

One Size Does Not Fit All: How the Uniform Rules of FIN 48 Affect the Relevance of Income Tax Accounting

Leslie A. Robinson
Dartmouth College

Bridget Stomberg
Erin M. Towery
The University of Georgia

ABSTRACT: Our study examines how the uniform rules of FIN 48, which governs accounting for income tax uncertainty, affect the relevance of income tax accounting. By requiring all firms to follow the same recognition and measurement process, the FASB intended FIN 48 to improve the relevance of income tax accounting. However, practitioners argue that reserves reported under FIN 48 lack relevance because they represent liabilities that will never be paid to tax authorities. Consistent with these concerns, we estimate that over a three-year period, only 24 cents of every dollar of reserves unwind via settlements. Moreover, contrary to the FASB's intention, we find no evidence that FIN 48 increased the ability of tax expense to predict future tax cash flows. Rather, we find that the predictive ability of tax expense for future tax cash flows decreases among firms for which FIN 48 is most restrictive. Finally, we find no evidence that investors identify firms for which reserves overstate future tax cash outflows and incorporate this into their valuations. Our results provide evidence that the uniform accounting rules of FIN 48 negatively affect the relevance of income tax accounting.

Keywords: relevance; FIN 48; income tax uncertainty.

JEL Classifications: H25; M41; M48.

I. INTRODUCTION

Some accounting rules impose a standard reporting process to limit the scope for earnings manipulation with the intent to provide more relevant information.¹ However, uniform accounting rules can negatively impact relevance if they restrict managers' ability to convey private information (Schipper 2003). We investigate how a uniform set of rules introduced to govern accounting for uncertain tax positions (Financial Accounting Standards Board [FASB] 2006, ASC 740-10, *Accounting for Uncertainty in Income Taxes* [FIN 48]) affects relevance by examining how well FIN 48 reserves reflect future

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¹ Financial Accounting Standards Board (FASB) 2010, Statement of Financial Accounting Concepts (SFAC) No. 8, *Conceptual Framework for Financial Reporting* characterizes relevance as a fundamental qualitative characteristic of useful information. Relevant information has predictive value, confirmatory value, or both. Predictive value implies that the information is useful in predicting future outcomes. Confirmatory value implies that the information provides feedback about previous predictions (changes or confirms).

tax cash payments required to settle uncertain tax positions and how FIN 48 *changed* the relevance of financial reporting for income taxes, which we define as the ability of tax expense to predict future tax cash flows. Although the FASB intended FIN 48 to improve relevance, there is limited large-sample empirical evidence assessing whether it accomplished its objective (Blouin and Robinson 2014).²

Firms establish reserves in their financial statements for cash tax savings generated in the current period that could be denied in the future if successfully challenged by a taxing authority. Although tax reserves are substantial for many firms and can materially affect income tax expense (Gleason and Mills 2002), no set of rules addressed accounting for income tax uncertainty prior to FIN 48. Regulators expressed concerns that this lack of guidance created diversity in practice and provided opportunities for earnings management through tax expense. Specifically, tax expense could have lacked relevance if managers used their discretion over tax reserves to manage earnings. The FASB introduced FIN 48 in response to these concerns.

FIN 48 requires firms to evaluate the likelihood of retaining the benefits of each tax position using a “benefit recognition approach,” whereby firms recognize no benefits from tax positions failing to meet a “more-likely-than-not” confidence threshold. For positions meeting the recognition threshold, firms recognize a benefit equal to the largest amount that cumulatively has a greater than 50 percent likelihood of being sustained upon audit. This process imposes three relatively controversial criteria that could overstate reserves relative to future cash payments required to settle uncertain tax positions. First, firms cannot consider detection risk and must instead assume that the relevant taxing authority will detect and audit each position. Second, firms cannot consider the ability to offset positions across jurisdictions even when, for example, they expect to settle a transfer pricing issue with one jurisdiction and obtain a refund from another jurisdiction to avoid double taxation. Third, firms cannot consider the ability to offset positions within the same jurisdiction even when they expect to concede benefits from one position to retain benefits from another.

Practitioners voice concerns that these rules create a “gap between the prescribed financial reporting and the underlying economics” (FASB 2005, 14). More specifically, reserves reported under FIN 48 do not adequately “reflect the knowledge, experience, and judgment of the company because the inability to take into account the dynamic process [of a tax audit] and reflect the firm’s judgment about the overall outcome” produces liabilities that lack relevance because they will never be paid (Tax Executives Institute [TEI] 2011). Notwithstanding these concerns, imposing uniform rules on accounting for income tax uncertainty could still *improve* the relevance of income tax reporting if firms were relatively more opportunistic before FIN 48. Further, FIN 48 requires that changes in the reserve be tied to some triggering event (and disclosed), which potentially limits managers’ ability to use the reserve to manage tax expense. Current evidence on the extent to which FIN 48 reduced earnings management via tax expense is mixed (Gupta, Laux, and Lynch 2015; Cazier, Rego, Tian, and Wilson 2015), and some studies demonstrate that significant discretion still exists (De Simone, Robinson, and Stomberg 2014; Towery 2015). FIN 48 also restricts managers’ ability to convey their expectations about future cash payments for uncertain tax positions, however, which could decrease relevance. As a result, it is unclear how FIN 48 *changed* the relevance of financial reporting for income taxes.

We evaluate practitioner concerns that FIN 48 reserves are not predictive of future tax cash flows required to settle uncertain tax positions, and address the broader question of whether FIN 48 changed the relevance of income tax accounting. Using several years of FIN 48 disclosures, we approximate how FIN 48 reserves unwind over time and construct a measure of the extent to which FIN 48 reserves unwind via cash settlements. We estimate that over a three-year period, 21 cents of each dollar of reserves unwind for positions unaudited by taxing authorities, 33 cents unwind due to changes in facts and circumstances or concessions by taxing authorities, and only 24 cents unwind via cash settlements. This descriptive analysis is consistent with practitioner concerns about FIN 48. However, it does not speak to whether the FASB met its objective of increasing the relevance of accounting for income taxes with FIN 48 because we are unable to observe these detailed disclosures prior to FIN 48.

We next test whether FIN 48 changed the relevance for income tax reporting in two ways. First, we use confidential Internal Revenue Service (IRS) settlement data to assess the ability of tax expense to predict future tax cash flows for positions settled with the IRS. All else equal, the effect of a settlement on tax expense depends on how the amount of cash paid to settle the position compares to the reserve balance for that position. Releasing an excess reserve decreases tax expense, whereas settling a position with an insufficient reserve increases tax expense. Thus, observing a change in how settlements affect tax expense from pre- to post-FIN 48 provides evidence about how FIN 48 changed the way income tax expense maps into future cash tax outflows.³ We estimate

² The Financial Accounting Foundation (FAF 2012) concluded that information about tax uncertainties is more relevant after FIN 48, but the information may not be predictive or confirmatory of future cash flows.

³ This analysis builds on our estimate above that 24 cents of each dollar of the aggregate reserve unwinds via settlement over a three-year period by allowing for a more direct comparison of how a position is resolved relative to the reserve *for that position*. For example, given an aggregate FIN 48 balance of \$100, our estimate that \$24 unwinds via settlement would be the same for Firm A, with a \$100 balance related to one single position that was settled for \$24, and for Firm B, with a \$100 balance related to two positions—one for \$24 that was settled for \$24 and one for \$76 that lapsed. The analysis in Table 2 allows us to estimate that each firm paid \$24 in cash for the settled position, but does not allow us to see that Firm A was over-reserved by \$76 for the *settled* position while Firm B was not over-reserved for the settled position.

that firms decrease tax expense in the period of an IRS settlement both before and after FIN 48, suggesting that, on average, the reserve exceeds the cash settlement in both periods. However, we find no significant difference in the magnitude of the decrease before versus after FIN 48. While these findings corroborate practitioner concerns that FIN 48 reserves lack relevance, they imply that pre-FIN 48 reserves also lacked relevance for positions settled with the IRS.

Our second test examines changes in the ability of tax expense to predict future tax cash flows in subsamples of firms facing material tax uncertainty that are most likely affected by the three criteria mentioned above: (1) the inability to consider detection risk (firms with many positions lapsing unaudited), (2) the inability to offset positions across jurisdictions (firms likely engaged in transfer pricing), or (3) the inability to offset multiple positions within the same jurisdiction (firms with multiple positions reported on Schedule UTP).⁴ We find a decline in the predictive ability of income tax expense for firms affected by the inability to consider detection risk and by the inability to offset positions across jurisdictions, but no significant change for firms affected by the inability to offset positions within the same jurisdiction. We also find no significant change in the predictive ability of tax expense for firms not facing material tax uncertainty.

The totality of our evidence suggests that FIN 48 reserves overstate future settlements and FIN 48 decreased the relevance of accounting for income taxes for at least some firms. One important caveat to our analyses is that we cannot conclude that FIN 48 did not improve relevance if the required disclosures allow financial statement users to adjust FIN 48 information for estimates of the difference between disclosed reserves and the portion of reserves that users expect to be paid out via cash settlements (FAF 2012).⁵ Therefore, we examine investors' valuation of tax expense in the FIN 48 period for firms most likely affected by the FIN 48 criteria relative to other firms. If investors appropriately make adjustments to reported tax reserves, then we expect a less negative coefficient on tax expense for the firms most likely affected by FIN 48. We find no such evidence. Thus, investors do not appear to distinguish firms for which tax reserve accruals are not related to future cash tax payments from other firms, despite the enhanced disclosures required under FIN 48.

These findings have important implications for researchers, investors, and standard setters. First, we provide evidence that standard setters' focus on reducing discretion can restrict managers' ability to convey private information about expected outcomes, thereby failing to improve the relevance of accounting information (Schipper 2003). We caution, however, that our study speaks directly to only some of the FIN 48 criteria that are both relatively controversial and for which we are able to construct reliable empirical measures; we do not examine how other elements of FIN 48 (such as the requirement of a triggering event to modify reserves) affected relevance. It is, therefore, possible that other elements of FIN 48 do not negatively affect relevance. Second, we propose a procedure for estimating, at the firm level, the amount of the reserve that unwinds via settlement with taxing authorities by directly utilizing the new roll-forward data disclosed under FIN 48. Researchers and investors assessing tax risk can apply this procedure to isolate the outcome of uncertain tax avoidance. This is important for: (1) researchers using FIN 48 reserves to identify firms with a high likelihood of future cash settlements (e.g., Hanlon, Maydew, and Saavedra 2013), and (2) investors who report that they use FIN 48 information to predict tax cash outflows (FAF 2012).

Section II provides background and develops our hypothesis. Section III describes our sample. Section IV assesses the relevance of tax reserves in the FIN 48 period. Section V examines changes in the relevance of income tax expense resulting from changes in accounting for tax reserves. Section VI concludes.

II. BACKGROUND AND HYPOTHESIS DEVELOPMENT

Accounting for Income Tax Uncertainty in General

Firms establish reserves in their financial statements for cash tax savings generated in the current period that could be denied in the future if successfully challenged by a taxing authority. Establishing a tax reserve creates a liability and typically increases income tax expense. Once the outcome of the uncertain tax position is no longer uncertain, the firm "releases" the reserve by removing the liability from the balance sheet.

The effect of releasing the reserve on income tax expense depends on the difference between the reserve for the uncertain position and any cash the firm pays to the taxing authority to settle the position. For example, a reserve released because an uncertain tax position lapses without being detected decreases income tax expense by the full amount of the reserve because the firm does not make a cash payment to the taxing authority. For positions that are detected and settled, the amount of the reserve

⁴ As described later in Section IV, we consider a firm to face material tax uncertainty if it reports: (1) a non-zero unrecognized tax benefit (UTB) balance each year of the sample, (2) a non-zero portion of the reserve will affect the effective tax rate (ETR) upon resolution, and (3) additions to the reserve for a majority of the years in the sample. We believe these criteria reflect recurring material tax uncertainty most likely to affect reported income tax expense.

