Do Smoothing Activities Indicate Higher or Lower Financial Reporting Quality? Evidence from Effective Tax Rates

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Abstract

Prior literature is mixed as to whether smoothing through accruals indicates higher or lower financial reporting quality (Tucker and Zarowin 2006; Jayaraman 2008; Dechow et al. 2010). Motivated by the unique inter-temporal features and reporting incentives of tax expense, we provide new evidence on this debate by examining the link between smoothing of GAAP effective tax rates (ETRs) and the likelihood of financial restatements. Different from earnings smoothing's insignificant relation with restatements, we find that ETR smoothing through tax accruals is associated with a lower likelihood of financial restatement and lower likelihood of tax-related financial reporting fraud. Further investigation reveals that such negative associations are stronger in firms with a higher level of discretion in tax reporting and when the demand and monitoring for transparent reporting is higher. We also document corroborating evidence that smoothing through tax accruals increases the informativeness of GAAP ETRs for predicting future cash ETRs. Collectively, our results contribute to the financial reporting and tax literatures by providing evidence that smoothing activities pertaining to tax accruals are consistent with *higher* financial reporting quality.

Keywords: effective tax rates, financial reporting quality, smoothing, managerial discretion
JEL Classification: M41; M48; H26

I. INTRODUCTION

An open question in financial accounting is whether smoothing activities are associated with higher or lower financial reporting quality (Tucker and Zarowin 2006; Jayaraman 2008; Dechow et al. 2010). One feature of accrual accounting is that accruals help remove extreme performance volatility. As a result, earnings based on accruals can better predict firms' long-term profits (Dechow 1994). This feature suggests that earnings smoothing is associated with higher financial reporting quality. However, common ways to manipulate earnings, such as creating reserves in profitable years or overstating earnings during negative shocks, can also manifest as earnings smoothing, obscuring value-relevant variation in firm performance. Consistent with the latter argument, earnings smoothing has been found to be negatively associated with alternative measures of financial reporting quality (Dechow et al. 2010). Therefore, it is unclear if smoothing through accruals is related to higher or lower financial reporting quality. To provide new evidence on whether smoothing activities indicate higher or lower financial reporting quality, we examine this question through a new perspective: the smoothing of GAAP effective tax rates (ETRs) through tax accruals and its link to financial reporting quality as measured by restatements and the ability of GAAP ETRs to predict future cash ETRs.

The smoothing of GAAP ETRs through tax accruals provides a unique setting to study the link between smoothing activities and reporting quality. First, tax expense is one of the largest corporate costs, making it an important determinant of earnings, and its reporting involves significant managerial discretion. Second, different from other cost items, tax is a non-core expense, and reporting abnormally low tax rates may invite scrutiny from tax authorities and increase the risk of audits and additional payments (Bozanic et al. 2017). Therefore, instead of pursuing an ever-decreasing tax rate, investors put a greater focus on the stability of GAAP ETRs. A survey by the Tax Executives Institute found that about 70 percent of tax executives are

evaluated on their ability to avoid tax-related surprises (TEI 2005). Despite this emphasis on the stability of GAAP ETRs by investors and managers, whether the smoothing of GAAP ETRs through tax accruals is linked to higher or lower reporting quality remains unknown.

Second, tax expense has a distinct inter-temporal relationship with firms' fundamental earnings. Most other costs have a fixed portion, so that when fundamental earnings deteriorate, cost percentages increase. The smoothing of cost percentages, therefore, creates reserves during good days and covers up earnings shortages during difficult times. Tax rates, however, stay mostly unchanged since they are proportionate to earnings, and even decrease when earnings deteriorate dramatically due to the progressive nature of the corporate tax system. As a result, using tax accruals to cover shortages in core earnings (i.e., by artificially depressing GAAP ETRs) generally increases the volatility of GAAP ETRs. For this reason, if firms are committed to smoothing GAAP ETRs, they are restrained from misreporting tax accruals for covering up shortages in core earnings (Dhaliwal et al. 2004; Krull 2004; Frank and Rego 2006; Cazier et al. 2015). Anticipating such a restraining effect, firms that exhibit higher ETR smoothing may be more likely to be the ones who commit to a more transparent earnings reporting strategy overall.

To empirically test the relation between ETR smoothing and financial reporting quality, we develop a new measure of GAAP ETR smoothing, based on the intuition in Jayaraman (2008), as the inverse difference in volatilities of GAAP ETRs and cash ETRs.[1] Our measure exploits the direct disclosure of both accrual-based tax expense and its corresponding cash taxes

[1] GAAP (cash) ETR is calculated as total tax expense (cash taxes paid) scaled by pretax income. Our GAAP ETR smoothing measure is calculated as -1×(Variance of GAAP ETR – Variance of Cash ETR). We multiply by -1 to facilitate interpretability so that higher levels represent greater GAAP ETR smoothing through tax accruals. Also see Section III. We focus on GAAP tax *rates*, rather than tax payment *levels*, because Graham et al. (2014) find that managers of public firms consider GAAP tax rates to be a significantly more important metric than cash taxes paid, and Armstrong et al. (2012) find that GAAP ETRs are the only tax metric associated with tax director compensation. Thus, the role of smoothing of tax accruals should be more evident around effective tax *rates* rather than *levels* of estimated taxable income or cash taxes paid.

paid to isolate the smoothing effect of managers' estimation of tax accruals from the volatility in firms' fundamental tax payouts determined by innate firm performance and tax planning. In measuring financial reporting quality, we primarily focus on overall earnings misreporting evident in restatements. In particular, we examine both tax-related and non-tax-related financial restatements to gauge the extent to which GAAP ETR smoothing is an indicator for overall financial reporting quality.

We use restatements to proxy for financial reporting quality as they are direct measures of poor financial reporting quality, and are not subject to the considerable measurement error in discretionary accrual models (Li and Zhu 2016). Restatements also do not rely on market-based information (Tucker and Zarowin 2006; Jayaraman 2008), which matters in a smoothing context because investors may not understand or price smoothing (McInnis 2010). Nevertheless, to triangulate our evidence on restatements, which may still suffer from detection bias, we also use a second financial reporting quality measure, based on tax information by examining whether the ability of GAAP ETRs for predicting future cash ETRs is stronger when GAAP ETR smoothing is higher. If the smoothing of GAAP ETRs is indicative of higher financial reporting quality, it should (1) be negatively associated with the likelihood of financial restatements; and (2) strengthen the informativeness of GAAP ETR for predicting future cash ETR outcomes.[2]

Our empirical analyses provide new evidence on the link between smoothing activities, as they pertain to tax accruals, and financial reporting quality. First, we find that GAAP ETR smoothing is negatively associated with the likelihood of restatements, especially for fraudulent reporting cases and tax-related restatements. We estimate that, on average, a one standard

[2] We use the term informativeness to refer to the ability of GAAP ETRs to predict future cash ETRs. This definition is consistent with recent literature that examines the mapping of financial accruals to future cash outcomes (e.g., Badertscher et al. 2012). This definition does *not* consider assumptions about market efficiency or rely on the market's perception of the informativeness of smoothing, which is important as investors may not understand and/or price the information content in smoothing (McInnis 2010) or taxes (Lev and Nissim 2004; Weber 2009).

deviation increase in GAAP ETR smoothing decreases the likelihood of tax-related (non-tax-related) restatements by 0.5 (0.8) percent overall, or 12.8 (6.8) percent conditional on the base likelihood. GAAP ETR smoothing also decreases the likelihood of tax-related fraud events by 0.001 percent, or 47 percent conditional on the base likelihood. Interestingly, we find that the smoothing of pretax income is *not* related to the likelihood of restatement, which mirrors the literature's mixed inferences on the link between earnings smoothing and reporting quality. Such a direct contrast between our results on GAAP ETR smoothing and pretax earnings smoothing highlights the uniqueness of GAAP ETR smoothing as it relates to identifying overall financial reporting quality.

We also find that GAAP ETR smoothing is associated with greater informativeness of GAAP ETRs regarding future cash ETRs. We estimate that, on average, a one standard deviation increase in GAAP ETR smoothing increases the ability of GAAP ETRs to predict future cash ETRs by an economically significant 31 percent. In combination with our previous findings, these results suggest that GAAP ETR smoothing through tax accruals credibly communicates long-term tax outcomes, and such a smoothing strategy is incompatible with using tax accruals in manipulating earnings opportunistically. In short, our results suggest that smoothing of GAAP ETRs through tax accruals indicates *higher* overall financial reporting quality.

In additional tests, we show that GAAP ETR smoothing is negatively associated with the occurrence of accounting restatements only when the adjustment to shareholders' equity is negative. That is, smoothing of ETRs and restatements are strongly negatively linked in cases when accruals inflated earnings. This finding is consistent with the idea that smoothing is incompatible with egregious, income-increasing manipulation, and thus it is a credible indicator of higher overall earnings reporting quality.

We further document that the informativeness of GAAP ETR smoothing on overall

reporting quality is mostly driven by the discretionary portion of tax accrual reporting. We find that when we decompose GAAP ETR smoothing into discretionary and non-discretionary components using (1) a model from Mayberry et al. (2015); (2) firms' deviations from industry-year averages; or (3) firms' deviations from their own historical averages, it is the discretionary smoothing component that drives the negative association between ETR smoothing and likelihood of restatement. Relatedly, we find that when firms have foreign operations or higher research and development (R&D) and intangibles, both of which are subject to higher tax reporting discretion, GAAP ETR smoothing indicates even higher overall reporting quality. Finally, we find that the negative association between ETR smoothing and likelihood of restatement is more prominent with greater monitoring, i.e., when firms have greater institutional ownership and analyst following. These results suggest that managers committed to greater ETR smoothing also seem to commit to higher overall financial reporting quality, especially when monitoring and demand for greater reporting quality is high.

Our study makes several contributions to the accounting literature. First, our findings provide new evidence on the relation between smoothing activities and overall financial reporting quality. Although earnings smoothing is a highly favored reporting strategy by managers (Graham et al. 2005), the extent to which smoothing leads to more informative reporting is "very much an open question" (Dechow et al. 2010, 362). Few studies examine the informativeness of earnings smoothing, and those that do find mixed evidence (e.g., Tucker and Zarowin 2006; Jayaraman 2008; McInnis 2010; Dechow et al. 2010). This study highlights and takes advantage of the important differences between earnings smoothing through total accruals and ETR smoothing through tax accruals. Unlike earnings smoothing that could be the result of either earnings manipulation or signaling long-term earnings, and therefore is unrelated to occurrence of misreporting, ETR smoothing appears to restrain firms from using tax accruals for

earnings manipulation purposes.

Second, while prior literature exhibits the importance of GAAP ETRs to managers (Phillips 2003; Armstrong et al. 2012; Graham et al. 2014) and provides evidence of the lack of variation in GAAP ETR changes over time (Kubata et al. 2016), the implications of GAAP ETR smoothing remain unexplored. We construct a new measure of GAAP ETR smoothing that captures smoothing through the reporting of tax accruals rather than tax avoidance or tax planning (Mayberry et al. 2015), and find that such smoothing is associated with higher financial reporting quality. These findings extend our basic understanding of GAAP ETR smoothing.

Third, we add to the literature on the informational role of tax accruals, which have been mostly studied in the context of aiding earnings management for opportunistic reasons. As such, concern over the use of tax accruals in earnings management is shared by both information users and their providers. Per Dichev et al. (2013), CFOs deem earnings to be of higher quality when they are not tied to changes in ETRs, while Gleason and Mills (2008) find that investors respond more strongly to earnings news when tax expense is not used to meet firms' earnings targets. In this study, we document an inter-temporal reporting strategy of tax accruals that represent managers' response to such concerns. Our evidence shows that managers using tax accruals to smooth out volatilities in GAAP ETRs seem to also be committed to not using tax accruals in earnings manipulation. Rather, GAAP ETR smoothing credibly conveys information about long-term cash tax ETR outcomes. Thus, our findings establish new links between tax accrual reporting strategies and reporting qualities for both overall earnings and cash tax outcomes.

This paper develops as follows. Section II describes the related literature and develops our hypothesis. Section III describes our methodology. We report our results in Section IV and conclude in Section V.

II. RELATED LITERATURE AND HYPOTHESIS DEVELOPMENT

Earnings Smoothing and Earnings Quality

Despite earnings smoothing being a highly favored and commonly practiced inter-temporal reporting strategy (Graham et al. 2005), both researchers and industry professionals have conflicting views on whether earnings smoothing is a representation of higher or lower earnings quality. Some academic sources point to smoothness as a desirable quality of earnings because it indicates the natural stability of operations or the elimination of transitory noise by the accrual process or benevolent managers (e.g. Dechow 1994; Subramanyam 1996; Dichev and Tang 2008). In particular, Tucker and Zarowin (2006) find that the stock returns of firms with greater earnings smoothing contain more information about future earnings.[3] Other studies point to the opposite interpretation, emphasizing the opportunistic and misleading "over-smoothing" of earnings with respect to the underlying cash flows or economic events (Leuz et al. 2003). Consistent with the latter view, Jayaraman (2008) finds that bid-ask spreads and the likelihood of insider trading are higher for firms that engage in more earnings smoothing, while Li and Zhu (2016) collect detailed restatement information and show that managers overstate (understate) accruals when actual earnings and cash flow performance is low (high).

