

Let's talk about tax: The determinants and consequences of income tax mentions during conference calls

Anne C. Ehinger
Indiana University-Purdue University, Indianapolis

Joshua A. Lee
University of Georgia

Bridget Stomberg
Indiana University

Erin Towery
University of Georgia

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ABSTRACT: This study examines the determinants, content and consequences of income tax mentions by managers or analysts during quarterly earnings conference calls. We present three main findings. First, income taxes are mentioned during 82 percent of calls, and the most commonly-mentioned topic is forward looking information about taxes. Second, income taxes are more likely to be mentioned during the discussion session when analysts have less experience, when firms have larger year-over-year effective tax rate (ETR) changes, are large, have more foreign operations, and when management mentions taxes during the presentation session. Finally, analyst ETR forecast errors decrease following calls with tax mentions; ETR forecast improvements are greatest after discussion session tax mentions. Our findings inform management and analysts about the importance of income tax mentions during conference calls and advance the literature examining voluntary income tax disclosures.

Keywords: Income tax expense; analysts; conference calls

JEL Codes: H25, M41, M48

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Contact author: Anne Ehinger. Physical address: Kelley School of Business, Indiana University–Purdue University, Indianapolis, 801 W. Michigan Street, Indianapolis, IN, 46202. Telephone: (317) 274-3585. Email address: aehinger@iu.edu.

I. INTRODUCTION

We explore the determinants and content of income tax mentions during quarterly earnings conference calls, and whether mentions of income taxes improve analysts' effective tax rate (ETR) forecast accuracy. Income taxes have a material effect on earnings and cash flows, yet empirical evidence suggests that even sophisticated financial statement users struggle to understand them (Amir and Sougiannis 1999; Chen and Schoderbek 2000; Plumlee 2003). Managers therefore have incentive to further stakeholders' understanding of the income tax consequences of various business transactions through voluntary disclosures. Furthermore, companies have come under scrutiny from governments, tax authorities and the public for what is often perceived as aggressive or risky tax avoidance. Voluntary disclosures about tax strategies can allay stakeholders' and analysts' concerns regarding potential negative consequences.

We focus on conference calls as a forum for voluntary disclosure of income tax information because prior literature provides evidence that firms use conference calls to provide new and unique information to market participants (e.g., Bowen, Davis and Matsumoto 2002; Brown, Call, Clement and Sharp 2017; Frankel, Johnson and Skinner 1999; Matsumoto, Pronk and Roelofsen 2011; Tasker 1998). Additionally, the interactive format of conference calls allows analysts and other participants to question management. Conference calls therefore allow us to observe not only the income tax topics that managers view as important but also which topics are important to analysts.

We investigate the factors that influence mentions of income taxes during both the presentation and discussion (i.e., question and answer or "Q&A") sessions of quarterly earnings conference calls. We also examine whether income tax mentions improve analysts' ETR

forecasts.¹ We focus on how income tax mentions affect analysts for two reasons. First, a growing literature examines the properties of analysts' income tax forecasts (e.g., Baik, Kim, Morton and Roh 2016; Bratten, Gleason, Larocque and Mills 2017; Kim, Schmidt and Wentland 2015; Mauler 2015), but little is known about how analysts obtain tax-related information. Conference calls are one channel through which managers can interpret complex tax-related information for analysts and highlight expected changes in ETRs. Indeed, because most analyst forecast revisions occur near earnings announcement dates, which coincide with earnings conference calls, and are rare at other times (Keskek, Tse and Tucker 2014), conference calls are potentially a critical source of tax-related information for analysts when updating their forecasts. Second, Brown et al. (2017) note that investor relations officers consider sell-side analysts to be “especially helpful in communicating the company’s message to institutional investors” (p. 4).

To conduct our analysis, we construct a sample of 39,473 quarterly earnings conference calls from Q1 2002 to Q4 2015. We document that income taxes are mentioned in 82 percent of all conference calls, the frequency of these mentions is relatively constant across quarters, and taxes are often mentioned during every conference call a company holds during the year. Over 71 percent of presentation sessions with income tax mentions include forward looking information about taxes and over 50 percent include a comparison of current-period taxes to a prior period.² Taxes are mentioned during 37 percent of discussion sessions and most of these mentions take place when management provides income tax information during the presentation session. In addition, 63 percent of discussion sessions with income tax mentions include forward

¹ Henceforth, we refer to statements related to income taxes during either the presentation session of a call or the discussion session of a call as ‘income tax mentions’.

² We developed an initial algorithm to classify income tax mentions into sub-topics based on key words we identified after reading quarterly earnings conference call transcripts from 2012 for a sample of the 100 largest and 100 smallest firms that host earnings conference calls. We further refined the algorithm by reading additional tax mentions from our sample. See Appendix B for our final classification algorithm.

looking comments about taxes and 30 percent include comparisons of current-period taxes to a prior period.

We next examine factors influencing the likelihood of income tax mentions. We estimate logistic regressions of income tax mentions as a function of factors that we believe increase the demand for voluntary disclosure of income tax information including tax complexity, general business complexity, the firm's information environment, and analyst characteristics. As expected, we find that managers are more likely to mention income taxes during the presentation session when firms have greater tax complexity. However, they are less likely to do so when firms have greater business complexity. This latter result is somewhat surprising in light of evidence that tax avoidance often accompanies business complexity and financial reporting opacity (e.g., Balakrishnan, Blouin and Guay 2012; Frank, Lynch and Rego 2009; Hope, Ma and Thomas 2013). We also document that presentation of income taxes in the prior quarter is a significant determinant of presentation in the current quarter, consistent with firms' disclosure policies being sticky.³ Mentions of income taxes during the discussion session are more likely when (i) firms have greater year-over-year changes in the ETR, (ii) firms are larger and have more foreign operations, (iii) analysts are less experienced and fewer analysts follow the firm, and (iv) income taxes are mentioned during the presentation session of the current call or in the discussion session in the prior quarter. Thus, both firm and analyst characteristics influence income tax mentions during the discussion session.

Finally, we examine the effect of income tax mentions on analysts' ETR forecast accuracy. To date, this question has not been addressed. Although prior studies suggest that

³ Managers have incentive to continue disclosure because ceasing disclosure can have negative consequences. Investors respond negatively, analyst forecast accuracy decreases, and analyst forecast dispersion increases following cessation of disclosure (Chen, Matsumoto, and Rajgopal 2011). Industries with firms ceasing voluntary disclosure see an increase in voluntary disclosure from previously non-disclosing firms, and these previously non-disclosing firms largely continue voluntary disclosure in future periods (Baginski and Hinson 2016).

conference calls improve analysts' EPS forecast accuracy relative to firms that do not hold conference calls (Bowen et al. 2002), prior research does not examine whether specific topics or types of information improve accuracy among firms holding conference calls. We therefore cannot conclude from prior research that mentions of tax-related information during conference calls will improve analyst ETR forecast accuracy.

Indeed, we posit multiple reasons why mentions of tax-related information during conference calls may *not* improve analyst ETR forecast accuracy. First, very few firms in our sample have tax personnel participate in conference calls; chief executive officers (CEOs), chief financial officers (CFOs), and investor relation officers (IROs) are the most common management representatives.⁴ Given these individuals often lack a tax background, they might not be able to provide clear and correct answers to analysts' tax questions like they can for questions related to general business operations. Second, income tax mentions might not be informative to analysts. The presentation session of the call is heavily scripted (Lee 2016) and could contain boilerplate tax-related language that does not convey meaningful information about taxes. Managers may choose boilerplate language to minimize the amount of tax-related information conveyed to competitors or tax authorities. Finally, analysts might not rely on conference calls as a source of information about taxes when developing their ETR forecasts. Instead, they might gather information from sources including industry reports or press articles. Thus, whether analysts' ETR forecast accuracy improves following conference calls with income tax mentions is an empirical question.

To test the effect of income tax mentions on forecast accuracy, we examine changes in analysts' implied-ETR forecast errors after each quarterly earnings conference call. We require analysts to make an ETR forecast both before and after the call, and we compute analyst forecast

⁴ Tax officers participate in less than 0.2 percent of conference calls in our sample.

error as the absolute value of the difference between the forecasted annual ETR and the actual annual ETR. Our results suggest that income tax mentions improve ETR forecast accuracy by approximately half a cent per share. The improvement in ETR forecast accuracy increases to almost one cent per share when taxes are mentioned during the discussion session of the call. Results are robust to controlling for income tax mentions in the concurrent earnings announcement, which provides comfort that income tax mentions during conference calls drive the observed improvements in ETR forecast accuracy. Using our detailed categorization of income tax mentions, we find that mentions related to tax reserves, tax loss carryforwards, tax legislation and forward looking tax information are associated with the largest improvement in ETR forecast accuracy. In contrast, mentions related to cash taxes, and state, local and foreign taxes, among others, do not improve analyst ETR forecast accuracy.

Our paper makes the following contributions. First, we advance the literature examining managers' voluntary disclosures of tax information (e.g., Balakrishnan et al. 2012; McGuire 2009; Schwab 2014). We provide the first large-sample empirical evidence of the content, determinants and consequences of conference call income tax mentions. Whereas Balakrishnan et al. (2012) focus on aggressive tax planning and Schwab (2014) focuses on book-tax differences during conference calls, we select search terms that capture a broader spectrum of income tax issues. In doing so, we identify the specific topic of the majority of conference call tax mentions, thus allowing us to provide descriptive evidence on the income tax issues management and analysts view as important.⁵ Our study is also distinct from McGuire (2009), who examines voluntary explanations of ETR decreases during earnings announcements. Second, we identify conference calls as an important determinant of improvements in analysts'

⁵ Our algorithm classifies over 95 percent of all conference calls with income tax mentions into at least one sub-category, indicating that we successfully identify the specific tax-related topics discussed during conference calls.

ETR forecast accuracy.⁶ This finding furthers our understanding of the channels through which analysts (and investors) obtain tax information. Given the limited amount of time available for conference calls, these results should be of particular interest to management when determining the content of conference call presentations. Finally, prior literature documents that analyst net income forecast accuracy improves for firms that hold conference calls relative to firms that do not (Bowen et al. 2002), but provides little evidence of cross-sectional variation in improvement among firms that hold conference calls based on the content of the call. Our finding that tax mentions improve analyst ETR forecast accuracy suggests that conference calls benefit analysts via discussion of complex financial statement items.

II. BACKGROUND & MOTIVATION

Overview of the Conference Call Literature

Prior literature documents several benefits of voluntary disclosure. Lang and Lundholm (1996) find that firms with more informative disclosures, measured using analysts' evaluation of qualitative disclosure from financial statements and disclosure during conference calls, have greater analyst following, more accurate analysts' forecasts, less disperse analysts' forecasts and less volatility in analysts' forecast revisions. Collectively, their results suggest more informative disclosures can lead to reduced estimation risk and information asymmetry, both of which can affect a firm's cost of capital.

