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Preface

The 8th University of Illinois Tax Research Symposium was held in Champaign during September 11-13, 2003. A total of six papers were presented by their authors. An outstanding group of discussants and symposium participants provided comments on each paper. This volume contains synopses of the papers and discussants' commentary.

Approximately 80 scholars from 32 universities attended the Symposium, including a number of accountancy faculty and Ph.D. students from the University of Illinois. We are especially appreciative of The Deloitte Foundation for underwriting much of the costs associated with bringing this group together.

We also wish to thank Mark Garay, Deloitte's Deputy Director of Tax Policy, for providing an insightful and entertaining keynote address on the political and economic forces underlying the formation of tax policy and legislation.

Finally, a symposium of this magnitude could not take place without considerable planning and attention to detail. In this regard we would like to thank Letha D. Barnhart, Sharon McLeod and Jean Seibold for their invaluable administrative assistance.

Tax Symposium Planning Committee, 2003

Paul J. Beck
Bryan Cloyd, Chair
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Estimates of the Magnitude of Financial and Tax Reporting Conflicts

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Companies face inherently conflicting interests in their reporting for financial and tax purposes. While higher financial reporting earnings are generally viewed as favorable, higher taxable income can result in additional tax liabilities. The tension between financial reporting and other firm objectives is a common research theme in accounting choice generally and in tax. In examining the financial-tax reporting tradeoff specifically, the empirical literature has not been consistent in its assumption regarding the relation between changes in book income and changes in taxable income. In some cases, changes in one are assumed to be mimicked in the other, while in other cases they are treated as essentially independent.

This paper empirically addresses the conflicting financial and tax reporting incentives for earnings management. Utilizing a standard model of discretionary accruals, I estimate the extent the tax system reflects discretionary actions taken for financial reporting purposes.

I find the degree to which financial reporting reflects discretionary tax activities varies significantly by industry, profitability, and by the sign of discretionary accruals measured under the tax system. These results imply that some managers are able to recognize significant financial reporting income without tax consequences and undertake substantial tax reducing activities without being subject to financial reporting costs. Both of these results are consistent with recent evidence on the differential growth of book and tax income and with tax sheltering activities.

Methodology

To examine the reporting relation between the two accounting systems I focus on differences in accruals under each system as the amount of cash collected is independent of the accounting method. I jointly estimate two standard models of accruals, one based in financial statement information, the other on tax return

information, to correct for omitted variable bias and other shortcomings of the standard model.

Pretax financial reporting total accruals for company i in period t ($TA_{i,t}^F$) can be written as:

$$TA_{i,t}^F = RBI_{i,t} - CF_{i,t} \quad (1)$$

where $RBI_{i,t}$ is pretax reported book income and $CF_{i,t}$ equals pretax cash flows. Similarly, tax reporting total accruals for company i in period t can be defined as:

$$TA_{i,t}^T = TI_{i,t} - CF_{i,t} \quad (2)$$

where $TI_{i,t}$ equals reported taxable income. Assuming cash flows are the same under each system, tax accruals will differ from pretax book accruals to the extent pretax book income differs from taxable income, that is

$$TA_{i,t}^F - TA_{i,t}^T = RBI_{i,t} - TI_{i,t}. \quad (3)$$

As a result, tax accounting accruals can be estimated from financial accounting accruals if one knows the difference between reported book and taxable income. Such differences depend on both timing differences (such as the differences in depreciation patterns) and scope (such as the inclusion or exclusion of unrepatriated foreign income). I decompose accruals into their non-discretionary and discretionary components via separate regressions of total accruals for financial and tax-reporting purposes. For financial reporting, the estimated equation is:

$$\frac{TA_{i,t}^F}{A_{i,t-1}} = \alpha_{FO} + \alpha_{F1} \frac{1}{A_{i,t-1}} + \beta_F \frac{\Delta Sales_{i,t-(t-1)}}{A_{i,t-1}} + \gamma_F \frac{PPE_{i,t}}{A_{i,t-1}} + \rho_F \frac{TA_{i,t-1}^F}{A_{i,t-2}} \quad (4)$$

where $\Delta Sales$ is the change in sales from the past year (adjusted for changes in accounts receivables), PPE is gross property, plant and equipment, and A_{t-1} is prior year total assets. A lag of total accruals is included to capture mean reversion.

For tax accruals, the empirical model is specified as:

$$\frac{TA_{i,t}^T}{A_{i,t-1}} = \alpha_{TO} + \alpha_{T1} \frac{1}{A_{i,t-1}} + \beta_T \frac{\Delta GrossReceipts_{i,t}}{A_{i,t-1}} + \gamma_T \frac{PPE_{i,t}}{A_{i,t-1}} + \rho_T \frac{TA_{i,t-1}^T}{A_{i,t-2}} \quad (5)$$

with all variables the same as those used in equation (4) with the exception of $\Delta Gross Receipts$, which is the tax accounting equivalent of sales. The predicted values from these models are taken as estimates of non-discretionary accruals, and the residuals as estimates of discretionary accruals.

An important concern highlighted in reviews of empirical accruals models has been the extent to which the estimation of total accruals equations using ordinary least

squares (OLS) are affected by omitted variables and the simultaneity of the explanatory variables with the methods available to manage earnings. Under the assumption accruals are determined contemporaneously, a more efficient approach is to jointly estimate the two equations using a system of seemingly unrelated regressions. In such a setting, cross-correlations and the omitted variables affecting each equation are captured in the covariance matrix, and the independence of the errors across the two equations can be explicitly tested.

Given the discretionary accruals estimates from the joint estimation of (4) and (5), the relation between discretionary accruals across the two accounting systems can be estimated via a regression of one on the other. The magnitude of the regression coefficient in the equation provides an estimate of the extent tax reporting costs are associated with earnings management. Additional covariates can then be added to test for difference due to other characteristics.

Results

Estimation results for the two accruals equations confirm a statistically significant correlation of the residuals from the two equations, violating the assumptions of the ordinary least squares model, and leading to better estimates if these equations are estimated jointly.

Results for the relation of the discretionary accruals show a statistically significant difference in the effect on taxable income accruals of book discretionary accruals depending on the sign of the book accrual. The estimated effect for positive book discretionary accruals is only about half the value of the effect on tax accruals when the book accrual is negative. The magnitude of the coefficients suggests that firms either take tax advantage of opportunities to recognize greater financial reporting income when the tax costs are small, or that firms are able to minimize the tax effects of increased financial reporting income through other mechanisms. Similarly, to the extent that firms recognize income decreasing accruals, they appear to be able to take greater advantage of the tax systems to reduce taxable income.

This general conclusion is reinforced by the introduction of additional covariates for a firm's tax status in the equations. Firms with negative taxable income face no change in their current period tax liability if they recognize greater income. These firms are estimated to have a much larger coefficient on book discretionary accruals, implying that income increasing accruals show up more on the tax return when the tax costs are smaller. For non-taxed firms, approximately 76 percent of the financial accounting accruals are reflected in tax accruals, more than double the amount for taxed firms. For income decreasing accruals, the amount that taxable income is affected by a negative book discretionary accrual is much smaller.

Individual industry results (at the two-digit SIC level) are consistent with expectations: regulated industries have the highest relation across the two reporting systems, suggesting a close tie between financial and tax reporting of positive accruals. For manufacturing firms, which comprise the largest number of observations, income increasing discretionary accruals are not estimated to be related to contemporaneous tax discretionary accruals.

These results provide evidence that financial reporting discretionary accruals and tax discretionary accruals are related, that the relation varies significantly by industry, and that income increasing book accruals are reflected less in taxable income than income decreasing accruals.

A separate conclusion, not related to the significance of individual coefficient estimates in each industry, is that financial statement-based measures of tax discretionary accruals are not appropriate substitutes for estimates based on the underlying tax return. Recent research questioning the usefulness of tax information drawn for financial statements is supported by these results.

Further tests explore the financial reporting costs of tax minimizing behavior by running the regression equations in reverse, with book discretionary accruals the dependent variable and tax discretionary accruals the primary explanatory variable. These results suggest that taxable income-increasing accruals of taxable firms have a greater contemporaneous effect on book income than taxable income decreasing accruals. These results are consistent with the observation that firms are able to mitigate the financial reporting effects of tax reducing activities.

Conclusions

I find the degree to which tax reporting is affected by discretionary financial activities varies significantly by industry, profitability, and by the sign of discretionary accruals measured under the tax system. These results imply that managers may be able to undertake substantial income increasing activities without being subject to immediate tax reporting costs, consistent with recent evidence on the differential growth of book and tax income, and with tax sheltering activities. Further, the results suggest that the extent to which tax discretionary accruals are affected by book discretionary accruals varies by both of the sign of the accrual and the firm's tax status. This suggests that the nature of discretionary accruals is such that many managers can opportunistically mitigate tax consequences of such activities, such as by recognizing more earnings that would be taxed when the tax costs are low.

Further, focusing on tax reporting, the evidence suggests an asymmetric effect, with taxable income increasing accruals more likely to be reflected in financial reporting

income than those activities that decrease income. Finally, the paper suggests an easily implemented methodological solution to address concerns with discretionary accruals-based earnings management.

Discussion of “Estimates of the Magnitude of Financial and Tax Reporting Conflicts”

Sonja Olhoft Rego, University of Iowa

The accounting literature has considered book-tax differences as measures of tax planning (e.g., Manzon and Plesko 2002; Phillips 2003; Rego 2003), as measures of earnings management (e.g., Mills and Newberry 2001; Dhaliwal, Gleason, and Mills 2003; Joos, Pratt, and Young 2003; Phillips, Pincus, and Rego 2003), as signals of earnings persistence (e.g., Hanlon 2003a; Schmidt 2003), and as a source of information to the market and other stakeholders (e.g., Hanlon 2003b; Hanlon, Kelley, and Shevlin 2003; and Mills and Plesko 2003). Plesko (2003) builds upon prior research by using book-tax differences to measure discretion in the U.S. financial reporting system as compared to discretion in the U.S. tax reporting system. Specifically, Plesko estimates discretionary book accruals and discretionary tax accruals and examines the relation between these two measures across: (1) industries, (2) tax status, and (3) sign of discretionary accrual. Plesko provides little motivation for this analysis and delays empirical predictions until the final pages of the paper. Consequently, this discussion will first propose a research question, second specify empirical predictions, third examine the research design, and fourth analyze the empirical results.

I. Research Question

Plesko states on page 1 that “(u)tilizing a standard model of discretionary accruals, I estimate the extent the tax system reflects discretionary actions taken for financial reporting purposes... (T)he correlation of the estimated discretionary accruals from each system will provide a measure of the extent to which discretionary actions in one system, such as those taken to increase financial reporting income, will be reflected in the accruals of the other”. My first question is, what is the research question of this paper? Further, what is a discretionary tax accrual? My second question is, what causes variation in discretionary book and tax accruals?

