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**Material Weaknesses in Tax-Related Internal Controls
and Last Chance Earnings Management**

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Material Weaknesses in Tax-Related Internal Controls and Last Chance Earnings Management

ABSTRACT: We investigate the consequences of tax-related internal control material weaknesses (ICMWs) for financial reporting. We hypothesize that the presence of ineffective controls over the tax function makes earnings management through the income tax accrual (both income-increasing and income-decreasing) easier to implement relative to firms with effective controls. We also predict that the remediation of tax-related ICMWs has the effect of constraining earnings management through the tax accrual. The results provide support for our predictions. We also find that last chance earnings management via tax-related ICMWs is concentrated in the early years of our sample, during the initial SOX implementation period. Our results suggest that tax-related ICMWs were initially associated with greater tax-expense management but that SOX internal control assessments subsequently improved the quality of financial reporting by reducing opportunities for tax-expense management.

Material Weaknesses in Tax-Related Internal Controls and Last Chance Earnings Management

I. INTRODUCTION

As mandated by the Sarbanes-Oxley Act of 2002 (SOX), publicly traded companies must disclose material weaknesses in their internal controls over financial reporting (ICFR). Initial disclosures following SOX indicate that one of the most common areas exhibiting internal control material weaknesses (ICMWs) involves income tax reporting (KPMG 2006a, 23-24). Subsequent surveys continue to indicate that tax-related ICMWs are still prevalent (Deloitte 2011). The prevalence of tax-related ICMWs is not surprising given the complexities of tax rules and regulations and the financial reporting requirements for income taxes. Moreover, in a survey of corporate tax departments prior to SOX, more than half reported focusing on minimizing income tax liabilities and effective tax rates and having few meaningful internal controls over the tax function (Robinson, Sikes, and Weaver 2010; KPMG 2006b). However, SOX changed tax departments' focus and led to an increased emphasis on compliance issues (KPMG 2006b, 8). Firms expanded the scope and documentation of their internal controls in the tax area (KPMG 2006b, 15), consistent with the presumption that such actions would lead to a reduction in material intentional and/or unintentional errors in financial statements, including earnings management.

Prior accounting research establishes a link between earnings management and the financial reporting of income taxes. Specifically, several studies provide evidence that managers use their discretion over the income tax accrual to manage earnings, also known as "last chance earnings management" (e.g., Dhaliwal, Gleason, and Mills 2004; Frank and Rego 2006; Krull 2004). Moreover, ineffective internal controls have been linked to earnings management. Skaife, Veenman, and Wangerin (2013, 91) state, "When firms have ineffective ICFR, managers have

more discretion over accounting estimates and methods due to the lack of formal policies and procedures that restrict managers' accounting choices (Hogan and Wilkins 2008).” The accounting literature includes studies demonstrating that accounting information is less reliable for firms with ineffective ICFR (e.g., Doyle, Ge, and McVay 2007; Ashbaugh-Skaife, Collins, Kinney, and LaFond, 2008; Feng, Li, and McVay 2009). It also provides evidence that firms with ICMWs engage in more accrual-based and real earnings management (e.g., Chan, Farrell, and Lee 2008; Jarvinen and Myllymaki 2016).

In this study we build on prior research by first investigating whether firms disclosing tax-related ICMWs are more likely to manage earnings through the income tax accrual than a control sample of firms with only non-tax ICMWs.¹ We examine both income-increasing and income-decreasing tax expense management in the year prior to the material weakness disclosure. We then test whether such earnings management is constrained once the material weaknesses have been remediated.

We focus on tax-related ICMWs for several reasons. Complex tax rules and the absence of public disclosure of tax return information result in a high degree of information asymmetry between managers and financial statement users with regard to income taxes. Such complexity and lack of transparency can foster earnings management, which is seemingly made easier in the presence of ineffective controls over the tax function.² Last chance earnings management, by definition, comes very late in the accounting adjustment (i.e., accrual) process. The presence of

1 We use the disclosure of a material weakness to identify the year that a material weakness is discovered and documented, since the effects of discovery and disclosure cannot be unraveled. This is consistent with Rice and Weber (2012). Also, in secondary tests, we use a sample of firms with no internal control deficiencies as an alternative control sample.

2 The SEC (2007) states that the effectiveness of internal controls for financial reporting should be evaluated, most especially for certain financial reporting elements that involve critical accounting policies and critical accounting estimates. “Critical accounting policies” include those that are most important to financial statement presentation and “critical accounting estimates” relate to estimates or assumptions that involve the application of GAAP where the nature of the estimates or assumptions is material due to the levels of subjectivity and managerial judgment necessary to account for highly uncertain matters. Income tax accounting generally reflects these concerns.

tax-related ICMWs, including insufficient documentation and the ability of management to override internal controls, suggests there is a greater opportunity to engage in last chance earnings management when controls are ineffective (AICPA 2016).

However, the presence of tax-related ICMWs could cause auditors to increase their scrutiny of the tax accounts, which could result in less earnings management. For example, the discovery of tax-related ICMWs could cause auditors to perform additional substantive testing that substitutes for the ineffective tax-related internal controls and constrains managers from engaging in last chance earnings management. Thus, it is not obvious that last chance earnings management will in fact be more easily implemented in the presence of tax-related ICMWs. We also note that having the opportunity to manage earnings does not imply firms will always exploit that opportunity. Management may choose not to manage earnings, or may be unable to sufficiently manage earnings to meet or beat analysts' earnings forecasts because it cannot overcome poor performance (i.e., pre-managed earnings are too far from the earnings target), or perhaps is constrained by an unduly low third-quarter effective tax rate (ETR) to successfully employ last chance earnings management.

Moreover, whether account-specific ICMWs, such as those related to the income tax function, are associated with earnings management is an open question. Doyle et al. (2007) find the association exists for company-level ICMWs but not for account-specific ICMWs. They argue it is easier to "audit around" account-specific ICMWs and thus such ICMWs should have little effect on accrual quality. However, Graham and Bedard (2015) suggest that tax-related ICMWs tend to be more severe than other account-specific material weaknesses. Thus, the unique features of the tax accounts suggest that tax-related ICMWs likely differ from other account-specific ICMWs. Further, the complexity of tax law and the relative lack of transparency

of income tax reporting also suggest that relatively few managers, external auditors, and financial analysts have the expertise to critically analyze a firm's accounting for income taxes and detect tax accrual manipulations. Hence, if a firm's internal controls over the tax function are ineffective, it is reasonable to expect a higher likelihood of tax expense management.

We compare firms with tax-related ICMWs (our *TAX* firms) with firms that have non-tax-related ICMWs (our *NONTAX* firms), enabling us to assess the specific impact of tax-related ICMWs versus non-tax ICMWs on last chance earnings management. We use a difference-in-difference research design to test whether the remediation of such tax-related ICMWs constrains future tax-expense management.

Our main results indicate that compared to firms with non-tax-related ICMWs, *TAX* firms are more likely to reduce their fourth-quarter ETR relative to their third-quarter ETR when earnings would otherwise miss the consensus analyst forecast in the year preceding the firm's first disclosure of a tax-related ICMW. We also demonstrate that conditional on firms decreasing their fourth-quarter ETRs, the *TAX* firms are more likely to meet/beat analysts' forecasts than the *NONTAX* firms in the year prior to the disclosure of the tax-related ICMW. This result is consistent with *TAX* firms engaging in more income-increasing, tax-expense management to meet or beat analysts' forecasts than the control firms. Absent earnings management, we would not expect ETR revisions to be distributed differently across firms with and without tax-related ICMWs. Similarly, amongst firms that would have exceeded the consensus analyst forecast based on their third-quarter ETR, *TAX* firms are more likely than the *NONTAX* firms to increase their fourth-quarter ETR, consistent with *TAX* firms using the tax provision to build cookie jar reserves. Further, we find that the relations observed in the year prior to the disclosure of a tax-

related ICMW are mitigated in the year the ICMW is disclosed (but prior to remediation), consistent with discovery leading to a reduction in tax-expense management.

Supplemental tests reveal that our main results are concentrated in years following the initial implementation of SOX, consistent with SOX mitigating last chance earnings management facilitated by tax-related ICMWs. We also compare the *TAX* firms to a sample of firms matched on size and industry but having no internal control deficiencies. Compared to firms without any ICMWs we find *TAX* firms are more likely to engage in last chance earnings management in both the year before and the year a tax-related ICMW is disclosed. Conditional on firms decreasing their fourth-quarter ETRs, *TAX* firms are also more likely than firms without internal control deficiencies to meet/beat analysts' forecasts in the year preceding the disclosure of their tax-related ICMWs. Overall, we provide evidence that tax-related ICMWs facilitated earnings management through the tax accrual in the early years of our sample; however, in the later years of our sample period it appears that SOX internal control audits mitigate tax-expense management facilitated by tax-related ICMWs.

Our findings should be of interest to researchers and regulators in auditing, financial reporting, and taxation. We contribute to the literature by extending the Ashbaugh-Skaife, Collins and Kinney (2007), Ashbaugh-Skaife et al. (2008) and Doyle et al. (2007) studies by focusing on the tax function. We provide evidence that an account-specific ICMW (i.e., related to income tax reporting) is associated with greater earnings management via the income tax accrual. This result contrasts with findings in Doyle et al. (2007), who conclude that the negative association between ICMWs and accounting quality in their study is driven by company- rather than account-level ICMWs. We also find that remediation of tax-related ICMWs leads to *less* earnings management via the tax accrual. Our analyses are important in that they yield a better

understanding of the impact of ineffective tax-related ICFR. Evidence that tax-related ICMWs are associated with greater last chance earnings management, and further, that remediation of the tax-related ICMWs constrains such earnings management, supports the contention of a link between tax-related weaknesses in internal controls and benchmark beating. It appears that tax-related ICMWs, coupled with the complexity of tax rules, the subjectivity in estimating tax expense, the proprietary nature of tax return data, and the limited transparency of income tax reporting, have a significant impact on the prevalence of last chance earnings management behavior relative to non-tax-related ICMWs.

II. BACKGROUND, PRIOR RESEARCH, AND HYPOTHESES

Background

SOX requires managers to evaluate and report on the internal controls over financial reporting. Section 302 of SOX focuses on the disclosure of internal controls and procedures while Section 404 deals with internal controls over financial reporting. In addition, Section 404 mandates that auditors annually attest to the effectiveness of a company's ICFR. Accelerated filers (essentially larger firms) were subject to both Sections 302 and 404 during our sample period, whereas non-accelerated filers were exempt from parts of Section 404 until 2007. These provisions of SOX were in part a response to concerns that ineffective controls over ICFR increase the likelihood of material misstatements in firms' financial reports.

Results from event studies of the SOX legislative process suggest that market participants expected firms to benefit from SOX through a tightening of internal controls and a reduction of opportunistic behavior (Zhang 2007; Li, Pincus, and Rego 2008). Moreover, prior research also links ineffective internal controls to lower earnings quality and higher information asymmetry. ICMWs reported under SOX Sections 302 and 404 are associated with lower accruals quality

(Ashbaugh-Skaife et al. 2008; Doyle et al. 2007), decreased earnings persistence (Doyle et al. 2007), and restatements of earnings and SEC Accounting and Auditing Enforcement Releases (Ashbaugh-Skaife et al. 2007). Feng et al. (2009) consider the accuracy of earnings guidance from firms with Section 404 ICMWs and find that firms with ICMWs, especially those related to revenue and cost of goods sold, provide less accurate earnings guidance compared to firms with no ICMWs. Kim, Song and Zhang (2009) show that earnings reports from firms with effective internal controls are more useful, resulting in a higher degree of analyst forecast convergence and larger forecast revisions per unit of earnings surprise.

