hanlon and Shevlin (2005), tax rules generally allow for less managerial discretion than accounting rules because the two systems have different goals. Under accrual accounting, revenues are recognized when earned and expenses are matched to the revenues they helped to generate. Matching expenses to revenues requires a great deal of estimation for warranties, bad debts, contingent liabilities, and so forth. In contrast, tax law generally more closely mirrors cash-basis accounting and requires more proof that a debt is uncollectible, that a firm incurred costs to repair or replace defective items, etc. Tax rules are generally closer to cash basis accounting because tax authorities are more concerned about taxpayers' ability to pay and about raising sufficient revenues to meet policy objectives than they are about the measurement of economic performance. Thus, to the extent that book income moves towards taxable income, managers lose some of their discretion and have a reduced ability to manage earnings, even if they have the same incentives to manage earnings. To the

extent that higher book-tax conformity is associated with less managerial discretion, we expect higher book-tax conformity to be associated with less earnings management.

On the other hand, high book-tax conformity could also be associated with higher levels of earnings management for at least three reasons. First, firms that face a progressive tax system have an incentive to smooth earnings because it reduces the amount of tax they will pay (Graham and Smith, 1999; Scholes et al., 2009). In a progressive tax system, the reduction in taxes for a given decrease in income is smaller than the increase in taxes for the same increase in income. Thus, firms that maintain a smooth level of income will pay less total tax than firms with more variable income but the same average level of income. Consequently, when book-tax conformity is high, managers may smooth book income more in response to tax incentives to smooth taxable income. Second, prior research shows that taxable income provides incremental information about economic performance (Hanlon et al., 2005), and that temporary book-tax differences provide information to investors about earnings persistence (Hanlon, 2005), earnings growth (Jackson, 2011) and earnings management (Phillips et al., 2003). When book-tax conformity is high, investors lose information about earnings quality and earnings management because by definition, book-tax differences are largely eliminated when book-tax conformity is high. Consequently, conforming book income with taxable income could have the unintended consequence of increasing earnings management because earnings management is more easily detected when investors are given an alternative measure of firm performance (taxable income) to which they can compare book income. Third, with book-tax conformity there is a loss of information to equity market investors (as documented by Hanlon et al., 2005 and Hanlon et al., 2008) likely increasing the cost of equity capital due to increased information asymmetry. In this scenario firms could turn to debt for any additional financing needs. With increased

use of debt firms have greater incentives to smooth earnings to reduce the perceived volatility of the earnings stream to lenders (see Trueman and Titman, 1988).

Which of these factors dominates is not clear ex ante, and the overall relation between earnings management and book-tax conformity is an empirical question. We address this question by using an international setting that provides us with the necessary variation in the required level of book-tax conformity across countries to assess whether higher book-tax conformity is associated with less or more earnings management. To proxy for earnings management, we use four measures adapted from Leuz et al. (2003) who also consider the determinants of earnings management in an international setting.

3. Variable construction

3.1 Book-tax conformity

Atwood et al. (2010) model book-tax conformity as the amount of variation in current tax expense that is not captured by variation in pre-tax earnings in a given country-year. They reason that countries that allow greater flexibility in the reporting of taxable income given a particular level of financial pre-tax earnings have lower required book-tax conformity.

We follow Atwood et al. (2010) in calculating book-tax conformity by estimating the conditional variance of current tax expense from the following model, estimated by country-year:

$$\text{CTE} = \theta_0 + \theta_1\text{PTBI} + \theta_2\text{ForPTBI} + \theta_3\text{DIV} + \varepsilon, \quad (1)$$

where CTE is current tax expense (Item #23 – Item #25)⁹, PTBI is pre-tax book income (Item #21), ForPTBI is an estimate of the foreign pre-tax book income (foreign tax expense (Item #51) / total tax expense (Item #23) x PTBI), DIV is total dividends (Item #34), and ε is a

⁹ All financial variables are drawn from Compustat's Global Vantage files.

disturbance term with mean zero.¹⁰ To control for cross-sectional differences in scale we divide CTE, PTBI, ForPTBI, and DIV by average total assets (Item #89). Our measure of book-tax conformity is calculated as the scaled ranking of the root mean squared errors (RMSEs) obtained from country-year estimates of equation (1). While a higher RMSE corresponds to lower book-tax conformity and vice versa, we use descending ranks (i.e., highest RMSE in a given year is ranked 0 and the lowest is ranked $n - 1$, where n is the number of included countries in that year). We then divide by $n - 1$ to scale the rankings so that they range between zero and one.¹¹

3.2 Earnings management

We use four different measures of earnings management, consistent with Leuz et al. (2003).^{12,13} Our first measure (EM1) captures the extent to which firms “smooth” earnings, or reduce the variability of reported earnings through the use of accruals. We use the country-year median ratio of the firm-level standard deviation of operating earnings divided by the firm-level standard deviation of cash flow from operations. Operating earnings and cash flow from operations are scaled by average total assets. Standard deviations are calculated using data from $t - 4$ to t . Lower values of this measure indicate that firms utilize accruals to smooth reported operating earnings (*ceteris paribus*).

¹⁰ Like Atwood et al. (2010), we use current tax expense (if available) when either total tax expense or deferred tax expense is missing. Atwood et al. (2010) include ForPTBI because foreign earnings of multinationals may be taxed at different rates than their domestic statutory rate, and DIV to control for potential cross-sectional differences in current tax expense arising from dividend distributions (e.g., such as the transition between the imputation system to the current system in Germany). Atwood et al. (2010) find that book-tax conformity rankings are unchanged after excluding either ForPTBI or DIV from the model.

¹¹ This procedure converts the ranks into percentiles. We do this because the number of included countries varies by year as in Atwood et al. (2010). This transformation gives the book-tax conformity variable a consistent scale across years.

¹² Barth et al. (2008) use modified versions of these measures to test for changes in earnings management around an event. They note that “An alternative approach used in some prior research (Dechow 1994, Leuz, Nanda, and Wysocki 2003) is to base comparisons on alternative metrics constructed using a time series of firms-specific data. Data limitations preclude this approach because it requires a time series of observations for each firm that is not overlapping in the pre- and postadoption periods.” (p. 481) Since we are not testing changes in earnings management around an event, and we have the firm-specific time series of data, we follow Leuz et al. (2003) in constructing our measures of earnings management.