⁵ Some empirical studies question the completeness and quality of FIN 48 disclosures (e.g., Blouin, Gleason, Mills, and Sikes 2007; Robinson and Schmidt 2013; Dunbar, Omer, and Schultz 2010), suggesting it might be difficult to make such an adjustment to FIN 48 information. Other evidence suggests that analysts have a limited ability to process information contained in tax footnotes (Kim, Schmidt, and Wentland 2014).

can be more than the cash payment (tax expense decreases), less than the cash payment (tax expense increases), or exactly equal to the cash payment (no effect on tax expense).

Recording and releasing reserves does not impact tax expense when the associated positions are related to timing differences or items that affect income unrelated to continuing operations (e.g., additional paid in capital, other comprehensive income, or discontinued operations).⁶ In our sample, reserve amounts not impacting tax expense are relatively rare.

Accounting for Income Tax Uncertainty under FIN 48

Prior to FIN 48, no set of rules specifically addressed accounting for income tax uncertainty, which resulted in diverse accounting practices (FAF 2012). Anecdotally, some firms recognized a reserve only when it was probable that a liability had been incurred and the amount was reasonably estimable, while others waited to establish reserves until a taxing authority conducted an audit. The FASB enacted FIN 48 in June 2006 to reduce diversity in accounting practices and enhance required disclosures (FASB 2006, 2).

FIN 48 requires firms to evaluate each tax position using a two-step recognition and measurement process. To meet the recognition threshold, a position must be more-likely-than-not to be sustained in the court of highest order based on its technical merits. If a position does not meet this threshold, then the firm must record a liability for the entire amount of benefits claimed. In practice, this “benefit recognition approach” could overstate the reserve relative to the expected cash payment because most tax positions are not frivolous (i.e., most positions have a non-zero probability of being sustained upon audit).⁷ If a position meets the recognition threshold, then a firm measures the benefit to be recognized as the largest amount that, cumulatively, is greater than 50 percent likely to be sustained upon audit. This could overstate or understate the reserve relative to the expected cash payment depending on the relation between the mean and median benefit (Mills, Robinson, and Sansing 2010).

The process described above imposes three additional criteria that could create reserves that do not map into future cash payments to settle uncertain tax positions. First, firms cannot consider detection risk and must instead assume that the relevant taxing authority in each jurisdiction will detect and audit each tax position. This criterion could overstate reserves for firms that have a low likelihood of being audited and for firms that are regularly audited, but claim multiple uncertain tax positions, some of which are unlikely to be detected. Second, firms cannot consider the ability to offset positions across jurisdictions even when, for example, the firm expects to settle a transfer pricing issue with one jurisdiction and apply for a refund from another jurisdiction to avoid double taxation. In this case, a company that settles with Country X for \$10, but expects to obtain a refund from the U.S. for \$8, must establish a reserve for \$10 rather than \$2, even though prior experience suggests that the total cash outflow for the position will be \$2. Third, firms cannot consider the ability to offset positions within the same jurisdiction even when they expect to be able to negotiate with taxing authorities on one position to achieve a favorable outcome on another. For example, a firm with two positions that would settle for \$10 separately must establish a reserve for \$20 even if prior experience suggests that the taxing authority would settle the positions together for \$16.

The Financial Accounting Foundation conducted a post-implementation review of FIN 48 to assess whether the rule met its objective of improving the relevance of financial reporting of income taxes. The FAF (2012, 1) concluded:

Reported information about income tax uncertainties is more relevant since FIN 48 was issued. However, such information may not be predictive or confirmatory of future cash flows because FIN 48 employs a benefit recognition approach, not a best-estimate approach for liabilities to be settled.

We provide large-sample empirical evidence to test the FAF’s (2012) conclusions. First, we use FIN 48 roll-forward data to assess how well FIN 48 reserves predict future tax cash settlements. Second, we test whether the predictive ability of income tax expense for future tax cash flows changed after FIN 48.

⁶ See Appendix A for additional discussion of items that do and do not affect income tax expense and example journal entries taken from FIN 48 (FASB 2006).

⁷ Before settling on the “benefit recognition approach,” the FASB considered the “impairment approach” (FASB (2006) set forth in International Accounting Standards (IAS) No. 12, *Income Taxes*. Under IAS 12, reserve amounts generally represent managers’ best estimates of what will be owed to the taxing authority. To illustrate, pursuant to Kraft’s acquisition of Cadbury, Kraft presented pro forma financial statements in an amended Form 8-K filed on April 16, 2010 (available at: <http://www.sec.gov/Archives/edgar/data/1103982/000119312510085236/dex991.htm>), converting Cadbury financial statements from IFRS (which uses the “impairment approach”) to U.S. GAAP (which uses the “benefit recognition approach”). With respect to tax contingencies, Kraft notes: “In order to recognize the tax benefit of a filing position, U.S. GAAP requires it be more likely than not to be sustained upon an audit. As this interpretation does not exist under IFRS, additional liabilities of \$59 million related to uncertain tax positions were recorded as of December 31, 2009.” This pro forma adjustment had a material effect on earnings, increasing Cadbury’s effective tax rate by 37 percent. Thus, relative to an accounting method that is intended to represent a best estimate of future cash settlements, the tax reserve required under FIN 48 is higher.

Predictive Ability of FIN 48 Tax Reserves for Future Tax Cash Settlements

Anecdotal evidence suggests that FIN 48 reserves overstate cash required to settle uncertain tax positions. Financial statement users and preparers criticize the new rules because they do not adequately “reflect the knowledge, experience, and judgment of the company” and because “the inability to take into account the dynamic process [of a tax audit] and reflect the firm’s judgment about the overall outcome” produces liabilities that lack relevance because they will never be paid in cash (TEI 2011). Now that several years of FIN 48 disclosures are available, we develop a measure that estimates the extent to which FIN 48 reserves are paid out in cash. We also discuss the challenges of using FIN 48 data to measure the relation between reserves and cash settlement amounts. This part of our analysis is related to concurrent work that also investigates the predictive ability of FIN 48 reserves for future settlements. Cicone, Donohoe, Lisowsky, and Mayberry (2015) conclude that each dollar of reserve is paid out in cash, on average, while Drake, Finley, and Koester (2014) conclude that firms keep a substantial portion of cash flows generated by uncertain tax positions. We make no formal predictions about the magnitude of FIN 48 reserves that are ultimately paid to taxing authorities.

One of the overarching objectives of FIN 48 was to increase the relevance of accounting for income taxes (FASB 2006). Despite practitioner concerns and existing empirical evidence about the extent to which FIN 48 reserves may overstate future cash settlements, it is unclear whether these rules met the FASB’s objective. Therefore, we next consider whether and how the relevance of accounting for income taxes *changed* in the FIN 48 regime.

Predictive Ability of Income Tax Expense for Future Tax Cash Flows Before and After FIN 48

How FIN 48 *changed* the relevance of income tax reporting depends on how firms accounted for income tax uncertainty prior to its adoption. We focus on changes in the ability of *tax expense* to predict future tax cash flows to examine the impact of FIN 48 for two reasons. First, tax reserves prior to FIN 48 are not observable due to lack of required disclosure and, therefore, empirical estimates of these reserves are imprecise. Moreover, examining how FIN 48 altered the relevance of income tax expense speaks to the broader effects of the new rule, as the overarching objective of FIN 48 is to improve the relevance of financial reporting of income taxes (FASB 2006).

One motivation for enacting FIN 48 was Securities and Exchange Commission (SEC) concern about earnings management through income tax expense. Dhaliwal, Gleason, and Mills (2004) document that managers manipulate tax accruals, of which the reserve is a substantial component (e.g., Gleason and Mills 2002), to meet earnings targets prior to FIN 48. The concern was that diversity in practice related to recording uncertain tax benefits created opportunities for maintaining overstated “cookie jar” reserves that managers could opportunistically release to smooth earnings and for premature recognition of unsustainable tax benefits (FAF 2012; Blouin and Robinson 2014).

Requiring all firms to adopt the same process to account for income tax uncertainty may improve relevance of income tax reporting if firms were relatively more opportunistic before FIN 48. Current evidence on the extent to which FIN 48 reduced earnings management via tax expense is mixed (Gupta et al. 2015; Cazier et al. 2015), and some studies demonstrate that significant discretion still exists (e.g., De Simone et al. 2014; Towery 2015). However, FIN 48 could also reduce relevance if pre-FIN 48 tax expense more accurately reflected cash flows, because the recognition and measurement process under FIN 48 restricts firms’ ability to convey private information when estimating reserves (Schipper 2003). Therefore, we state our hypothesis in the null:

Hypothesis: The ability of income tax expense to predict future tax cash flows does not change as a result of FIN 48.

III. SAMPLE SELECTION

Our analysis is two-pronged. We first analyze how FIN 48 reserves unwind over time, which allows us to estimate the extent to which reserves are released with cash consequences. We then test our hypothesis about changes in the predictive ability of income tax expense for future tax cash flows. We utilize different samples in each analysis. Panel A of Table 1 details our sample selection process, which we discuss below.

To provide summary statistics on how FIN 48 reserves unwind over time, we begin in Table 1, Panel A with 5,517 nonfinancial firms (18,517 observations) having valid FIN 48 roll-forward data available in the IRS FIN 48 registry. We consider FIN 48 data to be valid if the beginning balance plus all current-year adjustments sums to the ending balance. We use FIN 48 data from the IRS registry because prior literature documents that they are more accurate and complete than those reported in Compustat (Lisowsky, Robinson, and Schmidt 2013).⁸ From 2007 to 2011, there are only 14,105 observations for nonfinancial firms with valid FIN 48 data in Compustat. Thus, using the IRS data increases our FIN 48 sample by 30 percent.

⁸ Compustat reports a large number of missing values for FIN 48 reserve balances, all of which should not be treated as zero. Lisowsky et al. (2013) calculate that as many as 75 percent of observations for which Compustat reports a missing value have a non-zero ending FIN 48 reserve balance. Additionally, Compustat occasionally reports incorrect dollar units (i.e., reporting an amount as being in millions instead of billions).

TABLE 1
Sample Selection and Summary Statistics

Panel A: Sample Selection

FIN 48 Sample	18,517
Nonfinancial firm-years between 2007 and 2011 with valid FIN 48 roll-forward data in the IRS database	18,517
Effect of Tax Reserve Releases on Effective Tax Rates	
Firm-years between 2002 and 2011 for FIN 48 sample	47,213
Less: observations with missing or non-positive AT, PI, TXT, or TXPD	(26,354)
Less: observations with ETR < 0 or ETR > 1	(379)
Less: observations missing one or more control variables	(1,533)
Less: observations missing tax return data	(2,511)
	16,436
Predictive Ability of Tax Expense	
Firm-years between 2002 and 2011 for FIN 48 Sample	47,213
Less: observations with missing or non-positive AT, PI, TXT, or TXPD	(26,354)
Less: observations with missing or non-positive lagged PI, TXT, or TXPD	(4,618)
	16,241

The FIN 48 sample of 18,517 firm-years includes all nonfinancial firm-years for which we have valid FIN 48 roll-forward data in the IRS database. We use IRS FIN 48 data because prior literature documents that they are more accurate and complete than those reported in Compustat (Lisowsky et al. 2013). The second sample of 16,436 firm-years imposes the necessary data requirements on the FIN 48 sample from 2002 through 2011 for tests of the effect of tax reserve releases on firms' effective tax rates. The third sample of 16,241 firm-years imposes the necessary data requirements for testing the predictive ability of tax expense.