The empirical analysis in Plesko (2003) suggests the following research question, which I expand upon below: “How does discretionary *financial* reporting affect the tax accounting system, and how does discretionary *tax* reporting affect the financial

accounting system?” To answer this question, Plesko uses accrual models to estimate discretionary book and tax accruals, where *presumably* the former primarily measure discretion in financial reporting and the latter primarily measure discretion in tax reporting.¹ In theory, managers use financial accounting discretion to optimally report book income (i.e., higher book income) and tax accounting discretion to optimally report taxable income (i.e., lower taxable income). However, because many transactions require book-tax conformity, discretionary book accruals could have a detrimental impact on taxable income (i.e., higher taxable income), and discretionary tax accruals could have a detrimental impact on book income (i.e., lower book income). Consequently, it is not clear what our predictions would be for the correlation between discretionary book and tax accruals. Discretionary book and tax accruals would be *negatively* related if on average, managers use their discretion to report higher book income and lower taxable income. In contrast, discretionary book and tax accruals would be *positively* related if on average, book-tax conformity exists between financial and tax accounting. Thus, it is an empirical question whether the correlation between discretionary book and tax accruals is negative, positive, or significant at all.

This leads to my second question: “What causes variation in discretionary book and tax accruals?” Such variation could be due to: (1) different reporting incentives for book and tax purposes (i.e., earnings management and tax planning activities), (2) different amounts of discretion allowed for book and tax purposes (i.e., differences in financial and tax accounting rules), or (3) measurement error in the discretionary accrual models. I contend throughout section IV of this discussion that estimates of discretionary book and tax accruals contain substantial measurement error. Consequently, we cannot determine whether the empirical results in this paper are driven by different reporting incentives, different amounts of discretion, or measurement error in discretionary accrual models.

¹ Plesko does not define “discretionary tax accrual”, so we can only infer its definition from the paper.

II. Empirical Predictions

Plesko does not state specific empirical predictions until page 18 of the paper.² I recommend he insert empirical predictions at the beginning of the paper. For example,

“This paper partitions the sample based upon income-increasing and income-decreasing discretionary book accruals and estimates how a \$1 change in discretionary *book* accruals affects discretionary *tax* accruals. I predict that income-increasing discretionary book accruals will be associated with a smaller discretionary tax accrual than income-decreasing discretionary book accruals, due to the tax costs associated with the former.

In addition, this paper partitions the sample based upon income-increasing and income-decreasing discretionary tax accruals and estimates how a \$1 change in discretionary *tax* accruals affects discretionary *book* accruals. I predict that income-increasing discretionary tax accruals will be associated with a larger discretionary book accrual than income-decreasing discretionary tax accruals, due to the financial reporting benefits associated with the former”.

The lack of empirical predictions at the front-end of the paper obfuscates the purpose of the empirical tests. In addition, these predictions require the author to statistically test whether the coefficients are different between the income-increasing and income-decreasing discretionary accrual samples.

III. Research Design

I will discuss four aspects of the research design in Plesko (2003): (i) estimation of total tax accruals, (ii) estimation method for the total book and tax accrual equations, (iii) model specification for the total book and tax accrual equations, and (iv) model specification for the discretionary tax accrual equation. This section concludes with a discussion of the impact of measurement error on the empirical results.

Numerous accounting studies have computed discretionary (a.k.a. abnormal) accruals using various methodologies (e.g., Healy 1985; Jones 1991; Dechow, Sloan, and Sweeney 1995; Subramanyan 1996; Dechow, Richardson, and Tuna 2003; and

² Plesko states on page 18, “While the incentive to report less income to tax authorities leads to the prediction that income increasing book accruals will have smaller coefficients than income decreasing book accruals, the opposite will be true of tax motivated transactions.”

Francis, LaFond, Olsson, and Schipper 2003). While all discretionary accrual models contain measurement error, certain models contain less measurement error than others (e.g., Dechow, Sloan, and Sweeney 1995; Bernard and Skinner 1996; Thomas and Zhang 2000; and Kothari, Leone, and Wasley 2002). The accrual model employed in Plesko (2003) is a hybrid of several existing accrual models, but the paper lacks a description of the discretionary accrual estimation process.³ This lack of explanation glosses over several important issues.

First, typical discretionary accrual models define total *book* accruals (TA^F) as income before extraordinary items (*EBEI*) less cash flow from operations (*CFO*), which has been adjusted for extraordinary items and discontinued operations (*EIDO*), i.e., $TA^F = EBEI - (CFO - EIDO)$. Thus, typical discretionary accrual models define total accruals as those relating to *operating* activities. Based upon the following set of relations, Plesko estimates total tax accruals (TA^T) by subtracting total book-tax differences from total book accruals:

$$TA^F = RBI - CF \quad (1)$$

$$TA^T = TI - CF \quad (2)$$

Where *RBI* is reported book income, *CF* is cash flow, and *TI* is taxable income. Equations (1) and (2) together imply $TA^T = TA^F - (RBI - TI)$, provided cash flows are the same for book and tax purposes. The problem with this computation is that total book-tax differences reflect operating, financing, and investment activities. Thus, Plesko's estimated total tax accruals (TA^T) reflect operating, financing, and investment activities, where the financing and investment activities constitute measurement error in TA^T .⁴ In a regression where TA^T is the dependent variable, this measurement error would appear in the regression residual. Thus, measurement error directly affects Plesko's estimates of discretionary tax accruals.

The second research design issue concerns the estimation method for the discretionary accrual model in Plesko (2003). Plesko states that seemingly unrelated regressions (SUR) account for simultaneity between the regressors (i.e., nondiscretionary accruals such as revenues and property, plant, and equipment) and the regressand (i.e., total accruals), as discussed in Kang and Sivaramakrishnan (1995). Most discretionary accrual models do not explicitly address this type of

³ Plesko's accrual model most closely resembles the lagged accrual model in Dechow, Richardson, and Tuna (2003), which is an extension of the modified Jones accrual model in Dechow, Sloan, and Sweeney (1995).

⁴ Financing and investment activities constitute measurement error because accrual models are trying to estimate "normal", recurring accruals relating to the operations of the business.

simultaneity.⁵ However, Plesko has another type of simultaneity to consider: simultaneity between his measures of total book and tax accruals. Given book-tax conformity for typical revenue and expense transactions, portions of total book and tax accruals are simultaneously determined. Further, the method that Plesko uses to compute total tax accruals also suggests simultaneity between the two types of accruals. Specifically, Plesko defines $TA^T = TA^F - (RBI - TI)$. Thus, I recommend that Plesko use a simultaneous estimation method such as three-stage least squares (3SLS) that accounts for the simultaneous relation, as well as the cross-equation error correlation, between total book and tax accruals.⁶

Discussion of the estimation methodology brings us to the third research design issue: model specification. As discussed above, numerous accrual models exist in the accounting literature. I recommend Plesko use either the commonly-cited, modified Jones accrual model or the more recent, performance-matched modified Jones accrual model to estimate discretionary *book* accruals.⁷ The former has the advantage of simplicity, while the latter has the advantage of correcting for the simultaneity issue in Kang and Sivaramakrishnan (1995).

In contrast to numerous discretionary *book* accrual models, Plesko is the first to compute discretionary *tax* accruals. Thus, it is not clear that the model specification for discretionary book accruals should be used to compute discretionary tax accruals. Given the different motivations behind financial and tax accounting systems in the United States, total tax accruals are likely a function of a different set of variables

⁵ The most common method of correcting for this type of simultaneity is to estimate accrual model parameters “out of sample” or to compute “performance-matched” discretionary accruals. While estimating parameters “out of sample” is not feasible for Plesko, he could compute “performance-matched” discretionary accruals to address this simultaneity issue.

⁶ Plesko performs a Breusch-Pagan test of the independence of each set of residuals for each set of equations, to confirm the necessity of SUR estimation. Additional explanation of this test would be helpful to the reader, especially in light of the fact that Greene (1993, pp. 488-489) states that SUR estimation does not improve estimation efficiency when the independent variables in the system of equations are identical, or nearly identical, across equations, as they are in equations (6) and (7).

⁷ See Dechow, Sloan, and Sweeney (1995) or Phillips, Pincus, and Rego (2003) for a description of the modified Jones accrual model, and see Kothari, Leone, and Wasley (2002) or Francis, LaFond, Olsson, and Schipper (2003) for a description of the performance-matched modified Jones accrual model.

than total book accruals.⁸ Plesko does not address the appropriate model specification for total tax accruals in the current version of his paper, but the issue should at least be acknowledged in the manuscript.

To keep the system of equations as simple as possible, I suggest Plesko run the two following equations using three-stage least squares (3SLS) estimation:

$$TA^F_t = \alpha_{F0} + \beta_F TA^T_t + \delta_F (\Delta Sales_t - \Delta AR_t) + \gamma_F PPE_t + \pi_F SalesGr_{t+1} + \varepsilon \quad (3)$$

$$TA^T_t = \alpha_{T0} + \beta_T TA^F_t + \delta_T (\Delta GrossReceipts_t - \Delta AR_t) + \gamma_T PPE_t + \pi_F ETR_{t-1} + \varepsilon \quad (4)$$

where all variables are scaled by lagged total assets.⁹ I have added the endogenous discretionary accrual variables (TA^T_t and TA^F_t), as well as unique regressors (one-year ahead growth in sales, $SalesGr_{t+1}$, and beginning of the period average effective tax rate, ETR_{t-1}), to enable identification of the system of equations.¹⁰ This system of equations is based upon the modified Jones accrual model as shown in Phillips, Pincus, and Rego (2003) and accounts for the simultaneous relation between TA^F_t and TA^T_t .¹¹

⁸ For example, Hanlon, Kelley, and Shevlin (2003) state that the U.S. financial reporting system uses conservative accounting to represent shareholder value, while the U.S. tax reporting system exists to raise revenue, to change taxpayer behavior, to achieve social norms, and is the object of extensive politicking.

⁹ Plesko uses Compustat data for TA^F , $\Delta Sales$, ΔAR , and PPE , and tax return data for $\Delta GrossReceipts$ and book-tax differences in TA^T . Presumably, he would use tax return data for ΔAR and PPE in equation (2) if that data were available.

¹⁰ Dechow, Richardson, and Tuna (2003) include one-year ahead growth in sales ($SalesGr_{t+1}$) in their Forward Looking discretionary accrual model. In addition, it seems likely that beginning of the period tax burden (ETR_{t-1}) is related to current year total tax accruals.