¹³ Because the arguments in favor of increasing book-tax conformity focus on accrual (as opposed to real) earnings management, our tests focus on measures of accrual earnings management rather than real earnings management.

Because data on firms' cash flows are not widely available for many countries we follow prior literature (Dechow et al., 1995; Leuz et al., 2003) and measure cash flow from operations by subtracting the accrual component from earnings. We measure accruals as

$$\text{Accruals}_{it} = (\Delta CA_{it} - \Delta CASH_{it}) - (\Delta CL_{it} - \Delta STD_{it} - \Delta TP_{it}) - DEP_{it}, \quad (2)$$

where ΔCA_{it} is the annual change in total current assets (Item #75), $\Delta CASH_{it}$ is the annual change in cash and cash equivalents (Item #60), ΔCL_{it} is the annual change in current liabilities (Item #104), ΔSTD_{it} is the annual change in short-term debt included in current liabilities (Item #96), ΔTP_{it} is the annual change in taxes payable (Item #100), and DEP_{it} is depreciation and amortization expense (Item #11) for firm i in year t . Both ΔSTD_{it} and ΔTP_{it} are set to zero when missing.

Our second earnings management measure (EM2) also captures firms' smoothing behavior. While a negative correlation between changes in accruals and operating cash flows is a natural product of accrual accounting (Dechow, 1994), larger magnitudes of this correlation indicate smoothing of reported earnings not attributable to firms' underlying performance, *ceteris paribus* (Skinner and Myers, 1999; Leuz et al., 2003). Therefore, we use the correlation between changes in accruals and changes in operating cash flows as our second measure of earnings smoothing.¹⁴ Accruals and operating cash flows are defined above and are both scaled by average total assets. The correlations are computed at the country-year level.

We use the magnitude of accruals as our third measure of earnings management (EM3), as firms can use their reporting discretion to mask their underlying economic performance. For example, firms can use discretion over financial reporting to overstate reported earnings through accruals to increase management compensation or to achieve

¹⁴ The change in accruals and the change in operating cash flows are both scaled by average total assets.

market expectations.¹⁵ Therefore, we use the country-level median of the absolute value of firms' accruals divided by the absolute value of firms' cash flow from operations. Accruals and operating cash flows are defined above.

We use the degree to which firms avoid small losses as our fourth measure of earnings management (EM4), since prior literature suggests that firms use accounting discretion to avoid reporting small losses (Burgstahler and Dichev, 1997; Degeorge et al., 1999).¹⁶ While there is little insiders can do to mask large losses, they can use their discretion over financial reporting to avoid reporting small losses. We measure small loss avoidance as the ratio of the number of "small losses" to the number of "small profits" for each country-year. Firm-year observations are classified as having a small loss if after-tax earnings (Item #32) scaled by average total assets are in the range of $[-0.01, 0.00)$ and a small profit if after-tax earnings scaled by average total assets are in the range of $[0.00, 0.01]$. Our specification differs slightly from Leuz et al. (2003), who use the inverse of this ratio. Because small profits are more prominent in our sample (i.e., some country-years do not have a small loss), using the ratio of small losses to small profits maximizes sample size. However, in untabulated analyses we obtain the same inferences as those reported below when we define EM4 to be the country-year ratio of small profits to small losses as in Leuz et al. (2003).

Following Leuz et al. (2003), we aggregate our four measures of earnings management to reduce potential measurement error. For each country-year the four measures

¹⁵ Firms can also use discretionary accruals to improve the usefulness of accounting information (Watts and Zimmerman, 1986). However, Leuz et al. (2003) argue this may be a result of effective investor outside investor protection and therefore may not extend to countries with inferior investor protection. Consistent with their argument, they find a negative relation between investor protection and measures of accounting discretion.

¹⁶ This approach to identifying earnings management has recently come under attack in Durtschi and Eason (2005, 2009) who argue that the results in Burgstahler and Dichev (1997) are driven largely by scaling and sample selection issues. Burgstahler and Chuk (2011), however, continue to find earnings discontinuities using several alternative scalars for earnings and when using unscaled earnings. They also find that the majority of firms in Durtschi and Easton's (2005, 2009) sample are very small firms with stock prices of less than \$5, with very little analyst following and generally much weaker incentives to manage earnings than sample firms in Burgstahler and Dichev (1997). Burgstahler and Chuk (2011) observe earnings discontinuities in firms that are likely to have sufficient capital market pressures to manage earnings, consistent with the earnings management interpretation of discontinuities around earnings benchmarks. Nevertheless, in untabulated tests we omit EM4 from our analysis and find similar results.

of earnings management are ranked such that a higher rank corresponds to a higher level of earnings management. Our aggregate measure of earnings management is created by averaging the country-year rankings for our four individual earnings management variables.¹⁷

4. Sample selection and descriptive statistics

4.1 Sample selection

We obtain all firm-year observations in Compustat's Global Vantage files from 1996 to 2007 with necessary data to compute our four earnings management variables.¹⁸ Following prior literature we eliminate banks and financial institutions from our sample (Leuz et al., 2003). We also require each country-year to have at least 40 firm-year observations. Finally, our main analysis is limited to the countries studied in LaPorta et al. (1998), for which data are available on countries' legal environment and investor protection. Our sample selection criteria yield 141,389 firm-year observations from 35 countries for our main tests.

Our country-year estimates of book-tax conformity are estimated using the sample selection criteria of Atwood et al. (2010). We begin with all firm-year observations in Compustat Global Vantage from 1996 to 2007 with available data to estimate equation (1). Firms with negative pre-tax book income (i.e., $PTBI < 0$) or negative current tax expense (i.e., $CTE < 0$) are eliminated from the sample for purposes of calculating the book-tax conformity measure because it is difficult to interpret the current tax expense number (see Hanlon et al. 2005). These observations however are retained when estimating our earnings management variables and included in the hypothesis tests. We also exclude firms in the top or bottom one-half percent of the distributions of CTE, PTBI, ForPTBI, and DIV in each

¹⁷ In untabulated tests we substitute our aggregate measure of earnings management with a single factor obtained from factor analysis and find similar results. We also use aggregates of EM1 and EM2 (which capture smoothing) and of EM3 and EM4 (which capture discretion in financial reporting) separately and again find similar results for both sets of earnings management measures.