When examining the correlation between earnings smoothing and other indicators of earnings quality, Dechow et al. (2010) find that smoothing through accruals is negatively correlated with alternative indicators of earnings quality, including the level and volatility of accruals and accrual estimation errors. Survey evidence based on CFOs' views on earnings quality echoes the conflicting view held by researchers (Dichev et al. 2013); although admitting

[3] The research design used by Tucker and Zarowin (2006, 252) explicitly assumes "the informational efficiency of stock price." Our results for earnings and ETR smoothing differ in that our research design does not rely on assumptions about the efficiency of stock prices with respect to smoothing, since investors do not appear to incorporate information about smoothing into stock price (McInnis 2010).

pressure to report smooth earnings, CFOs do not rate earnings smoothing through accruals as an indicator of high earnings quality. Instead, they list earnings that are too smooth relative to economic fundamentals, especially in volatile industries, as a red flag for earnings manipulation.

GAAP ETR Smoothing through Tax Accruals

In discussing reporting quality, Dechow et al. (2010, 362) emphasize differentiating inherent or fundamental smoothness from smoothness related to accounting choice. In this study where we use a tax setting to inform financial reporting quality, we make such a distinction between fundamental smoothness and smoothing related to accounting choice. In particular, we isolate smoothing related to accounting choice as the difference (inverse difference) between the smoothness (volatility) of GAAP ETRs and the smoothness (volatility) of cash ETRs. Here, the smoothness of cash ETRs captures the impact of the firm's fundamental performance and tax planning on the stability of cash tax payouts per unit of income. Thus, the difference between the smoothness of GAAP ETRs and cash ETRs isolates the extent to which tax accruals, which are a function of accounting choice, smooth out (or intensify) the variance in underlying cash ETRs. We refer to this difference as the smooth*ing* of GAAP ETRs through tax accruals.

Within the tax setting, recent research examines the smooth*ness* of cash taxes paid and its implications for the level of future tax outcomes, persistence of pre-tax earnings, or disclosure transparency. These studies use the ratio of the standard deviation of estimated taxable income to the standard deviation of pretax cash flows as the (inverse) measure of smoothness.[4] In particular, Mayberry et al. (2015) find that smoothness in the level of estimated taxable income is associated with lower levels of future cash ETRs, suggesting that better managerial control over the tax function enables greater tax avoidance through tax planning over future periods. In

[4] We stress that this measure of smoothness is of the amount of taxable income as inferred from current tax expense only, not the cash ETR, which includes the effects of temporary differences. In contrast, we focus on effective tax *rates* because they are more likely than taxable income or tax expense to be a reporting target (Graham et al. 2014).

extending the idea that smoothness indicates better managerial control, McGuire et al. (2013) find that smoother cash ETRs contains information about the persistence of pre-tax earnings and earnings components, while Neuman et al. (2012) find that higher disclosure transparency is associated with smoother taxable income. These studies note that their measure of smoothness could reflect the volatility of underlying firm performance and/or managerial tax planning. In contrast, our design and definition of smoothing as the difference between the variances of GAAP and cash ETRs helps identify tax accrual reporting decisions distinct from firm performance or real cash impacts from tax planning because these latter effects are eliminated by subtracting out the volatility of cash ETRs. As a result, our measure can help inform whether smoothing due to accounting choice is related to financial reporting quality.

Our research question is also related to, but distinct from prior literature studying the reporting of tax accruals. First, most of the literature focuses on the level of tax accruals and how they are manipulated to achieve certain *earnings* targets or their relation to *earnings* characteristics (see Graham et al. 2012). In contrast, we examine an inter-temporal reporting strategy of tax accruals by looking at their role in smoothing GAAP ETRs. Second, several recent studies examining the informativeness of tax accruals focus on their predictive ability with respect to cash tax payouts. Laux (2013) provides evidence on how certain deferred tax assets and liabilities map into future tax payments, while Ciconte et al. (2016) find that the FIN 48 tax reserve is positively associated with future income tax payments. Both results are consistent with tax accruals containing predictive information about future cash tax outcomes, but neither study sheds light on how smoothing activities affect the informativeness of tax reporting. Choudhary et al. (2016) extend the framework of the Dechow and Dichev (2002) accrual quality model to develop a measure for tax accrual quality that estimates the precision of how one-period past, current, and one-period future tax cash flows map into current tax expense. In contrast to these

studies, we look at the smoothing of GAAP ETRs as an inter-temporal reporting strategy, instead of a single period's tax accrual quality. We also examine the implications of GAAP ETR smoothing not only for tax-specific reporting quality, but for overall financial reporting quality.

GAAP ETR Smoothing and Reporting Quality

The smoothing of GAAP ETRs through tax accruals provides a unique setting to study smoothing activities and reporting quality because the inter-temporal properties and the reporting incentives of tax rates are different from other cost or expense percentages. First, tax expense has a distinct inter-temporal relationship with firms' fundamental earnings. Most other expenses have a fixed portion, thus when fundamental earnings deteriorate, cost percentages increase. The smoothing of cost percentages, therefore, helps to create reserves during good days and cover up earnings shortages during difficult times. Tax rates, however, stay mostly unchanged with the movement of fundamental earnings since they are proportionate to earnings, and even decrease when earnings deteriorate dramatically due to the progressive nature of the corporate tax system. As a result, using tax accruals to cover shortages in core earnings (i.e., by artificially depressing GAAP ETRs) generally *increases* the volatility of GAAP ETRs. For this reason, if firms are committed to smoothing GAAP ETRs, they are restrained from misreporting tax accruals for covering up shortages in core earnings (Dhaliwal et al. 2004; Krull 2004; Frank and Rego 2006; Cazier et al. 2015). Anticipating such a restraining effect, firms that exhibit higher ETR smoothing are more likely to be the ones who commit to a more transparent earnings reporting strategy overall. Therefore, such unique inter-temporal properties of tax rates suggest that ETR smoothing could be associated with higher reporting quality.

Also different from the lowering of other costs, such as cost of goods sold, which increase profitability and is welcomed by investors, abnormally low tax rates may invite scrutiny from tax authorities and increase the risk of tax audits and additional payments (Bozanic et al.

2017). Thus, instead of pursuing ever-decreasing tax rates, there is greater emphasis on the stability of tax rates. The demand for reducing uncertainty in tax reporting also comes from the fact that tax expense does not represent a firm's core profitability, yet the significant discretion in tax reporting potentially clouds earnings quality. Prior research documents that total tax accruals (Dhaliwal et al. 2004), as well as specific tax accruals (Krull 2004; Frank and Rego 2006; Cazier et al. 2015), are commonly used as mechanisms for overall earnings management (Graham et al. 2012). Recent evidence suggests that sustainable tax reporting is a primary goal for many tax departments. For example, a survey conducted by the Tax Executives Institute found that about 70 percent of tax executives were evaluated based on their ability to avoid tax-related surprises (TEI 2005). In addition, KPMG LLP (2007) argues that sustainable tax management is a critical long-term goal for companies because financial analysts view an unexpected change in a company's tax rate as a signal of poor management. Consistent with this view, Dichev et al. (2013) document that CFOs deem earnings to be of higher quality when they are not tied to changes in ETRs. Furthermore, Gleason and Mills (2008) find that investors respond more strongly to earnings news when tax expense is not used to meet firms' earnings targets.

The high demand for less uncertainty regarding GAAP ETRs could make smoothing of GAAP ETRs associated with either higher or lower reporting quality. In response to the demand for less uncertainty, managers are likely to use tax accruals to smooth out volatilities in GAAP ETRs to communicate a long-term sustainable tax rate. In doing so, they are restrained from using accruals for earnings manipulation due to the reasons stated previously. Such a GAAP ETR smoothing strategy is a credible indicator for overall reporting quality, including both higher earnings quality and higher tax reporting quality. However, it is also likely that in the pursuit of stable GAAP ETRs, tax accruals are used to aggressively maintain the level of historical ETRs, disregarding the future long-term cash ETR rates. Such aggressive smoothing

through tax accruals could potentially result in restatements on tax reporting and decrease the current informativeness of GAAP ETRs for future cash ETRs.

Additionally, even absent demand for less uncertainty regarding GAAP ETRs, there are other incentives for managers to engage in GAAP ETR smoothing. For one, prior research shows that GAAP ETRs have significant impacts on managers' compensation and career outcomes Phillips 2003; Armstrong et al. 2012; Chyz and Gaertner 2017). Thus managers have incentives to smooth ETRs to maintain smoother compensation (and thus smoother personal consumption), regardless of the impact of such smoothing on financial reporting quality. In addition, managers may be concerned about fluctuations in GAAP ETRs being used by tax authorities to select the firm for a tax audit (Graham et al. 2012; Bozanic et al. 2017). Thus, to avoid the costly audit process and potentially large tax assessments and penalties (Wilson 2009), managers may engage in aggressively smooth accrual management to hide informative GAAP ETR fluctuations from tax authorities, potentially sacrificing the informativeness of GAAP ETRs.

Based upon these opposing arguments, we state our central hypothesis in the null form:

Hypothesis: GAAP ETR smoothing is not associated with higher financial reporting quality.

III. RESEARCH DESIGN AND SAMPLE SELECTION

GAAP ETR Smoothing Measure

To examine GAAP ETR smoothing, we build on the framework derived by Jayaraman (2008) to create a measure of GAAP ETR smoothing (GETR_SMO). The GAAP ETR can be deconstructed as follows:

$$GAAP\ ETR = \frac{GAAP\ Tax\ Expense}{Pretax\ Book\ Income} = \frac{Cash\ Taxes\ Paid}{Pretax\ Book\ Income} + \frac{Tax\ Accruals}{Pretax\ Book\ Income}$$
$$= Cash\ ETR + Tax\ Accrual\ ETR$$

Thus, the variance of the GAAP ETR can be expressed as:

$$Var(GAAP\ ETR) = Var(Cash\ ETR) + Var(Tax\ Accrual\ ETR) + 2Cov(Cash\ ETR, Tax\ Accrual\ ETR)$$

As shown above, the variance of GAAP ETRs is generated by three sources: the variance of cash ETRs, the variance of tax accrual ETRs, and their covariance. To create our ETR smoothing measure, we calculate the variance of the GAAP ETR and the cash ETR over the current year and the prior two years (i.e., over t, t-1, and t-2).[5] We then subtract the variance of the cash ETR from the variance of the GAAP ETR so that only variation that is related to tax accruals is left, and multiply this measure by negative one so that higher levels represent smoother GAAP ETRs relative to cash ETRs. This approach gives us our measure of GAAP ETR smoothing (i.e., GETR_SMO) due to tax accrual choices as follows:

$$GETR\_SMO = -1 \times [Var(GAAP\ ETR_{t-2,t-1,t}) - Var(Cash\ ETR_{t-2,t-1,t})]$$

Within this formulation, the GAAP ETR could be smoothed by reducing the variance of tax accruals and/or by changing the extent to which tax accruals covary with cash taxes paid. As described by Jayaraman (2008), both the variance of accruals and the extent to which accruals covary with cash flows are needed to measure smoothing. Alternate smoothing measures that focus only on the covariance between accruals and pre-managed earnings (e.g., Tucker and Zarowin 2006) can lead to problematic inferences, as they incorrectly classify certain accrual manipulations (e.g., big baths) as smoothing and do not effectively remove cash flow smoothness

[5] We winsorize all ETRs to lie between zero and one before computing ETR variances (Dyreng et al. 2008). In untabulated tests, we find all of our results are robust to calculating our smoothing measure (and other smoothing and variance control variables mentioned below) over five and seven years. We display our results using three-year measures to maximize our number of observations and demonstrate the importance of even short-term smoothing.

from the "smoothing" measure (Jayaraman 2008; Mayberry et al. 2015).[6]

Financial Reporting Quality Measure

We use the occurrence of a financial statement restatement (*Restatement*) as our primary measure of reporting quality, with *Restatement* capturing lower quality in complying with GAAP reporting standards.[7] Restatements are an ex-post measure of reporting quality, and thus are not subject to severe measurement errors. Discretionary accruals, on the other hand, have been shown to be highly correlated with firm fundamental characteristics (Dechow et al. 2010). Using restatements also has an advantage in identifying the role of managerial reporting discretion. Theoretically, GAAP ETR informativeness could be the product of GAAP standards and/or discretionary reporting choices of managers, while the occurrence of a restatement indicates a clear violation of GAAP. This means that an association between GAAP ETR smoothing and restatement occurrence is by definition not created by GAAP standards, but rather by the impact of discretionary managerial reporting on ETR smoothing.

