The Relevance of Tax Cash Flow and Tax Expense

Abstract:
Our study is motivated by recent FASB proposals for increased current period tax *cash flow* disclosures to "give users additional information to make predictions about…future cash flows." These proposals assume tax cash flow is relevant to investors. To test this assertion, we examine how well tax cash flow and tax expense explain both future tax cash flow and variation in contemporaneous stock returns. Our results suggest the incremental predictive power of current period tax cash flow for future tax cash flow is greater on average than that of tax expense. Tax cash flow also dominates tax expense in explaining returns, on average, which further supports tax cash flow as more value relevant than tax expense. However, despite observing a sharp increase in the relative predictive power of current tax cash flow after FIN 48, we find evidence that tax expense is more associated with returns. Our results provide evidence about how investors value firms' income taxes and suggest the FASB's proposal for additional taxes paid disclosures – particularly around tax uncertainty - will be useful to investors.

Keywords: Valuation, tax expense, cash taxes paid, disclosure

I. INTRODUCTION

On July 26, 2016, the Financial Accounting Standards Board (FASB) released its Exposure Draft (ED), *Changes to the Disclosure Requirements for Income Taxes*, as part of its initiative to improve the effectiveness of financial statement disclosures by "facilitating clear communication of information that is *most important to financial statement users*" (FASB 2016, 1, emphasis added). These proposed changes stem from concerns that existing tax disclosures do not provide users with sufficient information to predict the amount, timing, and uncertainty of future tax cash flow (FAF 2013). Specifically, the information currently required by ASC 740 *Accounting for Income Taxes* "may not be detailed enough for users to analyze the cash effects associated with income taxes…and estimate future tax payments" (FAF 2013, 1). Many of the proposed amendments are therefore intended to provide more information about current period tax cash flow to allow financial statement users to better understand how tax expense is associated with *future* tax cash flow and, therefore, with firm value.

Proposing more tax cash flow disclosures than what is currently required suggests the FASB believes tax cash flow is decision-useful to investors, and that it has become more decision useful since the current tax disclosure requirements were issued.[1] One example of the ED's focus on enhanced tax cash flow disclosures is the proposal to require disaggregation of settlements with tax authorities to separately identify those settled in cash from those settled with tax attributes such as tax loss carryovers.[2] This proposal highlights the fact that increased complexity in accounting for income taxes over time (e.g., after FIN 48 adoption) has perhaps made tax expense less relevant for predicting future cash flows (and therefore less useful in assessing firm value), and that additional tax cash flow disclosures will benefit investors.

---

[1] Firms are currently required to disclose only aggregated cash taxes paid for the year.

[2] The ED also proposes disclosure of cash taxes paid by material jurisdiction. We discuss our analysis of the relevance of tax cash flow and tax expense for multinational entities in Section IV.

However, many constituents have expressed concerns about the potential cost of these proposed disclosures, and one-fifth of the comment letters submitted to date oppose the ED in its entirety (Thompson Reuters 2017). Therefore, although the comment letter period ended in September 2016, the FASB is still deliberating the ED. Our study informs these deliberations. While we cannot directly test the decision-usefulness of the proposed disclosures, we believe our findings speak to the potential benefits of additional tax cash flow disclosures by providing large-scale empirical evidence on the relative decision-usefulness of tax cash flow and tax expense.[3] Our study also offers new insights into which summary measure of taxes – tax cash flow or tax expense – is most relevant to investors for valuation. Although income taxes paid average 30 percent of operating cash flow among profitable firms over the last 25 years (Dyreng, Hanlon, Maydew and Thornock 2016), there is little evidence on their relevance either in isolation or relative to income tax expense. We therefore believe our study should also be of interest to researchers and managers.

To assess relevance, we follow prior studies (e.g., Francis, Schipper and Vincent 2003; Kim and Kross 2005) and examine both the predictive ability of tax cash flow and tax expense for future tax cash flow, and the relative and incremental explanatory power of these measures for contemporaneous stock returns. Our results provide evidence regarding how each of these accounting measures is aligned with the information investors use for equity valuation.

Information is capable of making a difference (i.e., is relevant) only if it helps at least a subset of users "make new predictions, confirm or correct prior predictions, or both" (FASB 2010, 25). The recent ED explicitly states that the FASB intends the proposed disclosures to assist financial statement users in predicting future cash flow.[4] Therefore, our first set of tests focuses

[3] The FASB's *Conceptual Framework for Financial Reporting* notes that the objective of financial reporting is to produce decision-useful information. To be useful, financial information must be both relevant and faithfully represent what it purports to represent (FASB Statement of Financial Accounting Concepts No. 8).
[4] For example, see comments regarding future tax payments and future cash flows in paragraphs BC18a and BC19.

on the ability of current-period tax cash flow and tax expense to predict future tax cash flow. We provide evidence that the combined predictive ability of current period tax cash flow and tax expense for future tax cash flow has increased over time and that this increase is attributable to the growing incremental predictive ability of tax cash flow. On average, the incremental explanatory power of current period tax cash flow is nearly eight percentage points higher than that of current period tax expense. Further, we note a significant increase (decrease) in the incremental explanatory power of tax cash flow (tax expense) following the effective date of FIN 48. We observe that the coefficients on tax cash flow and tax expense are both significantly positive, suggesting that each measure has predictive ability. However, the coefficient on tax expense decreases over the sample period while the coefficient on tax cash flow increases. Inferences are robust to measuring future tax cash flow in *t+1* or on average from *t+1* through *t+5*. These findings are consistent with increased complexity in the accrual component of income tax expense weakening the relation between current period tax expense and future tax cash flow over time, and suggests more information about current period tax cash flow could be decision-useful to investors.

Our next set of analyses assesses value relevance based on the explanatory power of tax cash flow and tax expense for returns. We adopt the research design in Francis et al. (2003) and estimate contemporaneous 12-month returns as a function of taxes paid and/or income tax expense. We evaluate both the relative and incremental explanatory power of the two measures. To assess relative explanatory power, we estimate returns as a function of either tax cash flow or tax expense and use a Vuong (1989) test to determine if one model has significantly greater explanatory power than the other. We find the explanatory power of the model that includes taxes paid is significantly greater than the explanatory power of the model that includes tax expense, which is consistent with investors recognizing that current period tax cash flow has greater predictive ability for future tax cash flow than does current period tax expense on average over our entire sample period. To assess incremental explanatory power, we estimate returns as function of both tax cash flow and tax expense, and test whether each measure is significant controlling for the other. We find that both measures have significant explanatory power for returns.

Finally, motivated by our finding that the relative explanatory power of tax cash flow and tax expense dramatically diverge following FIN 48, we compare the predictive ability and explanatory power of tax cash flow and tax expense (a) before and after the effective date of FIN 48 and (b) after FIN 48 across samples of firms with varying levels of FIN 48 reserves. Practitioners express concern that the measurement and recognition rules of FIN 48 create liabilities that “vary significantly from the amount for which a tax position will ultimately be settled” (TEI 2011). Robinson, Stomberg and Towery (2016) provide evidence consistent with this concern, estimating on average that less than $0.50 of each dollar of FIN 48 liabilities are settled over a five-year period, and it is possible that some portion of that amount reflects non-cash settlements. One implication of this finding is that current period tax expense does not map well into future tax cash flow for firms with significant FIN 48 reserves. Indeed, we find that current period tax cash flow has greater predictive ability for future tax cash flow for firms with the highest FIN 48 reserves, but we estimate that tax expense dominates tax cash flow in explaining returns in this subsample. In fact, tax cash flow has no incremental explanatory power over tax expense in this subsample. Our finding that tax cash flow does not better explain returns for these firms - despite the fact that current tax cash flow better predicts future tax cash flow – could mean that investors do not recognize the potential bias in tax expense for firms with FIN 48 reserves and, therefore, the FASB’s proposed requirement to increase tax cash flow disclosures related to settlements of uncertain tax positions might be useful to investors.

Our study provides three contributions. First, we inform researchers, managers and regulators about which summary measure of taxes – tax cash flow or tax expense – is most value relevant to investors. Our results will be useful to future research exploring the valuation of tax avoidance (e.g., Ayers, Jiang, and Laplante 2009; Hanlon, Laplante and Shevlin 2005; Powers, Schmidt, Seidman and Stomberg 2017; Thomas and Zhang 2014). Our finding that tax expense is more value relevant than tax cash flow for firms with tax uncertainty recorded under FIN 48 should be of interest to managers of firms engaging in uncertain tax avoidance. These managers might want to better explain the possible future resolution of unrecognized tax benefits and clarify how these reserves are mostly likely to affect future cash flow.

Second, our findings inform the FASB as it deliberates proposed changes to income tax disclosures. We believe our evidence suggests a benefit from increased disclosures of information related to income taxes paid. These results complement recent findings that more transparent tax footnote disclosures (Bonsall, Koharki and Watson 2017) and footnote disclosures that contain more quantitative information (Hutchens 2015) benefit financial statement users such as credit rating agencies and analysts. Third, we contribute to the literature examining the relation between cash flow, accruals and stock returns over time (Collins, Maydew and Weiss 199; Kim and Kross 2005; Bushman, Lerman and Zhang 2016). Our finding that the predictive ability of tax expense for future tax cash flow decreases after FIN 48, which we attribute to increased complexity in the calculation of tax expense, is consistent with results in Bushman et al. (2016) that increases in non-timing-related accruals contribute significantly to the decline in the relation between accruals and future cash flow over time.

II. BACKGROUND AND RELATED LITERATURE

The Relevance of Cash Flow and Accruals

Several studies evaluate the relevance of earnings, accruals and cash flow. As explained in Dechow (1994), US GAAP alters the timing of cash flow recognition in accrual-based earnings with a focus on limiting managerial discretion. In some instances, these rules are beneficial because they prevent managers from providing optimistically biased projections of future cash flow to suit their own self-interest. In other instances, these rules are detrimental because they prevent managers from conveying private information. The results in Dechow (1994) are consistent with the notion that accounting accruals "provide a measure of short-term performance that more closely reflects expected cash flows than do realized cash flows" (35). Similarly, Dechow, Kothari and Watts (1998) develop an analytical model that suggests current-period earnings better predict future operating cash flow than does current-period cash flow, and that the difference varies with the firm's operating cycle. Their empirical results are generally consistent with predictions. In contrast, Finger (1994) shows that current-period cash flow is a better predictor of short-term future cash flow than earnings, but that earnings and cash flow are approximately equivalent for predicting longer-term cash flow. Thus, results are mixed regarding whether accrual-based or cash-flow measures better predict future cash flow, on average.