¹⁸ Compustat Global Vantage begins its coverage in 1991. However, because our aggregate earnings management requires five years of lagged data our sample period starts in 1996.

year. Lastly, we require each country to have at least 40 usable firm-year observations. We are left with 131,045 firm-year observations to estimate equation (1).

4.2 Descriptive statistics

Table 1 presents the number of firm-years included for each country, as well as descriptive statistics at the country level. There is substantial variation in the number of firm-years per country, which is due to differences in market development, country size, and Compustat's data coverage. There is also substantial variation in the median size of firms. To address these differences in scale we divide all financial variables by average total assets. Table 1 also shows substantial variation in capital intensity, fraction of manufacturing firms, GDP, and inflation. We control for these factors in our multivariate tests.

Table 1 also displays the average book-tax conformity for each country (averaged across the country-year ranks). Our book-tax conformity rankings are comparable to Atwood et al. (2010), but differ somewhat because we use a later version of Compustat Global Vantage and impose different sample selection criteria (e.g., availability of data from La Porta et al., 1998).¹⁹ Like Atwood et al. (2010) we find that Canada ranks lowest in book-tax conformity, while Chile ranks the highest.²⁰ In addition, our samples share eight countries in the lowest conformity decile and seven countries in the highest. Conformity is lowest in Canada, Germany, Norway, South Africa, and the US; and highest in Chile, Ireland, Switzerland, Spain, and Hong Kong.

¹⁹ Due to increases in Compustat's data coverage over time, we are able to estimate book-tax conformity for three countries (Ireland, Pakistan, and Portugal) in addition to those included in Atwood et al. (2010). However, our results are very similar when we delete these three countries from our sample (untabulated). Also, China is included in Atwood et al. (2010), but is excluded from our sample due to missing data from La Porta et al. (1998). When we examine the Pearson and Spearman correlations between earnings management and book-tax conformity after including China we find similar results to those reported in Table 4, suggesting our exclusion of China does not materially affect our conclusions (untabulated).

²⁰ In untabulated analysis we replicate Atwood et al. (2010) and obtain similar results. Specifically, we find a negative relation between earnings persistence and book-tax conformity and a negative relation between the ability of earnings to predict one-year-ahead cash flows and book-tax conformity.

In Table 2 we provide descriptive data for our earnings management variables by country. Consistent with Leuz et al. (2003), we find that earnings management is generally more prevalent in Continental Europe and Asia than in Anglo-American countries. Italy, Austria, Portugal, Greece, and Spain have the lowest volatility in income after controlling for the volatility of cash flows (EM1). Meanwhile, the correlation between changes in accruals and cash flows (EM2) is lowest for Indonesia, Italy, Portugal, Chile, and Spain; indicating higher smoothing behavior in these countries. The magnitude of accruals (EM3) is highest for the Philippines, Taiwan, Singapore, Indonesia, and Austria; while loss avoidance (EM4) is most prevalent in Spain, India, Indonesia, Japan, and Pakistan. The aggregate score of these four measures indicates that earnings management is highest in Indonesia, Greece, Austria, Italy, and Spain; and lowest in Australia, Sweden, the U.S., South Africa, and Canada.

Table 3 presents descriptive statistics on institutional characteristics, which may be correlated with earnings management and with book-tax conformity, for each country in our sample. With the exception of the accrual index which we take from Hung (2001), all measures are taken from La Porta et al. (1998). The first column shows each country's legal origin. Legal tradition refers to the code-law versus common-law characterization. Code-law countries tend to be rule-oriented, while legal systems in common-law countries tend to be based on precedent (La Porta et al., 1998). Consequently, politics have a greater influence on accounting in code-law countries, while accounting practices in common-law countries are largely established by the private sector (Ball et al., 2000). Outside investor rights is an anti-director index, which captures the voting rights of minority shareholders. Legal enforcement is the average of three measures: an index of the legal system's efficiency, an assessment of the rule of law, and the level of corruption (Leuz et al., 2003). Ownership concentration is the median percentage of common shares owned by the largest three shareholders in the ten

largest privately owned non-financial firms.²¹ The disclosure index captures country-level disclosure policies, and measures of the inclusion or exclusion of 90 accounting items in firms' 1990 annual reports. Finally, the accrual index captures the extent to which accrual rules accelerate the recognition of economic transactions in accounting (e.g., R&D activities or pension obligations).

5. Results

5.1 Correlation coefficients

Table 4 displays correlation coefficients (Pearson above, Spearman below) between book-tax conformity and our proxies for earnings management. All correlation coefficients in Table 4 are statistically significant at the 0.10 level. The table shows that higher book-tax conformity is associated with a smoother earnings path, after controlling for the volatility of cash flows (Person = -0.330, Spearman = -0.32). The correlation between changes in accruals and changes in cash flows (EM2) is lower in high-conformity regimes (Person = -0.106, Spearman = -0.176), indicating a positive relation between book-tax conformity and smoothing. The correlation between the magnitude of accruals (EM3) and book-tax conformity (Pearson = 0.165, Spearman = 0.168) suggests that conformity leads to greater accounting discretion. The probability of reporting a small loss (EM4) is lower in high-conformity regimes (Pearson = -0.154, Spearman = -0.207), consistent with higher book-tax conformity leading to greater discretion in financial reporting. The correlations between each of the individual earnings management variables suggest a positive association between earnings management across different dimensions. In addition, the individual earnings management variables are highly correlated with our aggregate measure of earnings management, supporting the use of a summary measure (Leuz et al., 2003). Finally, Table 4

²¹ La Porta et al. (1998) define privately owned firms to be firms in which the state is not a known shareholder. Consequently, "privately owned" firms may have publicly traded stock under this definition.

shows a strong positive correlation between book-tax conformity and aggregate earnings management (Pearson = 0.311, Spearman = 0.312). Contrary to conventional wisdom the associations described above consistently show that book-tax conformity is associated with more earnings management, not less.

