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The predictive ability of tax contingencies for future income tax cash outflows

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Abstract

Prior research shows that contingent liabilities do not accurately predict future cash payments due to the managerial discretion afforded by accounting standards. We examine the extent to which current accounting guidance for a material contingent liability—the reserve for unrecognized tax benefits (UTBs) under Financial Interpretation No. 48 (FIN 48)—generates accruals that are predictive of future income tax cash outflows. We document that UTBs fully unwind as cash tax payments over the subsequent 5 years, suggesting that managers, on average, accurately incorporate their expectations of future tax liabilities. This result persists for firms that are (1) most affected by the implementation of FIN 48, (2) unable to impound detection risk into their reserves, (3) engaged in relatively more ex ante tax avoidance, (4) suspected to have engaged in earnings management through the tax accounts, and (5) subject to plausibly exogenous shocks to tax reporting. Overall, our results suggest that current accounting guidance under FIN 48 for contingent tax liabilities enables managers to accurately report, and financial statement users to reliably predict, future cash obligations.

KEYWORDS
ASC 740, FIN 48, income tax, unrecognized tax benefit

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Capacité prévisionnelle des éventualités fiscales concernant les sorties de fonds futures au titre de l'impôt sur le revenu

Résumé

La recherche antérieure montre que le passif éventuel ne prédit pas avec exactitude les paiements futurs en espèces en raison du pouvoir discrétionnaire accordé aux gestionnaires par les normes comptables. Nous examinons la mesure dans laquelle les directives comptables actuelles applicables à un passif éventuel important — la réserve pour les économies d'impôt non constatées (ÉINC) en vertu de l'interprétation FIN 48 — génèrent des charges de trésorerie qui permettent de prédire les sorties de fonds futures au titre de l'impôt sur le revenu. Nous montrons que les ÉINC se déploient pleinement en tant que paiements d'impôts en espèces au cours des cinq années subséquentes, ce qui porte à croire que les gestionnaires, en moyenne, intègrent avec exactitude leurs attentes concernant les obligations fiscales à venir. Ce résultat persiste pour les entreprises qui (1) sont les plus touchées par la mise en œuvre de FIN 48, (2) ne peuvent pas inscrire le risque de non-détection dans leurs réserves, (3) pratiquent l'évitement fiscal ex ante de façon relativement plus soutenue, (4) sont soupçonnées de s'être adonnées à la gestion de résultats par l'entremise de leurs comptes fiscaux et (5) peuvent être touchées par des chocs exogènes plausibles en lien avec les déclarations fiscales. Dans l'ensemble, nos résultats portent à croire que les directives comptables actuelles en vertu de FIN 48 s'appliquant au passif fiscal éventuel permettent aux gestionnaires de communiquer l'information avec exactitude et aux utilisateurs des états financiers de prévoir de façon fiable leurs obligations à venir concernant les paiements en espèces.

MOTS-CLÉS

ASC 740, économies d'impôt non constatées, FIN 48, impôt sur le revenu

1 | INTRODUCTION

Regulators and academics frequently debate the costs and benefits of managerial discretion within accounting standards as they relate to financial statement users (Bauguess, 2016; Cheng et al., 2022; Lewis, 2012). This debate is especially salient for contingent liabilities, which represent uncertain claims on firms' future cash flows. As a material response to this debate in a tax setting, in 2006 the FASB revised the accounting for income tax contingencies with its implementation of ASC 740-10, Financial Interpretation No. 48 (FIN 48)

(FASB, 2006).[1] FIN 48 aims to restrict managers' discretion in accruing contingent tax liabilities and provide greater consistency in both the accounting and disclosure of income tax uncertainty (i.e., the probability that a claimed tax benefit will not be sustained upon audit). However, critics claimed the FIN 48 rules (e.g., 100% detection risk assumption) would generate tax reserves that do not adequately reflect underlying tax uncertainty or subsequent cash payments to tax authorities (Blouin & Robinson, 2014). To shed light on this debate, we estimate the extent to which income tax contingencies—unrecognized tax benefits (UTBs) reported under FIN 48—are predictive of their subsequent resolution as future income tax cash outflows. Based on the dimensions of FIN 48 emphasized by its critics, we also examine if the predictive ability of UTBs (1) varies in the cross-section and (2) changes after plausibly exogenous shocks to the tax reporting environment.

Our study directly responds to longstanding calls for research about the circumstances under which accruals predict future cash flows (e.g., Beyer et al., 2010; McNichols, 2002). Understanding the relation between accruals and cash flows is important as accruals should reflect the economic substance of transactions and allow financial statement users to forecast future cash payments (Barth et al., 2016). From a tax perspective, the UTB is a contingent liability that should be useful, on average, for predicting future income tax cash payments (J. Brown et al., 2016). Despite FIN 48 provoking the greatest interest in accounting for income taxes since the enactment of Statement of Financial Accounting Standards (SFAS) No. 109 in 1992 (FASB, 1992), there is little empirical evidence on the extent to which FIN 48 provides decision-relevant information regarding future economic events; in our case, this is information on the predictive ability of UTBs as contingent tax liabilities for firms' future income tax cash outflows.[2]

It is unclear the extent to which UTBs accrued under FIN 48 accurately predict future income tax cash outflows. On the one hand, critics of FIN 48 contend that it is too restrictive and inhibits managers from exercising their judgment about the potential outcome of an uncertain tax liability (Robinson et al., 2016). This reasoning is consistent with the theory that discretion in accounting standards allows managers to communicate their private information to financial statement users (Healy & Palepu, 1993; Schipper, 2003). Consistent with these concerns, Robinson et al. (2016) find that, for every dollar of UTBs in firms' financial reports, only $0.24 unwinds as a cash tax settlement over the subsequent 3-year period, suggesting UTBs are systematically overstated.[3] Their study also concludes that, while FIN 48 had no material effect on average, it impaired the informativeness of total tax expense in several settings. Thus, Robinson et al. (2016) provide indirect evidence that UTBs, a component of total tax expense, may not be informative about future cash tax outflows, at least for some firms. This conclusion is consistent with the Financial Accounting Foundation's (FAF, 2012) post-implementation review, which suggests some investors believe UTBs do not reliably predict the realization of tax uncertainty.

On the other hand, proponents of FIN 48 argue that constraining discretion is beneficial as it reduces managerial opportunism (Gupta et al., 2016).[4] FIN 48 establishes specific rules related to the measurement of uncertain tax positions and requires greater documentation to support managers' estimates (Gleason et al., 2018). Some evidence suggests that the contingent liabilities accrued

[1]The FASB subsequently issued an exposure draft to revise Accounting Standards Codification 450, Contingencies (formerly SFAS No. 5). The proposal would have revised accounting for all contingent liabilities. However, unlike for FIN 48, the FASB subsequently abandoned changing its standards for non-tax contingencies. Therefore, FIN 48 provides a strong setting to examine recent financial reporting guidance on contingencies.

[2]For example, the FASB received 255 comment letters on a draft of FIN 48 in 2005, a number that is nearly half of the 586 letters received on SFAS 109 that governs all aspects of accounting for income taxes (Lisowsky et al., 2013).

[3]The $0.24 estimate is based on the UTB settlement line item in the tabular roll-forward disclosure. While Robinson et al. (2016) assert this is the account through which a full cash settlement is reversed, both Bauer and Klassen (2019) and Dyreng et al. (2019) conclude that the UTB settlement line item is not interchangeable with cash outflows based on a review of practitioner literature and discussions with public accountants.

[4]Constraining discretion does not necessitate eliminating it. De Simone et al. (2014) find diversity in UTB accounting across firms engaged in the same transaction. Gupta et al. (2016) acknowledge that, while there is still some discretion afforded to managers under FIN 48, it did significantly reduce discretion relative to prior guidance.

under FIN 48 could reveal future obligations with tax authorities. For instance, managers appear to view FIN 48 as a "roadmap" for tax authorities to detect and challenge the firm's tax positions. Thus, the implementation of FIN 48 increased managers' propensity to settle their uncertain tax positions (Blouin et al., 2010). Creditors also appear to view UTBs as contingent liabilities that predict future obligations because, upon implementation of FIN 48, firms with relatively larger FIN 48 reserves incurred higher loan spreads (Hasan et al., 2014). Similarly, J. Brown et al. (2016) find that corporate boards consider UTBs when compensating management and reduce remuneration when managers avoid taxes by inducing relatively more tax uncertainty.

Given this debate in the literature, we examine the extent to which contingent tax liabilities in the form of UTBs predict future income tax cash outflows. We regress the sum of future income tax cash outflows across five horizons (ranging from years $t + 1$ to $t + 5$) on the UTB ending balance over the period that FIN 48 has been effective and data are available (2007–2018). While some studies consider a 3-year horizon to align with the statute of limitations for tax disputes (Lisowsky et al., 2013), we consider a longer horizon of 5 years because UTBs can require more time for resolution.[5] Our model controls for contemporaneous income tax cash outflows, the non-UTB accrual component of income tax expense, pre-tax income, and tax loss carryforwards, as well as firm and year fixed effects.[6] We use the coefficient on the UTB ending balance to gauge the extent to which the UTB is predictive of future income tax cash outflows. The empirical relation between UTBs and future income tax cash outflows should be statistically indistinguishable from one if UTBs, on average, accurately reflect the uncertain portion of future tax cash outflows (Mills et al., 2010).

Contrary to critics' assertions that FIN 48 would result in UTBs that are not predictive of future income tax cash outflows, we find that UTBs reliably and accurately predict a statistically and economically significant amount of future income tax cash outflows, on average. Specifically, the coefficient for the UTB ending balance is statistically indistinguishable from one over a 5-year forecasting horizon after controlling for other available tax information. This result implies that UTBs (1) reflect contingent liabilities that predict future income tax cash outflows and (2) are not systematically overstated or understated.[7]

Having shown that UTBs fully unwind as future income tax cash outflows on average, we next examine whether this relation varies in four cross-sectional settings. These analyses are motivated by critics' concerns that restrictions on managerial discretion imposed by FIN 48 lead to less predictive UTBs. First, we examine whether firms most affected by the implementation of FIN 48 have UTBs that are relatively less predictive of future income tax cash outflows. We identify firms as most affected by FIN 48 as those with the largest change in their accounting for tax reserves from pre- to post-FIN 48, as captured by the cumulative equity adjustment (CEA) at the FIN 48 implementation date.[8] We find that the UTBs for firms most affected by FIN 48 (i.e., with relatively high CEA) continue to accurately predict future income tax cash flows within 5 years. This result suggests that the effort to enhance the consistency of accounting for income tax uncertainty across firms did not result in systematically biased estimates for firms with relatively larger changes in their reporting of contingent liabilities, compared to firms with smaller changes.

Second, we examine if reporting restrictions under FIN 48 impair the predictive ability of UTBs for future income tax cash outflows. FIN 48 requires managers to assume a 100%

[5]The IRS can request that the taxpayer extend the statute of limitations beyond three years using a consent agreement (see IRS Publication 1035; IRS, 2017). Gleason and Mills (2011) report that the average time from filing a tax return in 1994 to completing a tax audit is 4.6 years, with a range of 1 to 9 years.

[6]Our conclusions are unchanged if we use a changes model, balanced panel, or control for future pre-tax income.

[7]We urge caution in interpreting our results as there is measurement imprecision in each model specification. As such, we report confidence intervals so readers can assess the range of plausible associations consistent with our results.

[8]The CEA captures the difference between the net amount of assets and liabilities in the firm's financial statements before adoption of FIN 48 (i.e., under SFAS No. 5) and the net amount of assets and liabilities after applying FIN 48 (FASB, 2006). If a firm has no CEA, then FIN 48 did not change that firm's accounting for income tax uncertainty, while a firm with the largest CEA changed its accounting for income tax uncertainty the most. We scale the CEA by lagged total assets to measure the relative size of the adjustment.

detection risk of their uncertain tax positions by tax authorities. Thus, firms with low detection risk may report overstated UTBs for positions that are ultimately never detected and overturned. Using two measures of detection risk, we continue to find that UTBs accurately predict future income tax cash outflows for firms subject to higher or lower detection risk. Thus, these results suggest, despite concerns from critics, lower detection risk does not impair the predictive ability of UTBs.

Third, we examine if the predictive ability of UTBs for future income tax cash outflows varies conditional on firms' tax avoidance. Critics of FIN 48 claim that public disclosures of UTBs could provide tax authorities with a "roadmap" that reveals a firm's controversial tax positions (Frischmann et al., 2008; Mills et al., 2010). Similarly, anecdotes and empirical evidence suggest that firms engaging in more tax avoidance obfuscate FIN 48 disclosures to minimize scrutiny from tax authorities (FAF, 2012; Gross, 2011; Robinson & Schmidt, 2013; Tax Executives Institute [TEI], 2011). We find that UTBs are reliably predictive of future income tax cash outflows for firms both engaging and not engaging in more tax avoidance. These results suggest that UTBs accurately predict subsequent cash settlements even among firms with an incentive to obfuscate their disclosures.

Fourth, we examine if the predictive ability of UTBs for future income tax cash outflows varies conditional upon firms' propensity to engage in opportunistic earnings management using the tax accounts (Dhaliwal et al., 2004; Frank & Rego, 2006; Schrand & Wong, 2003). We define opportunistic earnings management as when a firm would have missed the consensus analyst earnings forecast absent an effective tax rate (ETR) reduction in the fourth quarter. We find that UTBs accurately predict future income tax cash flows, even for firms more likely engaging in earnings management, suggesting that managers are not opportunistically biasing the UTB accrual. Collectively, despite critics' assertions that key design features of FIN 48 might make UTBs less predictive of future income tax cash flows for some firms, our contextually relevant cross-sectional tests do not reveal any significant evidence supporting these concerns.