Given the diversity in the scope and potential impact of reported ICMWs, there is reason to expect that not all ICMWs increase the likelihood of material misstatements in financial reports. Moody's Investment Services categorizes ICMWs into more severe and less severe categories. Moody's describes as more serious material weaknesses in "company-level controls such as the control environment or the financial reporting process" that are brought to the attention of its ratings committee and "call into question not only management's ability to prepare accurate financial reports but also its ability to control the business" (Doss and Jonas 2004, 1). On the other hand, less serious material weaknesses generally involve account-specific or transaction-level internal controls. Moody's does not expect these types of ICMWs to result in any ratings-related action, under the assumption that management will take corrective action on a timely basis to address such weaknesses. Further, Moody's asserts "that the auditor can effectively 'audit around' these material weaknesses by performing additional substantive procedures in the area where the material weakness exists" (Doss and Jonas 2004, p. 1).³

³ Asare and Wright (2012) find in an experimental setting that analysts have a more negative reaction to company-level material weaknesses relative to account-specific weaknesses. They hypothesize this is because of greater uncertainty about the nature of entity-level deficiencies.

Doyle et al. (2007) follow Moody's classification scheme and partition their sample of ICMWs into account-specific and company-level groups. They find no significant association between account-specific internal control deficiencies and earnings quality in the year prior to ICMW disclosure and conclude that their overall finding of a relation between ICMWs and earnings quality is driven by company-level internal control weaknesses. Hammersley, Myers, and Shakespeare (2008) document a lower market penalty for the announcement of account-specific ICMWs, suggesting market participants view them as less serious.⁴ Audit fees are also lower in the year before account-specific internal control deficiencies under Section 302 are reported (Hogan and Wilkins 2008).⁵ Lower audit fees suggest auditors did not assign a high level of risk or audit effort to the as yet undisclosed control deficiencies.

Tax-related ICMWs are included in Moody's less serious, account-specific internal control weakness category (Doss and Jonas 2004; Doyle et al. 2007a). However, based on an analysis of internal control deficiencies obtained from proprietary survey data from several accounting firms, Graham and Bedard (2015) document the types of tax-related internal control deficiencies that auditors are more likely to view as severe. These include problems arising in preparing the income tax provision, computing and valuing deferred taxes, and tax compliance. Bedard, Hoitash, Houtash, and Westermann (2012) consider all types of ICMWs under Section 404 for 2004-2006 and show that tax-related ICMWs are among the set of material weaknesses associated with significantly higher increases in abnormal accruals. Further, Bedard et al. (2012) argue that tax-related ICMWs are one of the types of ICMWs that investors should be most

4 Hammersley et al. (2008) adapt the Moody's classification using the advice of audit partners to refine Moody's account-specific and company internal categories of control weaknesses.

5 Because audit firms are permitted to also do tax work for their audit clients, it is conceivable that auditor independence could be impaired. However, Harris, and Zhou (2013) and De Simone, Ege, and Stomberg (2015) find that firms with higher ratios of tax fees to total auditor fees are less likely to report both tax-related ICMWs and other types of material weaknesses, and their results are not due to impaired auditor independence. Kinney, Palmrose, and Scholz (2004) also provide evidence inconsistent with a compromise of auditor independence when tax work is performed.

concerned about since they generally are slow to be remediated and thus can negatively impact near-term earnings quality.

We reviewed nearly 1,000 company-year reports indicating ICMWs (both account-specific and company-level) as described in SEC filings and included in the *Audit Analytics* database by June 2007, and found that more than one-third of the cases involved tax-related ICMWs. The prevalence of ineffective internal controls in the income tax area likely reflects the lack of adequate documentation and review of the tax function that prevailed prior to SOX,⁶ coupled with the high degree of complexity and judgment required in income tax reporting and also the lack of reporting for uncertain tax positions prior to FASB (2006) Interpretation No. 48. Moreover, the same characteristics that contribute to ineffective internal controls in the tax area make financial reporting of income taxes a likely area for earnings management.⁷ In essence, we expect that ineffective internal controls over the tax function will allow managers to opportunistically use their discretion over tax accruals, such as tax reserves, deferred taxes for permanently reinvested earnings, and valuation allowances, and manage earnings to meet or beat the consensus analyst forecast.

Even with fully functioning internal controls, accounting for income taxes involves a high degree of complexity and discretion that makes financial reporting of income tax expense a

6 Per Deloitte (2011), almost one-half of the leading causes of tax-related material weaknesses in 2009 were due to insufficient reviews by management (not enough levels of review, reviews not at the right level of precision or detail, or insufficient time for reviews to occur) and personnel issues (an insufficient number of personnel on hand during key times of the year or insufficiently trained personnel). Other leading causes for tax-related ICMWs included the lack of a general process or procedures in place, insufficient reconciliation of the tax accounts, and improper treatment and recording of items under GAAP.

7 We hand-collect data from the Form 10-Ks of our sample of firms with tax-related ICMWs and find that approximately 80 percent of the firms state in their material weakness disclosures that they restated, corrected errors before releasing financial statements, or had audit adjustments. With regard to restatements, *Audit Analytics* data show that in our sample the rate of restatements in the year firms first report their tax-related ICMW is 29.5 percent, and it is 10.7 percent in the year before the disclosure of their tax-related ICMW. Further, these rates of restatement are substantially above the respective restatement rates of 19.8 percent and 6.1 percent for the *NONTAX* firms that disclose only non-tax-related ICMWs in the same year that our *TAX* firms disclose their tax-related ICMWs. Moreover, our sample of firms that have no internal control deficiencies (*NO_ICMW* firms) have a restatement rate of just 2.7 percent in the year our *TAX* firms disclose their tax-related ICMW.

potentially ripe area for earnings management. The complexity arises both from tax law and from GAAP. For example, not only must firms estimate federal (and state) current and deferred income taxes, but they must also do so for each foreign jurisdiction in which they operate. Financial reporting for income tax expense also involves substantial estimation and judgment. Estimating tax reserves for uncertain tax positions requires firms to estimate the likelihood and amount of any loss due to challenges from tax authorities. Several studies (Blouin, Gleason, Mills, and Sikes 2010; Gupta, Laux, and Lynch 2015; Cazier, Rego, Tian, and Wilson 2015) provide evidence that companies use tax reserves to manage earnings. Until recently, disclosures about tax reserves were limited (Gleason and Mills 2002; Blouin and Tuna 2007, Gupta et al. 2015), and this lack of transparency coupled with internal control deficiencies makes tax reserves a likely tool for earnings management.

APB Opinion No. 23 (1972, ¶12) adds another layer of complexity by allowing managers to *not* record deferred tax expense on foreign income earned in countries with relatively low tax rates, provided the firm designates those earnings as “permanently reinvested” in the foreign location. Krull (2004) provides evidence that firms increase the amount of earnings designated as permanently reinvested overseas to meet or beat analysts’ earnings forecasts.

Another example of the discretion available in the income tax accrual is the judgment inherent in recording deferred tax asset valuation allowances. Each reporting period, companies estimate whether they are “more likely than not” to realize as tax benefits the book value of deferred tax assets. Frank and Rego (2006) report that firms use the discretion permitted in estimating the valuation allowance to smooth earnings toward analysts’ consensus forecasts (also see Schrand and Wong 2003). In summary, the complexity and discretion associated with the

accounting for income taxes creates the potential for earnings management, and the presence of tax-related ICMWs can be expected to make tax-expense management even more likely.

Hypotheses

We predict tax-related ICMWs are associated with greater tax-expense management. We expect that if ineffective internal controls over the tax function create an environment that is more conducive to earnings management and auditors are unable to sufficiently audit around the tax-related ICMWs, then tax-expense management will be related to the presence of ICMWs over income tax reporting. Alternatively, firms with tax-related ICMWs may lack sufficient understanding and/or control over the tax function to manage earnings. Consistent with this alternative, Bauer (2016) finds that firms with tax-related ICMWs are not effective tax planners because ineffective internal controls over the tax function inhibit management's understanding of tax positions and tax planning opportunities. These firms improve their tax planning effectiveness once the tax-related ICMWs are remediated.

Given the prior evidence on managing earnings to meet or beat analyst forecasts (Dhaliwal et al. 2004; Brown and Caylor, 2005; Ayers, Jiang, and Yeung 2006), we focus on that earnings benchmark to test our hypothesis. Accordingly, we hypothesize the following:

H1: Firms with ineffective controls over tax accounting engage in more tax-expense management compared to firms with effective controls over tax accounting.

We compare firms with tax-related ICMWs (*TAX* firms) to firms that report only non-tax-related ICMWs (*NONTAX* firms). Evidence consistent with H1 would suggest *TAX* firms manipulate tax expense to meet or beat analysts' forecasts more than *NONTAX* firms. However, if auditors are

able to audit around the tax-related ICMWs, since they are account-specific, then we would not expect to find a relation between tax expense management and tax-related ICMWs.^{8, 9}

We test H1 in both the year the ICMW is disclosed (ICMW year) and the preceding year (the PRE year). It is possible that we may only observe greater last chance earnings management for the *TAX* firms in the PRE year for two reasons. First, we expect the income tax accrual of *TAX* firms likely draws additional scrutiny from auditors in the ICMW year when the tax-related ICMW is disclosed, reducing the likelihood of last chance earnings management in the ICMW year. Second, it is possible that tax-related ICMWs exist but are not discovered (or disclosed) in the PRE year. Results in Rice and Weber (2012) indicate that only approximately 32 percent of firms that subsequently restate earnings disclose a Section 404 ICMW in the year of the original misstatement; rather, it is more likely for ICMWs to be reported in the year a firm announces a restatement of a prior year's financial statements. Hence, it would not be surprising to find that *TAX* firms employ last chance earnings management in the PRE year.

There is also evidence in the literature suggesting remediation of ICMWs leads to improved accruals quality (Ashbaugh-Skaife, Collins, Kinney, and LaFond 2009). Likewise, following the enactment of the 1991 Federal Deposit Insurance Corporation Improvement Act's internal control requirements Altamuro and Beatty (2010) document an improvement in earnings

⁸ Auditors detect the overwhelming majority of the ICMWs in our treatment sample. Untabulated results indicate that firms' auditors detect the tax-related ICMWs in 94.6 percent of the cases for the 94 firms in our sample disclosing tax-related ICMWs under SOX Section 404 or under both Sections 302 and 404. Further, these ICMWs are more likely to be disclosed in firms' fiscal fourth-quarter. Untabulated results show that 63 percent of the 19 firms that have their tax-related ICMWs reported under either Section 302 or under both Sections 302 and 404 first disclose their tax-related ICMWs in their fiscal year-end reporting. Because Section 404 evaluations are required annually, all 94 sample firms with ICMWs reported only under Section 404 disclosed the ICMWs in the fiscal fourth-quarter.

⁹ Firms that have an unremediated ICMW receive an adverse internal control opinion from their auditor. Such firms can still receive an unqualified audit opinion on their financial statements. Note that if firms remediate a tax-related ICMW in the year it is discovered, they will not report any tax-related material weaknesses for that year, and thus such firms would not appear in our treatment sample.

persistence and in the association between stock returns and earnings. Thus, we also examine the REMEDY year, which is the year the tax-related ICMW is remediated. Our second hypothesis is:

H2: Firms engage in less tax-expense management after tax-related control weaknesses are remediated compared to prior years when internal controls over tax accounting were ineffective and also compared to firms that maintain effective controls over tax accounting.