Conference calls are a widely used form of corporate voluntary disclosure. Firms often host conference calls after releasing quarterly earnings to provide financial statement users with

⁶ In an untabulated analysis, we re-estimate the effect of income tax mentions on analyst ETR forecast error using the tax keywords outlined in Balakrishnan et al. (2012). We fail to find a significant relation between conference calls that include their tax keywords and changes in analyst ETR forecast error. This result, combined with our finding that general mentions of income tax information are associated with decreased ETR forecast error, further suggests that our search algorithm captures income tax disclosures during conference calls that management and analysts view as important.

additional information about operating results. Conference calls typically last approximately one hour and include two components: (i) a presentation by management of operating results (the presentation session); and (ii) a question and answer session with call participants (the discussion session). Both the presentation and discussion sessions provide information incremental to the content of the earnings announcement, and the discussion session provides information incremental to the presentation session (Matsumoto et al. 2011).

Benefits of conference calls as a form of voluntary disclosure include reduced information asymmetry and cost of capital (Brown, Hillegeist, and Lo 2004). Additionally, Frankel et al. (1999) note that conference calls benefit managers by allowing them to disseminate consistent information to a large number of capital market participants simultaneously. Indeed, Brown et al. (2017) report that IROs view earnings conference calls as the most important medium through which management conveys information to institutional investors. Financial statement users benefit from hearing management's presentation and questions asked by participants during conference calls because they receive information in a timely fashion (Frankel et al. 1999). As evidence, Kimbrough (2005) finds that conference call initiations reduce serial correlation in analyst forecast errors and reduce post-earnings-announcement drift.

Studies document a positive association between the likelihood of hosting conference calls and analyst following (Frankel et al. 1999; Tasker 1998), which reflects analysts' demand for conference calls as a means of gathering additional information to better understand firms' operations. Conference calls are more likely for firms with less informative financial statements (Tasker 1998) and for firms with higher expected growth, which can increase information asymmetry (Frankel et al. 1999). Conference calls have been shown to increase analyst forecast accuracy and level the playing field between low- and high-quality analysts, with lower-quality

analysts benefitting more from conference calls than higher-quality analysts (Bowen et al. 2002). We build on this literature by examining the effect of conference call mentions of income taxes on analysts' forecast accuracy.

Voluntary Disclosure of Income Taxes

Income taxes have a material effect on both earnings and cash flows, and firms have come under increased scrutiny in recent years for their tax avoidance practices. For example, Chen, Powers and Stomberg (2016) document an increase in negative media coverage of tax avoidance in recent years, and Dhaliwal, Goodman, Hoffman and Schwab (2016) find that corporate tax avoidance is positively associated with negative news media sentiment during the Occupy Wall Street movement. As a result, regulators around the world are calling for increased transparency regarding corporate income taxes, and firms have increased their focus on managing their "public tax profile" (EY 2015, 6).⁷

Our study contributes to the growing literature on the incidence and consequences of firms' voluntary income tax disclosures. McGuire (2009) investigates firms' voluntary explanations of fourth quarter decreases in ETRs using a hand-collected sample of earnings announcements from 2003 and 2004. He finds that managers are less likely to explain their ETR decreases when the costs of disclosure are greater. Our study is distinct from McGuire (2009) in three ways. First, we focus on conference call disclosures rather than earnings announcements. Unlike earnings announcements, conference calls allow for interaction between managers and participants and therefore potentially enable a more robust discussion of income taxes. Second,

⁷ For example, beginning in 2010, the Internal Revenue Service requires firms to describe their uncertain tax positions on their federal tax returns. In 2013, Australia introduced a bill requiring the Australian Taxation Office to publicly report details of taxable income and tax liabilities for large companies. In 2015, the OECD issued guidelines for implementing country-by-country reporting under BEPS Action 13 and the European Commission published proposals for a Tax Transparency Package that included a proposal to introduce quarterly, automatic information exchange between Member States. In the U.S., the FASB issued an Exposure Draft in 2016 aimed at enhancing financial statement disclosures of income taxes and the IRS will require country-by-country reporting for large multinational entities for tax years beginning on or after June 30, 2016.

we examine a broader range of income tax topics beyond explanations of ETR decreases. Third, we control for income tax mentions in earnings announcements to ensure that any results we obtain related to improvements in ETR forecast accuracy are incremental to those arising from mentions in earnings announcements.⁸

Balakrishnan et al. (2012) posit that aggressive tax planning is associated with less transparent information environments, and provide evidence that managers at tax aggressive firms attempt to mitigate these transparency problems by increasing the volume of tax disclosures in the MD&A and conference calls. Schwab (2014) examines book-tax difference-related disclosures during conference calls and finds that disclosures of book-tax difference-related information are more likely for firms with large book-tax differences, firms with greater tax avoidance, and firms with low earnings quality. Our study differs from Balakrishnan et al. (2012) and Schwab (2014) because (i) we use a larger sample of conference calls that extends to more recent years; (ii) we search for a wide range of mentions related to income taxes (i.e., we do not limit our scope to mentions of aggressive income tax avoidance or book-tax differences); and (iii) we examine which specific types of income tax mentions affect analysts' ETR forecasts.⁹ Overall, our study advances the literature on voluntary disclosure of income taxes by providing large-scale empirical evidence of the frequency, content, determinants and consequences of income tax mentions during quarterly earnings conference calls.

Analysts and Income Taxes

Income taxes are one of the largest expense items on firms' financial statements and

⁸ See Section IV for a discussion of these results. We find no effect of income tax mentions in earnings announcements on ETR forecast accuracy but continue to find an effect of conference call mentions after controlling for mentions in earnings announcements.

⁹ Balakrishnan et al. (2012) analyze a sample of approximately 3,000 conference calls ending in 2010 and test the effect of the number of tax-related words in conference calls on analysts' earnings forecast errors. Schwab (2014) uses a sample of approximately 3,000 calls from 2002 through 2006 to examine the determinants, but not the consequences, of book-tax difference-related disclosures.

therefore have a material effect on earnings.¹⁰ To the extent analysts are incentivized to accurately forecast earnings, it is essential for them to accurately forecast income taxes.¹¹ Furthermore, recent studies provide evidence that analysts' income tax forecasts have important implications beyond being an input to earnings forecasts. Mauler (2015) demonstrates that analysts' implied tax expense forecasts are relevant to investors and that investors more heavily discount earnings management through tax expense when analysts issue an implied income tax expense forecast. Further, the presence of analysts' implied income tax forecasts is associated with less tax avoidance. Baik et al. (2016) provide evidence that analysts' implied tax expense forecasts help investors recognize the persistence of tax expense for future earnings, thereby mitigating the mispricing of tax expense. These studies suggest managers have strong incentives to ensure that analysts understand income taxes.

However, the income tax footnote is difficult to comprehend due to the complexity in accounting for income taxes. Kim et al. (2015) document analysts' under-reaction to the tax change component of earnings, consistent with analysts' failure to fully impound the difference between permanent and transitory ETR changes. McGuire (2009) provides evidence that analysts' one-year-ahead earnings estimates are less accurate when firms have greater ETR decreases in the current year (i.e., when a greater part of net earnings is related to a reduction in taxes). However, he also provides evidence that this inaccuracy is mitigated when firms offer explanations about the reasons for the ETR decreases in their earnings announcements, consistent with the disclosures enabling analysts to form more accurate earnings forecasts. Balakrishnan et al. (2012) estimate that analysts' earnings forecast errors are higher when firms

¹⁰ In our sample, analysts' forecast error attributable to income tax expense accounts for 29 percent of their total net income forecast error, on average.

¹¹ Mikhail, Walther and Willis (1999) find analyst forecast accuracy and turnover are negatively related, consistent with analysts having an incentive to issue accurate forecasts.

have higher levels of aggressive tax avoidance. However, they find no evidence that increased volume of tax disclosures in conference calls improve analysts' earnings forecasts. In contrast, Bratten et al. (2017) use analysts' implied quarterly ETR forecasts to provide evidence consistent with analysts providing more accurate forecasts relative to management as tax complexity increases and when the year-to-date ETR includes a discrete item.¹²

In addition to analysts not fully understanding the implications of tax changes for future earnings, it is also difficult for analysts to anticipate how changes in tax legislation will affect the tax expense of any particular firm. Therefore, even when information about the firm's current tax environment or potential changes to the tax environment is available, analysts may lack the technical knowledge to incorporate the information into their forecasts. Chen and Schoderbek (2000) find that analysts did not incorporate the effect of tax rate changes on deferred tax balances arising from the passage of the Omnibus Budget Reconciliation Act of 1993 into their forecasts. They further find no evidence of a differential effect on forecasts based on the size or direction of the adjustment or analyst sophistication. These results are largely consistent with analysts ignoring the change. Similarly, Plumlee (2003) provides evidence that analysts' ETR forecast revisions reflect the less complex tax law changes arising from the Tax Reform Act of 1986 but not the more complex changes.

Our study contributes to the literature examining analysts and taxes by providing empirical evidence on the extent to which income tax mentions during quarterly earnings

¹² Bratten et al. (2017) do not measure management forecast accuracy relative to management's explicit forecast of the annual ETR. Instead, the authors define management forecast accuracy as the absolute value of the difference between the $q-1$ year-to-date (YTD) GAAP ETR and the actual implied ETR for quarter q from IBES, multiplied by negative one. As the authors note in the paper and illustrate in Appendix A, discrete items recorded during the quarter reduce the informativeness of the quarterly ETR as a forecast of the annual ETR. Their results suggest that analysts gather additional information from management to understand how quarterly discrete items will affect the annual ETR and that it is through this channel that analysts achieve greater forecast accuracy relative to the YTD ETR. We control for tax complexity in our main regression specification. In untabulated analysis, we find that our results are robust to controlling for the inclusion of discrete items in the year-to-date ETR.

conference calls affect analysts' ETR forecasts.

Hypothesis Development

In addition to describing the frequency and content of income tax mentions during quarterly conference calls and examining their determinants, we also test whether the mention of income tax information during conference calls improves analyst ETR forecast accuracy. The effect of income tax mentions on analyst forecast accuracy is unclear *ex ante*. To improve analyst forecast accuracy, tax-related information mentioned during conference calls must be: (i) information not previously available to the analyst; (ii) relevant to the analyst's forecast of income taxes; (iii) accurate; and (iv) understood by the analyst. Using a sample of calls held prior to Regulation FD, Bowen et al. (2002) provide evidence that conference calls improve analysts' EPS forecast accuracy compared to firms that do not hold conference calls, suggesting that conference calls are informative on average. This overall effect could extend to income tax forecasts if management provides new tax information that furthers analysts' understanding of income taxes. Additionally, if analysts use the discussion session of the call to clarify complex income tax information by asking questions – or gain additional information and insight by listening to other analysts' questions – we expect income tax-related questions to improve analyst ETR forecasts.