Panel B: Summary Statistics

	Mean	SD	P25	Median	P75
FIN 48 Sample (n = 18,517)					
Total Assets (\$M)	3,055.61	8,311.46	66.56	352.20	1,767.12
Sales (\$M)	2,539.64	7,256.69	45.24	299.35	1,515.70
UTB_BEG (\$M)	51.09	304.42	0.00	0.76	10.34
LAPSE (\$M)	1.27	9.16	0.00	0.00	0.10
SETTLE (\$M)	4.86	60.22	0.00	0.00	0.00
PY_ADD (\$M)	5.76	42.19	0.00	0.00	0.35
PY_RED (\$M)	6.39	55.00	0.00	0.00	0.17
CY_CHG (\$M)	6.62	53.74	0.00	0.00	0.84
OTHER (\$M)	0.39	21.99	0.00	0.00	0.00
UTB_END (\$M)	51.35	309.67	0.00	0.82	10.74
PCTUTBETR (%)	0.69	0.35	0.46	0.83	1.00

(continued on next page)

For tests of our hypothesis, in Table 1, Panel A we begin our sample period in 2002 to provide five years of data before and five years of data after 2007, the first year that firms report under the new rules. We begin with 47,213 observations from 2002 through 2011 for the 5,517 firms in our FIN 48 sample and eliminate observations lacking data required to calculate variables for each of our tests. Panel B provides summary statistics for each sample.

IV. POST-FIN 48: PREDICTIVE ABILITY OF TAX RESERVES

The direct way to evaluate the predictive ability of tax reserves for cash settlements is to compare the reserve amount to the cash settlement. This is not possible prior to FIN 48 due to lack of disclosure and is challenging after FIN 48 for many reasons, including the fact that reserves are disclosed on an aggregate basis. We develop a measure to evaluate the predictive ability of reserves after FIN 48 and highlight some of the challenges in doing so.

TABLE 1 (continued)

	<u>Mean</u>	<u>SD</u>	<u>P25</u>	<u>Median</u>	<u>P75</u>
Effect of Settlements on Effective Tax Rates (n = 16,436)					
<i>ChgETR</i>	0.04	0.15	(0.02)	0.00	0.04
<i>ChgR&D</i>	(0.00)	0.01	0.00	0.00	0.00
<i>ChgAdv</i>	(0.00)	0.00	0.00	0.00	0.00
<i>ChgSGA</i>	(0.01)	0.04	(0.01)	(0.00)	0.01
<i>ChgCapex</i>	(0.00)	0.07	(0.02)	0.00	0.02
<i>ChgLeverage</i>	(0.01)	0.08	(0.04)	(0.00)	0.01
<i>ChgForeignInd</i>	0.02	0.18	0.00	0.00	0.00
<i>ChgNOLInd</i>	0.02	0.28	0.00	0.00	0.00
<i>ChgIntangibles</i>	0.01	0.05	(0.01)	0.00	0.01
<i>ChgPP&E</i>	(0.01)	0.07	(0.03)	0.00	0.02
<i>ChgPT_ROS</i>	0.03	0.14	(0.01)	0.01	0.04
<i>LAPSEIND</i>	0.20	0.40	0.00	0.00	0.00
<i>SETTLEIND (FIN48)</i>	0.17	0.37	0.00	0.00	0.00
<i>SETTLEIND (IRS)</i>	0.19	0.39	0.00	0.00	0.00
<i>FIN48IND</i>	0.52	0.50	0.00	1.00	1.00
Predictive Ability of Tax Expense (n = 16,241)					
<i>TaxExpense</i> (\$M)	185.43	866.61	5.85	24.14	90.80
<i>TaxesPaid</i> (\$M)	156.93	786.20	3.81	17.04	69.30

Table 1 presents our sample selection process and summary statistics. Panel A describes the samples we use to carry out our empirical analyses, and Panel B provides relevant summary statistics for each sample. We use FIN 48 information collected by the IRS from firms' FIN 48 tabular roll-forwards in the tax footnotes of their 10-K filings. *Chg* denotes a change from $t-1$ to t . Dollar amounts are in millions. Annual Compustat mnemonics are provided in parentheses in variable definitions.

Variable Definitions:

Total Assets = total assets (AT);

Sales = total sales (SALE). We use FIN 48 information collected by the IRS from firms' FIN 48 tabular roll-forwards in the tax footnotes of their 10-K filings;

UTB_BEG = beginning balance in the reserve;

LAPSE = reductions in the reserve associated with positions for which the statute of limitations expired during the year;

SETTLE = reductions in the reserve associated with positions that were settled with the taxing authority during the year;

PY_ADD = additions to the reserve related to positions taken in prior years;

PY_RED = reductions in the reserve related to positions taken in prior years;

CY_CHG = change in the reserve related to positions taken in the current year;

OTHER = other changes to the reserve;

UTB_END = ending balance in the reserve;

PCTUTBETR = proportion of the total tax reserve that would affect tax expense at the time of resolution;

ETR = tax expense scaled by pre-tax income (TXT/(IB + TXT));

R&D = research and development expenditures (set to 0 if missing), scaled by sales (XRD/SALE);

Adv = advertising expenses (set to 0 if missing), scaled by sales (XAD/SALE);

SGA = selling, general, and administrative expenses (set to 0 if missing), scaled by sales (XSGA/SALE);

Capex = capital expenditures (set to 0 if missing), scaled by gross property, plant, and equipment (CAPX/PPEGT). If XRD, XAD, XSGA, or CAPX are missing, we set them to 0;

Leverage = total debt scaled by assets ((DLC + DLTT)/AT);

ForeignInd = 1 if the absolute value of pre-tax foreign income (PIFO) is non-zero, and 0 otherwise;

NOLInd = 1 if the firm reports positive tax net operating loss carryforwards (TLCF), and 0 otherwise;

Intangibles = intangible assets scaled by assets (INTAN/AT);

PP&E = gross PPE scaled by assets (PPEGT/AT);

PT_ROS = pre-tax income scaled by sales ((IB + TXT)/SALE);

LAPSEIND = 1 when a statute lapse is disclosed in the FIN 48 tabular roll-forward, and 0 otherwise;

SETTLEIND (FIN48) = 1 when a settlement is disclosed in the FIN 48 tabular roll-forward available from 2007 through 2011, and 0 otherwise;

SETTLEIND (IRS) = 1 when a settlement is disclosed in IRS settlements data available from 2002 through 2011, and 0 otherwise;

FIN48IND = 1 for fiscal years ending after the effective date of FIN 48, and 0 otherwise;

TaxExpense = total tax expense (TXT); and

TaxesPaid = cash taxes paid (TXPD).

We use firms' FIN 48 tabular roll-forward disclosures to assess how FIN 48 reserves unwind. This analysis allows us to approximate the extent to which reserves represent cash payments required to settle uncertain tax positions. The roll-forward disclosure includes the beginning balance (*UTB_BEG*), reductions due to statute lapses (*LAPSE*), reductions due to settlements with taxing authorities (*SETTLE*), increases and decreases related to positions taken in prior periods (*PY_ADD* and *PY_RED*, respectively), changes due to tax positions taken in the current period (*CY_CHG*), other changes (e.g.,

due to foreign currency fluctuation) (*OTHER*), and the ending balance (*UTB_END*). A reserve can unwind in two ways. First, uncertainty can be resolved through settling audited positions or through a lapse in the statute of limitations for unaudited positions. Practitioner guidance directs firms to record the cash payments on the settlements line (*SETTLE*) and the amount of any over-accrual as a reduction related to prior-year positions (*PY_RED*) (Deloitte LLP 2008; PricewaterhouseCoopers [PwC] 2013).⁹ Second, management's evaluation of tax positions still subject to taxing authority examination often evolves due to new information, which can lead to reductions in reserves accrued for prior-year positions (*PY_RED*).

We begin by providing an aggregate roll-forward of FIN 48 reserve balances in Table 2, Panel A from 2007 through 2011 for a constant sample of 1,887 firms from our FIN 48 sample. The aggregate amount of reserve releases (i.e., the sum of *LAPSE*, *SETTLE*, and *PY_RED*) ranges from \$28 billion in 2007 to \$42 billion in 2010. In each year, *PY_RED* represents the largest single component of reserve releases, from a low of 49 percent in 2009 to a high of 57 percent in 2010, whereas *SETTLE* represents roughly 33 to 41 percent of total reserve releases. This aggregate roll-forward is consistent with a comparatively small proportion of FIN 48 reserves being released with cash consequences relative to releases due to statute lapses and reductions related to prior years.¹⁰

We next examine the proportion of *SETTLE*, *LAPSE*, and *PY_RED* relative to the reserve balance to quantify, for the average firm, how FIN 48 reserves unwind, and present these results in Table 2, Panel B. Our approach is similar to examining the adequacy of firms' allowance for doubtful accounts for future write-offs by comparing the *ex post* write-offs in year $t+1$ to amounts deemed uncollectible in year t (Cecchini, Jackson, and Liu 2012). Because the time period over which tax positions are resolved varies with many factors, we report results over three-year, four-year, and five-year windows. Thus, our sample is reduced from 5,567 observations to 1,366 observations as we move from a three-year to a five-year window.¹¹ We consider 2006 to be the first year in our sample and treat the UTB balance reported upon adoption at the beginning of 2007 to be the ending balance as of 2006. We are able to observe how this balance unwinds over the five-year period from 2007 through 2011.

We measure the denominator in Table 2, Panel B at the end of year t using either UTB_END_t or $UTB_END_t + PY_ADD_{t+1}$. Because PY_ADD_{t+1} reflects changes associated with positions taken in prior periods, we include it in the denominator to better capture *total* reserves related to positions taken prior to the end of year t .¹² When assuming a three-year window, the average proportion of reserve balances that unwinds via cash settlements is 24 percent, whereas 21 percent unwinds via statute lapses and 33 percent unwinds via changes in judgment or concessions by taxing authorities. When we include PY_ADD_{t+1} in the denominator, a similar pattern emerges; a majority of reserves unwind without cash consequences.

The roll-forward data enable us to measure the proportion of the reserve balance that unwinds via settlements, which could differ from the net cash flows associated with settling uncertain tax positions. By prohibiting firms from considering potential offsetting benefits from other jurisdictions, *SETTLE* overstates the net cash flows associated with settling positions because it reflects cash outflows (i.e., payments) to one jurisdiction, but not offsetting cash inflows (i.e., refunds) from another. Referring to our example in Section II, the proportion of the reserve balance that unwinds via settlements would be 100 percent because the company paid \$10 to settle the \$10 reserve in Country X. However, the proportion of the reserve that maps into *net* cash flows is only 20 percent once the \$8 refund from the U.S. is considered. Thus, our measure in Table 2 does not capture "overstatement" that arises from firms' inability to consider offsetting benefits from other jurisdictions when establishing reserves.

The mean ratio of $SETTLE/UTB_END$ in Table 2, Panel B increases to 34 cents over four years and 48 cents over five years. In sum, we estimate that FIN 48 reserves overstate future cash tax payments by 76 cents over three years, 66 cents over

⁹ According to PwC (2013), the amount reported in the roll-forward disclosure as *SETTLE* should reflect cash payments or tax attributes (e.g., net operating loss [NOL] or credit carryforwards) required to settle uncertain tax positions.

¹⁰ The data also show a substantial decrease in *CY_CHG* in 2010, coinciding with the introduction of Schedule UTP, which requires firms to disclose to the IRS federal positions underlying income tax reserves. Towery (2015) suggests that the relevance of tax reserves could have increased or decreased as the result of Schedule UTP. However, there is currently insufficient time-series data to analyze the incremental effect of UTP (over and above FIN 48) reporting on the relevance of tax reserves.

¹¹ Although the statute of limitations for the IRS to assess a deficiency is three years, positions can take longer to settle (e.g., if the taxpayer disputes the IRS's proposed adjustment). Our estimate, therefore, potentially understates the amount of cash taxes paid, especially for positions accrued in more recent years. However, because the beginning balance of the reserve contains open positions from all prior years, our analysis allows more than three years for positions from older tax returns to be settled. For example, if the FIN 48 balance on January 1, 2007 includes an open position claimed in 2002, then our estimates capture any cash taxes paid related to that position through 2011, thereby allowing nine years for the position to be resolved.