We use the occurrence of all types of restatements as our proxy for overall financial reporting quality. However, restatements could be due to managers' intentional discretionary reporting or innocent errors in the application of GAAP. Therefore, we separately examine restatements that are determined to be fraudulent or have negative impacts on shareholder equity to focus on settings where a restatement is likely due to managers' reporting discretion to inflate earnings. We also separately examine restatements involving tax reporting because GAAP ETR smoothing restrains managers from manipulating earnings directly through tax accruals, since the

[6] In a supplemental test we split our measure into the portion due to (a) the variance of accruals and (b) the covariance of accruals and cash flows, and examine the effects of each portion separately on financial reporting quality. We find that both components are significant in tests, consistent with the discussion in Jayaraman (2008).

[7] Per DeFond (2010, 404): "Earnings restatements…are potentially attractive alternatives to abnormal accruals as a proxy for EQ [earnings quality]. One perceived advantage of restatements and AAERs over abnormal accruals is that they appear to be more direct proxies for EQ. Restatements and AAERs are actual events, rather than error terms from a statistical model that cannot be validated."

use of tax accruals to manipulate earnings will introduce additional variation into GAAP ETRs. Therefore, if GAAP ETR smoothing through tax accruals is indicative of higher financial reporting quality, we will find a negative relation between our smoothing measure and fraudulent restatements, tax-related restatements, and equity decreasing restatements.

Using restatements as a proxy for financial reporting quality has shortcomings as well. The occurrence of a restatement is jointly determined by the violation of GAAP, auditors' failure in detecting the violation, and the later discovery of misreporting (Gow et al. 2016). Although we control for firm characteristics that theoretically reflect audit quality and monitoring strength (e.g., firm size, profitability, and growth), we caution that we may be unable to completely isolate managers' misreporting behavior. In addition, restatements only reflect discretionary reporting that violates GAAP, but does not reflect discretionary reporting within GAAP.

To address these concerns, we also measure financial reporting quality using an alternative proxy: the informativeness of GAAP ETRs for future cash ETRs. We expect GAAP ETR smoothing to increase the ability of current GAAP ETRs to predict future cash ETRs. This measure avoids detection bias evident in restatements, plus it includes within-GAAP reporting discretion. We also use this measure since it is unclear whether the use of GAAP ETR smoothing to signal greater reporting quality will remove important variation in GAAP ETRs that would reduce their usefulness to investors. The shortcoming of this measure, however, is that it captures both managerial discretion and the effect of GAAP standards. Our use of both measures helps us triangulate the association between GAAP ETR smoothing and financial reporting quality.

Regression Models

Restatement Model

To empirically test whether GAAP ETR smoothing is associated with a lower likelihood of financial statement restatements (i.e., higher reporting quality), we estimate the following

logistic regression model (year and time subscripts suppressed):

$$Restatement = \alpha_0 + \beta_1 GETR + \beta_2 PTIB + \beta_3 CETR + \beta_4 PTCF + \beta_5 GETR\_SMO + \beta_6 PTIB\_SMO + \sum \beta_j Controls_j + \epsilon \quad (1)$$

Our dependent variable *Restatement* is coded as one if any of the three-year period (t-2, t-1, or t) had a restatement, and zero otherwise. We identify restatements using the Audit Analytics database, as we seek to capture a wide range of restatement events, and not simply those explicitly associated with fraud.[8] Our primary variable of interest is GETR_SMO. If GAAP ETR smoothing is related to higher (lower) financial reporting quality through a lower (higher) likelihood of experiencing a restatement, then we expect $\beta_5<0$ ($\beta_5>0$).

We include control variables in Eq. (1) that potentially affect both ETR smoothing and the likelihood of restatement. All variables are calculated as the three-year average (period t-2, t-1, and t) unless otherwise noted. To ensure that our measure of GAAP ETR smoothing is not being driven by underlying cash tax outcomes, we include both the level of current cash ETR (CETR) and the variance of cash ETR (VAR_CETR). Similarly, to ensure that our results are not driven by pre-tax performance, we control for the level (PTIB) and volatility (VAR_PTIB) of pretax income, as well as the level of pre-tax cash flows (PTCF).[9] We control for pre-tax income smoothing (PTIB_SMO) to ensure that our results are truly related to ETR smoothing through

[8] Karpoff et al. (2017) examine and compare four common financial misconduct databases. They suggest that Audit Analytics is ideal if trying to capture a wide range of events, and not simply those associated with fraud or SEC enforcement. Additionally, Audit Analytics is ideal for research questions requiring a significant quantity of data; our focus on multi-period GAAP ETR smoothing means that additional data is particularly valuable in ensuring that our tests have sufficient power.

[9] To calculate pre-tax income, we start from income before extraordinary items (Compustat variable IB) and add back tax expense (Compustat variable TXT) to capture all non-tax income smoothing from the ACEV measure in Jayaraman (2008). This is different than how we compute pre-tax income for our ETRs, which following prior literature starts from pre-tax income (Compustat variable PI). The only difference between these two definitions is the inclusion of minority interest adjustments in the first, but not the second, measure of pre-tax income. To ensure that our results are not affected by this difference in definition, we alternately replace (IB + TXT) with PI in computing PTIB, VAR_PTIB, and PTIB_SMO. Unreported results are nearly identical to the results we report.

tax accruals, rather than earnings smoothing through non-tax accruals. We control for the level of GAAP ETR as well, since prior literature examines the association between tax avoidance (measured in part as GAAP ETRs) and financial misreporting (e.g., Lennox et al. 2013).

We also control for firm characteristics including profitability (ROA), size (SIZE), market-to-book (MB), leverage (LEV), R&D expense (R&D), the level (NOL) and change (NOL_DELTA) of net operating loss carryforwards, foreign income-producing activity (FOR), intangible assets (INTAN), mergers and acquisitions (M&A), capital intensity (PPE), cash holdings (CASH), the use of a Big-4 auditor (BIG4), losses (LOSS), and special items (SPI) (Lisowsky 2010; Cen et al. 2017). In addition, control for known predictors of restatements (Dechow et al. 2011), such as working capital accruals (RSST_ACC) as defined by Richardson et al. (2005), changes in accounts receivables (CH_REC), changes in inventory (CH_INV), the percentage of soft assets (SOFT_AT), changes in cash sales (CH_CS), changes in return on assets (CH_ROA), and securities issuances (ISSUE). All variables are winsorized at the 1 and 99 percent levels, mean-centered, and defined in Appendix A.[10]

Future Cash/GAAP ETR Model

To strengthen the interpretation of our restatement tests as measuring financial reporting quality, we also test whether GAAP ETR smoothing makes current-period GAAP ETRs (GETR) more informative of future cash ETRs (CETR). To do so, we estimate the following OLS model (year and time subscripts suppressed):

$$Future\_CETR = \alpha_0 + \beta_1 GETR + \beta_2 CETR + \beta_3 GETR\_SMO + \beta_4 GETR \times GETR\_SMO + \sum \beta_j Controls_j + \epsilon \quad (2)$$

[10] Additionally, for all our multivariate analyses, we cluster our standard errors by firm to address possible serial correlation in errors. We do not cluster by year since our panel effectively covers only 17 years and our panel is unbalanced, which provides insufficient dimensions to cluster by time (Cameron et al. 2011; Cameron and Miller 2015). However, in untabulated tests we use standard errors that are clustered by both firm and year, and find that our results are unaffected.

Our dependent variable Future_CETR is the average cash ETR (FAVG_CETR) calculated over the future 3 years (t+1, t+2, and t+3). We also use the average 3-year future GAAP ETR (FAVG_GETR) as an alternative dependent variable.

Our primary variable of interest is the interaction between GETR and GETR_SMO.[11] If GAAP ETR smoothing is indicative of higher (lower) financial reporting quality, then it will increase (decrease) the informativeness of GAAP ETRs for future cash ETRs, or $\beta_4>0$ ($\beta_4<0$). We expect both current GAAP ETR and cash ETR to be positively associated with future cash ETR, or $\beta_1>0$ and $\beta_2>0$, consistent with Dyreng et al. (2008) and Hoopes et al. (2012). However, we make no prediction about the association between GETR_SMO and future cash ETRs (β_3).

Similar to Eq. (1), we also include control variables that potentially affect both the levels of GAAP and cash ETRs and ETR smoothing. We include controls for level of current cash ETR (CETR), the variance of cash ETRs (VAR_CETR), the level (PTIB) and volatility (VAR_PTIB) of pretax income, the level of pre-tax cash flows (PTCF), pre-tax income smoothing (PTIB_SMO), and the interaction of GETR with VAR_CETR to ensure that our results are not driven by pre-tax performance, cash flows, or smoothing of non-tax accruals. We also control for all firm characteristic variables from Eq. (1).[12]

In interpreting Eq. (2), we do not intend to show a causal effect, but rather to examine the association between GAAP ETRs and future cash ETRs as GAAP ETR smoothing increases. It is possible that GAAP ETR smoothing could alter how the tax department prepares its tax returns, thus indirectly affecting future cash ETRs. However, it is more likely that the estimation of tax accruals has no impact on underlying cash ETRs, but merely provides information about

[11] Because our focus is on current-period GAAP ETRs, we define GETR and controls in Eq. (2) over one year. Our results are similar if we use a three-year average (period t-2, t-1, and t) in computing GETR and controls.

[12] In untabulated tests, we also include interactions between GETR and each of our control variables to ensure that our interaction of interest (GETR×GETR_SMO) is not capturing an interaction between GETR and another variable correlated with GETR_SMO. The significance and sign of our interaction of interest remains unchanged.

it. As such, a significantly positive (negative) coefficient on the interaction term indicates that smoothed GAAP ETRs are more (less) informative for future cash ETRs, but does not indicate that GAAP ETR smoothing has a causal effect on cash ETRs.

Sample Selection

We obtain our data from Compustat's Snapshot database and merge it with restatement data from Audit Analytics.[13] Our sample begins in 1994 to ensure the sample begins a full year after the implementation of SFAS 109, and end in 2015 due to data availability. We exclude financial and insurance (NAICS 52) and utility firms (NAICS 22), as they have different regulatory and tax rules than other firms. We require six years of consecutive data for any observation (i.e., for years t-2, t-1, t, t+1, t+2, and t+3) so that our smoothing measure and future cash ETRs can be calculated. We also exclude observations with abnormal ETR values, defined as having a GAAP ETR of 1 and cash ETR of 0 (or vice versa) for any year in their GETR_SMO calculation period.[14] Finally, we require that years t-2, t-1, and t have all control variables available.[15] Our final sample consists of 35,201 firm year observations from 1996 to 2012. The

[13] Compustat's Snapshot database provides the originally filed financial statement numbers before adjusting for subsequent restatements. We use this database so our smoothing measures capture the original ETRs provided by managers in the original financial statement filing, as these ETRs are most likely to contain managers' intended smoothing. Our inferences remain unchanged if we instead use the traditional Compustat database, which contains updates for restated numbers.

[14] These observations are likely caused by either an extreme event or having pre-tax income, tax expense, and cash taxes paid all close to 0. As a result, our inferences could be influenced by minor changes in any of these items. Nevertheless, we find that our results are quantitatively similar when these abnormal ETR observations remain.

[15] Studies that examine ETRs (e.g., Dyreng et al. 2008; Demeré et al. 2017) typically omit loss firms, as a negative ETR denominator leads to ETRs that are not meaningful. We retain loss firms as we are interested in the predictive ability of GAAP ETR smoothing, and the smoothing measure (along with ETR variability) is not affected by negative ETR denominators. Nevertheless, in untabulated tests, we remove observations that have negative pre-tax income at any point in the three-year ETR smoothing period. We find that our results and inferences are robust to the exclusion of these observations, except that we no longer find a statistically significant association between GAAP ETR smoothing and non-tax restatements. However, firms close to recording a loss have significant incentives to manage earnings to avoid a loss (Burgstahler and Dichev 1997). As such, these firms that want to signal that they are not giving in to their earnings management incentives likely have the greatest signaling value to GAAP ETR smoothing, and this filter also removes the firms most likely to have a strong negative association between GAAP ETR smoothing and restatement likelihood. Otherwise, our results generalize to the sample of firms typically examined in prior research. We also find that our results are robust to requiring all observations to have un-winsorized GAAP ETRs between 0 and 1.

number of firms fluctuates between 1,654 and 2,269 (in 1996 and 2003, respectively), with each year representing no more than 6.4 percent of the total sample. The number of firms each year is consistent with other recent studies (Hoopes et al. 2012; Demeré et al. 2017).

IV. RESULTS

Descriptive Statistics

Table 1 reports our descriptive statistics of firm-level characteristics. Our sample has a mean value of *Restatement* of 0.19, indicating that about 19 percent of our observations experience a restatement in the current or prior two years. While prior literature typically finds a lower restatement likelihood in their sample (Hobson et al. 2012; Cao et al. 2012; Francis et al. 2013), this is likely caused because by these studies using single years as observations, rather than three-year periods. Multiplying the restatement likelihoods in prior literature by three gives a likelihood closer to 0.19, where firms with multiple restatements in a three-year period could be responsible for why the restatement likelihood we observe is less than three times the single-year likelihood observed in prior literature.