¹¹ Many variations of this system of equations are possible. Plesko (2003) does not describe his estimation method in detail, but these models are commonly estimated by 2-digit SIC code and year, with a minimum of 10 observations for each 2-digit SIC code and year combination. See Phillips, Pincus, and Rego (2003) for further details.

The fourth research design issue is with respect to the model specification for equation (8), which regresses discretionary tax accruals on discretionary book accruals. Plesko states on page 9 that “(a)dditional covariates can then be added to test for differences due to other characteristics”. However, Plesko does not add such covariates to the analysis, except for a tax status indicator variable. Sensitivity analysis that incorporates additional covariates would strengthen the credibility of the empirical results.

Substantial prior accounting research has criticized existing discretionary accrual models as containing significant measurement error (e.g., Dechow, Sloan, and Sweeney 1995 and Bernard and Skinner 1996). This criticism applies to the accrual model used in Plesko (2003). In fact, there are several sources of measurement error for the discretionary book and tax accruals in this paper. First, there is measurement error embedded in TA^T due to total book-tax differences reflecting transactions from operating, financing, and investment activities (as discussed above). Second, there is measurement error related to estimation methodology (i.e., OLS, SUR, and 3SLS compute different residuals for the total accrual equations, which directly affects the computation of discretionary accruals). Third, there is measurement error related to model specification (i.e., which accrual model is appropriate for total book accruals versus total tax accruals). Consequently, the discretionary accruals in Plesko (2003) contain substantial measurement error that biases any regression coefficients to zero. In addition, because discretionary *tax* accruals likely contain more measurement error than discretionary *book* accruals, regression coefficients on discretionary tax accruals are further biased toward zero, making the empirical results difficult to interpret.

IV. Results

I have several broad comments regarding the empirical results. First, measurement error affects the empirical results to the extent that we cannot disentangle measurement error from empirical predictions. For example, Table 1 shows that the correlation between TA^T computed using tax return data (LINE28TA) and TA^T computed using financial statement data (GROSS63TA) is quite high (0.71). However, in Table 3 the correlation between discretionary tax accruals computed using tax return data (LINE28DA) and discretionary tax accruals computed using financial statement data (GROSS63DA) “is essentially zero”. While Plesko attributes this lack of correlation to noise associated with estimating taxable income from financial statement data, I attribute this lack of correlation to measurement error in the discretionary accrual models (given the high correlation between the total accrual measures). But there is no obvious way to disentangle these two interpretations of the empirical results.

Second, the author should focus on the industry-level results, as I find these more revealing than the pooled results. For example, manufacturing and service firms account for approximately two-thirds of the sample, and thus dominate the pooled results. In Table 4, the coefficients on BOOK28DA for these firms are much lower (and in fact insignificant for manufacturing firms) than for all other industries. Plesko does not interpret these results. Do the lower coefficients imply that manufacturing and service firms exercise more discretion in their financial and tax accounting than other industries? Or is the low correlation due to different amounts of discretion allowed across industries, or different amounts of measurement error across industries? In general, the industry-level results are rich, yet overlooked.

Third, Plesko downplays the reliability of using financial statement data to estimate taxable income, but the empirical results based upon these data are more compelling than he acknowledges. Plesko states on page 16 that “The most important conclusion from examining Table 5 is ... the general result that financial statement-based measures of tax discretionary accruals do not appear to be appropriate substitutes for estimates based on the underlying tax return.” This quote overstates the differences between Tables 4 and 5. While the “All” columns for firms with income-increasing discretionary book accruals are different between the two tables, most of the other results are quite similar between the two tables. In fact, Table 5 results may be more credible because the book-tax differences used to compute total and discretionary tax accruals in this table do not reflect differences due to non-qualified stock options (as discussed in Manzon and Plesko 2002; Shevlin 2002; and Hanlon, Kelley, and Shevlin 2003), so the 0.608 coefficient on GROSS63DA in Table 5 for service firms more be a more informative estimate than the 0.234 coefficient on BOOK28DA in Table 4.¹²

Fourth, Table 6 expands on the correlations in Table 3 and presents results for industry-level regressions of discretionary tax accruals computed using financial statement data (GROSS63DA) on discretionary tax accruals computed using tax return data (LINE28DA). Unfortunately, the discretionary accrual models likely add so much measurement error to these variables that I am not certain what we learn from this analysis. We learn that there is no correlation between these two measures for manufacturing and service firms, but we do not know whether this lack of correlation is due to financial statement distortions, inappropriate estimation method, or incorrect model specification. I would be more interested in seeing results for regressions of taxable income as computed from financial statement data (DATA63/.35) on taxable income computed from tax return data (Line28), similar to the analysis in Plesko (1999). These measures contain less measurement error and

¹² “More informative” in the sense that there is no discretion associated with the financial and tax accounting for non-qualified stock options.

would reveal for which industries financial statement data is more or less reliable to compute taxable income.

V. Conclusions

Plesko (2003) addresses an interesting research question: “How does discretionary *financial* reporting affect the tax accounting system, and how does discretionary *tax* reporting affect the financial accounting system?” However, Plesko does not properly motivate the empirical analysis in the first half of the paper. In addition, measurement error affects the estimates of discretionary book and tax accruals to the extent that we cannot disentangle the impact of measurement error from “true” empirical results. This discussion offers editorial and empirical suggestions that should improve the motivation for the paper and reduce the impact of measurement error on the empirical results, in hopes that Plesko (2003) can make a significant contribution to the book-tax accounting literature.

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Evidence on the Possible Information Loss of Conforming Book Income and Taxable Income

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This paper investigates whether and to what extent information content to stock market participants would be lost if financial accounting income is conformed to taxable income (or vice versa). This is an important issue because several recent events have led some tax policymakers, financial commentators, and academics to call for the calculation of taxable income (hereafter TI) to be more closely tied to GAAP book income (hereafter BI). For example, in light of the recent explosion in corporate tax shelters, the US Treasury (1999) issued a white paper report “The Problem with Corporate Tax Shelters.” One proposal to solve the “problem” is “to tax public corporations on their income reported for financial reporting purposes, as adjusted by tax rules authorizing specific deviations from that base” (Yin 2001, p.26). Further, the recent accounting scandals, such as Enron, Worldcom, Adelphia, and Qwest, where firms’ overstated corporate income, has also attracted attention to the large gap between book income and taxable income. In response to these alleged fraudulent reporting cases, Representative Lloyd Doggett stated that “when investors hear only of rosy earnings while at tax time Uncle Sam only hears of regrets and red ink, something is very wrong. A corporate culture of creative accounting and reporting abuses weakens our economy...” (Weisman 2002, p. A01).¹

¹ Other policy suggestions have also been made. There have been suggestions to require firms to disclose corporate tax returns in order to induce firms to keep the incomes more aligned. Lenter, Shackelford and Slemrod (2003) discuss this suggestion. A related suggestion is to make public the Schedule M-1, the tax return schedule that reconciles taxable income with accounting earnings that are computed for financial reporting purposes. For example, Senator Charles Grassley wrote a letter to President Bush on October 7, 2002 calling for additional disclosure of book-tax differences because “...the minimal disclosure is a breeding ground for the manipulation of financial statements and abusive tax shelter schemes.” Mills and
Footnote continued on the next page

Our primary motivation is to inform the debate about conforming (or reducing the gap between) the two income measures by documenting the relative and incremental information content of BI and TI. If BI and TI become one, the information set available to investors will be reduced. By documenting the information content of each income measure, we can begin to quantify the loss in information to investors if the two income measures are constrained to be the same.² We use the phrase conforming the two measures as shorthand as most of our comments and analysis also apply to the suggestion to reduce the differences between the two measures because reducing differences removes these items from the information set available to investors. However, our analysis does not directly assess the effects of removing specific differences. We also note here that investors must estimate taxable income from financial statement disclosures (that is taxable income is not directly in the publicly available information set). These disclosures will no longer exist if the two measurers are conformed and it is in this sense that we say one measure will be removed from the information set available to investors.

One of the claimed advantages of the process in which accounting standards are determined in the United States is that the U.S. capital markets (both equity and debt) are the most informationally efficient and liquid (have the lowest transaction costs and most participants) in the world, leading to the efficient allocation of scarce capital resources to their most productive use. There is an extensive analytical and empirical literature in accounting examining the properties of financial accounting information.³ Accounting earnings provide relevant information to capital market participants, which could well be lost if it is closely tied to tax rules and/or if standard setting and GAAP is captured by tax rule-makers, policymakers, and politicians.

Plesko (2003) develop a revised M1 schedule. A third suggestion is to improve the tax reporting on a company's financial statements. Hanlon (2003b) discusses this suggestion together with an evaluation of the difficulties of estimating a firm's taxable income from financial statement disclosures.

² We focus on the information content of book and taxable income to investors for valuation purposes, ignoring the stewardship and contracting uses of accounting information, ignoring the relevance of accounting information to other users such as creditors, unions, managers, and ignoring other possible uses by equity investors (for example, in assessing risk).

³ See Kothari (2001) for an extensive review of the literature examining the capital market's use of accounting information.

Whether estimated taxable income provides information to the capital markets has also been investigated in the accounting literature, although only much more recently. Shevlin (2002) provides some preliminary evidence on this issue (consistent with our results), but the issue is not the main focus of his commentary. We extend Shevlin by refining the estimate of taxable income (adjusting for change in NOL carryforwards), examining results by year (avoiding overstated significance levels due to cross-sectional correlation), adding hedge portfolio return results, and adding extensive analysis of alternative specifications and partitions of the data. Hanlon (2003a) investigates the persistence and pricing of earnings when book-tax differences are large and finds that earnings are less persistent under this condition. The evidence in Hanlon is consistent with investors and analysts interpreting large book-tax differences, where book income is in excess of taxable income, as a “red flag” and reducing their expectations of future earnings persistence as a result. Alford et al. (1993) and Ali and Hwang (2000) assess the information content of accounting information across multiple countries and as part of their analysis report that earnings exhibit lower information content in countries where book income conforms to taxable income.

Our first measure of information content is a portfolio returns test in which we estimate the total return that could be earned from foreknowledge of each income measure. This portfolio return is then expressed as a percentage of the return that could be earned with perfect foresight of the sample firms’ stock returns. The portfolio returns approach to assessing information content has been applied in other contexts beginning with Ball and Brown (1968) to assess the information content of annual earnings, in Alford et al. (1993) and Ali and Hwang (2000) to assess the information content of accounting information across multiple countries, and Francis and Schipper (1999) to assess the information content of accounting information in the U.S. across the past 40 years. In our context, examining the portfolio returns as a percentage of market returns allows an assessment of the economic significance of each measure. *Ceteris paribus*, the larger the portfolio returns as a percentage of market returns, the greater the economic cost if that measure of income was to be removed from the market’s information set.