III. EMPIRICAL DESIGN

Methods Used to Test H1 and H2

Following Dhaliwal et al. (2004), we use the change in the effective tax rate from the third to the fourth fiscal quarter to proxy for earnings management through reported income tax expense. The intuition for this measure stems from the requirement in APB Opinion No. 28 (1973, ¶19) that firms apply their “best estimate of the effective tax rate expected to be applicable for the full fiscal year” in determining income taxes for interim quarters. Thus, the reported ETR for the first three quarters is the firm’s best public estimate of the ETR it will report for the entire fiscal year, and is our proxy for the “unmanaged” annual ETR.

H1 predicts firms with ineffective controls over tax accounting engage in more tax expense management than firms with effective controls over tax accounting. In contrast, H2 predicts that remediation of ineffective controls over tax accounting significantly reduces the propensity for tax expense management for firms that previously reported ineffective controls over tax accounting. We test H1 and H2 using a multivariate regression that builds on the analysis of last chance earnings management investigated by Dhaliwal et al. (2004), which focuses on meeting or beating the consensus analyst forecast. We also adapt the model in Krull (2004) to allow for the possibility that firms build up “cookie jar” reserves through the tax accrual. Equation (1) below compares the change in ETRs from the third to the fourth fiscal quarter (*ETR_DIFF*) for firms with tax-related ICMWs (i.e., *TAX* firms) versus firms with

ICMWs that are unrelated to the tax function (i.e., *NONTAX* firms) (firm-specific and time subscripts are suppressed):

$$\begin{aligned}
 ETR_DIFF = & \beta_1 FC_MISS + \beta_2 FC_MISS \times TAX + \beta_3 FC_MEET + \beta_4 FC_MEET \times TAX + \\
 & \beta_5 MISS_AMT + \beta_6 TAX_FEES + \beta_7 I_CH_ETR + \beta_8 Q3_ETR + \\
 & Other_Controls + \varepsilon
 \end{aligned} \tag{1}$$

MISS_AMT captures the magnitude of the difference between analysts' consensus EPS forecast and earnings before any possible tax-accrual management (i.e., as if after-tax annual earnings were calculated based on *Q3_ETR*, a firm's third-quarter ETR, rather than *Q4_ETR*, its fourth-quarter ETR). We must combine *Compustat* and *IBES* data to compute *MISS_AMT*, which can induce measurement error. Because of the imprecision of *MISS_AMT*, we focus on the indicator variable *FC_MISS* (*FC_MEET*) that equals 1 if the firm would have missed (met) the consensus analyst forecast if after-tax earnings were calculated based on *Q3_ETR*, i.e., when *MISS_AMT* is positive (negative). We expect the coefficient on *FC_MISS* (β_1) to be positive if firms that would otherwise miss the consensus forecast reduce their fourth-quarter ETRs to achieve the earnings target.¹⁰ If firms with tax-related ICMWs have greater opportunities to reduce their ETRs to meet the consensus forecast relative to *NONTAX* firms, then we expect a positive coefficient on *FC_MISS* \times *TAX* (β_2), consistent with H1.

Similar to Krull (2004) we are also interested in whether firms use the tax accrual to create cookie jar reserves in anticipation of future earnings management. A firm might seek to create such reserves in a year when earnings are unexpectedly high and thus exceed the consensus analysts' forecast. We expect the coefficient on *FC_MEET* (β_3) to be negative if *FC_MEET* = 1 firms increase their fourth-quarter ETRs and create opportunities for future tax-expense management. Moreover, if *TAX* firms have greater opportunities to increase their ETRs

¹⁰ Note that our prediction is the opposite of Dhaliwal et al. (2004) because we define the dependent variable as *Q3_ETR* - *Q4_ETR*, while their dependent variable is defined as *Q4_ETR* - *Q3_ETR*.

in anticipation of future tax-expense management (relative to control firms), we also expect a negative coefficient on the interaction of *FC_MEET* and *TAX* (β_4).

We control for fees paid to the auditor for tax services (*TAX_FEES*) following Cook, Huston, and Omer (2008) who find that larger amounts of auditor-provided tax services are associated with larger decreases in the ETR from the third to the fourth quarter for firms that would otherwise miss the target. Consistent with the intuition in Dhaliwal et al. (2004), we control for the induced change in ETR and expect a negative association between *I_CH_ETR* and *ETR_DIFF*.¹¹ We also include the firm's *Q3_ETR*; firms with higher third quarter ETRs have greater opportunities to decrease their ETRs since they are starting at a higher ETR level and thus we expect a positive coefficient. In addition, we control for firm performance (*BTROA*), foreign operations (*FOR_DUMM*), sales growth (*SALESGR*), intangibles (*R&D* and *INTANG*), firm size (*SIZE*), and industry and year fixed effects. These control variables are widely used in the tax literature to explain cross-sectional or time-series variation in ETRs. However, their relation to quarterly changes in the ETR is unclear, and we make no sign predictions.

We do not include an intercept or a main effect for *TAX* in equation (1) because, if we did, the equation would be over-identified due to the inclusion of *FC_MISS* and *FC_MEET* as well as *FC_MISS*×*TAX* and *FC_MEET*×*TAX* (which are also indicator variables). The coefficient on *FC_MISS*×*TAX* (*FC_MEET*×*TAX*) captures the incremental *ETR_DIFF* for *TAX* firms whose earnings based on *Q3_ETR*, i.e., absent tax-expense management, would miss (meet) the consensus analyst forecast incremental to the average *ETR_DIFF* for *FC_MISS* = 1 (*FC_MEET* = 1) firms with non-tax ICMWs. We estimate equation (1) separately for the PRE year, the ICMW year, and the fiscal year the ICMW is remediated (the REMEDY year).¹²

11 As Dhaliwal et al. (2004) note, *I_CH_ETR* serves as a control for exogenous factors such as unexpected earnings surprises that can affect the change in ETR.

12 Lim and Lustgarten (2002) and Elgers, Pfeiffer, and Porter (2003) both show that tests based on the “backing out” approach are not diagnostic for hypotheses about earnings management. Regressing a discretionary earnings

We also employ a difference-in-difference approach to test H1 and H2 (e.g., Hanlon, Maydew, and Shevlin 2008). We jointly test differences in *ETR_DIFF* for *TAX* versus control firms and also differences in *ETR_DIFF* across time periods (e.g., PRE year versus REMEDY year). We estimate Equation (2) as our difference-in-difference regression model:

$$\begin{aligned}
ETR_DIFF = & \beta_1 FC_MISS + \beta_2 FC_MISS \times TAX + \beta_3 FC_MISS \times POST + \\
& \beta_4 FC_MISS \times TAX \times POST + \alpha_5 FC_MEET + \alpha_6 FC_MEET \times TAX + \\
& \alpha_7 FC_MEET \times POST + \alpha_8 FC_MEET \times TAX \times POST + \\
& \alpha_9 MISS_AMT + \alpha_{10} TAX_FEES + \alpha_{11} I_CH_ETR + \alpha_{12} Q3_ETR + \\
& Other_Controls + \epsilon
\end{aligned} \tag{2}$$

where *POST* equals 1 for the ICMW year when comparing the PRE and ICMW years, or it equals 1 for the REMEDY year when comparing the REMEDY year to either the PRE or the ICMW year, and 0 otherwise. Equation (2) includes the same control variables as equation (1).

Because we compare the *ETR_DIFF* of treatment and control firms across years, the difference-in-difference design enables us to make cross-period comparisons to test H2. Recall we predict (H1) that last chance earnings management is more likely to occur in the tax-related ICMW sample vis-à-vis the control sample in the ICMW and/or PRE years. H2 predicts a reduction in last chance earnings management for the treatment sample in the REMEDY year, which should lead to no differences in last chance earnings management between the treatment and control samples in that year. We can thus consider both H1 and H2 simultaneously. For example, if the average *TAX* firm reduces its *Q4_ETR* to meet/beat a consensus forecast in the PRE year, but no longer engages in tax-expense management in the REMEDY year, then the

component (*Y*) on income (*E*) with the earnings management backed out and less the target (*T*) income (i.e., *E-Y-T*), can lead to a spurious correlation because of the positive correlation between *E* and *T*. For this reason, we do not use a measure of adjusted income less the target as our dependent variable. Furthermore, we include *MISS_AMT* as an independent variable. Thus, our results are not driven by the correlation between reported earnings and the target. Elgers et al. (2003) follow the original design in DeFond and Park (1997) to examine misclassification of firms as earnings managers. Similar to Lim and Lustgarten (2002), their results show that backing out earnings can lead to spurious inferences about the effect of earnings management on target beating. In our setting, we examine whether the magnitude of the change in *ETR* is different for firms that would not meet the target with *Q3_ETR*, without classifying firms based on the outcome of the earnings management.

coefficient on $FC_MISS \times TAX$ (β_2) should be positive (and capture tax-expense management in the PRE year), while the coefficient on $FC_MISS \times TAX \times POST$ (β_4) should be negative in the REMEDY year. The difference-in-difference design also allows us to control for the impact of omitted factors (e.g., changes in the economic environment) that affect both the treatment and control samples.

IV. SAMPLE AND DESCRIPTIVE STATISTICS

Our empirical tests require financial data from *Compustat*'s Snapshot "As First Reported" Quarterly and Annual databases, IBES' Unadjusted Summary databases, and the following databases on *Audit Analytics*: SOX 302 Disclosure Controls, SOX 404 Internal Controls, and Non-Reliance Restatements. Using the SOX 302 and 404 databases on *Audit Analytics*, we identify 775 firms that disclose *either* a Section 302 or a Section 404 tax-related ICMW for the first time in fiscal years 2002-2012. From the initial sample of firms with tax-related ICMWs, we delete 23 firms because they lack requisite annual or quarterly *Compustat* data, and drop an additional 394 firms that lack requisite analyst data from I/B/E/S. We remove 38 firms with negative $Q3_ETRs$ or negative pre-tax income in the third or fourth fiscal quarter, since firms with negative pre-tax income typically have ETRs that are difficult to interpret (Dhaliwal et al. 2004). Lastly, we eliminate 208 firms without data for both the PRE and ICMW years. We require firms to have data for the PRE year to permit us to draw inferences about the impact of detecting ICMWs, particularly in the period immediately following the implementation of SOX, when unreported weaknesses are likely to exist in the PRE period. (We discuss our analysis around early SOX adoption in the last part of Section V.) Together, these data requirements yield a final sample of 112 *TAX* firms. Given the data requirements and the fact that only accelerated filers are required to report on ICMWs prior to 2007, our sample is comprised of firms that in

terms of total assets are on average more than 2.5 times as large as the typical *Compustat* firm. Finally, for firms that remediate their tax-related ICMW within our sample period, we also collect data for the first fiscal year the material weakness is remediated (the REMEDY year). We do not require all firms to have data in the remediation year to avoid imposing a survivorship bias on our analysis of the PRE and ICMW years.¹³

Of the 112 treatment (i.e., *TAX*) firms, 93 firms report only Section 404 material weaknesses, 18 firms report only Section 302 material weaknesses, and one firm reports its material weakness under both Section 302 and 404. We consider only material weaknesses and thus exclude firms that report Section 302 significant control deficiencies. Were we to focus solely on Section 404 material weaknesses, we would misclassify firms that report a Section 302 material weakness before Section 404 took effect.