¹² In most years, amounts reported as *PY_ADD* and *PY_RED* represent significant components of the change in tax reserves, although their net effect is usually relatively small. We cannot disentangle which portion of these components arises from settlements versus new information. Practitioner guidance suggests firms report increases in *PY_ADD* and decreases in *SETTLE* if the firm is under-reserved at settlement. Thus, excluding *PY_ADD* from the denominator could overstate the amount of *UTB_BEG* that unwinds through *SETTLE*. See Appendix A for further detail.

TABLE 2
Analysis of How Firms' FIN 48 Tax Reserves Unwind

Panel A: Aggregate Changes in FIN 48 Tax Reserve for Constant Sample of 1,887 Firms (in \$M)

n = 1,887	Year				
	2007	2008	2009	2010	2011
<i>UTB_BEG</i>	\$132,170	\$138,149	\$139,058	\$149,376	\$141,247
<i>LAPSE</i>	(2,250)	(3,560)	(3,346)	(4,232)	(3,676)
<i>SETTLE</i>	(11,622)	(10,366)	(12,831)	(13,581)	(10,572)
<i>PY_ADD</i>	15,157	16,066	15,979	16,837	15,286
<i>PY_RED</i>	(14,363)	(17,694)	(15,464)	(23,739)	(17,383)
<i>CY_CHG</i>	16,814	17,870	20,761	16,337	15,201
<i>OTHER</i>	2,279	(667)	4,697	304	351
<i>UTB_END</i>	\$138,186	\$139,797	\$148,854	\$141,303	\$140,453

UTB_END may differ from the sum of *UTB_BEG* and other components due to rounding. The cumulative balance of *UTB_END_t* does not equal the cumulative balance of *UTB_BEG_{t+1}* because firms occasionally report a beginning balance in year *t+1* that does not equal the ending balance in year *t*. These differences likely relate to minor audit adjustments or purchase price allocations resolved after the financial statements are released.

Panel B: How Firms' Beginning FIN 48 Tax Reserve Balances Reported in 2007–2009 Unwind

	Mean	SD	P25	Median	P75
Unwind Period = three years (n = 5,567)					
<i>UTB_END_t</i> (\$M)	74.62	235.00	1.49	6.71	36.30
<i>UTB_BEG_t</i> + <i>PY_ADD_{t+1}</i> (\$M)	83.50	260.83	1.72	7.52	41.70
<i>LAPSE_{t+1}</i> through <i>t+3</i> / <i>UTB_END_t</i>	0.205	0.295	0.000	0.069	0.301
<i>SETTLE_{t+1}</i> through <i>t+3</i> / <i>UTB_END_t</i>	0.235	0.372	0.000	0.066	0.331
<i>PY_RED_{t+1}</i> through <i>t+3</i> / <i>UTB_END_t</i>	0.334	0.506	0.000	0.144	0.469
<i>LAPSE_{t+1}</i> through <i>t+3</i> / <i>UTB_END_t</i> + <i>PY_ADD_{t+1}</i>	0.181	0.256	0.000	0.061	0.266
<i>SETTLE_{t+1}</i> through <i>t+3</i> / <i>UTB_END_t</i> + <i>PY_ADD_{t+1}</i>	0.198	0.296	0.000	0.059	0.290
<i>PY_RED_{t+1}</i> through <i>t+3</i> / <i>UTB_END_t</i> + <i>PY_ADD_{t+1}</i>	0.276	0.377	0.000	0.129	0.408
Unwind Period = four years (n = 3,303)					
<i>LAPSE_{t+1}</i> through <i>t+4</i> / <i>UTB_END_t</i>	0.289	0.407	0.000	0.126	0.427
<i>SETTLE_{t+1}</i> through <i>t+4</i> / <i>UTB_END_t</i>	0.335	0.509	0.000	0.146	0.476
<i>PY_RED_{t+1}</i> through <i>t+4</i> / <i>UTB_END_t</i>	0.484	0.736	0.022	0.247	0.666
<i>LAPSE_{t+1}</i> through <i>t+4</i> / <i>UTB_END_t</i> + <i>PY_ADD_{t+1}</i>	0.252	0.340	0.000	0.108	0.383
<i>SETTLE_{t+1}</i> through <i>t+4</i> / <i>UTB_END_t</i> + <i>PY_ADD_{t+1}</i>	0.283	0.408	0.000	0.126	0.414
<i>PY_RED_{t+1}</i> through <i>t+4</i> / <i>UTB_END_t</i> + <i>PY_ADD_{t+1}</i>	0.400	0.543	0.019	0.217	0.584
Unwind Period = five years (n = 1,366)					
<i>LAPSE_{t+1}</i> through <i>t+5</i> / <i>UTB_END_t</i>	0.397	0.589	0.000	0.181	0.555
<i>SETTLE_{t+1}</i> through <i>t+5</i> / <i>UTB_END_t</i>	0.475	0.783	0.000	0.226	0.630
<i>PY_RED_{t+1}</i> through <i>t+5</i> / <i>UTB_END_t</i>	0.647	0.961	0.070	0.360	0.831
<i>LAPSE_{t+1}</i> through <i>t+5</i> / <i>UTB_END_t</i> + <i>PY_ADD_{t+1}</i>	0.346	0.496	0.000	0.163	0.500
<i>SETTLE_{t+1}</i> through <i>t+5</i> / <i>UTB_END_t</i> + <i>PY_ADD_{t+1}</i>	0.388	0.578	0.000	0.208	0.543
<i>PY_RED_{t+1}</i> through <i>t+5</i> / <i>UTB_END_t</i> + <i>PY_ADD_{t+1}</i>	0.541	0.757	0.060	0.326	0.729

The sample of 5,567 is a subset of the 18,517 that have a non-zero UTB and report at least three consecutive years of FIN 48 data. The sample size reduces to 3,303 and 1,366 when the number of years we allow the reserve to unwind is extended to four years and five years, respectively.

(continued on next page)

four years, and 52 cents over five years. However, the sum of the three ratios (mean *LAPSE/UTB_END* + mean *SETTLE/UTB_END* + mean *PY_RED/UTB_END*) begins to exceed 100 percent when we extend the time period beyond three years. This implies that reserves unwinding in the numerator are not reflected in the denominator. One reason is that both the accrual and release of the reserve occur after we measure the beginning balance. Thus, including *PY_ADD* in the denominator is important

TABLE 2 (continued)

Panel C: How Firms' Beginning FIN 48 Tax Reserve Balances Reported in 2007–2009 Unwind for Various Subsamples

	Mean	SD	P25	Median	P75
Firms with inability to consider detection risk (n = 2,182)					
$LAPSE_{t+1}$ through $t+3/UTB_END_t$	0.323	0.292	0.105	0.235	0.454
$SETTLE_{t+1}$ through $t+3/UTB_END_t$	0.244	0.318	0.016	0.135	0.358
PY_RED_{t+1} through $t+3/UTB_END_t$	0.285	0.402	0.022	0.161	0.398
Firms with inability to offset across jurisdictions (n = 1,170)					
$LAPSE_{t+1}$ through $t+3/UTB_END_t$	0.182	0.258	0.000	0.074	0.266
$SETTLE_{t+1}$ through $t+3/UTB_END_t$	0.226	0.322	0.000	0.091	0.338
PY_RED_{t+1} through $t+3/UTB_END_t$	0.303	0.438	0.015	0.161	0.440
Firms with inability to offset within a jurisdiction (n = 1,171)					
$LAPSE_{t+1}$ through $t+3/UTB_END_t$	0.256	0.334	0.054	0.156	0.350
$SETTLE_{t+1}$ through $t+3/UTB_END_t$	0.262	0.362	0.032	0.166	0.350
PY_RED_{t+1} through $t+3/UTB_END_t$	0.379	0.676	0.062	0.237	0.502

We define firms affected by the inability to consider detection risk as firms that consistently report positions lapsing in their tabular roll-forward (i.e., report a lapse in at least four of the five years in the roll-forward data). We define firms affected by the inability to offset positions across jurisdictions as multinational firms in high-tech industries with above-median levels of foreign sales and research and development expenditures. We define firms affected by the inability to offset positions within a jurisdiction as firms that report two or more uncertain tax positions on IRS Schedule UTP.

Table 2 describes the annual changes in FIN 48 tax reserves disclosed in firms' tabular roll-forwards and analyzes how FIN 48 tax reserves unwind. Panel A presents the aggregate FIN 48 roll-forward for a constant sample of 1,887 firms from 2007 to 2011. Panel B analyzes how firms' beginning FIN 48 tax reserve balances reported in 2007–2009 unwind over a three-year, four-year, and five-year period. Panel C analyzes how firms' beginning FIN 48 tax reserve balances reported in 2007–2009 unwind over a three-year period for various subsamples of firms most affected by FIN 48 criteria. We use FIN 48 information collected by the IRS from firms' FIN 48 tabular roll-forwards in the tax footnotes of their 10-K filings. Dollar amounts are in millions.

Variable Definitions:

UTB_BEG = beginning balance in the reserve;

$LAPSE$ = reductions in the reserve associated with positions for which the statute of limitations lapsed during the year;

$SETTLE$ = reductions in the reserve associated with positions that were settled with the taxing authority during the year;

PY_ADD = additions to the reserve related to positions taken in prior years;

PY_RED = reductions in the reserve related to positions taken in prior years;

CY_CHG = change in the reserve related to positions taken in the current year;

$OTHER$ = other changes to the reserve; and

UTB_END = ending balance in the reserve.

as we extend the window beyond three years. Doing so reduces the mean $SETTLE/UTB_END$ estimate to 28 cents through $t+4$ and 39 cents through $t+5$.¹³

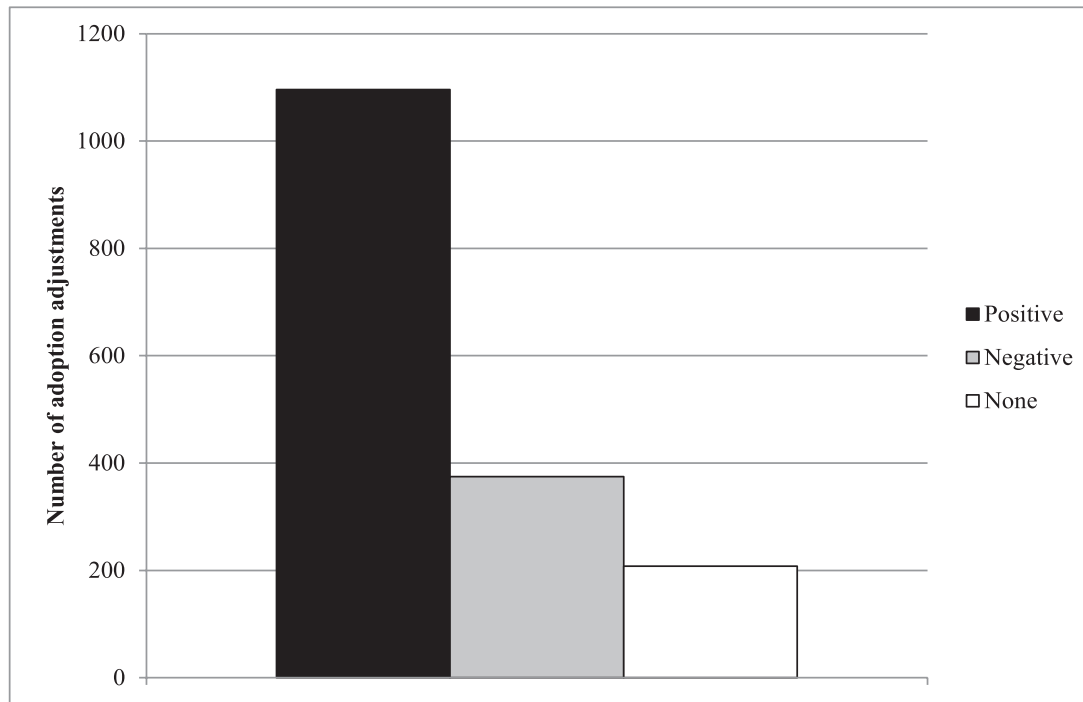
Finally, we present these ratios for those firms most likely affected by FIN 48. Because many firms in our sample do not appear to face material tax uncertainty (Table 1, Panel B), we begin by isolating a subsample of firms we expect do face material income tax uncertainty and, therefore, are most affected by FIN 48. We identify this subsample of 1,618 firms (7,416 firm-years) by requiring firms to report: (1) a non-zero UTB balance every year, (2) a non-zero portion of the reserve balance that will affect the ETR, and (3) additions to the reserve for at least half of the years in our sample period. We believe these criteria reflect recurring material tax uncertainty most likely to affect reported tax expense.