On the other hand, there are reasons to expect income tax mentions during conference calls will not improve analysts' ETR forecasts. First, analysts might not rely on conference calls as a primary source of information about taxes. Instead, they may rely on other sources including industry reports, press articles or private “call-backs” with management after the public conference call (Brown et al. 2017) such that any tax-related information presented during the call is not new and therefore does not change their forecast. Second, income tax information

mentioned during the call is not necessarily informative to analysts. For example, the presentation session of a conference call is often scripted (Lee 2016) and could contain boilerplate language that does not convey meaningful information. The use of boilerplate language to describe income taxes could be particularly prevalent if managers wish to obfuscate details of their tax planning strategies from tax authorities.¹³ Further, management is often represented on conference calls by the CEO, CFO and/or IRO; the company's chief tax officer rarely participates during conference calls. Whereas these executives are likely capable of answering questions related to overall firm operations, sales, etc., their lack of a tax background could prevent them from providing clear and accurate answers to analysts' questions about income taxes.¹⁴ Finally, even if the information presented is new and accurately conveyed, analysts could still lack the technical knowledge to understand and accurately incorporate the information into their forecasts (Plumlee 2003; Chen and Schoderbek 2000; Amir and Sougiannis 1999).

Because of these competing predictions, we state our hypothesis in the null form below.

Hypothesis: Analyst ETR forecast accuracy does not change following mentions of income tax-related information during quarterly earnings conference calls.

III. RESEARCH DESIGN

Sample Derivation

To construct our sample, we begin with all non-financial firms on Compustat between 2002 and 2015 with non-missing total assets. We match these firms to their unique Factiva

¹³ Managers might use boilerplate language if providing new tax information during a conference call could lead to increased scrutiny from tax authorities. Supporting this, Robinson and Schmidt (2013) find that investors reward firms that adopt less informative tax disclosures in response to new disclosure regulation, suggesting investors perceive more informative tax disclosures as increasing tax audit risk.

¹⁴ Further, Hollander, Pronk and Roelofsen (2010) report that management does not answer all analyst questions. If management does not answer income tax-related questions, we would not find an effect of income tax-related questions on forecast accuracy. However, Mayew, Sharp and Venkatachalam (2013) find that analysts who ask questions have more accurate forecasts and superior private information. If so, analysts' income tax-related questions could improve analysts' forecasts.

identifiers using the company name provided by Compustat to obtain a sample of 129,445 conference calls held between Q1 2002 and Q4 2015 for 5,359 unique firms. We then search Factiva's FD Wire for all earnings conference calls held by firms using these unique firm identifiers.

[Insert Table 1 here]

Our analysis requires that firms have sufficient data in I/B/E/S and Compustat to calculate analyst ETR forecast accuracy and our explanatory variables. As such, we remove 46,166 calls where pretax or net income forecasts for the quarter are missing in I/B/E/S; these variables are necessary to compute analysts' implied ETR forecasts. Second, we remove 6,574 calls where actual reported values of annual pretax income or net income in I/B/E/S are missing; these variables are required to compute ETR forecast errors. Third, we remove 33,370 calls with insufficient quarterly data to compute explanatory variables. Fourth, consistent with much tax research, we remove observations (212 calls) where actual or forecasted ETR for the quarter is less than zero or greater than one (e.g. Dyreng, Hanlon, and Maydew 2008; Rego and Wilson 2012; Kim et al. 2015). Fifth, we remove 10 calls where forecasted pretax income for the quarter equals zero because forecasted pretax income is the denominator of our ETR forecast measure. Sixth, we remove 2,807 calls where the forecasted or actual ETR equals zero because the mention of income taxes during a conference call is likely uninformative in cases where the firm does not incur tax expense. Seventh, we remove 111 calls for tax preparation firms (e.g., H&R Block) and Automatic Data Processing (ADP) because a manual review of their conference call transcripts reveals that the vast majority of their tax mentions relate to their underlying business model (e.g., increases in sales during tax filing season, transmission of payroll taxes to the IRS, etc.) rather than to their own income tax expense. Finally, we remove 722 calls where we are

unable to control for tax mentions during the most recent prior conference call. These criteria result in a final sample of 39,473 quarterly conference calls for 2,412 unique firms.

Table 1 Panel B provides the composition of our sample firms by industry using the Fama and French 12-industry classification. Firms in the Business Equipment industry make up just over 25 percent of sample firms, followed by approximately 12 percent in Wholesale, Retail and Some Services, and approximately 12 percent in Manufacturing. This industry composition is similar to the general distribution of industries for the full sample of firms with conference call data available from Factiva (untabulated). Thus, our sample selection criteria do not alter the industry make-up of firms covered by Factiva.

Determinants of Income Tax Mentions during Conference Calls

To examine factors that influence mentions of income taxes during quarterly earnings conference calls, we estimate the likelihood of a tax mention as a function of factors that we believe increase the demand for (and supply of) voluntary disclosure of tax information including tax complexity, general business complexity, the firm's overall information environment, analyst characteristics, and quarterly fixed effects. We estimate the following logistic regression:

$$\ln \frac{P_{ConfCallTax}}{1-P_{ConfCallTax}} = \alpha + \beta X + \varepsilon.$$

where $P_{ConfCallTax} = \frac{1}{1+e^{-(\alpha+\beta X+\varepsilon)}}$ = the probability that the conference call contains an income tax mention and

$$\beta X = \beta_0 + \beta_{1-7} TaxComplexity + \beta_{8-13} GeneralComplexity + \beta_{14-17} InformationEnvironment + \beta_{18-22} AnalystCharacteristics + Quarter\ FE + \varepsilon \quad (1)$$

We define *ConfCallTax* in three ways. *Mention* equals one if income taxes are mentioned during either the presentation or discussion session of the conference call, and zero otherwise.

Presentation equals one if management presents income tax-related information during the

presentation session of the conference call, and zero otherwise. *Discussion* equals one if income taxes are mentioned by analysts or managers during the discussion session of the conference call, and zero otherwise.

Frankel et al. (1999) conjecture that managers use conference calls to supplement mandatory disclosures when they believe additional information will be most helpful. We therefore expect income tax mentions are more common as tax complexity increases and call participants are more likely to benefit from additional information. We include several proxies for tax complexity following prior literature. First, we include *TA_GAAP*, which equals the industry-adjusted GAAP ETR calculated following Balakrishnan et al. (2012). We expect income tax mentions are more likely when firms engage in potentially complex or aggressive tax avoidance as evidenced by deviations from industry peers. Following Bratten et al. (2017), we also include *ETR_Surp*, *ETR_Volatility* and *Perm_Diff*. *ETR_Surp* equals the absolute value of the year-over-year change in the implied ETR, *ETR_Volatility* equals the standard deviation of the implied annual ETR over five years, and *Perm_Diff* equals the absolute value of the difference between a firm's prior year GAAP ETR and 35 percent.¹⁵ We expect income tax mentions to be increasing in each of these measures of tax complexity. We also include stock option-related compensation expense (*Comp_Exp*) (Austin 2014; Bratten et al. 2017), which can make the GAAP ETR more difficult to forecast due to complex accounting rules for the tax benefits of equity compensation. *Comp_Exp* equals prior year stock compensation expense (STKCO) plus implied option expense (XINTOPT/0.65), scaled by total assets (AT).

Finally, we include indicator variables for foreign operations (*Foreign*) and tax loss carryforwards (*TLCF*). The presence of foreign operations suggests increased tax complexity and

¹⁵ In untabulated analyses, we measure *ETR_Surp* and *ETR_Volatility* using GAAP ETR, defined as Compustat tax expense (TXT) scaled by pretax income (PI). Our results are robust to using these alternative measures.

possibly reduced financial reporting transparency (Balakrishnan et al. 2012; Hope et al. 2013; Akamah, Hope and Thomas 2017), both of which could increase the demand for income tax information on conference calls. The effect of tax loss carryforwards is less straightforward. Tax loss carryforwards could reduce income tax complexity (and therefore the demand for tax information during conference calls) if the firm reports persistently low levels of tax expense. Conversely, tax loss carryforwards could increase the demand for tax information if they are informative about firm performance or if they are accompanied by valuation allowances, which can complicate income tax expense forecasts (Bratten et al. 2017; Dhaliwal, Kaplan, Laux and Weisbrod 2013; Edwards 2017).

We also include multiple variables to capture general business complexity. Balakrishnan et al. (2012) suggest a positive association between tax complexity, business complexity and financial reporting opacity that could influence demand for income tax information. We include an indicator for pretax losses (*Loss*), as well as continuous measures of research and development expenses (*RD_Exp*), firm growth (*MTB*), and leverage (*Leverage*). We also include firm size (*Size*) (Atiase 1985), and the firm's level of diversification measured using the number of segments (*Num_Segs*) (Bushman, Piotroski and Smith 2004).

Because voluntary disclosures in conference calls are part of firms' overall information environment, we capture the information environment with the number of analysts following the firm during the year (*N_Analysts*), *Presentation_{q-1}*, and *Discussion_{q-1}*. We include *N_Analysts* because prior research suggests that voluntary disclosure is positively associated with analyst following (Frankel et al. 1999; Lang and Lundholm 1996; Tasker 1998). We include *Presentation_{q-1}* because we expect a firm's decision to present income tax information is consistent over time. We include *Discussion_{q-1}* because we expect income tax mentions are more

likely when analysts have asked about income taxes in the past. In the model of *Discussion* determinants, we also include *Presentation_q* to capture income tax information provided by management during the current quarter's conference call. Management's presentation may contain sufficient information for analysts' ETR forecasts, decreasing the likelihood that income taxes are mentioned during the discussion session. However, management's presentation of information may require further clarification for analysts to understand the information, increasing the likelihood that income taxes are mentioned during the discussion session.

We also include measures of analyst forecasting resources, ability, and portfolio complexity (Clement 1999; Clement and Tse 2005) because these may influence analysts' demand for supplemental income tax information. All analyst-related variables are measured as average values for all analysts following the firm. To capture analyst forecasting resources, we include brokerage firm size (*Broker_Size*). To capture analyst forecasting ability, we include analysts' average firm-specific experience (*Firm_Exp*) and general experience (*Gen_Exp*). To capture portfolio complexity, we include the average number of firms (*N_Cos*) and the average number of industries (*N_Inds*) that analysts follow. Appendix A provides greater detail about our calculation of analyst controls and all other variables.

Finally, we include quarterly fixed effects to control for tax regulatory changes during the quarter, such as an extension of the R&D tax credit, and for managers' incentives to engage in fourth quarter earnings management through tax expense (Dhaliwal, Gleason and Mills 2004). Events such as these, clustered in certain quarters, could affect the likelihood of tax mentions. We winsorize all continuous variables at one and 99 percent.