We hand-collected information from Form 10-Ks for the vast majority of our *TAX* firms with regard to how firms describe their tax-related ICMWs. Approximately 43 percent of firms mention deferred taxes, eight percent mention the deferred tax valuation allowance, six percent mention tax reserves, six percent mention foreign operations, and ten percent mention stock options.¹⁴ Twenty-five percent of firms did not provide sufficient information to identify the tax accounts or transactions related to the ICMW. However, even when specific areas are identified, the ICMW disclosures rarely provide specific details, e.g., whether income was increased or decreased by the ICMW. We provide several examples of firms' tax-related ICMW disclosures in Appendix A. Untabulated analysis of industry makeup indicates that most industries (based on one-digit SIC codes) are represented, with manufacturing firms comprising approximately 26

¹³ Requiring all firms to also have data in the REMEDY year would reduce our sample by approximately 50 percent.

¹⁴ Bedard et al. (2012) note that *Audit Analytics* bases its classification of material weakness disclosures on auditors' Section 404 opinions. For tax, these are tax expense, benefit, deferral, and other issues, including SFAS No. 109.

percent of the *TAX* firms, followed by service firms (18 percent), food, textile, and chemical firms (14 percent), and wholesale and retail firms and financial service firms (11 percent each). Table 1 presents the distribution of *TAX* firms across the sample period and for the PRE, ICMW, and REMEDY years. Thirty of the *TAX* firms first disclose their tax-related ICMWs for fiscal years 2003 and 2004, and another 34 *TAX* firms first disclose in fiscal year 2005. Nevertheless, only 31 firms remediate their tax-related ICMWs by fiscal 2006. By fiscal year 2012, the end of our sample period, 65 (or 58 percent) of the 112 *TAX* firms had remediated their ICMWs; for those sample firms that remediated their tax-related ICMWs within our sample period, the average firm took approximately 1.6 years to do so. Bedard et al. (2012) find that on average tax-related Section 404 ICMWs are among the most difficult to remediate out of all of the internal control deficiencies they examine.

[INSERT TABLE 1 HERE]

We identify our sample of control firms (i.e., *NONTAX* firms) from the *Compustat* population. This control group includes all firms in our sample period that disclose at least one ICMW but none in the tax area. This *NONTAX* control sample allows us to differentiate the effects of tax and non-tax ICMWs on earnings management through the tax provision. As shown in Table 1, our control sample includes 247 *NONTAX* firms (150 in the REMEDY year). In robustness tests we also consider firms that do not report any ICMWs during our sample period and that are matched to *TAX* firms based on industry and firm size deciles in the *TAX* firms' ICMW year. To test H1 and H2, we constrain *Q3_ETR* and *Q4_ETR* to be between 0 and 1, and winsorize all continuous variables, except *ETR_DIFF*, at the 1st and 99th percentiles to reduce the effect of extreme values.

Table 2, Panel A compares descriptive statistics for tax-related variables for the *TAX* and *NONTAX* firms and for the PRE, ICMW, and REMEDY years. Table 2 Panel B compares descriptive statistics for non-tax variables in the ICMW year only. Overall, the samples are fairly comparable, although we do not match on tax or performance attributes. In Panel A, *TAX* firms have smaller median changes in the ETR from the third to the fourth quarter in the ICMW year. The mean *Q3_ETR* for *TAX* firms is lower in the REMEDY year. *TAX* firms are also more likely to miss the consensus forecast based on their *Q3_ETR* in the PRE year, but not in the ICMW or REMEDY years (see mean *FC_MISS*). Consistent with this result, the median amount by which *TAX* firms are likely to miss (*MISS_AMT*) is larger in the PRE year.¹⁵ We also find no statistical differences in the purchase of tax services from auditors (*TAX_FEES*) or in induced changes in ETR (*I_CH_ETR*), which captures unexpected changes in pretax earnings. Panel B reveals *TAX* firms have lower before-tax *ROAs*, larger net operating losses (*NOL*), and higher likelihood of foreign operations (*FOR_DUMM*). However, *TAX* and *NONTAX* firms do not differ on other tax planning attributes (*R&D*, *INTANG*, Δ *NOL*) or in sales growth and firm size (*SALESGR* and *ASSETS*).

[INSERT TABLE 2 HERE]

Table 3 examines firms whose third-to-fourth-quarter ETR changes are suggestive of incentives to engage in tax-expense management. Panel A focuses on a univariate analysis of the sub-sample of firms that would have missed the consensus forecast based on their third-quarter ETR (*FC_MISS* = 1) to evaluate differences in propensities for *TAX* and *NONTAX* firms to use the tax provision to meet or beat the consensus analyst forecast. In the PRE year, 50.0 percent of

¹⁵ We acknowledge that in Table 2 both *TAX* and *NONTAX* firms exhibit more extreme values of *MISS_AMT* than those reported in Dhaliwal et al. (2004), which utilizes a broader set of firms than our small sample of firms that report ICMWs. While last chance earnings management is likely to be less effective for firms that miss earnings expectations by large amounts, this possibility only biases against finding a significant difference in *ETR_DIFF* between our *TAX* and *NONTAX* firms.

TAX firms report decreases in *Q4_ETRs* that allow them to *CROSS_UP* (i.e., meet or beat the consensus forecast when their earnings based on *Q3_ETR* would not have met the consensus forecast) while 46.3 percent of *NONTAX* firms appear to have used *Q4_ETR* decreases to beat the consensus forecast. Similar rates hold in the ICMW year, but the differences are not significant in any of the years.

[INSERT TABLE 3 HERE]

Panel B only includes firms that would have met or beat the consensus analyst forecast based on their *Q3_ETR* ($FC_MEET = 1$). These firms have opportunities to use the tax provision to create cookie jar reserves for future earnings management. The results indicate that in the PRE year more *NONTAX* firms than *TAX* firms increase their *Q3_ETRs* and still beat the consensus forecast ($SMOOTH_DOWN = 1$), but the difference is not significant which is also the case in the ICMW and REMEDY years. Because these tests do not take other factors into account, we rely on multivariate regression analyses for our main inferences.

V. MULTIVARIATE RESULTS

Analysis of H1 and H2

In Table 4, we report the results of estimating equation (1) to test our hypotheses. We estimate the regression separately for the PRE, ICMW, and REMEDY years. H1 predicts that if *TAX* firms use the tax accrual to manage earnings upward (downward) to meet or beat the median analyst forecast (to create cookie-jar reserves) more than *NONTAX* firms, then the coefficient on $FC_MISS \times TAX$ ($FC_MEET \times TAX$) should be positive (negative) in the PRE and/or ICMW year. H2 predicts an insignificant or negative (positive) coefficient on $FC_MISS \times TAX$ ($FC_MEET \times TAX$) in the REMEDY year, consistent with reduced last chance earnings management by *TAX* firms relative to *NONTAX* firms.

[INSERT TABLE 4 HERE]

First, the results in Table 4 show an insignificant coefficient on FC_MISS in the PRE year, suggesting the average *NONTAX* firm does not engage in last change earnings management. The focus of H1 is on the coefficient on $FC_MISS \times TAX$ in the PRE and ICMW years, and it is positive and significant (coeff. = 0.016; t-stat. = 1.45) in the PRE year only.¹⁶ However, *TAX* firms are not significantly different from *NONTAX* firms in the ICMW year. The focus of H2 is the coefficient on $FC_MISS \times TAX$ in the REMEDY year and it is not significant. The coefficient on $FC_MISS \times TAX$ in the PRE year suggests that the decrease in ETRs from the third to the fourth-quarter for *TAX* firms is 1.6 percentage points larger than the decrease in ETRs for *NONTAX* firms, while the results for the REMEDY year suggest no incremental difference for *TAX* firms vis-à-vis *NONTAX* firms. Given the mean values for $Q3_ETR$ and $Q4_ETR$, respectively, of 31.3 and 29.9 percent for *TAX* firms (and 31.7 to 30.3 percent for the *NONTAX* firms) in the PRE year, a 1.6 percent incremental reduction for *TAX* firms reflects a 5 percent reduction in their ETRs, which is economically significant.

The coefficient on $FC_MEET \times TAX$ is significantly negative in the PRE year (coeff. = -0.022, t-stat. = -1.94), which suggests that in our sample period *TAX* firms are more likely than *NONTAX* firms to exploit the presence of tax-related ICMWs to create cookie jar reserves through the tax accrual. The coefficient on the main effect FC_MEET is not significant in the PRE and REMEDY years. In addition, the coefficient on $FC_MEET \times TAX$ is positive and significant in the REMEDY year, suggesting that remediation of the tax-related ICMW is linked to a reduction in tax-expense management. Overall, these results are consistent with tax-related ICMWs providing *TAX* firms greater opportunities to engage in tax-expense management, consistent with H1, and with the remediation of tax-related ICMWs reducing the propensity for

¹⁶ An untabulated F-test of the sum of the coefficients on FC_MISS and $FC_MISS \times TAX$ is insignificant.

TAX firms to engage in last chance earnings management, consistent with H2. With regard to the control variables, our results are generally consistent with Dhaliwal et al. (2004). For brevity we do not discuss or tabulate these coefficients in later analyses.

Table 5 presents the results of our difference-in-difference analysis comparing *TAX* and *NONTAX* firms across different years, and controlling for possible omitted factors affecting both groups. We note first the coefficient on $FC_MISS \times TAX$ is positive and significant in the PRE versus REMEDY year comparison [column (2)], consistent with *TAX* firms engaging in more tax-expense management than *NONTAX* firms in the PRE year. However, the coefficients on $FC_MISS \times TAX \times POST$ are significant and negative in the PRE versus REMEDY and the ICMW versus REMEDY year comparisons [columns (2) and (3)]. The negative coefficients suggest *TAX* firms engage in less tax-expense management in the REMEDY years relative to the PRE and ICMW years. We find no difference in last chance earnings management between the PRE and ICMW years [column (1)]. Together, the results in Tables 4 and 5 suggest that detection and disclosure of ICMWs is not entirely sufficient to reduce last chance earnings management by ICMW firms. However, remediated ICMWs are associated with significantly less last chance earnings management.

Regarding income-decreasing earnings management, we find negative and significant coefficients on $FC_MEET \times TAX$ in columns (1) and (2), consistent with *TAX* firms being more likely than *NONTAX* firms to create cookie jar reserves in the PRE year. Turning to the coefficients on $FC_MEET \times TAX \times POST$, we find that *TAX* firms are less likely to create cookie jar reserves in the REMEDY year than in the PRE year [column (2)] (coeff. = 0.037; t-stat. = 1.46). Overall, the Table 5 results are consistent with Table 4 and indicate that *TAX* firms are

more likely to engage in last chance earnings management than *NONTAX* firms in the PRE year, and that remediation of tax-related ICMWs reduces tax-expense management by the *TAX* firms.