Our GAAP ETR smoothing variable (GETR_SMO) has a mean of 0.014 and a median of 0.002. This variable is more often positive (63 percent of observations) than negative or zero (31 and 6 percent of observations, respectively).[16] Our cash and GAAP ETRs have means of 0.20 and 0.26, respectively, which are slightly lower than those found in recent research (e.g., Ciconte et al. 2016; Mayberry et al. 2015). However, this study has seven and two times, respectively, the number of observations of those studies; by utilizing more observations, our study likely includes smaller firms, which is evidenced by a slightly lower mean of the natural log of assets of 5.75.

[16] The 6 percent of observations for which GETR_SMO equals zero are generally those with either negative or extreme positive GAAP tax expense and cash taxes paid over the three-year window. Because we winsorize all ETRs to lie between 0 and 1 before computing ETR variances, these observations exhibit no variation, leading to a GETR_SMO value of zero. Our results and inferences are unchanged when we remove these observations.

Taken together with a positive correlation between CETR and Size (see Table 2), we would expect our ETR means to be lower than other studies. Descriptive statistics on other variables are similar to those in prior studies (Jayaraman 2008; Dechow et al. 2011; Akamah et al. 2016).

Table 2 shows Pearson correlations of key variables used in our regressions. GETR_SMO is significantly and negatively correlated with *Restatement*, which is consistent with GAAP ETR smoothing indicating higher financial reporting quality. However, because both *Restatement* and GETR_SMO are significantly correlated with key control variables, we do not derive inferences from these univariate results. We also cannot derive inferences from this table with regards to Eq. (2) on the informativeness of GAAP ETR for future cash ETR, as testing this relation requires an interaction between GETR and GETR_SMO.

Multivariate Results

Primary Restatement Results

We begin our multivariate analyses by investigating whether smoothing through tax accruals is positively or negatively related to financial reporting restatements. Table 3 reports the results of testing our hypothesis. As shown in column (1), we find that GETR_SMO is significantly and negatively associated with the likelihood of having a restatement, consistent with ETR smoothing indicating higher quality financial reporting. Economically, we estimate that a one standard deviation increase in GETR_SMO about its mean is associated with a 1.3 percent reduction in the likelihood of experiencing a restatement. Given that the mean restatement likelihood in our sample is 19 percent, our estimate represents an economically significant 6.7 percent reduction in the base restatement likelihood. Separately, we find that VAR_CETR is positively associated with restatement risk, consistent with cash ETR variance indicating some degree of tax risk (Guenther et al. 2016). We also find that the coefficient on pre-tax earnings smoothing (PTIB_SMO) is statistically insignificant, consistent with previous

mixed results that cannot clearly answer whether overall earnings smoothing is associated with financial reporting quality. This result provides support for how the tax setting is unique to provide new evidence on whether smoothing activities indicate higher or lower earnings quality.

However, given that 19 percent of our sample experiences a restatement in a three-year period, it suggests that a restatement is not a particularly uncommon occurrence. Some restatements may be due to less severe misapplications of GAAP, while others are results of fraudulent reporting. To investigate whether the association between GAAP ETR smoothing and restatement varies with the nature and severity of misreporting, we separately examine restatements where the SEC did not identify fraudulent intent (less severe) and those where the SEC did identify fraudulent intent (more severe). As shown in columns (2) and (3), GAAP ETR smoothing is negatively associated with the likelihood of experiencing both a non-fraud and fraud related restatement, respectively.[17] Thus, GAAP ETR smoothing helps to identify less (i.e., non-fraudulent) and more (i.e., fraudulent) severe financial reporting issues.

Next, because GETR_SMO is a measure of *tax* smoothing, we split restatements into those with a tax related restatement issue versus those without to examine whether GAAP ETR smoothing only identifies the quality of tax expense, or whether GAAP ETR smoothing might act as a signal of a broader commitment by a firm to have high-quality financial reporting. In columns (4), (5), and (6), we find that GETR_SMO is negatively associated with the likelihood of experiencing a tax-related restatement, whether fraudulent or not. These results support that

[17] The total number of observations in any column of Table 3 may deviate from our full sample used in Column 1. This deviation occurs because we drop observations with the opposite type of restatement, so that we are truly comparing non-fraud restatement observations to only non-restatement observations, or tax restatement observations to only non-restatement observations. For example, the 246 fraud observations in Column 3 are removed from the sample in Column 2, while the 6,459 non-fraud restatement observations in Column 2 are removed from the sample in Column 3. We also require that each non-restatement observation have at least one restatement observation in the same industry or year to be included in the sample, which results in a reduction in non-restatement observations in some tests. We add this filter so our restatement and control firms are similar on industry and year dimensions.

GAAP ETR smoothing may act as a signal that managers will not manipulate tax accruals that erode the quality of tax-related financial reporting (e.g., managing overall earnings; Dhaliwal et al. 2004). Economically, we estimate that a one standard deviation increase in GETR_SMO about its mean is associated with a 0.5 percent reduction in the likelihood of experiencing a tax-related restatement, or a 12.8 percent reduction relative to the conditional tax restatement probability.[18] Specific to tax-related fraud, we find that a one standard deviation increase in GETR_SMO about its mean is associated with a 0.001 percent reduction in the likelihood of experiencing a restatement related to tax fraud, or a 47 percent reduction relative to the conditional tax fraud probability.[19]

In columns (7), (8), and (9), we find that GETR_SMO is negatively associated with the likelihood of experiencing a non-tax-related restatement as well, although only when the restatement is not fraudulent. From an economic standpoint, we estimate that a one standard deviation increase in GETR_SMO about its mean is associated with a 0.8 percent reduction in the likelihood of experiencing a non-tax restatement, or a 6.3 percent reduction relative to the conditional non-tax restatement probability.[20] While it may not seem intuitive that smoothing of ETRs using tax accruals indicates the quality of *non-tax* earnings components, this result is consistent with managers using GAAP ETR smoothing to commit to not managing earnings using one of the most readily available earnings management tools—tax accruals (Dhaliwal et al.

[18] As a baseline, we use the conditional tax restatement likelihood, or the likelihood a tax restatement at half a standard deviation below the mean (i.e., the starting point in our GETR_SMO increase) conditional on all controls being at their mean. Relative to the unconditional subsample mean tax restatement likelihood, this is an 8.5 percent reduction. All conditional likelihoods are computed using the margins command in Stata.

[19] As a baseline, we use the conditional tax fraud likelihood, which is the likelihood of a tax fraud at half a standard deviation below the mean (i.e., the starting point in our GETR_SMO increase) conditional on all controls being at their mean. Relative to the unconditional subsample mean tax fraud likelihood, this is a 1 percent reduction.

[20] As a baseline, we use the conditional non-tax restatement likelihood, which is the likelihood a non-tax restatement at half a standard deviation below the mean (i.e., the starting point in our GETR_SMO increase) conditional on all controls being at their mean. Relative to the unconditional subsample mean non-tax restatement likelihood, this is a 4.6 percent reduction.

2004; Krull 2004). This commitment in turn suggests that managers are devoted to faithfully reporting other components of earnings, and not simply the tax components.[21] However, this strategy only works when managers are not willing to engage in fraudulent reporting.

Overall, these results are consistent with GAAP ETR smoothing being associated with higher financial reporting quality. That the coefficient on pre-tax income smoothing is positive and *not* significant across all our tests also supports that smoothing of GAAP ETRs acts as a unique indicator of financial reporting quality, whereas overall earnings smoothing do not.

Future Cash/GAAP ETR Informativeness Results

Our results from Table 3 suggest that GAAP ETR smoothing is used to signal higher quality of tax (and non-tax) reporting in financial statements in the context of compliance with GAAP. We now investigate whether GAAP ETR smoothing through tax accruals is informative of future cash ETR outcomes. As discussed in Section IV, measuring the strength of this relation serves as an alternative measure of financial reporting quality to restatements, providing additional evidence on the relation between GAAP ETR smoothing and reporting quality. Table 4 reports the results of these tests.

To provide a baseline analysis, we first examine whether GAAP ETRs are informative about future cash ETRs incremental to current cash ETRs.[22] We interpret the coefficient on GETR as testing whether tax accruals (as a main effect) are significantly informative of future cash ETRs. The statistically positive signs on GETR in columns (1) and (2) support that tax accruals are incrementally informative of future levels of cash ETRs beyond current cash ETRs.

[21] An alternate hypothesis that is not born out by our data would be that managers use GAAP ETR smoothing to falsely signal commitment to earnings quality in an attempt to throw investors and others off the scent of a non-tax earnings management scheme. However, this strategizing is most likely to be prevalent when managers are aware of severe consequences to their actions, which may be why we fail to find results for non-tax fraud restatements.

[22] We provide this baseline analysis because we are aware of no prior study that has shown that GAAP *ETRs* are incrementally informative about future cash *ETRs*.

However, we are primarily interested in whether the smooth*ing* of tax accruals within GAAP ETRs makes those tax accruals more informative about future cash ETRs (an interactive effect). Our first estimation of Eq. (2) includes only GAAP ETR (GETR), cash ETR (CETR), GAAP ETR smoothing (GETR_SMO), and the interaction between GAAP ETR and GAAP ETR smoothing (GETR×GETR_SMO), as well as cash ETR variance (VAR_CETR), the interaction between GAAP ETR and cash ETR variance (GETR×VAR_CETR), and industry and year fixed effects. As shown in column (3), the interaction between GETR and GETR_SMO is significantly positive, indicating that smooth*ing* of tax accruals makes GAAP ETRs incrementally more informative of future levels of cash ETRs for the subsequent three-year period.[23]

In column (4) we re-estimate Eq. (2) after adding control variables. We find similar results in both sign and significance for our key independent variables (GETR, CETR, GETR_SMO, and GETR×GETR_SMO), indicating that our results are robust to controls used in the extant literature. Overall, we find evidence that the smoothing of tax accruals makes GAAP ETRs incrementally informative about future cash ETRs.[24]

In a related test, we examine whether smoother GAAP ETRs are more informative in predicting future GAAP (rather than cash) ETRs. In column (5), we similarly find that smoother

[23] We also find a significantly negative interaction between GETR and VAR_CETR, which is consistent with fundamental cash tax smoothness being associated with more informative GAAP ETRs. However, GETR×GETR_SMO remains incrementally significant to the effects of fundamental cash tax smoothness, suggesting that it has a significant role in the informativeness of GAAP ETRs. We do not include VAR_GETR in the specification to avoid perfect multicollinearity.

[24] In untabulated tests we run specification checks that use ranked variables to rule out the possibility that outliers are driving our results by ranking our dependent and independent variables based on the entire sample and divide by our sample size so that our ranked variables vary between 0 and 1. This "global ranked" estimation model yields similar significant results for the interaction between GETR and GETR_SMO. Additionally, we rank our dependent and independent variables within each year and industry, and divide by the total observations in that year and industry so that our ranked variables are between 0 and 1. Our by-industry, by-year ranked model yields similar results for the interaction between GETR and GETR_SMO. In both ranked analyses, all coefficients generally retain the same sign and significance, consistent with prior research, except that the signs on the main effect of VAR_CETR become positive when ranked variables are used. This result suggests that care should be taken when using VAR_CETR in future research as inferences may be susceptible to outlier observations.

GAAP ETRs are more informative for future GAAP ETRs.[25] Also note that the insignificant sign on the variance of pretax income (VAR_PTIB) in our extended models (i.e., columns (4) and (5)) indicates that our results are not driven by underlying *earnings* smoothness.[26]

In untabulated results, we standardize all of our variables to enable direct comparisons across coefficients. These results show that a one standard deviation change in smoothing at the mean makes GAAP ETRs 31 percent more informative about future cash ETRs, which is an economically significant increase in informativeness.

The Effect of Managerial Discretion

Our results so far indicate that GAAP ETR smoothing is associated with greater reporting quality both by signaling reduced restatement risk and making GAAP ETRs more informative about future cash tax outcomes. As described in Section IV, an association with greater reporting quality along both these dimensions, as well as the strong association with fraudulent misreporting involving tax issues, suggests that our results are driven primarily by managers' reporting discretion. To further support this inference, we also investigate how our results vary with managerial intent, the amount of discretion in tax reporting, and the demand for higher earnings and tax reporting quality. We focus only on restatements (i.e., Eq. (1)) in our cross-sectional analyses because GAAP standards, which may also vary cross-sectionally, play a role in the informativeness of ETR smoothing on future cash tax outcomes.

[25] For brevity, we only tabulate the results using future three-year average cash and GAAP ETRs as our dependent variable. Results using cash or GAAP ETRs for each individual future year (t+1, t+2, t+3) are similar.