Our second measure of information content is based on the explanatory power (both relative and incremental) of the income measures for security returns—the ability of earnings to explain annual market-adjusted returns. The explanatory power approach follows directly from Lev’s (1989) discussion of the ability of earnings to explain returns as the appropriate measure of the usefulness of accounting information to investors and has been used extensively in the capital markets literature, see for example, Dechow (1994) and Biddle, Bowen and Wallace (1997).

We conduct our tests using a sample of 66,678 firm-year observations over the period 1983-2001. We estimate taxable income for each firm by grossing up the

firm's reported current tax expense by the top statutory tax rate for the specific year then subtracting the change in the firm's net operating loss carryforward. Our portfolio return tests indicate that foreknowledge of the sign and magnitude of book income leads to significantly higher stock returns than does foreknowledge of (estimated) taxable income. Our relative information content tests indicate significantly greater explanatory power for book income. The incremental information content tests indicate both income measures have significant incremental explanatory power. Conforming the two measures at a minimum results in the loss of incremental explanatory power, and if as we conjecture, Congress usurps the rule-making role, book income is conformed to (that is, calculated using) the tax rules, a 50 percent loss in the explanatory power of earnings.

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Discussion of “Evidence on the Possible Information Loss of Conforming Book Income and Taxable Income”

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Hanlon, Kelly, and Shevlin (2003) (hereafter “HKS”) addresses an interesting policy question. How large would the decrease in the information content of earnings be if book income and taxable income were constrained to be the same? As HKS point out, some commentators and policy makers have argued for conforming book and taxable income as a means of curbing aggressive accounting as well as aggressive tax planning. The argument is that, in general, firms have incentives to reduce taxable income while at the same time increasing financial reporting (book) income. Proponents of book-tax conformity assert that when book-tax conformity is high, firms lose the ability to “have their cake and eat it too” and are forced to make trade-offs between tax and financial reporting objectives, presumably causing more conservative accounting and more conservative tax planning.

However, there are reasons why the tax code is different than GAAP. The purpose of GAAP is to provide information to investors, creditors, etc., for use in decision making. In making the tax code, Congress at times has various objectives including redistributing wealth, raising revenue, and achieving social or economic objectives. Providing information to investors is not one of the purposes of the tax code. In fact, the tax code provides for privacy of tax returns. The typical investor in a publicly traded corporation does not have access to that corporation’s tax returns and generally learns of the corporation’s tax expenses via the corporation’s GAAP financial statements and related disclosures. As HKS and other commentators (e.g., Hanlon, 2003a) have pointed out, it can sometimes be difficult to assess a firm’s tax position from its GAAP financial statements. Despite the limitations of GAAP financial statements, there is some evidence that the tax disclosures have information content (Shevlin, 2002; Hanlon, 2003b).

If Congress conformed book and tax it is likely that there would be some loss of information to investors. The amount of information loss would likely be larger if GAAP was made to look like the tax code than if the tax code was made to look like GAAP. The purpose of HKS is to estimate the likely information loss empirically by

applying some standard capital markets techniques to the research question. For example, HKS regress long-window stock returns on the change in annual accounting earnings and the estimated change in annual taxable income. HKS finds that both book income and taxable income have information content, so that removing either from investors' information sets would result in a loss in information content. As expected, the information content of book income is greater than the information content of taxable income. As such, HKS conclude that requiring firms to report taxable income in their financial statements in place of current GAAP would result in a more severe loss in information content than would replacing the tax code with GAAP.

Below I pose five questions that one might ask about the paper. Bear in mind that these are questions that arise from reading the April 2003 version of the paper and it is highly likely that the paper will evolve over time.

1. How likely is it that policy makers will require book-tax conformity? If book-tax conformity is being seriously considered that would make the paper more relevant for policy makers. The paper contains a quote from a Congressman but does not cite any proposed legislation or other evidence that book-tax conformity is being seriously considered by Congress. I suggest that the authors investigate whether there is evidence that policy makers are actively pursuing or investigating book-tax conformity. However, even if there is not much chance of a move towards book-tax conformity I would still find the paper interesting from an academic perspective.
2. Is there a viable null hypothesis? Accounting researchers have known that GAAP earnings have information content since Ball and Brown (1968) and Beaver (1968). If firms were required to present taxable income to their shareholders in place of current GAAP there would almost certainly be a loss of information content. Most financial accounting researchers would, I think, agree with this assessment. The only question is how large the information loss would be. Conversely, if taxable income was replaced by GAAP income then the only information investors would lose would be the current accounting for income tax disclosures, e.g., deferred taxes. While there is some evidence that deferred taxes can be useful for assessing the persistence of earnings (Hanlon, 2003b), it seems likely that the information loss of replacing taxable income with GAAP income would be small. I suggest that the paper be rewritten to make it clear that it is more about estimating the magnitude of the information loss under different book-tax conformity scenarios than it is about testing whether there would be any information loss. Finally, it is possible that policy makers and members of other academic disciplines are not as familiar with accounting research as

we might hope. In that event, this paper could be especially useful to non-accountants.

3. Don't we already have evidence on this question? Preliminary evidence on the information loss of book-tax conformity can be found in Shevlin (2002). Consequently, the current paper needs to discuss how the tests and results compare with those in Shevlin (2002). It is certainly the case that the current paper presents a more extensive battery of tests than Shevlin (2002). If the current paper could point to some new finding beyond the findings of Shevlin (2002) that would be useful. However, since Shevlin (2002) was published in a law journal not normally read by economists or accountants, there could be some usefulness to a more extensive version tailored to economists.
4. What happens to incremental information content if we allow for a broader set of financial reporting information? Since Ball and Brown (1968) and Beaver (1968), researchers have found a number of other financial reporting variables that either have information content on their own or affect the information content of earnings. If these variables are not controlled for, then one cannot determine whether the presumed information content of taxable income is unique or is simply an artifact of some omitted variable. The researchers recognize this and do control for one major partitioning variable – positive and negative income. Other factors I suggest they consider controlling for include the presence of one-time items (or direct measures of the persistence of earnings) and the lead-lag nature of earnings and returns (Collins, Kothari, Shanken and Sloan, 1994).
5. Are there other costs that the data could speak to? I think the answer to this question is yes. For example, suppose the Treasury has a preference for stable revenue streams over variable revenue streams. Then the variability of GAAP income versus currently defined taxable income would become an issue if there was a move to base taxes on GAAP income. It is an empirical question whether GAAP income is more variable than taxable income, but it seems likely given the tendency of GAAP income to include large accruals for restructuring charges and large write downs of assets such as goodwill. HKS could rather easily address the effect of book-tax conformity on the variability of tax revenues.

In conclusion, I find the question the paper addresses to be interesting and worthy of research. I hope the paper continues to evolve and ultimately finds itself in a high quality journal.

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E-Commerce and International Tax Planning

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This paper is a first exploration of how electronic commerce has altered multinational tax planning. Much has been written in the popular press about the effect of electronic commerce on the taxes that governments around the world will collect in the future. Many of these commentaries suggest that the traditional tax systems, developed during the last century, are not well suited for the new economy because income is attributed to physical products or processes, and thereby to a geographic location. Since these rules cannot be easily applied to electronic and intellectual products and processes, companies that employ e-commerce technologies are perceived to have greater flexibility in their tax planning.

We begin to address the specific question of whether multinational enterprises use opportunities created by e-commerce to reduce income taxes. E-commerce facilitates the use of exports, relative to foreign subsidiaries. We investigate whether e-commerce firms exploit this opportunity by exporting more than non e-commerce firms when there are tax benefits to doing so. Taxes have been shown to affect exporting decisions (Kemsley, 1998), but during a period when e-commerce was not prevalent. We determine whether e-commerce has increased the effects of tax incentives on tax planning behavior by comparing the responsiveness of exports to taxes across industries categorized by use of e-commerce trade technologies. Using U.S. company data, we demonstrate that, in tests that specifically estimate the tax incentives to export, an increase in average foreign tax rates facing U.S. companies with binding foreign tax credits results in a statistically significant increase in exports for firms in industries with more sales through e-commerce activities. Since the regressions control for sales through a foreign subsidiary, these results suggest that e-commerce aids in substituting export sales for foreign subsidiary sales when there are tax advantages to the substitution.

In our second set of tests, we use country-level data and perform a similar analysis. Whereas the company data has the advantage of being more disaggregated and allowing firms to be partitioned between those with and without binding foreign tax credits, the country data has the advantage of being able to identify exports to specific countries. The results of these tests are that, also consistent with our

hypothesis, U.S. exports are more responsive to tax rates in countries that have greater infrastructure for e-commerce activity.

While a modest beginning, this is the first rigorous empirical evidence that explores the effects of the “new economy” on multijurisdictional taxation and on the tax planning behavior of multinational companies. Given current levels of e-commerce trade, and the huge projected increase in cross-border e-commerce activity, documenting the effects of e-commerce on income location for tax purposes is important.

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Discussion of “E-Commerce and International Tax Planning”

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The paper by Professors Carnaghan and Klassen examines the choice of multinational companies to sell things “on the ground” in a foreign country using a subsidiary or to sell directly to those countries from a base in the U.S. using e-commerce and the Internet. The authors predict that growth of e-commerce should increase foreign sales, should increase sales from a central location, and should make exports more sensitive to tax rates. Using cross-sectional data, they find a huge correlation between these factors and the use of e-commerce.

One of the difficult problems that any cross-sectional study of e-commerce must confront is that the use of e-commerce in an industry or in a country is clearly not randomly allocated. The kinds of industries that use a lot of e-commerce tend to be high tech, tend to have educated workers, and on and on. Therefore, correlations between the use of e-commerce and something else (e.g. export sales) may be attributable to these other factors rather than to the use of e-commerce per se.

Concerns and Suggestions

The paper has three components. First, using firm-level data from COMPUSTAT, the study seems to indicate that more e-commerce is correlated with more exports. I have some concerns about this finding:

- a) Many service companies are included in the dataset. Service companies have a hard time exporting, almost by definition, and frequently tend to be big users of information technology. This may lead to a bias in the coefficients if you are trying to pick up an effect of e-commerce on export behavior. Looking just at manufacturing and including the value to weight ratio for the products produced by that industry (from, say, the Commodity Flow Survey) would be a natural alternative.

- b) It is important to distinguish computer usage in general from the impact of e-commerce sales. The story of this paper is really about e-commerce sales only.
- c) Even within manufacturing, I worry that the kinds of things that are generally hard to ship are things that are low tech. Consider the following table compiled using data on the dollar value per ton of goods produced in various industries. High value per ton things tend to export easily and, as the table makes clear, also tend to be high technology things where one would expect high e-commerce and/or computer usage regardless of its tax impact.