Effect of Income Tax Mentions on Analyst ETR Forecast Accuracy

To test our hypothesis, we estimate the change in analyst ETR forecast errors as a

function of income tax mentions and control variables as follows:

$$\begin{aligned} \Delta ETR_FE_{j,q} = & \beta_0 + \beta_1 Mention_{j,q} + \beta_{2-8} TaxComplexity_j + \beta_{9-14} GeneralComplexity_j \\ & + \beta_{15} InformationEnvironment_j + \beta_{16-20} AnalystCharacteristics_j \\ & + Quarter\ FE + Year\ FE + \varepsilon \end{aligned} \quad (2)$$

The dependent variable, ΔETR_FE , equals the consensus ETR forecast error after the current quarter's conference call (FE_{post}) less the consensus ETR forecast error prior to the current quarter's conference call (FE_{pre}). We calculate an analyst's ETR forecast error as the absolute value of the difference between the analyst's implied ETR forecast and actual ETR using data reported in I/B/E/S. Thus, ΔETR_FE is decreasing in consensus annual ETR forecast improvements; a negative (positive) value of ΔETR_FE indicates a reduction (increase) in consensus ETR forecast error. We define an analyst's implied ETR forecast as forecasted pretax income less forecasted net income, scaled by forecasted pretax income as reported in I/B/E/S. We calculate actual ETR as pretax income less net income, scaled by pretax income as reported in I/B/E/S. Analysts forecast "street" earnings, typically excluding the effects of transitory items and I/B/E/S adjusts firms' actual reported earnings (i.e., GAAP amounts) to reflect the items that analysts consider in their forecasts. To calculate FE_{pre} , we use the last forecast issued after the prior quarter conference call and before the current quarter conference call. Similar to Bowen et al. (2002), we calculate FE_{post} using the first analyst forecast issued in the twenty days following the current quarter conference call. Figure 1 illustrates this timeline of events.¹⁶

[Insert Figure 1 here]

¹⁶ We limit the time period for which an analyst can issue a forecast both prior to and following the conference call to more precisely capture the association between mentions of income tax information and changes in consensus analyst ETR forecast error. The consensus forecast measures in I/B/E/S do not provide enough information to verify that analyst forecasts included in the consensus estimate meet our limited timeline. To avoid potentially including stale forecasts in our consensus measures, we compute our own consensus forecast measures in place of those available in I/B/E/S. Additionally, we note that 93 percent of analysts in our sample provide revised forecasts within five days of the conference call, suggesting that conference calls are an important source of income tax information for analysts. In untabulated analysis, we find that our results are robust to limiting our sample to analysts who revise within the five-day window.

A negative coefficient on *Mention* is consistent with reductions in analyst ETR forecast errors after a conference call that includes an income tax mention. To further examine the relation between tax-related mentions and changes in analyst ETR forecast accuracy, we also estimate equation (2) replacing *Mention* with *Presentation* and *Discussion*. Finally, we replace each indicator variable with a continuous measure of the proportion of words in the call (or in each session) that are contained in income tax comments.

To isolate the effect of a tax-related mention on the change in consensus ETR forecast error, we control for firm-specific tax complexity and general complexity using variables from equation (1). We include *N_Analysts* to control for the information environment because prior literature suggests that greater analyst following reduces analyst forecast errors in general (Lang and Lundholm 1996) and specifically with respect to analysts' understanding of the persistence of ETRs (Kim et al. 2015). We also control for analyst forecasting resources (*Broker_Size*), ability (*Firm_Exp*, *Gen_Exp*), and portfolio complexity (*N_Cos*, *N_Inds*) as in equation (1). Prior literature finds that analyst forecast errors decrease with forecasting resources and ability, and increase with portfolio complexity (Clement 1999; Clement and Tse 2005).¹⁷

IV. RESULTS

Descriptive Statistics

Table 2 contains descriptive statistics for variables used in our empirical models. Income taxes are mentioned in 82 percent of conference calls, with management presenting income tax information in 75 percent of calls and participants asking and answering tax-related questions during the discussion session in 37 percent of calls.¹⁸ On average, 1.31 percent of all words

¹⁷ In untabulated analyses, we also include variables to capture analyst forecasting frequency and the length of time between analyst forecasts and find that our results are robust to the inclusion of these variables.

¹⁸ Using a sample of conference calls held between 2002 and 2006, Schwab (2014) reports a similar frequency of tax mentions of 77.6 percent.

spoken during a conference call relate to income tax mentions. This percentage is slightly higher in the presentation session (two percent) and lower in the discussion session (0.75 percent). Analyst ETR forecast errors decrease at both the mean and median following a conference call. While initial descriptive statistics suggest that conference calls lead to improvements in EPS forecasts through improved accuracy in ETR forecasts, we wait to interpret the economic significance of these improvements until our multivariate analysis.

[Insert Table 2 here]

The percentage of calls with tax mentions by year is relatively stable over our sample period, with income tax mentions occurring on 79 to 83 percent of all sample conference calls in most years. We observe 68 percent of firm-years have a mention of income taxes every quarterly call, 25 percent have a mention of income taxes during at least one but not all quarterly calls, and 7 percent of firm-years have no mentions of income taxes during conference calls. Figure 2 provides the percentage of calls with tax mentions by industry. A majority of firms within each industry have income tax mentions during quarterly calls. The percentages range from a high of 88 percent of calls held by firms in the business equipment industry to a low of 69 percent of calls by firms in the energy, oil, gas, and coal industry.

[Insert Figure 2 here]

Content of Tax Mentions during Conference Calls

Table 3 presents information on the content of income tax mentions. Panel A summarizes the content of all tax mentions during conference calls, Panel B summarizes the content of mentions during the presentation session of the conference call, and Panel C summarizes the content of mentions during the discussion session of the conference call. Appendix B provides our categorization algorithm. The five most common categories of income tax mentions are:

Forward Looking, Comparison, Operations/Historical, State, Local, and Foreign, and Cash Taxes. *Forward Looking* mentions include management forecasts of future quarterly or annual ETRs as well as more general statements about expected increases or decreases in taxes and the effect of business transactions (such as stock option exercises) on future tax payments. *Comparison* mentions typically compare current period taxes to those reported in a prior period. Mentions in the *Operations/Historical* category often provide information about the magnitude of taxes in the current period and key drivers of tax expense. *State, Local, and Foreign* mentions often detail the effect of specific jurisdictional characteristics on a firm's state, local, or foreign tax expense. Finally, mentions in the *Cash Taxes* category deal with topics such as refunds, cash taxes paid upon repatriation or settlement with tax authorities, and cash tax savings from temporary tax planning strategies such as bonus depreciation. We provide examples of each category of mention in Appendix C.

We focus the remainder of our discussion of Table 3 on Panels B and C. Of the calls where *Presentation* equals one, management provides forward looking information about taxes on 71.2 percent of calls and compares current taxes with prior period taxes on 50.7 percent of calls. These statistics highlight that much of management's presentation of income taxes relates to information that should benefit analysts forecasting ETRs. Mentions of historical income tax information are also common during the presentation session (38.9 percent of calls) as are mentions of state, local and foreign taxes (20.1 percent) and cash taxes (19.6 percent).

[Insert Table 3 here]

Of the calls where *Discussion* equals one, 63.1 percent of calls contain Q&A about forward looking tax information and 30.0 percent contain Q&A about comparisons of current-period taxes with prior periods. The fact that these are the most common topics in both the

presentation and discussion sessions suggests that much of the discussion reflects analysts following up on information management disclosed during the presentation session. Other common mentions during the discussion session relate to cash taxes (19.6 percent), state, local and foreign taxes (19.1 percent) and tax legislation (16.2 percent). Comparing frequencies across the two panels, we note that mentions about transitory items and historical information are more common during the presentation session than the discussion session. This pattern could reflect analysts' belief that historical information is relatively uninformative when forecasting ETRs. We also note a greater frequency of mentions of *Settlements* during the presentation session, which could again suggest analysts view tax settlements as more transitory in nature and not an important component of core tax forecasts. We later examine the effect of each tax mention category on analyst ETR forecast accuracy.

Determinants of Income Tax Mentions during Conference Calls

Table 4 presents results from estimating equation (1) separately for *Mention*, *Presentation* and *Discussion*. We find that *Mention* is positively associated with tax complexity measured using *ETR_Surp*, *Comp_Exp* and *Foreign*. The positive coefficient on *ETR_Surp* suggests that income taxes are more likely to be mentioned when the firm has a large year-over-year change in the ETR. In contrast, the likelihood of an income tax mention is decreasing in general business complexity. Income tax mentions tend to be sticky, with *Presentation_{q-1}* and *Discussion_{q-1}* both being significant determinants of *Mention_q*. We find similar results for *Presentation*: the likelihood of management presenting income tax information is generally increasing in tax complexity and decreasing in general business complexity. We estimate a positive coefficient on *TA_GAAP* when *Presentation* is the dependent variable. This result is consistent with the theory from Balakrishnan et al. (2012) that managers attempt to overcome the

information asymmetry and lack of financial reporting transparency that arise as a result of aggressive tax avoidance. Both the *Mention* determinants model and the *Presentation* determinants model show high discriminatory power with areas under the Receiver Operator Characteristic (ROC) Curve around 80 percent.

[Insert Table 4 here]

We find that income tax mentions during the discussion session are more likely when firms have larger year-over-year changes in the ETR, are larger, have foreign operations and are profitable. Tax mentions during the discussion session are also more common when management mentions income taxes during the presentation session. Focusing on analyst characteristics, tax mentions during the discussion session are more common when analysts have less forecasting experience and therefore have a greater demand for tax information beyond what is available outside of the call.¹⁹

Effect of Income Tax Mentions on Analyst ETR Forecast Accuracy

Panel A of Table 5 presents results from estimating equation (2) to test our hypothesis. We find a reduction in the magnitude of ETR forecast errors following conference calls with income tax mentions. Using mean values of pretax income (\$906 million) and shares outstanding (\$227 million), a 0.14 percentage point reduction in ETR forecast error (our coefficient estimate on *Mention*) suggests a \$0.006 per share reduction in analysts' net income forecasts following a conference call with an income tax mention relative to a call with no income tax mention, all else

¹⁹ In untabulated analyses, we develop an indicator variable for the presence of discrete items in the year-to-date ETR following the methodology outlined in Bratten et al. (2017). We classify 51 percent of our firm-quarters as having a discrete item in their year-to-date ETR reconciliation, similar to 47 percent of firm-quarters in Bratten et al. (2017) classified as having a discrete item in their year-to-date ETR reconciliation. We find that the likelihood of tax mentions in the call as a whole as well as in each session (*Mention*, *Presentation*, and *Discussion*) is increasing in the presence of discrete items.

equal. We therefore reject our hypothesis that conference call income tax mentions do not improve analysts' annual ETR forecasts.