[26] To verify that GAAP ETR smoothing improves the prediction of future cash ETR, we also conduct untabulated out-of-sample prediction tests. Using an approach similar to prior research (e.g., Lev et al. 2010; Ciconte et al. 2016), we estimate industry-specific coefficients for Eq. (1), both with and without GETR_SMO. We develop our estimates using observations during 1994-2007 and compute firm-specific unsigned prediction errors ($FAVG\_CETR - \widehat{FAVG\_CETR}$) using a "hold-out" sample of data from 2008-2014. For the final step, we test the distribution of the prediction errors across the two models (with and without GETR_SMO). If GETR_SMO improves the predictability of future levels of cash ETR, then we expect significantly smaller absolute prediction errors when the prediction models include GETR_SMO and its interaction with GETR. The mean and median tests indicate that Eq. (1) generates significantly smaller absolute errors when GETR_SMO and its interaction with GETR are included, suggesting that smoothing through tax accruals helps predict future cash ETRs.

We begin by splitting restatement observations by the net impact to shareholder equity caused by the restatement. Because negative impacts to shareholder equity in restatements are caused by the unwinding of inflated earnings in restated period(s), these are the restatements more likely caused by managers' discretionary reporting choices. Thus, the ability of GAAP ETR smoothing to indicate earnings quality is expected to be more prominent in the sub-sample of restatements with a negative impact to shareholder equity.

In columns (1) and (2) of Table 5, we separately examine our restatement results after splitting restatements into those with (i) negative and (ii) positive or zero impacts to shareholder equity. We find that GETR_SMO is negatively associated with restatement likelihood only for restatements resulting in a negative shareholder equity change, consistent with the association between ETR smoothing through tax accruals and reporting quality being the result of intentional managerial reporting choices. We repeat similar analyses for tax-related restatements in columns (3) and (4), and again find that GAAP ETR smoothing is negatively associated with the likelihood of having a tax-related restatement only when the restatement has a negative impact on shareholder equity (i.e., is most likely the result of managerial discretion to inflate earnings). We also examine non-tax restatements in columns (5) and (6); however, we fail to find a difference in the signaling ability of GAAP ETR smoothing for non-tax restatements between restatements with negative versus zero/positive net impacts on shareholder equity.[27]

To further examine the role of managerial discretion, we separate our smoothing measure into discretionary and non-discretionary components and compare the ability of the two smoothing components to signal greater reporting quality. To achieve this separation, we use three discretionary smoothing models. Our first model regresses GETR_SMO on the seven

[27] In untabulated analyses, we do not find any difference in the signaling ability of GAAP ETR smoothing for restatements with zero effects and positive impacts on shareholder equity, and so report them together.

innate firm attributes from Mayberry et al. (2015) for each industry-year with at least 10 observations.[28] Following the creation of a discretionary smoothness measure in Mayberry et al. (2015), we use the predicted value from this regression as our measure of non-discretionary smoothing, and the residuals as our measure of discretionary smoothing.[29] Our second method uses the simple mean of GETR_SMO by industry-year as an estimate of non-discretionary smoothing, and a firm's deviation from this mean as discretionary smoothing. Our third method uses the simple mean of a firm's GETR_SMO over its own time-series as an estimate of non-discretionary smoothing, and deviations from this mean as discretionary smoothing. We argue that ETR smoothing that cannot be explained by fundamentals, i.e., smoothing that deviates from industry or firms' own historical averages, is more likely to reflect managerial discretion than the remaining portion. [30,31] Table 6 reports our tests of discretionary vs. non-discretionary smoothing informativeness. Across columns (1) through (3), we find that only our estimated discretionary ETR smoothing (GETR_SMO_D) is negatively associated with restatement likelihood, consistent with this association being driven by manager's discretionary reporting choices.

[28] Mayberry et al. (2015) use these seven factors as they (a) follow a long literature that uses them to represent innate accounting system factors (e.g., Francis et al. 2004) and (b) are adjusted to be specific to the tax setting. All inferences remain if we use cut-offs of at least 20, 50, or 100 observations.

[29] Specifically, we estimate the following regression: $GETR\_SMO_{it} = \beta_j X_{jit} + \epsilon_{it}$, where X is a vector of the seven innate accounting system factors from Mayberry et al. (2015). Our measure of discretionary smoothing is $D\_SMO_{it} = \epsilon_{it}$, while our measure of non-discretionary smoothing is $ND\_SMO_{it} = \beta_j X_{jit}$. See Appendix B.

[30] In addition to the models used in this paper, we also (a) separately used firm fixed effects and industry fixed effects in the Mayberry et al. (2015) model; (b) used the Desai and Dharmapala (2006) model to split tax accruals into discretionary and nondiscretionary accruals before computing ETR smoothing; and (c) incorporated additional factors from Desai and Dharmapala (2006) and Francis et al. (2004) into the Mayberry et al. (2015) model. Our inferences remain qualitatively similar using these alternative models.

[31] We do not use the Choudhary et al. (2016) measure of tax accrual quality to compute discretionary and non-discretionary accruals, as this method classifies tax accruals that are orthogonal to tax cash flows as discretionary. In our setting, this effectively results in decomposing GAAP ETR smoothing into its two sources of volatility: the variance of tax accrual ETRs (classified as discretionary) and the covariance between cash ETRs and tax accrual ETRs (classified as non-discretionary). However, both of these volatility sources can be affected by discretionary reporting choices and innate, non-discretionary firm characteristics. In a supplemental analysis reported below, we separately examine how these different sources of variability affect our results. Consistent with our results here, we find that (1) smoothing through "discretionary" tax accrual ETR variance and (2) smoothing through the "non-discretionary" covariance between cash ETRs and tax accrual ETRs both make GAAP ETRs more informative.

In the last two columns of Table 6, we examine how the negative association between GAAP ETR smoothing and restatements varies in two settings where managers likely have greater tax accrual reporting discretion: (1) firms with significant foreign operations and (2) firms with intangible assets (including R&D).[32] We define a firm as having significant foreign operations (Foreign) when more than 5 percent of its pretax income is from foreign sources and define firms as having intangible assets (RD_Intan) when they report non-zero intangible assets or R&D spending. Consistent with our prior results, we find in columns (4) and (5) that the association between GAAP ETR smoothing and restatements is more negative when managers have more discretion with tax accrual reporting (i.e., have significant foreign activities and intangible assets). Together, these analyses suggest that our results are driven by managers using discretion in tax accruals to smooth GAAP ETRs as an indicator of greater reporting quality.

Finally, while the previous results suggest that managers use the discretion available to them in tax accruals to exhibit reporting quality through ETR smoothing, managers do not make these reporting decisions in a vacuum. We expect that managers are more likely to use ETR smoothing as an indicator of higher reporting quality when there is stronger external monitoring and a demand for higher financial reporting quality and low tax reporting opacity. To measure external monitoring and demand, we split our sample into observations with an above- or below-median institutional ownership percentage, and also into observations which do or do not have analysts covering the firm in any period t-2, t-1, or t. We report results from these tests in Table 7. As shown in columns (1) and (2), the negative association between GAAP ETR smoothing and restatements is stronger when a firm has greater institutional ownership and when it is

[32] Firms with foreign operations report tax accruals that domestic-only firms do not, including permanently reinvested earnings designations and foreign-tax uncertain tax benefits, which are subject to considerable managerial discretion (Krull 2004; Cazier et al. 2015). Firms with more intangible assets may have unique tax accruals (e.g., related to book-tax differences in mergers and acquisitions) and have a greater ability to manage tax accruals through cross-border income shifting (Grubert 2003; Demeré and Gramlich 2017; Hopland et al. 2017).

followed by financial analysts. The variation of informativeness of ETR smoothing with external monitoring further supports our interpretation that managers' discretionary reporting plays the key role in how ETR smoothing is linked to higher reporting quality.

Untabulated Supplemental Analyses

To further examine the information inherent in our measure of GAAP ETR smoothing, we decompose GAAP ETR smoothing into its two sources of volatility: (i) the variance of tax accrual ETRs and (ii) the covariance between cash ETRs and tax accrual ETRs. In untabulated results, we successively re-estimate Eq. (1) and Eq. (2) by replacing GETR_SMO with each of these sources.[33] The results are similar to the reported results in Tables 3 and 4, in that both the variance and covariance portions of GAAP ETR smoothing are important in signaling reporting quality and improving the informativeness of GAAP ETRs for future cash ETRs. These results support the argument in Jayaraman (2008) that both elements are necessary to infer smoothing.

Second, we decompose GAAP ETR smoothing into its reporting components, or smoothing from current versus deferred GAAP ETR. If only one component of GAAP ETR is significant, then we can gain a better understanding of the specific tax accruals used to informatively smooth GAAP ETRs. In untabulated results, we successively re-estimate Eq. (1) and (2) by replacing total GETR_SMO with smoothing in current GAAP ETRs and smoothing in deferred GAAP ETRs.[34] For Eq. (1), we find that smoothing attributable to the deferred GAAP ETR is most strongly associated with restatement likelihood, suggesting that deferred tax assets/ liabilities and potentially permanently reinvested earnings designations are the tax accruals most

[33] Covariance of cash ETR and tax accruals is calculated as $Var(GAAP\ ETR) - Var(cash\ ETR) - Var(tax\ accruals])$ for periods t-2, t-1, and t.

[34] These measures are constructed similarly to GETR_SMO, namely as the variance of the current (deferred) ETR less the variance of the cash ETR (CETR) for periods t-2, t-1, and t. Here the current (deferred) ETR is constructed as $\frac{Current\ Tax\ Expense_t}{Pretax\ Book\ Income_t}$ ($\frac{Deferred\ Tax\ Expense_t}{Pretax\ Book\ Income_t}$). However, we caveat that we cannot identify current and deferred portions of *cash* ETR.

likely to be used to smooth GAAP ETRs to signal reporting quality. For Eq. (2), however, we find that both smoothing components yield significant coefficients on their interaction with GETR with the same sign and significance as the original GAAP ETR smoothing measure. This finding is consistent with smoothing in both current and deferred ETRs helping to provide information about future cash tax outcomes.

Third, Brown et al. (2016) provide evidence of a shift around the passage of FIN 48 in the way that some managers' bonuses vary with ETRs. They find that bonuses in the pre-FIN 48 period are associated with GAAP ETRs but not cash ETRs, but this result reverses in the post-FIN 48 period. We re-estimate Eq. (1) and (2) separately on the pre- and post-FIN 48 periods and find results across the periods that are consistent with our main tests.[35] We infer that managers' compensation-related motives do not solely drive our results.

Fourth, we test whether the informativeness of GAAP ETR smoothing varies with a firm's tax avoidance. In untabulated tests, we re-estimate Eq. (1) and (2) separately for firms in the highest, middle, and lowest tercile of cash ETR relative to the firm's industry average cash ETR.[36] We find that our results are similar within each tercile, indicating both that (a) our results are likely not affected by tax planning, as intended by the construction of our smoothing measure in which we subtract the volatility of cash ETR and (b) GAAP ETR smoothing as a financial reporting strategy appears to be available to firms regardless of their level of cash tax avoidance.

Finally, we test whether the informativeness of GAAP ETR smoothing varies with a firm's pretax earnings smoothing. In untabulated tests, we re-estimate Eq. (1) and (2) separately for firms in each tercile of pretax income smoothing. We find that our results are similar within each tercile, indicating both that (a) our results are not a mechanical by-product of pretax

[35] We find no significant difference in our results between the pre- and post-FIN 48 periods.
[36] Terciles are determined based on the firm cash ETR minus its industry average cash ETR. This test is roughly equivalent to interacting all variables by CETR, including GETR*GETR_SMO.

earnings smoothing and (b) GAAP ETR smoothing as a financial reporting strategy appears to be available to firms regardless of their pretax earnings smoothing opportunities or strategies.

V. CONCLUSION

An open question in financial accounting is whether smoothing activities are associated with higher or lower financial reporting quality (Tucker and Zarowin 2006; Jayaraman 2008; McInnis 2010; Dechow et al. 2010). This study uses unique features in the tax setting to provide new evidence on this issue. We argue that the smoothing of ETRs is incompatible with earnings manipulations and investors put a greater emphasis on the stability of ETR reporting than on other costs. These unique features of ETR reporting make ETR smoothing potentially different from overall earnings smoothing in their relation to financial reporting quality.

We find that different from earnings smoothing, which is unrelated to the likelihood of restatement, smoothing through tax accruals is associated with a significantly lower likelihood of financial restatement, particularly tax-related financial reporting fraud and income-inflating restatements. Such negative associations are also stronger when there is a higher level of discretion in tax reporting (i.e., related to foreign operations and R&D/intangibles) and stronger external monitoring (i.e., more institutional ownership and analyst following). This evidence suggests that the ETR smoothing is mostly driven by managers' discretionary reporting of tax accruals. We also document that smoothing through tax accruals increases the informativeness of GAAP ETRs for predicting future cash and GAAP ETRs.

Our findings suggest that smoothing of GAAP ETRs through tax accruals serves as a credible indicator of overall higher financial reporting quality, both in reducing financial restatements and better revealing future tax cash outcomes. Collectively, our results contribute to the financial reporting and tax literatures by providing evidence that GAAP ETR smoothing, different from pretax income smoothing, is consistent with *higher* financial reporting quality.