Other papers examine the extent to which the relation between earnings, accruals and cash flow has changed over time. Kim and Kross (2005) document a robust, increasing relation between current earnings and future operating cash flow from 1973 through 2000. The authors note a strengthening relation for firms in industries that experienced increased accounting conservatism over their sample period but no significant change in the relation in other industries. In contrast, Bushman et al. (2016) document an overall decline in the correlation between accruals and cash flow from the 1960s until now. Annual regressions of accruals on contemporaneous cash flow yield adjusted R^2 values that drop from 0.23 in 1989 to 0.12 in 1990, 0.01 in 2000 and 0.00 in 2010. The authors attribute these results to increases in non-timing-related accruals, one-time and non-operating items, and the frequency of losses. One potential implication of the findings in Bushman et al. (2016) is that the usefulness of earnings-based measures in valuation has decreased over time while cash flow-related information has become more useful.

Assuming stock prices reflect investors' cash flow expectations, the extent to which current earnings and cash flow map into future cash flow should mirror how they map into price. Despite the mixed results regarding their association with future cash flow, studies generally find accrual-based measures have a higher association with returns. For example, Dechow (1994) finds that over short measurement intervals, earnings are more strongly associated with stock returns than are realized cash flow. Further, earnings have a higher association with stock returns than do realized cash flow in firms experiencing large changes in their working capital requirements and in their investment and financing activities. Also, Francis et al. (2003) find that earnings dominate EBITDA and cash flow in explaining returns even in industries where EBITDA or cash flow are argued to be preferred performance metrics for valuation. We contribute to the broad literature examining the relevance of cash flows and accruals by studying the predictive ability and value-relevance of tax cash flow and tax accruals. We believe our results inform this broad literature to the extent that specific characteristics of income taxes allow us to learn something about similar accounts or about accruals and cash flows more generally. Below, we outline why the rules governing the calculation of tax expense may result in an accrual-based measure that has different relative relevance than total accruals or earnings.

The Relevance of Tax Cash Flow and Tax Expense

Though prior research on total (or working capital) accruals and total (or operating) cash flow informs our research design, we do not assume results from prior research necessarily hold with respect to income taxes because income tax accruals have different characteristics than other accruals. Like other accruals, tax expense accrued under ASC 740 is intended to reflect total cash tax payments on current period pre-tax income, regardless of the year of payment. For example, accelerating depreciation deductions for tax purposes causes total tax expense to exceed (be less than) total tax cash flow in the earlier (later) years of an asset's life, all else equal.[5]

However, some facets of ASC 740 create significant non-timing differences between tax cash flow and tax expense. For example, establishing a valuation allowance causes total tax expense to exceed tax cash flow in the current period, but valuation allowances are intended to reverse the income statement effects of previously recorded tax benefits that are no longer more likely than not to be recognized rather than to signal expected future increases in cash tax payments. Additionally, provisions in APB 23 regarding timing of the accrual of US tax on foreign earnings can also cause future tax cash flows to differ dramatically from current period tax expense; tax expense may over- or understate future tax cash flows related to repatriation depending on a firm's reinvestment assertions. Finally, Robinson et al. (2016) provide evidence that the recognition and measurement rules of FASB Interpretation No. 48 (FIN 48), *Accounting for Uncertainty in Income Taxes*, create non-timing differences between tax expense and future tax cash flow by producing tax contingency reserves that systematically overstate amounts

[5] In this example, current tax expense would match cash taxes paid, all else equal. However, we do not focus on current tax expense because (a) it is not disclosed on the face of the financial statements or frequently discussed by management in the MD&A, and (b) it is also confounded by other financial reporting rules discussed below.

required to settle uncertain tax positions with tax authorities.[6] Thus, for firms with substantial FIN 48 reserves, income tax accruals could overstate potential future income tax cash outflows. In summary, rules that govern the calculation of tax expense – especially those related to establishing reserves – are less related to the basic idea that accruals should smooth cash flow timing differences.

Indeed, in its Post-Implementation Review of SFAS 109, the FAF concluded that currently disclosed income tax information "may not be sufficiently aligned with investor needs" (FAF 2013, 1). Survey respondents indicated that income tax information is useful in analyzing a company's effective tax rate, forecasting the *earnings* impact of income taxes and analyzing a company's income tax expense. However, the FAF's research indicated that income tax information provided under SFAS 109 might not be sufficiently detailed for investors to analyze the *cash* effects associated with income taxes or to estimate future tax payments.

On July 26, 2016, the FASB issued the ED, *Changes to the Disclosure Requirements for Income Taxes*, as part of its disclosure framework project. This project attempts to improve the effectiveness of financial statement disclosures by "facilitating clear communication of information that is most important to financial statement users" (FASB 2016, 1). One of the FASB's main objectives relates to tax cash flow as the ED states that it aims to modify income tax disclosures to provide financial statement users with information about "the various components

[6] FIN 48 allows companies to recognize only those tax benefits that are more likely than not to be sustained upon examination. This recognition provision imposes the assumption that each and every tax position on each return in each jurisdiction will be audited with certainty. Tax positions that meet the more-likely-than-not threshold are measured at the largest amount of benefit that is greater than 50 percent likely of being realized upon settlement. Robinson et al. (2016) estimate that less than 50 cents of every dollar of unrecognized tax benefits is lost to tax authorities over the subsequent five years, suggesting that the recognition and/or the measurement threshold required in FIN 48 is unrealistic for most corporate taxpayers. Additionally, these estimates do not isolate the amount of cash required to settle with tax authorities. This is a potentially important limitation because settlements can also occur with the taxpayer relinquishing tax attributes. In contrast to the findings in Robinson et al. (2016), Ciconte, Donohoe, Liswosky and Mayberry (2016) estimate the association between FIN 48 reserves and cash taxes paid converges to one over a five-year window.

of income taxes that are measured differently or could affect prospects for net cash flows differently" (FASB 2016, 8).

Despite the FAF's conclusion that currently disclosed income tax information might not be sufficiently aligned with investors' needs, particularly with respect to tax cash flow, we know of little archival research examining the relative usefulness of tax cash flow in relation to tax expense, or examining the extent to which investors rely on these measures of tax performance for firm valuation. In a related paper, Demeré, Li, Lisowsky and Snyder (2016) find that the smoothing effect of tax accruals increases the ability of current-period GAAP ETRs to predict future cash ETRs. In contrast, we are interested in the relevance of tax cash flow relative to tax expense and how these relations have changed over time. Robinson et al. (2016) test for changes in the predictive ability of tax cash flow and tax expense around FIN 48 adoption, and find no average effect. However, their sample period ended in 2011 thereby capturing only five years of observations after FIN 48, three of which were affected by the financial crisis. Robinson et al. (2016) also examine investors' valuation of tax expense after FIN 48 and find no differential valuation for firms that are likely most effected by the distortive measurement and recognition rules of FIN 48 and, therefore, for which tax expense likely overstates future cash tax flow. In contrast, Robinson, Savor and Sikes (2016) provide evidence that investors do understand the differential impact of FIN 48. Thus, the relevance of tax cash flow and tax expense over time – and in particular around the implementation of FIN 48 – remains an open empirical question.

We extend the growing literature examining the relevance of tax information by examining changes in the predictive ability of tax cash flow and tax expense over the last 20 years, and by examining the relative and incremental value relevance of tax cash flow and tax expense. Our predictive ability results should be important to the FASB as it finalizes the ED because they provide large-scale empirical evidence on the extent to which additional income tax cash flow information could be decision-useful. Our study also furthers researchers and managers understanding of which tax information is most relevant to investors.

III. RESEARCH DESIGN

Predictive Ability for Future Tax Cash Flow

The ED repeatedly emphasizes the importance of investors understanding the "prospects for cash flows" related to income taxes.[7] Thus, our first analysis tests the ability of current-period income tax cash flow and income tax expense to predict future income tax cash flow. We assess predictive ability using the methodology outlined in Kim and Kross (2005) and modified to test the predictive ability of tax cash flow and tax expense by Robinson et al. (2016). Specifically, we estimate the following set of annual cross-sectional regressions to examine the relation between current period tax cash flow, current period tax expense, and one-year-ahead tax cash flow:

$$Tax\ Paid_{i,t+1} = \alpha_0 + \alpha_1 Tax\ Paid_{i,t} + w_{i,t} \quad (1a)$$

$$Tax\ Paid_{i,t+1} = \beta_0 + \beta_1 Tax\ Expense_{i,t} + x_{i,t} \quad (1b)$$

$$Tax\ Paid_{i,t+1} = \gamma_0 + \gamma_1 TaxExpense_{i,t} + \gamma_2 Tax\ Paid_{i,t} + y_{i,t} \quad (1c)$$

Tax Paid is income taxes paid (TXPD) and *Tax Expense* is income tax expense (TXT). Both variables are scaled by total assets in the same year. The R^2 from equation (1c) shows the combined explanatory power of tax cash flow and tax expense for future taxes paid ($R^2_{Combined}$).

We use the R^2s from the three equations to determine the incremental explanatory power of each measure over the other. Specifically, the difference in R^2 between equations (1c) and (1a) provides the incremental explanatory power of tax expense over tax cash flow ($IncR^2_{Tax\ Expense} = R^2_{Combined} - R^2_{Tax\ Paid}$), and the difference in R^2 between equations (1c) and (1b) provides the

[7] For example, on pages 5, 8, 18, 24, 27-31, etc. (FASB 2016)

incremental explanatory power of tax cash flow over tax expense ($IncR^2_{Tax\ Paid} = R^2_{Combined} - R^2_{Tax\ Expense}$). We estimate these equations using both raw and percentile-ranked values of all variables, consistent with Kim and Kross (2005). Estimating ranked regressions eliminates problems of comparing R^2s over time and also allows us to compare coefficients.

Relative and Incremental Explanatory Power of Taxes Paid and Tax Expense

To test the relative explanatory power of tax cash flow and tax expense for returns, we follow the tests outlined in Francis et al. (2003). We estimate contemporaneous raw returns as a function of both the levels of and changes in our tax measures. Our first set of pooled OLS regressions is below:

$$Returns_{i,t} = \alpha_0 + \alpha_1 PT\_Earn_{i,t} + \alpha_2 PT\_Loss_{i,t} + \alpha_3 \Delta PT\_Earn_{i,t} + \alpha_4 PT\_CFO_{i,t} + \alpha_5 PT\_Outflow_{i,t} + \alpha_6 \Delta PT\_CFO_{i,t} + \gamma_1 Tax\ Paid_{i,t} + \gamma_2 Tax\ Refund_{i,t} + \gamma_3 \Delta Tax\ Paid_{i,t} + \varepsilon \quad (2a)$$

$$Returns_{i,t} = \alpha_0 + \alpha_1 PT\_Earn_{i,t} + \alpha_2 PT\_Loss_{i,t} + \alpha_3 \Delta PT\_Earn_{i,t} + \alpha_4 PT\_CFO_{i,t} + \alpha_5 PT\_Outflow_{i,t} + \alpha_6 \Delta PT\_CFO_{i,t} + \beta_1 Tax\ Expense_{i,t} + \beta_2 Tax\ Benefit_{i,t} + \beta_3 \Delta Tax\ Expense_{i,t} + \varepsilon \quad (2b)$$

Returns are contemporaneous 12-month cumulative raw returns during fiscal year *t.* As outlined in Francis et al. (2003), using 12 month returns allows us to "summarize the information used by investors" during the year to price securities (p. 162).