To complement our cross-sectional tests, we examine intertemporal variation in the predictive ability of UTBs. Unlike other financial statement contingent liabilities, the UTB is subject to scrutiny from both tax and financial reporting regulators. During our sample period, there were two significant changes in US federal tax reporting that altered IRS scrutiny over UTBs. First, effective in 2010, firms were required to file Schedule UTP to report uncertain federal tax positions on their US tax returns. Second, effective in 2018, the US Congress passed the Tax Cuts and Jobs Act (TCJA), a sweeping change of the Internal Revenue Code. We examine if the predictive ability of UTBs for future income tax cash outflows changed after either of these plausibly exogenous shocks to firms' tax reporting. We find no evidence that either shock significantly altered the predictive ability of UTBs, although we note that the post-TCJA horizon is relatively short as of the writing of this manuscript. These results suggest that accounting for income tax uncertainty under FIN 48 is not influenced by changes in tax authority scrutiny of tax uncertainty or in the underlying complexity of the tax law.

In sum, we find no significant evidence that UTBs are systematically overstated or understated. Instead, UTBs appear to fully unwind as future cash tax payments over the subsequent 5 years. This conclusion is consistent with managers under FIN 48 providing financial statement users with relatively accurate estimates of future cash tax payments arising from uncertain tax positions. It also has important implications for financial accounting standard setters. Using a focused tax setting, we show that efforts to constrain discretion to enhance reporting consistency and reduce managerial opportunism do not necessarily come at the cost of less informative accruals. Thus, future amendments of ASC 450, which governs accounting for contingent liabilities, might yield similar benefits without inducing systematic bias. Our results should also be of interest to tax authorities as they suggest disclosures under FIN 48 are predictive of future cash tax payments. Tax authorities could also rely on these public disclosures without requiring taxpayers to make costly private disclosures about contingent tax liabilities.

Our study makes four key contributions. First, we contribute to research on contingent liabilities. This literature finds that contingent liabilities, such as environmental reserves and

warranty reserves, do not accurately represent claims on future cash flows (Barth & McNichols, 1994; D. Cohen et al., 2011), suggesting that the inaccuracy of reserves is due to managers using discretion opportunistically. Consistent with this interpretation, Dichev et al. (2013) find that managers manipulate reserve accruals to meet targets and establish "cookie jars" for the future. We show in a tax setting that restrictions on managerial discretion in accounting for contingencies under FIN 48 need *not* impair the predictiveness of UTB accruals.

Second, we contribute broadly to research examining the effects of accounting standards on financial statement disclosures by providing new evidence about the effect of limiting managerial discretion (FAF, 2012). Although prior studies suggest more restrictive standards reduce the usefulness of accounting information (Cheng et al., 2022) and make accruals less predictive of future cash flows (Folsom et al., 2017), we find that UTBs accrued under FIN 48 are reliably predictive of future income tax cash outflows despite the financial reporting restrictions that it imposed on managers. Thus, future reforms to constrain managerial discretion could prove fruitful to the extent that bright-line rules do not induce systematic bias in accounting accruals.

Third, we contribute to research examining the extent to which accruals predict future cash flows. While some studies focus on the predictiveness of aggregate accruals (Dechow et al., 1998; Dechow & Dichev, 2002), others examine the predictiveness of specific accruals (Barth et al., 2001; Barth et al., 2016; Beaver & McNichols, 2001). We extend this research by examining the extent to which a specific accrual, the UTB, predicts a specific cash flow, future income taxes paid.

Finally, our study contributes to a growing literature examining the financial reporting effects of FIN 48. Prior research provides conflicting evidence regarding the usefulness of FIN 48 disclosures. Some studies find that managers circumvent its prescriptions (De Simone et al., 2014; Robinson & Schmidt, 2013), while others find that the disclosures are useful to stakeholders (J. Brown et al., 2016; Hasan et al., 2014). Another line of research examines the impact of FIN 48 on the extent to which income tax expense explains future cash taxes paid. Robinson et al. (2016) find that, for some firms, FIN 48 had a negative impact on the accounting for income taxes. In contrast, Gleason et al. (2023) find that FIN 48 improved accounting for income taxes for US firms relative to non-US firms. Distinct from both Robinson et al. (2016) and Gleason et al. (2023), our study examines the predictive ability of the income tax reserve itself, rather than inferring it from tax expense more broadly, and exploits data on FIN 48's effect on accounting for income taxes within US firms using the CEA at adoption. Our results show that FIN 48 is beneficial to financial statement users in that we find evidence of a key benefit—UTBs are reliably predictive of future income tax cash outflows, even for firms most affected by the change in accounting, where critics asserted UTBs might be less reliable, and through changes over time in tax return reporting.

2 | BACKGROUND AND RESEARCH QUESTION

2.1 | Financial reporting contingencies

A primary objective of accounting standards is to help stakeholders evaluate the magnitude, timing, and variation of future cash flows (FASB, 2010). However, accounting standards cannot anticipate all possible transactions or provide clear, bright-line rules for accruals that involve significant judgment or uncertainty. Consequently, many accounting standards provide managers with some discretion, which is particularly salient in the case of contingent liabilities whose outcomes depend on some future event (e.g., litigation reserves for product recalls).

For many years the FASB considered revising the accounting for contingent liabilities under SFAS No. 5 (now codified as ASC 450), which only requires the accrual of a contingent loss when it is probable and estimable (FASB, 1975; Reed Smith, 2012). With respect to investors, the FASB asserted that SFAS No. 5 "do[es] not provide adequate and timely information to assist them in assessing the likelihood, timing, and magnitude of future cash outflows associated

with loss contingencies" (FASB, 2010, p. 1). Because the disclosure of contingent liabilities can affect their ultimate realization amount, managers have an incentive to exploit discretion in SFAS No. 5 to minimize recognition of any contingent liabilities. The FASB ultimately elected to table the revision of SFAS No. 5 after facing strong backlash from financial statement preparers (Accounting Today, 2012). Thus, accounting for contingent liabilities remains largely unchanged. Consistent with managers continuing to exercise discretion in the accrual of contingent liabilities, Desir et al. (2010) find firms underreport contingent liabilities relating to litigation.

Historically, SFAS No. 5 governed the accounting for tax-related contingent liabilities. Ambiguity in tax reporting is common as firms routinely enter into transactions where the appropriate tax treatment is subject to many legal interpretations (Beck & Jung, 1989a, 1989b; Beck & Lisowsky, 2014; Gleason & Mills, 2002; Mills et al., 2010). As a result, firms routinely take positions on their tax returns that might not be sustained under future audit by tax authorities.

Ambiguous provisions under SFAS No. 5 afforded managers considerable discretion and led to significant diversity in practice for both the recognition and disclosure of income tax contingencies. For instance, the standard did not require disclosure of a tax contingency unless it was both "probable" and "estimable."[9] Along these lines, Gleason and Mills (2002) find that most firms did not disclose material tax contingencies, while those that did focused on the most visible issues. Thus, financial statement users were often not aware of many tax contingencies.

In contrast to the FASB's hesitancy to revise accounting standards on contingent liabilities in general, in 2007 the FASB dramatically revised the reporting for tax-related contingent liabilities. Specifically, FIN 48 (now codified as ASC 740-10) provides rules on recognizing and measuring uncertain tax benefits that go beyond the original SFAS No. 5 requirements. As described in Beck and Lisowsky (2014), firms with uncertain tax positions must apply a two-step process to recognize and measure tax reserves in financial statements for periods after December 15, 2006. Conceptually, the tax reserve arises from tax benefits (e.g., credits) claimed on the tax return, which, due to their uncertain nature, are not immediately recognized as a reduction to tax expense. Instead, the benefits are held in reserve awaiting resolution, either through a tax audit or settlement, regulatory guidance, or a lapse in the statute of limitations.

Operationally, the first step in FIN 48 is to apply a "more likely than not" recognition test to each tax position based on its technical merits and the assumption that the relevant tax authority will audit the position (i.e., 100% detection risk). If a tax position does not meet the "more likely than not" threshold, the firm must accrue a reserve for the full amount of the UTB. If the position meets the recognition threshold, then in the second step, the firm measures the tax benefit as the largest benefit that has a greater than 50% likelihood of being realized upon settlement, according to a cumulative probability table developed by managers. Thus, FIN 48 splits the total tax benefit into two parts: (1) the recognized tax benefit, which immediately reduces current period tax expense; and (2) the UTB, which is held in reserve to account for tax uncertainty about the likelihood of future tax payments (for details, see Blouin et al., 2010; Lisowsky et al., 2013).

As shown in Appendix 1, UTBs accrued under FIN 48 can be substantially smaller or larger than tax reserves accrued under SFAS No. 5. Thus, it is a priori unclear whether UTBs are reliably predictive of future income tax cash outflows. To illustrate, assume a firm claims a $1,000 tax benefit on its tax return that has two potential outcomes when audited by tax authorities: retain all *or* none of the benefit. Because the legal strength of facts underlying the position determines tax benefit retention (Mills et al., 2010), we consider two scenarios. In Scenario 1, tax benefit retention is more likely than not, while in Scenario 2, tax benefit retention does *not* meet the more-likely-than-not threshold.

[9]In particular, there was considerable ambiguity as to whether materiality should be applied to the original claim filed on the tax return or the expected loss upon audit (Gleason & Mills, 2002). Also, SFAS No. 5 governed contingent losses generally and did not separately provide specific guidance for contingent *tax* losses.

As detailed in Appendix 1, when the facts supporting the tax position are strong (Scenario 1), the firm records no UTB, regardless of detection risk. When detection risk is assessed at 100%, the difference between the FIN 48 UTB and tax reserve under SFAS No. 5 is greatest. Furthermore, the amount of the difference *decreases* as detection risk decreases in Scenario 1. When the facts are not strong enough to satisfy the more-likely-than-not threshold (Scenario 2), the firm records a UTB equal to the tax position, regardless of detection risk. Here, the divergence between the FIN 48 UTB and SFAS No. 5 tax reserve *increases* as detection risk decreases (see Figure 1).

While critics contend that FIN 48 leads to overstated tax reserves due to bright-line restrictions, such as disallowing managers to consider detection risk, managers must still exercise considerable judgment. For instance, as shown in Appendix 1, only a 2% change in the expected probability of sustaining a tax position upon audit can determine if a firm accrues a UTB for the entire position or none at all. If a firm ultimately pays $500 to tax authorities in a later year, then the UTB is understated by $500 in Scenario 1 and overstated by $500 in Scenario 2. In this respect, managers exercise judgment when assigning the expected probabilities of sustaining a tax position in the first place (i.e., in developing the cumulative probability table itself), which can significantly affect the degree to which the UTB accurately reflects future tax payments.

In sum, ex ante, it is unclear how FIN 48 influences the reporting of income tax contingencies, on average. When facts are weak, the UTB is larger under FIN 48 compared to SFAS No. 5. But when facts are strong, the UTB is smaller under FIN 48 compared to SFAS No. 5.

2.2 | Research question

Given the inherent discretion afforded to managers by contingent liability accounting standards, there are two competing hypotheses as to how managers accrue contingent liabilities. The *private information hypothesis* posits that managers use discretion to provide a reliable signal to financial statement users about their expectations based on their private information (Hann et al., 2007; Healy & Wahlen, 1999). Along these lines, managers use discretion to record accruals that are better at predicting future cash flows (Bowen et al., 2008; Folsom et al., 2017). Moreover, when regulators change standards to impose greater restrictions on discretion, accruals are less useful to external users, such as lenders (Cheng et al., 2022). Prior

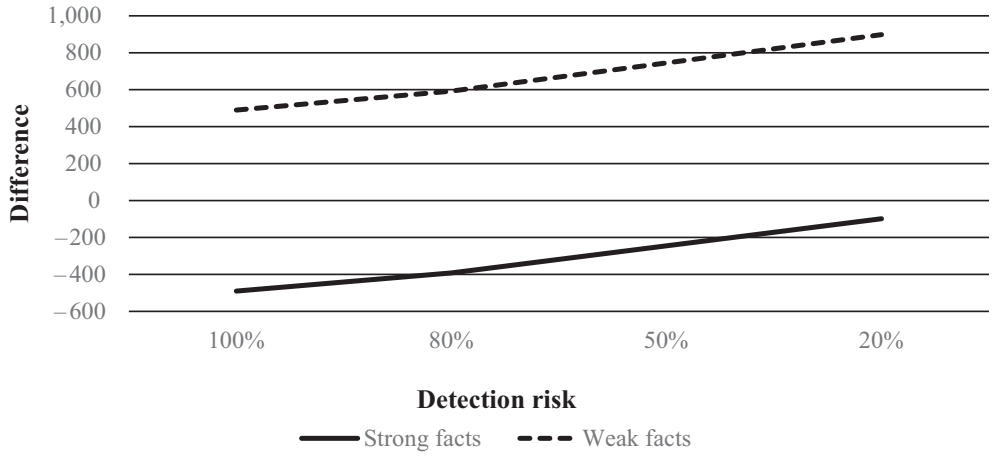

FIGURE 1 Differences in tax reserves between FIN 48 and SFAS No. 5 by detection risk for each scenario outlined in Appendix 1.

literature also finds that investors view managers' accruals of loan loss and warranty reserves as a signal about firms' future performance (Beaver and Engle, 1996; D. Cohen et al., 2011; Wahlen, 1994).

