DO PRIVATE TAX DISCLOSURES AFFECT THE QUALITY
OF PUBLIC FINANCIAL REPORTING?

by

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DISSERTATION ABSTRACT

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This study investigates whether increased private tax disclosures have implications for the quality of public financial reporting in the context of Schedule UTP. In terms of the predictive value of tax reserves, I find that firms reverted from being over-reserved to being adequately reserved post-Schedule UTP. In terms of the confirmatory value of tax reserves, I find that firms report more accurate tax reserves post-Schedule UTP, as evidenced by the higher explanatory power of the UTB prediction model (Rego and Wilson, 2012) and reduced tax expense management post-Schedule UTP. In terms of the informativeness of tax reserves, I find that analysts' ETR forecast accuracy is improved post-Schedule UTP, suggesting reduced information asymmetry between firms and financial statement users. Overall, this study provides evidence that other stakeholders beyond tax authorities benefit from increased private tax disclosures, and Schedule UTP may have achieved the goal intended by the FASB.

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This dissertation is dedicated to my family and friends for their love and support. And to my son, Gabriel Lewis, the greatest gift in my life.

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CHAPTER I

INTRODUCTION

The intricacy and lack of transparency embedded in tax provision leave firms wide

discretion in tax provision reporting, making the account a possible instrument for opportunistic

behavior (Dhaliwal, Gleason, & Mills, 2004). As a significant component of tax provision, tax

reserve is a critical element in improving income tax reporting. Thus, the Financial Accounting

Standards Board (FASB) and Internal Revenue Service (IRS) introduced FIN 48 (FASB

Interpretation No. 48, *Accounting for Uncertainty in Income Taxes*) in 2006 and Schedule UTP

in 2010 with the goal of standardizing and increasing the informativeness of tax reserve

disclosures. While the FASB released amendments in Update 2019-12 with an aim to simplify

income tax accounting, the IRS found the information disclosed in Schedule UTP insufficient to

enforce tax compliance (Treasury Report, 2018-30-023).[1] Specifically, more specifics with

respect to federal uncertain tax positions (UTP) are needed for examiners to effectively identify

and prioritize the selection of issues in the audit plan. Therefore, the ongoing efforts of regulators

in improving tax reserve reporting make this study particularly interesting and meaningful.

Prior studies find that firms alter their financial reporting decisions in response to

increased tax disclosures. Hope, Ma, and Thomas (2013) find that after the adoption of Schedule

M-3 in 2004, which increased private tax return disclosures of book-tax differences, firms are

more willing to disclose geographic earnings in their financial statements. On the contrary,

Brown, Jorgensen, and Pope (2019) find no significant change in segment reporting after the

implementation of mandatory public country-by-country reporting by European Union banks.[2]

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[1] The detailed report can be found at: https://www.treasury.gov/tigta/auditreports/2018reports/201830023fr.pdf.
[2] The European Union (EU) mandates EU banks to make a public disclosure of their tax-related financial information, including turnover, profits, taxes, employee numbers, and subsidiaries and entities on a country-by-country basis in 2013.

Abernathy, Davenport, and Rapley (2012) document a significant decrease in reported tax reserves and additions to tax reserves in firms' financial statements after the adoption of Schedule UTP in 2010, which increased private tax return disclosures of reserves. Two subsequent studies corroborate this result and further find that firms do so without changing underlying economics (Honaker & Sharma, 2017; Towery, 2017). Bozanic, Hoopes, Thornock, and Williams (2017) evaluate the interaction between private and public disclosures and find that firms increase the quantity and alter the content of tax-related disclosures in their financial statements post-Schedule UTP.

I extend this research by investigating whether firms' such response to increased private tax disclosures affects the quality of public financial reporting in the context of Schedule UTP. I evaluate the quality of financial reporting from a perspective of tax reserve reporting in three dimensions. First, I examine how private disclosures of Schedule UTP affect the predictive value of tax reserves to reflect future tax settlements, by examining how tax reserve settlements map onto changes in firms' effective tax rates (ETR). Next, I investigate whether private disclosures of Schedule UTP affect the confirmatory value of tax reserves to reflect underlying economics, by examining its effects on the explanatory power of the UTB prediction model in Rego and Wilson (2012) and managers' ability to beat analyst forecasts through tax expense management. Last, I study whether private disclosures of Schedule UTP affect the informativeness of tax reserves in helping analysts form predictions of future income tax expense, by examining its effects on analyst ETR forecast error and dispersion.

Not satisfied with the aggregate numbers provided under FIN 48, the IRS introduced Schedule UTP with staggered implementation from 2010 to 2014.[3] This new schedule requires

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[3] Firms report aggregate numbers of tax reserves, including federal, foreign, state, and local. Gupta, Mills, and Towery (2014) find that firm-level state income tax expense and state-level income tax collections increased upon

firms to rank their tax reserves based on U.S. federal income tax exposures from the largest to

the smallest, designate tax reserves that account for ten percent or more of the aggregate reserve

as major tax positions, and privately disclose to the IRS a narrative description of each federal

tax reserve. This policy allows the IRS to triangulate information reported on the private

Schedule UTP and disclosed in public financial statements, which incentivizes firms to reduce

reported reserves in their financial statements to avoid reporting uncertain tax positions to the

IRS.

Existing research finds that the introduction of Schedule UTP has unintended

consequences for publicly disclosed reserves. Specifically, Abernathy et al. (2012) find that

firms reduce reported tax reserves and additions to tax reserves post-Schedule UTP. Firms do so

without changing underlying economics of their transactions (Honaker and Sharma, 2017;

Towery, 2017). However, prior research does not examine the implications of these "unintended

effects" on the quality of public tax reserve reporting. To the extent that a decrease in tax

reserves is a truthful reflection of modification of real business transactions, the quality of tax

reserve reporting will not be affected. Nonetheless, if the decrease is a result of managerial

discretion to avoid reporting uncertain tax positions to tax authorities (Honaker and Sharma,

2017; Towery, 2017), or reevaluation of uncertain tax positions due to firms' expanded

information sets of their own tax reserves, the quality of tax reserve reporting will likely be

affected.[4]

Considering the stringent requirements of FIN 48 and firms' desire to build a larger

cushion to either avoid reserve inadequacy or engage in future earnings management activities,

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adoption of FIN 48, indicating that the aggregate FIN 48 numbers include uncertain tax positions with other tax
authorities, other than the IRS.
[4] Shroff (2017) finds that compliance with changes in Generally Accepted Accounting Principles alters managers'
information sets, thus affecting their investment activities.

firms were likely to be over-reserved prior to Schedule UTP.[5] The implementation of Schedule

UTP requires firms with total assets over $10 million to privately disclose all federal uncertain

tax positions to the IRS, thus providing an incentive for firms to reduce reported tax reserves in

their financial statements. Further, the process of complying with the schedule also expands

firms' information sets about their own tax positions and about ways the IRS selects and audits

tax reserves, increasing firms' ability to report tax reserves more accurately post-Schedule UTP.

Thus, Schedule UTP both incentivizes and enables firms that were over-reserved to self-correct,

because they did not want to list positions on the tax return that did not necessitate a reserve. If

so, decreased reserves in response to Schedule UTP should then become more accurate, on

average, post-Schedule UTP.

On the other hand, Schedule UTP could have led all firms, regardless of whether they

were over-reserved prior to Schedule UTP, to reduce reserves in an effort to avoid disclosing

positions on Schedule UTP. If more firms were "adequately" reserved before Schedule UTP

(Ciconte, Donohoe, Lisowsky, and Mayberry, 2016; Gleason and Mills, 2011), a decline in tax

reserves may render these firms under-reserved after Schedule UTP. Additionally, to the extent

that firms do not find Schedule UTP effective in its intended goal to improve tax return selection

and accelerate the examination process, firms may not adapt their financial reporting behavior

post-Schedule UTP. Considering possible concerns that reducing reported tax reserves may

expose firms' more aggressive uncertain tax positions and/or attract excessive attention from

other stakeholders, such as tax authorities and external auditors, firms may not decrease reported

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[5] Three assumptions are imposed in determining whether the more-likely-than-not threshold is met. First, firms must assume that tax authorities have full knowledge of the uncertain tax position and no detection risk should be considered in the process. Second, firms cannot consider the possibility of offsetting positions across jurisdictions. Third, firms cannot consider the possibility of offsetting positions within the same jurisdiction. Under such strict assumptions, it is logical that firms tend to over-reserve relative to the underlying economics, even if they are in full compliance with the rules.

tax reserves as many may presume. Therefore, how the introduction of this new schedule affects firms' financial reporting decisions, and thus the quality of such reporting, is an empirical question.

My first test examines whether firms reduce the extent to which they were over-reserved for uncertain tax positions. Using the methodology from Robinson, Stomberg, and Towery (2016), I investigate how well settlements with tax authorities map onto changes in ETRs.[6] When a firm settles an uncertain tax position with tax authorities, the effect of such settlement on the firm's ETR depends on whether the reserve related to this position was under-, adequately-, or over-reserved relative to the final payment to tax authorities. If the firm was adequately reserved for this position, the settlement would have no effect on the firm's ETR. If the firm was under-reserved and cash paid out to settle this position was more than the firm originally reserved for, the firm's tax expense in the year of settlement would increase. If the firm was over-reserved and released excessive reserves upon settlement, the firm's tax expense would decrease. I find that firms were over-reserved prior to Schedule UTP. Specifically, firms' ETRs, on average, decrease by 2.87 percentage points in the year of a settlement, which is consistent with Robinson et al. (2016). Additionally, as extant research documents that firms reduce reported tax reserves after Schedule UTP, I predict and find that firms shift to being adequately reserved post-Schedule UTP. Subsequent cross-sectional tests further suggest that these results are likely driven by firms that are more responsive to the implementation of Schedule UTP or by those that are more tax aggressive prior to Schedule UTP.

My second test examines the quality of tax reserves by investigating whether reported tax reserves better reflect underlying economics or, put another way, are more accurate, following

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[6] I acknowledge that not all uncertain tax positions affect income tax expense. For more information in this aspect, please refer to Robinson et al. (2016).

Schedule UTP in two ways. First, I use the UTB prediction model in Rego and Wilson (2012) and evaluate the changes in the explanatory power of this model post-Schedule UTP. Assuming that the UTB prediction model is logically sound, if tax reserves better reflect underlying economics post-Schedule UTP, I would expect the explanatory power of the model to increase after Schedule UTP when reported tax reserves are the dependent variable. Consistent with my prediction, I find evidence that the explanatory power of this prediction model is increased post-Schedule UTP. Next, I examine whether reported tax reserves post-Schedule UTP curtail managers' ability to beat analyst forecasts through tax expense management. I find evidence that the probability that firms beat analyst forecasts through tax expense management decreases by 15.7 percent post-Schedule UTP. Both results indicate improved accuracy of reported tax reserves post-Schedule UTP.

As a significant portion of income tax expense, the quality of tax reserves is mechanically related to that of income tax expense. If the reserves better reflected future tax settlements or were more accurate post-Schedule UTP, analysts could more easily forecast ETRs because there would be smaller ETR adjustments around settlements. If the reserves were noisier, then the settlements, which can be frequent for large firms, would cause rates to bounce around and would be difficult for analysts to predict. On the other hand, if analysts were able to efficiently estimate the effect of the schedule on firms' reported tax reserves, and adjust their ETR forecasts accordingly, compliance with this schedule should have no impact on analyst forecasts whatsoever. Thus, my last test examines the quality of tax reserves, by examining how the adoption of Schedule UTP affects analysts' ability to form predictions of firms' future ETRs.

I operationalize this last test by investigating analysts' ETR forecast error and dispersion post-Schedule UTP. I evaluate analysts' year-1 through year-3 ETR forecast error and dispersion

separately and find that analysts' year-1 and year-2 ETR forecast accuracy is improved after

Schedule UTP, but the benefits fade as the forecast window extends to three years. The lack of

evidence in year-3 ETR forecast accuracy could be a result of low statistical power, as the

number of analysts who provide year-3 forecasts drastically diminishes by over 74 percent. The

enhancement in analysts' year-1 and year-2 ETR forecast accuracy and year-1 forecast

dispersion suggests that sophisticated financial statement users, such as analysts, benefit from

increased quality of publicly disclosed tax reserves and improve their forecasts.

Further, I conduct a few additional analyses on the effects of Schedule UTP. First, I

examine how tax regulations, including Schedule M-3, FIN 48, and Schedule UTP, affect firms'

(estimated) tax reserves. I find a negative association with the adoption of Schedule UTP, as

compared to a positive association with the other two regulations. However, caution should be

exercised in interpreting this result, as tax reserves prior to FIN 48 are estimated based on the

UTB prediction model due to data availability. Second, I also test the intended effect of Schedule

UTP on tax settlements and find that tax settlements are reduced post-Schedule UTP. Next, I also

test the quality of tax reserves by examining tax expense restatement and tax fraud and find no

evidence that the introduction of Schedule UTP affects tax restatement or tax fraud, even though

the descriptive statistics indicate an increase in the number of firms reporting tax expense

restatement upon implementation of Schedule UTP. Last, I run robustness tests on a sample

period without financial crisis years for all the tests. I also rerun the first-part analyses using a

staggered difference-in-differences approach and reduced sample with relatively more

comparable firm sizes, and in general, find comparable results.