APPENDIX A
Variable Definitions

Dependent Variables

Restatement	Indicator of financial statement restatement, coded as one if period t-2, t-1, or t has a restatement, zero otherwise.
FAVG_CETR	Future 3-Year Average Year Cash Effective Tax Rate, computed as the Sum of [Cash Taxes Paid (TXPD) ÷ Pretax Income (PI) for periods t+1, t+2, & t+3] ÷ 3
FAVG_GETR	Future 3-Year Average Year GAAP Effective Tax Rate, computed as the Sum of [Total Tax Expense (TXT) ÷ Pretax Income (PI) for periods t+1, t+2, & t+3] ÷ 3

Independent Variables

GETR	GAAP Effective Tax Rate, computed as Total Tax Expense (TXT) ÷ Pretax Income (PI), averaged over t-2, t-1, & t.
CETR	Cash Effective Tax Rate, computed as Cash Taxes Paid (TXPD) ÷ Pretax Income (PI), averaged over t-2, t-1, & t.
PTIB	Pre-Tax Income, computed as [Income Before Extraordinary Items (IB) + Total Tax Expense (TXT)] ÷ prior-period Total Assets (AT) averaged over periods t−2, t−1, & t.
PTCF	Pre-Tax Cash Flows, computed as, computed as Cash Flows (OANCF) + Cash Taxes Paid (TXPD) ÷ prior-period Total Assets (AT) averaged over periods t−2, t−1, & t.
GETR_SMO	Tax Accrual Smoothing, computed as −1 × [Variance of GAAP Effective Tax Rate (GETR) − Variance of Cash Effective Tax Rate (CETR)] for periods t−2, t−1, & t.
PTIB_SMO	Pre-Tax Income Smoothing, computed as −1 × [Variance of Pre-Tax Income (PTIB) − Variance of Pre-Tax Cash Flows (PTCF)] for periods t−2, t−1, & t.
VAR_CETR	Variance of Cash Effective Tax Rate, computed as Variance of [Cash Taxes Paid (TXPD) ÷ Pretax Income (PI)] for periods t−2, t−1, & t.
VAR_GETR	Variance of GAAP Effective Tax Rate, computed as Variance of [Total Tax Expense (TXT) ÷ Pretax Income (PI)] for periods t−2, t−1, & t.
VAR_PTCF	Variance of Pre-Tax Cash Flows, computed as Variance of [[Cash Flows (OANCF) + Cash Taxes Paid (TXPD)] ÷ prior-period Total Assets (AT)] for periods t−2, t−1, & t.
VAR_PTIB	Variance of Pre-Tax Income, computed as Variance of [[Income Before Extraordinary Items (IB) + Total Tax Expense (TXT)] ÷ prior-period Total Assets (AT)] for periods t−2, t−1, & t.

Control Variables

ROA	Return on Assets, computed as the ratio of Pretax Income (PI) ÷ Total Assets (AT), averaged over t-2, t-1, & t.
MB	Market to Book ratio, computed as [Common Shares Outstanding (CSHO) × End of Fiscal Year Stock Price (PRCC_F)] ÷ Common Equity Book Value (CEQ). Negative values are recorded as missing, averaged over t-2, t-1, & t.
SIZE	Firm Size, computed as the natural log of [one plus Total Assets (AT)], averaged over t-2, t-1, & t.
LEV	Leverage, computed as the ratio of Long-Term Debt (DLTT) ÷ Total Assets (AT), averaged over t-2, t-1, & t.

R&D	Research & Development, computed as the ratio of Research Expense (XRD) ÷ prior-period Total Assets (AT), averaged over t-2, t-1, & t. Missing values in Compustat are recoded as $0.
NOL	Net Operating Loss Carryforward, coded as one if Tax Loss Carryforward (TLCF) is non-zero in t-2, t-1, or t and not missing; zero otherwise.
NOL_DELTA	Change in *NOL* indicator above from previous period, calculated as current-period NOL minus period-period NOL.
FOR	Foreign Activity, computed as Foreign Pretax Income (PIFO) ÷ prior-period Total Assets (AT), averaged over t-2, t-1, & t. Missing values in Compustat are recoded as $0.
INTAN	Intangible Assets, computed as Intangibles (INTAN) ÷ Total Assets (AT), averaged over t-2, t-1, & t.
M&A	Mergers and Acquisitions, coded as one if M&A (AQC) is non-zero in t-2, t-1, or t and not missing; zero otherwise.
PPE	Property, Plant, & Equipment, computed as the ratio of Property, Plant & Equipment (PPEGT) divided by Total Assets (AT), averaged over t-2, t-1, & t.
CASH	Cash Holdings, computed as cash and short-term investments (CHE) ÷ Total Assets (AT), averaged over t-2, t-1, & t.
BIG4	Big Four Auditor of the financial statements, coded as one if one of the Big Four Auditors audited the financial statements in t-2, t-1, or t; zero otherwise.
LOSS	Loss Year, coded as one if Income Before Extraordinary Items (IB) is negative in t-2, t-1, or t; zero otherwise.
SPI	Special Items, coded as one if Special Items (SPI) is non-zero in t-2, t-1, or t; zero otherwise.
RSST_ACC	Working capital accruals which include changes in long-term operating assets and long-term operating liabilities as defined by Richardson et al. (2005).
CH_REC	Change in accounts receivable, computed as current period Receivables (RECT) less prior period Receivables (RECT) ÷ Total Assets (AT), averaged over t-2, t-1, & t.
CH_INV	Change in inventory, computed as current period Inventory (INVT) less prior period Inventory (INVT) ÷ Total Assets (AT), averaged over t-2, t-1, & t.
SOFT_AT	Ratio of soft assets, computed as Total Assets (AT) less Net Property, Plant & Equipment (PPENT) less Cash and Cash Equivalents (CHE) ÷ Total Assets (AT), averaged over t-2, t-1, & t.
CH_CS	Percentage change in cash sales, Sales (SALE) less [current period Receivables (RECT) less prior period Receivables (RECT)], averaged over t-2, t-1, & t.
CH_ROA	Return on Assets, computed as Earnings (EARN) / [current period Total Assets (AT) less prior period Total Assets (AT)] less prior period Earnings (EARN) / [prior period Total Assets (AT) less second-prior period Total Assets (AT)], averaged over t-2, t-1, & t.
ISSUE	Actual issuance, coded as one if Sale of Common and Preferred Stock (SSTK) or Long-Term Debt Issuance (DLTIS) is greater than zero in t-2, t-1, or t; zero otherwise.

Non-Discretionary and Discretionary Smoothing Variables

ND_SMO	Non-Discretionary Smoothing, estimated the following three ways: Model 1 – Mayberry et al. (2015) Smoothing: the fitted value from the following OLS regression model, estimated using individual regressions by

each industry-year combination for which there are at least 10 observations:

$$GETR\_SMO_{i,t} = \beta_0 + \beta_1 CAPINT_{i,t} + \beta_2 INTAN\_INT_{i,t} + \beta_3 DUM\_INTAN_{i,t} + \beta_4 NEGTI_{i,t} + \beta_5 OPCYCLE_{i,t} + \beta_6 SIZE_{i,t} + \beta_7 SALE\_VOL_{i,t} + \varepsilon_{i,t}.$$

Model 2 – Industry-Year Average Smoothing: the simple average of our GETR_SMO measure (i.e., $Average[GETR\_SMO_i]$), estimated over firms within each industry-year with at least 10 GETR_SMO observations.

Model 3 – Firm Average Smoothing: the simple average of our GETR_SMO measure (i.e., $Average[GETR\_SMO_t]$), estimated over time for each firm with at least 3 GETR_SMO observations.

D_SMO Discretionary Smoothing, estimated the following three ways:

Model 1 – Residual from Mayberry et al. (2015) Smoothing: the residual value from the ND_SMO Model 1 above.

Model 2 – Departure from Industry-Year Average Smoothing: firm's GETR_SMO measure at time *t* minus its industry-year's average level of GETR_SMO in the same period, as calculated in ND_SMO Model 2 above.

Model 3 – Departure from Firm Average Smoothing: firm's GETR_SMO measure at time *t* minus its time-series average level of GETR_SMO, as calculated in ND_SMO Model 3 above.

Cross-Sectional Test Variables

Foreign Foreign Dummy, coded as one if Pre-Tax Foreign Income (PIFO) over periods t-2, t-1, and t ÷ Pre-tax Income over periods t-2, t-1 is greater than five percent; zero otherwise.

RD_Intan R&D and Intangibles Dummy, coded as one if Research and Development (RD) + Intangibles (INTAN) over periods t-2, t-1, and t is not equal to zero; zero otherwise.

Institutional Institutional Dummy, coded as one if the Institutional Ownership Percentage over periods t-2, t-1 is above its mean value; zero otherwise.

Analyst Analyst Indicator, coded as one if the IBES database contains at least one analyst earnings forecast in period t-2, t-1, or t; zero otherwise.

Other Variables

CAPINT Capital Intensity, computed as the ratio of gross property, plant, and equipment (PPEGT) to assets (AT).

INTAN_INT Intangible Intensity, computed as the ratio of research and development (XRD) and advertising (XAD) to sales (SALE).

DUM_INTAN Intangible Indicator, computed as 1 if a firm has zero or missing XRD and XAD, and 0 otherwise

NEGTI Negative Taxable Income Ratio, computed as the proportion of years with negative taxable income from year t-2 to year t. Taxable income is defined as [total tax expense (TXT) less deferred tax expense (TXDI)] ÷ top statutory tax rate (35 percent) less the change in net operating loss carryforwards (TLCF).

OPCYCLE Operating Cycle, computed as the natural log of the sum of a firm's days accounts receivable (RECT/SALE) and days inventory (INVT/COGS).

SALE_VOL Sales Volatility, computed as the standard deviation of sales (SALE), scaled by total assets (AT), over the prior three years.

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Table 1
Descriptive Statistics

	Mean	Std. Dev.	Q1	Median	Q3	N
Dependent Variables						
RESTATEMENT	0.19	0.393	0	0	0	35,201
FAVG_CETR	0.201	0.168	0.037	0.189	0.323	35,201
FAVG_GETR	0.26	0.154	0.139	0.297	0.369	35,201
Independent Variables						
GETR	0.261	0.184	0.094	0.31	0.375	35,201
CETR	0.204	0.211	0.007	0.174	0.324	35,201
PTIB	0.053	0.192	0.005	0.07	0.138	35,201
PTCF	0.114	0.155	0.056	0.117	0.187	35,201
GETR_SMO	0.014	0.061	-0.001	0.002	0.017	35,201
PTIB_SMO	-0.01	0.095	-0.003	0	0.002	35,201
VAR_CETR	0.033	0.065	0.001	0.006	0.029	35,201
VAR_GETR	0.019	0.045	0	0.001	0.016	35,201
VAR_PTCF	0.016	0.081	0.001	0.002	0.008	35,201
VAR_PTIB	0.031	0.215	0.001	0.002	0.01	35,201
Control Variables						
ROA	0.034	0.175	0	0.061	0.117	35,201
MB	2.927	3.054	1.315	2.045	3.309	35,201
SIZE	5.75	2.092	4.251	5.694	7.159	35,201
LEV	0.149	0.152	0.007	0.111	0.243	35,201
R&D	0.035	0.067	0	0	0.04	35,201
NOL	0.448	0.497	0	0	1	35,201
NOL_DELTA	-0.023	0.141	0	0	0	35,201
FOR	0.011	0.031	0	0	0.009	35,201
INTANG	0.139	0.167	0.006	0.073	0.216	35,201
MNA	0.583	0.493	0	1	1	35,201
PPE	0.534	0.385	0.227	0.448	0.765	35,201
CASH	0.172	0.185	0.033	0.101	0.251	35,201
BIG4	0.819	0.385	1	1	1	35,201
LOSS	0.402	0.49	0	0	1	35,201
SPI	0.807	0.394	1	1	1	35,201
RSST_ACC	0.044	0.109	-0.01	0.034	0.089	35,201
CH_REC	0.014	0.038	-0.002	0.008	0.026	35,201
CH_INV	0.009	0.03	0	0.002	0.017	35,201
SOFT_AT	0.546	0.232	0.379	0.574	0.729	35,201
CH_CS	0.140	0.314	-0.364	0.081	2.876	35,201
CH_ROA	-0.002	0.059	-0.019	-0.001	0.014	35,201

ISSUE	0.964	0.186	1	1	1	35,201

Continuous variables are winsorized at the 1st and 99th percentiles except for ETRs, which are winsorized at zero and one. Unless otherwise indicated, variables are measured as an average over years t-2, t-1, and t. Variables are defined in Appendix A.