In contrast, the *managerial opportunism hypothesis* posits that managers act in their own interest by manipulating earnings such that they do not reflect the firm's underlying economic performance (Schipper, 1989). Consistent with this hypothesis, relatively more discretion in accounting standards is associated with manipulating accruals to avoid debt covenant violations (DeFond & Jiambalvo, 1994; Sweeney, 1994). There is also evidence that managers specifically use contingent liabilities to engage in opportunistic reporting. Petroni et al. (2000) find that managers use discretion to understate their loss reserves in the current period, which is negatively related to future profitability. Similarly, D. Cohen et al. (2011) find that managers use discretion when accounting for warranty reserves to meet earnings targets. Overall, the desirability of discretion by external stakeholders depends on whether the value of managers' signaling of private information exceeds the costs of enabling opportunism in financial reporting (Dye & Verrecchia, 1995).

Within the tax setting, it is ex ante unclear whether FIN 48 reduces managers' ability to credibly convey private information. Robinson et al. (2016) contend that FIN 48's restrictions on managerial discretion negatively affected the accounting for income tax uncertainty by reducing managers' ability to convey their private information. They attribute this result to a potential mechanical overstatement of UTBs due to the assumption of 100% detection risk. That is, firms are required to accrue UTBs regardless of whether they expect the tax authority will ultimately overturn the position, and more often than not, the tax authority lacks the resources to challenge all positions (Nessa et al., 2020). Conversely, De Simone et al. (2014) find that managers still possess considerable discretion under FIN 48 as firms engaging in the same specific transaction with the same tax authority differentially accrue the uncertain tax benefit.

Similarly, there is mixed evidence on whether FIN 48 affects managerial opportunism. Using a random sample of 100 firms from the 2006 Fortune 500, Gupta et al. (2016) find that managers no longer use the tax reserve after FIN 48 to manage earnings to meet analysts' expectations, consistent with FIN 48's enhanced standardization limiting managerial discretion. Conversely, using a broader sample, Cazier et al. (2015) find that FIN 48 did not alter managers' ability to use the tax reserve to engage in earnings management, suggesting discretion remains despite FIN 48's enhanced standardization. Their finding is consistent with Gleason et al. (2018), who conclude that FIN 48 has not altered the adequacy or accuracy of tax reserves on average relative to pre-FIN 48.

If UTBs are accurately measured without bias, the relation between UTBs and subsequent cash tax payments due to tax uncertainty should be one-to-one, as every dollar of UTBs is eventually paid out in cash. However, as shown in Appendix 1 and consistent with one stream of empirical evidence, FIN 48 permits considerable managerial discretion in accruing the UTB. If such discretion results in an understatement of UTBs, the empirical relation between the UTB at time t and final cash tax settlement will be greater than one. Not only will the entire accrued UTB be paid to tax authorities, but additional tax payments will be required to cover the portion of the settlement for which there was no reserve. Alternatively, an overstatement creates a relation between zero and one. In an extreme case, if the entire UTB is an overstatement (i.e., no future cash tax payment on the reserved position), the relation will equal zero.

Consistent with Appendix 1, prior research argues that UTBs could be understated or overstated relative to ultimate resolution with the tax authority. Mills et al. (2010) analytically demonstrate that, when no UTB is recorded for a given tax position, the reserve is understated, unless the probability that the transaction will be audited is zero. When a UTB is recorded, it can be understated or overstated relative to the expected value of the reserve. If detection risk is equal to 100%, then the UTB will be understated (overstated) when the median expected value is lower (higher) than the mean expected value of the reserve. If detection risk is less than 100%,

the UTB will be overstated when the median expected value of the reserve exceeds the mean expected value of the reserve conditional upon audit. Finally, the UTB could be overstated, understated, or accurate when the median expected value of the reserve is less than the mean expected value of the reserve conditional upon audit (Mills et al., 2010).

Given the mixed empirical evidence regarding the impact of FIN 48 on the accounting for income tax uncertainty and theory suggesting that UTBs could be overstated or understated, the extent to which UTBs predict future income tax cash outflows is an open empirical question. Therefore, we state our research question as follows:

> **Research Question.** To what extent do FIN 48 UTBs predict future income tax cash outflows?

Understanding the relation between UTBs and future tax cash flows provides an opportunity to understand the role that managerial discretion has over contingent liabilities in general, as well as over tax reserves in particular. FIN 48 also allows us to study how decreased managerial discretion under FIN 48 impacts the predictive ability of contingent liabilities on future economic events.

3 | RESEARCH DESIGN AND SAMPLE SELECTION

3.1 | Empirical model

To estimate the extent to which UTBs are predictive of future income tax cash outflows, we specify the following OLS model for firm i at time t (see Appendix 2 for variable definitions):[10]

$$\sum TXPD_{i,t+1\text{ to }t+k} = \alpha_0 + \beta_1 UBEND_{i,t} + \beta_2 TXPD_{i,t} + \beta_3 TAXACC_{i,t} + \beta_4 PT_{i,t} + \beta_5 NOL_{i,t} + \sum \beta_j YEAR_t + \sum \beta_m FIRM_i + \varepsilon. \quad (1)$$

The dependent variable, $\sum TXPD_{i,t+1\text{ to }t+k}$, is the sum of future income tax cash outflows from years $t+1$ to $t+k$, where k varies from one to five, scaled by total assets at time $t-1$.

We use cash tax payments as the dependent variable consistent with prior research that examines how an accrual predicts future cash flows (Laux, 2013). We do not use UTB settlements as our dependent variable because settlements disclosed within the UTB roll-forward schedule depend on a firm reserving for a tax position in the first place. That is, a firm cannot reverse a UTB due to a settlement if it has not previously reserved for the position. Furthermore, if a firm's UTB was under-reserved at the time of a settlement, the firm must increase tax expense and cash taxes paid relative to the reserve. However, these increases will not appear in the settlement portion of the UTB. In effect, UTB settlements provide a truncated view of actual settlements as they are dependent on managers' ex ante financial reporting choices. Using cash taxes paid as the dependent variable is independent of such choices.

In our main tests, we use the sum of future income tax cash outflows over five horizons rather than a single future year, consistent with the forecasting literature (e.g., Jones & Smith, 2011; Lev et al., 2010; Patatoukas et al., 2015; Tucker & Zarowin, 2006) and estimates of the timing of tax dispute resolution (Gleason & Mills, 2011). Furthermore, because tax audits often have a lag of 1 year or more and are not uniformly distributed over time, summing across

[10]Consistent with Petersen (2009), we employ Huber-White robust standard errors clustered at the firm level to adjust for potential serial correlation among multiple observations per firm. We winsorize all continuous variables at the 1st and 99th percentile levels by fiscal year to mitigate the effect of outliers.

years increases the likelihood of identifying the period in which a future cash settlement occurs. Our variable of interest, *UBEND*, is the year-end UTB (scaled by lagged total assets) reported in Compustat and reflects the firm's unresolved, uncertain tax positions. We follow Lisowsky et al. (2013) and use the ending balance rather than the change in UTBs. The ending balance reflects uncertainty from all open tax positions, thus allowing us to examine the predictive ability of the income tax reserve regardless of when the position is initially taken.[11] If the UTB is predictive of future income tax cash outflows, then we expect that $\beta_1 > 0$. If each dollar of UTB is reliably predictive of future income tax cash outflows, then the coefficient on *UBEND* should be indistinguishable from one (i.e., $\beta_1 = 1$).

Our model examines whether UTBs provide incremental information over other available tax information in predicting the uncertain portion of future income tax cash payments. To identify control variables at time t, we primarily use the Laux (2013) model explaining future income tax cash outflows. First, we include cash taxes paid in the current year (*TXPD*) as many tax attributes are serially correlated over time (e.g., research and development or foreign operations). Consistent with Laux (2013), we expect a positive coefficient for *TXPD*. Second, we include the tax accrual component of income tax expense adjusted for the change in UTBs related to permanent differences (*TAXACC*) to control for tax accruals unrelated to income tax uncertainty. We expect a positive coefficient for *TAXACC* as income tax accruals should be predictive of future income tax cash outflows. Third, we include pre-tax income (*PT*) to control for contemporaneous performance and expect a positive coefficient. Fourth, we include net operating loss carryforwards (*NOL*) because future taxable income can be offset with current and prior-period tax losses. We expect a negative coefficient for *NOL*. All variables are scaled by lagged total assets.

Consistent with the resource-based view of the firm, theory and empirical evidence suggests it is important to control for idiosyncratic unobservable features of firms that likely drive tax uncertainty (Belnap et al., 2023). To determine the appropriate fixed-effect structure in our models, we follow Hausman (1978) and compare the model's coefficients with firm fixed effects versus random effects (Hoopes et al., 2012; Lourenco, 2016; Mayberry et al., 2021).[12] To the extent coefficient estimates significantly differ, omitting firm fixed effects would result in model misspecification. In untabulated tests, the chi-squared test statistic for our Hausman test is significant ($p < 0.01$), suggesting firm fixed effects are necessary.

3.2 | Sample selection and descriptive statistics

Our sample consists of firms in Compustat during fiscal years 2007–2018. We begin with 2007 as it is the first full financial reporting year in which FIN 48 is effective, and we end with 2018 as we require a minimum of three future years (up to 2021) to calculate our dependent variable, $\sum TXPD_{t+1 \text{ to } t+k}$. We exclude observations lacking data necessary to calculate variables in Equation (1). We also exclude observations with total assets less than $1 million to alleviate concerns about small denominators. We require firms to have positive pre-tax income, income tax expense, and cash taxes paid at time t. Thus, our sample using $\sum TXPD_{t+1 \text{ to } 3}$ as the dependent variable contains 12,510 firm-year observations, while the samples using $\sum TXPD_{t+1 \text{ to } 4}$

[11] In untabulated tests, we find that an alternative measure, current year UTB increases due to current period positions, is also positive and significantly related to future cash tax payments for period $t + 2$ and $t + 3$, and that the coefficients are statistically indistinguishable from one.

[12] We also alleviate concerns that employing a firm fixed effects structure "overfits" the model. Following Jennings et al. (2023), we examine the absorption rate of fixed effects on UTBs. Specifically, we regress *UBEND* on year and firm fixed effects and find R^2 ranging from 79% to 82%. In all cases, the R^2 falls below the 90% "rule of thumb" proposed by Jennings et al. (2023). Our results are consistent with Belnap et al. (2023), which finds that firm fixed effects alone account for 53% of the total variation in UTBs.

($\sum TXPD_{t+1\text{ to }5}$) contain 10,848 (9,342) firm-year observations, respectively. Naturally, the sample sizes decrease as the dependent variable requires additional years of future tax payments (i.e., for years $t+4$ and $t+5$).

We report univariate statistics in Table 1. The UTB balance (*UBEND*) accounts for approximately 1.0% of total assets, which represents an economically significant $118.9 million average contingent liability. Income tax cash outflows ($TXPD_{t+1}$) account for 2.8% of lagged total assets, while the sum of these payments over the 5-year horizon ($\sum TXPD_{t+1\text{ to }5}$) equates to 15.9% of lagged total assets. The non-UTB tax accrual (*TAXACC*) and pre-tax income (*PT*) account for 0.5% and 11% of lagged total assets, respectively. Descriptive statistics are largely consistent with prior studies. Untabulated correlations reveal that UTBs are positively and significantly related to future income tax cash outflows ($p < 0.01$).

4 | MAIN RESULTS AND ROBUSTNESS TESTS

We report the results of estimating Equation (1) in Table 2, where the dependent variable is the sum of cash taxes paid (*TXPD*) at $t+1$, $t+2$, $t+3$, $t+4$, and $t+5$ in Columns 1–5, respectively. In Panel A, we find that *UBEND* is significantly related to future income tax cash outflows in each column ($p < 0.01$), suggesting UTBs represent contingent liabilities that

TABLE 1 Descriptive statistics.

Variable	*N*	Mean	SD	Q1	Median	Q3
Dependent variable						
$\sum TXPD_{t+1}$	12,510	0.028	0.031	0.007	0.020	0.038
$\sum TXPD_{t+1\text{ to }2}$	12,510	0.057	0.062	0.016	0.040	0.076
$\sum TXPD_{t+1\text{ to }3}$	12,510	0.088	0.095	0.026	0.062	0.115
$\sum TXPD_{t+1\text{ to }4}$	10,848	0.123	0.130	0.037	0.087	0.160
$\sum TXPD_{t+1\text{ to }5}$	9,342	0.159	0.166	0.050	0.113	0.206
Independent variables						
$UBEND_t$	12,510	0.010	0.014	0.001	0.005	0.012
UBEND (raw)	12,510	118.886	55.273	1.023	7.852	45.000
$TXPD_t$	12,510	0.028	0.029	0.008	0.020	0.037
$TAXACC_t$	12,510	0.005	0.017	−0.003	0.003	0.011
PT_t	12,510	0.110	0.093	0.048	0.086	0.143
NOL_t	12,510	0.082	0.193	0.000	0.009	0.069
Cross-sectional variables						
CEA_t	6,577	−1.790	6.747	−2.458	−0.617	0.000
$HIGHABSCEA_t$	6,577	0.244	0.429	0.000	0.000	0.000
CIC_t	12,227	−1.408	2.617	−3.389	−2.090	−0.184
$LOWCIC_t$	12,227	0.250	0.433	0.000	0.000	0.000
$IRS\ ATTENTION_t$	7,246	12.612	27.744	2.000	4.000	11.000
$LOWIRS_t$	7,246	0.235	0.424	0.000	0.000	0.000
$CETR_t$	11,925	0.245	0.156	0.147	0.243	0.319
$LOWCETR_t$	11,925	0.250	0.433	0.000	0.000	0.000
EM_t	10,171	0.059	0.235	0.000	0.000	0.000

Note: This table reports descriptive statistics for tests of the predictive ability of UTBs (Equation 1). Continuous variables are winsorized at the 1st and 99th percentiles. Unless indicated, variables are measured in year *t*. Variables are defined in Appendix 2.