My study has important implications for regulators, researchers, and financial statement

users. First, while a few studies find evidence that firms alter their financial reporting in response

to tax disclosures (Abernathy et al., 2012; Bozanic et al., 2017; Brown et al., 2019; Honaker & Sharma, 2017; Hope et al., 2013; Towery, 2017), I take one step further to investigate whether firms' response to increased tax disclosures improves or undermines the quality of public financial reporting. I find evidence that this shift in firms' financial reporting behavior improves the quality of reported tax reserves, by helping financial statement users form better predictions about future tax settlements and tax expense and providing feedback about the accuracy of tax reserves. Thus, holding a firm accountable for the content of a public disclosure through private disclosures can increase the quality of the public disclosure.

This finding could even provide some implications to regulated sectors, which are required to provide private disclosures to relevant government agencies, and firms that redact disclosures but still submit them to the U.S. Securities and Exchange Commission (SEC). Further, given both the FASB and IRS are contemplating additional guidance on regulating the reporting of tax reserves, each party should consider the other party's actions.

Second, my study complements prior work in investigating the monitoring role of tax authorities. De Simone and Olbert (2020) examine the monitoring role of European tax authorities in the context of private country-by-country reporting and find that firms increase tangible fixed assets and human capital in countries with preferential tax regimes. This result suggests that increased regulation of tax authorities motivates firms to better align investment with income sourcing, which could further distort corporate decisions. My study investigates the monitoring role of the IRS in the context of Schedule UTP and finds that firms report more accurate tax reserves post-Schedule UTP, suggesting that the IRS may have achieved the goal intended by the FASB.

Last, my study extends the disclosure literature by providing evidence that private tax

disclosures could affect the usefulness of income tax reporting. Rather than focusing on public disclosures, my study examines the effect of private disclosures and finds evidence that sophisticated financial statement users, such as analysts, benefit from increased quality of tax reserve reporting and improve their ETR forecasts, suggesting that private tax disclosures could potentially mitigate the information asymmetry between firms and financial statement users.

CHAPTER II

BACKGROUND AND HYPOTHESES DEVELOPMENT

Background

Tax reserve has been a controversial account, which has inbred information asymmetry between firms and financial statement users, and attracted increasing attention among regulators, practitioners, and researchers in the past two decades. In pre-FIN 48 periods, lack of guidance on financial reporting of tax reserves gave rise to diverse accounting practices, resulting in inconsistency and low comparability of the measurement and recognition of tax reserves. Existing research finds strong evidence that firms manage earnings via income tax expense account, most likely from the tax reserve component (Cazier, Rego, Tian, and Wilson, 2015; Dhaliwal et al., 2004; Gleason and Mills, 2008; Gupta, Laux, and Lynch, 2016).

With the goal of increasing the relevance and comparability in the reporting and disclosure of tax reserves, the FASB enacted FIN 48 in 2006. It requires companies to publicly disclose aggregate uncertain tax positions in their financial statements, using a two-step recognition and measurement process. Firms evaluate whether a position is more likely than not to be sustained when audited by tax authorities and then recognize only the portion that is cumulatively greater than 50 percent likely to be realized upon settlements, conditioned on the more-likely-than-not threshold being met. Empirical research finds that firms reduce the amount of tax reserves disclosed in their financial statements in response to the adoption of FIN 48 (Beck and Lisowsky, 2013; Blouin, Gleason, Mills, and Sikes, 2010; Gupta et al., 2016; Gupta et al., 2014; Lisowsky, Robinson, and Schmidt, 2013).

However, the evidence on whether FIN 48 improves financial reporting of tax reserves is mixed. In terms of opportunistic use of tax reserves, Cazier et al. (2015) find that firms appear to

continue to use tax reserves to manage earnings post-FIN 48, while Gupta et al. (2016) find

evidence that FIN 48 has curtailed firms' earnings management behavior via tax expense. In

terms of the predictive ability of tax reserves, Gleason and Mills (2011) and Ciconte et al. (2016)

find that firms are adequately reserved for their uncertain tax positions, while Robinson et al.

(2016) find that firms are over-reserved in both pre- and post-FIN 48 periods.[7,8] Many attribute

this seeming ineffectiveness to the highly aggregated nature of FIN 48, as no specific

transactions or jurisdictions that give rise to these contingencies can be identified through the

public disclosure mandated by FIN 48 (Bozanic et al., 2017; Towery, 2017). Other studies

examining the effect of FIN 48 find that comparability of tax reserves among firms remains low

(De Simone, Robinson, and Stomberg, 2014; Nichols, 2008), and there is still tremendous

discretion over the reporting of tax reserves (Blouin, Gleason, Mills, and Sikes, 2007; Dunbar,

Omer, and Schultz, 2010; Lisowsky et al., 2013).

As tax reserves disclosed under FIN 48 are highly aggregated, the IRS phased in

Schedule UTP, starting at the end of 2010 for firms with total assets over $100 million, 2012 for

those over $50 million, and 2014 for those over $10 million, to obtain more detailed information

about a company's federal uncertain tax positions. Schedule UTP requires firms to rank all U.S.

federal uncertain tax positions from the largest to the smallest and list them individually with a

brief description of each position. Additionally, firms must designate and disclose positions that

account for ten percent or more of the aggregate reserve as major tax positions. Lee and Curatola

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[7] Gleason and Mills (2011) use estimated tax reserves in their study, as their sample period ends at 2003, when reported tax reserves are not available yet. Ciconte et al. (2016) find that the relation between tax reserves and future tax cash outflows converges to one over a five-year horizon, which they interpret as being adequately reserved. However, considering that the average life of a tax reserve is less than four years, this result could be interpreted as firms being over-reserved.

[8] Specifically, Gleason and Mills (2011) investigate whether auditor-provided tax services improve the estimate of tax reserves, by testing whether firms are adequately reserved for IRS disputes. They find that firms that engage in auditor-provided tax services are adequately reserved for IRS disputes, while those that do not are under-reserved, suggesting knowledge spillover, rather than independence failures of auditors.

(2017) find that half of the firms that filed Schedule UTP reported only one uncertain tax position, and the other half reported, on average, two per filing, even though firms recorded tax reserves ranging from one to two percent of their total assets in their financial statements.

A few empirical studies find that firms reduce reported tax reserves after Schedule UTP (Abernathy et al., 2012), and firms do so without changing underlying economics (Honaker and Sharma, 2017; Towery, 2017). However, prior research does not examine the implications of these "unintended effects" on the quality of reported tax reserves. My study fills in the gaps by investigating how firms' response to the implementation of Schedule UTP affects the quality of public financial reporting from a perspective of reported tax reserves.

Hypotheses Development

Relevance and informativeness are essential characteristics in evaluating the quality of an account. Building on the definition of relevance in FASB Statement of Concepts No. 2, I evaluate the quality of reported tax reserves in three dimensions: the predictive value of tax reserves to reflect future tax settlements, the confirmatory value of tax reserves to reflect underlying economics, and the informativeness of tax reserves in helping analysts form predictions of future tax expense.[9]

Predictive Value of Tax Reserves

Prior literature, which examines the effect of FIN 48 on the financial reporting of tax reserves, finds that firms significantly decreased reported tax reserves in their financial statements in the year prior to the adoption of FIN 48 (J. L. Blouin et al., 2010), or shortly after (Beck & Lisowsky, 2013; Gupta et al., 2016; Gupta et al., 2014; Lisowsky et al., 2013), due to

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[9] FASB Statement of Financial Accounting Concepts No.2, *Qualitative Characteristics of Accounting Information*, defines relevance as accounting information that provides either predictive value about future events or confirmatory value about the past and present, or both.

concerns of greater IRS scrutiny. Since Schedule UTP requires firms to disclose all federal uncertain tax positions with a narrative description, it could potentially function as a roadmap for the IRS to track down firms' tax-planning strategies. Therefore, the implementation of Schedule UTP also provides firms an incentive for firms to reduce reported tax reserves in their financial statements so that they can report fewer uncertain tax positions to the IRS.

Further, compliance with Schedule UTP could expand firms' information sets about their own tax reserves, and about ways the IRS selects and audits uncertain tax positions, thus leading to more accurate tax reserve reporting post-Schedule UTP. That is, firms realize that they do not need to list as many positions as they did in their financial statements. Considering the stringent assumptions of FIN 48 to recognize a tax benefit, and firms' desire to avoid reserve inadequacy or engage in future tax expense management, it is likely that firms were, on average, over-reserved before Schedule UTP. Thus, Schedule UTP both incentivizes and enables firms to report less reserves post-Schedule UTP.

However, to the extent that firms do not find Schedule UTP effective in helping the IRS improve tax return selection and accelerate the examination process, firms may not adapt their financial reporting behavior post-Schedule UTP. In addition, firms may be concerned that reducing reported tax reserves may expose firms' more aggressive uncertain tax positions and/or attract excessive attention from other stakeholders, such as tax authorities and external auditors. If so, firms may not decrease reported tax reserves as many may presume.

Therefore, how the quality of reported tax reserves is affected depends on whether firms were under-, adequately, or over-reserved relative to underlying uncertain tax positions before Schedule UTP and whether firms reduced their tax reserves upon adoption of Schedule UTP. If firms were over-reserved (Robinson et al., 2016), a reduction in reported tax reserves could lead

reported tax reserves to be more predictive of future tax settlements post-Schedule UTP. If firms were adequately reserved (Ciconte et al., 2016; Gleason and Mills, 2011), or under-reserved, a decrease in recorded tax reserves may render firms further under-reserved, that is less predictive of future tax settlements post-Schedule UTP. Or if firms do not respond to the implementation of this schedule, it should have no impact on the predictive value of tax reserves whatsoever. Thus, I reach my first hypothesis in the null form.

H1: The predictive value of tax reserves to reflect future tax settlements does not change following the implementation of Schedule UTP.

Confirmatory Value of Tax Reserves

Based on FASB Statement of Concepts No. 2, I define the confirmatory value of tax reserves as the extent to which reported tax reserves reflect underlying economics of the transactions that give rise to these contingencies. Rego and Wilson (2012) identify a set of key firm attributes, which explain the non-discretionary portion of tax reserves, to estimate tax reserves. I employ this UTB prediction model in my study, but rather than using it to estimate tax reserves, I use reported tax reserves as the dependent variable and analyze how well reported tax reserves are explained by these non-discretionary attributes in the model. The better reported tax reserves can be explained by these attributes, the greater the confirmatory value.

Since Schedule UTP incentivizes and enables firms to reduce the discretionary portion of tax reserves to avoid reporting tax reserves that do not necessitate a reserve to the IRS, reported tax reserves post-Schedule UTP may better reflect underlying economics. Accordingly, the explanatory power of the UTB prediction model will likely be increased. However, if firms did not sufficiently reserve for its underlying contingencies, or they were not responsive to the implementation of this schedule, tax reserves post-Schedule UTP may be pushed further away

from their underlying economics. Consequently, the explanatory power of the model will likely be decreased.

Additionally, prior research finds strong evidence of opportunistic use of income tax expense, most likely via the tax reserve component (Cazier et al., 2015; Dhaliwal et al., 2004; Gleason and Mills, 2008; Gupta et al., 2016). Anecdotal evidence also suggests that firms build up cookie jar reserves for future earnings management. Tax reserves recorded for such purpose will be less likely to properly reflect underlying economics. Therefore, an indirect test on changes in firms' tax expense management activities could also help in examining the confirmatory value of tax reserves. Specifically, if tax reserves were systematically over-reserved and thus offer more room for earnings management behavior, tax reserves disclosed in financial statements are likely to reflect less of the underlying economics. The extent to which tax reserves reflect underlying economics depends on whether firms become less over-reserved post-Schedule UTP. Therefore, I arrive at my second set of hypotheses in the null form.

H2: The confirmatory value of tax reserves to reflect underlying economics does not change following the implementation of Schedule UTP.

H2a: The explanatory power of the UTB prediction model does not change upon implementation of Schedule UTP.

H2b: The probability of firms' ability to beat analyst forecasts via tax expense management does not change upon implementation of Schedule UTP.

Informativeness of Tax Reserves

The quality of reported tax reserves will likely be highly correlated with that of income tax expense, since tax reserves account for a significant portion of income tax expense. With all else equal, if tax reserves post-Schedule UTP were more accurate, that is if they better reflect

future tax settlements or underlying economics, there will be smaller changes in income tax expense in the year of settlement. Thus, analysts can provide more accurate ETR forecasts with less disagreement among one another. However, if tax reserves were less accurate after Schedule UTP, the changes in income tax expense upon settlements will be greater. Thus, analysts have more difficulty providing accurate ETR forecasts and are more likely to disagree.

Additionally, Bozanic et al. (2017) document that following Schedule UTP, firms increase tax-related disclosures and change the content of such disclosures in their 10-K filings due to reduced "tax-based proprietary costs." On one hand, increased tax-related disclosures could help analysts better understand firms' tax environment and predict future income tax expense. On the other hand, if increased disclosures impose higher information processing cost (Lee, 2012) or obfuscate audience more by using more vague and/or passive language (Chen, Powers, and Stomberg, 2015), analysts may be unable to provide more accurate ETR forecasts and hence more likely to disagree.