Table 2
Pearson Correlation Table

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) RESTATEMENT	1.00												
(2) FAVG_CETR	-0.04*	1.00											
(3) FAVG_GETR	-0.02*	0.58*	1.00										
(4) GETR	-0.03*	0.37*	0.47*	1.00									
(5) CETR	-0.04*	0.39*	0.33*	0.60*	1.00								
(6) PTIB	-0.06*	0.36*	0.40*	0.36*	0.30*	1.00							
(7) PTCF	-0.04*	0.33*	0.38*	0.33*	0.27*	0.84*	1.00						
(8) GETR_SMO	-0.02*	0.11*	0.10*	0.11*	0.47*	0.05*	0.03*	1.00					
(9) PTIB_SMO	-0.03*	0.10*	0.11*	0.11*	0.09*	0.42*	0.27*	0.02*	1.00				
(10) VAR_CETR	0.02*	0.05*	0.07*	0.30*	0.56*	-0.02*	-0.02*	0.74*	0.03*	1.00			
(11) VAR_GETR	0.06*	-0.07*	-0.04*	0.28*	0.15*	-0.08*	-0.07*	-0.30*	0.00	0.41*	1.00		
(12) VAR_PTCF	0.02*	-0.09*	-0.11*	-0.10*	-0.08*	-0.27*	-0.21*	-0.02*	-0.33*	-0.02*	0.00	1.00	
(13) VAR_PTIB	0.03*	-0.09*	-0.11*	-0.11*	-0.09*	-0.38*	-0.25*	-0.02*	-0.79*	-0.03*	-0.01	0.71*	1.00
(14) ROA	-0.07*	0.39*	0.43*	0.39*	0.32*	0.90*	0.78*	0.06*	0.32*	0.00	-0.08*	-0.20*	-0.27*
(15) MB	0.02*	-0.04*	-0.07*	-0.07*	-0.06*	-0.07*	0.01*	-0.07*	-0.16*	-0.11*	-0.06*	0.19*	0.19*
(16) SIZE	0.03*	0.21*	0.22*	0.23*	0.16*	0.25*	0.28*	-0.01	0.11*	0.00	0.01	-0.18*	-0.14*
(17) LEV	0.01*	-0.02*	0.10*	0.10*	-0.01	-0.01*	0.00	0.01	0.05*	0.04*	0.05*	-0.09*	-0.07*
(18) R&D	0.00	-0.23*	-0.30*	-0.28*	-0.20*	-0.32*	-0.30*	-0.07*	-0.10*	-0.05*	0.01*	0.13*	0.11*
(19) NOL	0.07*	-0.14*	-0.14*	-0.15*	-0.15*	-0.17*	-0.15*	-0.07*	-0.05*	0.00	0.10*	0.02*	0.04*
(20) NOL_DELTA	-0.03*	0.04*	0.04*	0.01	0.02*	0.05*	0.03*	-0.01	0.00	-0.03*	-0.03*	0.02*	0.01
(21) FOR	-0.02*	0.14*	0.05*	0.07*	0.11*	0.22*	0.20*	0.00	0.04*	-0.02*	-0.04*	-0.04*	-0.04*
(22) INTANG	0.05*	0.05*	0.05*	0.05*	0.03*	-0.03*	0.00	-0.04*	0.00	0.00	0.05*	-0.06*	-0.02*
(23) MNA	0.02*	0.10*	0.09*	0.09*	0.08*	0.08*	0.10*	0.01	0.02*	0.02*	0.03*	-0.07*	-0.04*
(24) PPE	-0.04*	-0.03*	0.06*	0.05*	-0.02*	0.02*	0.15*	0.01*	0.04*	-0.01	-0.03*	-0.08*	-0.06*
(25) CASH	0.00	-0.14*	-0.24*	-0.23*	-0.14*	-0.13*	-0.12*	-0.07*	-0.11*	-0.06*	0.00	0.19*	0.15*
(26) BIG4	0.00	0.11*	0.13*	0.14*	0.10*	0.15*	0.17*	0.00	0.09*	0.01*	0.02*	-0.12*	-0.12*
(27) LOSS	0.08*	-0.40*	-0.39*	-0.40*	-0.45*	-0.55*	-0.48*	-0.06*	-0.15*	0.10*	0.22*	0.11*	0.13*
(28) SPI	0.07*	-0.06*	-0.05*	-0.04*	-0.05*	-0.10*	-0.07*	0.00	-0.02*	0.07*	0.10*	-0.02*	0.00
(29) RSST_ACC	-0.01*	0.06*	0.12*	0.08*	0.06*	0.26*	0.19*	-0.03*	-0.09*	-0.07*	-0.06*	0.15*	0.14*
(30) CH_REC	-0.02*	0.10*	0.10*	0.09*	0.08*	0.20*	0.07*	-0.01*	-0.02*	-0.04*	-0.04*	0.09*	0.05*
(31) CH_INV	0.00	0.12*	0.11*	0.10*	0.11*	0.18*	0.02*	0.02*	0.02*	-0.03*	-0.06*	0.04*	0.01
(32) SOFT_AT	0.03*	0.16*	0.12*	0.11*	0.14*	0.07*	-0.05*	0.05*	0.06*	0.08*	0.04*	-0.09*	-0.08*

(33) CH_CS	-0.01*	-0.06*	-0.46*	-0.06*	-0.07*	-0.04*	-0.03*	-0.05	0.08*	-0.06*	-0.02*	0.21*	0.15*
(34) CH_ROA	0.00	0.03*	0.04*	-0.05*	-0.04*	0.04*	0.01	-0.05*	-0.07*	-0.07*	-0.02*	0.17*	0.14*
(35) ISSUE	0.04*	-0.01	0.03*	0.03*	0.00	-0.01*	0.01	-0.01	0.00	0.01	0.02*	-0.01	0.00

* denotes statistical significance level of $p<0.05$. See Appendix A for variable definitions. Correlations between control variables are not displayed for brevity and readability.

Table 3: Main Results
Regressions of Restatement

Dependent Variable	Restatement								
	All Restatements			Tax Issue Restatements			Non-Tax Issue Restatements		
	All	Non-Fraud	Fraud	All	Non-Fraud	Fraud	All	Non-Fraud	Fraud
# of Restatements	6,705	6,459	246	1,541	1,525	16	5,164	4,979	185
# of Non-Restatements	28,496	28,496	27,144	28,247	28,247	11,638	28,496	28,496	26,833
Total Observations	35,201	34,955	27,390	29,788	29,772	11,654	33,660	33,475	27,018
Restatement %	19.0%	18.5%	0.9%	5.2%	5.1%	0.1%	15.3%	14.9%	0.7%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
GETR	-0.144	-0.134	-0.424	0.067	0.083	-1.101	-0.221	-0.204	-0.714
	(-0.86)	(-0.80)	(-0.56)	(0.21)	(0.26)	(-0.51)	(-1.22)	(-1.12)	(-0.75)
PTIB	0.025	0.029	0.358	0.756	0.775	-34.885**	-0.101	-0.106	1.251
	(0.09)	(0.11)	(0.20)	(1.33)	(1.36)	(-2.30)	(-0.35)	(-0.37)	(0.66)
CETR	-0.132	-0.118	-0.365	-0.787**	-0.827**	2.448***	0.110	0.147	-0.610
	(-0.75)	(-0.65)	(-0.50)	(-2.29)	(-2.38)	(3.92)	(0.56)	(0.74)	(-0.73)
PTCF	0.412	0.439	-0.510	-0.043	-0.009	0.507	0.520*	0.538*	-0.401
	(1.50)	(1.59)	(-0.35)	(-0.07)	(-0.02)	(0.06)	(1.81)	(1.85)	(-0.24)
GETR_SMO	**-1.547*****	**-1.459*****	**-4.039****	**-2.316*****	**-2.199****	**-10.499****	**-1.219****	**-1.167****	**-2.785**
	(-3.10)	**(-2.88)**	**(-2.25)**	**(-2.73)**	**(-2.56)**	**(-2.19)**	**(-2.15)**	**(-2.03)**	**(-1.14)**
PTIB_SMO	0.252	0.227	2.971	0.677	0.655	15.797	0.141	0.121	2.287
	(0.91)	(0.81)	(1.15)	(1.22)	(1.18)	(1.32)	(0.48)	(0.41)	(0.96)
VAR_CETR	2.193***	2.090***	4.545***	5.097***	5.073***	4.301	1.032	0.851	5.230**
	(3.93)	(3.68)	(2.72)	(5.81)	(5.73)	(0.85)	(1.64)	(1.32)	(2.40)
VAR_PTIB	0.129	0.123	-0.121	0.270	0.265	-160.459***	0.072	0.066	-0.044
	(1.08)	(1.02)	(-0.20)	(1.24)	(1.21)	(-3.29)	(0.57)	(0.52)	(-0.14)
ROA	-1.058***	-1.107***	0.698	-1.088*	-1.130*	40.494**	-1.078***	-1.130***	0.151
	(-3.86)	(-4.02)	(0.41)	(-1.80)	(-1.87)	(2.36)	(-3.81)	(-3.97)	(0.09)
MB	0.021***	0.021***	0.012	0.038**	0.039***	-0.358	0.014*	0.015*	0.022
	(2.62)	(2.64)	(0.38)	(2.54)	(2.59)	(-0.73)	(1.72)	(1.73)	(0.66)
SIZE	0.129***	0.135***	0.070	0.188***	0.191***	-0.029	0.114***	0.126***	-0.080
	(5.23)	(5.44)	(0.63)	(3.60)	(3.64)	(-0.15)	(4.41)	(4.78)	(-0.72)
LEV	-0.059	-0.032	-1.161	0.256	0.279	-2.726	-0.152	-0.119	-1.546
	(-0.27)	(-0.14)	(-1.08)	(0.61)	(0.66)	(-0.92)	(-0.63)	(-0.48)	(-1.13)
RD	-0.715	-0.669	-2.413	-2.034*	-1.932*	-19.099***	-0.326	-0.289	-1.802

	(-1.43)	(-1.33)	(-0.79)	(-1.90)	(-1.81)	(-2.58)	(-0.62)	(-0.55)	(-0.54)
NOL	0.157***	0.157***	0.191	0.170	0.167	0.302	0.160***	0.162***	0.097
	(2.80)	(2.76)	(0.78)	(1.56)	(1.52)	(0.22)	(2.65)	(2.66)	(0.36)
NOL_DELTA	-0.013	-0.017	0.194	0.047	0.077	-3.042	-0.039	-0.055	0.401
	(-0.10)	(-0.13)	(0.34)	(0.19)	(0.31)	(-1.13)	(-0.27)	(-0.37)	(0.56)
FOR	-0.724	-0.550	-4.673	1.713	1.702	7.646	-1.732*	-1.558	-4.749
	(-0.80)	(-0.60)	(-1.00)	(1.09)	(1.08)	(0.51)	(-1.70)	(-1.53)	(-0.86)
INTANG	-0.321	-0.316	-0.414	-0.732*	-0.742*	0.811	-0.232	-0.256	0.434
	(-1.39)	(-1.36)	(-0.43)	(-1.68)	(-1.70)	(0.27)	(-0.91)	(-1.00)	(0.39)
MNA	-0.120**	-0.124**	0.047	-0.030	-0.040	1.145**	-0.143**	-0.144**	0.001
	(-2.17)	(-2.24)	(0.17)	(-0.29)	(-0.38)	(2.19)	(-2.35)	(-2.37)	(0.00)
PPE	-0.328**	-0.334**	-0.228	-0.108	-0.088	-4.419*	-0.412**	-0.425**	-0.098
	(-2.11)	(-2.12)	(-0.31)	(-0.39)	(-0.32)	(-1.82)	(-2.37)	(-2.42)	(-0.12)
CASH	-0.411	-0.387	-1.590	0.170	0.177	-3.780	-0.582	-0.568	-1.728
	(-1.21)	(-1.13)	(-1.08)	(0.27)	(0.28)	(-1.40)	(-1.57)	(-1.51)	(-1.12)
BIG4	-0.101	-0.115	0.181	-0.227	-0.244*	0.000	-0.068	-0.081	0.095
	(-1.32)	(-1.48)	(0.48)	(-1.58)	(-1.69)	(.)	(-0.83)	(-0.96)	(0.25)
PI_LOSS_DUM	0.292***	0.300***	0.248	0.234*	0.230*	1.598**	0.327***	0.345***	-0.014
	(4.63)	(4.70)	(0.84)	(1.90)	(1.86)	(2.12)	(4.76)	(4.94)	(-0.04)
SPI_DUM	0.289***	0.269***	0.986***	0.481***	0.478***	1.351	0.254***	0.234***	0.913**
	(4.54)	(4.19)	(2.82)	(3.52)	(3.48)	(1.00)	(3.66)	(3.33)	(2.53)
RSST_ACC	0.460**	0.471**	-0.252	0.142	0.165	-2.653	0.537**	0.554**	-0.544
	(2.08)	(2.11)	(-0.25)	(0.33)	(0.39)	(-1.20)	(2.22)	(2.27)	(-0.44)
CH_REC	0.192	0.198	-0.892	-1.426	-1.545	20.681***	0.643	0.664	-0.449
	(0.28)	(0.28)	(-0.35)	(-0.98)	(-1.05)	(5.04)	(0.86)	(0.87)	(-0.15)
CH_INV	2.358***	2.487***	-0.870	0.702	0.919	-15.517***	2.678***	2.758***	0.215
	(2.81)	(2.91)	(-0.30)	(0.43)	(0.56)	(-3.54)	(2.94)	(2.96)	(0.07)
SOFT_AT	0.182	0.136	1.359	0.984*	1.027*	-6.244***	-0.055	-0.112	1.371
	(0.60)	(0.45)	(1.02)	(1.79)	(1.86)	(-2.79)	(-0.17)	(-0.33)	(0.95)
CH_CS	0.053	0.051	0.125	0.034	0.039	-2.282	0.064	0.057	0.170
	(0.88)	(0.84)	(0.45)	(0.24)	(0.27)	(-1.00)	(1.01)	(0.90)	(0.63)
CH_ROA	-0.130	-0.118	-0.941	-0.462	-0.465	-3.932	-0.089	-0.069	-1.123
	(-0.47)	(-0.42)	(-0.83)	(-0.81)	(-0.81)	(-0.86)	(-0.30)	(-0.23)	(-0.88)
ISSUE	0.453***	0.467***	-0.030	0.319	0.340	-0.580	0.493***	0.481**	0.673
	(2.89)	(2.88)	(-0.06)	(1.21)	(1.27)	(-0.45)	(2.67)	(2.54)	(1.12)
Constant	-5.554***	-5.622***	-6.545***	-8.349***	-8.617***	-0.716	-5.202***	-5.260***	-6.222***
	(-10.64)	(-10.64)	(-3.88)	(-8.82)	(-8.89)	(-0.19)	(-9.64)	(-9.63)	(-3.51)
Industry Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y