[INSERT TABLE 5 HERE]

Next, we test whether *TAX* firms are more successful at meeting or beating (*MEET_BEAT* = 1) the analysts' consensus forecast than *NONTAX* firms. Specifically, we estimate the following model:

$$MEET_BEAT = a + \beta_1 ETR_DOWN + \beta_2 TAX + \beta_3 ETR_DOWN \times TAX + Controls + \varepsilon \quad (3),$$

where *MEET_BEAT* equals 1 if the firm met or beat the consensus analyst forecast, and 0 otherwise; and *ETR_DOWN* equals 1 if the firm decreased its *Q4_ETR* relative to its *Q3_ETR*, and 0 otherwise. The vector of control variables includes factors expected to be associated with firm performance and earnings management opportunities, including the amount by which the firm would have missed the consensus forecast based on *Q3_ETR* (*MISS_AMT*), cash flows from operations (*CFO*), the change in cash flows from operations (Δ *CFO*), market-to-book ratio (*MTB*), and before-tax return on assets (*BTROA*). We also control for fees paid to the firm's auditor for tax services (*TAX_FEES*), firm size (*SIZE*), and include industry and year fixed effects.¹⁷ (See Appendix B for complete variable definitions.) If *TAX* firms are more likely than *NONTAX* firms to beat the consensus forecast by reducing their *Q4_ETRs*, then the coefficient on *ETR_DOWN* × *TAX* (β_3) should be positive and significant.

Table 6 presents the results for equation (3). The coefficient on the variable of interest, *ETR_DOWN* × *TAX*, is significant (p-value = 0.027) in the PRE year. Using its coefficient and following Norton, Wang, and Ai (2004), we estimate the marginal effect of decreasing *Q4_ETR* for *TAX* firms on the likelihood of meeting or beating analysts' consensus across different probability thresholds and values for the control variables. The untabulated average interaction

¹⁷ Results are qualitatively similar but based on a much smaller sample with discretionary accruals in equation (3).

effect is 0.251 (one-tailed p-value = 0.0165). The untabulated marginal effect of *ETR_DOWN* is 0.568 and is the effect of decreasing the ETR on the likelihood of meeting or beating the forecast for *NONTAX* firms. The marginal effect of the interaction term represents a 44 percent increase in the likelihood of meeting or beating the target for *TAX* firms that decrease the ETR, which is economically important. This finding is consistent with the results in Tables 4 and 5 and suggests that *TAX* firms are more likely than firms that report only non-tax ICMWs to manage tax expense to meet the earnings target in the PRE year.

[INSERT TABLE 6 HERE]

Additional Tests

We perform several additional analyses to assess the sensitivity of the main results. First, we separately examine firm fiscal years during the initial implementation of SOX (2002-2005) and fiscal years after 2005 by estimating equation (1) separately for the two time periods. For the implementation period (2002-2005), we have 81 (183) *TAX (NONTAX)* firms in the PRE year, 64 (127) *TAX (NONTAX)* firms in the ICMW year, and 15 (24) *TAX (NONTAX)* in the REMEDY year. For the post-implementation time period after 2005 we have 31 (64) *TAX (NONTAX)* firms in the PRE year, 48 (120) *TAX (NONTAX)* firms in the ICMW year, and 50 (126) *TAX (NONTAX)* in the REMEDY year. Table 7, Panel A reports the estimated coefficients for the implementation period. Consistent with results for the full sample period, *TAX* firms that would miss analysts' consensus forecast using the *Q3_ETR* are more likely to decrease their ETR during the fourth quarter (coeff = 0.042, t-statistic = 3.63). *TAX* firms that would beat the forecast are more likely to increase their ETR during the fourth quarter (coeff = -0.019, t-statistic = -1.67). However, after ICMWs are disclosed or remedied, *TAX* firms are no more likely than *NONTAX* firms to exhibit last chance earnings management. In the post-implementation period (Table 7, Panel B), we find

no significant difference between *TAX* and *NONTAX* firms in the PRE, ICMW, or REMEDY years. The change in the likelihood of last change earnings management from the implementation period to the post-implementation period suggests that SOX reduced the use of last chance earnings management by firms with tax-related ICMWs.¹⁸

We also re-do our analysis with a sample of control firms that have no ICMWs (untabulated). We match *NO_ICMW* firms to *TAX* firms based on industry and firm size deciles in the *TAX* firms' ICMW year.¹⁹ Importantly, *NO_ICMW* firms must not have reported any ineffective controls (under SOX Section 302) or any internal control deficiencies (under Section 404) during the sample period per *Audit Analytics*. We delete any firm-years that are included in a given control sample more than once and require control firms to have requisite data across the same years (PRE, ICMW, and REMEDY years) as the matched *TAX* firms. Our inferences are similar to those shown in Table 4, based on the *NONTAX* control sample.

Finally, we note that when we eliminate observations with analyst forecast errors that are greater than the absolute value of 5-cents per share, the results are also qualitatively similar (and typically have higher significance levels) compared to those tabulated in the study.

VI. CONCLUSION

We investigate tax-related material weaknesses in firms' internal controls over financial reporting with regard to "last chance" earnings management (i.e., earnings management via the tax accrual). We hypothesize that ineffective controls over the tax function make last chance earnings management (Dhaliwal et al. 2004) easier to implement relative to two comparison

¹⁸ Untabulated results after eliminating all observations in the post-FIN 48 time-period (i.e., fiscal years beginning after December 15, 2006) indicate results similar in magnitude to our main results, but with higher significance levels across all of the analyses. Thus our results are not driven by FASB (2006) Financial Interpretation No. 48 (FIN 48), *Accounting for Uncertainty in Income Taxes*.

¹⁹ We assign size deciles each year for the *Compustat* population based on total assets. We initially match industry using two-digit SIC code. If we are unable to find a match in the same size decile and two-digit SIC industry and year, we match based on the same size decile and one-digit SIC industry and year.

samples: firms with ineffective controls not related to the tax function and firms that did not report any internal control deficiencies. We also predict that remediation of ineffective controls over the tax function constrains tax expense management.

Our results indicate that tax-related ICMWs are associated with greater ETR revisions than for firms with non-tax-related ICMWs and firms without internal control deficiencies. If there were no tax-accrual earnings management, we would not expect ETR revisions to be distributed differently for firms with and without tax-related ICMWs. We document that last chance earnings management behavior occurs prior to disclosure of tax-related ICMWs and is concentrated in the SOX implementation period. In addition, we provide evidence that remediation of tax-related ICMWs reduces last chance earnings management through the income tax accrual. One implication of our results is that auditors were not able to sufficiently “audit around” the material weaknesses in tax-related internal controls and reduce earnings management, at least in years prior to the disclosure of firms’ tax-related ICMWs in the SOX implementation period.

Overall, the results support a link between tax-related ICMWs and last chance earnings management. The results also suggest that the disclosure of tax-related ICMWs serves as a signal that firms have been prompted to begin to improve their internal controls over income tax reporting and that remediation of the tax-related ICMWs constrains such earnings management. Prior research demonstrates that the act of disclosing an ICMW is damaging to firms (e.g., increases cost of capital) and thus, firms presumably have strong incentives to remediate any material weaknesses as quickly as possible. Given prior evidence that internal control weaknesses generally impair accrual quality (Ashbaugh-Skaife et al. 2007; 2009; Doyle et al. 2007), our results suggest that additional research on accounting quality following remediation

of tax-related ICMWs should be fruitful. For example, are tax-related ICMWs more likely to be disclosed in advance of restatement announcements compared to other ICMWs?

REFERENCES

- Accounting Principles Board (APB). 1972. *Accounting for income taxes – Special Areas*. APB Opinion No. 23. New York, NY: APB.
- Accounting Principles Board (APB). 1973. *Interim financial reporting*. APB Opinion No. 28. New York, NY: APB.
- Altamuro, J., and A. Beatty. 2010. How does internal control regulation affect financial reporting? *Journal of Accounting and Economics* 49(1-2): 58-74.
- American Institute of Certified Public Accountants (AICPA). 2016. *Management Override of Internal Control: The Achilles' Heel of Fraud Prevention*. American Institute of Certified Public Accountants, Inc. New York, NY.
- Ashbaugh-Skaife H., D. Collins, and W. Kinney. 2007. The discovery and reporting of internal control deficiencies prior to SOX-mandated audits. *Journal of Accounting and Economics* 44(1-2): 166-192.
- Ashbaugh-Skaife, H., D. Collins, W. Kinney, and R. LaFond. 2008. The effect of SOX internal control deficiencies and their remediation on accrual quality. *The Accounting Review* 83(1): 217-250
- Ashbaugh-Skaife, H., D. Collins, W. Kinney, and R. LaFond. 2009. The effect of SOX internal control deficiencies on firm risk and cost of equity. *Journal of Accounting Research* 47(1): 1-43.
- Asare, S. and A. Wright. 2012. The effect of change in the reporting threshold and type of control deficiency on equity analysts' evaluation of the reliability of future financial statements. *AUDITING: A Journal of Practice and Theory* 31(2): 1-17.
- Ayers, B., X. Jiang and P. Yeung. 2006. Discretionary accruals and earnings management: An analysts of pseudo earnings targets. *The Accounting Review* 81(3): 617-652.
- Bauer, A. M. 2016. Tax avoidance and the implications of weak internal controls. *Contemporary Accounting Research* 33(2):449-486.
- Bedard, J., R. Hoitash, U. Hoitash, and K. Westermann. 2012. Remediation of internal control material weaknesses: A detailed examination. *Auditing: A Journal of Practice and Theory* 31(1): 57-78.
- Blouin, J., C. Gleason, L. Mills, and S. Sikes. 2010. Pre-empting disclosure? Firms' decisions prior to FIN 48. *The Accounting Review* 85(3): 791-815.
- Blouin, J., and I. Tuna. 2007. Tax contingencies: Cushioning the blow to earnings? Working paper, University of Pennsylvania.
- Brown, L., and M. Caylor. 2005. A temporal analysis of quarterly earnings thresholds: Propensities and valuation consequences. *The Accounting Review* 80(2): 423-440.
- Cazier, R., S. Rego, X. Tian and R. Wilson. 2015. The impact of increased disclosure requirements and the standardization of accounting practices on earnings management through the reserve for income taxes. *Review of Accounting Studies* 20:436-469.
- Chan, K., B. Farrell, and P. Lee 2008. Earnings management of firms reporting material internal control. *Auditing: A Journal of Theory and Practice* November 27: 161-179.
- Cook, K., G. Huston, T. Omer. 2008. Earnings management through effective tax rates: The effects of tax-planning and the Sarbanes-Oxley Act of 2002. *Contemporary Accounting Research* 25(2):447-471.
- DeFond, M. and C. Park. 1997. Smoothing income in anticipation of future earnings. *Journal of Accounting and Economics* 23(2): 115-139.