5.2 Multivariate results

In Table 5 we regress aggregate earnings management on book-tax conformity, controlling for several factors that could confound this relation Model (1) of Table 5 presents ordinary least squares (OLS) estimates for a regression of aggregate earnings management on book-tax conformity. The coefficient on book-tax conformity suggests a statistically and economically significant positive relation between book-tax conformity and earnings management (coefficient = 7.323, p-value < 0.01). The R^2 indicates that book-tax conformity alone explains close to 10% of the overall variation in earnings management. In model (2) we add controls for outside investor rights and legal environment, as Leuz et al. (2003) show that these variables are negatively associated with earnings management, and obtain a similar coefficient on our book-tax conformity variable (coefficient = 7.499, p-value < 0.01). Consistent with Leuz et al. (2003), outside investor rights and legal enforcement are associated with less earnings management, as they limit insiders' ability to acquire private benefits of control.

Because each country enters the sample more than once, in model (3) we employ heteroscedasticity-robust standard errors clustered by country and add year fixed effects to the regression.²² Adding year fixed effects only slightly changes our estimated coefficient (7.395) and we continue to find a positive and statistically significant relation between earnings management and book-tax conformity (p-value < 0.01). In model (4) we control for

²² Since our earnings management and book-tax conformity variables are ranked by year, adding year fixed effects to the model should have little impact on our test results. Nevertheless, we include year fixed effects to capture yearly variation in our control variables that might vary from year to year.

several other potential determinants of earnings management, including: ownership concentration, legal tradition, firm size, capital intensity, the fraction of manufacturing firms, gross domestic product (GDP), and inflation.²³ Book-tax conformity continues to be positively associated with earnings management (coefficient = 6.678, p-value < 0.01).

5.3 Additional analyses

We verify the sensitivity of our results along several dimensions. First, we check how robust our results are to using alternative scalars. Like Atwood et al. (2010), we scale all financial variables by average total assets in our reported results. However, we obtain similar results when we scale all financial variables by lagged assets, following Leuz et al. (2003) or when we scale all financial variables by sales.

Second, we add two additional explanatory variables specifically related to accounting quality (disclosure index and accrual index).²⁴ We do so because accounting rules can both limit firms' abilities to manage earnings and affect the extent to which book and taxable incomes reflect one another. Results from this procedure are reported in table 6. While our sample is significantly reduced by this additional data requirement, we continue to find a positive and significant relation between book-tax conformity and earnings management (coefficient = 5.976, p-value < 0.05). The coefficients on the two additional explanatory variables, however, are not statistically significant.

Third, we examine whether our results are robust to different aggregation schemes. We conduct our analysis on a country-year level to maximize variation in book-tax conformity. Thus, our reported tests attempt to strike a balance between the research designs

²³ In studying the relation between earnings persistence and book-tax conformity Atwood et al. (2010) also control for earnings variability, and find that it has no significant effect on the relation between earnings persistence and book-tax conformity. We omit earnings variability from our set of control variables because it likely over-controls for the effect we are trying to capture (e.g., earnings variability is the numerator in calculating EM1). However, in untabulated results we find that the coefficient on book-tax conformity is still positive and significant (coefficient = 4.492, p-value < 0.01) even after controlling for earnings variability.

²⁴ We report these results separately in table 6 because including the disclosure and accrual indexes reduces our sample by almost 30%.

used in Atwood et al. (2010) (i.e., at the firm-year level) and in Leuz et al. (2003) (i.e., at the country level). To alleviate concerns over data aggregation we also conduct our main analysis at both the firm-year and country levels and all inferences remain the same.

Fourth, we assure that our results are not driven by any single country by estimating the relation between book-tax conformity and earnings management after removing each country from our sample. We find that our results are not sensitive to excluding any one country.

Fifth, we consider the possibility that our measure of book-tax conformity is also affected by earnings management. While earnings management could affect our measure of required conformity, we believe this is unlikely to be a problem given our results. Managers' discretionary choices must have different effects on book and taxable income (i.e., they must be book-tax non-conforming) to affect our measure of book-tax conformity. However, non-conforming earnings management should increase the root mean squared error of equation (1), as pre-tax book income explains less variation in income tax expense when managers engage in non-conforming earnings management. Consequently, more non-conforming earnings management biases the tests against finding a positive relation between book-tax conformity and earnings management.

Finally, we provide an estimate of the robustness of our results with respect to correlated omitted variables. Required country-level book-tax conformity is likely correlated with other institutional features such as code law vs. common law, the level of enforcement, investor protections, etc. To the extent we can identify and measure these variables we include them as controls in our model. However, because book-tax conformity is likely a choice variable for the country, we cannot be sure we have identified and included all the determinants of book-tax conformity that could also be correlated with earnings management. Thus, we address concerns over correlated omitted variables by estimating the smallest

correlation such a confounding variable would have to have with both earnings management and with book-tax conformity to invalidate our statistical inferences. Frank (2000) derives an estimate to assess the robustness of multivariate regression coefficients in the presence of potential correlated omitted variables, known as the Impact Threshold for a Confounding Variable (denoted as ITCV). This approach has been previously used in the accounting literature (e.g., Larcker and Rusticus, 2010; Fu et al., 2011). Thus, while we are not able to control for every possible confounding effect, we can estimate how strong such an effect would have to be to invalidate our results and inferences. The ITCV is defined as the lowest product of the partial correlation between y and the confounding variable and the partial correlation between x and the confounding variable that would cause the observed statistical relation between x and y to become statistically insignificant. Using our main regression model, we find an ITCV of 0.152 for book-tax conformity.²⁵ This value implies that a potential correlated omitted variable would need to have a correlation of at least 0.390 ($0.152^{0.5}$) with both book-tax conformity and aggregate earnings management to invalidate our conclusions. Given that our main regression model explains over 50% of variation in earnings management and that none of our control variables exhibit such strong joint partial correlations with book-tax conformity and earnings management, we conclude that our results are reasonably robust to potential correlated omitted variables.

6. Conclusion

There is an ongoing debate in the policy arena and in the accounting literature about the costs and benefits of increasing the level of book-tax conformity in the US. Calls to tax

²⁵ $ITCV = \left(\sqrt{(1 - r_{x:z}^2)(1 - r_{y:z}^2)} \left(\frac{t^2 + t\sqrt{d}}{-(n-q-1)} + \left[\frac{-d - t\sqrt{d}}{-(n-q-1)} \right] r_{y:x|z} \right) \right)$, where $r_{x:z}^2$ is the R-squared from a regression of x on all other control variables, $r_{y:z}^2$ is the R-squared from a regression of y on all other control variables, t is the critical value from a T distribution, n is the number of observations, q is the number of independent variables included in the model, $r_{y:x|z}$ is the partial correlation between x and y holding constant all control variables, and $d = t^2 + (n - q - 1)$. For more details on the calculation of ITCV see Frank (2000).

firms on book income or to get rid of many of the differences between book income and taxable income are predicated partly on the belief that higher book-tax conformity would reduce opportunistic managerial discretion over reported accounting numbers. Opponents respond that book-tax conformity would be more difficult to achieve than proponents suggest and that increasing the level of book-tax conformity would lead to less informative financial statements (and in particular, earnings).