All independent variables are presented as both levels in year *t* and changes from year *t-1* to *t.*[8] *PT_Earn* is pre-tax income (IB+TXT). Because Hayn (1995) finds the relation between returns and earnings varies for profits and losses, we allow for different coefficient estimates depending on whether pre-tax earnings are positive or negative. Following Francis et al. (2003), we include *PT_Loss*, which equals *PT_Earn* if *PT_Earn* < 0, and zero otherwise. We also include changes in pre-tax income from year *t-1* to *t* with Δ*PT_Earn. PT_CFO* is pre-tax cash flow from operations (OANCF+TXPD). As above, *PT_Outflow* allows the coefficient to vary when

[8] We obtain similar inferences (untabulated) if we exclude the levels of all variables and include only changes.

operations generate versus use pre-tax cash flow and *ΔPT_CFO* measures the year-over-year change.

We include both accrual and cash flow measures of pre-tax performance in our regressions to make certain that any difference in R^2 between equations (2a) and (2b) is due to differences in measures of income taxes and not to measures of pre-tax performance.[9] We expect the measures of pre-tax performance to control for information about taxes that can be derived from other financial statement information (e.g., absent tax planning and differences in tax rates across jurisdictions, total tax expense is 35% of pre-tax income). These measures also control for expected future profitability. To the extent performance follows a random walk, performance in year *t* is an acceptable proxy for expected performance in *t+1*. If the random walk assumption is not valid, including a stronger predictor of future performance, such as analysts' consensus earnings forecast or actual performance in *t+1*, might increase the overall explanatory power of equations (2a) and (2b). But we would not expect the increase in explanatory power to *differ* between equations (2a) and (2b). Thus, because we compare the explanatory power between regressions, how we control for expected future performance should not bias results as long as our control is consistent across equations.

We also include both the levels of and changes in tax cash flow or tax expense and allow coefficients to vary based on whether the values are positive or negative. *Tax Paid* is TXPD in year t, *Tax Refund* equals *Tax Paid* if *Tax Paid* < 0 and zero otherwise, and Δ*Tax Paid* is the change

[9] Theoretically, the difference between pre-tax income and tax expense is due to permanent book-tax differences, special items like tax credits, and the tax rate. Including only pre-tax income measures in equations (2a) and (2b) would handicap the incremental explanatory power of tax expense relative to tax cash flow, which is theoretically further from (and likely less correlated with) pre-tax income. A similar argument can be made for including only operating cash flow and its effect on the incremental explanatory power of tax cash flow. Thus, we include both pre-tax income and pre-tax cash flow measures in both regressions to ensure we appropriately capture the explanatory power of the tax measures that is incremental to these pre-tax performance measures. We thank Luke Watson for highlighting this issue.

in *Tax Paid* from *t-1* to *t*. Similarly, *Tax Expense* is TXT in year *t, Tax Benefit* equals *Tax Expense* if *Tax Expense* < 0 and zero otherwise, and Δ*Tax Expense* is the change in *Tax Expense* from *t-1* to *t.* Consistent with the recommendation in Christie (1987) and with Francis et al. (2003), we scale all variables by market cap (*PRCC_F*CSHO*) in year *t-1*. We winsorize all continuous variables at one and 99 percent and report robust standard errors clustered by year.

We test for relative explanatory power using a Vuong (1989) test. Relative explanatory power captures the variation in returns explained by the level of and change in each measure of income taxes. Thus, estimating the R^2 is significantly greater for one model suggests the particular measure of income taxes included in that model dominates the other measure in explaining annual returns. Because we make no prediction as to which model has greater explanatory power, we evaluate significance using two-tailed tests.

To test the incremental explanatory power of the measures, we estimate the following pooled OLS regression, which combines the tax measures from (2a) and (2b):

$$\begin{aligned} Returns = {} & \alpha_0 + \alpha_1 PT\_Earn_{i,t} + \alpha_2 PT\_Loss_{i,t} + \alpha_3 \Delta PT\_Earn_{i,t} + \alpha_4 PT\_CFO_{i,t} + \alpha_5 PT\_Outflow_{i,t} \\ & + \alpha_6 \Delta PT\_CFO_{i,t} + \beta_1 Tax\ Paid_{i,t} + \beta_2 Tax\ Refund_{i,t} + \beta_3 \Delta Tax\ Paid_{i,t} \\ & + \gamma_1 Tax\ Expense_{i,t} + \gamma_2 Tax\ Benefit_{i,t} + \gamma_3 \Delta Tax\ Expense_{i,t} + \varepsilon \end{aligned} \qquad (3)$$

All variables are as defined above. Incremental explanatory power reflects the additional variation in returns that each income tax measure explains, controlling for the other measure. We test whether $\beta_1=\beta_2=\beta_3=0$ to determine whether, combined, the taxes paid measures have incremental explanatory power for returns controlling for income tax expense. Similarly, we test whether $\gamma_1= \gamma_2= \gamma_3=0$ to determine whether, combined, the income tax expense measures have incremental explanatory power for returns controlling for taxes paid. We assess statistical significance of the incremental value relevance in this nested model using an *F* statistic.

Sample

The sample is 87,470 firm-years from Compustat from 1993 through 2015 with information required to calculate necessary variables. There are 11,076 distinct firms in the sample. We begin the sample in 1993 because it is the effective date of ASC 740, the current US accounting standard governing accounting for income taxes.[10]

Table 1 reports the frequency of *PT_Loss*, *PT_Outflow*, *Tax Refund*, and *Tax Benefit* by year to provide information about the sample. We observe higher frequencies of pre-tax losses around times of economic crisis, such as 2001 (when 38.0 percent of observations report a pre-tax loss) and 2009 (when 36.0 percent do). We note that *PT_Outflow* appears to be less tied to economic crises than *PT_Loss*. The frequency of firms reporting income tax benefits is closely aligned with the frequency of pre-tax losses: 22.0 percent of observations in 2001 report negative tax expense and 27.2 percent do so in 2009. The frequency of tax refunds lags tax benefits by approximately one year, which is consistent with firms needing time to request and receive tax refunds. We report that 13.2 percent of observations disclose a tax refund in 2002 and 12.2 percent disclose a tax refund in 2010.

[Insert Table 1 here.]

IV. RESULTS

Table 2 presents descriptive statistics. Panel A presents statistics for variables used in our tests of predictive ability while statistics in Panel B relate to variables used in tests of explanatory power. Panel A shows that on average, taxes paid in year *t* are 1.80 percent of assets while tax expense averages 1.92 percent of assets. Panel B shows positive contemporaneous returns both at

[10] Ayers (1998) provides evidence that ASC 740 (formerly SFAS 109) requires additional, value-relevant information relative to the disclosures required by APB 11, its predecessor.

the mean and median. Consistent with Panel A, *Tax Expense* is a larger percentage of beginning of year market cap than is *Taxes Paid* on average.

[Insert Table 2 here.]

Predictive Ability for Future Tax Cash Flow

Table 3 presents results of estimating equations (1a) through (1c) to assess the predictive ability of tax cash flow and tax expense for one-year-ahead tax cash flow. We estimate the regressions by year and present the coefficient estimates and R^2 from equation (1c) as well as the incremental R^2 associated with tax cash flow and tax expense. Panel A presents raw regression results and Panel B presents ranked regression results.

[Insert Table 3 here.]

In Panel A, we observe that the incremental R^2 of $Tax\ Paid_t$ increases over the sample period from 5.43% in 1993 to 17.10% in 2015 while the incremental R^2 of $Tax\ Expense_t$ declines from 8.48% in 1993 to 3.37% in 2015. In untabulated analysis, we estimate each incremental R^2 as a function of time and find a significant increase (decrease) in the incremental R^2 of $Tax\ Paid_t$ ($Tax\ Expense_t$) over our sample period.[11] Results from estimating ranked regressions, shown in Panel B, yield similar inferences.

For all years in both panels, the coefficients on $Tax\ Paid_t$ and $Tax\ Expense_t$ are positive. This suggests that each tax measure has incremental predictive ability for $Tax\ Paid_{t+1}$. Further, the ranked regressions suggest that the average coefficient on $Tax\ Paid_t$ across the sample period is higher on average and significantly increasing over the period while the average coefficient on *Tax*

[11] Following Kim and Kross (2005), we estimate $IncR^2_{TaxExpense} = \delta_0 + \delta_1 * YEAR + \varepsilon$ and $IncR^2_{TaxPaid} = \delta_0 + \delta_1 * YEAR + \varepsilon$ to test for a significant trend in the incremental explanatory power of *Tax Expense* and *Tax Paid*, respectively, for one-year-ahead cash taxes paid. For *Tax Expense*, we estimate δ_1=-0.002 (p-value < 0.001), consistent with a significant decrease in explanatory power over our sample period. For *Tax Paid*, we estimate δ_1=0.006 (p-value < 0.001), consistent with a significant increase in explanatory power over our sample period.

Expense$_t$ is significantly decreasing. Together, results in Table 3 suggest that tax cash flow is more relevant than tax expense.

Figure 1 presents the results from ranked regressions graphically. Panel A shows the combined R^2 of equation (1c) and the incremental R^2s of *Tax Paid*$_t$ and *Tax Expense*$_t$ over time. The figure depicts the overall increase in combined explanatory power and shows a growing difference in the predictive ability of *Tax Paid*$_t$ relative to *Tax Expense*$_{t.}$ We note particularly large divergence in the measures' predictive ability in times of economic downturn (2001 through 2003; 2008 and 2009) and consistently high divergence since the effective date of FIN 48 in 2007. Panel B presents coefficient estimates for *Tax Paid*$_t$ and *Tax Expense*$_t$ from each annual regression and highlights the steadily increasing divergence between the predictive ability of tax cash flow and tax expense over time. The declining predictive ability of tax expense likely reflects the increased complexity in income tax accruals and supports the FASB's decision to revisit required tax cash flow disclosures since the implementation of SFAS 109 in 1993.

[Insert Figure 1 here.]