TABLE 2 Tests of the predictive ability of UTBs for future income tax cash outflows.

Panel A: Full sample						
		(1) $TXPD_{t+1}$ **Coeff. (*t*-stat) [CI]**	**(2)** $\sum TXPD_{t+1 \text{ to } 2}$ **Coeff. (*t*-stat) [CI]**	**(3)** $\sum TXPD_{t+1 \text{ to } 3}$ **Coeff. (*t*-stat) [CI]**	**(4)** $\sum TXPD_{t+1 \text{ to } 4}$ **Coeff. (*t*-stat) [CI]**	**(5)** $\sum TXPD_{t+1 \text{ to } 5}$ **Coeff. (*t*-stat) [CI]**
$UBEND_t$	β_1	0.119***	0.298***	0.434***	0.637***	0.901***
		(2.692)	(3.680)	(3.420)	(3.315)	(3.388)
		[0.032 to 0.206]	[0.139 to 0.457]	[0.185 to 0.683]	[0.260 to 1.014]	[0.380 to 1.423]
$TXPD_t$		0.337***	0.583***	0.718***	0.721***	0.847***
		(10.551)	(8.957)	(6.213)	(4.411)	(3.651)
$TAXACC_t$		0.253***	0.478***	0.621***	0.823***	1.160***
		(9.874)	(9.686)	(7.149)	(6.171)	(5.331)
PT_t		0.080***	0.134***	0.197***	0.214***	0.176**
		(7.936)	(6.986)	(6.007)	(4.504)	(2.480)
NOL_t		−0.000	0.008	0.023**	0.048***	0.056**
		(−0.037)	(1.230)	(2.025)	(2.705)	(2.377)
Constant		0.023***	0.042***	0.067***	0.030***	0.066***
		(8.891)	(8.589)	(9.205)	(5.439)	(9.917)
Firm and year FE		Included	Included	Included	Included	Included
Adj. R^2		0.726	0.760	0.766	0.793	0.820
Obs.		12,510	12,510	12,510	10,848	9,342
F-test: $\beta_1 = 1.00$		397.40***	75.04***	19.87***	3.56*	0.14

(Continues)

TABLE 2 (Continued)

Panel B: Balanced sample

		(1) $TXPD_{t+1}$ Coeff. (*t*-stat) [CI]	(2) $\sum TXPD_{t+1 \text{ to } 2}$ Coeff. (*t*-stat) [CI]	(3) $\sum TXPD_{t+1 \text{ to } 3}$ Coeff. (*t*-stat) [CI]	(4) $\sum TXPD_{t+1 \text{ to } 4}$ Coeff. (*t*-stat) [CI]	(5) $\sum TXPD_{t+1 \text{ to } 5}$ Coeff. (*t*-stat) [CI]
$UBEND_t$	β_1	0.147***	0.366***	0.549***	0.759***	0.901***
		(2.609)	(3.455)	(3.424)	(3.657)	(3.388)
		[0.037 to 0.258]	[0.158 to 0.574]	[0.235 to 0.864]	[0.352 to 1.166]	[0.380 to 1.423]
$TXPD_t$		0.354***	0.550***	0.717***	0.826***	0.847***
		(7.910)	(6.027)	(4.237)	(3.979)	(3.651)
$TAXACC_t$		0.334***	0.586***	0.808***	1.062***	1.160***
		(7.654)	(7.044)	(5.381)	(5.546)	(5.331)
PT_t		0.074***	0.126***	0.161***	0.170***	0.176**
		(5.262)	(4.458)	(3.208)	(2.709)	(2.480)
NOL_t		−0.002	0.007	0.024	0.040*	0.056**
		(−0.407)	(0.823)	(1.477)	(1.949)	(2.377)
Constant		0.008***	0.017***	0.027***	0.039***	0.066***
		(6.691)	(6.346)	(6.455)	(7.043)	(9.917)
Firm and year FE		Included	Included	Included	Included	Included
Adj. R^2		0.755	0.792	0.804	0.813	0.820
Obs.		9,342	9,342	9,342	9,342	9,342
F-test: $\beta_1 = 1.00$		228.10***	35.79***	7.89***	1.35	0.14

Note: This table reports the results from estimating Equation (1). In Panel A, we require at least 3 future years of cash taxes paid to be available in order to include an observation, while in Panel B we balance the sample such that a given observation must have future cash taxes paid available through $t + 5$. The dependent variable in Columns 1–5 is the sum of cash taxes paid (*TXPD*) in periods $t + 1$, $t + 2$, $t + 3$, $t + 4$, and $t + 5$ scaled by total assets at $t - 1$, respectively. We report *t*-statistics in parentheses based on standard errors clustered by firm. We report confidence intervals for *UBEND* in brackets. All continuous variables are winsorized at the 1st and 99th percentiles by fiscal year. *F*-tests of β_1 indicate whether the coefficient is statistically indistinguishable from 1.00. Thus, an insignificant *F*-test for $\beta_1 = 1.00$ at $t + 5$ (i.e., no asterisks) indicates that UTBs (*UBEND*) fully unwind over a 5-year period. Variables are defined in Appendix 2.
*, **, and *** denote statistical significance at the 0.10, 0.05, and 0.01 levels, respectively.

ultimately unwind as subsequent cash tax payments. *F*-tests indicate that the coefficient for *UBEND* (β_1) is significantly less than one in Columns 1–4 ($F = 397.40$, 75.04, 19.87, and 3.56, respectively). However, the coefficient on *UBEND* is *not* significantly different from one in Column 5 ($F = 0.14$), suggesting that the UTB predicts future income tax cash outflows dollar-for-dollar over the 5-year period. We also report the confidence interval for *UBEND*, which ranges from 0.380 to 1.423 and includes 1.000 in Column 5.[13] The confidence interval provides additional context behind the precision of our estimates.

We perform several robustness checks. First, in Panel B of Table 2, we report results of re-estimating Equation (1) using a balanced sample, such that each observation has data on future cash taxes paid for all years $t + 1$ through $t + 5$. We find that the coefficient on *UBEND* is not significantly different from one in Columns 4 and 5 ($F = 1.35$ and 0.14, respectively).

Second, in untabulated analyses, we employ a first-differences design, which addresses concerns about serial correlation in the error terms and/or correlated omitted variables (Wooldridge, 2010, p. 316). To do so, we modify Equation (1) and use the change in *UBEND* and all controls (change in $\sum TXPD_{t+1 \text{ to } t+k}$) as the independent (dependent) variables. Similar to our base specification, the coefficients for the change in *UBEND* are positive and significant ($p < 0.01$), and indistinguishable from one ($F = 0.498$) at $t + 3$. These results indicate that the change in UTBs predicts future cash tax payments dollar-for-dollar.

Third, we modify Equation (1) to include a control for future information contemporaneous with the dependent variable. We do not control for future information in our primary specification because our intent is to understand the predictive ability of the UTB accrual for future income tax cash outflows using information available to stakeholders at time *t*. Including future information also introduces hindsight bias into the analysis, potentially subsuming the informativeness of variables measured at time *t* (Richardson et al., 2010). Thus, our inclusion of such information should bias *against* finding evidence that UTBs are predictive of future income tax cash outflows and, if our results hold in this specification, it will provide compelling evidence about the strength of the predictive ability of UTBs for future income tax cash outflows.

To address this issue, we include the sum of pre-tax income (*PT*) in Equation (1) for each of the five forecasting horizons. Consistent with income taxes being based on pre-tax book income, in Table 3 we find significantly positive coefficients on $\sum PT_{t+1 \text{ to } t+k}$ in each of the five specifications ($p < 0.01$). However, we continue to find significantly positive coefficients on *UBEND* across all five specifications ($p < 0.01$). By year $t + 5$, the coefficient on *UBEND* is indistinguishable from one ($F = 1.46$).[14] Thus, even after accounting for subsequent drivers of future income tax cash outflows, we continue to find that UTBs accurately represent contingent liabilities.

Lastly, we examine whether our results are robust to alternative approaches for addressing outliers (Leone et al., 2019). In untabulated analyses, we reestimate Equation (1) on two alternative subsamples. First, we truncate the data at the 1st and 99th percentiles by fiscal year for variables in our model rather than winsorize. Second, we remove observations with Cook's *D* greater than 4/*n* (Cook, 1977; Leone et al., 2019). Across both techniques, we continue to find coefficients on *UBEND* that are significantly positive and indistinguishable from one in the sum of cash taxes paid through $t + 5$ specification. As such, outliers do not appear to confound our primary results.

[13]In untabulated analysis, we also find that the coefficient on *UBEND* is significantly different across adjacent columns (i.e., comparing Column 1 to Column 2 or Column 2 to Column 3). When we extend our estimation window to include period $t + 6$, the coefficient on *UBEND* is not significantly different from Column 5. Thus, it does not appear that the coefficient mechanically grows with the horizon of the dependent variable.

[14]In untabulated analysis, we also include future *NOL* carryforwards and future non-UTB tax accruals in lieu of future pretax income. We continue to find that the coefficient on *UBEND* is indistinguishable from one by year $t + 5$.

TABLE 3 Tests of the predictive ability of UTBs for future income tax cash outflows controlling for future pre-tax income.

		(1) $TXPD_{t+1}$ Coeff. (*t*-stat) [CI]	(2) $\sum TXPD_{t+1\text{ to }2}$ Coeff. (*t*-stat) [CI]	(3) $\sum TXPD_{t+1\text{ to }3}$ Coeff. (*t*-stat) [CI]	(4) $\sum TXPD_{t+1\text{ to }4}$ Coeff. (*t*-stat) [CI]	(5) $\sum TXPD_{t+1\text{ to }5}$ Coeff. (*t*-stat) [CI]
$UBEND_t$	β_1	0.108**	0.267***	0.355***	0.502***	0.688***
		(2.502)	(3.281)	(2.860)	(2.728)	(2.663)
		[0.023 to 0.193]	[0.108 to 0.427]	[0.112 to 0.599]	[0.141 to 0.863]	[0.181 to 1.194]
$TXPD_t$		0.281***	0.438***	0.505***	0.514***	0.542***
		(9.647)	(7.621)	(5.105)	(3.846)	(2.876)
$TAXACC_t$		0.219***	0.392***	0.493***	0.680***	0.860***
		(9.228)	(9.277)	(6.742)	(6.340)	(5.223)
PT_t		0.044***	0.066***	0.104***	0.125***	0.137***
		(4.550)	(4.099)	(3.942)	(3.475)	(2.600)
NOL_t		−0.003	−0.004	−0.000	0.014	0.030
		(−1.077)	(−0.545)	(−0.018)	(0.857)	(1.385)
PT_{t+1}		0.115***				
		(16.717)				
$\sum PT_{t+1\text{ to }2}$			0.158***			
			(20.884)			
$\sum PT_{t+1\text{ to }3}$				0.189***		
				(20.197)		
$\sum PT_{t+1\text{ to }4}$					0.214***	
					(18.111)	
$\sum PT_{t+1\text{ to }5}$						0.237***
						(16.463)
Constant		0.051***	0.076***	0.097***	−0.009	0.001
		(17.845)	(16.499)	(15.331)	(−1.588)	(0.131)
Firm and year FE		Included	Included	Included	Included	Included
Adj. R^2		0.770	0.825	0.840	0.863	0.880
Obs.		12,510	12,510	12,510	10,848	9,342
F-test: $\beta_1 = 1.00$		426.20***	80.84***	26.93***	7.32***	1.46

Note: This table reports the results from estimating Equation (1) after including a control for the sum of future pre-tax income ($\sum PT_{t+1\text{ to }k}$). The dependent variable in Columns 1–5 is the sum of cash taxes paid (*TXPD*) in periods $t+1$, $t+2$, $t+3$, $t+4$, and $t+5$ scaled by total assets at $t-1$, respectively. We report *t*-statistics in parentheses based on standard errors clustered by firm. We report confidence intervals for *UBEND* in brackets. All continuous variables are winsorized at the 1st and 99th percentiles by fiscal year. *F*-tests of β_1 indicate whether the coefficient is statistically indistinguishable from 1.00. Thus, an insignificant *F*-test for $\beta_1 = 1.00$ at $t+5$ (i.e., no asterisks) indicates that UTBs (*UBEND*) fully unwind over a 5-year period. Variables are defined in Appendix 2.
*, **, and *** denote statistical significance at the 0.10, 0.05, and 0.01 levels, respectively.