- Deloitte. 2011. Material weaknesses and restatements: Is tax still in the hot seat? Deloitte Development LLC.
- De Simone, L., M. Ege, B. Stomberg. 2015. Internal control quality: The role of auditor-provided tax services. *The Accounting Review* 90(4):1469-1496.
- Dhaliwal, D., C. Gleason, and L. Mills. 2004. Using income tax expense to achieve analysts' targets *Contemporary Accounting Research* 21(2): 431-459.
- Doss, M., and G. Jonas. 2004. *Section 404 reports on internal control: Impact on ratings will depend on nature of material weaknesses reported*. Moody's Investors Service, Global Credit Research. October.
- Doyle, J. T., W. Ge, and S. E. McVay. 2007. Accruals quality and internal control over financial reporting. *The Accounting Review* 82(5): 1141-1170.
- Elgers, P. T., R. J. Pfeiffer Jr., and S. L. Porter. 2003. Anticipatory income smoothing: A re-examination. *Journal of Accounting and Economics* 35(3): 405-422.
- Financial Accounting Standards Board (FASB). 2006. Accounting for Uncertainty in Income Taxes – An Interpretation of FASB Statement No. 109. FIN 48.
- Feng, M., C. Li, and S. McVay. 2009. Internal controls and management guidance. *Journal of Accounting and Economics* 48(2): 190-209.
- Frank M. M., and S. O. Rego. 2006. Do managers use the valuation allowance account to manage earnings around certain earnings targets? *Journal of the American Taxation Association* 28(1): 43-65.
- Gleason, C., and L. Mills. 2002. Materiality and contingent tax liability reporting. *The Accounting Review* 77 (2): 317-42.
- Graham, L. E. and J. C. Bedard. 2015. Internal control deficiencies in tax reporting: A detailed view. *Accounting Horizons* 29(4) 917-942.
- Gupta, Sanjay, R. Laux, and D. Lynch. 2015. Do firms use tax reserves to meet analysts' forecasts? Evidence from the pre- and post-FIN 48 periods. *Contemporary Accounting Research* (forthcoming).
- Hammersley, J., L. Myers, and C. Shakespeare. 2008. Market reactions to the disclosure of internal control weaknesses and to the characteristics of those weaknesses under section 302 of the Sarbanes Oxley Act of 2002. *Review of Accounting Studies* (13): 141-165.
- Hanlon, M., E. Maydew, and T. Shevlin. 2008. An unintended consequence of book-tax conformity: A loss of earnings informativeness. *Journal of Accounting and Economics* 46: 294-311.
- Harris, D., and J. Zhou. 2013. Auditor-provided tax consulting, knowledge spillovers and reported weaknesses in internal control. Working Paper. Syracuse University.
- Hogan, C. E. and M. S. Wilkins. 2008. Evidence on the audit risk model: Do auditors increase audit fees in the presence of internal control deficiencies? *Contemporary Accounting Research* 25(1): 219-242.
- Jarvinen, T. and E.-R. Myllymaki 2016. Real earnings management before and after reporting SOX 404 material weaknesses. *Accounting Horizons* 60: 119-141.
- Kim, J-B, B. Song, and L. Zhang. 2009. Internal control quality and analyst forecast behavior: evidence from sox section 404 disclosures. 2009 CAAA Conference Paper.
- Kinney, W., Z-V. Palmrose, and S. Scholz. 2004. Auditor independence, non-audit services, and restatements: Was the U.S. government right? *Journal of Accounting Research* 42 (3): 561-588.

- KPMG LLP. 2006a. Assessing internal controls for the tax department. Presented at the American Tax Association 2006 Midyear meeting in San Diego.
- KPMG LLP. 2006b. KPMG 2006 Tax Department Survey in materials for Faculty Update.
- Krull, L. 2004. Taxes and the reinvestment of foreign subsidiary earnings. *The Accounting Review* 79(3): 745-767.
- Li, H., Pincus, M. and Rego, S.O., 2008. Market reaction to events surrounding the Sarbanes-Oxley Act of 2002 and earnings management. *Journal of law and Economics*, 51(1), pp.111-134.
- Lim, S. C. and S. Lustgarten. 2002. Testing for income smoothing using the backing out method: A review of specification issues. *Review of Quantitative Finance and Accounting* 19(3): 273-290.
- Nance, L. 2004. An Interview with United States Senator Paul S. Sarbanes. *Journal of Leadership & Organizational Studies* 11(1): 3-8.
- Norton, E. C., H. Wang, and C. Ai. 2004. Computing interaction effects and standard errors in logit and probit models. *The Stata Journal*, 4(2): 154-167.
- Rice, S. and D. Weber. 2012. How effective is internal control reporting under SOX 404? Determinants of the (non-)disclosure of existing material weaknesses. *Journal of Accounting Research* 50 (June): 811-843.
- Robinson, J.R., S.A. Sikes, and C.D. Weaver. 2010. Performance measurement of corporate tax departments. *The Accounting Review* 85 (3): 1035-1064.
- Schrand, C., and F. Wong. 2003. Earnings management using the valuation allowance for deferred tax assets under SFAS 109. *Contemporary Accounting Research* 20(3): 579-611.
- Securities and Exchange Commission. 2007. *Commission guidance regarding management's report on internal control over financial reporting under Section 13(a) or 15(d) of the Securities Exchange Act of 1934*.
- Skaife, H. A., D. Veenman, and D. Wangerin. 2013. Internal control over financial reporting and managerial rent extraction: Evidence from the profitability of insider trading. *Journal of Accounting & Economics* 55: 91-110.
- U.S. House of Representatives. 2002. The Sarbanes-Oxley Act of 2002. Public Law 107-204 [H.R. 3763]/. Washington D.C. Government Printing Office.
- Zhang, I. 2007. Economic consequences of the Sarbanes-Oxley Act of 2002. *Journal of Accounting and Economics* 44 (September): 74-115.

APPENDIX A

Examples of Tax-related ICMW Disclosures

We provide several examples of disclosures of tax-related ICMWs obtained from our review of firms' Management's Annual Report on Internal Control Over Financial Reporting (ITEM 9A in Form 10-K) and of their auditor's opinion regarding ICMWs. Explicit mention of weaknesses related to valuation allowances, reserves, and permanently reinvested earnings is rare. Only eight percent of firms explicitly mention valuation allowances and only six percent of firms mention reserves. No firms explicitly mention permanently reinvested earnings although taxes on foreign income are mentioned six times. Deferred taxes are the most common specific tax-accounting element mentioned in ICMW disclosures (43 percent of the ICMW sample).

Cymer, Inc. 2005 10-K: We did not maintain effective internal controls over our accounting for income taxes. Specifically, our policies and procedures over the reconciliation of income tax accounts were not designed with adequate precision and our policies and procedures over foreign tax provisions did not provide for adequate review. These deficiencies resulted in errors in our consolidated tax provision. Such errors were corrected prior to the issuance of our consolidated financial statements at and for the year ended December 31, 2005. These deficiencies also resulted in a more than remote likelihood that a material misstatement to our consolidated financial statements would not be prevented or detected.

Sonus Networks, Inc. 2005 10-K: Certain of our procedures and controls relating to financial statement preparation and review are not yet fully effective or have not been fully tested in their operation to provide reasonable assurance that the following control objectives have been met: . . . the completeness, accuracy, review and timely recording of tax transactions in our general ledger and financial statements and assessment of potential tax exposure . . .

Embarcadero Technologies Corporation 2004 10-K: . . . [T]he Company did not maintain effective controls over its accounting for income taxes including the determination of deferred income tax assets and liabilities and the related income tax provision. Specifically, effective controls were not in place to monitor the differences between the income tax basis and the financial reporting basis of assets and liabilities and reconcile the differences to the deferred income tax assets and liabilities. This control deficiency resulted in the restatement of the Company's consolidated financial statements for the years ended December 31, 2002 and 2003 and the restatement of the Company's quarterly results of operations data for each of the quarters in the year ended December 31, 2003 and for the first three quarters in the year ended December 31, 2004.

Keynote Systems, Inc. 2005 10-K: . . . [M]anagement identified a material weakness related to the accounting for income taxes. Specifically, the Company did not have resources with adequate technical knowledge relating to accounting for deferred income taxes in order to prepare or review the income tax related amounts recorded in the consolidated financial statements. This material weakness resulted in a material error in the Company's consolidated financial statements related to the inappropriate recording of a reduction in the valuation allowance as a benefit for income taxes rather than as a reduction of goodwill. This error was corrected prior to the Company's issuance of its 2005 consolidated financial statements.

APPENDIX B
Variable Definitions (Compustat Variable Names Shown in Parentheses)

Tax-Related Variables:

<i>TAX</i>	= 1 for firms that report a tax-related material internal control weakness during our sample period, and 0 otherwise.
<i>Q3_ETR</i>	= Total tax expense (TXTQ) accumulated through the 3 rd quarter, scaled by pre-tax income (PIQ) accumulated through the 3 rd quarter.
<i>Q4_ETR</i>	= Total tax expense (TXTQ) accumulated through the 4 th quarter, scaled by pre-tax income (PIQ) accumulated through the 4 th quarter.
<i>ETR_DIFF</i>	= <i>Q3_ETR</i> - <i>Q4_ETR</i> .
<i>ETR_DOWN</i>	= 1 if <i>ETR_DIFF</i> > 0; and 0 otherwise.
<i>MISS_AMT</i>	= Median analyst forecast EPS – {[pre-tax income (PI) – special items (SPI)] × (1 - <i>Q3_ETR</i>) / [common shares for calculating EPS fully diluted (CSHFD)]}. The median analyst forecast is based on I/B/E/S <i>Summary</i> data.
<i>FC_MISS</i>	= 1 if <i>MISS_AMT</i> > 0, and 0 otherwise.
<i>FC_MEET</i>	= 1 if <i>MISS_AMT</i> ≤ 0, and 0 otherwise.
<i>I_CH_ETR</i>	= {[Statutory tax rate <i>Q3_ETR</i>] × [(actual EPS - median analyst forecast EPS) × common shares for calculating EPS fully diluted (CSHFD) / (1 - statutory tax rate)]}, scaled by pre-tax income (PI). Actual EPS and the median analyst forecast are based on I/B/E/S data.
<i>TAX_FEES</i>	= Tax fees paid to the auditor scaled by total auditor fees. Tax fees and total auditor fees are based on <i>Audit Analytics</i> data.
<i>AFE</i>	= Actual EPS – median analyst forecast EPS. Actual EPS and the median analyst forecast are based on I/B/E/S data.
<i>MEET_BEAT</i>	= 1 if <i>AFE</i> ≥ 0; and 0 otherwise.
<i>CROSS_UP</i>	= 1 if (<i>AFE</i> ≥ 0) and (<i>MISS_AMT</i> > 0); and 0 otherwise.
<i>SMOOTH_DOWN</i>	= 1 if <i>AFE</i> ≥ 1 and <i>ETR_DIFF</i> < 0; and 0 otherwise.
<i>POST</i>	= 1 for the ICMW year (when comparing the PRE year to the ICMW year) or = 1 for the REMEDY year (when comparing the ICMW year to the REMEDY year); and 0 otherwise.

Descriptive Variables:

<i>BTROA</i>	= Pre-tax income (PI), scaled by beginning of year total assets (TA).
<i>ATROA</i>	= After-tax net income (NI), scaled by beginning of year total assets (TA).
<i>CFO</i>	= Cash flow from operations (OANCF), scaled by total assets (AT).
\square <i>CFO</i>	= The change in cash flow from operations (OANCF) from year <i>t-1</i> to year <i>t</i> , scaled by beginning of year total assets (TA)
<i>NOL</i>	= Net operating loss (TLCF), scaled by total assets (TA).
\square <i>NOL</i>	= The change in net operating loss (TLCF) from year <i>t-1</i> to year <i>t</i> , scaled by beginning of year total assets (TA).
<i>ASSETS</i>	= Total assets (TA).
<i>SIZE</i>	= Natural log of <i>ASSETS</i> .
<i>FOR_DUMM</i>	= 1 if foreign pretax income (PIFO) is not equal to zero or missing, and zero otherwise.
<i>R&D</i>	= Research and development expenditures (XRD), scaled by beginning of year total assets (TA).