In untabulated analysis, we re-estimate the tests in Table 3 measuring future tax cash flow over a longer window. We define future tax cash flow as the sum of taxes paid (TXPD) from $t+1$ to $t+5$ scaled by the sum of total assets (AT) over the same period. Inferences from this analysis are qualitatively similar. These analyses confirm that current-period taxes paid have greater predictive ability for future tax cash flow than does current-period tax expense.

Relative and Incremental Explanatory Power of Tax Cash Flow and Tax Expense

Table 4 presents regression results from estimating equations (2a), (2b) and (3) to test the relative and incremental explanatory power of tax cash flow and tax expense for contemporaneous returns. In Panel A, we estimate that the R^2 of the model including income taxes paid is significantly higher than that of the model including tax expense (18.76% vs. 18.54%, Vuong (1989) Z-statistic = 4.213***). Thus, on average, tax cash flow dominates tax expense in explaining returns. These results are consistent with expectations based on findings reported in Table 3; if stock price reflects discounted future cash flow, then we expect tax cash flow to dominate tax expense in explaining returns because it better predicts future tax cash flow and therefore total cash flow.

[Insert Table 4 here.]

Results of testing the incremental explanatory power of each tax measure are in Panel B. We show coefficient estimates and p-values for each variable and test the hypothesis that collectively the three variables capturing tax expense (taxes paid) are equal to zero. Rejecting this null hypothesis is consistent with tax expense measures having incremental explanatory power while controlling for taxes paid measures and vice versa. We reject the null hypotheses that tax cash flow measures jointly have no incremental explanatory power ($\beta_1= \beta_2 =\beta_3=0$ (F=4.45)) and that tax expense measures jointly have no incremental explanatory power ($\gamma_1=\gamma_2=\gamma_3=0$ (F=8.10)). Thus, both tax expense and tax cash flow are value relevant, on average, controlling for the other.

Tests around FIN 48 and Tax Uncertainty

The recent ED specifically proposes increased disclosure of tax cash flow related to cash settlements of uncertain tax positions. FIN 48 requires firms to present a tabular reconciliation of the total amounts of unrecognized tax benefits at the beginning and end of the period, which includes the amount of decreases relating to settlements with tax authorities. In the ED, the FASB proposes requiring disaggregation of this settlements line item between those that require cash outlays and those that do not. For example, firms can settle with tax authorities by forfeiting deferred tax assets such as net operating loss carryforwards, which does not impact current period cash flow. However, settlements that use deferred tax assets could affect future cash taxes paid, because they reduce the amount of tax attributes available to offset future tax liabilities.

An assumption implicit in this proposal is that FIN 48 reserves do not map well into future cash flow (Robinson et al. 2016), and that additional disclosure will help users better anticipate the future tax cash flow implications of uncertain tax avoidance. Indeed in its post-implementation review of FIN 48, the FAF concluded that the information provided by FIN 48 "may not be useful in estimating future cash flows because the recognition and measurement provisions [do not employ] a best-estimate approach for liabilities to be settled" (FASB 2016, 31). In reinforcing this conclusion, users suggested disaggregated disclosures would be beneficial because they would "explain the consequences of an entity's tax strategies" (FASB 2016, 33). We therefore test for differences in the predictive ability and value relevance of tax cash flow and tax expense (a) before and after FIN 48 and (b) within samples of firms facing varying degrees of tax uncertainty after FIN 48.

To execute these analyses, we first separately estimate regressions using observations before and after FIN 48. Specifically, the *Pre-FIN 48* sample contains fiscal years ending before the effective date of FIN 48, and the *Post-FIN 48* sample contains fiscal years ending after the effective date of FIN 48 through 2015. We also restrict our analysis to the post-FIN 48 period and separately estimate regressions using samples of observations with no tax uncertainty, low tax uncertainty and high tax uncertainty. We measure variation in income tax uncertainty within the *Post-FIN 48* sample using the magnitude of FIN 48 tax reserves reported in Compustat, scaled by total assets (TXTUBEND/AT). We set *No Uncertainty* equal to one for observations with reported FIN 48 balances of zero. We set *Low Uncertainty* (*High Uncertainty*) equal to one for observations with below-median (above-median) values of scaled FIN 48 reserve balances where balances are ranked by year. We omit all observations with missing values of TXTUBEND from this analysis because prior studies show these amounts cannot be reliably reset to zero (Lisowsky, Robinson and Schmidt 2013).

Predictive Ability

Panel A of Table 5 summarizes the predictive ability of current period tax cash flow and tax expense for one-year-ahead tax cash flow before and after the effective date of FIN 48. We note an increase in the incremental explanatory power of tax cash flow (*Inc* R^2 *Tax Paid*) and a decline in the incremental explanatory power of tax expense (*Inc* R^2 *Tax Expense)*. Additionally, the difference between *Inc* R^2 *Tax Paid* and *Inc* R^2 *Tax Expense* is larger after FIN 48 (13.72 percentage points) than before FIN 48 (3.98 percentage points), consistent with the divergence seen in Figure 1. The overall differences are statistically significant; when we estimate these incremental R^2s as a function of *FIN48*, an indicator set equal to one for years after the effective date of the Interpretation, we estimate significant coefficients.[12] Thus, in contrast to the findings in Robinson et al. (2016), we provide evidence of an on average increase (decline) in the predictive ability of tax cash flow (tax expense) for future cash taxes paid after FIN 48.

Additionally, we examine predictive ability in the *PostFIN 48* sample separately for firms with *No, Low*, and *High Tax Uncertainty*. In all subsamples, *Inc* R^2 *Tax Paid* is higher than *Inc* R^2 *Tax Expense.*[13] As in the full sample, these results suggest that if investors recognize that tax cash

---

[12] As above, we estimate $IncR^2_{TaxExpense} = \delta_0 + \delta_1 * FIN48 + \varepsilon$ and $IncR^2_{TaxPaid} = \delta_0 + \delta_1 * FIN48 + \varepsilon$ to test for a significant difference in the incremental explanatory power of *Tax Expense* and *Tax Paid*, respectively, for one-year-ahead cash taxes paid before and after FIN 48. For *Tax Expense*, we estimate δ_1=--0.028 (p-value < 0.001), consistent with a significant decrease in explanatory power. For *Tax Paid*, we estimate δ_1=0.070 (p-value < 0.001), consistent with a significant increase in explanatory power.

[13] Finding $IncR^2_{TaxPaid} > IncR^2_{TaxExpense}$ for firms without FIN 48 reserves cannot be attributed to FIN 48 reducing the predictive ability of tax expense for future tax cash flow. Instead, these subsample results could reflect the effect of increasing losses or valuation allowances. We do not explore these explanations in this draft because our focus is on how changes in accounting rules (rather than changes in economics) affect relevance.

flow has greater predictive ability for future tax cash flow and if stock prices reflect investors' cash flow expectations, tax cash flow should have greater explanatory power for returns than tax expense.

[Insert Table 5 here.]

Explanatory Power

Results of evaluating the relative explanatory power of income tax measures before and after FIN 48 are in Panels B and C. Whereas taxes paid has greater relative explanatory power for returns prior to FIN 48, consistent with tax cash flow having greater predictive ability, we find that tax expense has greater explanatory power for returns after FIN 48. These results suggest tax expense is more value relevant after FIN 48 despite the fact the tax expense is less predictive of future cash flow in this period. In fact, results in Panel C reveal that tax cash flow measures jointly have no incremental explanatory power for returns after FIN 48 (β_1=β_2=β_3=0 (F=0.557)). We therefore conclude the value relevance of tax cash flow has substantially declined in recent years despite having a stronger relation with future cash flow.

We repeat these analyses in Panels D and E using the *Post FIN 48* sample and separately analyzing observations with *No, Low*, and *High Uncertainty*. Similar to the results in Panels B and C, Panel D shows that despite being more predictive of future tax cash flow in all subsamples, tax cash flow is not more value-relevant than tax cash flow in firm-years with FIN 48 reserves. Further, results in Panel E show that tax cash flow has no incremental explanatory power over tax expense for the *High Tax Uncertainty* sample. Thus, for firms with large FIN 48 reserves, investors appear to rely more heavily on income tax expense for valuation. To the extent income tax accruals systematically bias estimates of future tax cash flow related to uncertainty, as suggested by Robinson et al. (2016), investors' reliance on tax expense could lead to biased valuations. These results suggest that the FASB's proposed requirement to have firms disclose the portion of income tax reserves settled for cash could provide useful information to investors.

Tests around Foreign Intensity

Another fairly contentious proposal in the ED would require companies to report certain tax information for each material jurisdiction. After considering other proposals related to foreign operations including requiring information about deferred tax liabilities on unremitted foreign earnings by country, pre-tax income by country and details about factors that could change plans for repatriations, the Board decided these disclosures would be too costly and instead limited the proposals to requiring cash taxes paid by material jurisdiction. Although the recognition and measurement rules of FIN 48 suggest current period tax cash flow should have greater predictive ability for future cash tax flow such that enhanced cash flow disclosures related to uncertain tax avoidance will be decision useful, the predictions around foreign taxes are less clear. Thus, it is not obvious whether disclosures of cash taxes paid by material jurisdiction will significantly benefit users' ability to predict future tax cash flow.

For example, current period tax cash flow should have greater predictive ability than tax expense if a multinational entity does *not* assert that any of its foreign earnings are permanently reinvested and does *not* repatriate in the near future. In contrast, current period tax expense should have greater predictive ability than tax cash flow if the entity does not assert that any of its foreign earnings are permanently reinvested and *does* repatriate in the near future. Because the predictions are unclear, we do not tabulate tests of relevance based on the degree of foreign earnings or PRE. However, in untabulated analysis, we find evidence that current period tax cash flow has greater predictive ability for future tax cash flow, but the magnitude of the incremental predictive ability is much smaller than what we estimate for the full sample.[14] Additionally, we do not find evidence that tax cash flow has greater relative explanatory power for returns among firms with foreign earnings. This casts doubt upon whether the proposed disclosures related to cash taxes paid to foreign jurisdictions will be sufficiently informative to financial statement users without additional information regarding PRE by jurisdiction or the expected timing of repatriations.

V. CONCLUSION

The FASB's recent ED on income tax disclosures aims to provide investors with information that is useful in forecasting future tax cash flow. Many of the proposed changes related to increased disclosure about taxes paid in the current period. We provide large-scale empirical evidence on the relevance of tax cash flow to assess whether enhanced disclosures of taxes paid are likely to be decision-useful to investors. Although we cannot directly test the decision-usefulness of these proposed disclosures as one could in an experimental setting, we nonetheless believe our archival evidence offers useful insights to the FASB as it continues to deliberate the ED. Further, we believe our findings are informative to researchers and managers who seek to better understand how investors value taxes.