We contribute to this debate by testing the assumption that higher book-tax conformity is associated with lower earnings management. Using an international panel of firms across 35 countries from 1996-2007 we test the claim that higher book-tax conformity is associated with less earnings management. If higher levels of book-tax conformity are associated with a sufficiently large reduction in earnings management, investors could be better off with higher book-tax conformity even though they would lose some information from conforming the two income measures. However, our evidence suggests that higher levels of book-tax conformity are not necessarily associated with less earnings management. In fact, we find that higher levels of book-tax conformity are associated with higher, not lower, levels of earnings management across the world. We conclude that one of the primary asserted benefits of conforming book and taxable income, more truthful financial reporting, is unlikely to be large as previously thought.

Our study, of course, is not without limitations. Because our tests employ an international setting it is possible that book-tax conformity and other institutional country characteristics are determined endogenously with earnings management, possibly biasing our results. A potential approach to address this problem would be to focus on a single country, such as the US, which would maintain institutional factors constant across all firms. Unfortunately, this approach has limitations as well. Since there is little variation in required book-tax conformity within a country, limiting our analysis to any single country would

remove the variation in required conformity needed to test for the effects of book-tax conformity on earnings management.²⁶ Because endogeneity concerns are at least somewhat measurable, we opt to maximize statistical power by using cross-country tests and report how large a potential endogenous variable would have to be to invalidate our results. Our analysis suggests that the correlations between an omitted institutional variable and *both* book-tax conformity and earnings management would have to be quite large to invalidate our inferences (i.e., at least 0.390 after accounting for variation shared with our current control variables). Therefore, our results appear to be reasonably robust to concerns over endogeneity.

²⁶ For example, single-country studies measuring book-tax conformity using the approach in Atwood et al. (2010) would capture the effect of managers' discretionary choices that give rise to book-tax differences across firms rather than the effect of differences in required book-tax conformity.

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Table 1

Descriptive statistics of sample firms

The full sample consists of 141,389 firm-year observations for the fiscal years 1996 to 2007 across 35 countries. Financial accounting information is obtained from Compustat's Global Vantage files. Firm size is measured as total US\$ sales (in millions). Capital intensity is measured as the ratio of long-term assets over average total assets. The fraction of manufacturing firms is the percentage of firm-year observations with SIC 2000 to 3999. GDP is the gross domestic product (in billions). Inflation is the annual percentage change in consumer prices. Book-tax conformity is the amount of variation in current tax expense that cannot be explained by the variation in pre-tax earnings, income from foreign operations, and dividends (see Atwood et al., 2010).

	Years covered	# Firm-years	Median firm size in US\$ (millions)	Median capital intensity	Fraction of mfg. firms	Median GDP in US\$ (billions)	Median inflation (%)	Average book-tax conformity
CANADA	1996-2007	4,587	246.8	0.445	0.275	1,085.0	2.00	0.070
GERMANY	1996-2007	5,605	201.1	0.213	0.551	2,753.4	1.56	0.123
NORWAY	1996-2007	1,176	143.9	0.246	0.406	278.5	2.33	0.126
SOUTH AFRICA	1999-2007	1,302	922.1	0.247	0.233	204.7	5.34	0.131
UNITED STATES	1996-2007	31,837	442.9	0.229	0.504	11,347.2	2.68	0.131
INDIA	1996-2006	2,002	226.5	0.394	0.787	602.0	4.25	0.167
BELGIUM	1996-2007	922	274.0	0.221	0.547	348.3	1.79	0.231
AUSTRALIA	1996-2007	7,197	17.4	0.265	0.241	684.9	2.68	0.243
INDONESIA	1996-2007	1,853	60.8	0.406	0.629	257.7	10.45	0.270
PAKISTAN	1999-2001	128	63.7	0.502	0.664	89.0	4.14	0.285
THAILAND	1996-2007	2,806	53.0	0.430	0.603	158.0	2.24	0.342
MEXICO	1997-2007	669	940.9	0.560	0.478	706.7	5.03	0.348
DENMARK	1996-2007	1,198	177.7	0.328	0.573	245.8	2.11	0.399
UNITED KINGDOM	1996-2007	12,039	126.5	0.239	0.350	2,071.3	2.91	0.415
SWEDEN	1996-2007	2,216	144.8	0.176	0.472	330.9	1.04	0.424
PHILIPPINES	1999-2007	803	40.6	0.410	0.386	93.4	5.89	0.436
ITALY	1996-2007	1,901	348.2	0.202	0.588	1,723.3	2.21	0.534
NETHERLANDS	1996-2007	1,571	576.3	0.228	0.498	585.5	2.12	0.575
JAPAN	1996-2007	30,465	295.6	0.292	0.515	4,094.2	-0.27	0.577
GREECE	1999-2007	608	272.4	0.337	0.484	200.8	3.37	0.579
FRANCE	1996-2007	5,359	194.4	0.142	0.471	2,050.3	1.70	0.581
NEW ZEALAND	1999-2007	604	91.8	0.403	0.293	93.9	2.56	0.584
FINLAND	1996-2007	1,032	317.6	0.248	0.627	179.1	1.40	0.604
BRAZIL	1996-2007	1,173	736.9	0.445	0.598	890.5	6.84	0.607
MALAYSIA	1996-2007	6,046	40.4	0.373	0.551	119.7	2.03	0.622
PORTUGAL	1998-1999	86	253.0	0.463	0.535	160.8	2.51	0.671
SINGAPORE	1996-2007	3,329	66.6	0.301	0.457	103.0	0.96	0.690
SOUTH KOREA	1999-2007	1,612	817.2	0.404	0.679	812.7	2.75	0.700
TAIWAN	1998-2007	4,949	115.5	0.303	0.803	351.9	1.61	0.703
AUSTRIA	1996-2007	760	240.5	0.314	0.621	289.1	1.80	0.770
HONG KONG	1996-2007	1,250	151.3	0.275	0.405	147.2	-1.03	0.777
SPAIN	1996-2007	1,257	419.8	0.345	0.485	1,033.1	3.07	0.785
SWITZERLAND	1996-2007	1,863	386.7	0.311	0.616	351.1	0.81	0.812
IRELAND	1998-2006	397	258.7	0.328	0.378	174.5	3.48	0.815
CHILE	1999-2007	787	174.8	0.549	0.480	108.4	3.34	0.954
Mean		4,040	281.2	0.331	0.508	992.2	2.79	0.488
Median		1,571	226.5	0.314	0.504	330.9	2.33	0.575
Standard deviation		7,209	245.8	0.105	0.137	2,004	2.08	0.243
Min		86	17.4	0.142	0.233	89.0	-1.03	0.070
Max		31,837	940.9	0.560	0.803	11,347.2	10.45	0.954