Further, anecdotal evidence suggests that analysts may provide ETR forecasts by applying a simple average ETR based on past years' ETR levels to the forecasting periods. If this is the case, the quality of the reported tax reserve will likely have no immediate impact on analysts' ETR forecasts. Analyst forecast accuracy and dispersion in ETRs will likely depend more on the volatilities of firms' past ETR levels, which is more a result of firms' business operations and tax planning activities. In the long run, if reported tax reserves are more accurate post-Schedule UTP, analysts' forecasts, which are based on past improved ETR levels, will also be more accurate, and vice versa. On the other hand, if analysts can efficiently estimate the effect of Schedule UTP on firms' tax reserves and properly adjust their ETR forecasts, the implementation of the schedule should have no impact on analyst forecasts whatsoever. As such,

I state my last set of hypotheses also in the null form.

H3: The informativeness of tax reserves in helping analysts form predictions of future tax expense does not change following the implementation of Schedule UTP.

H3a: Analyst ETR forecast error does not change upon implementation of Schedule UTP.

H3b: Analyst ETR forecast dispersion does not change upon implementation of Schedule UTP.

CHAPTER III

RESEARCH DESIGN

Empirical Models

Predictive Value of Tax Reserves

I examine the predictive value of tax reserves to reflect future tax settlements following

Robinson et al. (2016). Given the controversy regarding the staggered difference-in-differences

approach (Baker, Larcker, & Wang, 2021), I exclude firms with total asset value under $100

million and estimate a pooled ordinary least squares regression on my sample period from year

2007 to 2015 as in equation (1) below.

$$ETR\_CHG_{i,t} = \alpha_0 + \alpha_1 POST_t + \alpha_2 SETTLE_{i,t} + \alpha_3 POST_t * SETTLE_{i,t} + CONTROLS_{i,t}$$

$$+ FirmFE + YearFE + ERROR \qquad (1)$$

The dependent variable, *ETR_CHG*, is estimated as the one-year change in firms' ETR

from year t-1 to t, where ETR is defined as the total tax expense (Compustat TXT) divided by

pre-tax income (Compustat PI). *POST* is an indicator variable equal to one if the period ends on

or after December 31, 2010, and zero otherwise. *SETTLE* is an indicator variable equal to one if

the firm discloses a settlement with tax authorities in that year, and zero otherwise. The sign on

SETTLE indicates whether tax reserves are adequate relative to settlement outcomes with tax

authorities. A negative coefficient implies that firms were, on average, over-reserved prior to

Schedule UTP (Robinson et al., 2016). A positive coefficient, on the other hand, indicates that

firms were, on average, under-reserved before Schedule UTP. An insignificant coefficient

implies that firms were adequately reserved (Gleason and Mills, 2011) or not systematically

under- or over-reserved (Ciconte et al., 2016).

The interaction term, *POST*SETTLE*, is my variable of interest, which estimates the

differential effect of settlements with tax authorities on tax expense after Schedule UTP relative to before Schedule UTP. If the predictive value of tax reserves to reflect future tax settlements is increased post-Schedule UTP, the sign on the interaction term should be opposite from that on *SETTLE*. Specifically, if the coefficient on *SETTLE* is negative and firms were, on average, over-reserved, a positive sign on the interaction term indicates that firms are less over-reserved post-Schedule UTP. A further test of the sum of the coefficients on *SETTLE* and the interaction term could further advise whether recorded tax reserves are significantly different from actual settlement outcome post-Schedule UTP. If the sign on the sum is negative, it suggests that firms are still over-reserved post-Schedule UTP. If the sign on the sum is insignificant, it implies that firms are, on average, adequately reserved post-Schedule UTP.

Following Robinson et al. (2016), I include the following control variables in the regressions. *LEV_CHG* is the one-year change in firms' leverage, defined as total debts (Compustat DLC+DLTT) divided by total assets (Compustat AT). *RD_CHG* is the one-year change in firms' research and development (R&D) expenditures (Compustat XRD), scaled by sales (Compustat SALE). *ADV_CHG* is the one-year change in firms' advertising expense (Compustat XAD), scaled by sales. *SGA_CHG* is the one-year change in firms' selling, general, and administrative (SG&A) expense (Compustat XSGA), scaled by sales. *CAPX_CHG* is the one-year change in firms' capital expenditures (Compustat CAPX), scaled by gross property, plant, and equipment (PPE, Compustat PPEGT). *INTAN_CHG* is the one-year change in firms' intangible assets (Compustat INTAN), scaled by total assets. *ROS_CHG* is the one-year change in firms' pretax return on sales, defined as pretax income divided by sales. *NOL_IND* is an indicator variable equal to one if the changes in firms' net operating loss carryforwards (NOL, Compustat TLCF) are negative, and zero otherwise. *FORINC_CHG* is an indicator variable

equal to one if the changes in firms' pretax foreign income (Compustat PIFO) are positive, and zero otherwise. I include year and firm fixed effects in the regressions.

Confirmatory Value of Tax Reserves

In terms of the confirmatory value of tax reserves, I first investigate whether Schedule UTP affects the explanatory power of the UTB prediction model in Rego and Wilson (2012). This model estimates several key non-discretionary factors that could affect tax reserves, as well as the discretionary accrual to control for the overall financial reporting quality. Assuming that these factors well proxy for the underlying economics of reported tax reserves, the higher the adjusted r-squares from estimating this model, the better tax reserves reflect the underlying economics. To test H2b, I first estimate the following cross-sectional regressions from year 2007 through 2015:

$$UTB_{i,t} = \alpha_o + \alpha_1 PT\_ROA_{i,t} + \alpha_2 SIZE_{i,t} + \alpha_3 FOR\_SALE_{i,t} + \alpha_4 RD_{i,t} + \alpha_5 LEV_{i,t}$$
$$+ \alpha_6 DACCR_{i,t} + \alpha_7 SGA_{i,t} + \alpha_8 MTB_{i,t} + \alpha_9 SALES\_GR_{i,t} + firmFE + yearFE$$
$$+ ERROR \tag{2}$$

I use reported tax reserves (Compustat UTBUBEND) disclosed in the financial statements, scaled by lagged assets to measure the dependent variable, *UTB*. I measure the independent variables as those in Rego and Wilson (2012). *PT_ROA* is defined as pretax return on assets (Compustat PI/AT). *SIZE* is the logarithm of total assets. *FOR_SALE* is defined as total foreign sales (Compustat SALES) scaled by lagged assets. *RD* is R&D expense scaled by lagged assets. *LEV* is defined as previously. *DACCR* is estimated using the performance-adjusted modified Jones model (Kothari, Leone, and Wasley, 2005). *SGA* is calculated as SG&A expense scaled by lagged assets. *MTB* is the market-to-book ratio, measured as market value (Compustat PRCC_F*CSHO) divided by book value of equity (Compustat CEQ). *SALES_GR* is the one-year

change in sales. Firm and year fixed effects are included in the regressions.

I obtain r-squares from estimating equation (2) for each year and measure the difference in the explanatory power of the UTB prediction model pre- and post-Schedule UTP, by running the following regression:

$$R_t^2 = \alpha_0 + \alpha_1 UTP_t + ERROR \qquad (3)$$

UTP is an indicator variable equal to one if the year is 2010 or beyond, and zero otherwise.[10] A positive coefficient on *UTP* is consistent with the explanatory power of the UTB prediction model being increased and reported tax reserves better reflecting underlying economics post-Schedule UTP. A negative coefficient implies that the confirmatory value of tax reserves to reflect underlying economics is reduced after Schedule UTP. An insignificant coefficient indicates that the confirmatory value of tax reserves is likely unaffected.

I also test the confirmatory value of tax reserves indirectly, by investigating whether reported tax reserves post-Schedule UTP limit firms' ability to beat analyst forecasts through tax expense management. If reported tax reserves provide more room for firms' earnings management through tax expense, they are likely further away from the underlying economics. Following Dhaliwal et al. (2004), I limit this analysis to firm-year observations whose differences between the consensus forecast and the actual earnings per share (EPS) are within five cents per share, since these firms are likely more sensitive to earnings management incentives. I estimate the following regressions to test this hypothesis.

$$BEAT\_W\_EM_{i,t} = a_0 + a_1 UTP_t + CONTROLS_{i,t} + firmFE + yearFE + ERROR \qquad (4a)$$

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[10] In the first part of my analyses, I estimate *POST* variable using a more definitive time point, that is December 31st, 2010, to ensure that I am examining the effect of Schedule UTP on firms' predictive value after firms' preemptive behavior in response to the implementation of Schedule UTP. I define *UTP* variable, in the rest of my study, relatively loosely as an indicator variable equal to one if the year is 2010 or beyond, consistent with existing literature.

$$BEAT\_WO\_EM_{i,t} == a_0 + a_1 UTP_t + CONTROLS_{i,t} + firmFE + yearFE + ERROR \quad (4b)$$

I measure the dependent variables following Gleason and Mills (2008), where *BEAT_W_EM* equals to one if firms' actual EPS is greater than or equal to analyst EPS forecast, and EPS absent tax expense management is smaller than analyst EPS forecast, and zero otherwise. *BEAT_WO_EM* equals to one if firms' actual EPS and EPS absent tax expense management are both greater than or equal to analyst EPS forecast, and zero otherwise. Firms' EPS absent earnings management is estimated as follows:

$$EPS\ absent\ earnings\ managment$$
$$= annual\ pretax\ income * (1 - ETR\_3Q)$$
$$\div weighted\ average\ number\ of\ shares\ outstanding \quad (5)$$

Following Dhaliwal et al. (2004), I include three control variables in the regressions. *INDUCED_CHG_ETR* is used to control for the amount of ETR change that could have been induced due to the difference between the actual pretax income and the implied pretax income. *ETR_3Q* is calculated as the cumulative tax expense (Compustat TXT) from the first three quarters divided by the corresponding cumulative pretax income and is used to control for unexpected changes in ETRs due to fourth-quarter misestimation. *TAX_OWED* is estimated as taxes payable (Compustat TXP) net of tax refunds (Compustat TXR), scaled by pretax income. Firm and year fixed effects are included in the regressions.

The coefficient on *UTP* is my coefficient of interest. If the sign on the coefficient is negative when *BEAT_W_EM* is the dependent variable, it implies that firms are less likely to beat analyst forecasts via tax expense post-Schedule UTP, suggesting improved confirmatory value of tax reserves. If the sign is positive, it indicates that the probability that firms beat analyst forecasts via tax expense is increased after Schedule UTP, suggesting decreased confirmatory

value of tax reserves. An insignificant sign implies that Schedule UTP has no significant impact on firms' earnings management behavior.

Informativeness of Tax Reserves

Next, I examine analyst ETR forecast error and dispersion to evaluate the effect of Schedule UTP on the informativeness of tax reserves in helping analysts form predictions of future tax expense. For comparison, I also examine the effect of FIN 48 on analyst ETR forecast error and dispersion in the same regressions:

$$INFOR_{i,t} = \alpha_0 + \alpha_1 FIN48_t + \alpha_2 UTP_t + CONTROLS_{i,t} + firmFE + yearFE + ERROR \tag{6}$$

INFOR is measured in two ways. One is analyst forecast error in implied ETRs, *ETR_ERR*, which is estimated as the mean of the absolute difference between analyst ETR forecasts and the actual ETRs for each firm-year, where analyst ETR forecasts are analysts' first implied ETR forecast following previous-year 10-K filings. The other is analyst forecast dispersion in implied ETRs, *ETR_DISP*, which is estimated as the standard deviation of analyst ETR forecasts for each firm-year. Consistent with prior research, I estimate analysts' implied ETR forecasts as follows:

$$implied\ ETRs = \frac{pretax\ income\ forecasts - net\ income\ forecasts}{pretax\ income\ forecasts} \tag{7}$$

FIN48 is an indicator variable equal to one if the year is 2006 or beyond, and zero otherwise. *UTP* is my variable of interest and defined as previously. A negative sign on this variable implies that analyst ETR forecast error and dispersion are reduced post-Schedule UTP, and the informativeness of tax reserves is increased. A positive sign, on the other hand, indicates that analyst ETR forecast error and dispersion are increased post-Schedule UTP, and the informativeness of tax reserves is reduced. An insignificant coefficient on this variable implies

that the informativeness of tax reserves is likely unaffected post-Schedule UTP.