Value to Weight (\$ per ton) – 1997 Commodity Flow Survey

<i>Goods Produced by Selected Industries</i>	<i>\$ per ton</i>
Aircraft and Spacecraft	\$ 230,000
Electronic Components & Parts	160,000
Optical Instruments	138,000
Computer Equipment	64,000
Line telephone equipment	63,000
Logs, in the rough	24
Coal	12
Dolomite	7
Natural Sands	6
Gravel and Crushed Stone	5

Second, the paper estimates the effect of e-commerce on tax planning behavior using the interaction term (e-commerce * FTC Bind * Export Tax Incentive) in the Tobit analysis of the log of export sales. The estimated coefficient on this interaction term implies that a 1 percent increase in e-commerce sales combined with a 1 percent increase in average foreign tax rates for firms with a binding FTC limitation generates close to a 40 percent increase in export sales. This seems awfully high to me. How much tax can they really save, in practice, given the permanent establishment rules? Again, we are strictly comparing cross-sectional patterns in different industries and it is hard to decide what is causal. This interaction term should not find anything if we substitute computer usage for e-commerce sales, so it is worth testing that also.

Third, using data aggregated at the country level, the paper looks at the log of export sales to other countries and includes a measure of spending on information and computer technology (ICT) interacted with the country's effective tax rate (ETR) for U.S. majority-owned foreign affiliates. The coefficient on this interaction term has a

positive sign and shows that moving across the range of the data raises the elasticity from +1 to -4. The problem here is that ICT spending is exactly the wrong way to measure e-commerce. It is literally computers and telecom equipment. A far better measure would be web hosts per capita which is available over the entire sample.

The cross-sectional problem remains here. ICT has a negative sign on its own in the regression. I believe that is merely showing that services and finance (which have the big IT spending) do not export a whole lot. Adding country and year dummies would go a long way to alleviating some of the concerns about alternative explanations.

Conclusions

This is a provocative paper that shows a clear correlation between e-commerce/technology activity and the tax sensitivity of different types of business operation. The difficult problems raised with using cross-sectional data, though, mean that we should probably be circumspect in making conclusions about the causal links. Ultimately we have a long way to go before we truly know how much e-commerce affects international tax behavior.

Follow the Leader? Evidence on European and U.S. Tax Competition

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It is often alleged that countries will compete in setting tax rates on mobile factors such as capital. If true, tax competition could have a profound impact on fiscal systems worldwide, possibly altering revenue, progressivity, the mix of taxes and the overall efficiency of the tax system. Many argue that tax competition will lead to less reliance on taxes on capital and more reliance on taxes on labor, possibly reflecting more closely the benefits that different groups receive in terms of public services.

A large theoretical literature on tax competition has developed beginning with papers such as Zodrow and Mieszkowski (1986), Wilson (1986), Wildasin (1988), Bond and Samuelson (1989), Kanbur and Keen (1993) and recently surveyed in Wilson (1999). The basic argument is that countries recognize that taxes can be avoided by relocation in the case of capital taxes or cross-border purchases in the case of consumption taxes. Consequently, the tax rates set by other countries can influence the tax rate set by a given country. Most of the theoretical models of tax competition that have been developed consider a Nash game. Gordon (1992) provides an interesting exception to this by considering a Stackelberg game. He suggests that the United States may be large and influential enough to play the role of a Stackelberg leader. Moreover, it has sometimes been suggested that the Tax Reform Act of 1986 in the United States (hereafter TRA '86) stimulated European tax reforms in the ensuing years. In this paper we investigate empirically the role of the United States vis-à-vis Europe in the setting of tax rates.

Empirical examination of tax competition has lagged behind the development of theoretical models and is quite recent. Moreover, most of the empirical work, surveyed by Brueckner (2003), concentrates on tax competition between governmental units within a country. A small empirical literature has recently begun that attempts to estimate tax reaction functions of national governments competing against other national governments. For instance, Devereux, Lockwood, and

Redoano (2002) and Besley, Griffith, and Klemm (2001) estimate Nash reaction functions for OECD countries.

The purpose of our paper is to provide some evidence on the period between 1968 and 1996. Our focus is on tax competition among European countries and between those countries and the United States. The background for our empirical work is a simple model of tax competition in which one large country acts as a Stackelberg leader while the other countries follow the leader and compete among themselves in a Nash way. The slope of the reaction function of a follower with respect to the leader is ambiguous in sign. It tends to be positive because the leader's tax change increases the elasticity of capital but negative because of a desire to maintain public spending.

Our empirical work provides estimates of European reaction functions for the standard tax competition model in which each country plays a Nash game as well as the European reaction function in a game in which the U.S. is a Stackelberg leader. Our results add to the evidence of a positively sloped Nash reaction function in corporate tax as found in Devereux, Lockwood, and Redoano (2002) and Besley, Griffith, and Klemm (2001). However, in contrast to previous research, we also estimate reaction functions that include the tax rate of a Stackelberg leader. Our main finding is that the European countries behave as if the U.S. is a Stackelberg leader in setting corporate taxes after TRA'86 but not before. We test whether Germany or the United Kingdom played a leadership role and find that they did not. Our empirical findings are reinforced by our Granger causality tests, and are somewhat stronger when we exclude certain tax havens. Over time we find that European countries have become more intensely competitive with the U.S. in corporate taxes, but less intensely competitive among themselves.

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Discussion of “Follow the Leader? Evidence on European and U.S. Tax Competition”

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In this paper, Altshuler and Goodspeed add much needed empirical analysis to the theoretical literature examining tax competition. They extend a line of research that primarily has focused on intra-country tax competition to cross-border competition between national governments. In particular, the authors examine whether national governments in Europe respond to tax rate changes in “neighboring” countries and whether the significant change in U.S. tax rates enacted in the Tax Reform Act of 1986 stimulated corresponding tax reductions in Europe.

The authors use a conventional Nash equilibrium model to examine tax competition between European national governments and employ an innovative Stackelberg game approach to model European responsiveness to U.S. tax rate changes. This latter approach follows from the suggestion by Gordon (1992) that the tax rate changes enacted by the United States in 1986 were significant enough to have produced a domino effect on European tax rates, thus casting the United States into the role of a Stackelberg leader in this area.

The study focuses on changes in average tax rates imposed on corporations (a proxy for capital) during the period 1968-1996 using Organization for Economic Cooperation and Development (OECD) data. The authors define “*average corporate tax rate*” as [total corporate income tax revenues/gross domestic product]. This measure has been used in prior Nash fiscal reaction studies and has the advantage that it can be calculated consistently over the time period studied from the OECD data. The authors define a country as “*neighboring*” if it is contiguous to another country (ignoring “small” bodies of water such as the English Channel and the North Sea).

The authors make several interesting discoveries. First, they find that the slope of the corporate tax reaction function in the Nash setting between European neighbors is positive and highly significant. The results suggest that a 10 percent decrease in the neighbors’ corporate tax rate (a weighted average) induces a 3.3 percent decrease in a country’s corporate tax rate. Second, the results from the Stackelberg model

indicate that European governments acted as if the United States were a Stackelberg leader after 1986 but not before. The coefficient on U.S. tax rate is highly significant, implying that a 10 percent decrease in the U.S. tax rate leads to a 6.2 percent decrease in the own country tax rate. The authors find no evidence that Germany or the United Kingdom acted as Stackelberg leaders within the European community during the time period tested. Finally, the authors do not find any evidence that European national governments became more competitive with respect to tax rates in recent years (up to 1996), despite the “prevailing view” that tax competition had intensified in the near term.

Contribution of the Paper

Altshuler and Goodspeed address very timely issues in this paper and make an important contribution to the tax competition literature. In its 1998 policy statement on “harmful tax competition,” the OECD recognized that increased globalization had greatly increased the potential impact that domestic tax policies can have on other economies, leading to more tax competition (sometimes referred to as a “race to the bottom”) and a possible lessening of global welfare (OECD 1998, Chapter 1). In 1997, the European Commission published a Code of Conduct on Business Taxation (European Commission 1997) that recommended the harmonization of its members’ tax bases but left the tax rates to be determined by individual member states.

This paper documents that European countries do react to changes in tax regimes enacted by neighboring countries that have the effect of lowering the effective tax imposed on capital. This result supports recent empirical work done by European scholars investigating tax competition in the European Union (Devereux et al. 2002, Griffith and Klemm 2004). However, the data indicate that such competition has not accelerated as one might conclude from reading the OECD and EU reports. The authors refrain from expressing any opinions on whether such tax competition is harmful or beneficial, which is a growing area of research interest, particularly as it relates to the European Union (see, for examples, Griffith and Klemm (2004), Sorensen (2004), Devereux et al. (2004), Devereux and Hubbard (2003), Janeba and Smart (2003), and Devereux et al. (2002)). Sorensen refers to the issue as to whether corporate tax systems in the European Union should be harmonized as the “never-ending debate” (Sorensen 2004, 91).

The authors identify their primary contribution as providing strong empirical support for the proposition that the United States served as a Stackelberg leader in affecting European tax rate changes after 1986. This is a significant finding in that European-based research on tax competition in the European Union has focused on competition within the European Union, while downplaying the influence that the United States may have had on specific country tax regimes. Devereux et al. (2004) recognize that strategic interaction between European countries with respect to taxes may be

attributable to three factors: tax competition, yardstick competition, and a common intellectual trend. They define *tax competition* as countries cutting tax rates in response to others' cuts to attract inward investment. *Yardstick competition* refers to a comparison by voters as to whether their elected officials respond to tax setting in neighboring jurisdictions. Finally, they define a *common intellectual trend* as the impact of an influential country (e.g., the United States) with respect to an innovation in tax policy (e.g., lower rates and broaden the tax base as was done in 1986) that spreads internationally through the influence of the media and personal contact between policymakers in different countries. This last factor casts the United States into the role of a Stackelberg leader, as investigated by Altshuler and Goodspeed. Devereux et al. (2004) state that empirical evidence to date supports only the first factor, *tax competition*, as affecting the interaction of EU tax regimes. They further state that to test the *common intellectual trend* factor, one should look to changes in the top marginal tax rate for individuals, whose income is considered immobile and not responsive to tax rate competition. They conjecture that if one found strategic interaction between the top personal tax rates, this would provide evidence that the *common intellectual trend* factor could be a reason for changes in tax regimes. In this regard, Altshuler and Goodspeed find that personal tax rates within their sample were not affected by tax regime changes made by neighboring countries, which Devereux et al. (2004) would likely interpret as ruling out *common intellectual trend* as a factor. I would find it helpful if Altshuler and Goodspeed would address this issue with regard to how it affects the theoretical model of a Stackelberg leader.