Table 2

Earnings management variables

This table reports mean earnings management proxies by country. All earnings management variables are measured at the country-year level. EM1 is the country's median ratio of the firm-level standard deviations of operating income and operating cash flow (both scaled by average total assets). The cash flow from operations is equal to operating income minus accruals, where accruals are calculated as: $(\Delta\text{total current assets} - \Delta\text{cash}) - (\Delta\text{total current liabilities} - \Delta\text{short-term debt} - \Delta\text{taxes payable}) - \text{depreciation expense}$. EM2 is the country-year's Spearman correlation between the change in accruals and the change in cash flow from operations (both scaled by average total assets). EM3 is the country-year's median ratio of the absolute value of accruals and the absolute value of the cash flow from operations. EM4 is the number of "small losses" divided by the number of "small profits" for each country-year. A firm-year observation is classified as a small loss if net earnings before extraordinary items (scaled by average total assets) are in the range $[-0.01, 0]$. A firm-year observation is classified as a small profit if net earnings before extraordinary items (scaled by average total assets) are in the range $[0, 0.01]$. The aggregate earnings management score is the average rank across all four measures, EM1-EM4. The sign in the column heading indicates whether higher scores for the respective EM measures imply more earnings management (+) or less (-).

(continued)

Table 2
Earnings management variables (continued)

	Earnings smoothing measures		Earnings discretion measures		Aggregate earnings management score
	EM1 $\sigma(\text{OpInc})/\sigma(\text{CFO})$ (-)	EM2 $\rho(\Delta\text{Acc}, \text{ACFO})$ (-)	EM3 $ \text{Acc} / \text{CFO} $ (+)	EM4 # of SmLoss / # of SmProfit (-)	
INDONESIA	0.365	-0.975	0.711	0.265	26.3
GREECE	0.312	-0.953	0.691	0.435	25.8
AUSTRIA	0.307	-0.955	0.697	0.488	24.7
ITALY	0.303	-0.972	0.640	0.406	24.5
SPAIN	0.327	-0.955	0.558	0.129	24.3
BELGIUM	0.347	-0.944	0.667	0.384	23.5
PORTUGAL	0.312	-0.968	0.592	0.417	23.3
JAPAN	0.398	-0.947	0.577	0.269	22.3
PHILIPPINES	0.463	-0.863	0.763	0.698	21.5
SOUTH KOREA	0.380	-0.886	0.563	0.335	21.5
FRANCE	0.378	-0.940	0.580	0.397	21.1
TAIWAN	0.486	-0.911	0.723	0.368	20.5
CHILE	0.392	-0.963	0.467	0.773	20.3
THAILAND	0.440	-0.941	0.629	0.559	19.6
SINGAPORE	0.438	-0.847	0.712	0.368	19.5
PAKISTAN	0.439	-0.906	0.549	0.278	19.3
MALAYSIA	0.465	-0.827	0.685	0.334	19.1
HONG KONG	0.466	-0.647	0.644	0.390	18.9
GERMANY	0.441	-0.801	0.657	0.326	18.7
DENMARK	0.467	-0.741	0.557	0.578	16.4
NETHERLANDS	0.453	-0.765	0.511	0.358	15.5
FINLAND	0.534	-0.808	0.524	0.463	15.5
SWITZERLAND	0.489	-0.744	0.466	0.333	14.9
MEXICO	0.476	-0.945	0.395	0.768	14.8
NEW ZEALAND	0.513	-0.801	0.445	0.417	14.4
BRAZIL	0.567	-0.928	0.454	0.642	14.3
IRELAND	0.539	-0.377	0.395	0.286	13.8
INDIA	0.496	-0.849	0.384	0.250	13.6
NORWAY	0.609	-0.666	0.584	0.784	12.3
UNITED KINGDOM	0.593	-0.703	0.452	0.481	9.7
CANADA	0.657	-0.703	0.450	0.667	9.3
SOUTH AFRICA	0.540	-0.665	0.390	1.170	9.1
UNITED STATES	0.670	-0.832	0.409	0.650	8.3
SWEDEN	0.712	-0.606	0.445	0.707	7.8
AUSTRALIA	0.718	-0.622	0.447	0.616	7.5
Mean	0.471	-0.827	0.555	0.480	17.5
Median	0.465	-0.849	0.558	0.417	18.9
Standard deviation	0.114	0.139	0.114	0.208	5.5
Min	0.303	-0.975	0.384	0.129	7.5
Max	0.718	-0.377	0.763	1.170	26.3

Table 3

Descriptive statistics of sample countries

The classification of the legal origin and the legal tradition upper/lower case? are based on La Porta et al. (1998). CD (CM) indicates a code-law (common-law) country. The outside investor rights variable is the anti-director rights index created by La Porta et al. (1998), which is an aggregate measure of minority shareholder rights and ranges from zero to five. Legal enforcement is measured as the mean score of three legal variables used in La Porta et al. (1998): (1) the efficiency of the judicial system, (2) an assessment of the rule of law, and (3) the corruption index. All three variables range from zero to ten. Ownership concentration is measured as the median percentage of common shares owned by the largest three shareholders in the ten largest privately owned non-financial firms (La Porta et al., 1998). The disclosure index measures the inclusion or omission of 90 items in the 1990 annual reports (La Porta et al., 1998); it is not available (NA) for three countries in our sample. The accrual index captures the extent to which accrual rules accelerate the recognition of economic transactions (e.g., R&D activities or pension obligations) in accounting. It is constructed by Hung (2001) and is not available (NA) for fourteen countries in our sample.