5 | CROSS-SECTIONAL ANALYSIS

Given the robust evidence that UTBs reliably predicts future income tax cash outflows dollar-for-dollar, on average after 5 years, we conduct several tests to explore whether this relation varies conditional upon theoretically motivated cross-sectional differences.

5.1 | Effect of FIN 48 upon adoption

When adopting FIN 48, some firms experienced a relatively greater change than others in how they accrued for income tax uncertainties relative to prior guidance under SFAS No. 5. Consistent with the prescriptions of FIN 48, firms recorded a CEA to the extent that FIN 48 altered their accounting for income tax uncertainty from SFAS No. 5. Specifically, the CEA reflects a change in accounting principle. Prior literature finds that a change in accounting principle can be associated with more (or less) useful accruals for predicting future outcomes (L. D. Brown, 1983). If managers were opportunistically using their discretion over income tax contingencies under SFAS No. 5, but FIN 48 reduced this discretion, we expect that firms with a higher CEA will have more predictive UTBs (i.e., $\beta_2 > 0$). Conversely, if firms with relatively larger CEAs were using their discretion to communicate their private information and they continue to use the discretion under FIN 48 to convey that information, we expect that firms with larger CEAs will not have less predictive UTBs (i.e., $\beta_2 = 0$). We define firms most affected by FIN 48 ($HIGHABSCEA = 1$) as firms with a CEA in the top quartile of the absolute value of CEA, scaled by assets.[15]

We reestimate Equation (1) and include an interaction term between the *HIGHABSCEA* indicator and *UBEND*. We do not include the main effect of *HIGHABSCEA* as it does not vary by firm and is thus subsumed by firm fixed effects. We report the results in Table 4. We find that *UBEND* is significantly related to the sum of future income tax cash outflows in Columns 3–5 ($p < 0.10$), and that the interaction term, $HIGHABSCEA \times UBEND$, is insignificant across all columns. Consistent with our previous results, we find that the coefficient on *UBEND* is not distinguishable from one at $t + 4$ or $t + 5$ ($F = 1.01$ and 0.01, respectively). In joint *F*-tests of the coefficients of *UBEND* and $HIGHABSCEA \times UBEND$, we find that the coefficients are significantly less than one in Columns 1 and 2 ($F = 88.72$ and 9.01), but not significantly different from one in Columns 3, 4, or 5 ($F = 0.68$, 0.00, and 0.09). Thus, UTBs predict future income tax cash outflows dollar-for-dollar over the 5-year period, even for firms most impacted by FIN 48.[16]

5.2 | Detection risk assumption

Next, we test whether UTBs are less predictive of future income tax cash outflows for firms that are less likely to naturally coincide with a major assumption of FIN 48, namely that UTBs must reflect a 100% probability of detection by tax authorities for all uncertain tax positions. It is possible that low detection risk firms (i.e., audit probability farther from 100%) will have weaker predictive ability of UTBs for future income tax cash outflows, compared to high detection risk firms (i.e., audit probability closer to 100%). Conversely, if managers communicate their private information to stakeholders despite this assumption (e.g., by adjusting the underlying cumulative probability table; see Appendix 1), then the predictive ability of UTBs should be no different for firms with lower detection risk compared to firms with higher detection risk. We define firms with relatively lower detection risk if they are in the bottom quartile of (1) the predicted probability of Coordinated Industry Case (CIC) program assignment ($LOWCIC = 1$; Ayers et al., 2019), or (2) the number of Form 10-K downloads by the IRS ($LOWIRS = 1$) (Bozanic et al., 2017).[17]

[15]An advantage of exploiting the CEA is that we effectively use the firm as its own control, which complements Gleason et al. (2023). We obtain similar results if we measure the impact of FIN 48 using the signed value of the CEA.

[16]Because statistical power is a concern for many subsample tests, in untabulated analyses, we confirm that each of our cross-sectional tests has sufficient power to reliably detect a relatively "small" effect of 0.03, following J. Cohen (1988) and J. Cohen (1992). We also find similar results if we use a balanced sample for all columns.

[17]Assignment in the CIC program results in relatively higher IRS scrutiny as the IRS conducts an in-depth audit of the firm (Ayers et al., 2019). For *LOWCIC*, we use coefficient estimates from tab. 3, panel B, column 1 of Ayers et al. (2019) to predict the likelihood that a firm is assigned to the CIC program. Regarding 10-K downloads by the IRS, prior studies suggest that the IRS uses public information to make its audit decisions. Bozanic et al. (2017) construct a measure of IRS attention, which equals the number of times in a year that an internet protocol (IP) address at the IRS downloads a public company's filing from the SEC website. For *LOWIRS*, we

TABLE 4 Tests of the predictive ability of UTBs for future income tax cash outflows for firms most affected by FIN 48 (*HIGHABSCEA* = 1).

		(1) $TXPD_{t+1}$ Coeff. (*t*-stat) [CI]	(2) $\sum TXPD_{t+1 \text{ to } 2}$ Coeff. (*t*-stat) [CI]	(3) $\sum TXPD_{t+1 \text{ to } 3}$ Coeff. (*t*-stat) [CI]	(4) $\sum TXPD_{t+1 \text{ to } 4}$ Coeff. (*t*-stat) [CI]	(5) $\sum TXPD_{t+1 \text{ to } 5}$ Coeff. (*t*-stat) [CI]
$UBEND_t$	β_1	0.109	0.253	0.448*	0.649*	0.951**
		(1.109)	(1.462)	(1.830)	(1.864)	(2.270)
		[−0.084 to 0.302]	[−0.086 to 0.593]	[−0.032 to 0.929]	[−0.034 to 1.333]	[0.129 to 1.773]
$HIGHABSCEA \times UBEND_t$	β_2	0.115	0.279	0.346	0.343	0.214
		(0.936)	(1.246)	(1.028)	(0.680)	(0.322)
		[−0.126 to 0.355]	[−0.161 to 0.719]	[−0.314 to 1.007]	[−0.647 to 1.334]	[−1.093 to 1.522]
$TXPD_t$		0.279***	0.475***	0.616***	0.708***	0.939**
		(5.756)	(4.928)	(3.498)	(2.764)	(2.417)
$TAXACC_t$		0.214***	0.429***	0.594***	0.783***	1.178***
		(6.209)	(6.830)	(5.112)	(4.198)	(3.750)
PT_t		0.094***	0.158***	0.209***	0.221***	0.149
		(6.344)	(6.023)	(4.559)	(3.102)	(1.318)
NOL_t		−0.000	0.005	0.020	0.040	0.052*
		(−0.049)	(0.514)	(1.195)	(1.622)	(1.659)
Constant		0.025***	0.045***	0.070***	0.035***	0.073***
		(6.753)	(6.395)	(7.604)	(5.527)	(10.434)
Firm and year FE		Included	Included	Included	Included	Included
Adj. R^2		0.722	0.757	0.771	0.802	0.829
Obs.		6,577	6,577	6,577	5,806	5,090
F-test: $\beta_1 = 1.00$		82.22***	18.62***	5.07**	1.01	0.01
F-test: $\beta_1 + \beta_2 = 1.00$		88.72***	9.01***	0.68	0.00	0.09

Note: This table reports the results from estimating Equation (1) after including an interaction term for firms most affected by the adoption of FIN 48, *HIGHABSCEA* × *UBEND*. *HIGHABSCEA* is an indicator variable taking a value of one if a given observation is above the median absolute value of CEA upon adoption, and zero otherwise. The dependent variable in Columns 1–5 is the sum of cash taxes paid (*TXPD*) in periods $t + 1$, $t + 2$, $t + 3$, $t + 4$, and $t + 5$ scaled by total assets at $t - 1$, respectively. We report *t*-statistics in parentheses based on standard errors clustered by firm. We report confidence intervals for *UBEND* and *HIGHABSCEA* × *UBEND* in brackets. All continuous variables are winsorized at the 1st and 99th percentiles by fiscal year. *F*-tests of β_1 indicate whether the coefficient is statistically indistinguishable from 1.00. Thus, an insignificant *F*-test for $\beta_1 = 1.00$ at $t + 5$ (i.e., no asterisks) indicates that UTBs (*UBEND*) fully unwind over a 5-year period. Variables are defined in Appendix 2.

*, **, and *** denote statistical significance at the 0.10, 0.05, and 0.01 levels, respectively.

We reestimate Equation (1) after separately including the main effects of *LOWCIC* and *LOWIRS* and their interactions with *UBEND*. We report the results in Table 5. We find that *UBEND* is significantly related with the sum of future income tax cash outflows in each column ($p < 0.05$) across both panels. The interaction terms *LOWCIC* × *UBEND* and *LOWIRS* × *UBEND* are insignificant across all columns in both panels. In joint *F*-tests of the coefficients of *UBEND* and its interaction with each detection risk measure, we find that the coefficients are significantly less than one in Columns 1 and 2 of Panel A ($F = 49.37$ and 4.54), but not significantly different from one in Columns 3, 4, or 5 ($F = 0.26$, 0.04, and 0.14). We observe a similar pattern in Panel B, although the coefficients

focus on relatively less IRS attention of the firm's financial statements. We thank Jeff Hoopes for sharing this measure on his website. We obtain qualitatively similar results if we use a median split to calculate these measures.

TABLE 5 Tests of the predictive ability of UTBs for future income tax cash outflows for firms with lowest detection risk ($LOWCIC = 1$ and $LOWIRS = 1$).

Panel A: Detection risk measured using CIC program assignment ($LOWCIC = 1$)						
		(1) $TXPD_{t+1}$ **Coeff. (*t*-stat) [CI]**	**(2)** $\sum TXPD_{t+1\text{ to }2}$ **Coeff. (*t*-stat) [CI]**	**(3)** $\sum TXPD_{t+1\text{ to }3}$ **Coeff. (*t*-stat) [CI]**	**(4)** $\sum TXPD_{t+1\text{ to }4}$ **Coeff. (*t*-stat) [CI]**	**(5)** $\sum TXPD_{t+1\text{ to }5}$ **Coeff. (*t*-stat) [CI]**
$UBEND_t$	β_1	0.099**	0.234***	0.329**	0.520***	0.838***
		(2.337)	(2.836)	(2.545)	(2.741)	(3.182)
		[0.016 to 0.183]	[0.072 to 0.397]	[0.075 to 0.582]	[0.148 to 0.892]	[0.321 to 1.354]
$LOWCIC_t$		0.001	0.003	0.005	0.006	0.019**
		(0.766)	(1.045)	(1.138)	(0.813)	(1.969)
$LOWCIC \times UBEND_t$	β_3	0.085	0.292	0.480	0.590	0.368
		(0.731)	(1.256)	(1.224)	(1.084)	(0.694)
		[−0.143 to 0.314]	[−0.164 to 0.748]	[−0.289 to 1.249]	[−0.477 to 1.657]	[−0.671 to 1.406]
$TXPD_t$		0.336***	0.582***	0.720***	0.738***	0.888***
		(10.410)	(8.817)	(6.134)	(4.504)	(3.938)
$TAXACC_t$		0.254***	0.486***	0.640***	0.859***	1.241***
		(9.960)	(10.065)	(7.590)	(6.845)	(6.376)
PT_t		0.079***	0.128***	0.185***	0.193***	0.144**
		(7.908)	(6.920)	(5.942)	(4.481)	(2.321)
NOL_t		−0.001	0.007	0.021*	0.045**	0.050**
		(−0.230)	(1.031)	(1.814)	(2.541)	(2.158)
Constant		0.023***	0.043***	0.070***	0.031***	0.065***
		(8.913)	(8.781)	(9.333)	(5.444)	(9.159)
Firm and year FE		Included	Included	Included	Included	Included
Adj. R^2		0.722	0.759	0.767	0.795	0.822
Obs.		12,227	12,227	12,227	10,612	9,144
F-test: $\beta_1 = 1.00$		449.00***	85.75***	27.01***	6.39**	0.38
F-test: $\beta_1 + \beta_3 = 1.00$		49.37***	4.54**	0.26	0.04	0.14

(Continues)

TABLE 5 (Continued)

Panel B: Detection risk measured using IRS 10-K downloads (*LOWIRS* = 1)

		(1) $TXPD_{t+1}$ Coeff. (*t*-stat) [CI]	(2) $\sum TXPD_{t+1 \text{ to } 2}$ Coeff. (*t*-stat) [CI]	(3) $\sum TXPD_{t+1 \text{ to } 3}$ Coeff. (*t*-stat) [CI]	(4) $\sum TXPD_{t+1 \text{ to } 4}$ Coeff. (*t*-stat) [CI]	(5) $\sum TXPD_{t+1 \text{ to } 5}$ Coeff. (*t*-stat) [CI]
$UBEND_t$	β_1	0.161**	0.290**	0.434*	0.595**	0.748**
		(2.097)	(2.023)	(1.936)	(2.111)	(2.178)
		[0.010 to 0.312]	[0.009 to 0.570]	[−0.006 to 0.873]	[0.042 to 1.147]	[0.074 to 1.421]
$LOWIRS_t$		0.001	0.004**	0.007***	0.006**	0.007*
		(0.786)	(2.187)	(2.733)	(2.028)	(1.767)
$LOWIRS \times UBEND_t$	β_3	−0.019	0.035	0.045	0.297	0.394
		(−0.255)	(0.330)	(0.279)	(1.419)	(1.413)
		[−0.163 to 0.126]	[−0.175 to 0.245]	[−0.272 to 0.362]	[−0.113 to 0.708]	[−0.153 to 0.941]
$TXPD_t$		0.243***	0.324***	0.404*	0.537*	0.529*
		(4.388)	(2.693)	(1.674)	(1.885)	(1.652)
$TAXACC_t$		0.280***	0.455***	0.612***	0.888***	0.982***
		(5.200)	(4.269)	(2.971)	(3.438)	(3.353)
PT_t		0.080***	0.147***	0.197***	0.198**	0.189*
		(4.453)	(3.681)	(2.602)	(2.173)	(1.789)
NOL_t		0.005	0.019	0.042*	0.065**	0.082**
		(0.809)	(1.410)	(1.670)	(2.042)	(2.414)
Constant		0.033***	0.065***	0.100***	0.058***	0.080***
		(8.867)	(9.089)	(9.101)	(4.991)	(6.137)
Firm and year FE		Included	Included	Included	Included	Included
Adj. R^2		0.748	0.800	0.818	0.841	0.856
Obs.		7,246	7,246	7,246	6,890	6,529
F-test: $\beta_1 = 1.00$		119.40***	24.65***	6.39**	2.07	0.54
F-test: $\beta_1 + \beta_3 = 1.00$		73.31***	18.27***	4.22**	0.11	0.10