I also include a few control variables, which may affect analyst ETR forecast error or dispersion in the regressions. *PRE_ERR* is analyst forecast error in pretax income, which is calculated as the mean of the absolute difference between analyst pretax income forecasts and the actual pretax income for each firm-year, scaled by lagged assets. This variable is included as a control variable when the dependent variable is *ETR_ERR*. *PRE_DISP* is analyst forecast dispersion in pretax income, which is calculated as the standard deviation of the analyst pretax income forecasts for each firm-year deflated by lagged assets and is included as a control variable when the dependent variable is *ETR_DISP*. *ETRVOL* is measured the absolute changes in ETRs from year t-2 to t-1 and captures task difficulties in forecasting ETRs. *LOSS* is an indicator variable equal to one if the firms' pretax income is negative in that year, and zero otherwise, and this variable is included as prior literature finds that loss firms are essentially different from profitable firms (Hayn, 1995). *ANA_NUM* is the logarithm of the number of analysts following. *MULTI* is an indicator variable if the firm reports non-zero pretax foreign income, and zero otherwise. I also include *SIZE*, *MTB*, and *LEV* as other control variables, which are defined as previously. Firm and year fixed effects are included in the regressions.

Sample Selection

I acquire firms' financial data from Compustat and analyst forecast data from Institutional Brokers' Estimate System (IBES). I also obtain foreign sales data from Compustat Segment database and restatement data from Audit Analytics. My sample period for the predictive and confirmatory value tests spans from year 2007 through 2015, and my sample period for the informativeness test spans from year 2000 through 2015.[11] Consistent with prior

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[11] I start my sample period at year 2007 for my first two tests, because FIN 48 was implemented at end 2006, and the data was not very well populated in 2006. I extend my sample period to year 2000 for the informativeness test to

literature, I exclude firm-year observations with firms in regulated utilities (Standard Industrial Classification codes 4900-4999), financial firms (SIC 6000-6999), and firms categorized as international affairs, public service, or non-operating establishments (SIC 9000+) for all my tests.

Table 1 Panel A reports the sample selection process for my first two tests, which investigates the predictive and confirmatory value of reported tax reserves. Following Robinson et al. (2016), I delete observations with missing or non-positive values of total assets, pretax income, or total tax expense. I also delete observations with missing beginning and ending balances for tax reserves and those with missing key values to estimate control variables in my first two tests. My final sample for the predictive value test consists of 10,329 firm-year observations with total assets over $100 million.

Panel B describes the sample selection process for the informativeness test, which evaluates the effect of Schedule UTP on analyst ETR forecast error and dispersion. I construct three samples for this test in a similar process, and the detailed selection process for analyst year-1 forecasts is presented in Panel B. I keep analysts' first year-1 forecasts that were made within 30 days after past-year 10-K filing dates and then drop any duplicates after calculating analyst forecast error and dispersion for each firm-year. I also delete observations with only one or two analysts following to exclude skewed influence from individual analysts. The final sample sizes for analysts' year-1, year-2, and year-3 forecasts are 2,967, 2,616, and 764, respectively.

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include pre-FIN 48 period. I cap the sample period at year 2015 to maintain comparability with other relevant studies and to exclude possible confounding effects from the anticipation and implementation of the 2017 tax reforms, if any.

CHAPTER IV

EMPIRICAL RESULTS

For each test discussed in Section 3, I will first describe the summary statistics of the

sample and then present the results of the test.

The Test on the Predictive Value of Tax Reserves

Table 2 presents the descriptive statistics for the test of the predictive value of tax

reserves. The mean of one-year change in ETR in my sample is 0.3%, which is much smaller

than the 4% in Robinson et al. (2016), while the median of -0.1% is more comparable to 0% in

Robinson et al. (2016).[12] Firms that disclose at least one settlement with tax authorities in one

sample year is 43.0%, much higher than the 17% (using FIN 48 disclosures) or 19% (using IRS

data) in Robinson et al. (2016). Other summary statistics on control variables are comparable to

those in Robinson et al. (2016).

Table 3 reports the results of estimating equation (1), which examines how tax

settlements map onto changes in ETRs. Following Robinson et al. (2016), I validate the model in

column (1) by investigating how lapse of statute of limitations affects firms' changes in ETRs

and column (2) by evaluating how settlements with tax authorities affect firms' changes in ETRs.

When the statute of limitations of an uncertain tax position lapses, firms will release the tax

reserves recorded for this position, and firms' tax expense in the year of lapse will be reduced.

Thus, I would expect a negative sign on the coefficient on *LAPSE*. The greater the amount that

lapses, the larger the negative impact. Supporting this expectation, I find a significant and

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[12] Since Robinson et al. (2016) link their sample to tax return data, I cannot follow their sample selection process
precisely. In order to find out whether the differences in summary statistics are due to differences in sample period
or sample selection process, I use the same sample selection process described in Table 1 Panel A to obtain a sample
for the period from year 2002 to 2011, and the descriptive statistics for this period are more similar to mine than to
theirs. Thus, the differences in our summary statistics are more likely due to differences in our sample selection
process.

negative coefficient of -4.036 (t-statistics: -2.676) on *LAPSE*.

The sign on the settlement indicator variable, *SETTLE*, depends on whether firms are, on average, over-, adequately, or under-reserved relative to their final tax settlements with tax authorities. A negative sign indicates that firms are over-reserved, and excessive reserves are released in the year of settlement, thus decreasing firms' income tax expense in the year of settlement. A positive sign implies that firms are under-reserved, and firms pay out more to tax authorities than they originally reserved for such an uncertain tax position, thus increasing firms' income tax expense in that year. An insignificant sign indicates that firms are adequately reserved for their uncertain tax positions. Therefore, settlements with tax authorities have no significant effect on firms' income tax expense in the year of settlement. Consistent with Robinson et al. (2016), I find evidence that firms were, on average, over-reserved relative to the final settlements.

I further find that the sign on my variable of interest, *SETTLE*POST*, is opposite to that on *SETTLE,* suggesting that firms are less over-reserved post-Schedule UTP. Specifically, firms decrease ETRs by 2.9 percentage points on average prior to Schedule UTP, and increase ETRs by 2.0 percentage points post-Schedule UTP. To test whether firms subject to Schedule UTP are, on average, still over-reserved post-Schedule UTP, I test the sum of the coefficients on *SETTLE* and the interaction term and find that the sum of these two coefficients is no longer significant (F-value: 1.82). This result suggests that firms revert to being adequately reserved post-Schedule UTP, and the predictive value of tax reserves to reflect future tax settlements is improved.

Table 4 documents the results of the cross-sectional variations of tax settlements on firms' effective tax rates. Towery (2017) argues that private disclosures of Schedule UTP are costlier for two subsets of firms. The first are multinational firms, because aggregated tax

reserves reported by multinational firms prior to Schedule UTP include foreign reserves and are thus less informative to the IRS than those reported by domestic firms. The second are firms that report greater tax reserves before Schedule UTP, since these firms likely receive more attention from the IRS. Therefore, in this study, I test the cross-sectional variations for these two subsets of firms in Table 4 Panel A and Panel B. I also test whether firms that have larger decreases in reported tax reserves in response to the adoption of Schedule UTP are affected differently by the new schedule in Panel C. Also, firms that were more tax aggressive may respond to the implementation of Schedule UTP differently than those that were less tax aggressive, so I conduct another cross-sectional test partitioned on whether firms were more tax aggressive prior to Schedule UTP in Panel D.

Table 4 Panel A presents the results comparing multinational firms and domestic firms, where multinational firms are defined as firms that report non-zero foreign pretax income. I find that multinational firms are, on average, over-reserved both before and after Schedule UTP, and I find no evidence that Schedule UTP significantly changes the predictive value of tax reserves. Panel B presents the results comparing firms with large reserves and those with small reserves, where firms with large reserves are defined as firms that report above-average scaled tax reserves in the year that they are required to file Schedule UTP. The coefficient on *SETTLE* for firms with large reserves is negative and significant (t-statistics: -2.401), and that on the interaction term is positive and significant (t-statistics: 1.800), implying that firms with large reserves were over-reserved before Schedule UTP and are less over-reserved after Schedule UTP. The test on the sum of these two coefficients further suggests that these firms are no longer over-reserved after Schedule UTP.

Panel C presents the results comparing firms with large decreases in tax reserves and

those with small decreases, where firms with large decreases are defined as firms that report above-average decreases in tax reserves in the year they are required to file Schedule UTP. The coefficient on *SETTLE* for firms with large decreases in tax reserves are also negative and significant (t-statistics: -2.477), and that on the interaction term is positive and significant (t-statistics: 2.518), implying that firms with large decreases were over-reserved before Schedule UTP and are less over-reserved after Schedule UTP. The test on the sum of these two coefficients further suggests that these firms are no longer over-reserved after Schedule UTP.

Panel D presents the results comparing firms that were more tax aggressive and those that were not prior to Schedule UTP, where firms that were more tax aggressive are defined as firms that have below-average ETRs in the preceding year of Schedule UTP. The coefficient on *SETTLE* for tax aggressive firms is negative and significant (t-statistics: -2.073), and that on the interaction term is positive and significant (t-statistics: 1.840), implying that firms that were more tax aggressive were over-reserved before Schedule UTP and are less over-reserved after Schedule UTP. The test on the sum of these two coefficients further suggests that these firms revert to being adequately reserved post-Schedule UTP. Overall, the results in Table 4 suggest that those in Table 3 are likely driven by firms with large reserves, those with large decreases in tax reserves, or those that were more tax aggressive before Schedule UTP.

The Test on the Confirmatory Value of Tax Reserves

I evaluate the confirmatory value of tax reserves by first examining the explanatory power of the UTB prediction model and then studying firms' earnings management behavior via tax expense.[13] Figure 1 plots the average scaled tax reserve levels for firms with total assets

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[13] I also test the effect of Schedule UTP on tax expense restatement in this part of the analysis. However, even though a plot of the number of firms reporting tax expense restatement suggests increased tax restatement incidences after Schedule UTP, an OLS regression finds no such evidence to support or invalidate this result. Thus, for simplicity, I do not discuss this result in the study.

greater than $100 million from year 2007 through 2015. Consistent with existing literature (Abernathy et al., 2012; Honaker & Sharma, 2017; Towery, 2017), my findings show these firms experience a continuous decrease in reported tax reserve levels from the effective year of 2010, consistent with the notion that Schedule UTP both incentivizes and enables firms to decrease reported tax reserves following the passage of Schedule UTP.

I also plot Figure 2, which describes the average residual values from estimating equation (2) from year 2007 through 2015. I witness a continuous drop, similar to that in Figure 1, in the magnitude of residual levels from year 2010, which suggests that the explanatory power of the UTB prediction model has been increased post-Schedule UTP.

Table 5 describes the summary statistics (in Panel A) and results (in Panel B) for the UTB prediction model in Rego and Wilson (2012). Different from the model in Rego and Wilson (2012), which uses predicted tax reserve values as the input for their dependent variable due to data availability, my model uses reported tax reserves. Surprisingly, the sign on the discretionary accrual variable is significant and negative, indicating a substitution relation between discretionary accruals and tax reserves. The adjusted r-square in my model is 0.1115, which is smaller than 0.2182 in Rego and Wilson (2012).

Table 6 Panel A reports results of estimating equation (3), which investigates the effect of Schedule UTP on the explanatory power of the UTB prediction model. I predict and find a positive and significant sign on *UTP* (t-stat: 2.000), suggesting increased explanatory power of the UTB prediction model post-Schedule UTP.[14] Put another way, tax reserves disclosed post-Schedule UTP reflect underlying economics better than those prior to Schedule UTP.

I also test the confirmatory value of tax reserves by investigating firms' ability to beat

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[14] If I expand the sample without considering the sample selection criteria in the first test, the sample size for this test increases significantly, and the result becomes much stronger.

analyst forecasts via tax expense post-Schedule UTP. Figure 3 shows the percentages of firms beating analyst forecasts pre- and post-2010. While the percentage of firms beating analyst forecasts post-2010 does not change significantly, that of firms beating analyst forecasts via tax expense management decreases noticeably from 34.7% pre-2010 to 26.6% post-2010.

Table 6 Panel B presents the results of estimating equations (4), which tests the effect of Schedule UTP on the probability of firms' beating analyst forecasts via tax expense management. Column (1) estimates the ability of firms beating analyst forecasts with tax expense management, whereas column (2) measures the ability of firms beating analyst forecasts without tax expense management. Column (1) provides results consistent with Figure 3 that the probability that firms beat analyst forecasts via tax expense is reduced post-2010, while column (2) demonstrates that the probability that firms beat analyst forecasts without tax expense management is increased post-Schedule UTP. These results suggest that the implementation of Schedule UTP curtails earnings management via tax expense, and the confirmatory value of tax reserves is increased post-Schedule UTP.

The Test on the Informativeness of Tax Reserves

Table 7 documents the descriptive statistics for the test of the informativeness of tax reserves. I conduct this part of the analysis on three samples, which include analysts' year-1 through year-3 forecasts respectively. Per Table 7, analysts provide significantly fewer forecasts for long-term forecasts. While the means of the dependent variables are fairly comparable across three samples, those of the control variables regarding pretax income increase dramatically as the forecasting period lengthens. Specifically, the means of analyst ETR forecast error are 0.163, 0.167, and 0.232, respectively, while the means of analyst pretax income forecast error increase from 0.036 in year-1 sample to 0.067 in year-2 sample and 0.141 in year-3 sample.