[Insert Table 5 here]

We also separately analyze the effects of *Presentation* and *Discussion* to examine whether one portion of the call has a greater impact on forecast errors. Results indicate that although income tax mentions during both sessions of the call are associated with improvements in annual ETR forecasts, discussion session mentions have the largest effect. The coefficient estimate of -0.0011 (-0.0019) on *Presentation* (*Discussion*) equates to a \$0.004 (\$0.007) reduction in analysts' annual net income forecasts per share, all else equal.²⁰

In Panel B of Table 5, we examine whether the proportion of words dedicated to taxes during the call is associated with improvements in analyst ETR forecast accuracy. This analysis allows us to understand whether more discussion of income taxes improves ETR forecasts. To conduct this analysis, we replace the indicator variables for *Mention*, *Presentation* and *Discussion* with continuous variables that capture the proportion of words in sentences containing income tax mentions to total words during the conference call (*Mention%*) or to total words during that session of the call (*Presentation%* and *Discussion%*). As in Panel A, analyst ETR forecast accuracy is increasing in the amount of time devoted to income taxes. In

²⁰ In addition to our main model, we also estimate multiple alternate specifications (untabulated). First, we examine the effect of *Mention* on changes in annual net income forecast errors following the methodology in Bowen et al. (2002). We find that *Mention* reduces annual net income forecast errors, which suggests the improvements in ETR forecasts we document herein carry over to bottom-line earnings forecasts. Second, because our finding of an improvement in net income forecasts contrasts with Balakrishnan et al. (2012), who find no effect of conference call tax mentions on net income forecasts, we re-estimate equation (2) using our sample but replace *Mention* with *Mention_BBG*, which is equal to one when conference calls contain the tax keywords outlined in Balakrishnan et al. (2012). Although *Mention* and *Mention_BBG* are significantly correlated ($\rho=0.65$), we estimate an insignificant coefficient on *Mention_BBG* in our specification. We conclude that the keywords from Balakrishnan et al. (2012), which target complex or aggressive tax avoidance, do not capture the income tax disclosures during conference calls that most benefit analysts in improving earnings forecasts. Our contrasting findings can therefore not be solely attributed to the low power of the relatively small sample of conference calls examined by Balakrishnan et al. (2012). Third, similar to Bowen et al. (2002), we examine the relation between income tax mentions and ETR forecast dispersion and find no effect. Finally, results in Table 5 are also robust to measuring changes in analysts' annual tax expense forecasts rather than in their annual ETR forecasts.

untabulated analyses, we redefine *Mention*, *Presentation*, and *Discussion* as (i) continuous variables equal to the log of the number of income tax mentions and (ii) indicator variables set equal to one for quarterly conference calls with greater than one income tax mention. Our results in Table 5 are robust to both specifications.²¹

In Table 6, we exploit our detailed categorization of income tax mentions (shown in Table 3) to identify which topics are most helpful in reducing analysts' annual ETR forecast errors. Results suggest that several categories of tax mentions improve analysts ETR forecasts overall. We estimate significant negative coefficients on *Forward Looking*, *Comparison*, *Persistent*, *Legislation*, *Settlement*, *Reserves* and *Losses*. These results suggest that it is not only managements' forward looking tax information that aids analysts in improving ETR forecasts; other information is incrementally important. Not surprisingly, mentions related to *Transitory*, *Deferred Taxes*, and *Cash Taxes* (that often do not affect tax expense) do not improve ETR forecasts.²² This pattern of results generally holds when looking at the presentation session separately in Panel B.

Interestingly, we find that the improvement in ETR forecasts derived from forward looking information occurs more during the discussion session than the presentation session (p -value = 0.009). Thus, it appears the interactive nature of the discussion session is particularly important in helping analysts understand forward looking information. Discussion of tax losses, comparisons, tax legislation and current period tax expense in light of operations also leads to significant reductions in ETR forecast errors. As with *Mention* and *Presentation*, discussion of

²¹ Consistent with our one-directional hypothesis, we present the results in Table 5 using one-tailed p -values. However, our inferences remain unchanged if we use two-tailed p -values.

²² Consistent with our one-sided hypothesis, we present the results in Table 6 using one-tailed p -values. Using two-tailed p -values, we estimate a positive coefficient on *Other*, suggesting that 'other' tax mentions are associated with increases in analyst ETR forecast error. All other inferences remain unchanged.

transitory items, valuation allowance, deferred taxes and state, local and foreign taxes has no effect on ETR forecast accuracy.

[Insert Table 6 here]

The Role of Earnings Announcements

To rule out the alternative explanation that our results are driven by the concurrent release of income tax information in earnings announcements, we conduct additional analyses in Table 7. Specifically, we apply our search algorithm to a sample of 35,808 observations for which we have both conference call transcripts and earnings announcements. In Panel A, we note that only 69 percent of earnings announcements contain mentions of income tax, compared to 82 percent of conference calls in this sample. We estimate no significant effect of earnings announcement tax mentions (*EA Mention*) on changes in analysts' annual ETR forecast errors. Further, in Panel B when we control for *EA Mention* in equation (2), we continue to estimate significant and negative coefficients on *Mention*, *Presentation* and *Discussion*. Thus, income tax mentions during conference calls are helpful to analysts in improving ETR forecasts incremental to income tax mentions during earnings announcements.²³

V. CONCLUSION

This study provides a comprehensive analysis of income tax-related mentions during quarterly earnings conference calls. We present multiple findings. First, income taxes are mentioned during 82 percent of quarterly conference calls, often during every quarterly call held during the year, suggesting the policy to voluntarily disclose income tax information during

²³ Brown et al. (2017) report that a significant number of companies allow private “call-backs” during which management communicates privately with “select individuals in the investment community.” These call-backs often begin immediately after the conference call. We cannot rule out these private call-backs as the source of information useful to analysts in forecasting ETRs. However, to avoid violating Reg FD, management can communicate only “inconsequential” data during private communications, such as clarifying information that was publicly-disclosed on the conference call. We therefore believe our results are attributable to information communicated during conference calls and not to private call-backs.

conference calls is sticky. Second, the most common topic mentioned during both the presentation and discussion sessions is forward looking information about taxes. Third, discussion of income taxes during Q&A is more likely when analysts have less experience, when firms have larger year-over-year changes in their ETRs, when firms are large and have more foreign operations, and when management mentions taxes during the presentation session. Finally, analyst ETR forecast errors decrease following calls with income tax mentions, consistent with conference call tax mentions improving analysts' understanding of tax information.

Our study advances multiple streams of literature. First, we contribute to the literature examining managers' voluntary disclosures of tax information (e.g., Balakrishnan et al. 2012; McGuire 2009; Schwab 2014) by providing the first, large-sample empirical evidence of the frequency, content, determinants and consequences of conference call income tax mentions. Our search algorithm capturing a broad spectrum of income tax issues enables us to classify income tax mentions on the conference call and to provide descriptive evidence on the income tax issues management and analysts view as important. Second, our finding that conference call tax mentions are associated with improvements in analysts' ETR forecast accuracy furthers our understanding of the channels through which market participants obtain tax information. Finally, prior literature documents that conference calls improve analyst net income forecast accuracy (Bowen et al. 2002). Our finding that tax mentions improve analyst ETR forecast accuracy suggests that one mechanism through which conference calls improve analyst forecast accuracy is via discussion of complex financial statement information.

Our results demand some caveats. First, the lack of explicit ETR forecasts in I/B/E/S requires us to estimate an implied ETR forecast using pretax and net income forecasts. Although

we take measures to eliminate observations that appear unreasonable, our measure of forecasted ETRs is indirect. Second, not all I/B/E/S analysts report both pretax income and net income forecasts. To the extent analysts reporting both pretax and net income forecasts are not representative of all analysts, our results might not generalize.

APPENDIX A
Variable definitions

Conference Call Variables

- Presentation* = One if management presents income-tax related information during the presentation session of the quarterly conference call, and zero otherwise.
- Discussion* = One if income taxes are mentioned by analysts or managers during the discussion session of the quarterly conference call, and zero otherwise.
- Mention* = One if either *Presentation* or *Discussion* equals one, and zero otherwise.
- Presentation%* = The proportion of income-tax related words relative to all words in the presentation session of the quarterly conference call.
- Discussion%* = The proportion of income-tax related words relative to all words in the discussion session of the quarterly conference call.
- Mention%* = The proportion of income-tax related words relative to all words on the quarterly conference call.

Analyst Forecast Accuracy Variable

- ΔETR_FE* = The mean change in individual analyst ETR forecast errors for all analysts following firm *j* around the quarter *q* conference call, calculated as the difference between *FE_{Post}* and *FE_{Pre}* by quarter. *FE* equals the absolute value of the difference between the implied annual ETR forecast and the actual annual ETR for analyst *i* following firm *j* in year *t*. The implied ETR forecast is calculated as the I/B/E/S pretax income forecast less the net income forecast scaled by the pretax income forecast. *FE_{Pre}* equals the annual forecast error prior to the quarter *q* call using the last forecast issued after the prior quarter conference call and before the current quarter conference call. *FE_{Post}* equals the annual forecast error after the quarter *q* call using the first analyst forecast issued in the twenty days following the current quarter conference call. Analysts must provide forecasts both prior to and following the conference call to be included in the consensus measure.

Tax Complexity Variables

- TA_GAAP* = The average industry-size matched GAAP ETR less the firm's GAAP ETR. GAAP ETR equals the sum of tax expense (TXT) over years *t-2* to *t*, divided by the sum of pretax income (PI) over years *t-2* to *t*.
- ETR_Surp* = The absolute value of the year-over-year change in implied ETR, where ETR equals I/B/E/S pretax income less net income scaled by pretax income.
- ETR_Volatility* = The standard deviation of the annual ETR from *t-4* to *t*, where ETR equals I/B/E/S pretax income less net income scaled by pretax income.
- Comp_Exp* = Prior year stock compensation expense (STKCO) plus implied option expense (XINTOPT/0.65), scaled by total assets (AT).
- Perm_Diff* = The absolute value of the difference between a firm's prior year GAAP ETR and 35%, where GAAP ETR equals tax expense (TXT) scaled by pretax income (PI).
- TLCF* = One for firms with non-zero tax loss carryforwards (TLCF) in the prior year, and zero otherwise.
- Foreign* = One for firms with non-zero pretax foreign income (PIFO) in the prior year, and zero otherwise.
-

APPENDIX A (continued)

Variable definitions

General Complexity Variables

- Loss* = One if the firm reports a pretax loss for the year ($PI < 0$), and zero otherwise.
- RD_Exp* = Prior year R&D expenditures (XRD) scaled by prior year sales (SALE). If R&D expenditures exceed sales, *RD_Exp* is set to one. If XRD is missing, XRD is set to zero.
- MTB* = Prior year market value (PRCC_F*CSHO) scaled by prior year book value (CEQ).
- Leverage* = Prior year long-term debt (DLTT) scaled by prior year total assets (AT).
- Size* = The natural log of prior year total assets (AT).
- Num_Segs* = The number of 4-digit SIC segments for a firm in the current year as reported in Compustat.

Information Environment Variables

- N_Analysts* = The number of analysts following a firm in year t as reported in I/B/E/S Summary History dataset.
- EA Mention* = One if the firm includes income-tax related information in its quarterly earnings announcement, and zero otherwise.