We then identify firms most likely affected by: (1) the inability to consider detection risk, (2) the inability to offset positions across jurisdictions, and (3) the inability to offset positions within a jurisdiction. We identify firms affected by the inability to consider detection risk by looking at firms that consistently report positions lapsing in their tabular roll-forward. We identify firms affected by the inability to offset positions across jurisdictions by looking at multinational firms in high-tech industries with above-median levels of foreign sales and research and development expenditures. These firms are likely to engage in cross-country transfer pricing that can create tax uncertainty in multiple jurisdictions. We identify firms affected by the inability to offset positions within a jurisdiction by looking at firms that report two or more uncertain tax positions on IRS Schedule UTP.

We present ratios separately for each of these groups of firms in Table 2, Panel C. For firms most likely affected by detection risk, $LAPSES$ are the largest component of reserve releases, as expected. In each subsample, the proportion of the

¹³ Using a regression methodology, [Ciconte et al. \(2015\)](#) estimate that approximately \$0.67 of UTB in year t is paid out through year $t+5$. The 95 percent confidence interval for the parameter estimate is approximately \$0.13–\$1.20, which contains our estimate.

FIGURE 1
FIN 48 Adoption Adjustments



This figure presents descriptive data on FIN 48 adoption adjustments for 1,679 firms included in the Audit Analytics Revisions database with non-missing data. A positive (negative) adjustment implies that a firm increased (decreased) its existing tax reserve. The figure shows the distribution of firms that increased, decreased, or made no change to the tax reserve when adopting FIN 48.

reserve that unwinds via settlements with taxing authorities is less than 30 percent over a three-year horizon. Despite the measurement issue described above relating to the inability to include cash refunds from other jurisdictions in the roll-forward data, we find the lowest settlement ratio for firms most likely affected by this criterion.

V. PRE- VERSUS POST-FIN 48: PREDICTIVE ABILITY OF TAX EXPENSE

We design our empirical tests to examine whether the predictive ability of income tax expense changed with the implementation of FIN 48. To illustrate how FIN 48 potentially altered the predictive ability of tax expense, Figure 1 presents information about firms' adoption adjustments. These adjustments provide a direct way to observe changes in tax reserves arising from the adoption of FIN 48.

Using 1,679 disclosures collected by Audit Analytics, Figure 1 shows that firms were more likely to increase their reserves (65.3 percent) than to decrease their reserves (22.3 percent) upon adopting FIN 48. This distribution is similar to the results presented in [Blouin et al. \(2007\)](#) for a smaller sample of firms. However, we are unable to conclude from this simple observation whether the positive adjustments arose from firms maintaining deficient reserves prior to FIN 48, from FIN 48 requiring excess reserves, or both. We also note that these adjustments do not provide us with insight as to any particular aspect of FIN 48 that prompted the adjustment. We explore these issues next.

Changes in Income Tax Expense when Tax Reserves Unwind

Our first test of how the ability of income tax expense to predict future cash tax outflows changed subsequent to FIN 48 uses a subsample of firms for which we have IRS settlement data. All else equal, the effect of releasing a reserve on a firm's tax expense depends on the cash flow impact of the actual outcome relative to the amount reserved. The simplest example is a reserve that unwinds because the statute of limitations lapses without the position being audited. A statute lapse decreases tax expense because it reverses the entire reserve with a corresponding decrease to tax expense. For a position that is audited, the actual outcome involves a cash settlement that could be greater than, equal to, or less than the reserve associated with that

position. If the reserve is greater than (less than) the settlement, then releasing the excess reserve decreases (increases) tax expense. Thus, observing a change in how settlements affect tax expense from pre- to post-FIN 48 provides evidence that FIN 48 changed the way income tax expense maps into future cash tax outflows.

To test our hypothesis, we estimate the following pooled ordinary least squares (OLS) regression on a sample of observations from 2002 to 2011:

$$\begin{aligned} \text{ChgETR} = & \beta_0 + \beta_1 \text{SETTLEIND} + \beta_2 \text{FIN48IND} + \beta_3 \text{SETTLEIND} * \text{FIN48IND} + \beta_4 \text{ChgR\&D} + \beta_5 \text{ChgAdv} + \beta_6 \text{ChgSGA} \\ & + \beta_7 \text{ChgCapex} + \beta_8 \text{ChgLeverage} + \beta_9 \text{ChgForeignInd} + \beta_{10} \text{ChgNOLInd} + \beta_{11} \text{ChgIntangibles} \\ & + \beta_{12} \text{ChgPP\&E} + \beta_{13} \text{ChgPT_ROS} + \varepsilon \end{aligned} \quad (1)$$

The dependent variable (*ChgETR*) is the one-year change in GAAP ETR from $t-1$ to t , defined as total tax expense (Compustat TXT) divided by pre-tax earnings (Compustat IB plus TXT). We acknowledge that not every reserve release affects tax expense.¹⁴ For example, reserve releases related to timing differences, excess tax deductions from stock compensation, or items that affect other comprehensive income impact other parts of the financial statements without affecting tax expense from continuing operations. We provide journal entries related to these positions in Appendix A. However, because the proportion of the reserve impacting the ETR is 69 (83) percent at the mean (median) in our sample, we believe that examining changes in the ETR upon settlement provides a powerful test of our hypothesis because the vast majority of uncertain tax positions will affect the ETR upon resolution. Moreover, there is no reason to believe that there are systematic differences in how these items were handled by firms before versus after FIN 48. However, for completeness, we estimate Equation (1) after deleting firms disclosing that none of their reserve amount would affect the ETR upon resolution of uncertainty and our results are unchanged.

We set *SETTLEIND* equal to 1 if the firm settles a position with the IRS in year t (per the IRS), and 0 otherwise.¹⁵ The sign of the coefficient on *SETTLEIND* tells us qualitatively how tax reserves compare to actual settlement outcomes. A negative coefficient implies that the reserve is greater than the cash outflow, whereas a positive coefficient implies that the reserve is lower than the cash outflow. An insignificant coefficient is consistent with empirical evidence prior to FIN 48 (Gleason and Mills 2002, 2011) that firms are generally “adequately” reserved at settlement, whereas a positive (negative) coefficient implies that firms were generally under- (over-) reserved prior to FIN 48. *FIN48IND* is equal to 1 for the period 2007 through 2011, and 0 otherwise.

Our variable of interest is *SETTLEIND * FIN48IND*, which captures the differential effect of IRS settlements on tax expense after FIN 48 relative to before FIN 48. This interaction term captures the shift in the mean prediction error (i.e., reserve different from actual outcome) after FIN 48. If FIN 48 increased the ability of tax expense to predict future cash tax outflows, then we expect the sign on the interaction to be the opposite of the sign on the main effect of *SETTLEIND*, suggesting a shift in the mean prediction error toward zero. A negative coefficient on the interaction term implies more excess reserves (fewer deficient reserves), whereas a positive coefficient implies fewer excess reserves (more deficient reserves) post-FIN 48. Our selected control variables are defined as one-year changes from $t-1$ to t (see Dyreng, Hanlon, and Maydew 2010; Gupta and Newberry 1997; Mills, Erickson, and Maydew 1998; Rego 2003). We include year and industry fixed effects measured at the two-digit SIC level.

Results

Table 3 reports results from estimating Equation (1). Before reporting the test of our hypothesis in Column (4), we validate our model in Columns (1) through (3). In Column (1), we show how lapses affect the ETR. All else equal, lapses should be associated with a decrease in the ETR because the entire reserve for a position that lapses reverses as a reduction to tax expense. We set *LAPSEIND* equal to 1 if the firm reports a non-zero amount as a lapse in its FIN 48 roll-forward, and 0 otherwise. As expected, we estimate a negative coefficient on *LAPSEIND*. The coefficient estimate of -0.018 suggests that ETRs, on average, decrease by 1.8 percentage points in the year of a statute lapse. This result provides comfort that our test is sufficiently powerful to detect the effect of reserves on income tax expense when they do not map perfectly into future tax cash flows.

In Table 3, Column (2), we set *SETTLEIND(FIN48)* equal to 1 for all years in which the firm reports an amount in the settlement line of the FIN 48 roll-forward, and 0 otherwise. We estimate a coefficient of -0.015 , which suggests that ETRs, on

¹⁴ For parsimony, we refer to tax expense from continuing operations as “income tax expense.” We acknowledge that this amount (TXT) excludes income tax expense reported elsewhere in the financial statements.

¹⁵ We use an indicator variable instead of a continuous measure of settlements because the effect of a settlement on income tax expense depends not on the magnitude of the settlement amount, but on the difference between the settlement amount and the reserve amount.

TABLE 3
Analysis of Changes in Firms' Effective Tax Rates upon IRS Settlements

	Dependent Variable = $ChgETR_{i,t}$			
	2007–2011 <i>LAPSEIND</i> (1)	2007–2011 <i>SETTLEIND</i> (<i>FIN48</i>) (2)	2007–2011 <i>SETTLEIND</i> (<i>IRS</i>) (3)	2002–2011 <i>SETTLEIND</i> (<i>IRS</i>) (4)
Intercept $_{i,t}$	0.041*** (18.57)	0.039*** (18.36)	0.037*** (18.99)	0.032*** (16.82)
<i>LAPSEIND</i> $_{i,t}$	-0.018*** (-5.31)			
<i>SETTLEIND</i> $_{i,t}$		-0.015*** (-4.25)	-0.015*** (-3.45)	-0.024*** (-5.64)
<i>FIN48IND</i> $_{i,t}$				0.004 (1.62)
<i>SETTLEIND</i> * <i>FIN48IND</i> $_{i,t}$				0.009 (1.55)
<i>ChgR&D</i> $_{i,t}$	0.321** (2.3)	0.316** (2.26)	0.321** (2.3)	0.198** (2.09)
<i>ChgAdv</i> $_{i,t}$	-0.265 (-0.67)	-0.268 (-0.67)	-0.272 (-0.68)	-0.218 (-0.84)
<i>ChgSGA</i> $_{i,t}$	-0.104** (-2.02)	-0.101** (-1.96)	-0.11** (-2.15)	-0.164*** (-4.62)
<i>ChgCapex</i> $_{i,t}$	-0.057** (-2.57)	-0.058*** (-2.6)	-0.058*** (-2.62)	-0.024 (-1.53)
<i>ChgLeverage</i> $_{i,t}$	-0.044** (-1.98)	-0.043* (-1.95)	-0.044* (-1.95)	-0.02 (-1.37)
<i>ChgForeignInd</i> $_{i,t}$	0.007 (0.77)	0.007 (0.77)	0.007 (0.79)	0.003 (0.48)
<i>ChgNOLInd</i> $_{i,t}$	-0.01* (-1.67)	-0.01* (-1.69)	-0.011* (-1.72)	-0.006 (-1.52)
<i>ChgIntangibles</i> $_{i,t}$	0.05 (1.5)	0.049 (1.44)	0.049 (1.46)	0.051** (2.27)
<i>ChgPP&E</i> $_{i,t}$	-0.008 (-0.3)	-0.006 (-0.23)	-0.006 (-0.25)	-0.011 (-0.65)
<i>ChgPT_ROS</i> $_{i,t}$	0.123*** (9.46)	0.124*** (9.54)	0.125*** (9.59)	0.128*** (13.5)
No. Obs.	8,479	8,479	8,479	16,436
Adj. R ²	1.86%	1.74%	1.67%	2.10%

***, **, * Denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 3 presents the results for OLS regressions of changes in effective tax rates when firms pay settlements to the IRS. Columns (1) through (3) validate our model and Column (4) presents our result. Coefficients of interest are in bold and t-statistics appear in parentheses below the coefficients. *Chg* denotes a change from $t-1$ to t . Annual Compustat mnemonics are provided in parentheses in variable definitions.