We first assess the predictive ability of current period tax cash flow and tax expense for future tax cash flow. We find that the combined explanatory power of tax cash flow and tax expense has increased over time, and that this increase is attributable to the rising incremental predictive ability of tax cash flow. In contrast, we estimate a decrease in the predictive ability of tax expense over time. Together, these findings suggest that additional information about tax cash

[14] For firms with above-median levels of foreign earnings, the differential predictive ability of tax cash flow over tax expense is 3.7 percentage points compared to an eight percentage point difference across the whole sample and a 14 percentage point difference for firms with above-median UTB reserves.

flow could enhance the decision usefulness of income tax disclosures for financial statement users. We also find that the relative explanatory power of models including income taxes paid for contemporaneous returns is significantly greater than the explanatory power of models including tax expense, on average.

We then re-perform these tests separately using sample before and after FIN 48 as well as using samples of firms with varying levels of FIN 48 reserves. We find that current period tax cash flow has even greater predictive ability for future tax cash flow after FIN 48 than before, and for firms with larger FIN 48 reserves. However, include tax *expense* has greater relative explanatory power for returns than tax cash flow. Thus, investors do not appear to recognize that tax cash flow is more relevant than tax expense for firms with FIN 48 reserves. These inconsistent results suggest market inefficiencies, or differences in expected persistence, cash flow growth rates or risk among these subsets of firms (Kim and Kross 2005). Although identifying the explanation underlying this pattern of results is beyond the scope of our study, our findings suggest the proposed requirement to have firms disclose the portion of income tax reserves settled in cash will be useful to investors and other financial statement users. We acknowledge, however, that additional disclosure might not be useful is users either fail to access the information or to adequately process it.

REFERENCES

Ayers, B., J. Jiang, and S. Laplante, 2009. Taxable income as a performance measure: The effects of tax planning and earnings quality. *Contemporary Accounting Research* 26: 15-54.

Bonsall, S., K. Koharki, and L. Watson, 2017. Deciphering tax avoidance: Evidence from credit rating disagreements. Forthcoming, *Contemporary Accounting Research*.

Bushman, R., A. Lerman, and X. Zhang, 2016. The changing landscape of accrual accounting. *Journal of Accounting Research* 54: 41-77.

Christie, A., 1987. On cross-sectional analysis in accounting research. *Journal of Accounting and Economics* 9: 231-258.

Ciconte, W., M. Donohoe, P. Lisowsky, and M. Mayberry, 2016. Predictable uncertainty: The relation between unrecognized tax benefits and future income tax cash outflows. *Working paper:* University of Illinois and University of Florida.

Collins, D., E. Maydew, and I. Weiss, 1997. Changes in the value-relevance of earnings and book values over the past forty years. *Journal of Accounting and Economics* 24: 39-67.

Dechow, P., 1994. Accounting earnings and cash flow as measures of firm performance: The role of accounting accruals. *Journal of Accounting and Economics* 18: 3-42.

Dechow, P., S.P. Kothari, and R. L. Watts, 1998. The relation between earnings and cash flows. *Journal of Accounting and Economics* 25: 133-168.

Demeré, P., L. Li, P. Lisowsky, and R. Snyder, 2016. The smoothing and informativeness of GAAP effective tax rates. University of Illinois working paper.

Dyreng, S., M. Hanlon, E. Maydew, and J. Thornock. 2016. Changes in corporate effective tax rates over the past 25 years. *Journal of Financial Economics*, forthcoming.

Financial Accounting Foundation (FAF), *Post-Implementation Review Report on FASB Statement No. 109, Accounting for Income Taxes (Codified in Accounting Standards Codification Topic 740, Income Taxes)* (November 2013)

Financial Accounting Standards Board (FASB) Interpretation No. 48 (FIN 48), *Accounting for Uncertainty in Income Taxes: an Interpretation of FASB Statement No. 109*. Norwalk, CT (June 2006).

Financial Accounting Standards Board (FASB), Statement of Financial Accounting Concepts No. 8, *Conceptual Framework for Financial Reporting*, Chapter 3, Qualitative Characteristics of Useful Financial Information (September 2010).

Financial Accounting Standards Board (FASB), *Statement of Cash Flows (Topic 230)*. (November 1987).

Financial Accounting Standards Board (FASB), Proposed Accounting Standards Update, *Income Taxes (Topic 740) Disclosure Framework – Changes to the Disclosure Requirements for Income Taxes* (July 2016).

Finger, C. 1994. The ability of earnings to predict future earnings and cash flow. *Journal of Accounting Research* 32: 210-223.

Francis, J., K. Schipper and L. Vincent, 2003. The relative and incremental explanatory power of earnings and alternative (to earnings) performance measures for returns. *Contemporary Accounting Review* 20: 121-164.

Hanlon, M., S. Laplante, and T. Shevlin, 2005. Evidence for the possible information loss of conforming book income and taxable income. *The Journal of Law and Economics* 48: 407-442.

Hayn, C., 1995. The information content of losses. *Journal of Accounting and Economics* 20: 125-153.

Hutchens, M. 2015. How do disclosure characteristics affect forecast accuracy? University of Illinois working paper.

Kim, M., and W. Kross, 2005. The ability of earnings to predict future operating cash flows has been increasing-not decreasing. *Journal of Accounting Research* 43: 753-780.

Lisowsky, P., L. Robinson, and A. Schmidt. 2013. Do publicly disclosed tax reserves tell us about privately disclosed tax shelter activity? *Journal of Accounting Research* 51: 583-629.

Powers, K., A. Schmidt, J. Seidman, and B. Stomberg, 2017. Examining which tax rates investors use for equity valuation. *Working paper:* University of Tennessee, NC State University, University of Virginia, Indiana University.

Robinson, L., B. Stomberg, and E. Towery, 2016. One size does not fit all: How the uniform rules of FIN 48 affect the relevance of income tax accounting. *The Accounting Review* 91: 1195-1217.

Robinson, L., P. Savor, and S. Sikes, 2017. Value relevance of income tax expense post FIN 48. *Working paper*, Dartmouth College, Temple University, University of Pennsylvania.

Tax Executives Institute (TEI), 2011. Comments on FAF Post-Implementation Review of FIN 48 (September 30).

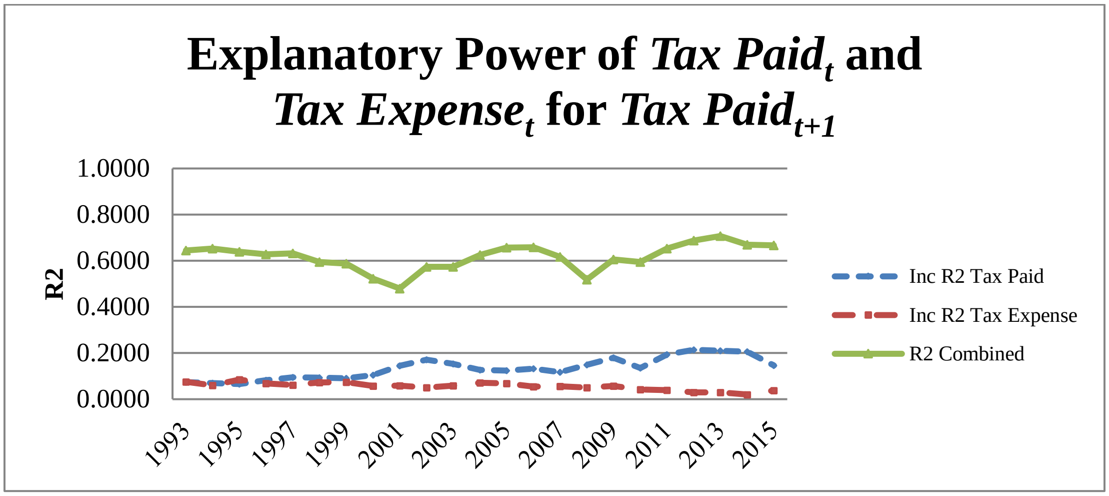
Thomas, J., and F. Zhang. 2014. Valuation of tax expense. *Review of Accounting Studies* 19: 1436-1467.

Thompson Reuters, 2017. Income Tax Disclosure Proposal Faces Harsh Criticism (January 30).

Vuong, Q., 1989. Likelihood ratio tests for model selection and non-nested hypotheses. *Econometrica* 57: 307-333.

Figure 1: Predictive Ability of Current-Period Tax Cash Flow and Tax Expense for One-Year Ahead Tax Cash Flow

Panel A: Combined and incremental R^2



Panel B: Coefficients from regression (1c)

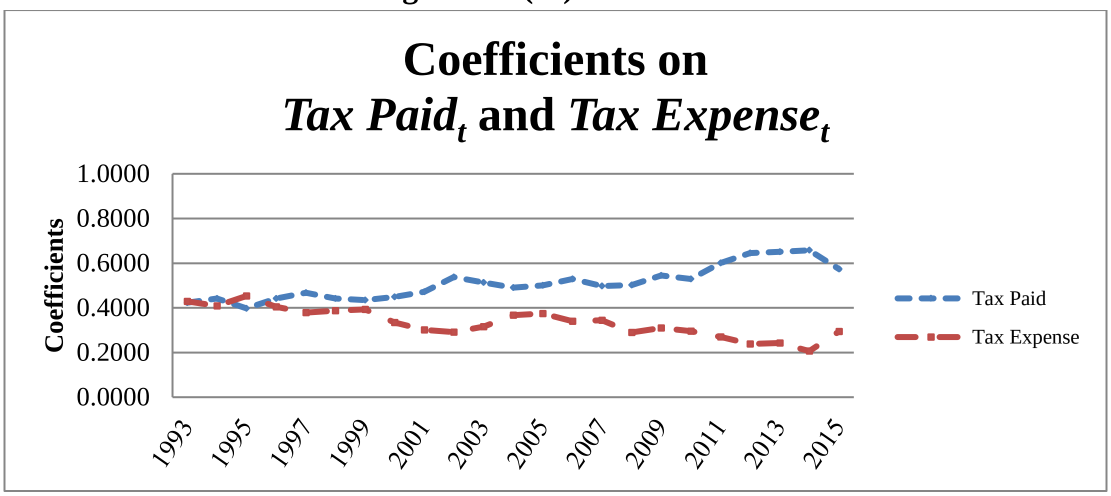


Figure 1 presents the incremental and combined explanatory power (R^2) and coefficient estimates of current period tax cash flow and tax expense for predicting future tax cash flow. The sample is 87,470 observations with non-missing data from 1993-2015 to calculate variables required to estimate contemporaneous 12-month cumulative raw returns over fiscal year *t* as a function of pre-tax earnings, taxes paid and/or tax expense in year *t*.