Analyst Characteristic Variables

- Broker_Size* = The average value across all analysts providing an implied ETR forecast for firm j in quarter q based on the following calculation: The number of analysts employed by the brokerage firm employing analyst i following firm j in year t minus the minimum number of analysts employed by brokerage firms for analysts following firm j in year t , scaled by the range of brokerage size for analysts following firm j in year t (Clement and Tse 2005).
- Firm_Exp* = The average value across all analysts providing an implied ETR forecast for firm j in quarter q based on the following calculation: The number of years of firm-specific experience for analyst i following firm j in year t minus the minimum number of years of firm-specific experience for analysts following firm j in year t , scaled by the range of years of firm-specific experience for analysts following firm j in year t (Clement and Tse 2005).
- Gen_Exp* = The average value across all analysts providing an implied ETR forecast for firm j in quarter q based on the following calculation: The number of years of experience for analyst i following firm j in year t minus the minimum number of years of experience for analysts following firm j in year t , scaled by the range of years of experience for analysts following firm j in year t (Clement and Tse 2005).
- N_Cos* = The average value across all analysts providing an implied ETR forecast for firm j in quarter q based on the following calculation: The number of companies analyst i follows in year t , calculated as the number of companies followed by analyst i following firm j in year t minus the minimum number of companies followed by analysts who follow firm j in year t , scaled by the range in the number of companies followed by analysts following firm j in year t (Clement and Tse 2005).
- N_Inds* = The average value across all analysts providing an implied ETR forecast for firm j in quarter q based on the following calculation: The number of industries analyst i follows in year t , calculated as the number of two-digit SICs followed by analyst i following firm j in year t minus the minimum number of two-digit SICs followed by analysts who follow firm j in year t , scaled by the range in the number of two-digit SICs followed by analysts following firm j in year t (Clement and Tse 2005).
-

APPENDIX B

Tax mention search algorithm

PRIMARY TAX MENTION IDENTIFICATION

A tax mention is identified by instances of the following: tax*, IRS, ETR, UTB*, R&D credit*, R&E credit*, valuation allowance*, valuation reserve*, NOL*, FIN 48, Internal Revenue Service, depreciation deduction*, domestic production activities deduction*, DPAD

We remove any tax mention within 15 words of the following: liquidity, consumer, customer, rebate, and VAT.

We also remove all instances of the following: ad valorem tax*, after income tax*, after tax*, before income tax*, before interest tax*, before interest expense and income tax*, before tax*, cigarette tax*, consumption tax*, Consumption tax*, different tax*, drink tax*, employment tax*, excise tax*, export tax*, extraction tax*, gaming tax*, gas tax*, gift tax*, individual income tax*, individual tax*, interest and other income tax*, interest and tax*, interest expense income tax*, interest expense tax*, interest income tax*, interest tax*, internet tax*, medical device* tax*, net of income tax*, net of tax*, non income tax*, nonincome tax*, other than income tax*, payroll related tax*, payroll tax*, personal income tax*, personal tax*, post income tax*, post tax*, pre income tax*, pre tax*, production tax*, profit tax*, property tax*, Pump tax*, revenue tax*, sales tax*, security tax*, severance tax*, soda tax*, tax accountant*, tax advisor*, tax area*, tax break*, tax consultant*, tax department*, tax director*, tax efficien*, tax group*, tax guy*, tax implication*, tax incentive*, tax manager*, tax matter*, tax optimization, tax people, tax regime*, tax related, tax team*, transfer tax*, use tax*, value add* tax*, value added tax*, valueadd* tax*, vice president tax*, VP of tax*, VP IR Taxation, VP Investor Relations and Taxation, Vice President Investor Relations and Taxation, tax effect our earnings, tax effected, tax effecting, unemployment tax*

We also remove all instances where the only mention of “tax” relates to the title of the speaker. E.g., the title of the speaker has “TAX” in all caps in their position title as in “VP OF TAX”.

TAX MENTION CATEGORIES:

1. Forward Looking:
 - a. A primary tax mention within 15 words of any of the following (excluding verbs ending in ‘ed’): guidance, guide*, guiding, model*, updat*, range, unchang*, expect*, approximat*, around, estimat*, forecast*, project*, anticipat*, ongoing, should be, going forward, go forward, future, will, may, might, goal*, objective*, seek*, intend*, hope*, hoping, plan*, believe*, outlook, going to be, is/are (now/currently/still/presently) anticipated to, is/are (now/currently/still/presently) forecasted to, is/are (now/currently/still/presently) expected to, is/are (now/currently/still/presently) projected to, is/are (now/currently/still/presently) estimated to, is/are (now/currently/still/presently) guided to, next year, next quarter, next period, rest of the year, rest of the quarter, rest of the period
 - b. Instances of: expected [tax mention] within 5 words of “is” or “are”, approximated [tax mention] within 5 words of “is” or “are”, estimated [tax mention] within 5 words of “is” or “are”, projected [tax mention] within 5 words of “is” or “are”, anticipated [tax mention] within 5 words of “is” or “are”, guided [tax mention] within 5 words of “is” or “are”, what is the tax rate, what is the effective tax rate
2. Comparison
 - a. Instances of “tax rate”, “tax expense”, or “tax provision” within 15 words of any of the following words: up, down, high*, low*, increas*, decreas*, compar*, versus, above, below, similar
3. Transitory
 - a. A primary tax mention within 15 words of any of the following: one time, onetime, one off*, discontinued operation*, impair*, true up, trueup, discrete, writeoff, write off, overstatement, understatement, remeasur* **AND NOT** within 10 words of any of the following: settl*, closing agreement, resolution, litigat*
4. Persistent
 - a. A primary tax mention within 15 words of any of the following: permanent, recurring, ongoing, sustain* **OR** within 5 words of any of the following: normal, normalized, structural
 - b. Instances of: tax planning strateg*, tax strateg*, tax initiative*

APPENDIX B (continued)
Tax mention search algorithm

5. Legislation
 - a. A primary tax mention with any of the following within the sentence: congress*, legislation, work opportunity credit*, work opportunity tax credit*, welfare to work, tax credit*, domestic production activities deduction, regulation
 - b. Instances of: tax credit*, R&D tax, R&D credit, R&E tax, R&E credit, tax polic*, tax law*, tax holiday*, tax reform, DPAD
 - c. Instances of “tax law” within 15 words of “change*”
6. Valuation Allowance
 - a. A primary tax mention with any of the following within the sentence: valuation allowance, valuation reserve
7. Settlement
 - a. A primary tax mention with any of the following within the sentence: settl*, closing agreement, resolution, determination, ruling, litigat*, audit*, exam*,
8. Deferred Taxes
 - a. A primary tax mention with any of the following within the sentence: bonus depreciat*, accelerated depreciat*, depreciation deduct*
 - b. Instances of: deferred tax*, tax asset*, deferred income tax*, tax depreciat*, tax deferred asset*, timing of tax*
9. Reserves
 - a. A primary tax mention with any of the following within the sentence: lapse, reserve*
 - b. Instances of: UTB*, uncertain tax position*, unrecognized tax benefit*, uncertain tax benefit*, FIN 48,
10. Losses
 - a. A primary tax mention with any of the following within the sentence: loss carry*, net operating loss, carry forward*
 - b. Instances of: NOL*, tax loss*, tax attribute*
11. Cash Taxes
 - a. A primary tax mention within 15 words of any of the following: pay*, paid, refund*,
 - b. Instances of: cash tax*
 - c. Instance of tax liability* **AND NOT** within 5 words of “deferred”
12. State, Local and Foreign
 - a. A primary tax mention with any of the following within the sentence: repatriat*, indefinit*, APB 23, permanent*, AJCA, American Jobs Creation Act, foreign earning*, apportionment, PRT, the name of any state in the United States, the name of any country in the world
 - b. Instances of: state tax*, state income tax*, local tax*, local income tax*, foreign tax*, foreign income tax*, international tax*, international income tax*, petroleum revenue tax*
13. Operations/Historical
 - a. A primary tax mention with any of the following within the sentence: results include
 - b. Instances of: tax expense was, tax expense for/during/in the year was, tax expense for/during/in the quarter was, tax expense for/during/in the period was, tax rate was, tax rate for/during/in the year was, tax rate for/during/in the quarter was, tax rate for/during/in the period was, tax provision was, tax provision for/during/in the year was, tax provision for/during/in the quarter was, tax provision for/during/in the period was, tax benefit was, tax benefit for/during/in the year was, tax benefit for/during/in the quarter was, tax benefit for/during/in the period was, or any of the above instances including a one-word gap between “the” and “year/quarter/period”
 - c. A primary tax mention from a sentence with a verb in the past tense that was not classified in any other category based on the above algorithm
14. Other
 - a. Primary tax mentions from conference calls in which none of the other primary tax mentions on the conference call were classified based on the above algorithm

Appendix C

Examples of Categorized Mentions

This appendix contains examples of mentions categorized using the tax mention search algorithm from Appendix B. If a mention contains information relating to more than one tax category, we include the comment in each category to which it applies. We provide the company name and date of the conference call for each mention provided below.

1. Forward Looking

Shifting to taxes and net income, we now expect that our effective US GAAP tax rate for 2013 will be between 22% and 26%. – Repligen Corporation, 8/1/2013

Our effective tax rate will be lower in the March quarter, favorably impacting net income. – Linear Technologies Corporation, 1/16/2013

Can you talk about what the impact for the current year's going to be for stock option expenses related to 123R and then secondly now after a few good quarters in a row of profits, what we can think about in terms of having to pay the tax man going forward and what's your current balance on the NOLs? Thanks. – Sigma Designs, 3/21/2006

2. Comparison

You may recall that our tax provision last year was significantly higher, over 90 percent, actually, for all of FY '04 because our U.S. income was insufficient to offset foreign income taxes payable. – Phoenix Technologies, 1/27/2005

In fact, the tax rate looks a little higher than it was in the first half of 2003. – TOTAL, 5/7/2004

3. Transitory

EPS in the fourth quarter included a \$0.01 discrete tax benefit. – Texas Instruments, 1/22/2008

In addition, fourth quarter results were benefited from a one-time non-recurring reversal of certain excess reserves for income taxes and bonuses and a decrease in the allowance for doubtful accounts, together which totaled about a million dollars. – Netegrity, Inc., 1/29/2003

In addition, we had the one-time favorable tax ruling I mentioned earlier in Malaysia which -- where we reversed a tax provision made last year of \$1.9 million and that was done in the quarter. – Stolt-Nielsen S.A., 7/5/2007

4. Persistent

The lower tax rate in this quarter reflects several items, including permanent differences primarily related to the Internal Revenue Code Section 199 deduction. – Pike Electric Corporation, 2/6/2013

You're saying that a 24.3% tax rate is sustainable? – WABCO Holdings, Inc., 2/7/2008