Variable Definitions:

ETR = tax expense scaled by pre-tax income ($TXT/(IB + TXT)$);

LAPSEIND = 1 when a statute lapse is disclosed in the FIN 48 tabular roll-forward, and 0 otherwise;

SETTLEIND (FIN 48) = 1 when a settlement is disclosed in the FIN 48 tabular roll-forward available from 2007 through 2011, and 0 otherwise;

SETTLEIND (IRS) = 1 when a settlement is disclosed in IRS settlements data available from 2002 through 2011, and 0 otherwise;

FIN48IND = 1 for fiscal years ending after the effective date of FIN 48, and 0 otherwise;

R&D = research and development expenditures (set to 0 if missing), scaled by sales ($XRD/SALE$);

Adv = advertising expenses (set to 0 if missing), scaled by sales ($XAD/SALE$);

SGA = selling, general, and administrative expenses (set to 0 if missing), scaled by sales ($XSGA/SALE$);

Capex = capital expenditures (set to 0 if missing), scaled by gross property, plant, and equipment ($CAPX/PPEGT$);

Leverage = total debt scaled by assets ($(DLC + DLTT)/AT$);

ForeignInd = 1 if the absolute value of pre-tax foreign income (PIFO) is non-zero, and 0 otherwise;

NOLInd = 1 if the firm reports positive tax net operating loss carryforwards (TLCF), and 0 otherwise;

Intangibles = intangible assets scaled by assets ($INTAN/AT$);

PP&E = gross PPE scaled by assets ($PPEGT/AT$); and

PT_ROS = pre-tax income scaled by sales ($(IB + TXT)/SALE$).

average, decrease by 1.5 percentage points in the year of a settlement.¹⁶ These results are consistent with our earlier analysis documenting that, on average, firms pay only a fraction of every dollar of reserve upon settlement with taxing authorities. In Column (3), we replace *SETTLEIND(FIN48)* with *SETTLEIND(IRS)*, an indicator set equal to 1 for all years in which the firm settles with the IRS. We do this to confirm that firms account for IRS settlements in the same year that they are reported in the IRS database. This is important because IRS settlements are our key test variable in Equation (1). We again find that ETRs decrease by 1.5 percentage points in the year of a settlement.

Having validated our model, we report results from Equation (1) in Table 3, Column (4). The coefficient on *SETTLEIND(IRS)* is significantly negative, suggesting that reserves exceeded cash settlements prior to FIN 48. This result stands in contrast to Gleason and Mills (2011), who conclude that firms generally maintain “adequate” reserves for IRS contingencies prior to FIN 48.¹⁷ Although positive, the coefficient on *SETTLEIND(IRS) * FIN48IND* is not significantly different from zero at conventional levels (two-tailed p-value = 0.12) and the magnitude is small enough that reserves remain overstated relative to cash settlements after FIN 48. Thus, we find no evidence that FIN 48 significantly changed the ability of income tax expense to predict future tax cash flows, at least with respect to firms’ accounting for federal tax uncertainty.

Changes in Predictive Ability of Tax Expense for Future Cash Taxes Paid

The settlements analysis presented in Table 3 allows us to evaluate the change in the ability of tax expense to predict future tax cash flows by testing what happens in the period that tax uncertainty is resolved. However, a limitation of this test is that it speaks only to settlements with the IRS. Because we do not observe detailed reserve information prior to FIN 48, we are unable to isolate *firm-years* prior to FIN 48 in which firms report other changes to the reserve. Therefore, we develop an alternative method to evaluate whether tax expense is less predictive of future cash flows after FIN 48 regardless of IRS settlements.

We adopt the methodology from Kim and Kross (2005) to examine time-series changes in the ability of tax expense to predict future cash tax outflows. Kim and Kross (2005) estimate annual cross-sectional regressions and compare the time-series trend in the explanatory power measured by R^2 to determine whether the predictive value of current earnings is changing over time. This approach to exploring changes in the explanatory power of one variable for another was first introduced by Theil (1971) and was later used in accounting studies (e.g., Easton 1985; Collins, Maydew, and Weiss 1997; Kim and Kross 2005).

We estimate the following set of annual cross-sectional regressions from 2002–2011 to examine the relation between current-period cash taxes paid, current-period tax expense, and future cash taxes paid:

$$\text{TaxesPaid}_{i,t+n} = a_0 + a_1 \text{TaxExpense}_{i,t} + a_2 \text{TaxesPaid}_{i,t} + w_{i,t} \quad (2a)$$

$$\text{TaxesPaid}_{i,t+n} = b_0 + b_1 \text{TaxesPaid}_{i,t} + x_{i,t} \quad (2b)$$

$$\text{TaxesPaid}_{i,t+n} = c_0 + c_1 \text{TaxExpense}_{i,t} + y_{i,t} \quad (2c)$$

TaxesPaid is cash taxes paid (TXPD) and *TaxExpense* is tax expense (TXT). Consistent with Kim and Kross (2005), we scale all variables in the model by total assets (AT). We obtain R^2 s for each equation for each year from 2002 through 2011. Because we are interested in the incremental explanatory power of tax expense for future cash taxes paid (over and above the explanatory power of current-period cash taxes paid), our focus is on the difference in R^2 between Equations (2b) and (2a). We estimate the incremental R^2 of tax expense on time period indicator variable *FIN48IND* to evaluate whether there is a trend in this difference from the pre-FIN 48 period to the post-FIN 48 period:

$$R^2_{v,t} = d_0 + d_1 \text{FIN48IND}_t + z_t, \quad (2d)$$

A negative coefficient on d_1 is consistent with tax expense having a reduced ability to predict future cash tax payments after FIN 48. This is true regardless of whether year t is the year of accrual or the year of reversal.

We estimate this series of equations using our full sample of firms and subsamples of firms most likely affected by FIN 48. Observing significant changes in the predictive ability of tax expense for future tax cash flows in the FIN 48 regime for these subsamples provides evidence consistent with differences across time being attributable to FIN 48 rather than other factors (e.g., changes in accounting for stock options, etc.). We first focus on firms that consistently report positions lapsing due to

¹⁶ Results are robust to simultaneously including *LAPSEIND* and *SETTLEIND* in the regression. Results are also robust when we include an additional control in Column (2) to capture additions to the reserve arising in the year of the settlement. Firms can revise their assessment of reserves on open positions either because of their own settlement experience or the settlement experience of another taxpayer. For example, in 2008, Wachovia increased their reserve by \$1.2B for positions taken in prior years. The increase resulted from a U.S. Court of Appeals ruling against BB&T disallowing income tax benefits associated with lease in-lease out transactions. Wachovia claimed tax benefits from sale in-lease out transactions in the early 2000s, and in applying FIN 48, concluded that the Court decision against BB&T for a similar issue constituted new facts and circumstances that required them to reevaluate their reserves.

¹⁷ As there are a number of differences between our study and theirs, it is not possible to ascertain the reason for the different results. Their sample size is less than 3 percent of our sample size and their sample period (2000–2002) pre-dates the Sarbanes-Oxley Act of 2002.

expiration of the statute of limitations. For these firms, the inability to take detection risk into consideration when establishing reserves is likely to overstate income tax expense relative to future tax cash flows.¹⁸ Second, we focus on multinational firms in high-tech industries with high levels of foreign sales and research and development (R&D), which are likely engaged in cross-country transfer pricing and, therefore, most affected by the inability to offset positions across jurisdictions. Finally, we focus on firms that report more than one position on Schedule UTP, as these firms are most likely affected by the inability to offset positions within a jurisdiction.¹⁹

We measure the dependent variables over two distinct time periods. We begin by using cash taxes paid in year $t+1$ as the dependent variable. This methodology is consistent with accounting and tax research examining how well current-period accruals map into one-year-ahead cash flows (e.g., Collins et al. 1997; Kim and Kross 2005; Choudhary, Koester, and Shevlin 2016). This methodology also allows us to address regulators' concerns that, prior to FIN 48, managers were prematurely recognizing uncertain tax benefits because they were waiting until a settlement was probable to accrue a corresponding reserve. If managers accrued reserves for pending settlements in the year preceding the settlement prior to FIN 48, and if the rules of FIN 48 curb this behavior by requiring reserves to be accrued in the period the uncertain tax position is claimed, then we expect a decline in the ability of current-period tax expense to predict one-year-ahead tax cash flows as a result of FIN 48.

One potential benefit of FIN 48, however, is that it requires firms to accrue reserves for potential future tax cash flows in the year the associated tax benefits are claimed with the intent to provide financial statement users with more information about tax cash flows beyond year $t+1$. Therefore, we reestimate the above system of equations measuring the dependent variable beyond $t+1$. Specifically, we extend the time period to the future year in which tax uncertainty associated with the accrual in year t is most likely to be resolved. This analysis allows us to examine whether FIN 48 enhanced the predictive ability of income tax expense for tax cash flows beyond year $t+1$. For firms most affected by the inability to consider detection risk, we use cash taxes paid in year $t+3$ as the dependent variable because the statute of limitations for federal tax positions and for a majority of state tax positions is three years. For firms most affected by the inability to offset audited positions either within or across jurisdictions, we use cash taxes paid in year $t+5$ as the dependent variable, consistent with findings in Gleason and Mills (2011) that IRS examinations are concluded an average of 4.6 years after the year for which the return was filed.

Results

Tables 4 and 5 present our results. Table 4 presents results using $TaxesPaid_{i,t+1}$ as the dependent variable. In Panel A we estimate the series of equations using the sample of 16,241 observations and find no evidence of a significant change in the predictive ability of income tax expense for one-year-ahead cash taxes paid as a result of FIN 48 (two-tailed p-value = 0.16). Thus, it does not appear that FIN 48 materially affected the ability of current-period tax expense to predict one-year-ahead tax cash flow for firms with material tax uncertainty, on average. These results do not provide strong evidence that firms accrued reserves for pending settlements in the year preceding the settlement, on average, prior to FIN 48.

In Table 4, Panel B we focus on firms that consistently report positions lapsing due to expiration of the statute of limitations. We estimate a significant decline in the predictive ability of tax expense among this subset of firms (-0.04 , two-tailed p-value = 0.08).²⁰ In Panel C we focus on multinational firms in high-tech industries with high levels of foreign sales and R&D. We estimate a significant decline in the predictive ability of tax expense among this subset of firms (-0.04 , two-tailed p-value = 0.07). Finally, in Panel D we focus on firms that report more than one position on Schedule UTP. We find no evidence of a significant change in the predictive ability of tax expense among this subset of firms (-0.03 , two-tailed p-value = 0.29). In untabulated analysis, we also find no significant change in the predictive ability for a control sample of firms not facing material income tax uncertainty. Thus, it appears that FIN 48 reduced the predictive ability of current-period tax expense for one-year-ahead cash taxes paid for some subsets of firms most likely affected by the measurement and recognition criteria in the standard.

We report results in Table 5 from subsample analyses that extend the time period in which we measure the dependent variable to periods beyond $t+1$, and obtain a similar pattern of results. We estimate a significant decline in the ability of current-period tax expense to predict three-year-ahead cash taxes paid for firms most likely affected by the inability to consider detection risk (-0.04 , two-tailed p-value = 0.04). For firms most likely affected by the inability to offset positions across jurisdictions, we estimate a significant decline in the ability of current-period tax expense to predict five-year-ahead cash taxes paid (-0.05 , two-tailed p-value

¹⁸ Because we identify firms most likely affected by the inability to consider detection risk using FIN 48 data, we examine adoption adjustment data to validate the sample that we identify. We find that more of these firms (68.9 percent) reported reserve increases than decreases upon adoption compared to other firms (62.8 percent), and that the median (mean) adjustment as a percentage of beginning reserve balance is 21.5 percent (51.0 percent) for these firms and only 15.8 percent (35.8 percent) for other firms. This difference of 5.7 (15.2) percentage points is significant at 1 percent (5 percent).