Comments Regarding the Research Sample and Design

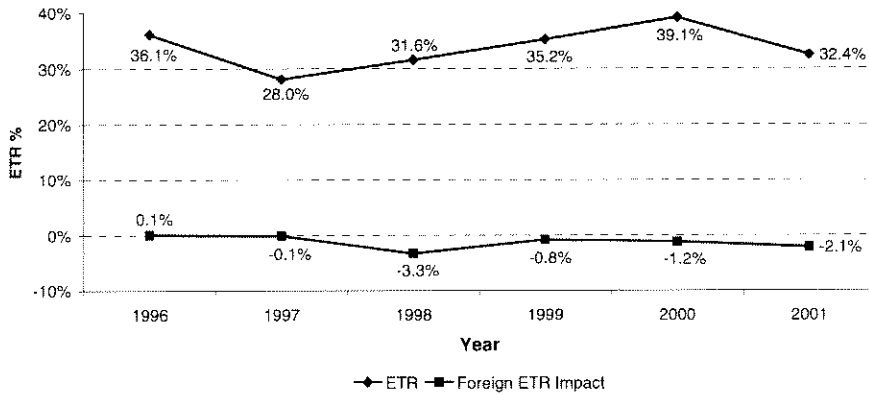
The most problematic issue with respect to investigating tax competition is choosing the appropriate measure of "tax rate." Everyone seems to agree that examining changes in countries' statutory tax rates is inappropriate, given that high tax rates do not necessarily translate into high "effective tax rates" (tax paid/tax base). As the authors point out, tax competition may involve lowering statutory tax rates, but it often takes the form of firm (industry) specific preferential tax arrangements such as credits, tax holidays, and income tax measures that are "ring-fenced" (i.e., unavailable to domestic taxpayers) (see Janeba and Smart 2003). Devereux and Griffith (2003) find empirical evidence that the decision as to where to locate an investment is governed by the *effective average tax rate* (corporate tax paid/pretax profit). The *average corporate tax rate* measure used by Altshuler and Goodspeed (total corporate income tax revenues/gross domestic product), has been used in prior research and offers the advantage of being consistent over time and straightforward to calculate over a wide variety of countries. Devereux et al. (2002) caution that this measure may be skewed by changes in profitability or inward investment that result from changes in statutory rates (e.g., Ireland may be perceived as having a high average corporate tax rate if corporate revenues increased as a result of lowering the

statutory corporate tax rate to 10 and 12.5 percent). In this study, however, the focus is on reactions to tax rate changes and not the magnitude of the change itself, which negates this potential drawback.

The use of a broad measure of a country's "tax rate" will necessarily preclude examining the idiosyncratic aspects of most national tax regimes. The countries examined in this study do not compete for the same business activities. For example, countries such as Germany, France, Ireland, Italy, and the United Kingdom generally compete for manufacturing activities. Countries such as the Netherlands, Luxembourg, Belgium, Denmark, Switzerland, and the United Kingdom compete for holding (headquarter) companies through reduced withholding taxes and preferential treatment of intercompany payments. Other countries provide preferential tax regimes for financial centers, while others favor distribution centers. Where countries vie for different activities, comparing "average effective corporate tax rates" can be difficult to interpret.

My biggest regret (no fault of the authors) is that the data end in 1996. International tax planning by U.S. corporations increasingly is centered on identifying "profit drivers" and separating profits from capital (reemphasizing the presumption that corporate income is mobile). The increasing use of offshore intellectual property holding companies allows a U.S. company to divert significant streams of profits to low tax jurisdictions. By converting manufacturing operations into contract manufacturing set-ups and strip-risk distributorships, companies can minimize the profits associated with capital. As a result, countries with high statutory tax rates may appear to be low average tax countries because of changes in per-country profitability. In addition, the advent of "check-the-box" regulations in the United States in 1997 has changed significantly the manner in which foreign taxes can be effectively "optimized". As shown in Figure 1, U.S. companies have come to depend on international tax strategies to lower their accounting effective tax rates in recent years (unpublished data compiled with Professor Gary McGill at the University of Florida). It may be that statutory tax rates and the authors' measure of average effective tax rates will become more divergent when more recent data become available.

Figure 1
Impact of Foreign Operations on ETR of Fortune 100



Since 1996, corporate effective tax rates in EU countries have tended to converge, with the exception of Ireland. Figure 2 shows the corporate effective tax rates of current EU countries and the United States, using the rates computed by KPMG in their annual corporate tax survey.

Figure 2
Corporate Effective Tax Rates - 2003

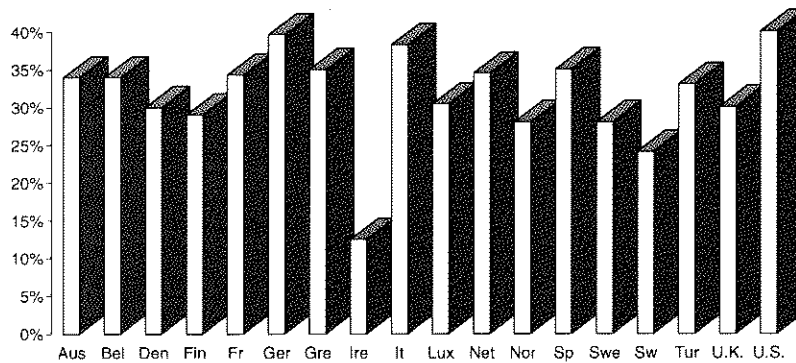
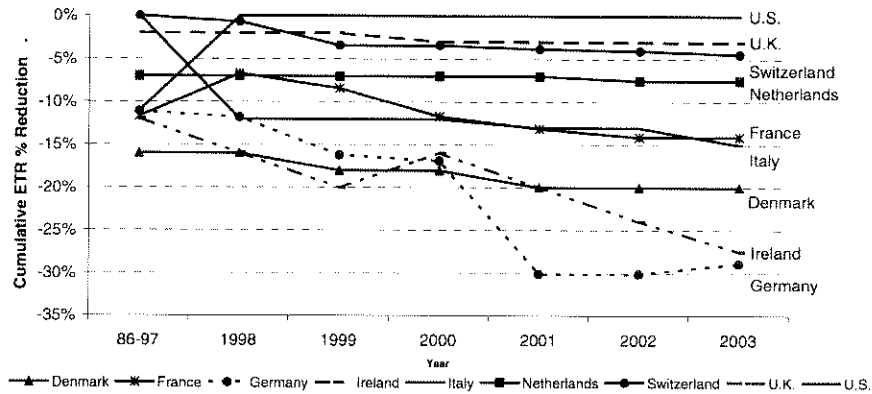


Figure 3 shows the cumulative changes in corporate effective tax rates from 1986-2003 for select EU countries compared to the United States. The chart points out that many EU countries have reduced their effective tax rates significantly since 1996, particularly Germany, Ireland, France, and the United Kingdom. I will be

anxious to see how this activity in both tax rate changes and changes in corporate structuring within the EU affect the authors' results, if at all.

Figure 3
Cumulative Reductions in ETR 1986-2003



Summary

This paper makes an important contribution to the growing literature on tax competition. Given that the U.S. government is embroiled in debate as to how to react to the World Trade Organization decision that the current export tax regime is an illegal trade subsidy, this research is highly relevant. U.S. multinational companies continue to press Congress to reduce corporate tax rates to “level the playing field” with their OECD counterparts. This line of reasoning is best captured in the testimony of David Bullington, Vice President of Tax for Wal-Mart Stores, Inc., before the Senate Finance Committee in July 2002:

...the United States is not a “low tax” country for corporations. The U.S. corporate tax rate of 35 percent is higher than that of the home countries of corporations that directly compete with U.S.-based multinational firms and many of these countries have lowered their rates in recent years... More generally, the average central government corporate tax rate in OECD member states has fallen since 1986 to 30.5 percent in 2001—4.5 percentage points less than the U.S. rate.

...the reduction of the U.S. federal corporate income tax rate would be the most effective means to increase American business competition, both at home and abroad.

Unlike its EU counterparts, the United States shows no interest in joining in the quest for tax harmonization. In the *Daily Tax Reporter* (March 5, 2003), Pam Olson, Treasury Assistant Secretary for Tax Policy, was quoted as stating the U.S. position as follows:

The U.S. interest in a level playing field does not suggest an interest in tax harmonization. To the contrary, we believe tax competition is beneficial because it forces governments to create efficiencies. Indeed it may be the only way of ensuring that governments create efficiencies, and harmonization may undercut it. A level playing field is important to ensuring that healthy competition flourishes.

Based on the results of this study, we can expect to see increasing competitive pressure to lower tax regimes in the EU in response to U.S. tax changes.

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The Persistence, Forecasting, and Valuation Implications of the Tax Change Component of Earnings

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This study investigates whether earnings generated by changes in effective tax rates (*hereafter, the tax change component of earnings*) persist and aid in forecasting future earnings. In addition, this study investigates to what extent investors incorporate the forecasting implications of the tax change component of earnings into stock prices. ETRs are likely to have implications for persistence and forecasting for two reasons. First, income taxes are of such magnitude that small changes in the ETR can lead to substantial changes in earnings.¹ Second, recent academic literature, as well as the financial press, has identified ETR manipulation as an earnings management tool.²

My study contributes to the growing literature that examines the persistence and pricing implications of book-tax differences by directly examining how taxes contribute to financial statement analysis. Prior literature either ignores or aggregates taxes with other earnings components (Sloan 1996; Hribar 2001; Nissim and Penman 2001; Barth, Beaver, Hand, and Landsman 2004) or examines the implications of information contained in temporary book-tax differences (deferred tax expense) for the quality of pretax earnings (Hanlon 2005). An additional branch

¹ In the third quarter of 2000, Hewlett-Packard lowered its year-to-date ETR by one percent, which resulted in a 3.1 percent increase in earnings. Bauman and Shaw (2002) report that, on average, the annual change in ETR accounts for approximately eight percent of the change in annual earnings.

² Dhaliwal, Gleason, and Mills (2004) find that firms lower ETRs as earnings absent tax management fall short of analyst forecasts. See also: *Wall Street Journal*, 12/11/97, p. C1; and *Wall Street Journal*, 01/07/02, Heard on the Street, p. C1-C2 and <http://www.thestreet.com/p/money/herbonthestreet-rm/10023056.html>, 05/17/02.

of research examines the informativeness of estimated taxable income to capital markets (Shevlin 2002; Hanlon, Kelly, and Shevlin 2003; Lev and Nissim 2004).³

In contrast to these studies, my decomposition of earnings treats taxes like any other earnings component (i.e., cash flows, changes in accounts receivable, changes in inventory, etc.), which allows me to directly test a maintained hypothesis that earnings generated by ETR changes are transitory or attempts at aggressive accounting by management, rather than as improvements in the core operations of the business. Further, I use the interim reporting requirements of APB No. 28 (APB 1973) and FASB Interpretation No. 18 (FASB 1977) to develop hypotheses regarding the source of the persistence of the tax change component. Understanding the differential persistence of the tax change component and its forecasting implications should aid market participants in profitability analysis and in income forecasting. This study also complements concurrent research that suggests tax-related earnings information is priced by the market (Hanlon 2005; Gleason and Mills 2004; Guenther and Jones 2004; Lev and Nissim 2004) by directly testing whether investors appropriately incorporate tax changes into market prices.