5. Legislation

In October new tax legislation that extends the carryforward period for these types of credits from 5 years to 10 years was enacted. – AAR Corp., 12/17/2004

Our tax rate for 2009 is expected not to exceed 11% as we benefit from our long term Malaysian tax holiday. – First Solar Inc., 10/29/2008

Speaking of cash flows, with the recently enacted tax law changes around bonus depreciation, our current taxes in 2010 were actually a benefit of \$900,000. – Intrepid Potash Inc., 2/24/2011

6. Valuation Allowance

We recorded a \$27.1 million non-cash charge for additional valuation allowance against our deferred tax assets compared to a tax benefit of \$53.5 million last year. – Rite Aid Corporation, 12/18/2008

Based on our stated accounting policy, which I have commented on in previous conference calls, and after assessment of other relevant factors, we released our remaining tax valuation allowance. – Superior Industries, 3/5/2012

7. Settlement

The lower tax rate was primarily due to favorable IRS settlements and statute expirations. – LifePoint Hospitals Inc., 2/19/2010

The change in the effective tax rate and the decrease in income tax expense were driven by the release of uncertain tax positions for Garmin Europe following the conclusion of taxing authority reviews of the 2008, 2009 tax years and a change in methodology for uncertain tax position reserves following favorable audits in both 2010 and 2011. – Garmin Ltd., 5/4/2011

8. Deferred Taxes

Most companies have accelerated tax depreciation and tax is higher than book. So normally that would create something called deferred tax assets that would not show up in your tax rate. – Veritas DGC Inc., 3/30/2005

What Jim was trying to explain earlier is that the deferred tax issue really is on the timing of the recognition of revenue or taxable income for tax purposes. – Hawaiian Electric Industries, Inc., 2/18/2014

9. Reserves

MCI's tax provision for the first quarter included 104 million adjustments to our reserve for contingent liabilities. – MCI Inc., 5/5/2005

The tax rate for the quarter was 35.1%, and we expect our full-year 2007 tax rate to be about 32.5%, reflecting the adoption of FIN 48 and the elimination of the FISC ETI benefit. – AMETEK Inc., 4/19/2007

Tax expense was significantly higher versus the prior year, primarily due to a release of foreign tax credit reserves in the fourth quarter of 2011 that did not repeat this past quarter. – Armstrong World Industries, 2/19/2013

10. Losses

So mechanically, utilization of this NOL in 2014, when profitable, does not result in a provision for taxes on our P&L. – American Airlines Inc., 1/28/2014

At this point, how long do you project that the NOLs will last? Did you acquire any NOLs through the transaction? – Westmoreland Coal Co., 4/25/2014

In addition, due to our substantial tax loss carry-forwards, we do not expect to pay federal taxes in fiscal 2012 or in the years to come. – Winn Dixie Stores Inc, 8/30/2011

11. Cash Taxes

Bonus depreciation deductions in 2011 and 2012 are expected to generate \$450 million to \$500 million of cash tax benefits for APS. – Pinnacle West Capital Corporation, 2/18/2011

We did actually get a big refund first of January -- \$100 million refund on taxes that we paid in 2014. – Aaron's Inc., 2/6/2015

12. State, Local, and Foreign

The tax rate in Chile is 17% and in Argentina is 35%. – Barrick Gold, 7/27/2004

We believe we will find opportunities to invest in other countries for decades to come, thereby retaining our low effective tax rate indefinitely. – The Cooper Companies, Inc., 3/7/2013

Turning to income taxes during the fourth quarter of '02, the company recognized a \$2.3m income tax benefit primarily due to net effects of income tax reform enacted in Belgium in December. – NL Industries, 1/31/2003

There are reasons to be optimistic about California as the broader economy improves and the state's new tax credit takes effect, although we will have to wait and see how budget issues at the state level affect the rate of improvement. – PulteGroup, Inc., 5/5/2010

13. Operations/Historical

Our third quarter income tax rate was 35.1%, in-line with our expectation going into the quarter. – Foot Locker, Inc., 11/21/2008

The GAAP tax rate for the quarter was 25%, which was higher than our 23% target, primarily due to the sales mix in higher taxing jurisdictions than we had forecasted. – Cree Inc., 8/11/2009

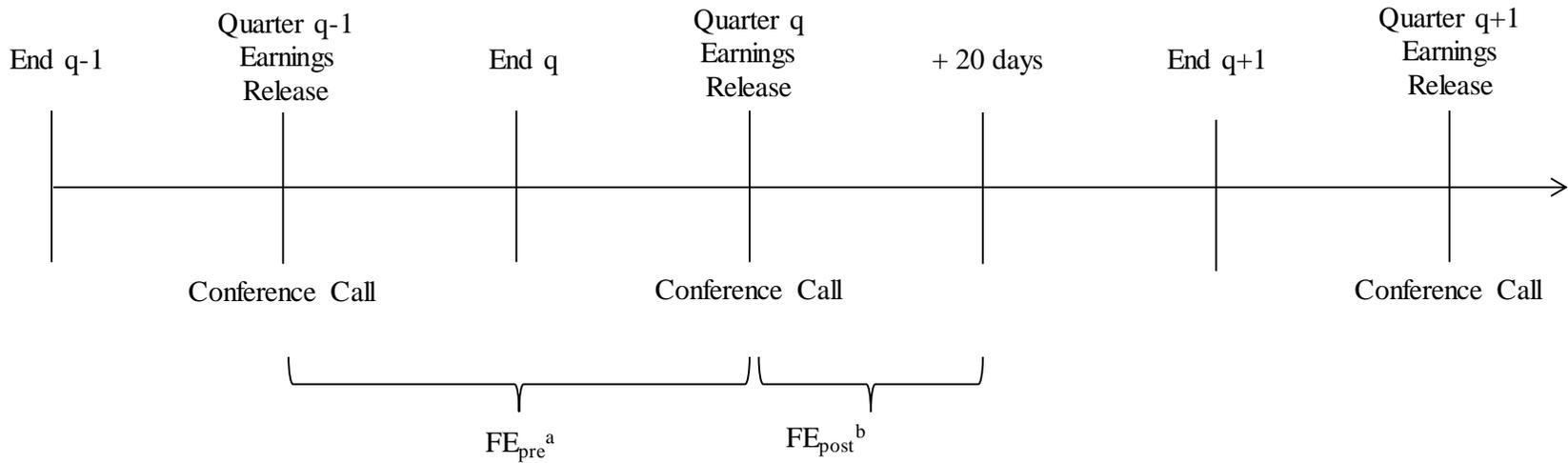
14. Other

A big cost increase, which is actually a good one, is on our income taxes. – California Water Service Group, 10/28/2004

We're trying to eliminate our taxes as much as possible and generate and keep as much of our cash as we can so we can reinvest or pay down debt with that cash. – Rick's Cabaret International, Inc., 5/10/2012

FIGURE 1
Measurement of $\Delta ETR_FE_{i,j,q}$

This figure illustrates the timeline of events for measuring the change in an analyst's implied ETR forecast error. To calculate FE_{pre} , we use the last forecast issued after the prior quarter conference call and before the current quarter conference call. We calculate FE_{post} using the first analyst forecast issued in the twenty days following the current quarter conference call.



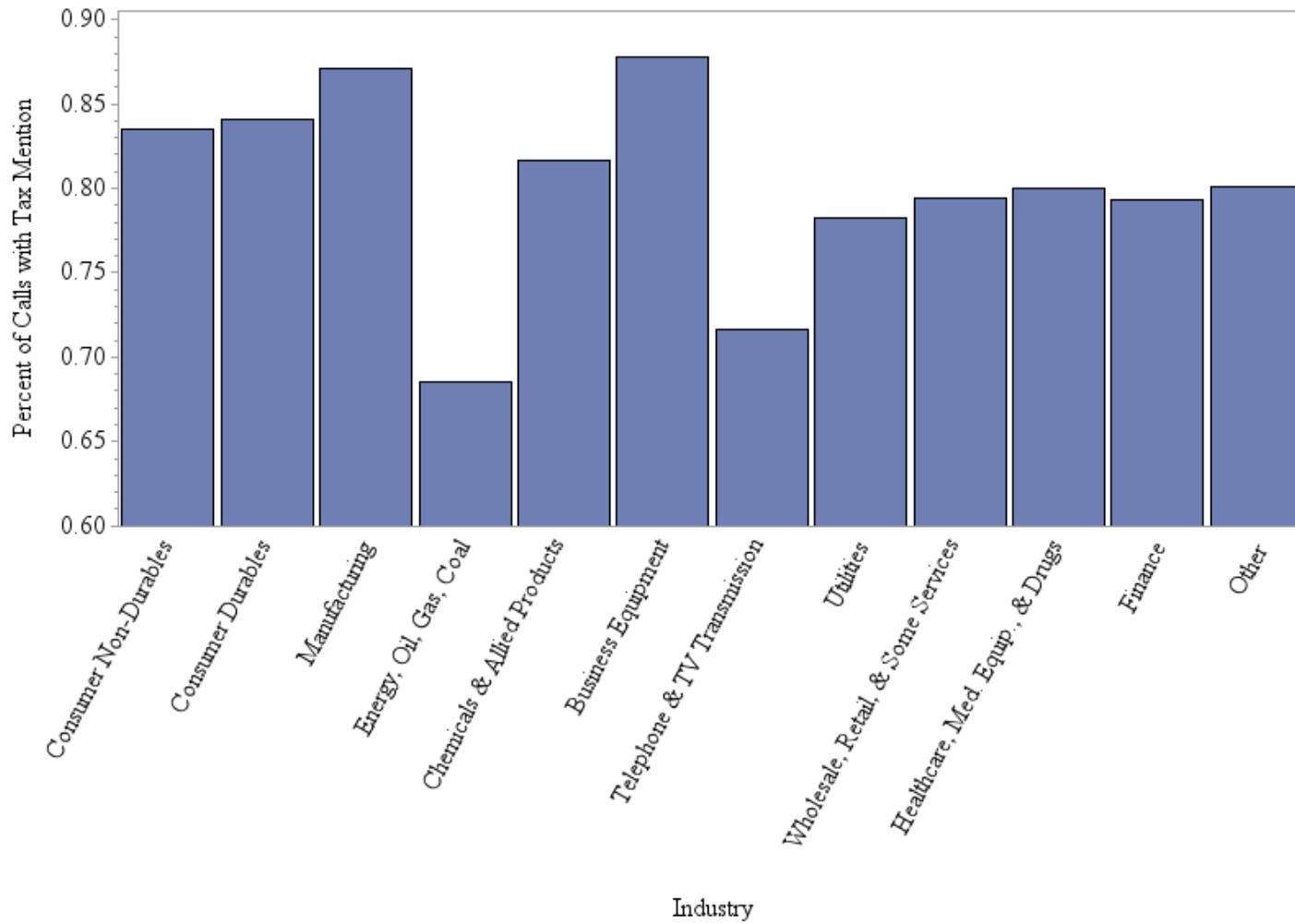
^a FE_{pre} represents an individual analyst *i*'s ETR forecast error for firm *j* in year *t* prior to the quarter *q* conference call.