Table 8 presents the results of estimating equation (6), which examines the effect of Schedule UTP on analyst ETR forecast error (Panel A) and dispersion (Panel B), respectively. If reported tax reserves are more accurate post-Schedule UTP, and/or increased tax-related disclosures helped analysts better formulate their forecasts, I would expect the sign on *UTP* to be negative. Consistent with this notion, I find evidence that analysts' year-1 and year-2 ETR forecast errors are reduced after Schedule UTP, but the benefits of Schedule UTP in forecasting ETRs dissipate as the forecasting window extends from two to three years. I find that the adoption of Schedule UTP reduces analysts' year-1 forecast dispersion, but I find no such evidence regarding analysts' year-2 and year-3 forecast dispersion, which suggests that analysts could be equally bad at determining the effect of the reserves on long-term ETRs and that the improvement in forecast accuracy could be more likely due to improved accuracy of reported tax reserves. Additionally, I find no evidence that the adoption of FIN 48 has any significant impact on analysts' ETR forecast error or dispersion. The results suggest that the implementation of Schedule UTP may have achieved the objective FIN 48 was intended to fulfill.

CHAPTER V

ADDITIONAL ANALYSES

The Effect of Tax Regulations on Tax Reserves

Considering the lack of a comparable control group, I expand out the analysis of the

effect of tax regulations on firms' tax reserves to include multiple changes in tax disclosures.

Three disclosure regulations are included in this analysis: (1) Schedule M-3, which increased

private tax return disclosures of book-tax differences in 2004, (2) FIN 48, which increased public

disclosures of tax reserves in 2006, and (3) Schedule UTP. Due to lack of tax reserve data prior

to 2006, I estimate tax reserves using the UTB prediction model in Rego and Wilson (2012) for

firm-years before 2006 and run the following regression from year 1996 through 2015.

$$UTB_{i,t} = a_0 + a_1 M3_i + a_2 FIN48_i + a_3 UTP_i + CONTROLS + ERROR \tag{8}$$

I define *M3* as an indicator variable, which equals one if the year is 2004 or beyond, and

zero otherwise. *FIN48* and *UTP* are defined as previously. I find that the implementations of

Schedule M-3 and FIN 48 are both positively associated with tax reserves, while Schedule UTP

is negatively associated with tax reserves. This result suggests that firms reduce reported tax

reserves in response to the adoption of Schedule UTP.[15] However, one caveat with this result is

that tax reserves used in this regression prior to year 2006 are estimated values, not reported tax

reserve values.

The Effect of Schedule UTP on Tax Settlements

Considering the objective of Schedule UTP is to assist the IRS in the selection of issues

and examination process, I also evaluate the effect of Schedule UTP on firms' tax settlements.

First, I graphed a plot of the demeaned values of tax settlements from years 2007 to 2015 in

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[15] I also replicated Abernathy et al. (2012)'s analyses regarding firms' tax reserves and additions to tax reserves
post-Schedule UTP, and find similar results.

Figure 4, which indicates a downward trend of tax settlements post-Schedule UTP. Further, I run a multivariate regression as follows:

$$UTBSETTLEMENT_{i,t} = a_0 + a_1 UTP + CONTROLS + ERROR \qquad (9)$$

Here *UTBSETTLEMENT* is estimated as reported tax settlements scaled by lagged assets, and other variables are defined as previously. I document a negative and significant sign on *UTP* (t-statistics: -3.117), suggesting that firms' tax settlements with tax authorities are reduced post-Schedule UTP, and the IRS does not appear to collect more settlements by implementing Schedule UTP.

The Test of Tax Settlements on Firms' ETRs using Staggered Difference-in-Differences approach

Given the controversy regarding the staggered difference-in-differences approach (Baker et al., 2021), I do not use this methodology in the main analyses, but rather present the results using this methodology here as a robustness test. Considering the wide differences in firms' size, I also run an additional test by restricting the sample to firms with total asset value smaller than $200 million in the last column. The results of this part of the analysis are presented in Table 11. I find results similar to those in Table 3, corroborating the results of improved predictive value of tax reserves to reflect future tax settlements.

Results without Financial Crisis Years

I also run all my analyses in Section 4 without financial crisis years, i.e. years 2007 and 2008, and find comparable results in all my analyses, except the first one. After deleting 2007 and 2008 observations, I find that firms are over-reserved both before and after Schedule UTP. This result indicates that financial crisis may have impacted reported tax reserves to some extent.

CHAPTER VI

CONCLUSION

This study investigates whether increased private tax disclosures affect the quality of public financial reporting in the context of Schedule UTP. Specifically, I evaluate the quality of public financial reporting from a perspective of tax reserve reporting in three dimensions: the predictive value of tax reserves to reflect future tax settlements, the confirmatory value of tax reserves to reflect underlying economics, and the informativeness of tax reserves in helping analysts form predictions of future tax expense.

I find that firms were, on average, over-reserved prior to Schedule UTP and revert to being adequately reserved post-Schedule UTP. Subsequent cross-sectional tests suggest that these results are likely driven by firms that were more responsive to the adoption of Schedule UTP and those that were more tax aggressive prior to Schedule UTP. In terms of the confirmatory value of tax reserves, I find evidence that the explanatory power of the UTB prediction model (Rego & Wilson, 2012) is improved, and the probability that firms beat analyst forecasts through tax expense management is decreased post-Schedule UTP, both suggesting increased accuracy of tax reserves. Last, I find that the implementation of Schedule UTP is negatively associated with analyst year-1 and year-2 ETR forecast error as well as year-1 ETR forecast dispersion, suggesting that analysts benefit from the adoption of Schedule UTP in improving their ETR forecasts. Overall, my study suggests that Schedule UTP may have failed in its intended goal but achieved the objective FIN 48 was designed to fulfill.

My study makes important contributions to the disclosure literature, by providing evidence that holding a firm accountable for the content of a public disclosure through private disclosures can increase the quality of the public disclosure and speaking to the effects of FIN 48

and Schedule UTP on analysts' ability to improve their ETR forecasts. Considering that both the

FASB and IRS are contemplating additional guidance on the reporting of tax reserves, it is

important that they take the effect of each other's actions into consideration.

APPENDIX A
VARIABLE DEFINITIONS

Variables		Definitions
The test on the predictive value of tax reserves		
ETR_CHG	=	The one-year change in firms' effective tax rates from year t-1 to t, where effective tax rates are calculated as the total tax expense divided by firms' pretax income.
LAPSE	=	The amount of lapse disclosed in the financial statements, scaled by lagged assets.
SETTLE	=	An indicator variable equal to one if the firm discloses a settlement with tax authorities in that year, and zero otherwise.
POST	=	An indicator variable equal to one if the firm is required to file Schedule UTP in that year, and zero otherwise.
LEV_CHG	=	The one-year change in firms' leverage, which is estimated as firms' total liabilities divided by total assets.
RD_CHG	=	The one-year change in R&D expenditures, scaled by sales.
ADV_CHG	=	The one-year change in advertising expense, scaled by sales.
SGA_CHG	=	The one-year change in SG&A expense, scaled by sales.
CAPX_CHG	=	The one-year change in capital expenditures, scaled by gross PPE.
INTAN_CHG	=	The one-year change in intangible assets, scaled by total assets.
PPE_CHG	=	The one-year change in gross PPE, scaled by total assets.
ROS_CHG	=	The one-year change in return on sales, defined as pretax income divided by sales.
NOL_IND	=	An indicator variable equal to one if the changes in net operating loss from year t-1 to t is negative, and zero otherwise.
FORINC_IND	=	An indicator variable equal to one if the changes in pretax foreign income from year t-1 to t is positive, and zero otherwise.
The test on the confirmatory value of tax reserves		
UTB	=	Tax reserves disclosed in firms' financial statements, scaled by lagged assets.
UTP	=	An indicator variable equal to one if the year is 2010 or beyond, and zero otherwise.
PT_ROA	=	Estimated as pretax income divided by lagged assets.
FOR_SALE	=	Total foreign sales, scaled by lagged assets.
RD	=	R&D expense, scaled by lagged assets.
DACCR	=	Estimated using the following performance matched Modified Jones model: $TACCR = 1/AT + SSA + SPPEGT + ROA$ where *TACCR* is firms' total accrual, and estimated as net income before extraordinary items minus firms' operating cash flows, scaled by lagged assets, following Hribar and Collins (2002); *AT* is firms' total assets; *SSA* is the changes in sales minus changes in accounts receivables, scaled by lagged assets; *SPPEGT* is firms' gross PPE, scaled by lagged assets;

		ROA is return on assets, and calculated as net income before extraordinary items divided by total assets.
SGA	=	SG&A expense, scaled by lagged assets.
SALES_GRO	=	The y-o-y change in sales from year t-1 to t.
BEAT_W_EM	=	An indicator variable equal to one if firms' actual EPS is greater than or equal to analyst EPS forecast, and EPS absent tax expense management is smaller than analyst EPS forecast, and zero otherwise. Firms' EPS absent earnings management is estimated as annual pretax income multiplying one minus *ETR_Q3* divided by weighted average number of shares outstanding.
BEAT_WO_EM	=	An indicator variable equal to one if firms' actual EPS and EPS absent tax expense management are both greater than or equal to analyst EPS forecast, and zero otherwise.
INDUCED_CHG_ETR	=	Induced tax change divided by pretax income, where induced tax change equals (the statutory tax rate – *ETR_Q3*) * unexpected pretax income. Unexpected pretax income is estimated as (IBES actual EPS – consensus EPS) * common shares outstanding / (1-statutory tax rate).
ETR_Q3	=	The sum of the first three quarters' total tax expense divided by the sum of the first three quarters' total pretax income.
TAX_OWED	=	Tax payable minus tax refunds, divided by pretax income.
The test on the informativeness of tax reserves		
ETR_ERR	=	Analyst forecast errors in ETRs, which are estimated as the mean of the absolute difference between implied analyst ETR forecasts and actual ETRs for each firm-year.
ETR_DISP	=	Analyst forecast dispersions in ETRs, which are estimated as the standard deviation of implied analyst ETR forecasts for each firm-year, scaled by lagged assets.
FIN48	=	An indicator variable equal to one if the year is 2006 or beyond, and zero otherwise.
PRE_ETR	=	Analysts' forecast errors in pretax income forecasts, and estimated as the mean of the absolute difference between analyst pretax income forecasts and the actual pretax income, scaled by actual pretax income for each firm-year.
PRE_DISP	=	Forecast dispersions in pretax income forecasts, and estimated as the standard deviation of analysts' pretax income forecasts for each firm-year, scaled by lagged assets.
ETRVOL	=	The absolute change in ETRs from year t-2 to t-1.
LOSS	=	An indicator variable equal to one if the firm reports negative pretax income in that year, and zero otherwise.
ANA_NUM	=	The logarithm of the number of analysts following.
MTB	=	Estimated by market value of the firm, divided by shareholders' equity.
R^2	=	The R-square from running the following cross-sectional regressions for each sample year: $$UTB = \alpha_o + \alpha_1 pt\_roa + \alpha_2 size + \alpha_3 for\_sale + \alpha_4 rd \\ + \alpha_5 lev + \alpha_6 disc\_accr + \alpha_7 sga + \alpha_8 mtb \\ + \alpha_9 sales\_gr + firmFE + yearFE + error$$
SIZE	=	The logarithm of total assets.

LEV	=	Total liabilities divided by total assets.
MULTI	=	An indicator variable equal to one if the firm reports non-zero pretax foreign income, and zero otherwise.
Additional analyses		
M3	=	An indicator variable equal to one if the year is 2004 or beyond, and zero otherwise.

Figure 1: The Demeaned Value of the Tax Reserve Levels (2007 – 2015)

This figure plots the demeaned value of tax reserve levels for firms with total asset value greater than $100 million from year 2007 through 2015. The effective year for this group of firms is year 2010, which is indicated by the vertical line in the figure.