Following Kim and Kross (2005), we estimate the following series of regressions:

(1a) $Tax\ Paid_{t+1} = \alpha_0 + \alpha_1 Tax\ Paid_t + \varepsilon;\ R^2 = R^2_{Tax\ Paid}$
(1b) $Tax\ Paid_{t+1} = \alpha_0 + \alpha_1 Tax\ Expense_t + \varepsilon;\ R^2 = R^2_{Tax\ Expense}$
(1c) $Tax\ Paid_{t+1} = \alpha_0 + \alpha_1 Tax\ Paid_t + \alpha_2 Tax\ Expense + \varepsilon;\ R^2 = R^2_{Combined}$

We calculate the incremental R^2 of $Tax\ Paid_t$ as $R^2_{Combined} - R^2_{Tax\ Expense}$. Similarly, the incremental R^2 of $Tax\ Expense_t$ is $R^2_{Combined} - R^2_{Tax\ Paid}$. *Tax Paid* is income taxes paid (TXPD) scaled by total assets (AT). *Tax Expense* is income tax expense (TXT) scaled by total assets (AT). Results in Figure 1 are estimated on percentile-ranked values of all variables.

Table 1: Percentage of sample reporting pre-tax losses, tax benefits and tax refunds

Fiscal Year	*PT_Loss*	*PT_Outflow*	*Tax Refund*	*Tax Benefit*
1993	23.7%	16.8%	5.2%	12.9%
1994	21.0%	19.1%	5.0%	11.7%
1995	22.9%	18.9%	4.2%	14.0%
1996	22.8%	18.2%	5.0%	13.7%
1997	23.7%	20.3%	4.3%	12.6%
1998	27.4%	20.2%	4.8%	15.2%
1999	25.5%	18.1%	5.5%	14.2%
2000	29.6%	21.7%	6.4%	16.4%
2001	38.0%	19.7%	8.5%	22.0%
2002	33.3%	16.6%	13.2%	20.9%
2003	27.5%	16.0%	11.5%	16.1%
2004	21.4%	15.4%	6.4%	13.3%
2005	19.8%	14.2%	3.9%	12.4%
2006	19.6%	13.8%	3.5%	11.5%
2007	21.6%	12.7%	3.5%	13.8%
2008	34.9%	13.8%	4.9%	22.2%
2009	36.0%	13.5%	12.1%	27.2%
2010	23.6%	13.8%	12.2%	17.7%
2011	22.1%	13.1%	8.5%	15.0%
2012	23.1%	13.6%	5.4%	15.5%
2013	23.0%	12.2%	5.3%	14.4%
2014	21.8%	13.6%	4.5%	13.3%
2015	19.9%	8.2%	4.4%	14.6%
Average	**25.3%**	**15.8%**	**6.4%**	**15.7%**

Table 1 shows the percentage of observations each year that report either *PT_Loss* (pre-tax income (PI) less than zero), *PT_Outflow* (pre-tax cash flow (OANCF+TXPD) less than zero), *Tax Refund* (income taxes paid (TXPD) less than zero) or *Tax Benefit* (income tax expense (TXT) less than zero). The sample is 87,470 observations with non-missing data from 1993-2015 to calculate required variables.

Table 2: Descriptive statistics

Panel A: Tests of predictive ability

	Mean	Std Dev	P25	P50	P75
Tax Paid$_{t+1}$	0.0172	0.0250	0.0008	0.0075	0.0258
Tax Paid$_{t}$	0.0180	0.0256	0.0010	0.0081	0.0269
Tax Expense$_{t}$	0.0192	0.0327	0.0003	0.0123	0.0340

Panel A presents descriptive statistics for variables used to estimate the predictive ability of current period tax cash flow and tax expense for future tax cash flow. The sample is 87,470 observations with non-missing data from 1993-2015 to calculate required variables. *Tax Paid* is income taxes paid (TXPD). *Tax Expense* is total income tax expense (TXT). All variables are scaled by total assets (AT) in the same year.

Panel B: Tests of explanatory power

	Mean	Std Dev	P25	P50	P75
Returns	0.1467	0.6128	-0.2097	0.0612	0.3506
PT_Earn	0.0237	0.2106	-0.0027	0.0672	0.1153
ΔPT_Earn	0.0212	0.2336	-0.0303	0.0090	0.0459
PT_CFO	0.1233	0.2032	0.0419	0.1064	0.1849
ΔPT_CFO	0.0135	0.1924	-0.0338	0.0084	0.0527
Tax Paid	0.0206	0.0283	0.0014	0.0135	0.0319
ΔTax Paid	0.0010	0.0277	-0.0049	0.0001	0.0080
Tax Expense	0.0210	0.0437	0.0003	0.0192	0.0392
ΔTax Expense	0.0037	0.0547	-0.0067	0.0010	0.0124

Panel B presents descriptive statistics for variables used to estimate the relative and incremental explanatory power of tax cash flow and tax expense for returns. The sample is 87,470 observations with non-missing data from 1993-2015 to calculate required variables *Returns* are contemporaneous 12-month cumulative raw returns during fiscal year *t*. *PT_Earn* is pre-tax income (IB+TXT); *PT_CFO* is pre-tax cash flow (OANCF+TXPD); *Tax Paid* is income taxes paid (TXPD); *Tax Expense* is total income tax expense (TXT). All explanatory variables are presented as both levels in year *t* and changes from year *t-1* to *t*, and all variables are scaled by market value of equity (PRCC_F*CSHO) in year *t-1*.

Table 3: Predictive ability of tax cash flow and tax expense for future tax cash flow

Panel A: Regressions using raw variables

Fiscal Year	*Tax Paid*$_t$	*Tax Expense*$_t$	R^2	*Inc* R^2 *Tax Paid*$_t$	*Inc* R^2 *Tax Expense*$_t$
(1)	(2)	(3)	(4)	(5)	(6)
1993	0.3806	0.4110	0.6262	0.0543	0.0848
1994	0.4152	0.3306	0.6040	0.0653	0.0548
1995	0.3951	0.3531	0.5881	0.0631	0.0715
1996	0.3826	0.3010	0.5502	0.0742	0.0662
1997	0.4376	0.2776	0.5846	0.0968	0.0600
1998	0.4309	0.2518	0.5300	0.1019	0.0568
1999	0.4070	0.3022	0.5263	0.0800	0.0699
2000	0.3612	0.2129	0.4618	0.0912	0.0552
2001	0.4434	0.1994	0.4260	0.1317	0.0605
2002	0.5084	0.1696	0.5416	0.1836	0.0440
2003	0.4718	0.2205	0.5419	0.1413	0.0540
2004	0.5524	0.2661	0.5996	0.1279	0.0572
2005	0.5014	0.3314	0.6155	0.1009	0.0717
2006	0.4778	0.2770	0.6032	0.1022	0.0502
2007	0.4623	0.2792	0.5883	0.1021	0.0537
2008	0.4729	0.1477	0.5201	0.1827	0.0351
2009	0.6403	0.2188	0.6112	0.1851	0.0466
2010	0.4855	0.2097	0.6110	0.1249	0.0336
2011	0.5945	0.1993	0.6607	0.1661	0.0310
2012	0.6276	0.1848	0.6853	0.1836	0.0284
2013	0.6465	0.1690	0.7015	0.2151	0.0234
2014	0.6484	0.1404	0.6745	0.2044	0.0153
2015	0.5594	0.1792	0.6704	0.1710	0.0337
Average	**0.4914**	**0.2449**	**0.5879**	**0.1282**	**0.0503**

Following Kim and Kross (2005), we obtain coefficient estimates, and incremental and combined R^2 through the following series of regressions:

(1a) $Tax\ Paid_{t+1} = \alpha_0 + \alpha_1 Tax\ Paid_t + w;\ R^2 = R^2_{Tax\ Paid}$
(1b) $Tax\ Paid_{t+1} = \beta_0 + \beta_1 Tax\ Expense_t + x;\ R^2 = R^2_{Tax\ Expense}$
(1c) $Tax\ Paid_{t+1} = \gamma_0 + \gamma_1 Tax\ Paid_t + \gamma_2 Tax\ Expense + y;\ R^2 = R^2_{Combined}$

Column (2) presents coefficient estimates on *Tax Paid* from equation (1a). Column (3) presents coefficient estimates on *Tax Expense* from equation (1b). Column (4) presents $R_{2Combined}$. *Inc* R^2 *Tax Paid*$_t$ in column (5) is $R^2_{Combined}$- $R^2_{Tax\ Expense}$. *Inc* R^2 *Tax Paid*$_t$ in Column (6) is $R^2_{Combined}$- $R^2_{Tax\ Paid}$. *Tax Paid* is income taxes paid (TXPD). *Tax Expense* is total income tax expense (TXT). All variables are scaled by total assets (AT) in the same year.

Table 3: Predictive ability of tax cash flow and tax expense for future tax cash flow

Panel B: Regressions using ranked variables

Fiscal Year	*Tax Paid$_t$*	*Tax Expense$_t$*	R^2	*Inc R^2 Tax Paid$_t$*	*Inc R^2 Tax Expense$_t$*
1993	0.4232	0.4287	0.6443	0.0734	0.0752
1994	0.4418	0.4092	0.6528	0.0703	0.0602
1995	0.3978	0.4530	0.6386	0.0656	0.0849
1996	0.4417	0.4044	0.6274	0.0818	0.0681
1997	0.4680	0.3783	0.6325	0.0950	0.0621
1998	0.4422	0.3880	0.5953	0.0939	0.0724
1999	0.4348	0.3930	0.5881	0.0904	0.0741
2000	0.4490	0.3338	0.5222	0.1039	0.0578
2001	0.4715	0.3016	0.4798	0.1448	0.0594
2002	0.5375	0.2921	0.5740	0.1711	0.0505
2003	0.5134	0.3158	0.5744	0.1535	0.0581
2004	0.4911	0.3675	0.6254	0.1269	0.0709
2005	0.5003	0.3740	0.6578	0.1233	0.0690
2006	0.5289	0.3402	0.6591	0.1325	0.0546
2007	0.4983	0.3447	0.6174	0.1165	0.0556
2008	0.5014	0.2904	0.5188	0.1492	0.0502
2009	0.5448	0.3095	0.6062	0.1792	0.0579
2010	0.5297	0.2962	0.5944	0.1352	0.0424
2011	0.6001	0.2701	0.6525	0.1933	0.0391
2012	0.6454	0.2390	0.6880	0.2142	0.0295
2013	0.6512	0.2422	0.7072	0.2104	0.0291
2014	0.6575	0.2063	0.6693	0.2065	0.0204
2015	0.5731	0.2947	0.6671	0.1457	0.0384
Average	**0.5106**	**0.3336**	**0.6171**	**0.1338**	**0.0556**

Following Kim and Kross (2005), we obtain coefficient estimates, and incremental and combined R^2 through the following series of regressions:

(1a) $Tax\ Paid_{t+1} = \alpha_0 + \alpha_1 Tax\ Paid_t + w;\ R^2 = R^2_{Tax\ Paid}$
(1b) $Tax\ Paid_{t+1} = \beta_0 + \beta_1 Tax\ Expense_t + x;\ R^2 = R^2_{Tax\ Expense}$
(1c) $Tax\ Paid_{t+1} = \gamma_0 + \gamma_1 Tax\ Paid_t + \gamma_2 Tax\ Expense + y;\ R^2 = R^2_{Combined}$

Column (2) presents coefficient estimates on *Tax Paid* from equation (1a). Column (3) presents coefficient estimates on *Tax Expense* from equation (1b). Column (4) presents $R_{2Combined}$. *Inc R^2 Tax Paid$_t$* in column (5) is $R^2_{Combined} - R^2_{Tax\ Expense}$. *Inc R^2 Tax Paid$_t$* in Column (6) is $R^2_{Combined} - R^2_{Tax\ Paid}$. *Tax Paid* is income taxes paid (TXPD). *Tax Expense* is total income tax expense (TXT). All variables are scaled by total assets (AT) in the same year.