Note: This table reports the results from estimating Equation (1) after including an indicator for firms subject to relatively lower detection risk (*LOWCIC* = 1 and *LOWIRS* = 1) and the interaction term between low detection risk and UTBs. The dependent variable in Columns 1–5 of both panels is the sum of cash taxes paid (*TXPD*) in periods $t + 1$, $t + 2$, $t + 3$, $t + 4$, and $t + 5$ scaled by total assets at $t - 1$, respectively. In Panel A, detection risk is measured as the predicted probability of assignment to the CIC program (*LOWCIC*), following Ayers et al. (2019). In Panel B, detection risk is measured as the number of 10-K downloads for a given firm by the IRS (*LOWIRS*), consistent with Bozanic et al. (2017). We report *t*-statistics in parentheses based on standard errors clustered by firm. We report confidence intervals for *UBEND*, *LOWCIC* × *UBEND*, and *LOWIRS* × *UBEND* in brackets. All continuous variables are winsorized at the 1st and 99th percentiles by fiscal year. *F*-tests of β_1 indicate whether the coefficient is statistically indistinguishable from 1.00. Thus, an insignificant *F*-test for $\beta_1 = 1.00$ at $t + 5$ (i.e., no asterisks) indicates that UTBs (*UBEND*) fully unwind over a 5-year period. Variables are defined in Appendix 2. *, **, and *** denote statistical significance at the 0.10, 0.05, and 0.01 levels, respectively.

are not jointly indistinguishable from one until year $t + 4$. Collectively, the evidence suggests the restriction on managerial discretion within FIN 48 regarding the assumption of 100% detection risk does not significantly inhibit the predictive ability of UTBs for future income tax cash outflows.

5.3 | Tax avoidance

The extent to which FIN 48 accurately represents a contingent liability is a function of a firm's adherence to the reporting guidance. Prior literature asserts that managers obfuscate their financial statements to serve their own interests (Li, 2008; Lo et al., 2017). Managers that engage in relatively more tax avoidance might believe that adhering to FIN 48 will create significant costs via greater audit scrutiny as the UTB reflects aggressive tax positions (Lisowsky et al., 2013). Thus, critics of FIN 48 suggest that it will inhibit firms' opportunities for successful tax avoidance (Frischmann et al., 2008). There is empirical evidence that some firms appear to specifically obfuscate UTBs (Robinson & Schmidt, 2013). On the one hand, if firms that engage in relatively more tax avoidance also engage in obfuscation, we expect UTBs will be less predictive of future income tax cash outflows. On the other hand, if FIN 48 constrains managers' discretion, we expect that UTBs of high tax avoiders will be predictive of future income tax cash outflows. We identify high tax avoiders using an indicator for firms in the bottom quartile of cash ETR ($LOWCETR = 1$).[18]

We reestimate Equation (1) after including the main effects of *LOWCETR* and its interaction with *UBEND*. We report the results in Table 6. We find that *UBEND* is significantly related to the sum of future income tax cash outflows in each column ($p < 0.01$). The coefficient on the interaction among *LOWCETR* and *UBEND* is significantly negative across all columns, suggesting the relation between *UBEND* and future cash tax payments is weaker for high tax avoiders. In joint *F*-tests of the coefficients of *UBEND* and $LOWCETR \times UBEND$, we find that the coefficients are significantly less than one in Columns 1–4 ($F = 360.90$, 60.72, 19.74, and 6.90), but not significantly different from one in Column 5 ($F = 2.25$). Collectively, the evidence suggests that the predictive ability of UTBs for future income tax cash outflows is dollar-for-dollar after 5 years, even among high tax avoiders.

5.4 | Earnings management

Our final cross-sectional test focuses on managers that are likely to engage in opportunistic reporting using tax accounts and would be more constrained by the restrictions of FIN 48. Prior literature finds that managers engage in earnings management through the tax accounts (Dhaliwal et al., 2004; Frank & Rego, 2006; Schrand & Wong, 2003), though the evidence is mixed with respect to the tax reserve (Cazier et al., 2015; Gupta et al., 2016). On the one hand, if FIN 48 fails to adequately restrict opportunism, we expect firms that are more likely to manage earnings through the tax accounts will not have predictive UTBs. On the other hand, if FIN 48 constrains managerial discretion, especially managerial opportunism, we expect UTBs for firms that are more likely to engage in earnings management to be predictive of future income tax cash outflows. We measure firms engaging in earnings management through the tax accounts ($EM = 1$) as those that would have failed to meet the consensus analyst forecast using their third quarter ETR but met the benchmark due to a reduction in their annual ETR, consistent with Gleason and Mills (2008).[19]

[18]We obtain qualitatively similar results if we identify high tax avoiders as those below the median cash ETR, or GAAP ETRs, to identify tax avoiders rather than cash ETRs.

[19]To determine if a firm is engaging in earnings management through the tax accounts, we first compute pre-managed EPS as annual EPS multiplied by one less the third quarter ETR divided by one less the annual GAAP ETR. We then examine if the firm beats the last I/B/E/S consensus forecast before the earnings announcement but would not have without the unexpected decrease in income tax expense. We obtain qualitatively similar results if we follow Phillips et al. (2003) and identify firms as suspected of engaging in earnings management if the change in net income from $t - 1$ to t scaled by the market value of equity at $t - 1$ falls between 0 and 0.01.

TABLE 6 Tests of the predictive ability of UTBs for future income tax cash outflows for high tax-avoider firms ($LOWCETR = 1$).

		(1) $TXPD_{t+1}$ Coeff. (*t*-stat) [CI]	(2) $\sum TXPD_{t+1 \text{ to } 2}$ Coeff. (*t*-stat) [CI]	(3) $\sum TXPD_{t+1 \text{ to } 3}$ Coeff. (*t*-stat) [CI]	(4) $\sum TXPD_{t+1 \text{ to } 4}$ Coeff. (*t*-stat) [CI]	(5) $\sum TXPD_{t+1 \text{ to } 5}$ Coeff. (*t*-stat) [CI]
$UBEND_t$	β_1	0.182***	0.391***	0.550***	0.847***	1.189***
		(3.437)	(4.159)	(3.750)	(3.862)	(3.957)
		[0.078 to 0.285]	[0.207 to 0.575]	[0.262 to 0.837]	[0.417 to 1.277]	[0.600 to 1.778]
$LOWCETR_t$		0.002**	0.006***	0.011***	0.016***	0.018***
		(2.406)	(3.736)	(4.550)	(4.459)	(4.153)
$LOWCETR \times UBEND_t$	β_3	−0.130***	−0.223**	−0.301*	−0.460**	−0.634**
		(−2.670)	(−2.137)	(−1.786)	(−2.069)	(−2.440)
		[−0.226 to −0.035]	[−0.428 to −0.018]	[−0.631 to 0.029]	[−0.897 to −0.024]	[−1.143 to −0.124]
$TXPD_t$		0.318***	0.560***	0.688***	0.709***	0.820***
		(9.341)	(8.025)	(5.471)	(3.966)	(3.217)
$TAXACC_t$		0.244***	0.456***	0.576***	0.790***	1.144***
		(9.468)	(9.149)	(6.433)	(5.659)	(4.893)
PT_t		0.087***	0.148***	0.216***	0.225***	0.184**
		(7.913)	(7.263)	(6.022)	(4.291)	(2.292)
NOL_t		−0.002	0.003	0.016	0.046**	0.053**
		(−0.571)	(0.467)	(1.242)	(2.190)	(2.054)
Constant		0.023***	0.040***	0.064***	0.027***	0.063***
		(8.354)	(7.728)	(8.248)	(4.878)	(9.174)
Firm and year FE		Included	Included	Included	Included	Included
Adj. R^2		0.729	0.764	0.770	0.797	0.823
Obs.		11,925	11,925	11,925	10,349	8,930
F-test: $\beta_1 = 1.00$		239.50***	41.97***	9.42***	0.49	0.40
F-test: $\beta_1 + \beta_3 = 1.00$		360.90***	60.72***	19.74***	6.90***	2.25

Note: This table reports the results from estimating Equation (1) after including an indicator for firms engaging in relatively more tax avoidance ($LOWCETR = 1$) and the interaction term between high tax avoidance and UTBs, $LOWCETR \times UBEND$. The dependent variable in Columns 1–5 is the sum of cash taxes paid ($TXPD$) in periods $t + 1$, $t + 2$, $t + 3$, $t + 4$, and $t + 5$ scaled by total assets at $t - 1$, respectively. High tax avoidance is identified as a firm that falls into the bottom quartile of cash effective tax rates for the period $t - 3$ to $t - 1$. We report *t*-statistics in parentheses based on standard errors clustered by firm. We report confidence intervals for $UBEND$ and the interaction term in brackets. All continuous variables are winsorized at the 1st and 99th percentiles by fiscal year. *F*-tests of β_1 indicate whether the coefficient is statistically indistinguishable from 1.00. Thus, an insignificant *F*-test for $\beta_1 = 1.00$ at $t + 5$ (i.e., no asterisks) indicates that UTBs ($UBEND$) fully unwind over a 5-year period. Variables are defined in Appendix 2.
*, **, and *** denote statistical significance at the 0.10, 0.05, and 0.01 levels, respectively.

We reestimate Equation (1) after including EM and its interaction with $UBEND$. We report the results in Table 7. We find that $UBEND$ is significantly related to the sum of future income tax cash outflows in each column ($p < 0.10$). The interaction term $EM \times UBEND$ is insignificant across all columns. In joint *F*-tests of the coefficients of $UBEND$ and $EM \times UBEND$, we find that the coefficients are significantly less than one in Columns 1–4 ($F = 106.20$, 25.43, 7.22, and 2.98), but not significantly different from one in Column 5 ($F = 0.81$). This evidence suggests that the predictive ability of UTBs for future income tax cash outflows is dollar-for-

TABLE 7 Tests of the predictive ability of UTBs for future income tax cash outflows for firms most likely to engage in earnings management ($EM = 1$).

		(1) $TXPD_{t+1}$ Coeff. (*t*-stat) [CI]	(2) $\sum TXPD_{t+1 \text{ to } 2}$ Coeff. (*t*-stat) [CI]	(3) $\sum TXPD_{t+1 \text{ to } 3}$ Coeff. (*t*-stat) [CI]	(4) $\sum TXPD_{t+1 \text{ to } 4}$ Coeff. (*t*-stat) [CI]	(5) $\sum TXPD_{t+1 \text{ to } 5}$ Coeff. (*t*-stat) [CI]
$UBEND_t$	β_1	0.090*	0.263***	0.377***	0.596***	0.836***
		(1.929)	(2.969)	(2.780)	(2.855)	(2.949)
		[−0.002 to 0.182]	[0.089 to 0.437]	[0.111 to 0.643]	[0.187 to 1.006]	[0.280 to 1.393]
EM_t		−0.002*	−0.001	−0.000	0.001	0.000
		(−1.761)	(−0.373)	(−0.122)	(0.340)	(0.073)
$EM \times UBEND_t$	β_3	0.053	−0.038	0.021	−0.079	−0.157
		(0.735)	(−0.289)	(0.109)	(−0.366)	(−0.624)
		[−0.088 to 0.193]	[−0.296 to 0.220]	[−0.350 to 0.391]	[−0.503 to 0.345]	[−0.651 to 0.337]
$TXPD_t$		0.347***	0.594***	0.669***	0.630***	0.701***
		(9.349)	(7.757)	(5.360)	(3.602)	(2.681)
$TAXACC_t$		0.270***	0.498***	0.600***	0.765***	1.106***
		(9.163)	(8.410)	(6.047)	(4.897)	(4.143)
PT_t		0.086***	0.150***	0.237***	0.273***	0.246***
		(6.840)	(6.092)	(5.820)	(4.733)	(2.759)
NOL_t		−0.002	0.004	0.015	0.040**	0.033
		(−0.549)	(0.585)	(1.385)	(2.339)	(1.602)
Constant		0.003**	0.006**	0.022***	0.030***	0.067***
		(2.430)	(2.432)	(5.854)	(5.224)	(9.339)
Firm and year FE		Included	Included	Included	Included	Included
Adj. R^2		0.734	0.760	0.769	0.794	0.820
Obs.		10,171	10,171	10,171	8,940	7,799
F-test: $\beta_1 = 1.00$		379.40***	69.21***	21.15***	3.74*	0.33
F-test: $\beta_1 + \beta_3 = 1.00$		106.20***	25.43***	7.22***	2.98*	0.81

Note: This table reports the results from estimating Equation (1) after including an indicator for firms likely to engage in earnings management through the tax accounts ($EM = 1$) and an interaction term between earnings management and UTBs, $EM \times UBEND$. The dependent variable in Columns 1–5 is the sum of cash taxes paid ($TXPD$) in periods $t + 1$, $t + 2$, $t + 3$, $t + 4$, and $t + 5$ scaled by total assets at $t - 1$, respectively. We report *t*-statistics in parentheses based on standard errors clustered by firm. We report confidence intervals for $UBEND$ and $EM \times UBEND$ in brackets. All continuous variables are winsorized at the 1st and 99th percentiles by fiscal year. *F*-tests of β_1 indicate whether the coefficient is statistically indistinguishable from 1.00. Thus, an insignificant *F*-test for $\beta_1 = 1.00$ at $t + 5$ (i.e., no asterisks) indicates that UTBs ($UBEND$) fully unwind over a 5-year period. Variables are defined in Appendix 2.
*, **, and *** denote statistical significance at the 0.10, 0.05, and 0.01 levels, respectively.

dollar, even among firms that are most likely to engage in earnings management through the tax accounts. Overall, evidence from this analysis and the other cross-sectional tests suggest that UTBs' predictive ability for future cash tax outflows is *not* impaired in settings where the seemingly prescriptive nature of FIN 48 and opportunities for managerial opportunism may be stronger.