Figure 2: The Residual Value from Estimating the UTB Prediction Model (2007 – 2015)
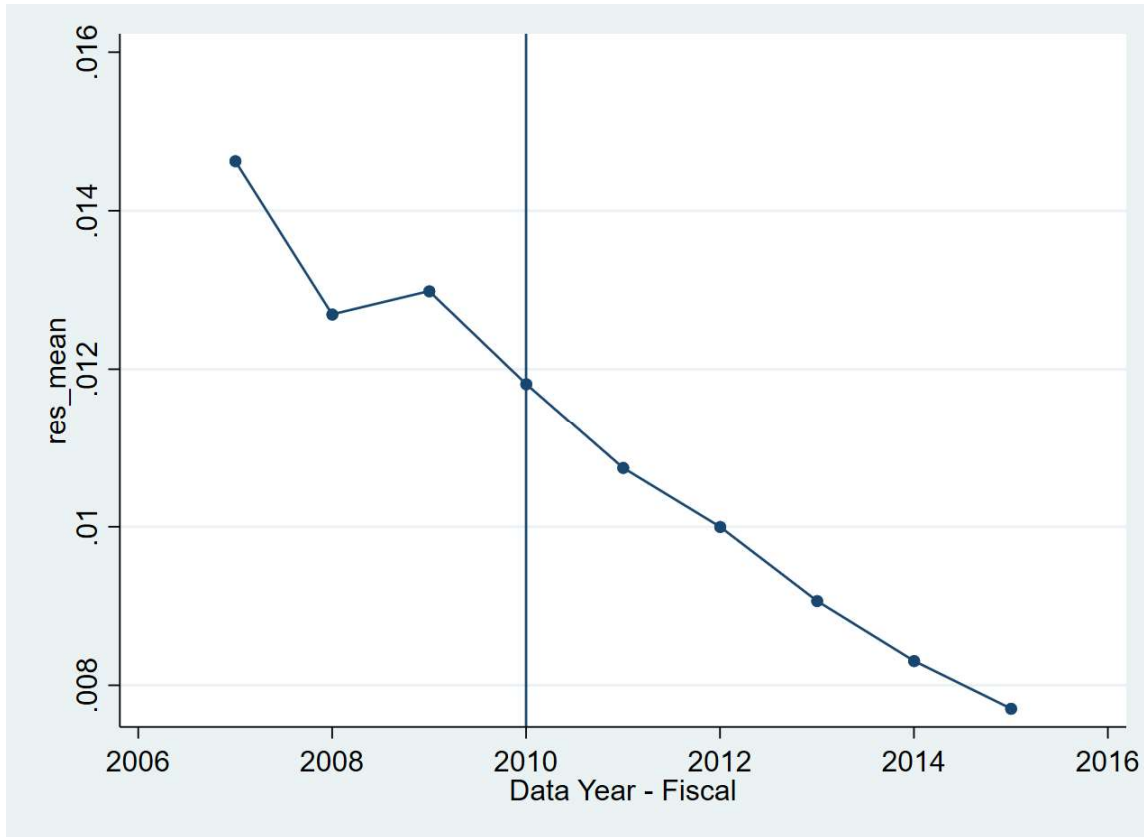
This figure plots the residual value for firms with total asset value greater than $100 million from year 2007 through 2015. The effective year for this group of firms is year 2010, which is indicated by the vertical line in the figure.

I obtain the residuals from estimating the UTB prediction model in Rego and Wilson (2012) as follows:

$$UTB = \alpha_o + \alpha_1 pt\_roa + \alpha_2 size + \alpha_3 for\_sale + \alpha_4 rd + \alpha_5 lev + \alpha_6 disc\_accr + \alpha_7 sga + \alpha_8 mtb + \alpha_9 sales\_gr + firmFE + yearFE + error$$

Figure 3: Percentages of Firms Beating Analyst Forecasts via Tax Expense pre- and post-2010
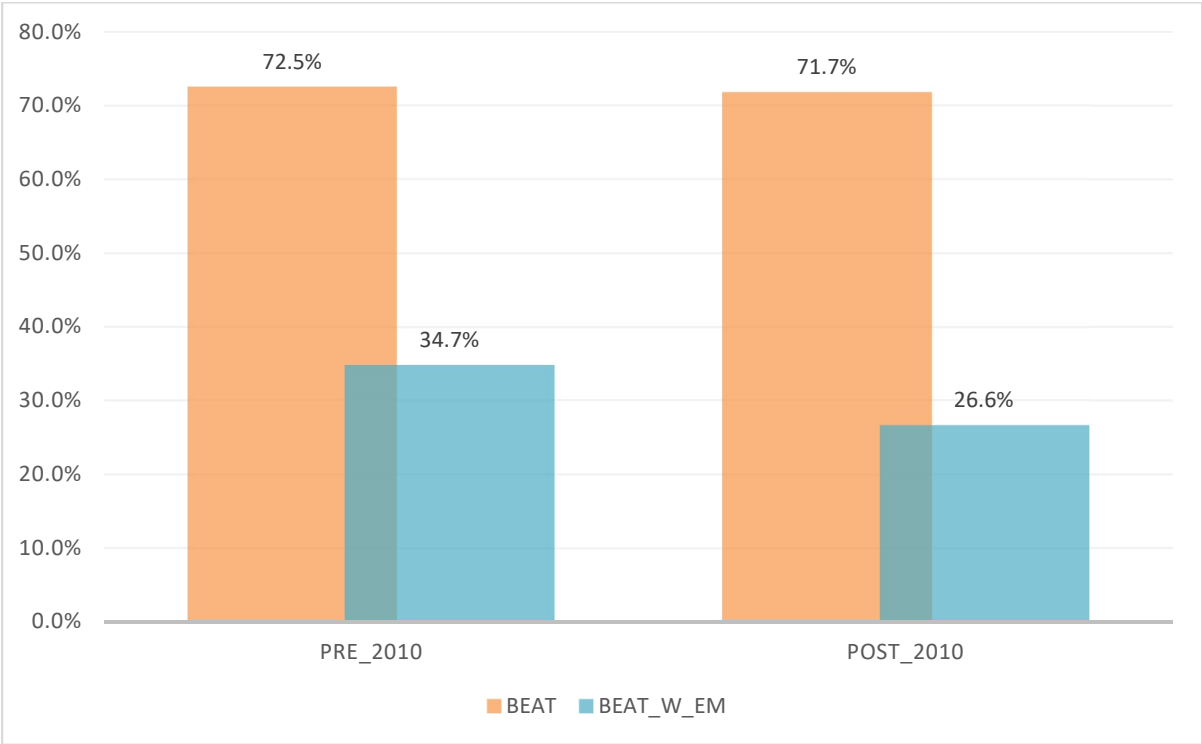
This figure reports the percentages of firms beating analyst forecasts via tax expense pre- and post-2010. Specifically, the green bar represents the percentages of firms beating analyst forecasts in general in the sample where the difference between analyst consensus forecast and the actual EPS is within five cents, while the blue bar represents the percentages of firms beating analyst forecasts via tax expense in the same sample.

Figure 4: The Number of Firms Reporting Tax Settlements (2007 – 2015)
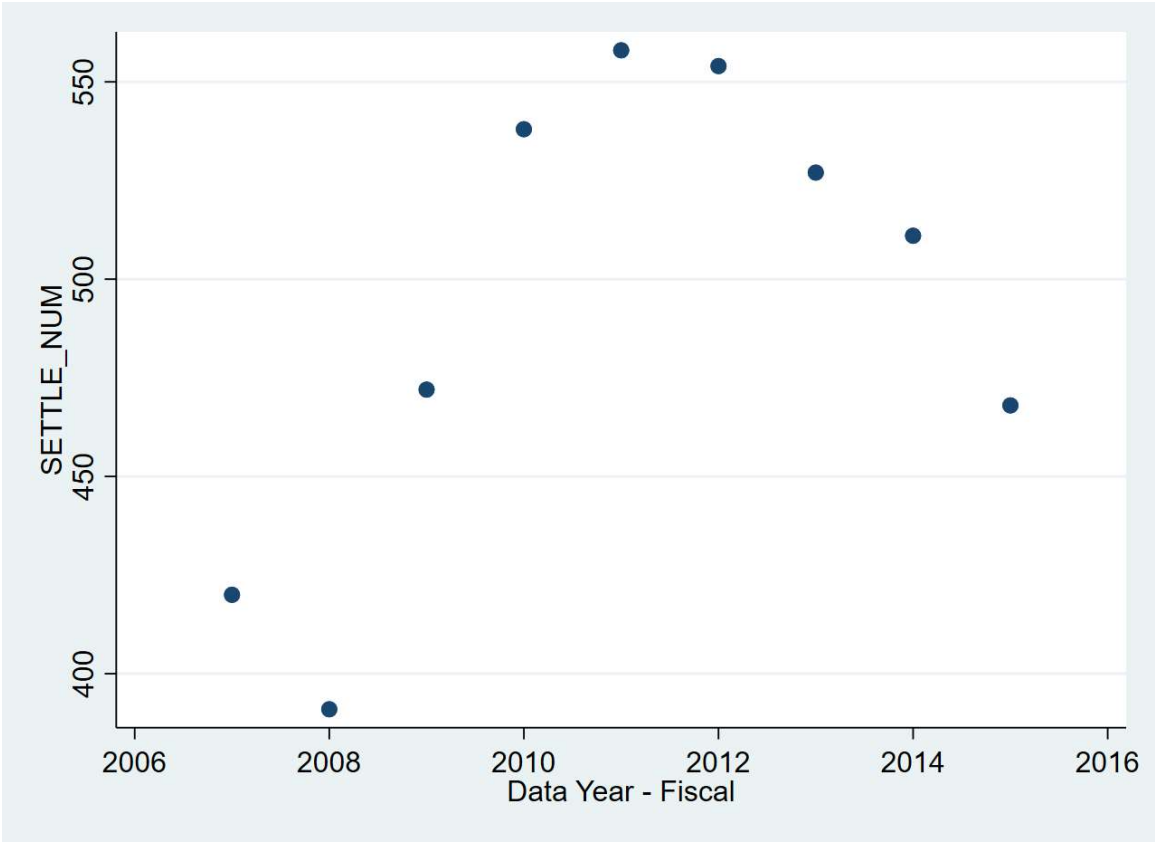
This figure plots the number of firms reporting settlements with tax authorities from year 2007 through 2015.

Table 1: Sample Selection Process

Panel A: The Test of the Predictive and Confirmatory Value of Tax Reserves

	Firm-year observations
Compustat annual data	533,873
Less: observations with missing or non-positive AT, PI, or TXT	261,643
Less: observations in regulated industries[*]	37,172
Less: observations with missing key values to estimate eq (1)	77,737
Less: observations with missing beginning and ending balances of UTBs	140,476
Less: observations with missing values to estimate the UTB prediction model	701
Less: firm-years outside my sample period: [2007, 2015]	5,014
Less: firm-years with asset value smaller than $100 million	801
	10,329

Panel B: The Effect of Schedule UTP on Analyst ETR Forecast Error and Dispersion

year-1 forecast sample[#]	Firm-year observations
IBES year-1 firm-year-analyst-forecasts after past 10-K filings in [2000, 2015][**]	521, 311
Less: revised analyst forecasts[***]	383,880
Less: forecasts made beyond 30 days after 10-K filing dates	105,274
Less: forecasts with missing actual values of PRE and NI	3,366
Less: duplicates after calculating analyst forecast errors	20,027
Less: forecasts in regulated industries or with missing key values	4,417
Less: observations with fewer than 3 analysts following	879
Less: firm-years with asset value smaller than $100 million	501
	2,967

This table presents the sample selection process. Panel A is the selection process for the first two tests, which investigate the predictive value of tax reserves to reflect future tax settlements and the confirmatory value of tax reserves to reflect underlying economics, respectively. Panel B is the selection process for the informativeness test, which studies the effect of Schedule UTP on analyst ETR forecast error and dispersion.

[*] Consistent with prior literature, I exclude firm-year observations with firms in regulated utilities (Standard Industrial Classification codes 4900-4999), financial firms (SIC 6000-6999), and firms categorized as international affairs, public service, or non-operating establishments (SIC 9000+).

[**] I use the BOG Index Data provided by Brian P. Miller on his web page (https://host.kelley.iu.edu/bpm/activities/bogindex.html) to find corresponding 10-K filing dates, and this dataset starts in 1994.

[***] I rank analyst forecasts based on announcement dates and keep only the first forecast of each analyst after 10-K filing dates.

[#] I create year-2 through year-3 forecast sample based on a similar process, and their final sample sizes are 2,616 and 764, respectively.

Table 2: Summary Statistics for the Test of Tax Reserve Settlements on Effective Tax Rates

	N	Mean	P50	SD	Skewness
ETR_CHG	10,329	0.003	-0.001	0.236	4.349
LAPSE	10,329	0.001	0.000	0.002	11.421
SETTLE	10,329	0.430	0.000	0.495	0.284
POST	10,329	0.717	1.000	0.451	-0.961
LEV_CHG	10,329	0.005	0.000	0.072	1.121
RD_CHG	10,329	0.000	0.000	0.008	0.280
ADV_CHG	10,329	0.000	0.000	0.004	1.267
SGA_CHG	10,329	0.001	0.000	0.022	0.376
CAPX_CHG	10,329	-0.002	0.000	0.060	-0.106
INTAN_CHG	10,329	0.008	0.000	0.053	2.588
PPE_CHG	10,329	0.001	0.004	0.059	-1.075
ROS_CHG	10,329	-0.002	0.001	0.054	-0.599
FORINC_IND	10,329	0.384	0.000	0.486	0.476
NOL_IND	10,329	0.569	1.000	0.495	-0.277

This table presents descriptive statistics for the test of tax reserve settlements on effective tax rates. All continuous variables are winsorized at top and bottom one percent. The suffix _CHG denotes a change from year t-1 to t.

Variable Definitions:
ETR = total tax expense divided by pretax income (TXT/PI);
LAPSE = the amount of lapse disclosed in financial statements, scaled by lagged assets (TXTUBSOFLIMIT/AT);
SETTLE = 1 if the firm discloses a settlement in financial statements, and zero otherwise;
POST = 1 if the firm is required to disclose Schedule UTP to the IRS in that year, and zero otherwise;
LEV = total debt divided by total assets (DLC+DLTT)/AT;
RD = R&D expense (set to 0 if missing), scaled by sales (XRD/SALE);
ADV = advertising expense (set to 0 if missing), scaled by sales (XAD/SALE);
SGA = SG&A expense (set to 0 if missing), scaled by sales (XSGA/SALE);
CAPX = capital expenditures (set to 0 if missing), scaled by gross PPE (CAPX/PPEGT);
INTAN = intangible assets, scaled by total assets (INTAN/AT);
PPE = gross PPE, scaled by total assets (PPEGT/AT);
ROS = pretax income divided by sales (PI/SALE);
FORINC_IND = 1 if the changes in firms' pretax foreign income (PIFO) from year t-1 to t is positive, and zero otherwise;
NOL_IND = 1 if the change in NOL from year t-1 to t is negative, and zero otherwise.