	Legal origin	Legal tradition	Outside investor rights	Legal enforcement	Ownership concentration	Disclosure index	Accrual index
AUSTRALIA	English	CD	4	9.5	0.28	75	0.82
AUSTRIA	German	CM	2	9.4	0.58	54	NA
BELGIUM	French	CM	0	9.4	0.54	61	0.68
BRAZIL	French	CM	3	6.1	0.57	54	NA
CANADA	English	CD	5	9.8	0.4	74	0.82
CHILE	French	CM	5	6.5	0.45	52	NA
DENMARK	Scandinavian	CM	2	10.0	0.45	62	0.55
FINLAND	Scandinavian	CM	3	10.0	0.37	77	0.55
FRANCE	French	CM	3	8.7	0.34	69	0.64
GERMANY	German	CM	1	9.1	0.48	62	0.41
GREECE	French	CM	2	6.8	0.67	55	NA
HONG KONG	English	CD	5	8.9	0.54	69	0.64
INDIA	English	CD	5	5.6	0.4	57	NA
INDONESIA	French	CM	2	2.9	0.58	NA	NA
IRELAND	English	CD	4	8.4	0.39	NA	0.82
ITALY	French	CM	1	7.1	0.58	62	0.45
JAPAN	German	CM	4	9.2	0.18	65	0.55
MALAYSIA	English	CD	4	7.7	0.54	76	NA
MEXICO	French	CM	1	5.4	0.64	60	NA
NETHERLANDS	French	CM	2	10.0	0.39	64	0.73
NEW ZEALAND	English	CD	4	10.0	0.48	70	0.73
NORWAY	Scandinavian	CM	4	10.0	0.36	74	0.82
PAKISTAN	English	CD	5	3.7	0.37	NA	NA
PHILIPPINES	French	CM	3	3.5	0.57	65	NA
PORTUGAL	French	CM	3	7.2	0.52	36	NA
SINGAPORE	English	CD	4	8.9	0.49	78	0.64
SOUTH AFRICA	English	CD	5	6.4	0.52	70	0.68
SOUTH KOREA	German	CM	2	5.6	0.23	62	NA
SPAIN	French	CM	4	7.1	0.51	64	0.77
SWEDEN	Scandinavian	CM	3	10.0	0.28	83	0.59
SWITZERLAND	German	CM	2	10.0	0.41	68	0.32
TAIWAN	German	CM	3	7.4	0.18	65	NA
THAILAND	English	CD	2	4.9	0.47	64	NA
UNITED KINGDOM	English	CD	5	9.2	0.19	78	0.82
UNITED STATES	English	CD	5	9.5	0.2	71	0.86

Table 4

Correlation coefficients

This table reports correlation coefficients (Pearson above, Spearman below) for 374 country-year observations. Book-tax conformity is the amount of variation in current tax expense that cannot be explained by the variation in pre-tax earnings, income from foreign operations, and dividends (see Atwood et al., 2010). EM1 is the country's median ratio of the firm-level standard deviations of operating income and operating cash flow (both scaled by average total assets). The cash flow from operations is equal to operating income minus accruals, where accruals are calculated as: $(\Delta\text{total current assets} - \Delta\text{cash}) - (\Delta\text{total current liabilities} - \Delta\text{short-term debt} - \Delta\text{taxes payable}) - \text{depreciation expense}$. EM2 is the country-year's Spearman correlation between the change in accruals and the change in cash flow from operations (both scaled by average total assets). EM3 is the country-year's median ratio of the absolute value of accruals and the absolute value of the cash flow from operations. EM4 is the number of "small losses" divided by the number of "small profits" for each country-year. A firm-year observation is classified as a small loss if net earnings before extraordinary items (scaled by average total assets) are in the range $[-0.01, 0)$. A firm-year observation is classified as a small profit if net earnings before extraordinary items (scaled by average total assets) are in the range $[0, 0.01]$. The aggregate earnings management score is the average rank across all four measures, EM1-EM4. The sign in the column heading indicates whether higher scores for the respective EM measures imply more earnings management (+) or less (-).

	Book-tax conformity	EM1 (-)	EM2 (-)	EM3 (+)	EM4 (-)	Aggregate earnings management
Book-tax conformity		-0.330 <i><.0001</i>	-0.106 <i>0.040</i>	0.165 <i>0.001</i>	-0.154 <i>0.003</i>	0.311 <i><.0001</i>
EM1 (-)	-0.320 <i><.0001</i>		0.483 <i><.0001</i>	-0.440 <i><.0001</i>	0.230 <i><.0001</i>	-0.761 <i><.0001</i>
EM2 (-)	-0.176 <i>0.001</i>	0.571 <i><.0001</i>		-0.155 <i>0.003</i>	0.093 <i>0.074</i>	-0.523 <i><.0001</i>
EM3 (+)	0.168 <i>0.001</i>	-0.453 <i><.0001</i>	-0.268 <i><.0001</i>		-0.131 <i>0.011</i>	0.651 <i><.0001</i>
EM4 (-)	-0.207 <i><.0001</i>	0.311 <i><.0001</i>	0.148 <i>0.004</i>	-0.097 <i>0.060</i>		-0.374 <i><.0001</i>
Aggregate earnings management	0.312 <i><.0001</i>	-0.754 <i><.0001</i>	-0.684 <i><.0001</i>	0.659 <i><.0001</i>	-0.479 <i><.0001</i>	

Table 5

Earnings management and book-tax conformity

This table reports multivariate regression estimates in which the dependent variable is the aggregate earnings management score and the variable of interest is book-tax conformity. Aggregate earnings management is created by averaging the ranks of all four earnings management measures, EM1-EM4 (see Table 3), where EM1-EM4 are measured at the country-year level. Book-tax conformity is the amount of country-year variation in current tax expense that cannot be explained by the variation in pre-tax earnings, income from foreign operations, and dividends (see Atwood et al., 2010). The outside investor rights variable is the anti-director rights index created by La Porta et al. (1998), which is an aggregate measure of minority shareholder rights and ranges from zero to five. Legal enforcement is measured as the mean score of three legal variables used in La Porta et al. (1998): (1) the efficiency of the judicial system, (2) an assessment of the rule of law, and (3) the corruption index. All three variables range from zero to ten. Ownership concentration is measured as the median percentage of common shares owned by the largest three shareholders in the ten largest privately owned non-financial firms (La Porta et al., 1998). Legal tradition is 1 for code law countries and zero for common law countries. Firm size is country-year median of total US\$ sales (in millions). Capital intensity is the country-year median ratio of long-term assets over average total assets. The fraction of manufacturing firms is the percentage of firm-year observations with SIC 2000 to 3999, computed at the country-year level. GDP is the gross domestic product (in billions), computed at the country-year level. Inflation is the country's annual percentage change in consumer prices. ***, **, and * indicate significance at the 10%, 5%, and 1% levels respectively.