Table 4: Relative and incremental explanatory power of tax cash flow and tax expense

Panel A: Relative explanatory power

Variable	(1)		(2)		(3)	
PT_Earn	2.028	***	2.264	***	2.130	***
	(0.155)		(0.161)		(0.154)	
PT_Loss	-2.133	***	-2.342	***	-2.234	***
	(0.132)		(0.141)		(0.135)	
ΔPT_Earn	0.448	***	0.435	***	0.419	***
	(0.073)		(0.080)		(0.072)	
PT_CFO	0.352	***	0.352	***	0.397	***
	(0.118)		(0.117)		(0.116)	
PT_Outflow	-0.728	***	-0.739	***	-0.759	***
	(0.147)		(0.148)		(0.148)	
ΔPT_CFO	0.0838	**	0.0835	**	0.0535	*
	(0.034)		(0.033)		(0.032)	
Tax Paid			-1.279	***		
			(0.399)			
Tax Refund			-0.445			
			(0.754)			
ΔTax Paid			1.475	***		
			(0.426)			
Tax Expense					-0.840	***
					(0.263)	
Tax Benefit					0.133	
					(0.330)	
ΔTax Expense					0.140	
					(0.176)	
N	87,470		87,470		87,470	
Adj. R2	18.40%		18.50%		18.80%	
			(2) vs. (3)			
Vuong (1989) Z-statistic			4.213***			

All variables are presented as both levels in year *t* and changes from year *t-1* to *t* and are scaled by market value of equity (PRCC_F*CSHO) in year *t-1: Returns* are contemporaneous 12-month cumulative raw returns during fiscal year *t; PT_Earn* is pre-tax income (IB+TXT); *PT_Loss* is equal to *PT_Earn* if *PT_Earn* is less than zero, and zero otherwise; *PT_CFO* is pre-tax operating cash flow (OANCF+TXPD); *PT_Outflow* is equal to *PT_CFO* if *PT_CFO* is less than zero, and zero otherwise; *Tax Paid* is income taxes paid (TXPD); *Tax Refund* is equal to *Tax Paid* if *Tax Paid* is less than zero, and zero otherwise; *Tax Expense* is income tax expense (TXT); *Tax Benefit* is equal to *Tax Expense* if *Tax Expense* is less than zero, and zero otherwise. Standard errors clustered by year are presented in parentheses. *, **, *** denote significance at 1%, 5% and 10%, respectively. We use a Vuong (1989) test to determine whether the explanatory power of the model including tax cash flow information is greater than that of the model including tax expense information.

Table 4 (cont'd): Relative and incremental explanatory power of tax cash flow and tax expense

Panel B: Incremental explanatory power

Variable	Coefficient	Coefficient estimate	p-value
PT_Earn	α_1	2.233	<0.01
PT_Loss	α_2	-2.310	<0.01
ΔPT_Earn	α_3	0.429	<0.01
PT_CFO	α_4	0.387	<0.01
PT_Outflow	α_5	-0.760	<0.01
ΔPT_CFO	α_6	0.058	<0.10
Tax Paid	β_1	-1.135	<0.01
Tax Refund	β_2	-0.425	0.579
ΔTax Paid	β_3	1.497	<0.01
Tax Expense	γ_1	-0.391	0.113
Tax Benefit	γ_2	-0.257	0.347
ΔTax Expense	γ_3	-0.067	0.686
F-test of incremental explanatory power			
$\beta_1 = \beta_2 = \beta_3 = 0$		F=8.10 (0.001)	
$\gamma_1 = \gamma_2 = \gamma_3 = 0$		F= 4.45 (0.014)	

All variables are presented as both levels in year *t* and changes from year *t-1* to *t* and are scaled by scaled by market value of equity (PRCC_F*CSHO) in year *t-1: Returns* are contemporaneous 12-month cumulative raw returns during fiscal year *t; PT_Earn* is pre-tax income (IB+TXT); *PT_Loss* is equal to *PT_Earn* if *PT_Earn* is less than zero, and zero otherwise; *PT_CFO* is pre-tax operating cash flow (OANCF+TXPD); *PT_Outflow* is equal to *PT_CFO* if *PT_CFO* is less than zero, and zero otherwise*; Tax Paid* is income taxes paid (TXPD); *Tax Refund* is equal to *Tax Paid* if *Tax Paid* is less than zero, and zero otherwise; *Tax Expense* is income tax expense (TXT); *Tax Benefit* is equal to *Tax Expense* if *Tax Expense* is less than zero, and zero otherwise. Standard errors clustered by year are presented in parentheses. *, **, *** denote significance at 1%, 5% and 10%, respectively.

Table 5: Tax uncertainty subsample analysis

Panel A: Predictive ability of tax cash flow and tax expense for future tax cash flow

	Average N per year	***R^2Combined***	***R^2Tax Paid***	***R^2Tax Expense***	***Inc R^2 Tax Paid$_t$***	***Inc R^2 Tax Expense$_t$***
By period						
Pre-FIN 48	4,039	0.5571	0.4404	0.2789	0.1010	0.0612
Post-FIN 48	3,436	0.6359	0.5708	0.1920	0.1706	0.0334
Post-FIN 48						
No Uncertainty	328	0.5753	0.5351	0.3802	0.1951	0.0401
Low Uncertainty	858	0.6149	0.5800	0.4638	0.1511	0.0349
High Uncertainty	857	0.6228	0.5816	0.4520	0.1708	0.0412

Following Kim and Kross (2005), we obtain coefficient estimates, and incremental and combined R^2 through the following series of regressions:

(1a) $Tax\ Paid_{t+1}=\alpha_0 + \alpha_1 Tax\ Paid_t + w;\ R^2 = R^2_{Tax\ Paid}$
(1b) $Tax\ Paid_{t+1}=\beta_0 + \beta_1 Tax\ Expense_t + x;\ R^2 = R^2_{Tax\ Expense}$
(1c) $Tax\ Paid_{t+1}=\gamma_0 + \gamma_1 Tax\ Paid_t + \gamma_2 Tax\ Expense + y;\ R^2 = R^2_{Combined}$

Inc R^2 Tax Paid is $R^2_{Combined}$- $R^2_{Tax\ Expense}$. *Inc R^2 Tax Paid* is $R^2_{Combined}$- $R^2_{Tax\ Paid}$. *Tax Paid* is income taxes paid (TXPD). *Tax Expense* is total income tax expense (TXT). All variables are scaled by total assets (AT) in the same year.

The period *Pre-FIN 48* includes firm-years prior to the effective date of FIN 48 (fiscal year 2007 for most firms). The period *Post-FIN 48* begins in fiscal year 2007.

We form tax uncertainty subsamples within the *Post-FIN 48* period based on the magnitude of FIN 48 reserves scaled by total assets (TXTUBEND/AT). *No Uncertainty* equals one where TXTUBEND=0. *Low Uncertainty* (*High Uncertainty*) equals one for observations where (TXTUBEND/AT) is below the median (above the median) by year. We omit all observations with missing values of TXTUBEND.

Table 5 (cont'd): Tax uncertainty subsample analysis

Panel B: Relative explanatory power – Before and after FIN 48

	Pre-FIN 48		***Post-FIN 48***	
Variable	(1)	(2)	(3)	(4)
PT_Earn	2.388 ***	2.56 ***	1.592 ***	1.724 ***
	(0.117)	(0.153)	(0.226)	(0.215)
PT_Loss	-2.511 ***	-2.666 ***	-1.626 ***	-1.728 ***
	(0.102)	(0.094)	(0.194)	(0.215)
ΔPT_Earn	0.394 ***	0.399 ***	0.444 ***	0.473 ***
	(0.104)	(0.120)	(0.084)	(0.084)
PT_CFO	0.306 ***	0.257 ***	0.581 **	0.559 *
	(0.082)	(0.082)	(0.238)	(0.250)
PT_Outflow	-0.674 ***	-0.643 ***	-0.931 **	-0.936 **
	(0.141)	(0.137)	(0.336)	(0.342)
ΔPT_CFO	-0.056 *	0.088 ***	0.054	0.068
	(0.031)	(0.031)	(0.045)	(0.049)
Tax Paid	-1.712 ***		-0.797	
	(0.412)		(0.630)	
Tax Refund	-0.022		-0.645	
	(0.948)		(0.582)	
ΔTax Paid	-1.916 ***		0.611	
	(0.348)		(0.789)	
Tax Expense		-1.171 ***		-0.79 *
		(0.308)		(0.368)
Tax Benefit		0.504		0.103
		(0.386)		(0.495)
ΔTax Expense		0.39 *		-0.184
		(0.190)		(0.242)
N	56,542	56,542	30,928	30,928
Adj. R2	18.92%	18.50%	18.92%	19.15%
	Model 1 vs. Model 2		Model 3 vs. Model 4	
Vuong (1989) Z-Statistic	5.729***		-2.382**	

All variables are presented as both levels in year *t* and changes from year *t-1* to *t*, and are scaled by market value of equity (PRCC_F*CSHO) in year *t-1: Returns* are contemporaneous 12-month cumulative raw returns during fiscal year *t; PT_Earn* is pre-tax income (IB+TXT); *PT_Loss* is equal to *PT_Earn* if *PT_Earn* is less than zero, and zero otherwise; *PT_CFO* is pre-tax operating cash flow (OANCF+TXPD); *PT_Outflow* is equal to *PT_CFO* if *PT_CFO* is less than zero, and zero otherwise; *Tax Paid* is income taxes paid (TXPD); *Tax Refund* is equal to *Tax Paid* if *Tax Paid* is less than zero, and zero otherwise; *Tax Expense* is income tax expense (TXT); *Tax Benefit* is equal to *Tax Expense* if *Tax Expense* is less than zero, and zero otherwise. The period *Pre-FIN 48* includes firm-years prior to the effective date of FIN 48 (fiscal year 2007 for most firms). The period *Post-FIN 48* begins in fiscal year 2007. Standard errors clustered by year are presented in parentheses. *, **, *** denote significance at 10%, 5% and 1%, respectively. We use a Vuong (1989) test to determine whether the explanatory power of the model including tax cash flow information is greater than that of the model including tax expense information.