Table 3: The Test of Tax Reserve Settlements on Effective Tax Rates

	(1)	(2)	(3)
	ETR_CHG	ETR_CHG	ETR_CHG
LAPSE	**-4.036*****		
	(-2.676)		
SETTLE		**-0.0148****	**-0.0287****
		(-2.128)	**(-2.269)**
SETTLE*POST			**0.0202***
			(1.712)
LEV_CHG	0.0556	0.0557	0.0561
	(0.917)	(0.918)	(0.924)
RD_CHG	0.122	0.119	0.118
	(0.292)	(0.284)	(0.283)
ADV_CHG	0.639	0.643	0.649
	(0.918)	(0.928)	(0.935)
SGA_CHG	-0.398**	-0.396**	-0.398**
	(-2.077)	(-2.060)	(-2.074)
CAPX_CHG	-0.0111	-0.0111	-0.00738
	(-0.179)	(-0.179)	(-0.119)
INTAN_CHG	-0.0718	-0.0755	-0.0754
	(-1.066)	(-1.123)	(-1.123)
PPE_CHG	0.0858	0.0900	0.0904
	(1.214)	(1.272)	(1.278)
ROS_CHG	-0.973***	-0.974***	-0.974***
	(-8.267)	(-8.286)	(-8.292)
NOL_IND	-0.0342***	-0.0343***	-0.0340***
	(-4.835)	(-4.859)	(-4.829)
FORINC_IND	-0.00766	-0.00779	-0.00809
	(-1.164)	(-1.183)	(-1.229)
_CONS	0.0207***	0.0247***	0.0313***
	(2.588)	(2.876)	(3.012)
SETTLE + SETTLE*POST			**-0.0086**
F-Value			**1.82**
No. Obs.	10,329	10,329	10,329
Adj. R²	0.0665	0.0663	0.0668
Firm and Year FEs	Yes	Yes	Yes

This table presents the results for the test of tax reserve settlements on effective tax rates. Following Robinson et al. (2016), columns (1) and (2) validate the model, and column (3) presents the results of estimating the following equation:

$$ETR\_CHG_{i,t} = \alpha_0 + \alpha_1 POST_t + \alpha_2 SETTLE_{i,t} + \alpha_3 POST_t * SETTLE_{i,t} + CONTROLS_{i,t} + FirmFE + YearFE + ERROR$$

Coefficients of interest are in bold, and t-statistics appear in parentheses below the coefficients. ***, **, * denote

significance at the 1 percent, 5 percent, and 10 percent levels, respectively. All continuous variables are winsorized at top and bottom one percent. The suffix _CHG denotes a change from year t-1 to t.

Variable Definitions:
ETR = total tax expense divided by pretax income (TXT/PI);
LAPSE = the amount of lapse disclosed in financial statements, scaled by lagged assets (TXTUBSOFLIMIT/AT);
SETTLE = 1 if the firm discloses a settlement in financial statements, and zero otherwise;
POST = 1 if the firm is required to disclose Schedule UTP to the IRS in that year, and zero otherwise;
LEV = total debt divided by total assets (DLC+DLTT)/AT;
RD = R&D expense (set to 0 if missing), scaled by sales (XRD/SALE);
ADV = advertising expense (set to 0 if missing), scaled by sales (XAD/SALE);
SGA = SG&A expense (set to 0 if missing), scaled by sales (XSGA/SALE);
CAPX = capital expenditures (set to 0 if missing), scaled by gross PPE (CAPX/PPEGT);
INTAN = intangible assets, scaled by total assets (INTAN/AT);
PPE = gross PPE, scaled by total assets (PPEGT/AT);
ROS = pretax income divided by sales (PI/SALE);
FORINC_IND = 1 if the changes in firms' pretax foreign income (PIFO) from year t-1 to t is positive, and zero otherwise;
NOL_IND = 1 if the change in NOL from year t-1 to t is negative, and zero otherwise.

Table 4: Cross-sectional Tests of Tax Settlements on Effective Tax Rates
Panel A: Multinational Firms versus Domestic Firms

	ETR_CHG	
	Multinational firms	Domestic firms
SETTLE	-0.0304**	-0.0154
	(-2.116)	(-0.564)
*SETTLE*POST*	**0.0172**	**0.0266**
	(1.281)	**(1.017)**
SETTLE+SETTLE*POST	**-0.013***	**0.011**
F-Value	**3.30**	**0.99**
# of obs.	7,962	2,367
Adj. R^2	0.0793	0.0369
Controls	Yes	Yes
Firm and Year FEs	Yes	Yes

Panel B: Firms with Large Reserves versus Firms with Small Reserves

	ETR_CHG	
	Firms with large reserves	Firms with small reserves
SETTLE	-0.0461**	-0.0120
	(-2.401)	(-0.700)
*SETTLE*POST*	**0.0304***	**0.00679**
	(1.800)	**(0.402)**
SETTLE+SETTLE*POST	**-0.016***	**-0.005**
F-Value	**2.84**	**0.34**
# of obs.	3,795	6,534
Adj. R^2	0.0700	0.0686
Controls	Yes	Yes
Firm and Year FEs	Yes	Yes

Panel C: Firms with Large Decreases in UTBs versus Firms with Small Decreases

| | ETR_CHG | |
	Firms with large decreases	Firms with small decreases
SETTLE	-0.0485**	-0.0148
	(-2.477)	(-0.911)
*SETTLE*POST*	**0.0428****	**0.00374**
	(2.518)	**(0.239)**
*SETTLE+SETTLE*POST*	**-0.006**	**-0.011**
F-Value	**0.32**	**1.78**
# of obs.	3,345	6,984
Adj. R^2	0.0925	0.0612
Controls	Yes	Yes
Firm and Year FEs	Yes	Yes

Panel D: Tax Aggressive Firms versus Others

| | ETR_CHG | |
	Tax aggressive firms	Others
SETTLE	-0.0420**	-0.0180
	(-2.073)	(-1.118)
*SETTLE*POST*	**0.0324***	**0.0106**
	(1.840)	**(0.664)**
*SETTLE+SETTLE*POST*	**-0.010**	**-0.008**
F-Value	**0.97**	**0.79**
# of obs.	3,571	6,758
Adj. R^2	0.0758	0.0713
Controls	Yes	Yes
Firm and Year FEs	Yes	Yes

This table presents the results of the cross-sectional tests of tax reserve settlements on effective tax rates. Panel A presents the results comparing multinational firms and domestic firms, where I define multinational firms as those that report non-zero foreign pretax income. Panel B presents the results comparing firms with large reserves and those with small reserves, where I define firms with large reserves as those that report above-average scaled UTBs in the year they are required to file Schedule UTP. Panel C presents the results comparing firms with large decreases in UTBs and those with small decreases, where I define firms with large decreases in UTBs as those that report above-average scaled decreases in UTBs in the year they are required to file Schedule UTP.

Coefficients of interest are in bold, and t-statistics appear in parentheses below the coefficients. ***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively. All continuous variables are winsorized at top and bottom one percent. The suffix _CHG denotes a change from year t-1 to t.

Variable Definitions:
ETR = total tax expense divided by pretax income;
SETTLE = 1 if the firm discloses a settlement in financial statements, and zero otherwise;
POST = 1 if the firm is required to disclose Schedule UTP to the IRS in that year, and zero otherwise.

Table 5: The UTB Prediction Model
Panel A: Summary Statistics for the UTB Prediction Model

	N	Mean	P50	SD	Skewness
UTB	10,329	0.011	0.006	0.014	2.596
PT_ROA	10,329	0.120	0.099	0.089	1.644
SIZE	10,329	7.516	7.396	1.592	0.423
FOR_SALE	10,329	0.249	0.078	0.368	2.239
RD	10,329	0.026	0.000	0.045	2.267
LEV	10,329	0.218	0.194	0.192	0.882
DACCR	10,329	-0.052	-0.047	0.018	-0.786
SGA	10,329	0.247	0.198	0.201	1.353
MTB	10,329	3.141	2.335	5.225	1.487
SALES_GR	10,329	0.096	0.069	0.183	1.551

Panel B: Results for the UTB Prediction Model

	Pr. Signs	(1) UTB
PT_ROA	+	0.0126***
		(3.885)
SIZE	+	0.00170**
		(2.474)
FOR_SALE	+	0.00126**
		(2.309)
RD	+	0.0268
		(1.614)
LEV	-	-0.00122
		(-0.620)
DACCR	+	-0.141***
		(-4.296)
SGA		0.0144***
		(4.545)
MTB		-0.0000438*
		(-1.723)
SALES_GR		-0.00101
		(-1.389)
_CONS		-0.0112*
		(-1.924)
No. Obs.		10,329
Adj. R^2		0.1115
Firm and Year FEs		Yes

This table presents the descriptive statistics (Panel A) and results (Panel B) for the UTB prediction model in Rego and Wilson (2012). ***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively. All continuous variables are winsorized at top and bottom one percent.

Variable Definitions:

UTB = tax reserved disclosed in the financial statements, scaled by lagged assets;

PT_ROA = pretax income, divided by lagged assets;

$SIZE$ = the logarithm of total assets;

FOR_SALE = total foreign sales, scaled by lagged assets;

RD = R&D expense, scaled by lagged assets;

LEV = total debt, divided by total assets;

$DACCR$ = discretionary accruals estimated using the performance matched Modified Jones model:

$TACCR = 1/AT + SSA + SPPEGT + ROA$

where $TACCR$ is firms' total accrual, and estimated as net income before extraordinary items minus firms' operating cash flows, scaled by lagged assets, following Hribar and Collins (2002);

AT is firms' total assets;

SSA is the changes in sales minus changes in accounts receivables, scaled by lagged assets;

$SPPEGT$ is firms' gross PPE, scaled by lagged assets;

ROA is return on assets, and calculated as net income before extraordinary items divided by total assets.

SGA = SG&A expense, scaled by lagged assets;

MTB = market value of the firm, divided by shareholders' equity;

$SALES\_GR$ = the y-o-y change in sales from year t-1 to t.

Table 6: The Confirmatory Value of Tax Reserves

Panel A: The Test of Schedule UTP on the Explanatory Power of the UTB Prediction Model

	R^2
UTP	**0.0262***
	(2.000)
_CONS	0.160***
	(40.842)
No. Obs.	10,329
Adj. R^2	0.3209
Controls	No
Firm and Year FEs	No

Panel B: The Effect of Schedule UTP on Tax Expense Management

	(1)	(2)
	BEAT_W_EM	BEAT_WO_EM
UTP	**-0.158***	**0.106****
	(-3.421)	**(2.038)**
INDUCED_CHG_ETR	0.475***	-0.185
	(3.229)	(-0.859)
ETR_Q3	-0.320***	0.327***
	(-8.538)	(6.716)
TAX_OWED	-0.0202	0.00329
	(-0.577)	(0.068)
_CONS	0.483***	0.282***
	(24.261)	(12.447)
# of obs.	9,769	9,769
Adj. R^2	0.0324	0.0231
Firm and Year FEs	Yes	Yes

This table presents the results of the tests on the confirmatory value of tax reserves, by examining the effect of Schedule UTP on the explanatory power of the UTB prediction model (Panel A) and evaluating the effect of Schedule UTP on the probability of firms' beating analyst forecasts with tax expense management (Panel B).

$$BEAT\_W\_EM_{i,t} = a_0 + a_1 UTP_t + CONTROLS_{i,t} + firmFE + yearFE + ERROR$$
$$BEAT\_WO\_EM_{i,t} == a_0 + a_1 UTP_t + CONTROLS_{i,t} + firmFE + yearFE + ERROR$$

Coefficients of interest are in bold, and t-statistics appear in parentheses below the coefficients. ***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Variable Definitions:

R^2 = the r-squares from running the following cross-sectional regressions for each sample year:

$$UTB_{i,t} = \alpha_o + \alpha_1 PT_{ROA_{i,t}} + \alpha_2 SIZE_{i,t} + \alpha_3 FOR_{SALE_{i,t}} + \alpha_4 RD_{i,t} + \alpha_5 LEV_{i,t} + \alpha_6 DACCR_{i,t} + \alpha_7 SGA_{i,t} + \alpha_8 MTB_{i,t} + \alpha_9 SALES_{GR_{i,t}} + firmFE + yearFE + ERROR$$

UTP = 1 if the year is 2010 or beyond, and zero otherwise;

BEAT_W_EM = 1 if firms' actual EPS is greater than or equal to analyst EPS forecast, and EPS absent tax expense management is smaller than analyst EPS forecast, and zero otherwise. Firms' EPS absent earnings management is estimated as annual pretax income multiplying one minus etr_cum3q divided by weighted average number of shares outstanding;

BEAT_WO_EM = 1 firms' actual EPS and EPS absent tax expense management are both greater than or equal to analyst EPS forecast, and zero otherwise;

INDUCED_CHG_ETR = (0.35-*ETR_Q3*)*[(EPS actual-EPS consensus)*common shares outstanding/[(1-0.35)*pretax income];

ETR_Q3 = the cumulative tax expense in the third quarter divided by the cumulative pretax income in the third quarter;

TAX_OWED = tax payables minus tax refunds, scaled by lagged assets.