Year Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Pseudo R-squared	0.077	0.079	0.079	0.086	0.087	0.245	0.075	0.079	0.074

This table reports the estimates of Eq. (1) using Logistic Regression. All columns use the labeled restatement type as the dependent variable. When not looking at total restatements (i.e., in column 1), we drop observations with the opposite type of restatement. For example, the 246 fraud observations in column 3 are removed from the sample in column 2, while the 6, 459 non-fraud restatement observations in column 2 are removed from the sample in column 3. We also require that each non-restatement observation have at least one restatement observation in the same industry or year to be included in the sample.*, **, and *** denote statistical significance levels of $p<0.10$, 0.05, and 0.01, respectively (two-tailed). Reported t-statistics (in parentheses) are based on robust standard errors clustered by firm. All continuous variables are winsorized at the 1st and 99th percentile except for ETRs, which are winsorized at zero and one, to mitigate the effect of outliers. Variables are defined in Appendix A.

Table 4
Regressions of Future Cash ETR

Dependent Variable	Average 3-year Future CETR (FAVG_CETR)				Average 3-year Future GETR (FAVG_GETR)
	Base Model	Extended Model	Base Model	Extended Model	Extended Model
Total Observations	35,201	35,201	35,201	35,201	35,201
	(1)	(2)	(3)	(4)	(5)
GETR	0.129***	0.103***	0.222***	0.186***	0.357***
	(16.79)	(13.64)	(25.97)	(21.32)	(40.85)
PTIB	0.146***	0.060***	0.108***	0.061***	0.058***
	(17.73)	(7.25)	(13.51)	(7.48)	(6.98)
CETR	0.172***	0.135***	0.191***	0.158***	0.036***
	(27.83)	(22.30)	(30.82)	(25.53)	(8.09)
PTCF	0.110***	0.081***	0.088***	0.071***	0.071***
	(11.33)	(8.28)	(9.41)	(7.45)	(8.47)
GETR_SMO			0.173***	0.113***	0.106***
			(5.96)	(3.89)	(3.30)
GETR×GETR_SMO			**1.112*** **	**0.941*** **	**1.436*** **
			(16.23)	**(13.86)**	**(20.11)**
PTIB_SMO			-0.034**	-0.024	-0.031**
			(-2.25)	(-1.57)	(-1.97)
VAR_CETR			-0.200***	-0.113***	-0.058*
			(-7.02)	(-3.92)	(-1.91)
GETR×VAR_CETR			-1.909***	-1.605***	-1.974***
			(-28.10)	(-23.31)	(-26.23)
VAR_PTIB			-0.007	0.003	0.002
			(-0.92)	(0.45)	(0.30)
ROA		0.013		-0.006	0.049***
		(1.33)		(-0.62)	(4.84)
MB		-0.000		-0.000	-0.001**
		(-0.38)		(-0.45)	(-2.07)
SIZE		0.006***		0.006***	0.003***
		(6.62)		(6.11)	(4.15)
LEV		-0.083***		-0.077***	0.013
		(-8.17)		(-7.72)	(1.46)
R&D		-0.185***		-0.164***	-0.096***
		(-9.05)		(-8.28)	(-4.71)
NOL		-0.014***		-0.011***	-0.003
		(-5.22)		(-4.19)	(-1.17)
NOL_DELTA		0.005		0.007	0.011*
		(0.68)		(0.99)	(1.71)
FOR		0.171***		0.197***	-0.232***
		(3.31)		(3.98)	(-6.20)
INTANG		-0.010		-0.010	0.001
		(-0.95)		(-1.00)	(0.16)
M&A		0.008***		0.008***	0.000
		(3.15)		(3.01)	(0.21)
PPE		-0.013**		-0.012**	-0.005
		(-2.54)		(-2.49)	(-1.22)

CASH		-0.041***		-0.032***	-0.048***
		(-4.38)		(-3.59)	(-5.84)
BIG4		0.006		0.006*	0.006*
		(1.52)		(1.66)	(1.92)
LOSS		-0.042***		-0.027***	-0.015***
		(-13.38)		(-8.57)	(-5.30)
SPI		-0.009***		-0.008***	-0.001
		(-3.24)		(-2.88)	(-0.42)
Constant	0.169***	0.192***	0.178***	0.193***	0.242***
	(9.27)	(9.13)	(11.59)	(10.70)	(10.34)
Industry Fixed Effects	Y	Y	Y	Y	Y
Year Fixed Effects	Y	Y	Y	Y	Y
R-squared	0.271	0.304	0.304	0.324	0.392

This table reports the estimates of Eq. (2) using OLS. Columns (1), (2), (3) and (4) use the future 3-year average cash ETR for periods t+1 through t+3 as the dependent variable. Column (5) uses the future 3-year average GAAP ETR for periods t+1 through t+3. *, **, and *** denote statistical significance levels of $p<0.10$, 0.05, and 0.01, respectively (two-tailed). Reported t-statistics (in parentheses) are based on robust standard errors clustered by firm. All continuous variables are winsorized at the 1st and 99th percentile except for ETRs, which are winsorized at zero and one, to mitigate the effect of outliers and mean-centered to improve interpretability of the main effects. Variables are defined in Appendix A.

Table 5 - Split on Changes on Shareholder Equity
Regressions of Restatement

Dependent Variable	Restatement					
	All Restatements		Tax Issue Restatements		Non-Tax Issue Restatements	
	negative	zero/pos	negative	zero/pos	negative	zero/pos
# of Restatements	2,945	2,495	794	481	2,151	2,014
# of Non-Restatements	28,496	28,496	27,767	26,133	28,496	28,496
Total Observations	31,441	30,991	28,561	26,614	30,647	30,510
Restatement %	9.4%	8.1%	2.8%	1.8%	7.0%	6.6%
	(1)	(2)	(3)	(4)	(5)	(6)
GETR	-0.148	0.105	-0.254	0.560	-0.092	-0.013
	(-0.61)	(0.42)	(-0.58)	(1.10)	(-0.33)	(-0.05)
PTIB	-0.360	-0.343	0.460	0.418	-0.500	-0.547
	(-0.81)	(-0.96)	(0.51)	(0.63)	(-1.02)	(-1.35)
CETR	-0.375	0.242	-0.918**	-0.382	-0.110	0.422
	(-1.45)	(0.90)	(-2.11)	(-0.59)	(-0.36)	(1.46)
PTCF	0.732*	0.343	-0.245	0.165	1.010**	0.387
	(1.75)	(0.92)	(-0.26)	(0.20)	(2.24)	(0.96)
GETR_SMO	**-1.820****	**-0.860**	**-3.137*****	**-0.965**	**-0.960**	**-0.816**
	(-2.55)	**(-1.13)**	**(-2.90)**	**(-0.61)**	**(-1.08)**	**(-0.97)**
PTIB_SMO	0.738	0.072	2.636*	0.268	0.491	-0.055
	(1.49)	(0.20)	(1.94)	(0.39)	(0.89)	(-0.14)
VAR_CETR	3.298***	0.134	6.433***	2.035	1.489	-0.448
	(4.29)	(0.16)	(5.80)	(1.35)	(1.56)	(-0.49)
VAR_PTIB	0.095	0.132	0.212	0.409	0.032	0.013
	(0.49)	(0.77)	(0.96)	(1.30)	(0.13)	(0.07)
Control Variables	Y	Y	Y	Y	Y	Y
Industry Fixed Effects	Y	Y	Y	Y	Y	Y
Year Fixed Effects	Y	Y	Y	Y	Y	Y
Pseudo R-squared	0.101	0.080	0.116	0.088	0.109	0.075

This table reports the estimates of Eq. (1) using Logistic Regression. All columns use restatement as the dependent variable. *, **, and *** denote statistical significance levels of p<0.10, 0.05, and 0.01, respectively (two-tailed). Reported t-statistics (in parentheses) are based on robust standard errors clustered by firm. All continuous variables are winsorized at the 1st and 99th percentile except for ETRs, which are winsorized at zero and one, to mitigate the effect of outliers. Variables are defined in Appendix A.

Table 6 - Discretionary Smoothing: Regressions of Restatement

Dependent Variable	Restatement				
	Non-Discretionary vs. Discretionary Smoothing			Foreign	RD_Intan
	Mayberry	Ind Avg ND D Split	Firm Avg ND D Split		
# of Restatements	6,606	6,700	6,548	6,705	6,705
# of Non-Restatements	27,912	28,422	27,494	28,496	28,464
Total Observations	34,518	35,122	34,042	35,201	35,169
Restatement %	19.1%	19.1%	19.2%	19.0%	19.1%
	(1)	(2)	(3)	(4)	(5)
GETR_SMO_ND	**-0.034**	**-0.046**	**-0.028**		
	(-1.56)	**(-1.61)**	**(-0.88)**		
GETR_SMO_D	**-0.090*** **	**-0.092*** **	**-0.100*** **		
	(-2.99)	**(-3.04)**	**(-3.80)**		
GETR_SMO				-0.850	2.711
				(-1.49)	(1.62)
PTIB_SMO				0.201	0.784*
				(0.71)	(1.69)
Foreign × GETR_SMO				**-2.401** **	
				(-2.34)	
Foreign × PTIB_SMO				-0.071	
				(-0.03)	
RD_Intan × GETR_SMO					**-4.747*** **
					(-2.74)
RD_Intan × PTIB_SMO					-0.766
					(-1.36)
Control Variables	Y	Y	Y	Y	Y
Control × Interactions	n/a	n/a	n/a	Y	Y
Industry Fixed Effects	Y	Y	Y	Y	Y
Year Fixed Effects	Y	Y	Y	Y	Y
Standardized Coefficients	Y	Y	Y	N	N
Pseudo_R-squared	0.077	0.077	0.076	0.085	0.083

This table reports the estimates of Eq. (1) using Logistic Regression. All columns use restatement as the dependent variable. *, **, and *** denote statistical significance levels of p<0.10, 0.05, and 0.01, respectively (two-tailed). Reported t-statistics (in parentheses) are based on robust standard errors clustered by firm. All continuous variables are winsorized at the 1st and 99th percentile except for ETRs, which are winsorized at zero and one, to mitigate the effect of outliers. Variables are defined in Appendix A.

Table 7 - Institutional Investors and Analysts: Regressions of Restatement

Dependent Variable	Restatement	
	Prc Inst Own	Analyst
# of Restatements	6,705	6,705
# of Non-Restatements	28,496	28,496
Total Observations	35,201	35,201
Restatement %	19.0%	19.0%
	(1)	(2)
GETR_SMO	-0.519	-0.056
	(-0.62)	(-0.06)
PTIB_SMO	0.308	0.595
	(0.98)	(1.61)
Institutional × GETR_SMO	**-1.772***	
	(-1.71)	
Institutional × PTIB_SMO	-0.299	
	(-0.44)	
Analyst × GETR_SMO		**-2.364****
		(-2.12)
Analyst × PTIB_SMO		-0.764
		(-1.30)
Control Variables	Y	Y
Control × Interactions	Y	Y
Industry Fixed Effects	Y	Y
Year Fixed Effects	Y	Y
Pseudo R-squared	0.096	0.093

This table reports the estimates of Eq. (1) using Logistic Regression. All columns use restatement as the dependent variable. *, **, and *** denote statistical significance levels of p<0.10, 0.05, and 0.01, respectively (two-tailed). Reported t-statistics (in parentheses) are based on robust standard errors clustered by firm. All continuous variables are winsorized at the 1st and 99th percentile except for ETRs, which are winsorized at zero and one, to mitigate the effect of outliers. Variables are defined in Appendix A.