6 | INTERTEMPORAL ANALYSIS

Having documented that UTBs represent a dollar-for-dollar contingent liability on average and in the cross-section, we conduct two intertemporal tests to examine if the predictive ability of

UTBs varies after plausibly exogenous changes in the tax reporting environment. Unlike other accounts, the UTB is subject to scrutiny from both tax authorities and financial reporting regulators. Therefore, changes in the level of scrutiny by the tax authorities or changes in tax return reporting could impact related financial statement disclosures.

Our first test exploits the requirement that firms with assets of $100 ($50) [$10] million or more file Schedule UTP with their US federal tax returns effective in 2010 (2012) [2014] (Honaker & Sharma, 2017). This tax compliance change requires firms to rank their material uncertain tax positions from biggest to smallest to aid the IRS when scrutinizing the positions included in firms' FIN 48 tax reserves (Lisowsky et al., 2013). We expect that this additional private disclosure assists the IRS in detecting uncertain tax positions and successfully challenging them upon audit. If, as noted above, firms' inability to consider detection risk induces measurement error, then this tax return reporting change should result in more predictive UTBs, since UTBs will more likely manifest in future cash tax payments. Alternatively, if the assumption of 100% detection risk does not induce measurement error, we expect no change in the predictive ability of UTBs for future income tax cash outflows after Schedule UTP.

We modify Equation (1) to include an indicator for the implementation period of Schedule UTP ($UTP = 1$) as well as the interaction between UTP and $UBEND$. We report the results in Table 8. We find that $UBEND$ is significantly related to the sum of future income tax cash outflows in each column ($p < 0.05$). The interaction term $UTP \times UBEND$ is insignificant across all columns. In joint F-tests of the coefficients of $UBEND$ and $UTP \times UBEND$, we find that the coefficients are significantly less than one in Columns 1–4 ($F = 367.10$, 69.96, 21.13, and 5.48), but not significantly different from one in Column 5 ($F = 0.41$). The evidence suggests that the predictive ability of UTBs for future income tax cash outflows did not significantly change after the implementation of Schedule UTP despite the increased risk of detection.

Our second intertemporal test exploits the passage of the TCJA in the United States. While Schedule UTP focuses on uncertain tax positions, the TCJA is the largest change in US tax law since the Tax Reform Act of 1986. As a result, tax avoidance strategies and the risks of noncompliance are likely significantly different after TCJA. The TCJA also strengthened the link between tax returns and financial statements by requiring firms to recognize revenue for tax purposes in the year that it is included in the firm's financial statements (Hanlon, 2021). It is an open question whether the impact of the TCJA altered the predictive ability of UTBs for future income tax cash outflows.

We modify Equation (1) and include an indicator for the period after the passage of the TCJA ($TCJA = 1$) as well as its interaction with $UBEND$. We also restrict our analysis to include only firm-year observations from 2015 through 2020 to ensure a balanced number of years before and after TCJA enactment. Due to the limited number of years available after TCJA enactment, we are only able to examine the sum of future income tax cash outflows up to $t + 3$, and caution readers on the interpretation of our results given the recency of TCJA.

In Table 9, we find that $UBEND$ is significantly related to the sum of future income tax cash outflows in each column ($p < 0.05$). The coefficient on the interaction term $TCJA \times UBEND$ is insignificant in all columns. In joint F-tests of the coefficients of $UBEND$ and $TCJA \times UBEND$, we find that the coefficients are significantly less than one in Columns 1 and 2 ($F = 75.71$ and 6.44), but not significantly different from one in Column 3 ($F = 1.25$). The results suggest that the predictive ability of UTBs for future income tax cash outflows did not significantly change after the TCJA.

Overall, the intertemporal evidence provides additional support for our inference that UTBs accrued under FIN 48 are predictive of future income tax cash outflows and that the relation

TABLE 8 Intertemporal tests of the predictive ability of UTBs for future income tax cash outflows given the implementation of Schedule UTP ($UTP = 1$).

		(1) $TXPD_{t+1}$ Coeff. (*t*-stat) [CI]	(2) $\sum TXPD_{t+1 \text{ to } 2}$ Coeff. (*t*-stat) [CI]	(3) $\sum TXPD_{t+1 \text{ to } 3}$ Coeff. (*t*-stat) [CI]	(4) $\sum TXPD_{t+1 \text{ to } 4}$ Coeff. (*t*-stat) [CI]	(5) $\sum TXPD_{t+1 \text{ to } 5}$ Coeff. (*t*-stat) [CI]
$UBEND_t$	β_1	0.138**	0.357***	0.578***	0.882***	1.058***
		(2.490)	(3.383)	(3.328)	(3.486)	(3.373)
		[0.029 to 0.246]	[0.150 to 0.563]	[0.237 to 0.918]	[0.386 to 1.378]	[0.443 to 1.674]
UTP_t		−0.003	−0.008*	−0.010	−0.014	−0.020
		(−1.611)	(−1.760)	(−1.399)	(−1.478)	(−1.639)
$UTP \times UBEND_t$	β_3	−0.027	−0.082	−0.199	−0.350	−0.237
		(−0.545)	(−0.803)	(−1.166)	(−1.512)	(−0.918)
		[−0.122 to 0.069]	[−0.281 to 0.118]	[−0.533 to 0.135]	[−0.803 to 0.104]	[−0.743 to 0.269]
$TXPD_t$		0.336***	0.579***	0.712***	0.708***	0.831***
		(10.525)	(8.940)	(6.222)	(4.394)	(3.619)
$TAXACC_t$		0.252***	0.477***	0.618***	0.814***	1.151***
		(9.852)	(9.704)	(7.195)	(6.194)	(5.331)
PT_t		0.081***	0.135***	0.199***	0.218***	0.180**
		(7.979)	(7.035)	(6.086)	(4.613)	(2.546)
NOL_t		0.000	0.009	0.023**	0.049***	0.058**
		(0.004)	(1.272)	(2.071)	(2.782)	(2.439)
Constant		0.022***	0.040***	0.064***	0.045***	0.086***
		(8.326)	(7.944)	(8.038)	(4.202)	(6.551)
Firm and year FE		Included	Included	Included	Included	Included
Adj. R^2		0.726	0.760	0.767	0.794	0.820
Obs.		12,510	12,510	12,510	10,848	9,342
F-test: $\beta_1 = 1.00$		242.80***	37.28***	5.92**	0.22	0.03
F-test: $\beta_1 + \beta_3 = 1.00$		367.10***	69.96***	21.13***	5.48**	0.41

Note: This table reports the results from estimating Equation (1) after including an indicator for firm-years after the implementation of Schedule UTP ($UTP = 1$) and an interaction term between the indicator for the implementation of Schedule UTP and UTBs, $UTP \times UBEND$. The dependent variable in Columns 1–5 is the sum of cash taxes paid ($TXPD$) in periods $t + 1$, $t + 2$, $t + 3$, $t + 4$, and $t + 5$ scaled by total assets at $t - 1$, respectively. We report *t*-statistics in parentheses based on standard errors clustered by firm. We report confidence intervals for $UBEND$ and $UTP \times UBEND$ in brackets. All continuous variables are winsorized at the 1st and 99th percentiles by fiscal year. *F*-tests of β_1 indicate whether the coefficient is statistically indistinguishable from 1.00. Thus, an insignificant *F*-test for $\beta_1 = 1.00$ at $t + 5$ (i.e., no asterisks) indicates that UTBs ($UBEND$) fully unwind over a 5-year period. Variables are defined in Appendix 2.

*, **, and *** denote statistical significance at the 0.10, 0.05, and 0.01 levels, respectively.

appears to be dollar-for-dollar. The results also suggest that changes in tax authority scrutiny of tax uncertainty or changes in the complexity of the underlying tax law do not alter this relation. However, we urge caution when interpreting these results given the relatively short pre-period for the Schedule UTP analysis and post-period for the TCJA analysis.[20]

[20]In addition, we note that tax positions taken prior to the implementation of Schedule UTP were not required to be included on Schedule UTP, potentially muting the impact of this new tax return disclosure. Similarly, only tax positions taken after the enactment of the TCJA are affected by the TCJA and thus potentially have a different tax risk profile than tax positions taken before the TCJA.

TABLE 9 Intertemporal tests of the predictive ability of UTBs for future income tax cash outflows given the change in tax law due to the TCJA ($TCJA = 1$).

		(1) $TXPD_{t+1}$ Coeff. (*t*-stat) [CI]	(2) $\sum TXPD_{t+1 \text{ to } 2}$ Coeff. (*t*-stat) [CI]	(3) $\sum TXPD_{t+1 \text{ to } 3}$ Coeff. (*t*-stat) [CI]
$UBEND_t$	β_1	0.213**	0.549***	0.854***
		(2.177)	(2.747)	(3.002)
		[0.021 to 0.405]	[0.157 to 0.940]	[0.296 to 1.413]
$TCJA_t$		0.001	−0.007***	−0.010***
		(1.290)	(−3.527)	(−3.879)
$TCJA \times UBEND_t$	β_3	−0.003	−0.068	−0.196
		(−0.061)	(−0.556)	(−0.953)
		[−0.114 to 0.107]	[−0.306 to 0.171]	[−0.599 to 0.207]
$TXPD_t$		0.226***	0.306***	0.171
		(5.024)	(3.551)	(1.432)
$TAXACC_t$		0.183***	0.263***	0.219***
		(6.470)	(5.331)	(3.379)
PT_t		0.079***	0.124***	0.178***
		(6.409)	(5.023)	(5.302)
NOL_t		−0.003	0.009	0.014
		(−0.699)	(0.683)	(0.659)
Constant		0.011***	0.029***	0.049***
		(7.641)	(8.624)	(9.719)
Firm and year FE		Included	Included	Included
Adj. R^2		0.659	0.750	0.826
Obs.		7,088	5,798	4,418
F-test: $\beta_1 = 1.00$		64.53***	5.11**	0.26
F-test: $\beta_1 + \beta_3 = 1.00$		75.71***	6.44**	1.25

Note: This table reports the results from estimating Equation (1) after including an indicator for firm-years after the TCJA became effective ($TCJA = 1$) and an interaction term between the indicator for the effective period of the TCJA and UTBs, $TCJA \times UBEND$. The dependent variable in Columns 1–3 is the sum of cash taxes paid ($TXPD$) in periods $t + 1$, $t + 2$, and $t + 3$ scaled by total assets at $t - 1$, respectively. We report *t*-statistics in parentheses based on standard errors clustered by firm. We report confidence intervals for $UBEND$ and $TCJA \times UBEND$ in brackets. All continuous variables are winsorized at the 1st and 99th percentiles by fiscal year. *F*-tests of β_1 indicate whether the coefficient is statistically indistinguishable from 1.00. Thus, an insignificant *F*-test for $\beta_1 = 1.00$ at $t + 3$ (i.e., no asterisks) indicates that UTBs ($UBEND$) fully unwind over a 3-year period. Variables are defined in Appendix 2.
*, **, and *** denote statistical significance at the 0.10, 0.05, and 0.01 levels, respectively.

7 | CONCLUSION

Accrual accounting enables various stakeholders to evaluate the underlying economic performance of a firm, specifically because it allows users to forecast future cash flows. Accruals related to uncertain future events, namely contingent liability accruals, can be particularly useful when predicting future cash flows. However, due to the inherent difficulty of predicting the outcome of these events, there is also considerable judgment and discretion involved in determining the appropriate accrual amount. Accounting standards trade off the potential costs and benefits of restricting such managerial discretion. Theory suggests that discretion can be beneficial to the extent managers use it to convey their private information, but acknowledges it can also be costly when managers act opportunistically. FIN 48 provides a focused setting to

examine if the restrictions on managerial discretion embedded in the accounting guidance over tax-related contingencies yield tax accruals predictive of future income tax cash flows.