	Model (1)	Model (2)	Model (3)	Model (4)
Intercept	13.754 *** [1.159]	27.246 *** [1.372]	26.309 *** [3.221]	12.590 [9.782]
Book-tax conformity	7.323 *** [0.693]	7.499 *** [0.9593]	7.395 *** [1.822]	6.678 *** [1.556]
Outside investor rights		-1.737 *** [0.199]	-1.775 *** [0.456]	-0.154 [0.560]
Legal enforcement		-1.014 *** [0.141]	-0.947 *** [0.317]	-0.866 *** [0.285]
Ownership concentration				18.020 *** [5.795]
Legal tradition				3.096 ** [1.413]
Median firm size				-1.491 ** [0.731]
Median capital intensity				-11.028 * [5.985]
Fraction of mfg. firms				11.662 *** [3.927]
Median GDP				0.815 [0.722]
Median inflation				-0.209 [0.143]
Year Fixed Effects	No	No	Yes	Yes
Error Clustering	No	No	Country	Country
R ²	0.097	0.348	0.394	0.527
Nobs	374	374	374	374

Table 6

Earnings management and book-tax conformity, controlling for countries' accounting characteristics

This table reports multivariate regression estimates in which the dependent variable is the aggregate earnings management score and the variable of interest is book-tax conformity. Aggregate earnings management is created by averaging the ranks of all four earnings management measures, EM1-EM4 (see Table 3), where EM1-EM4 are measured at the country-year level. Book-tax conformity is the amount of country-year variation in current tax expense that cannot be explained by the variation in pre-tax earnings, income from foreign operations, and dividends (see Atwood et al., 2010). The outside investor rights variable is the anti-director rights index created by La Porta et al. (1998), which is an aggregate measure of minority shareholder rights and ranges from zero to five. Legal enforcement is measured as the mean score of three legal variables used in La Porta et al. (1998): (1) the efficiency of the judicial system, (2) an assessment of the rule of law, and (3) the corruption index. All three variables range from zero to ten. Ownership concentration is measured as the median percentage of common shares owned by the largest three shareholders in the ten largest privately owned non-financial firms (La Porta et al., 1998). Legal tradition is 1 for code law countries and zero for common law countries. Firm size is country-year median of total US\$ sales (in millions). Capital intensity is the country-year median ratio of long-term assets over average total assets. The fraction of manufacturing firms is the percentage of firm-year observations with SIC 2000 to 3999, computed at the country-year level. GDP is the gross domestic product (in billions), computed at the country-year level. Inflation is the country's annual percentage change in consumer prices. The disclosure index measures the inclusion or omission of 90 items in the 1990 annual reports (La Porta et al., 1998); it is not available (NA) for two countries in our sample. The accrual index captures the extent to which accrual rules accelerate the recognition of economic transactions (e.g., R&D activities or pension obligations) in accounting. It is constructed by Hung (2001) and is not available (NA) for six countries in our sample. ***, **, and * indicate significance at the 1%, 5%, and 10% levels respectively.

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)
Intercept	11.905 *** [0.780]	39.622 *** [3.498]	38.821 *** [8.757]	-4.145 [19.169]	30.553 [31.335]
Book-tax conformity	9.438 *** [1.511]	8.154 *** [1.266]	8.305 *** [2.864]	6.332 ** [2.221]	5.976 ** [2.012]
Outside investor rights		-1.989 *** [0.218]	-2.013 *** [0.447]	0.323 [0.759]	0.340 [0.655]
Legal enforcement		-2.257 *** [0.367]	-2.209 ** [0.971]	-0.700 [1.107]	-1.213 [1.066]
Ownership concentration				28.894 ** [11.822]	16.435 [13.212]
Legal tradition				3.755 * [2.050]	2.854 [1.956]
Median firm size				-1.049 [0.941]	-1.307 [1.088]
Median capital intensity				-1.533 [9.987]	-3.416 [6.799]
Fraction of mfg. firms				10.105 [6.468]	15.708 * [7.780]
Median GDP				1.693 * [0.816]	0.519 [0.910]
Median inflation				-0.421 [0.553]	-0.590 [0.642]
Disclosure index					-0.314 [0.183]
Accrual index					7.491 [5.726]
Year Fixed Effects	No	No	Yes	Yes	Yes
Error Clustering	No	No	Country	Country	Country
R ²	0.136	0.426	0.472	0.572	0.614
Nobs	234	234	234	234	234

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CEO After-tax Compensation Incentives and Corporate Tax Avoidance (dissertation)
Revise and resubmit at Contemporary Accounting Research

The Influence of Profit-based Compensation on Nonprofit Objectives
with Leslie Eldenburg and Theodore Goodman
Revise and resubmit at Contemporary Accounting Research

The Association between Book-tax Conformity and Earnings Management
with Bradley Blaylock and Terry Shevlin
Under review at Journal of Accounting and Economics

Equity Valuation and the Interaction between Corporate Tax Rules and Inflation
with Dan Dhaliwal, Grace Lee, and Robert Trezevant

WORKS IN PROGRESS

Quantifying the Costs and Benefits of Book-tax Differences *Writing Stage*
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Partial Adjustment toward Target Capital Structures: Do Taxes Matter? *Data Analysis Stage*
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AAA Annual Meeting, San Francisco, CA *2010*
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INVITED RESEARCH PRESENTATIONS

American Accounting Association Annual Meeting, Anaheim, CA *2008*
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