¹⁹ When we run our analyses with more restrictive measures of the inability to offset within a jurisdiction (firms reporting more than two positions on Schedule UTP or firms reporting more than three positions on Schedule UTP), our results are unchanged.

²⁰ We obtain a similar pattern of results when evaluating the change in the average coefficient on $TaxExpense$ (a_1). To simplify the exposition and presentation of our results, we report only R^2 in Table 4.

TABLE 4
Analysis of Changes in Predictive Value of Tax Expense for One-Year-Ahead Cash Taxes Paid

Panel A: Full Sample (n = 16,241)

Period	n	(2a) <i>TaxExpense</i> and <i>TaxesPaid</i>	(2b) <i>TaxesPaid</i>	(2c) <i>TaxExpense</i>	(2a) – (2c) <i>Incr. R²</i> <i>TaxesPaid</i>	(2a) – (2b) <i>Incr. R²</i> <i>TaxExpense</i>
Pre-FIN 48	1,564	0.58	0.49	0.54	0.04	0.09
Post-FIN 48	1,684	0.59	0.52	0.56	0.03	0.07
Difference					–0.01	–0.02
p-value on <i>FIN48IND</i> (d_1) from Equation (2d)					0.19	0.16

Panel B: Firms with Inability to Consider Detection Risk (n = 4,682)

Period	n	(2a) <i>TaxExpense</i> and <i>TaxesPaid</i>	(2b) <i>TaxesPaid</i>	(2c) <i>TaxExpense</i>	(2a) – (2c) <i>Incr. R²</i> <i>TaxesPaid</i>	(2a) – (2b) <i>Incr. R²</i> <i>TaxExpense</i>
Pre-FIN 48	481	0.45	0.36	0.40	0.05	0.09
Post-FIN 48	468	0.53	0.48	0.45	0.08	0.05
Difference					0.03	–0.04
p-value on <i>FIN48IND</i> (d_1) from Equation (2d)					0.13	0.08

Panel C: Firms with Inability to Offset Across Jurisdictions (n = 2,332)

Period	n	(2a) <i>TaxExpense</i> and <i>TaxesPaid</i>	(2b) <i>TaxesPaid</i>	(2c) <i>TaxExpense</i>	(2a) – (2c) <i>Incr. R²</i> <i>TaxesPaid</i>	(2a) – (2b) <i>Incr. R²</i> <i>TaxExpense</i>
Pre-FIN 48	214	0.45	0.36	0.40	0.05	0.09
Post-FIN 48	233	0.53	0.48	0.45	0.08	0.05
Difference					0.03	–0.04
p-value on <i>FIN48IND</i> (d_1) from Equation (2d)					0.13	0.07

Panel D: Firms with Inability to Offset Within a Jurisdiction (n = 4,687)

Period	n	(2a) <i>TaxExpense</i> and <i>TaxesPaid</i>	(2b) <i>TaxesPaid</i>	(2c) <i>TaxExpense</i>	(2a) – (2c) <i>Incr. R²</i> <i>TaxesPaid</i>	(2a) – (2b) <i>Incr. R²</i> <i>TaxExpense</i>
Pre-FIN 48	345	0.61	0.53	0.55	0.06	0.08
Post-FIN 48	358	0.60	0.56	0.54	0.06	0.04
Difference					0.00	–0.03
p-value on <i>FIN48IND</i> (d_1) from Equation (2d)					0.93	0.29

Table 4 presents the average incremental R^2 s from estimating Equations (2a)–(2c), which are annual cross-sectional regressions covering the period 2002–2011 in four subsamples of firms. Panel A presents the results for the full sample derived in Panel A of Table 1. Panels B through D present the results for various subsamples of firms most affected by FIN 48 criteria. We define firms affected by the inability to consider detection risk as firms that consistently report positions lapsing in their tabular roll-forward (i.e., report a lapse in at least four of the five years in the roll-forward data). We define firms affected by the inability to offset positions across jurisdictions as multinational firms in high-tech industries with above-median levels of foreign sales and research and development expenditures. We define firms affected by the inability to offset positions within a jurisdiction as firms that report two or more uncertain tax positions on IRS Schedule UTP. The n reported is the average number of firms included in the regression each year during that period. The bottom right corner of each panel reports the p-value on the *FIN48IND* coefficient in Equation (2d). Annual Compustat mnemonics are provided in parentheses in variable definitions.

Full Model: $TaxesPaid_{i,t+1} = a_0 + a_1TaxExpense_{i,t} + a_2TaxesPaid_{i,t} + w_{i,t}$ (2a)

Taxes Paid: $TaxesPaid_{i,t+1} = b_0 + b_1TaxesPaid_{i,t} + x_{i,t}$ (2b)

Tax Expense: $TaxesPaid_{i,t+1} = c_0 + c_1TaxExpense_{i,t} + y_{i,t}$ (2c)

Trend in R^2 : $R^2_{v,t} = d_0 + d_1FIN48IND_t + z_t$ (2d)

Variable Definitions:

TaxExpense = total tax expense (TXT) scaled by total assets (AT);

TaxesPaid = cash taxes paid (TXPD) scaled by total assets (AT); and

FIN48IND = 1 for fiscal years ending after the effective date of FIN 48, and 0 otherwise.

TABLE 5
Analysis of Changes in Predictive Value of Tax Expense for Future Cash Taxes Paid

Panel A: Firms with Inability to Consider Detection Risk (n = 3,832)

<u>Period</u>	<u>n</u>	(2a) <u>TaxExpense and TaxesPaid</u>	(2b) <u>TaxesPaid</u>	(2c) <u>TaxExpense</u>	(2a) – (2c) <u>Incr R² TaxesPaid</u>	(2a) – (2b) <u>Incr R² TaxExpense</u>
Pre-FIN 48	402	0.42	0.36	0.40	0.02	0.06
Post-FIN 48	365	0.53	0.48	0.49	0.03	0.04
Difference					0.01	-0.02
p-value on <i>FIN48IND</i> (d_1) from Equation (2d)					0.57	0.04

Panel B: Firms with Inability to Offset Across Jurisdictions (n = 1,418)

<u>Period</u>	<u>n</u>	(2a) <u>TaxExpense and TaxesPaid</u>	(2b) <u>TaxesPaid</u>	(2c) <u>TaxExpense</u>	(2a) – (2c) <u>Incr R² TaxesPaid</u>	(2a) – (2b) <u>Incr R² TaxExpense</u>
Pre-FIN 48	180	0.26	0.19	0.24	0.02	0.08
Post-FIN 48	173	0.24	0.23	0.19	0.05	0.01
Difference					0.03	-0.07
p-value on <i>FIN48IND</i> (d_1) from Equation (2d)					0.09	0.06

Panel C: Firms with Inability to Offset Within a Jurisdiction (n = 2,165)

<u>Period</u>	<u>n</u>	(2a) <u>TaxExpense and TaxesPaid</u>	(2b) <u>TaxesPaid</u>	(2c) <u>TaxExpense</u>	(2a) – (2c) <u>Incr R² TaxesPaid</u>	(2a) – (2b) <u>Incr R² TaxExpense</u>
Pre-FIN 48	264	0.36	0.31	0.34	0.02	0.05
Post-FIN 48	281	0.35	0.32	0.33	0.02	0.03
Difference					0.00	-0.02
p-value on <i>FIN48IND</i> (d_1) from Equation (2d)					0.84	0.13

Table 5 presents the average incremental R^2 s from estimating Equations (2a)–(2c), which are annual cross-sectional regressions covering the period 2002–2011, in three subsamples of firms. We define firms affected by the inability to consider detection risk as firms that consistently report positions lapsing in their tabular roll-forward (i.e., report a lapse in at least four of the five years in the roll-forward data) and expect tax uncertainty for these firms to be resolved in $t+3$ when the federal and most state statutes of limitations for tax assessment lapse. We define firms affected by the inability to offset positions across jurisdictions as multinational firms in high-tech industries with above-median levels of foreign sales and research and development expenditures. We define firms affected by the inability to offset positions within a jurisdiction as firms that report two or more uncertain tax positions on IRS Schedule UTP. For these two subsets of firms, we expect tax uncertainty to be resolved in $t+5$. The n reported is the average number of firms included in the regression each year during that period. The bottom right corner of each panel reports the p-value on the *FIN48IND* coefficient in Equation (2d). Annual Compustat mnemonics are provided in parentheses.

Full Model: $TaxesPaid_{i,t+n} = a_0 + a_1TaxExpense_{i,t} + a_2TaxesPaid_{i,t} + w_{i,t}$ (2a)

Taxes Paid: $TaxesPaid_{i,t+n} = b_0 + b_1TaxesPaid_{i,t} + x_{i,t}$ (2b)

Tax Expense: $TaxesPaid_{i,t+n} = c_0 + c_1TaxExpense_{i,t} + y_{i,t}$ (2c)

Trend in R^2 : $R^2_{v,t} = d_0 + d_1FIN48IND_t + z_t$ (2d)

Variable Definitions:

TaxExpense = total tax expense (TXT) scaled by total assets (AT);

TaxesPaid = cash taxes paid (TXPD) scaled by total assets (AT); and

FIN48IND = 1 for fiscal years ending after the effective date of FIN 48, and 0 otherwise.

= 0.06). Finally, for firms most likely affected by the inability to offset positions within a jurisdiction, we fail to find strong evidence of a decline in the ability of current-period tax expense to predict five-year-ahead cash tax flows (-0.02, two-tailed p-value = 0.13). Overall, the results show no improvement in the relevance of tax expense, but instead suggest a significant decline in the ability of income tax expense to predict future cash tax flows for at least some firms.²¹

²¹ Our results are robust to using current tax expense (TXC) instead of total tax expense (TXT).

In untabulated analysis, we find no significant difference in the incremental explanatory power of tax expense prior to FIN 48 between our three subsamples of firms and other firms in the IRS database. However, after FIN 48, the incremental explanatory power of tax expense is significantly worse for our three subsamples. In the final section, we explore whether financial statement users appear to recognize these differences post-FIN 48 and differentially value tax expense for firms whose income tax expense is most likely affected by FIN 48.

Valuation of Tax Expense for Firms Affected by FIN 48 Criteria

Estimating that tax expense is less predictive of future tax cash flows after FIN 48 for our three subsamples of firms relative to firms not likely affected by FIN 48 suggests that income tax is now less relevant for some firms. However, estimating that income tax expense itself is less predictive of future tax cash flows may not be a problem if FIN 48 disclosures allow financial statement users to recognize that FIN 48 reserves are overstated and “adjust FIN 48 information for estimates of the differences between (a) preparers’ assessments using the more-likely-than-not threshold and (b) the possible results of the settlement process” (FAF 2012). Therefore, our final analysis examines whether investors can assess when the relevance of income tax expense is lower and incorporate those assessments into their estimates of firm value. We evaluate whether investors differentially value firms’ tax expense when firms are most likely to be affected by the controversial criteria of FIN 48:

$$MVE = \beta_0 + \beta_1 BVE + \beta_2 PreTaxIncome + \beta_3 TaxExpense + \beta_4 SubSample + \beta_5 BVE * SubSample + \beta_6 PreTaxIncome * SubSample + \beta_7 TaxExpense * SubSample + \varepsilon_i \quad (3)$$

Equation (3) expands the model from Thomas and Zhang (2013) by interacting each valuation coefficient with *SubSample*, which is an indicator variable set equal to 1, in turn, for firms most affected by the inability to consider detection risk, the inability to offset positions across jurisdictions, and the inability to offset positions within a jurisdiction.²² *MVE* is the market value of equity three months after a firm’s fiscal year-end. *BVE* is the firm’s book value of equity (CEQ) at the end of the fiscal year and is included to capture future expected profitability, thus allowing tax expense to reflect value lost to taxing authorities rather than serve as a proxy for future profitability (Thomas and Zhang 2013). *PreTaxIncome* is pre-tax income, calculated as earnings before extraordinary items (IB) plus total tax expense (TXT). *TaxExpense* is total tax expense (TXT).