Contrary to critics' concerns, we find that UTBs accrued under FIN 48 are predictive of future tax cash outflows, on average. In cross-sectional analyses, we find that this result holds for firms (1) most affected by the change in accounting, (2) subject to relatively lower detection risk, (3) engaged in relatively more tax avoidance, and (4) more likely engaged in earnings management through the tax accounts. We also provide evidence that this relation holds after two plausibly exogenous shocks, namely the introduction of Schedule UTP and the passage of the TCJA. Collectively, the evidence suggests that FIN 48 does not impair managers' ability to convey their private information, induce measurement error because detection risk is assumed to be 100%, or enable managers to use the tax reserve accrual opportunistically.

Our study has important implications for accounting standard setters, practitioners, and academics. Using the focused tax setting, we provide evidence that efforts to constrain managerial discretion do not necessarily impair the predictive ability of contingent liabilities. Given the ability of tax reserves accrued under FIN 48 to predict future income tax cash outflows, the FASB and accounting standard setters in other jurisdictions can consider if revisions to existing accounting standards, such as the FASB's abandoned effort to revise SFAS No. 5 more generally, would be beneficial. Our results suggest that such efforts could yield similar benefits constraining managerial discretion without inhibiting accruals from aiding users in predicting future cash flows.

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APPENDIX 1: UTB MEASUREMENT AND RECOGNITION EXAMPLES

Assume a firm claims a $1,000 tax benefit (e.g., tax credit) on its current year tax return. Below, we illustrate how changes in the manager's expectations about the strength of facts supporting the tax position and detection risk related to the tax position can affect the financial reporting for income tax uncertainty under FIN 48 (more-likely-than-not approach) and SFAS No. 5 (expected value approach), respectively. We summarize the scenarios in Table 10.

Scenario 1: Relatively strong facts

The manager develops the following probability table for the two possible outcomes of an audit of the tax position based on an evaluation of the strength of its facts:

Possible tax benefit retained	Individual probability	Cumulative probability
$1,000	51%	51%
$0	49%	100%

If the manager determines that detection risk is 100%, then the difference in the tax reserve under FIN 48 relative to SFAS No. 5 is computed as follows:

FIN 48 tax benefit retained : $1,000.

Accrued UTB liability : $1,000 − $1,000 = $0.

Expected value of benefit if undetected : $1,000 × 0 = $0.

Expected value of benefit if detected : ($1,000 × 0.51 × 1) + ($0 × 0.49 × 1) = $510.

SFAS No. 5 tax benefit : $0 + $510 = $510.

SFAS No. 5 liability : $1,000 − $510 = $490.

Difference in liabilities (FIN 48 − SFAS No. 5) : $0 − $490 = ($490).

If the manager sets detection risk at 80%, the difference in the tax reserve under FIN 48 relative to SFAS No. 5 is computed as follows:

FIN 48 tax benefit retained : $1,000.

Accrued UTB liability : $1,000 − $1,000 = $0.

Expected value of benefit if undetected : $1,000 × 0.2 = $200.

Expected value of benefit if detected : ($1,000 × 0.51 × 0.8) + ($0 × 0.49 × 0.8) = $408.

SFAS No. 5 tax benefit : $200 + $408 = $608.

SFAS No. 5 liability : $1,000 − $608 = $392.

Difference in liabilities (FIN 48 − SFAS No. 5) : $0 − $392 = ($392).

If the manager sets detection risk at 50%, then the difference in the tax reserve under FIN 48 relative to SFAS No. 5 is computed as follows:

FIN 48 tax benefit retained : $1,000.

Accrued UTB liability : $1,000 − $1,000 = $0.

Expected value of benefit if undetected : $1,000 × 0.5 = $500.

TABLE 10 Summary of UTB measurement and recognition examples for $1,000 benefit.

Panel A: Relatively strong facts

(a) Potential benefit	(b) Individual probability	(c) Cumulative probability	(d) Detection risk	(e) FIN 48 benefit	(f) FIN 48 liability (a) – (e)	(g) SFAS No. 5 benefit if detected (a) × (b) × (d)	(h) SFAS No. 5 benefit if undetected (a) × [1 – (d)]	(i) SFAS No. 5 liability (a) – (g) – (h)	Difference (f) – (i)
$1,000	51%	51%	100%	$1,000	$0	$510	$0	$490	($490)
$1,000	51%	51%	80%	$1,000	$0	$408	$200	$392	($392)
$1,000	51%	51%	50%	$1,000	$0	$255	$500	$245	($245)
$1,000	51%	51%	20%	$1,000	$0	$102	$800	$98	($98)

Panel B: Relatively weak facts

(a) Potential benefit	(b) Individual probability	(c) Cumulative probability	(d) Detection risk	(e) FIN 48 benefit	(f) FIN 48 liability (a) – (e)	(g) SFAS No. 5 benefit if detected (a) × (b) × (d)	(h) SFAS No. 5 benefit if undetected (a) × [1 – (d)]	(i) SFAS No. 5 liability (a) – (g) – (h)	Difference (f) – (i)
$1,000	49%	49%	100%	$0	$1,000	$490	$0	$510	$490
$1,000	49%	49%	80%	$0	$1,000	$392	$200	$408	$592
$1,000	49%	49%	50%	$0	$1,000	$245	$500	$255	$745
$1,000	49%	49%	20%	$0	$1,000	$98	$800	$102	$898

Note: This table presents a summary of the scenarios discussed in Appendix 1. Recall that if it is more likely than not that the position will (not) be upheld upon audit, the firm will (not) recognize the benefit. In Panel A, there is a 51% chance that the position will be upheld upon audit and a 49% chance it will not. In Panel B, there is a 49% chance that the position will be upheld upon audit and a 51% chance it will not.

Expected value of benefit if detected : $(\$1{,}000 \times 0.51 \times 0.5) + (\$0 \times 0.49 \times 0.5) = \$255$.

SFAS No. 5 tax benefit : $\$500 + \$255 = \$755$.

SFAS No. 5 liability : $\$1{,}000 - \$755 = \$245$.

Difference in liabilities (FIN 48 − SFAS No. 5) : $\$0 - \$245 = (\$245)$.

If the manager sets detection risk at 20%, then the difference in the tax reserve under FIN 48 relative to SFAS No. 5 is computed as follows:

FIN 48 tax benefit retained : $1,000.

Accrued UTB liability : $\$1{,}000 - \$1{,}000 = \$0$.

Expected value of benefit if undetected : $\$1{,}000 \times 0.8 = \$800$.

Expected value of benefit if detected : $(\$1{,}000 \times 0.51 \times 0.2) + (\$0 \times 0.49 \times 0.2) = \$102$.

SFAS No. 5 tax benefit : $\$800 + \$102 = \$902$.

SFAS No. 5 liability : $\$1{,}000 - \$902 = \$98$.

Difference in liabilities (FIN 48 − SFAS No. 5) : $\$0 - \$98 = (\$98)$.

Scenario 2: Relatively weak facts

The manager no longer believes that the tax position is more likely than not to be sustained upon audit. The manager develops the following probability table based on an evaluation of the strength of its facts:

Possible tax benefit retained	Individual probability	Cumulative probability
$1,000	49%	49%
$0	51%	100%

If the manager determines that detection risk is 100%, then the difference in the tax reserve under FIN 48 relative to SFAS No. 5 is computed as follows:

FIN 48 tax benefit retained : $0.

Accrued UTB liability : $\$1{,}000 - \$0 = \$1{,}000$.

Expected value of benefit if undetected : $\$1{,}000 \times 0 = \$0$.

Expected value of benefit if detected : $(\$1{,}000 \times 0.49 \times 1) + (\$0 \times 0.51 \times 1) = \$490$.

SFAS No. 5 tax benefit : $0 + $490 = $490.

SFAS No. 5 liability : $1,000 – $490 = $510.

Difference in liabilities (FIN 48 – SFAS No. 5) : $1,000 – $510 = $490.

If the manager sets detection risk at 80%, then the difference in the tax reserve under FIN 48 relative to SFAS No. 5 is computed as follows:

FIN 48 tax benefit retained : $0.

Accrued UTB liability : $1,000 – $0 = $1,000.

Expected value of benefit if undetected : $1,000 × 0.2 = $200.

Expected value of benefit if detected : ($1,000 × 0.49 × 0.8) + ($0 × 0.51 × 0.8) = $392.

SFAS No. 5 tax benefit : $200 + $392 = $592.

SFAS No. 5 liability : $1,000 – $592 = $408.

Difference in liabilities (FIN 48 – SFAS No. 5) : $1,000 – $408 = $592.

If the manager sets detection risk at 50%, then the difference in the tax reserve under FIN 48 relative to SFAS No. 5 is computed as follows:

FIN 48 tax benefit retained : $0.

Accrued UTB liability : $1,000 – $0 = $1,000.

Expected value of benefit if undetected : $1,000 × 0.5 = $500.

Expected value of benefit if detected : ($1,000 × 0.49 × 0.5) + ($0 × 0.51 × 0.5) = $245.

SFAS No. 5 tax benefit : $500 + $245 = $745.

SFAS No. 5 liability : $1,000 – $745 = $255.

Difference in liabilities (FIN 48 – SFAS No. 5) : $1,000 – $255 = $745.

If the manager sets detection risk at 20%, then the difference in the tax reserve under FIN 48 relative to SFAS No. 5 is computed as follows:

FIN 48 tax benefit retained : $0.

Accrued UTB liability : $1,000 – $0 = $1,000.

Expected value of benefit if undetected : $\$1{,}000 \times 0.8 = \$800$.

Expected value of benefit if detected : $(\$1{,}000 \times 0.49 \times 0.2) + (\$0 \times 0.51 \times 0.2) = \$98$.

SFAS No. 5 tax benefit : $\$800 + \$98 = \$898$.

SFAS No. 5 liability : $\$1{,}000 - \$898 = \$102$.

Difference in liabilities (FIN 48 − SFAS No. 5) : $\$1{,}000 - \$102 = \$898$.

APPENDIX 2: VARIABLE DEFINITIONS

Variable	Definition
Dependent variable	
$\sum TXPD_{t+1 \text{ to } t+k}$	Cash taxes paid (txpd) in year $t + k$, where $1 \le k \le 5$, scaled by total assets at time $t - 1$ (at)
Independent variables	
$UBEND_t$	Ending balance of unrecognized tax benefits (UTBs) (txtubend) in year t, scaled by total assets at time $t - 1$ (at)
$TXPD_t$	Cash taxes paid (txpd) in year t, scaled by total assets at time $t - 1$ (at)
$TAXACC_t$	Income tax expense (txt) less cash taxes paid (txpd) less the change in uncertain tax benefits related to permanent differences in year t (txtubtxtr), scaled by total assets at time $t - 1$ (at). The change in uncertain tax benefits related to permanent differences (txtubtxtr) is computed as the difference from period $t - 1$ to t
PT_t	Pre-tax income (pi) in year t, scaled by total assets at time $t - 1$ (at)
NOL_t	Tax loss carryforwards (tlcf) in year t, scaled by total assets at time $t - 1$ (at)
Future information control variable	
$\sum PT_{t+1 \text{ to } t+k}$	Pre-tax income (pi) in year $t + k$, scaled by total assets at time $t - 1$ (at)
Cross-sectional variables	
CEA_t	The cumulative equity adjustment (from Audit Analytics) from the adoption of FIN 48 scaled by assets (at)
$HIGHABSCEA_t$	Indicator variable equal to one if the absolute value of a firm's *CEA* is in the top quartile for all firms that disclose a non-zero cumulative equity adjustments, and zero otherwise
CIC_t	A firm's detection risk measured using the predicted probability of Coordinated Industry Case (CIC) program assignment consistent with Ayers et al. (2019)
$LOWCIC_t$	Indicator variable equal to one if a firm is subject to low detection risk as measured using *CIC*, and zero otherwise
$IRS\ ATTENTION_t$	Number of Form 10-K downloads by the IRS following Bozanic et al. (2017)

(Continues)

APPENDIX (Continued)

Variable	Definition
$LOWIRS_t$	Indicator variable equal to one if a firm is subject to low detection risk as measured using *IRS ATTENTION*, and zero otherwise
$CETR_t$	Three-year cash effective tax rate measured for the period from $t-3$ to $t-1$, defined as the sum of cash taxes paid (txpd) divided by the sum of pre-tax income (pi) less special items (spi). Observations with negative denominators are dropped. ETRs are reset to one (zero) if greater (less) than one (zero)
$LOWCETR_t$	Indicator variable equal to one if firm i is in the bottom quartile of *CETR* by year, and zero otherwise
EM_t	Indicator variable equal to one if firm i is engaging in earnings management through the tax accounts, and zero otherwise. We identify a firm as engaging in earnings management if the firm would have failed to meet consensus analyst forecast using their third quarter ETR but did meet the forecast given a reduction in annual ETR, consistent with Gleason and Mills (2008)
Intertemporal variables	
UTP_t	Indicator variable equal to one if a given firm-year observation falls on or after the fiscal year when that firm would first be required to file Schedule UTP, and zero otherwise. Schedule UTP became effective for firms with assets greater than \$100 (\$50) [\$10] million in 2010 (2012) [2014]
$TCJA_t$	Indicator variable equal to one if a given firm-year observation falls on or after the fiscal year when the Tax Cuts and Jobs Act (TCJA) (i.e., 2017) would be in effect, and zero otherwise

Note: Compustat data items are indicated in parentheses.