I find that the tax change component is more persistent than transitory. In contrast to earlier studies, I use the interim reporting requirements of APB No. 28 (APB 1973) and FASB Interpretation No. 18 (FASB 1977) to decompose the tax change component into an initial and a revised portion based on the first quarter estimate of the annual ETR. I find that the initial tax change component is more useful in forecasting future tax changes and future earnings than the revised tax change component. These results are consistent with my hypotheses that the initial and revised tax change components have differential persistence and forecasting implications, and dispute the broad notion espoused by prior literature (Lev and Thiagarajan 1993; Abarbanell and Bushee 1997, 1998; Amir, Lev, and Sougiannis 2000) that ETR-related earnings changes are transitory.⁴ Results from mispricing

³ A potential problem with this approach is that taxable income must be estimated from financial statement data (it is not publically available) and these estimates likely contain substantial measurement error. For detailed discussions of measurement error in estimates of taxable income, see Hanlon and Shevlin (2002); Manzon and Plesko (2002); Mills, Newberry, and Novack (2003); Hanlon (2005); and Mills and Plesko (2003).

⁴ A subtle difference among this study and Lev and Thiagarajan (1993); Abarbanell and Bushee (1997, 1998); and Amir et al. (2000) is how the ETR is defined. Lev and Thiagarajan (1993) use current tax expense only in the numerator of the ETR (opposed to total tax expense in this study) and Abarbanell and Bushee (1997, 1998) and Amir et al. (2000) use pretax income adjusted for amortization of intangibles in

Footnote continued on the next page

tests indicate that the market underweights the forecasting implications of the persistence of the tax change component and the mispricing appears to be driven by the transitory nature of the revised tax change component. Supplemental tests confirm that the results obtained from the mispricing tests are likely a result of market mispricing rather than alternative explanations such as omitted risk factors.

The results also suggest that investors can gain from breaking the tax change component of earnings into an initial and revised portion. To the extent that investors focus on the initial tax change component, they can better understand the persistence of ETR changes and consequently, make better forecasts of future earnings. Such an understanding should also decrease the mispricing of ETRs. Investors may also benefit by focusing on the relative lack of persistence for the revised tax change component. Such a lack of persistence is consistent with managers using the revised tax change component as an earnings management tool. Increased attention to this issue may mitigate such behavior by managers.

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the denominator of the ETR (opposed to pretax income only in this study). Additionally, Abarbanell and Bushee (1997, 1998) and Amir et al. (2000) interact the change in ETR with the change in after-tax EPS in order to determine the earnings effect of ETR changes, which differs from the approach used in this study.

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Discussion of “The Persistence, Forecasting, and Valuation Implications of the Tax Change Component of Earnings”

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Schmidt (2003) investigates whether changes in earnings attributable to changes in effective tax rates (ETRs) are persistent and whether the market misjudges the persistence of such changes. Investigating these research questions addresses conflicts arising in prior literature regarding the market valuation of ETRs. Schmidt (2003) answers these research questions as follows. First, he investigates the time series properties of changes in net income resulting from ETR changes using a pooled cross-sectional regression approach. Second, he decomposes these changes into initial (Q1) and revised (Q2-Q4) components to investigate whether these components have different time series properties. Third, he uses the Mishkin (1983) test to investigate market mispricing. The evidence in Schmidt (2003) is consistent with changes in net income resulting from ETR changes being moderately persistent and with the initial component being more persistent than the revised component. The evidence also suggests that the market underestimates the persistence of the revised component.

Contribution and Major Strengths

Schmidt (2003) contributes directly to the market valuation of ETRs literature. The evidence in both Lev and Thiagarajan (1993) and Abarbanell and Bushee (1997) suggests that ETR changes are not only transitory but are not value relevant. These findings conflict with the finding in Swenson (1999) that firms with low ETRs have relatively higher price/earnings ratios. Guenther and Jones (2003) address methodological concerns with the Lev and Thiagarajan and Abarbanell and Bushee studies and finds that changes in earnings attributable to ETR changes, referred to as the *tax change component* (hereinafter TCC), are value relevant under certain circumstances. As Guenther and Jones point out, however, even a transitory change in the TCC, though valued less than persistent changes, should be value relevant.

The evidence in Schmidt (2003) suggests that the TCC, though less persistent than changes in pretax earnings, is not transitory. Furthermore, Schmidt finds that the

even though the initial component of the TCC based on the first quarter (Q1) estimated ETR is more persistent than the revised (Q2 – Q4) ETR, the market *underestimates* the persistence of the latter component. These contributions to the market valuation of ETRs literature—the decomposition of the TCC into initial and revised components and the creative use of the Mishkin (1983) test—are the major strengths of the paper, along with the preliminary investigation of statutory rate reconciliation components.

The evidence in Schmidt (2003) also has the potential to contribute to the literature addressing whether firms manage earnings via income tax expense (Krull 2001; Dhaliwal, Gleason, and Mills 2003). However, findings that the TCC, and its components, are not totally persistent cannot be interpreted as evidence consistent with earnings management without additional sensitivity analyses.

Effective Tax Rate (ETR)

The ETR in Schmidt (2003), consistent with the ETR definition in Guenther and Jones (2003), is defined as follows:

$$\text{ETR} = \text{Total tax expense (TTE)} \div \text{Pretax Earnings (PTE)} \quad (1)$$

TTE is the sum of current tax expense, the amount of federal, state and local, and foreign income tax owed for the current year, and deferred tax expense computed under SFAS 109. Because there were no statutory tax rate changes during the sample period in Schmidt (2003), TTE can be expressed as follows:

$$\text{TTE} = [(\text{PTE} + \text{P}) \times \text{STR}] + \Delta\text{DTAVA} \quad (2)$$

where P represents permanent book-tax differences, STR is the statutory tax rate, and ΔDTAVA is the change in the firm's deferred tax asset valuation allowance. This definition of permanent differences includes, without loss of generality, nontaxable income, nondeductible expenses, foreign income taxed at lower rates and permanently or indefinitely reinvested, tax credits, state and local income taxes, and other statutory rate reconciling items.

TTE does not reflect the following: (1) the tax benefit of deferrals, (2) the tax benefit from the exercise of nonqualified stock option exercises (Hanlon and Shevlin, 2002), and (3) implicit taxes (Scholes et al. 2002). The omission of implicit taxes is particularly troublesome in the current study's setting because $\partial\text{PTE}/\partial\text{permanent differences}$ should be negative (Wilkie 1992); i.e., as firms engage in tax-advantaged activities that generate permanent differences, pretax returns, and thus pretax income, should decrease. Based on these factors Scholes et al. (2002, p. 161) criticize the ETR and "argue that effective tax rates have little economic meaning."

So why study ETRs? First, despite its criticisms, ETR reduction is a major tax planning focus and, as noted in Schmidt (2003), is purported to have capital market benefits despite the tendency for analysts to discount its positive income effects. ETRs also have been used in prior studies as measures of tax planning effectiveness (Phillips 2003) and as the subject of earnings manipulation (Dhaliwal, Gleason and Mills 2003). We thus need a better understanding of why ETRs matter and why they vary.

Tax Change Component (TCC)

Consistent with Lev and Thiagarajan (1993) and Guenther and Jones (2003), Schmidt measures the earnings change resulting from ETR changes as

$$TCC_t = PTE_t * (ETR_{t-1} - ETR_t).^1 \quad (3)$$

My concern is that PTE also appears in both the ETR numerator and denominator. Accordingly, the TCC can be restated as

$$TCC_t = STR \times [(G \times P_{t-1}) - P_t] \quad (4)$$

where STR is the statutory tax rate, G is the ratio of PTE_t to PTE_{t-1} , and P represents permanent differences. Thus, TCC not only depends on changes in permanent differences (P_t versus P_{t-1}), but it also depends on the change in pretax earnings (G). For example, even though permanent differences may stay the same from year t-1 to year t, an increase (decrease) in pretax earnings would lead to a decrease (increase) in the TCC. Alternatively, the effect on the TCC of tax planning efforts that lead to increases in permanent differences that lower taxable income relative to book income would be biased downwards (upwards) by an increase (decrease) in pretax earnings. These implications are equally applicable to the initial and revised components of the TCC.

In H1, the author predicts that “The initial (Q1) [TCC] of earnings is likely to be more persistent for future tax changes than subsequent revisions (Q2, Q3, Q4) in the [TCC]...” I would like to see an expanded discussion of what drives revisions in the TCC and whether such revisions are more or less persistent in nature. The inclusion of potential control variables also should be considered. For example, is it possible that revisions in pretax earnings estimates are less persistent than the first quarter

¹ Lev and Thiagarajan (1993) do not use the ETR as specified in Schmidt (2003). Their measure has only current federal income tax expense in the numerator and a measure of worldwide pretax income in the denominator. See Guenther and Jones (2003) for a discussion of ETR-based change in earnings measures used in prior studies.

earnings estimate? If so, could this revision, not a revision in tax planning estimates, be driving the study's results?

Hypotheses

H2, H3 and H4 seem to be repetitive. First, H2 repeats H1 (and H4 repeats H3) just for firms with *decreases* in annual ETRs. Why would we not expect the full sample results to apply to firms with negative ETR changes? Instead the motivation in the paper seems to suggest the following hypothesis: Does persistence of the TCC vary with whether the firm has a negative or positive ETR change? Estimating the following model can test this hypothesis:

$$\begin{aligned} TCC_{t+1} = & \delta_0 + \delta_1 INTCC_t + \delta_2 REV TCC_t + \delta_3 D_t + \\ & \delta_4 D_t * INTCC_t + \delta_5 D_t * REV TCC_t + \varepsilon_{t+1} \end{aligned} \quad (5)$$

where D is an indicator variable equal to one if the firm has a negative ETR change. The prediction would be that both δ_4 and δ_5 are different than zero.