Our coefficient of interest is the interaction term *TaxExpense * SubSample*. Thomas and Zhang (2013) estimate a negative coefficient on *TaxExpense*, after controlling for book value of equity and pre-tax income, implying that the level of tax expense is negatively related to levels of expected future cash flows. If investors correctly determine when excess reserves are incorporated into firms’ tax expense accruals, then the level of tax expense should be less negatively related to levels of expected future cash outflows. Therefore, we would expect a positive coefficient on *TaxExpense * SubSample*. On the other hand, if investors do not distinguish among these two types of firms, then the coefficient on *TaxExpense * SubSample* should be no different from zero.

Results

We report our results for the market valuation of tax expense in Table 6. We replicate the results from Thomas and Zhang (2013) in Column (1), and we estimate Equation (3) for our three subsamples of firms most likely affected by FIN 48 in Columns (2) through (4).

We estimate that the coefficient on *TaxExpense * SubSample* is not significantly different from zero in any of our subsamples, suggesting that even though tax expense is less predictive of future tax cash flows for firms most affected by the controversial criteria of FIN 48, investors do not appear to use information contained in FIN 48 disclosures to adjust firm value. That is, although FIN 48 disclosures provide some information about the extent to which firms’ tax reserves unwind via lapses, settlements, and changes in judgment, thereby indicating excess reserves with no cash flow effect, this information does not alter investors’ valuation coefficient on *TaxExpense*. We recognize, however, that we may not be able to detect valuation effects of FIN 48 so soon after the implementation of FIN 48.

VI. CONCLUSIONS AND IMPLICATIONS

This study evaluates how well FIN 48 reserves map into future cash settlements and whether FIN 48 enhanced the ability of tax expense to predict future tax cash flows. We use FIN 48 roll-forward data to isolate the outcome of uncertain tax

²² Thomas and Zhang (2013) emphasize the importance of sample selection in evaluating the valuation of tax expense. Accordingly, we limit our sample to firms with positive pretax income, positive tax expense, and positive tax payments to increase the likelihood that investors view tax expense in a matching role rather than a proxy-for-profitability role. We estimate a negative coefficient on *TaxExpense*, consistent with this amount representing value lost to taxing authorities and not an alternative measure of profitability.

TABLE 6
Analysis of the Valuation of Tax Expense

<i>SubSample</i>	Dependent Variable = $MVE_{i,t}$			
	(1)	Detection Risk (2)	Offset Across Jurisdictions (3)	Offset Within Jurisdiction (4)
Intercept $_{i,t}$	820.99*** (4.08)	635.16*** (2.60)	664.70*** (2.59)	786.10*** (3.29)
$BVE_{i,t}$	0.1600*** (2.42)	0.08 (1.01)	-0.05 (0.21)	0.16*** (1.97)
$PreTaxIncome_{i,t}$	12.11*** (24.13)	8.32*** (12.09)	7.71*** (8.98)	6.42*** (8.63)
$TaxExpense_{i,t}$	-13.96*** (9.46)	-13.11*** (6.10)	-9.20 (4.02)	-9.84*** (4.73)
<i>SubSample</i>		-865.30*** (2.23)	-788.81 (1.50)	302.99 (0.64)
$BVE_{i,t} * SubSample$		0.78*** (4.43)	1.32*** (5.36)	0.41*** (2.16)
$PreTaxIncome_{i,t} * SubSample$		3.28*** (3.67)	3.94*** (3.02)	5.36*** (7.42)
$TaxExpense_{i,t} * SubSample$		2.75 (0.32)	-1.67 (0.75)	-3.88 (1.14)
Avg. No. Obs.	1,496	1,071	876	992
Adj. R ²	0.78	0.84	0.82	0.88

***, **, * Denote statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 6 presents the results of tests examining the market valuation of tax expense. t-statistics appear in parentheses below the coefficients. We define firms affected by the inability to consider detection risk as firms that consistently report positions lapsing in their tabular roll-forward (i.e., report a lapse in at least four of the five years in the roll-forward data). We define firms affected by the inability to offset positions across jurisdictions as multinational firms in high-tech industries with above-median levels of foreign sales and research and development expenditures. We define firms affected by the inability to offset positions within a jurisdiction as firms that report two or more uncertain tax positions on IRS Schedule UTP. Annual Compustat mnemonics are provided in parentheses in the variable definitions.

Variable Definitions:

MVE = market value of equity three months after a firm's fiscal year-end from CRSP;

BVE = book value of equity (CEQ) for firm i at the end of fiscal year t ;

$PreTaxIncome$ = pre-tax income, calculated as earnings before extraordinary items (IB) plus total tax expense (TXT) for firm i at the end of fiscal year t ;

and

$TaxExpense$ = total tax expense for firm i at the end of fiscal year t .

avoidance, and estimate that only 24 cents of every dollar of FIN 48 reserves unwind via settlements over the next three years. Our estimate increases to 34 cents over the next four years and 48 cents over the next five years. These data corroborate practitioners' concerns that the uniform criteria in FIN 48 create financial reporting information that does not reflect actual economic outcomes. We next evaluate how FIN 48 *changed* the relevance of income tax expense using two methodologies. In our first analysis using confidential IRS settlement data, we find no evidence that the tax reserve exceeds the actual cash settlement more after FIN 48 than before, which suggests no change in the relation between reserves and cash tax settlements after FIN 48. However, in our second analysis, we find evidence that the ability of tax expense to predict future tax cash outflows *decreased* for firms most likely affected by FIN 48. Further, we find no evidence that investors identify firms with reserves that are more likely to be paid in cash.

Our results provide evidence that despite potential benefits of increasing uniformity and improving disclosure, FIN 48 did not enhance the predictive value of tax expense for future tax cash outflows. We find no evidence supporting the FASB's claim that FIN 48 increased the relevance of accounting for income taxes, which has important implications for standard setters, users, and preparers (FAF 2012; Blouin and Robinson 2014). First, we provide evidence that, in the context of FIN 48, standard setters' focus on reducing discretion may have restricted managers' ability to convey private information about expected outcomes, thereby failing to improve the relevance of accounting information (Schipper 2003). We caution, however, that our

study speaks to only some of the FIN 48 criteria and acknowledge that other elements of FIN 48 might not negatively affect relevance. Second, we develop a parsimonious estimate of the amount of the reserve that unwinds via settlement with taxing authorities using roll-forward data. This measure is useful for researchers and other financial statement users who rely on FIN 48 reserves to assess the risk or future cash tax outflows.

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APPENDIX A

Tabular Roll-Forward Example

This appendix explains how changes in the reserve related to settled positions should be classified in the tabular roll-forward disclosed pursuant to FIN 48 and provides an example (note that FIN 48 termed the tax reserve the unrecognized tax benefit, or UTB):

The following is explained in [Dunbar and McEligot \(2008, A-803\)](#):

The settlement amount of a tax position will usually differ from the recorded amount of the UTB related to that position because judgment is involved in the two-step recognition and measurement process. In preparing the tabular reconciliation of the total amount of UTBs as of the beginning and end of the year, a company should disclose the difference between the UTB and the settlement in the reconciliation as a gross amount of increase or decrease in UTB related to tax positions taken in prior periods. The settlement amount should be disclosed in the reconciliation as the amount of decrease in unrecognized tax benefits related to settlements with taxing authorities.

This same guidance is also provided by [Deloitte \(2008, 1\)](#):

While the particular line items will depend on a company and its circumstances, the tabular reconciliation should include decreases in unrecognized tax benefits relating to settlements with taxing authorities. However, the difference between the FIN 48 liability and the cash settlement should be included in the gross amounts of increases and decreases in unrecognized tax benefits resulting from tax positions taken during the prior period.

Example

In Year 1, a firm settles position A for \$5 in cash, but the amount reserved was \$1. Further, suppose that the same firm, in the same year, settles position B for \$20 in cash, but the amount reserved was \$30. According to practitioner guidance, the journal entries associated with these settlements should appear as follows (the tabular roll-forward classification is in parentheses):

Position A

Debit Tax Expense (Benefit)	\$4	
Credit UTB (<i>PY_ADD</i>)		\$4
Debit UTB (<i>SETTLE</i>)	\$5	
Credit Cash		\$5

Position B

Debit UTB (<i>PY_RED</i>)	\$10	
Credit Tax Expense (Benefit)		\$10
Debit UTB (<i>SETTLE</i>)	\$20	
Credit Cash		\$20

Net effect on tax provision: Tax benefit of \$6

Net effect on cash taxes paid: Taxes paid of \$25

Net effect on reserve or UTB: minus \$31

Amount showing in *SETTLE* in Year 1: minus \$25

Amount showing in *PY_ADD* in Year 1: plus \$4

Amount showing in *PY_RED* in Year 1: minus \$10

Net decrease of \$6 (*PY_RED* + *PY_ADD*) (implies UTB was overstated by \$6)

Note that any changes in the reserve due to new information about open tax positions in Year 1 would be comingled with the \$6 net decrease showing across *PY_ADD* and *PY_RED*.

The resolution of uncertainty from audited positions is reflected in the tabular roll-forward disclosure as both a settlement and a change in estimate. Specifically, the cash payment is reflected as a settlement (*SETTLE*), and the difference between the cash payment and the existing reserve for the position is reflected as an increase or decrease to prior-period positions (*PY_ADD* or *PY_RED*).

The overall effect on the reserve from the resolution of uncertainty from a settlement is a decrease. However, if the position was initially over-reserved, then the settlement should be reflected in the table as two separate decreases—a decrease showing in *PY_RED* and a decrease showing in *SETTLE*. In contrast, if the position was initially under-reserved, then the settlement should be reflected in the table separately as an increase to *PY_ADD* and as a decrease to *SETTLE*.

Changes due to new information should have an equal likelihood of showing up in *PY_RED* versus *PY_ADD*. Overstated reserves should show a decrease in *PY_RED* at settlement. Understated reserves should show an increase in *PY_ADD* at settlement. Setting aside changes due to new information, a reduction in the reserve for any reason other than an actual cash settlement suggests overstatement of the reserve.

Positions that Do Not Affect the Income Tax Provision

The above examples assume that the unrecognized tax benefits relate to positions that would affect the provision for income taxes associated with income from continuing operations (“income tax provision”). ASC 740 requires companies to accrue a provision for income taxes related to continuing operations. Other components of income tax expense, such as those related to discontinued operations or other comprehensive income, are allocated throughout the financial statements. Additionally, tax reserves related to timing differences do not change total tax expense and, therefore, are considered to be positions that would not affect the provision.

The following example is adapted from FIN 48:

Assume a company acquires an intangible asset for \$15 and decides, due to some uncertainty in the Internal Revenue Code, to fully deduct the \$15 for tax purposes in year *t* instead of amortizing it over 15 years. The deductibility of the amount is not in question, only the timing of the deduction is uncertain. Applying FIN 48, the company determines the largest benefit that is more likely than not to be sustained in year *t* is \$1. Assuming a 40% tax rate and \$100 of pre-tax book income with no other book-tax differences, the company would record the following entries at the end of year *t*.

To record the position as taken on the return:

Debit Income tax expense	\$40	
Credit Deferred tax liability		\$6
Credit Income tax payable		\$34

To record the FIN 48 liability:

Debit Deferred tax liability	\$5.6	
Credit UTB (CY_ADD)		\$5.6

The \$5.6 UTB is the difference between the amount claimed and the amount recognized under FIN 48 ($[(\$15 - \$1) * 40 \text{ percent}]$). The deferred tax liability is adjusted to reflect the basis difference in the intangible asset for book purposes (\$15) and for tax purposes (\$14). The total tax provision remains \$40. If the position were disallowed immediately, then the company would reverse the UTB and pay the balance of cash to the IRS.

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