<i>INTANG</i>	= Intangible assets (INTAN), scaled by total assets (TA).
<i>SALESGR</i>	= Net sales (SALE) for year <i>t</i> , scaled by net sales (SALE) for year <i>t-1</i> .
<i>MTB</i>	= Market-to-book ratio = [end of year stock price (PRCC_F) × common shares outstanding (CSHO)] / book value of equity (CEQ).
<i>DACC</i>	= Firm <i>i</i> 's performance-adjusted, discretionary accruals in year <i>t</i> , calculated on a pretax basis. We adopt the modified-Jones model in Dechow, Sloan, and Sweeney (1995), which we estimate using data from the statement of cash flows to measure total accruals (Hribar and Collins 2002) and then performance-adjust following Francis, LaFond, Olsen, and Schipper (2005). To estimate the model yearly by two-digit SIC code, we require at least 5 observations be available for each industry-year combination. The model is: $TACC_{jt} = a_0 + a_1(\Delta REV_{jt} - \Delta TR_{jt}) + a_2 PPE_{jt} + \eta_{it}$, where: <i>TACC</i> is total accruals for firm <i>i</i> in year <i>t</i> , which is defined as income before extraordinary items adjusted for total tax expense (IBC + TXT), less net cash flow from operating activities adjusted for income taxes paid from the statement of cash flow and extraordinary items and discontinued operations (OANCF + TXPD – XIDOC). ΔREV is the change in sales in year <i>t</i> (SALE); <i>PPE</i> is gross property, plant, and equipment in year <i>t</i> (PPEGT); ΔTR is the change in trade receivables in year <i>t</i> (RECTR). All variables (including the intercept a_0) are scaled by beginning-of-year total assets (<i>AT</i>).
<i>NUM_EST</i>	= Number of analysts covering the firm.

TABLE 1
Sample Composition for Firms Reporting Tax-Related ICMWs (TAX Firms) and Only Non-Tax ICMWs (NONTAX Firms) for One Year Prior to (PRE Year) and the First Year an ICMW Is Disclosed (ICMW Year), and the Year the ICMW Is Remediated (REMEDY Year)

	<u>1 Year Prior to the ICMW Disclosure (PRE Year)</u>		<u>Subtotal</u>
	<i>TAX Firms</i>	<i>NONTAX Firms</i>	
2001	0	1	1
2002	2	2	4
2003	28	70	98
2004	34	54	88
2005	17	56	73
2006	15	23	38
2007	3	10	13
2008	3	6	9
2009	2	5	7
2010	5	11	16
2011	3	9	<u>12</u>
Total	112	247	359
	<u>Year of the ICMW Disclosure (ICMW Year)</u>		<u>Subtotal</u>
	<i>TAX Firms</i>	<i>NONTAX Firms</i>	
2002	0	1	1
2003	2	2	4
2004	28	70	98
2005	34	54	88
2006	17	56	73
2007	15	23	38
2008	3	10	13
2009	3	6	9
2010	2	5	7
2011	5	11	16
2012	3	9	<u>12</u>
Total	112	247	359
	<u>Year the ICMW Is Remediated (REMEDY Year)</u>		<u>Subtotal</u>
	<i>TAX Firms</i>	<i>NONTAX Firms</i>	
2003	0	1	1
2004	2	0	2
2005	13	23	35
2006	16	37	53
2007	15	35	50
2008	8	25	33
2009	5	9	14
2010	0	10	10
2011	0	4	4
<u>2012</u>	6	6	<u>12</u>
Total	65	150	215

TABLE 2

Descriptive Statistics for Firms with Tax-Related ICMWs (*TAX* Firms) and Firms with Only Non-Tax ICMWs (*NONTAX* Firms)Panel A: Tax-Related Variables in the PRE, ICMW, and REMEDY Years (*TAX* firm data in bold)

Variable	N	Mean	Std Dev	Max	75 th	50 th	25 th	Min
<i>ETR_DIFF</i>								
PRE Year	112	0.014	0.093	0.424	0.032	0.001	-0.007	-0.465
ICMW Year	112	0.010	0.140	0.660	0.041	0.000*	-0.022	-0.629
REMEDY Year	65	-0.008	0.143	0.306	0.020	0.001	-0.016	-0.670
<i>ETR_DIFF</i>								
PRE Year	247	0.014	0.053	0.344	0.016	0.000	-0.003	-0.240
ICMW Year	247	0.006	0.063	0.267	0.019	0.004	-0.003	-0.518
REMEDY Year	150	0.003	0.098	0.613	0.009	0.001	-0.004	-0.701
<i>Q3_ETR</i>								
PRE Year	112	0.313	0.167	1.00	0.382	0.350	0.232	0
ICMW Year	112	0.320	0.157	1.00	0.383	0.339	0.191	0
REMEDY Year	65	0.299**	0.124	0.658	0.376	0.341	0.224	0
<i>Q3_ETR</i>								
PRE Year	247	0.317	0.129	1.00	0.380	0.346	0.292	0
ICMW Year	247	0.321	0.122	1.00	0.383	0.353	0.282	0
REMEDY Year	150	0.338	0.132	1.00	0.381	0.352	0.298	0
<i>Q4_ETR</i>								
PRE Year	112	0.299	0.178	1.00	0.375	0.327	0.217	0
ICMW Year	112	0.311	0.194	1.00	0.386	0.339	0.191	0
REMEDY Year	65	0.306	0.159	1.00	0.376	0.342	0.237	0
<i>Q4_ETR</i>								
PRE Year	247	0.303	0.133	1.00	0.378	0.340	0.263	0
ICMW Year	247	0.315	0.142	1.00	0.381	0.350	0.268	0
REMEDY Year	150	0.335	0.149	1.00	0.380	0.346	0.278	0
<i>FC_MISS</i>								
PRE Year	112	0.554**	0.499	1.00	1.00	1.00**	0	0
ICMW Year	112	0.625	0.486	1.00	1.00	1.00	0	0
REMEDY Year	65	0.600	0.494	1.00	1.00	1.00	0	0
<i>FC_MISS</i>								
PRE Year	247	0.437	0.497	1.00	1.00	0	0	0
ICMW Year	247	0.615	0.487	1.00	1.00	1.00	0	0
REMEDY Year	150	0.507	0.502	1.00	1.00	1.00	0	0

Variable	N	Mean	Std Dev	Max	75th	50th	25th	Min
<i>FC_MEET</i>								
PRE Year	112	0.446**	0.499	1.00	1.00	0**	0	0
ICMW Year	112	0.375	0.496	1.00	1.00	0	0	0
REMEDY Year	65	0.400	0.494	1.00	1.00	0	0	0
<i>FC_MEET</i>								
PRE Year	247	0.563	0.497	1.00	1.00	1.00	0	0
ICMW Year	247	0.385	0.487	1.00	1.00	0	0	0
REMEDY Year	150	0.493	0.502	1.00	1.00	0	0	0
<i>MISS_AMT</i>								
PRE Year	112	0.019	0.538	2.824	0.085	0.016**	-0.053	-2.346
ICMW Year	112	0.024	0.464	1.775	0.138	0.035	-0.083	-2.186
REMEDY Year	65	0.063	0.538	1.850	0.149	0.010	-0.051	-2.540
<i>MISS_AMT</i>								
PRE Year	247	-0.037	0.561	63.853	0.041	-0.010	-0.076	-2.346
ICMW Year	247	0.042	0.413	2.824	0.134	0.020	-0.043	-2.128
REMEDY Year	150	-0.059	0.487	1.757	0.072	0.003	-0.082	-3.022
<i>TAX_FEES</i>								
PRE Year	112	0.046	0.088	0.349	0.049	0	0	0
ICMW Year	112	0.076	0.096	0.444	0.124	0.038	0	0
REMEDY Year	65	0.076	0.104	0.485	0.128	0.029	0	0
<i>TAX_FEES</i>								
PRE Year	247	0.045	0.079	0.349	0.059	0	0	0
ICMW Year	247	0.068	0.091	0.396	0.105	0.030	0	0
REMEDY Year	150	0.061	0.092	0.524	0.082	0.030	0	0
<i>I_CH_ETR</i>								
PRE Year	112	-0.005	0.092	0.262	0.005	0	-0.002	-0.719
ICMW Year	112	0.030	0.188	1.017	0.004	-0.001	-0.006	-0.443
REMEDY Year	65	-0.010	0.056	0.131	0.001	-0.000	-0.005	-0.277
<i>I_CH_ETR</i>								
PRE Year	247	0.003	0.025	0.215	0.003	0	-0.001	-0.151
ICMW Year	247	0.003	0.069	0.354	0.003	0	-0.002	-0.719
REMEDY Year	150	-0.005	0.048	0.152	0.002	0	-0.001	-0.319

Panel B: Non-Tax Variables in the ICMW Year Only (TAX firm data in bold)

Variable	N	Mean	Std Dev	Max	75 th	50 th	25 th	Min
BTROA	112	0.080**	0.078	0.482	0.099	0.061*	0.028	0.003
BTROA	247	0.103	0.086	0.440	0.143	0.079	0.045	0.004
FOR_DUMM	112	0.563***	0.498	1.00	1.00	1.00***	0	0
FOR_DUMM	247	0.364	0.482	1.00	1.00	0	0	0
R&D	112	0.025	0.045	0.225	0.031	0	0	0
R&D	247	0.020	0.042	0.289	0.022	0	0	0
INTANG	112	0.178	0.183	0.741	0.312	0.113	0.026	0
INTANG	247	0.149	0.181	0.748	0.216	0.073	0.007	0
NOL	112	0.086**	0.200	1.555	0.089	0**	0	0
NOL	247	0.043	0.148	1.784	0.023	0	0	0
□NOL	112	0.009	0.083	0.497	0.011	0	-0.003	-0.231
□NOL	247	-0.000	0.088	0.714	0	0	0	-0.715
SALESGR	112	1.173	0.263	2.422	1.246	1.105	1.039	0.754
SALESGR	247	1.168	0.228	2.583	1.228	1.113	1.030	0.789
ASSETS	112	10,230	716,623	750,507	2,119.6	675.4	228.6	51.25
ASSETS	247	6,074	48,645	750,507	1,889.3	769.2	311.7	23.83

***, **, * indicates a significant difference in mean / median values between the TAX and NONTAX sub-samples at the 0.01, 0.05, or 0.10 level or better (two-sided p-values). Variables are winsorized at the 1st and 99th percentiles. Variable definitions are in Appendix B.

TABLE 3

Proportions of TAX and NONTAX ICMW Firms with Different Earnings Management Incentives that “Cross” the Consensus Analyst Forecast Threshold Due to the 3rd to 4th Quarter ETR Change

Panel A: Only includes TAX and NONTAX firms that would have missed the consensus forecast based on Q3ETR (FC_MISS = 1)

	(1) PRE Year	(2) ICMW Year	(3) REMEDY Year	Difference b/t (2) – (1) ICMW – PRE	Difference b/t (3) - (1) REMEDY - PRE	Difference b/t (3) - (2) REMEDY - ICMW
TAX = 1: CROSS_UP	0.500 (N = 62)	0.486 (N = 70)	0.513 (N = 39)	-0.014	0.013	0.027
NONTAX = 1: CROSS_UP	0.463 (N = 108)	0.414 (N = 152)	0.513 (N = 76)	-0.049	0.052	0.099
Difference TAX vs. NONTAX	0.037	0.071	0.000			

Panel B: Only includes TAX and NONTAX firms that would have met or beat the consensus forecast based on Q3ETR (FC_MEET = 1)

TAX = 1: SMOOTH_DOWN	0.200 (N = 50)	0.262 (N = 42)	0.346 (N = 26)	0.062	0.146	0.084
NONTAX = 1: SMOOTH_DOWN	0.309 (N = 139)	0.284 (N = 95)	0.378 (N = 74)	-0.025	0.069	0.094
Difference TAX vs. NONTAX	-0.109	-0.022	-0.032			

*, **, *** indicates a significant difference in mean values between the TAX and NONTAX sub-samples (in the same year) at the 0.10, 0.05, 0.01 level or better. These tests compare two vertically adjacent cells. #, ##, ### indicates a significant difference in mean values between the year under consideration and the PRE year, i.e., the year prior to the ICMW disclosure (within the TAX and NONTAX sub-samples) at the 0.10, 0.05, 0.01 level or better. Variable definitions are in Appendix B.