H3 states that “The initial (Q1) [TCC] is likely to be more persistent for future earnings than subsequent revisions (Q2, Q3, Q4) in the [TCC].” The persistence of TCC_t , which is the focus in H1, should imply greater implications for year $t + 1$ earnings. Alternatively stated, if the TCC is not totally transitory, its coefficient estimate in (6b) below should be greater than zero. I propose a different question: Does decomposing year t earnings into pretax (ATE) and TCC components lead to a better prediction of year $t + 1$ earnings? The Vuong (1989) test can be used to compare the ability of following models to predict one-year-ahead earnings:

$$E_{t+1} = \delta_0 + \delta_1 E_t + v_{t+1} \quad (6a)$$

$$E_{t+1} = \delta_0 + \delta_1 ATE_t + \delta_2 TCC_t + v_{t+1} \quad (6b)$$

$$E_{t+1} = \delta_0 + \delta_1 ATE_t + \delta_2 INTCC_t + \delta_3 REV TCC_t + v_{t+1} \quad (6c)$$

I also have two concerns with equation (6c), which appears in Schmidt (2003) as equation (6). First, this equation mixes levels variables (E_{t+1} and ATE_t) with change variables ($INTCC_t$ and $REV TCC_t$). Second, I do not understand why the author expects $\delta_3 \leq 0$?

Interpretation of Results and Other Comments

The author tends to loosely interpret the relatively transitory nature of $REV TCC$ as evidence consistent with earnings management. The ETR effect of tax planning efforts and other events such as IRS settlements not anticipated in the Q1 ETR estimate, however, can be transitory. I suggest that the test of H1 be repeated after

redefining (1) INTCC to be based on the Q2 (Q3) ETR and (2) REVTCC to be based on the Q3-Q4 (Q4) revision in the ETR. Isolating the transitory nature of the TCC to a Q4 revised component would be consistent with the evidence in Dhaliwal, Gleason and Mills (2003) that firms needing to do so manage income tax expense in the fourth quarter to meet or beat analysts' forecasts.

Finally, I have the following minor suggestions. First, why not delete observations with ETRs less than zero or greater than one? Second, I would consider expanding the sample period to pre-SFAS 109. Because there was no DTAVA for managers to manipulate prior to SFAS 109, ETRs are perhaps less persistent now than when total tax expense was computed using APB 11. I would also consider adding industry control variables; e.g., stock option exercises in the computer industry, which comprises over 10 percent of the sample, could be adding noise to the TCC measure.

Conclusion

I enjoyed reading this paper and learning more about ETRs. The paper makes a nice contribution to the market valuation of ETRs literature and applies the Mishkin (1983) test in an interesting setting. I encourage the author to push forward his analysis of statutory rate reconciliation items. Measurement of the TCC is an issue and hypotheses two through four need to be readdressed.

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Diversification and the Taxation of Capital Gains and Losses

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This paper explores the incentives to hold a diversified portfolio that arise from the asymmetric tax treatment of capital gains and losses. Under current U.S. law, the total portfolio of realized capital gains is netted annually against the total portfolio of realized capital losses. If gains exceed losses, the net gain is taxed. If losses exceed gains, individuals can deduct \$3,000 of the net loss. Losses that are not deducted in the year of realization are carried forward indefinitely, offsetting gains in future years.

Prior analyses of capital gains taxes typically ignore the provisions governing the pooling of gains and losses. Their impact is assumed minor, and modeling them is an analytical challenge. This paper develops a model which employs the mathematics of option pricing theory to evaluate the impact of the current capital gains tax system on common stock valuations. We find that these nettings introduce complexity into the basic relation between share values and capital gains taxes. For firms with stock returns that are positively correlated with those of the overall market, share values generally are a *decreasing* function of the capital gains tax rate. However, for firms whose stock returns are negatively correlated with the overall market, share values generally *increase* with the capital gains tax rate.

This counterintuitive result—shareholder taxes enhance share value—occurs because taxpayers can expect to offset taxable capital gains in an overall portfolio with a capital loss from an individual stock if the returns of the stock and portfolio are negatively correlated. In such a situation, the effective capital gains tax rate associated with the stock is negative. Similarly, if the overall portfolio incurs a realized capital loss, the expected capital gains tax on a stock whose returns are negatively correlated with those of the portfolio is zero, since the expected gain on the stock should be offset by a capital loss in the portfolio. Therefore, on balance, the expected effective capital gains tax rate for a stock whose returns are negatively correlated with those of the investor's overall portfolio is negative. Consequently,

the current U.S. tax system provides an incentive to hold investments with returns that provide negative correlation with market returns.

This paper makes three primary contributions. First, it advances the ongoing research investigating the effects of capital gains taxes on equity prices by showing that the pooling of capital gains and losses can affect individual common stock valuations. More generally, it contributes to research that investigates the economic implications of asymmetric tax treatment of gains and losses.

Second, by evaluating a setting where the effective marginal tax rate depends on other aspects of the taxpayer's opportunity set, the paper provides a framework that can be applied more generally, because the tax considerations of all decisions are conditional on an investor's other taxable activities. To give an example from a different setting, the U.S. corporate income tax rate that applies to dividends from a foreign corporation depends on a firm's repatriations from all other foreign subsidiaries.

Third, the paper is timely for current policy debates. In recent years researchers could ignore the netting of capital gains and losses because the long-running bull market in the 1980s and 1990s, preceded by inflation in the 1970s (recall taxes are assessed on nominal, not real, profits), generally rendered the treatment of capital losses irrelevant since gains far exceeded losses for most investors. Following the downturn in the markets from 2000-2002, many investors face substantial capital losses. Congress has been considering legislation that would increase the \$3,000 net capital loss limit for individuals (which has remained unchanged since 1977). Any such increase would mitigate, but not fundamentally alter, the complex incentives arising under the current structure. By explicitly modeling these incentives, this paper may be instructive in the evaluation of new policy.

Finally, if the current system of netting capital gains and losses affects individual firm valuations differently, depending on the correlation of their returns with movements in the overall stock market, then the burden of the capital gains tax is not born equally by all equity shares. Some shares bear a significant portion of the overall capital gains tax burden while others can actually benefit from the taxation of capital gains. A tax, whose distributional effects vary with the correlation and growth characteristics specific to individual investments, rather than the income and wealth levels of their investors, cannot be justified under conventional tax theory and is likely an unintended consequence. Policy remedies could include lifting the limitation on losses or substituting a transaction tax for the capital gains tax.

Discussion of “Diversification and the Taxation of Capital Gains and Losses”

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Rendleman and Shackelford (2003) (hereafter, RS) develop and analyze a model to show that the asymmetric treatment of capital gains and losses implies that stocks with returns that are negatively correlated with the market are tax-favored. The basic idea is that a stock that is negatively correlated with the market will yield a non-taxable capital gain (because the gain will be sheltered by losses from the rest of the portfolio) or a deductible loss (because the loss will offset gains from the rest of the portfolio). While the basic idea is clearly correct, several assumptions in the model lead to an overstatement of the likely magnitude of the effect on stock price.

The first and second sections of my discussion examine the discount rates used in the model. Section three examines the way RS analyzes the model. The final section examines the case in which stock prices decline because the firm’s dividends exceed its earnings.

I. Discounting Tax Effects

An important feature of the model is that after-tax dividends and sales price proceeds are discounted at a risky rate k while the tax effects of the capital gain or loss are discounted at the riskless rate r . The authors assert that the tax aspect of their pricing model is mathematically identical to an option pricing model, and use a riskless discount rate because options are priced in a risk-neutral fashion. It is true that the tax effect on shares have an option-like payoff in that a nondeductible loss yields a zero payoff (like an option that expires out of the money) and a taxable gain yields a tax that is linearly increasing in the stock price (like an option that is in the money.) However, in the option pricing literature the assumption of risk-neutrality arises because an investor can create a riskless portfolio by buying an option and short-selling s shares of the stock, $s \neq 1$. In this model, an investor necessarily holds shares and the tax effect on shares in equal number, so a critical assumption that justifies use of the risk-free rate in the option pricing models is not satisfied here.

My primary concern is that the use of different discount rates leads the authors to overstate the effects of taxes in their model. To illustrate my concern, consider a stock that pays no dividends during the next 20 years that will have a price of either \$1,000 or zero when it is sold in 20 years. The risky (riskless) discount rate is 10 percent (5 percent). The stock price with no taxes on capital gains or losses should be:

$$P = \frac{1}{2} \times \frac{\$1,000}{1.1^{20}} = \$74. \quad (1)$$

If capital gains are taxed at 20 percent and capital losses are not deducted, the stock price should be:

$$P = \frac{1}{2} \times \frac{[\$1,000 - .2(\$1,000 - P)]}{1.1^{20}} \rightarrow P = \$60. \quad (2)$$

However, the approach in RS discounts the tax on capital gains at the riskless rate, yielding a stock price of:

$$P = \frac{1}{2} \times \left\{ \frac{\$1,000}{1.1^{20}} - \frac{.2(\$1,000 - P)}{1.05^{20}} \right\} \rightarrow P = \$38. \quad (3)$$

Note that if the risky rate is 14 percent or greater, the authors' approach in equation (3) implies a negative stock price. Because the authors argue that the magnitude of tax effects is large by examining the ratio of the prices in equations (1) and (3), I believe that their approach overstates the magnitude of their results.

II. The Risk Premium

The authors use the capital asset pricing model to determine the risky discount rate associated with a firm's dividends and stock price. They argue that the components of β "...should be interpreted as statistical parameters estimated in the absence of capital gains taxation." However, the tax effects of capital gains will have different effects on the standard deviation of both the market portfolio and any particular stock. Ignoring the effect of taxes on the risk premium can either overstate or understate the tax effect. Because some of the authors' analysis involves negative β stocks with very low discount rates, any error is greatly magnified. Given the authors find enormous tax effects (they claim that stock prices of negatively correlated stocks can be over ten times greater than what they would have been in the absence of capital gains taxation), I am concerned that their findings are driven by ignoring the interaction between taxation and the risk premium. One way of addressing this concern is by assuming risk-neutral pricing on the part of investors.

III. Analysis of the Model

The authors analyze their model by comparing the price of the market portfolio with the price of an arbitrarily small part of the portfolio. The authors argue that because the gain or loss of any particular stock is small relative to the entire portfolio, it can be ignored when determining whether the overall portfolio is in a gain or loss position. If the returns of stocks were uncorrelated, this argument would be plausible. However, correlation in returns implies that one cannot ignore the effect of a price change of one very small stock on the gain/loss position of the entire portfolio. A more persuasive approach would be to simply model the effects of capital gains taxes on the prices of two assets with negatively correlated returns.

IV. High Dividend Stocks

Stocks can decline in price in RS either because of unfavorable stochastic shocks to the future dividend stream or because a firm adopts a policy of paying out dividends that exceed its earnings. However, a distribution to shareholders in excess of the firm's current or accumulated earnings and profits should be treated as a tax-free return of capital that reduces stock basis instead of as a taxable dividend. Therefore, I do not believe that the case in which the firm's expected dividend declines over time [$E(g_s) < 0$] has been accurately modeled.