Table 7: Summary Statistics for the Analyst Forecast Samples
Panel A: Summary Statistics for Year-1 ETR Forecast Sample

	N	Mean	P50	SD	Skewness
ETR_ERR	2,967	0.163	0.028	0.750	21.916
PRE_ERR	2,967	0.036	0.018	0.067	8.937
ETR_DISP	2,967	0.079	0.006	0.593	38.676
PRE_DISP	2,967	0.012	0.004	0.023	5.775
ETRVOL	2,967	0.341	0.035	1.487	9.585
MTB	2,967	3.803	2.718	8.889	-7.197
SIZE	2,967	7.913	7.853	1.704	0.180
LEV	2,967	0.232	0.204	0.210	1.352
MULTI	2,967	0.648	1.000	0.478	-0.619
UTP	2,967	0.506	1.000	0.500	-0.025
FIN48	2,967	0.802	1.000	0.398	-1.517
LOSS	2,967	0.199	0.000	0.399	1.512
ANA_NUM	2,967	1.642	1.609	0.522	0.909

Panel B: Summary Statistics for Year-2 ETR Forecast Sample

	N	Mean	P50	SD	Skewness
ETR_ERR	2,616	0.167	0.036	0.669	13.299
PRE_ERR	2,616	0.067	0.034	0.129	10.061
ETR_DISP	2,616	0.063	0.007	0.319	15.288
PRE_DISP	2,616	0.018	0.007	0.051	11.756
ETRVOL	2,616	0.306	0.035	1.219	8.838
MTB	2,616	3.784	2.721	7.494	0.948
SIZE	2,616	8.087	8.064	1.713	0.122
LEV	2,616	0.241	0.216	0.212	1.347
MULTI	2,616	0.674	1.000	0.469	-0.740
UTP	2,616	0.520	1.000	0.500	-0.080
FIN48	2,616	0.820	1.000	0.384	-1.669
LOSS	2,616	0.205	0.000	0.404	1.462
ANA_NUM	2,616	1.616	1.609	0.498	0.910

Panel C: Summary Statistics for Year-3 ETR Forecast Sample

	N	Mean	P50	SD	Skewness
ETR_ERR	764	0.232	0.047	1.098	12.081
PRE_ERR	764	0.141	0.047	0.709	23.320
ETR_DISP	764	0.072	0.009	0.358	12.208
PRE_DISP	764	0.045	0.010	0.176	12.493
ETRVOL	764	0.354	0.041	1.676	10.552
MTB	764	5.694	3.131	33.602	8.127
SIZE	764	8.617	8.784	1.837	-0.334
LEV	764	0.297	0.266	0.234	1.726
MULTI	764	0.726	1.000	0.446	-1.016
UTP	764	0.671	1.000	0.470	-0.730
FIN48	764	0.933	1.000	0.250	-3.472
LOSS	764	0.277	0.000	0.448	0.994
ANA_NUM	764	1.387	1.386	0.344	1.136

This table reports descriptive statistics for the test of Schedule UTP on analyst ETR forecast error and dispersion. All continuous variables are winsorized at top and bottom one percent. I conduct this test on analyst year-1 through year-3 forecast samples respectively. Panel A presents the summary statistics for year-1 ETR forecast sample, Panel B documents that for year-2 ETR forecast sample, and Panel C reports that for year-3 ETR forecast sample.

Variable Definitions:
ETR_ERR = the mean of the absolute difference between analyst ETR forecasts and actual ETRs for each firm-year;
PRE_ETR = the mean of the absolute difference between analyst pretax income forecasts and actual pretax income for each firm-year, scaled by lagged assets;
ETR_DISP = the standard deviation of analyst ETR forecasts for each firm-year;
PRE_DISP = the standard deviation of analyst pretax income forecasts for each firm-year, scaled by lagged assets;
ETRVOL = the absolute change in ETRs from year t-2 to t-1;
MTB = market value of the firm, divided by shareholders' equity;
SIZE = the logarithm of total assets;
LEV = total debt, divided by total assets;
MULTI = 1 if the firm reports non-zero pretax foreign income (PIFO);
UTP = 1 if the year is 2010 or beyond, and zero otherwise;
FIN48 = 1 if the year is 2006 or beyond, and zero otherwise;
LOSS = 1 if the firm reports negative pretax income in that year, and zero otherwise;
ANA_NUM = the logarithm of the number of analysts following.

Table 8: The Informativeness of Tax Reserves
Panel A: The Effect of Schedule UTP on Analyst ETR Forecast Error

	Pr. Signs	(1) year-1 ETR_ERR	(2) year-2 ETR_ERR	(3) year-3 ETR_ERR
FIN48		0.0317	-0.0945	0.137
		(0.593)	(-0.552)	(1.025)
UTP	-	**-0.0710****	**-0.0960****	**0.149**
		(-2.313)	**(-2.451)**	**(1.019)**
PRE_ERR	+	0.778***	0.419***	0.199
		(2.711)	(3.055)	(1.552)
ETRVOL	+	-0.00230	-0.0158	-0.0430
		(-0.288)	(-1.035)	(-1.489)
MTB		-0.00316**	-0.00111	-0.000255
		(-2.033)	(-0.966)	(-1.456)
SIZE		-0.0315	-0.0357	-0.179
		(-0.739)	(-0.817)	(-1.099)
LEV		0.321**	0.186	0.541
		(2.387)	(1.572)	(1.178)
MULTI	+	0.142*	0.0805**	0.0203
		(1.953)	(2.237)	(0.160)
ANA_NUM		-0.0114	0.00897	0.0728
		(-0.471)	(0.401)	(1.166)
LOSS	+	0.156***	0.0711	0.139
		(2.667)	(1.152)	(1.074)
_CONS		0.263	0.133	1.224
		(0.869)	(0.412)	(1.213)
No. Obs.		2,967	2,616	764
Adj. R^2		0.0460	0.0249	0.0693
Year FEs?		Yes	Yes	Yes
Firm FEs?		Yes	Yes	Yes

Panel B: The Effect of Schedule UTP on Analyst ETR Forecast Dispersion

	Pr. Signs	(1) year-1 ETR_DISP	(2) year-2 ETR_DISP	(3) year-3 ETR_DISP
FIN48		-0.0284	0.00847	0.0334
		(-0.643)	(0.273)	(0.329)
UTP	-	**-0.0494***	**0.0152**	**-0.00658**
		(-2.789)	**(0.561)**	**(-0.275)**
PRE_DISP	+	0.0000498***	0.0000330**	0.0000483
		(2.908)	(2.488)	(0.939)
ETRVOL	+	-0.00209	0.000323	-0.0172
		(-0.498)	(0.066)	(-1.002)
MTB		-0.000765	0.000997*	-0.000125
		(-1.343)	(1.891)	(-0.936)
SIZE		-0.0314	-0.0261	-0.0856
		(-1.184)	(-1.436)	(-0.775)
LEV		0.170**	-0.0140	0.241
		(2.073)	(-0.296)	(0.881)
MULTI	+	0.0370*	0.00282	-0.0863
		(1.741)	(0.153)	(-0.874)
ANA_NUM		0.00948	0.000663	0.0485
		(0.597)	(0.072)	(1.625)
LOSS	+	0.0413	0.0370*	-0.0403
		(1.287)	(1.780)	(-0.592)
_CONS		0.197	0.222	0.608
		(1.045)	(1.595)	(0.861)
No. Obs.		2,967	2,616	764
Adj. R^2		0.0221	0.0179	0.0707
Year FEs?		Yes	Yes	Yes
Firm FEs?		Yes	Yes	Yes

This table reports the results of the tests on the informativeness of analyst ETR forecasts, by examining the effect of Schedule UTP on analyst ETR forecast error (Panel A) and analyst ETR forecast dispersion (Panel B). Column (1) present the results for year-1 analyst forecasts, column (2) those for year-2 analyst forecasts, and column (3) those for year-3 analyst forecasts.

Coefficients of interest are in bold and t-statistics appear in parentheses below the coefficients. ***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively. All continuous variables are winsorized at top and bottom one percent.

Variable Definitions:
ETR_ERR = the mean of the absolute difference between analyst ETR forecasts and actual ETRs for each firm-year;
PRE_ETR = the mean of the absolute difference between analyst pretax income forecasts and actual pretax income for each firm-year, scaled by lagged assets;
ETR_DISP = the standard deviation of analyst ETR forecasts for each firm-year;
PRE_DISP = the standard deviation of analyst pretax income forecasts for each firm-year, scaled by lagged assets;
ETRVOL = the absolute change in ETRs from year t-2 to t-1;
MTB = market value of the firm, divided by shareholders' equity;

SIZE = the logarithm of total assets;
LEV = total debt, divided by total assets;
MULTI = 1 if the firm reports non-zero pretax foreign income (PIFO);
UTP = 1 if the year is 2010 or beyond, and zero otherwise;
FIN48 = 1 if the year is 2006 or beyond, and zero otherwise;
LOSS = 1 if the firm reports negative pretax income in that year, and zero otherwise;
ANA_NUM = the logarithm of the number of analysts following.

Table 9: The Effect of Tax Regulations on Firms' (Estimated) Tax Reserves

	(1)
	UTB
M3	0.000887**
	(2.055)
FIN48	0.00330***
	(5.522)
UTP	**-0.00363***
	(-6.062)
# of obs.	15,390
Adj. R^2	0.1369
Controls	Yes
Firm and Year FEs	Yes

This table reports the results of the effect of tax regulations on firms' tax reserves. Due to data availability, tax reserves prior to 2006 are estimated using the UTB prediction model.

Coefficients of interest are in bold, and t-statistics appear in parentheses below the coefficients. ***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively. All continuous variables are winsorized at top and bottom one percent.

Variable Definitions:
M3 =1 if the year is 2004 or beyond, and zero otherwise;
FIN48 = 1 if the year is 2006 or beyond, and zero otherwise;
UTP = 1 if the year is 2010 or beyond, and zero otherwise.

Table 10: The Effect of Schedule UTP on Tax Settlements

	(1)
	UTBSETTLEMENT
UTP	**-0.000313*****
	(-3.117)
# of obs.	10,329
Adj. R^2	0.0080
Controls	Yes
Firm and Year FEs	Yes

This table reports the results of the effect of Schedule UTP on tax settlements. Coefficients of interest are in bold, and t-statistics appear in parentheses below the coefficients. ***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively. All continuous variables are winsorized at top and bottom one percent.

Variable Definitions:
UTBSETTLEMENT = reported tax settlements (TXTUBSETTLE), scaled by lagged assets;
UTP = 1 if the year is 2010 or beyond, and zero otherwise.

Table 11: The Test of Tax Settlements on Firms' ETRs-Staggered Difference-in-differences

	(1) ETR_CHG	(2) ETR_CHG	(3) ETR_CHG	(4) ETR_CHG
LAPSE	-3.423**			
	(-2.193)			
SETTLE		-0.0145**	-0.0273**	-0.0641**
		(-2.121)	(-2.277)	(-2.086)
SETTLE*POST			0.0189*	0.114**
			(1.683)	(2.443)
SETTLE+SETTLE*POST			-0.0084	0.0502
F-Value			1.71	1.52
# of obs.	11,130	11,130	11,130	1,541
Adj. R^2	0.0659	0.0659	0.0662	0.0863
Controls?	Yes	Yes	Yes	Yes
Firm and Year FEs?	Yes	Yes	Yes	Yes

This table presents the results for the test of tax reserve settlements on effective tax rates using staggered difference-in-differences approach. As in Table 3, columns (1) and (2) validate the model, and columns (3) and (4) present the results of estimating the following equation. The sample size is restricted to firms with total asset value under $200 million in column (4) to make the treatment and control firms more comparable.

$$ETR\_CHG_{i,t} = \alpha_0 + \alpha_1 POST_t + \alpha_2 SETTLE_{i,t} + \alpha_3 POST_t * SETTLE_{i,t} + CONTROLS_{i,t} + FirmFE + YearFE + ERROR$$

Coefficients of interest are in bold, and t-statistics appear in parentheses below the coefficients. ***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively. All continuous variables are winsorized at top and bottom one percent. The suffix _CHG denotes a change from year t-1 to t.

Variable Definitions:
ETR = total tax expense divided by pretax income (TXT/PI);
LAPSE = the amount of lapse disclosed in financial statements, scaled by lagged assets (TXTUBSOFLIMIT/AT);
SETTLE = 1 if the firm discloses a settlement in financial statements, and zero otherwise;
POST = 1 if the firm is required to file Schedule UTP in that year, and zero otherwise.

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