TABLE 4
Results for OLS Regressions Based on Samples of Firms that Reported Tax-Related (TAX Firms) and Only Non-Tax (NONTAX Firms)
ICMWs, where the Dependent Variable is the Change in ETR from the 3rd to the 4th Fiscal Quarter (ETR_DIFF)

	(1)			(2)			(3)		
	Predicted Sign	PRE Year Coefficient	T-Stat	Predicted Sign	ICMW Year Coefficient	T-Stat	Predicted Sign	REMEDY Year Coefficient	T-Stat
<i>FC_MISS</i>	+	-0.009	-0.24	+	-0.082	-1.54	NS	-0.066	-0.83
<i>FC_MISS</i> × <i>TAX</i>	+	0.016*	1.45	+	0.015	1.15	NS	-0.004	-0.19
<i>FC_MEET</i>	-	-0.009	-0.23	-	-0.079*	-1.45	NS	-0.077	-0.95
<i>FC_MEET</i> × <i>TAX</i>	-	-0.022*	-1.94	-	-0.009	-0.52	NS	0.045*	1.57
<i>MISS_AMT</i>	+	-0.002	-0.22	+	0.014	1.02	+	0.024	1.28
<i>TAX_FEES</i>	+	-0.019	-0.39	+	0.067	1.26	+	-0.057	-0.67
<i>I_CH_ETR</i>	-	-0.017	-0.26	-	-0.204***	-4.84	-	-0.260	-1.35
<i>Q3_ETR</i>	+	0.077***	2.70	+	0.101***	2.63	+	0.178**	2.47
<i>BTROA</i>		-0.050	-1.22		-0.077	-1.20		0.150	1.39
<i>FOR_DUMM</i>		-0.005	-0.58		0.020*	1.77		0.000	0.02
<i>R&D</i>		0.189**	2.15		0.381***	2.79		-0.080	-0.29
<i>INTANG</i>		-0.009	-0.42		-0.114***	-3.95		0.025	0.49
<i>NOL</i>		-0.000	-0.01		0.014	0.47		-0.262***	-3.29
□ <i>NOL</i>		-0.019	-0.47		0.069	1.15		0.223	0.90
<i>SALESGR</i>		-0.006	-0.45		0.030	1.34		0.030	1.13
<i>SIZE</i>		-0.002	-0.94		0.003	1.00		-0.005	-0.90
Industry & Year Fixed Effects?		YES			YES			YES	
Adjusted R ²		0.1154			0.1372			0.064	
N		359			359			215	

***, **, * indicate significance, respectively, at the 0.01, 0.05, 0.10 level or better in a one-sided t-test of significance for coefficients with predicted signs, but a two-sided t-test of significance for all others. Variable definitions are in Appendix B.

TABLE 5

Results for Difference-in-Difference Regression Analyses that Compare Regression Results across the PRE, ICMW, and REMEDY Years Based on Samples of Firms that Reported Tax-Related (*TAX* Firms) and Only Non-Tax (*NONTAX* Firms) ICMWs, where the Dependent Variable is the Change in ETR from the 3rd to the 4th Fiscal Quarter (*ETR_DIFF*)

	(1) PRE vs. ICMW Year			(2) PRE vs. REMEDY Year			(3) ICMW vs. REMEDY Year		
	Predicted Sign	Coefficient	T-Stat	Predicted Sign	Coefficient	T-Stat	Predicted Sign	Coefficient	T-Stat
<i>FC_MISS</i>	+	-0.033	-0.91	+	-0.046	-1.09	+	-0.073	-1.64
<i>FC_MISS</i> × <i>TAX</i>	+	0.014	1.10	+	0.020*	1.39	+	0.016	1.08
<i>FC_MISS</i> × <i>POST</i>	?	-0.008	-0.78	?	0.004	0.25	?	0.001	0.05
<i>FC_MISS</i> × <i>TAX</i> × <i>POST</i>	?	0.001	0.05	-	-0.036*	-1.63	-	-0.038*	-1.55
<i>FC_MEET</i>	-	-0.032	-0.85	-	-0.044	-1.01	-	-0.071*	-1.54
<i>FC_MEET</i> × <i>TAX</i>	-	-0.027**	-2.08	-	-0.020*	-1.33	-	-0.002	-0.13
<i>FC_MEET</i> × <i>POST</i>	?	-0.009	-0.85	?	-0.016	-1.10	?	-0.010	-0.60
<i>FC_MEET</i> × <i>TAX</i> × <i>POST</i>	?	0.019	0.96	+	0.037*	1.46	+	0.015	0.51
<i>MISS_AMT</i>	+	0.004	0.65	+	0.000	0.04	+	0.017	1.53
<i>TAX_FEES</i>	+	0.018	0.51	+	-0.019	-0.43	+	0.025	0.55
<i>I_CH_ETR</i>	-	-0.160***	-4.94	-	-0.011	-0.16	-	-0.196***	-4.48
<i>Q3_ETR</i>	+	0.085***	3.60	+	0.111***	3.78	+	0.108***	3.20
Additional Controls?		YES			YES			YES	
Industry & Year Fixed Effects?		YES			YES			YES	
Adjusted R ²		0.1153			0.049			0.057	
N		718			574			574	

***, **, * indicate significance, respectively, at the 0.01, 0.05, 0.10 level or better in a one-sided t-test of significance for coefficients with predicted signs, but a two-sided t-test of significance for all others. Variable definitions are in Appendix B.

TABLE 6

Results for Logit Regressions Based on Samples of Firms that Reported Tax-Related ICMWs (*TAX* Firms) and Only Non-Tax ICMWs (*NONTAX* Firms), where the Dependent Variable is an Indicator Variable for whether the Firm Met or Beat the Median Analyst Forecast (*MEET_BEAT*)

	Predicted Signs for (1) and (2)	(1) PRE Year		(2) ICMW Year		Predicted Signs for (3)	(3) REMEDY Year	
		Coefficient	Pr > \square	Coefficient	Pr > \square		Coefficient	Pr > \square
<i>Intercept</i>		5.535	0.974	-10.803	0.948		9.305	0.957
<i>ETR_DOWN</i>	+	0.049	0.868	0.671	0.018	+	0.463	0.227
<i>TAX</i>	?	-1.187	0.003	-0.148	0.685	?	-0.099	0.843
<i>ETR_DOWN</i> × <i>TAX</i>	+	1.179	0.027	0.193	0.704	NS or -	-0.110	0.875
<i>MISS_AMT</i>	+	-0.385	0.102	-0.793	0.011	+	-0.608	0.108
<i>TAX_FEES</i>	+	1.767	0.299	4.541	0.001	+	-2.584	0.117
<i>CFO</i>	+	3.030	0.153	-0.952	0.686	+	-2.353	0.479
\square <i>CFO</i>	+	-0.074	0.961	1.551	0.440	+	1.448	0.587
<i>MTB</i>	+	-0.044	0.521	0.042	0.424	+	0.045	0.674
<i>BTROA</i>	+	1.378	0.414	2.857	0.117	+	4.640	0.104
<i>SIZE</i>	?	0.076	0.364	0.022	0.790	?	0.137	0.219
Industry and Year Fixed Effects?		YES		YES			YES	
Area under ROC curve		0.717		0.712			0.726	
Total N		359		359			215	

***, **, * indicate significance, respectively, at the 0.01, 0.05, 0.10 level or better in a one-sided t-test of significance for coefficients with predicted signs, but a two-sided t-test of significance for all others. Variable definitions are in Appendix B.

TABLE 7

Results from Separate Regressions that Include Fiscal Years Before vs. After the Implementation of SOX

Panel A: Results Based on Fiscal Years before 2006

	(1)			(2)			(3)		
	Predicted Sign	PRE Year Coefficient	T-Stat	Predicted Sign	ICMW Year Coefficient	T-Stat	Predicted Sign	REMEDY Year Coefficient	T-Stat
<i>FC_MISS</i>	+	0.167	0.51	+	-0.060	-1.02	NS	0.048	0.63
<i>FC_MISS</i> × <i>TAX</i>	+	0.042***	3.63	+	0.021	1.22	NS	0.014	0.60
<i>FC_MEET</i>	-	0.021	0.63	-	-0.051	-0.85	NS	0.078	0.89
<i>FC_MEET</i> × <i>TAX</i>	-	-0.019*	-1.67	-	-0.006	-0.29	NS	-0.023	-0.74
<i>MISS_AMT</i>	+	-0.002	-0.20	+	0.007	0.48	+	-0.002	-0.13
<i>TAX_FEES</i>	+	-0.022	-0.40	+	0.077	1.16	+	-0.014	-0.24
<i>I_CH_ETR</i>	-	0.121*	1.87	-	-0.163***	-3.70	-	0.181	1.31
<i>Q3_ETR</i>	+	0.077**	2.41	+	0.059	1.07	+	0.029	0.43
Additional Controls & Industry Fixed Effects		YES			YES			YES	
Adjusted R ²		0.1709			0.1460			-0.0361	
<i>N</i> of <i>TAX</i> = 1 (0) Obs		81 (183)			64 (127)			15 (24)	

Panel B: Results Based on Fiscal Years after 2005

<i>FC_MISS</i>	+	-0.272***	-3.56	+	-0.097	-1.15	NS	-0.038	-0.42
<i>FC_MISS</i> × <i>TAX</i>	+	-0.008	-0.35	+	-0.007	-0.31	NS	-0.006	-0.20
<i>FC_MEET</i>	-	-0.263***	-3.36	-	-0.102	-1.20	NS	-0.046	-0.52
<i>FC_MEET</i> × <i>TAX</i>	-	-0.023	-0.91	-	-0.005	-0.15	NS	0.053	1.52
<i>MISS_AMT</i>	+	0.011	1.05	+	0.032	1.08	+	0.029	1.34
<i>TAX_FEES</i>	+	-0.021	-0.27	+	0.031	0.36	+	-0.097	-0.88
<i>I_CH_ETR</i>	-	-1.434***	-6.86	-	-0.485***	-3.26	-	-0.425*	-1.84
<i>Q3_ETR</i>	+	0.016	0.30	+	0.167**	2.59	+	0.182**	2.12
Additional Controls & Industry Fixed Effects		YES			YES			YES	
Adjusted R ²		0.4393			0.1181			0.1037	
<i>N</i> of <i>TAX</i> = 1 (0) Obs		31 (64)			48 (120)			50 (126)	

***, **, * indicate significance, respectively, at the 0.01, 0.05, 0.10 level or better in a one-sided t-test of significance for coefficients with predicted signs, but a two-sided t-test of significance for all others. Variable definitions are in Appendix B.