Table 5 (cont'd): Tax uncertainty subsample analysis

Panel C: Incremental explanatory power – Before and after FIN 48

		Pre-FIN 48		***Post-FIN 48***	
Variable	Coeff.	Coeff. estimate	p-value	Coeff. estimate	p-value
PT_Earn	α_1	2.510	<0.01	1.728	<0.01
PT_Loss	α_2	-2.610	<0.01	-1.731	<0.01
ΔPT_Earn	α_3	0.392	<0.01	0.468	<0.01
PT_CFO	α_4	0.298	<0.01	0.577	<0.05
PT_Outflow	α_5	-0.673	<0.01	-0.943	<0.05
ΔPT_CFO	α_6	0.058	<0.10	0.056	0.293
Tax Paid	β_1	-1.488	<0.01	-0.590	0.351
Tax Refund	β_2	0.017	0.986	-0.876	0.196
ΔTax Paid	β_3	1.876	<0.01	0.695	0.388
Tax Expense	γ_1	0.543	0.146	-0.576	0.100
Tax Benefit	γ_2	-0.068	0.842	-0.053	0.916
ΔTax Expense	γ_3	0.101	0.658	-0.279	0.218
N		56,542		7,717	
Adj. R2		18.98%		24.99%	
F-test:					
$\beta_1 = \beta_2 = \beta_3 = 0$		F= 9.25 (0.002)		F= 0.74 (0.557)	
$\gamma_1 = \gamma_2 = \gamma_3 = 0$		F=5.35 (0.013)		F= 17.07 (0.001)	

All variables are presented as both levels in year *t* and changes from year *t-1* to *t*, and are scaled by scaled by market value of equity (PRCC_F*CSHO) in year *t-1: Returns* are contemporaneous 12-month cumulative raw returns during fiscal year *t; PT_Earn* is pre-tax income (IB+TXT); *PT_Loss* is equal to *PT_Earn* if *PT_Earn* is less than zero, and zero otherwise; *PT_CFO* is pre-tax operating cash flow (OANCF+TXPD); *PT_Outflow* is equal to *PT_CFO* if *PT_CFO* is less than zero, and zero otherwise; *Tax Paid* is income taxes paid (TXPD); *Tax Refund* is equal to *Tax Paid* if *Tax Paid* is less than zero, and zero otherwise; *Tax Expense* is income tax expense (TXT); *Tax Benefit* is equal to *Tax Expense* if *Tax Expense* is less than zero, and zero otherwise. The period *Pre-FIN 48* includes firm-years prior to the effective date of FIN 48 (fiscal year 2007 for most firms). The period *Post-FIN 48* begins in fiscal year 2007. Standard errors clustered by year are presented in parentheses. Standard errors clustered by year are presented in parentheses. *, **, *** denote significance at 10%, 5% and 1%, respectively.

Table 5 (cont'd): Tax uncertainty subsample analysis

Panel D: Relative explanatory power – Post-FIN 48

	No Uncertainty		*Low Uncertainty*		*High Uncertainty*	
Variable	(1)	(2)	(3)	(4)	(5)	(6)
PT_Earn	1.436 ***	1.361 ***	1.35 ***	1.487 ***	1.431 ***	1.581 ***
	(0.176)	(0.156)	(0.194)	(0.138)	(0.240)	(0.243)
PT_Loss	-1.655 ***	-1.524 ***	-1.449 ***	-1.589 ***	-1.422 ***	-1.546 ***
	(0.221)	(0.132)	(0.164)	(0.207)	(0.202)	(0.257)
ΔPT_Earn	0.572 ***	0.595 ***	0.586 ***	0.663 ***	0.418 ***	0.461 ***
	(0.044)	(0.048)	(0.067)	(0.080)	(0.092)	(0.095)
PT_CFO	0.488 ***	0.448 ***	0.766 ***	0.759 ***	1.121 ***	1.091 ***
	(0.142)	(0.133)	(0.257)	(0.280)	(0.324)	(0.340)
PT_Outflow	-0.785 **	-0.777	-0.982 ***	-0.994 ***	-1.672 ***	-1.72
	(0.315)	(0.314)	(0.317)	(0.313)	(0.413)	(0.400)
ΔPT_CFO	0.00304	0.0417	-0.087	-0.0981	0.25 ***	0.251 ***
	(0.044)	(0.046)	(0.086)	(0.104)	(0.053)	(0.063)
Tax Paid	-1.215 **		-0.31		-1.081	
	(0.492)		(0.716)		(0.716)	
Tax Refund	-0.111		-2.261 ***		-0.106	
	(1.971)		(0.837)		(1.022)	
ΔTax Paid	1.206 ***		0.393		-0.239	
	(0.435)		(0.950)		(0.800)	
Tax Expense		-0.06		-0.426		-1.079
		(0.783)		(0.302)		(0.337)
Tax Benefit		-0.585		0.141		0.601
		(0.792)		(0.270)		(0.778)
ΔTax Expense		-0.135		-0.569 **		-0.594
		(0.519)		(0.248)		(0.261)
N	2,955	2,955	7,717	7,717	7,720	7,720
Adj. R2	17.47%	17.29%	24.49%	24.88%	23.96%	24.61%
	Model 1 vs. Model 2		Model 3 vs. Model 4		Model 5 vs. Model 6	
Vuong (1989) Z-Statistic	0.730		-1.713*		-2.321**	

All variables are presented as both levels in year *t* and changes from year *t-1* to *t*, and are scaled by market value of equity (PRCC_F*CSHO) in year *t-1: Returns* are contemporaneous 12-month cumulative raw returns during fiscal year *t; PT_Earn* is pre-tax income (IB+TXT); *PT_Loss* is equal to *PT_Earn* if *PT_Earn* is less than zero, and zero otherwise; *PT_CFO* is pre-tax operating cash flow (OANCF+TXPD); *PT_Outflow* is equal to *PT_CFO* if *PT_CFO* is less than zero, and zero otherwise; *Tax Paid* is income taxes paid (TXPD); *Tax Refund* is equal to *Tax Paid* if *Tax Paid* is less than zero, and zero otherwise*; Tax Expense* is income tax expense (TXT); *Tax Benefit* is equal to *Tax Expense* if *Tax Expense* is less than zero, and zero otherwise. We omit observations where TXTUBEND is missing as well as firm-years before the effective date of FIN 48 (fiscal year 2007 for most firms). *No Uncertainty* equals one where TXTUBEND=0. *Low Uncertainty* (*High Uncertainty*) equals one for observations where (TXTUBEND/AT) is below the median (above the median) by year. Standard errors clustered by year are presented in parentheses. *, **, *** denote significance at 10%, 5% and 1%, respectively. We use a Vuong (1989) test to determine whether the explanatory power of the model including tax cash flow information is greater than that of the model including tax expense information.

Table 5 (cont'd): Tax uncertainty subsample analysis

Panel E: Incremental explanatory power – Post-FIN 48

		No Uncertainty		***Low Uncertainty***		***High Uncertainty***	
Variable	Coeff.	Coeff. estimate	p-value	Coeff. estimate	p-value	Coeff. estimate	p-value
PT_Earn	α_1	1.368	<0.01	1.495	<0.01	1.658	<0.01
PT_Loss	α_2	-1.550	<0.01	-1.592	<0.01	-1.623	<0.01
ΔPT_Earn	α_3	0.596	<0.01	0.653	<0.01	0.452	<0.01
PT_CFO	α_4	0.471	<0.01	0.766	<0.05	1.118	<0.01
PT_Outflow	α_5	-0.779	<0.05	-0.960	<0.05	-1.734	<0.01
ΔPT_CFO	α_6	0.016	-0.735	-0.106	0.285	0.243	<0.01
Tax Paid	β_1	-1.527	<0.10	-0.241	0.773	-0.843	0.262
Tax Refund	β_2	0.188	0.933	-2.540	<0.05	-0.416	0.709
ΔTax Paid	β_3	1.363	<0.05	0.561	0.558	-0.092	0.900
Tax Expense	γ_1	0.628	0.564	-0.370	0.411	-0.799	<0.01
Tax Benefit	γ_2	-1.115	0.283	0.200	0.554	0.465	0.546
ΔTax Expense	γ_3	-0.374	0.551	-0.633	<0.05	-0.669	<0.05
N		2,955		7,717		7,720	
Adj. R2		17.62%		24.99%		24.72%	
F-test:							
$\beta_1 = \beta_2 = \beta_3 = 0$		F= 16.79 (0.001)		F= 4.83 (0.033)		F=1.75 (0.234)	
$\gamma_1 = \gamma_2 = \gamma_3 = 0$		F=6.21 (0.014)		F= 7.43 (0.011)		F=30.73 (0.000)	

All variables are presented as both levels in year *t* and changes from year *t-1* to *t*, and are scaled by scaled by market value of equity (PRCC_F*CSHO) in year *t-1: Returns* are contemporaneous 12-month cumulative raw returns during fiscal year *t; PT_Earn* is pre-tax income (IB+TXT); *PT_Loss* is equal to *PT_Earn* if *PT_Earn* is less than zero, and zero otherwise; *PT_CFO* is pre-tax operating cash flow (OANCF+TXPD); *PT_Outflow* is equal to *PT_CFO* if *PT_CFO* is less than zero, and zero otherwise; *Tax Paid* is income taxes paid (TXPD); *Tax Refund* is equal to *Tax Paid* if *Tax Paid* is less than zero, and zero otherwise; *Tax Expense* is income tax expense (TXT); *Tax Benefit* is equal to *Tax Expense* if *Tax Expense* is less than zero, and zero otherwise. We omit observations where TXTUBEND is missing as well as firm-years before the effective date of FIN 48 (fiscal year 2007 for most firms). *No Uncertainty* equals one where TXTUBEND=0. *Low Uncertainty* (*High Uncertainty*) equals one for observations where (TXTUBEND/AT) is below the median (above the median) by year. Standard errors clustered by year are presented in parentheses. *, **, *** denote significance at 10%, 5% and 1%, respectively.