^b FE_{post} represents the same individual analyst *i*'s ETR forecast error for firm *j* in year *t* following the quarter *q* conference call.

FIGURE 2

Percentage of Quarterly Conference Calls with an Income Tax Mention – By Industry

This figure presents the percentage of calls with income tax mentions by industry.



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TABLE 1
Sample derivation

This table derives the sample. Panel A summarizes our sample derivation. The first column reports the number of firms, the second column reports the number of firm-years, and the third column reports the number of conference call observations. Our data restrictions do not always result in the loss of all four conference call observations for a particular firm in a given year. We only report a reduction in the number of firms in our sample if we lose all conference calls relating to that firm as a result of a data restriction. Panel B presents our sample composition by industry.

Panel A, Sample selection criteria

	Total		
	<i>Number of Firms</i>	<i>Number of Firm- Years</i>	<i>Number of Conference Calls</i>
Initial sample	5,359	40,663	129,445
Conference calls missing forecast data in I/B/E/S	(1,708)	(14,834)	(46,166)
Conference calls missing actuals data in I/B/E/S	(105)	(2,407)	(6,574)
Conference calls missing data to compute explanatory variables	(949)	(10,222)	(33,370)
Conference calls where actual/forecasted ETR outside of (0,1)	(8)	(49)	(212)
Conference calls where forecasted pretax income = 0	-	(3)	(10)
Conference calls where forecasted or actual ETR = 0	(110)	(924)	(2,807)
Tax preparation firms and ADP	(3)	(32)	(111)
Missing data to control for previous quarter mention of taxes	(64)	(208)	(722)
Final sample	2,412	11,984	39,473

Panel B, Industry classification (Fama and French 12 Industry Classification)

	Number	Percent
Consumer Non-Durables	140	5.8%
Consumer Durables	71	2.9%
Manufacturing	287	11.9%
Energy, Oil, Gas, and Coal Extraction and Products	142	5.9%
Chemicals and Allied Products	80	3.3%
Business Equipment	616	25.5%
Telephone and Television Transmission	84	3.5%
Utilities	72	3.0%
Wholesale, Retail, and Some Services	296	12.3%
Healthcare, Medical Equipment, and Drugs	250	10.4%
Finance	13	0.5%
Other	361	15.0%
Total	2,412	100.00%

TABLE 2
Descriptive statistics

This table presents descriptive statistics for the final sample of 39,473 quarterly conference calls. See Appendix A for variable definitions.

	Mean	Std. Dev.	25th Pctl	Median	75th Pctl
<u>Conference Call Tax Mentions</u>					
<i>Mention</i>	0.8216	0.3829	1.0000	1.0000	1.0000
<i>Presentation</i>	0.7455	0.4356	0.0000	1.0000	1.0000
<i>Discussion</i>	0.3716	0.4832	0.0000	0.0000	1.0000
<i>Mention%</i>	0.0131	0.0140	0.0031	0.0090	0.0185
<i>Presentation%</i>	0.0207	0.0222	0.0000	0.0149	0.0303
<i>Discussion%</i>	0.0075	0.0144	0.0000	0.0000	0.0095
<u>Forecast Error Variables</u>					
<i>ΔETR_{FE}</i>	-0.0023	0.0216	-0.0067	-0.0009	0.0025
<u>Tax Complexity Variables</u>					
<i>TA_GAAP</i>	-0.0445	0.1626	-0.1145	-0.0474	0.0344
<i>ETR_Surp</i>	0.0510	0.0768	0.0079	0.0212	0.0565
<i>ETR_Volatility</i>	0.0530	0.0576	0.0141	0.0310	0.0699
<i>Comp_Exp</i>	0.0123	0.0156	0.0035	0.0067	0.0145
<i>Perm_Diff</i>	0.1662	0.3444	0.0270	0.0662	0.1720
<i>TLCF</i>	0.5569	0.4968	0.000	1.000	1.000
<i>Foreign</i>	0.6191	0.4856	0.000	1.000	1.000
<u>General Complexity Variables</u>					
<i>Loss</i>	0.0970	0.2960	0.0000	0.0000	0.0000
<i>RD_Exp</i>	0.0412	0.0716	0.0000	0.0003	0.0530
<i>MTB</i>	3.357	3.740	1.638	2.520	3.934
<i>Leverage</i>	0.1869	0.1789	0.0102	0.1582	0.2908
<i>Size</i>	7.529	1.632	6.340	7.449	8.613
<i>Num_Segs</i>	1.753	1.038	1.000	1.000	2.000
<u>Information Environment Variables</u>					
<i>N_Analysts</i>	9.811	6.815	5.000	8.000	13.000
<u>Analyst Characteristics</u>					
<i>Broker_Size</i>	0.3599	0.1848	0.2466	0.3376	0.4467
<i>Firm_Exp</i>	0.5394	0.1772	0.4167	0.5234	0.6429
<i>Gen_Exp</i>	0.4389	0.1836	0.3333	0.4224	0.5192
<i>N_Cos</i>	0.4954	0.1988	0.3667	0.4921	0.6094
<i>N_Inds</i>	0.4011	0.2240	0.2500	0.3889	0.5238

TABLE 3*Tax issues presented during conference calls*

This table details the content of income tax mentions by management during the presentation session of quarterly conference calls. *Forward Looking* refers to estimates of the annual ETR. *Comparison* refers to a comparison of the ETR to the ETR reported in a prior period. *Operations/Historical* refers to taxes in the context of year-to-date or quarterly operating results. *State, Local, and Foreign* refers to state and local income taxes or foreign income taxes. *Cash Taxes* refers to income taxes paid. *Legislation* refers to legislation relating to income taxes. *Transitory* refers to a non-recurring tax event. *Settlement* refers to a settlement with tax authorities. *Deferred Taxes* refers to an adjustment to the deferred tax balance. *Persistent* refers to a tax event that is expected to be recurring in the future. *Losses* refers to net operating losses. *Reserves* refer to tax reserves and some mentions predate the adoption of FIN 48. *Valuation Allowance* refers to the valuation allowance associated with deferred tax assets. The sum of *Presentation* and *Discussion* mentions is greater than all mentions because some conference calls mention income taxes in both the *Presentation* and *Discussion* portions of the call.

<i>Panel A, All mentions</i>	Total	% of Calls	Q1	Q2	Q3	Q4
Forward Looking	24,920	76.8%	71.3%	60.0%	59.5%	62.5%
Comparison	17,032	52.5%	48.3%	41.0%	40.1%	43.6%
Operations/Historical	11,955	36.9%	32.2%	30.5%	29.0%	29.7%
State, Local, and Foreign	7,779	24.0%	25.1%	17.3%	18.2%	18.8%
Cash Taxes	7,616	23.5%	22.3%	18.5%	19.0%	17.7%
Legislation	6,726	20.7%	22.7%	15.6%	14.6%	15.8%
Transitory	4,762	14.7%	15.6%	9.5%	10.3%	13.1%
Settlement	3,757	11.6%	12.0%	7.7%	8.9%	9.7%
Deferred Taxes	3,211	9.9%	11.8%	6.9%	6.8%	7.4%
Persistent	3,152	9.7%	10.6%	6.5%	6.9%	8.1%
Losses	2,411	7.4%	9.0%	5.2%	5.1%	5.4%
Reserves	2,121	6.5%	6.7%	4.4%	4.3%	6.2%
Valuation Allowance	1,465	4.5%	6.4%	2.6%	2.8%	3.2%
Other	1,299	4.0%	3.8%	3.4%	3.1%	3.0%
<i>Panel B, Presentation mentions</i>	Total	% of Calls	Q1	Q2	Q3	Q4
Forward Looking	20,964	71.2%	59.1%	50.9%	50.4%	52.6%
Comparison	14,924	50.7%	41.9%	36.2%	35.3%	38.2%
Operations/Historical	11,455	38.9%	30.9%	29.1%	27.8%	28.5%
State, Local, and Foreign	5,915	20.1%	19.7%	12.6%	13.9%	14.2%
Cash Taxes	5,776	19.6%	16.6%	13.9%	14.6%	13.6%
Legislation	5,333	18.1%	18.2%	12.6%	11.4%	12.2%
Transitory	4,169	14.2%	13.9%	8.4%	8.8%	11.3%
Settlement	3,308	11.2%	10.7%	6.6%	7.8%	8.6%
Deferred Taxes	2,552	8.7%	9.6%	5.3%	5.3%	5.9%
Persistent	2,225	7.6%	7.5%	4.9%	4.9%	5.5%
Reserves	1,818	6.2%	5.7%	3.8%	3.6%	5.4%
Losses	1,692	5.8%	6.4%	3.7%	3.4%	3.9%
Valuation Allowance	1,324	4.5%	5.9%	2.3%	2.6%	2.9%
Other	291	1.0%	0.6%	0.9%	0.8%	0.7%
<i>Panel C, Discussion mentions</i>	Total	% of Calls	Q1	Q2	Q3	Q4
Forward Looking	9,255	63.1%	29.6%	20.4%	21.0%	23.2%
Comparison	4,403	30.0%	13.8%	9.7%	9.9%	11.4%
Cash Taxes	2,880	19.6%	9.5%	6.8%	6.9%	6.3%
State, Local, and Foreign	2,795	19.1%	8.5%	6.6%	6.6%	6.8%
Legislation	2,380	16.2%	8.0%	5.2%	5.1%	5.9%
Persistent	1,095	7.5%	3.8%	1.9%	2.4%	3.1%
Other	1,014	6.9%	3.2%	2.5%	2.3%	2.3%
Losses	959	6.5%	3.6%	2.0%	2.1%	2.1%
Deferred Taxes	883	6.0%	3.3%	2.0%	1.8%	2.0%
Transitory	833	5.7%	2.4%	1.6%	1.9%	2.6%
Operations/Historical	707	4.8%	2.0%	1.9%	1.6%	1.7%
Settlement	753	5.1%	2.3%	1.7%	1.9%	1.8%
Reserves	436	3.0%	1.4%	0.9%	0.9%	1.2%
Valuation Allowance	242	1.6%	1.0%	0.5%	0.4%	0.6%

TABLE 4

Determinants of income tax mentions during conference calls

This table presents the determinants of income tax mentions during conference calls. Panel A presents logistic regression results for *Mention*. Panel C presents logistic regression results for *Presentation*. Panel B presents logistic regression results for *Discussion*. See Appendix A for variable definitions. All continuous variables are winsorized at one and 99 percent. *, **, *** indicate statistical significance at the 0.10, 0.05, and 0.01 levels, respectively (two-tailed tests).

Variable	Panel A, Mention Determinants			Panel B, Presentation Determinants			Panel C, Discussion Determinants		
	Coeff.	SE	dy/dx	Coeff.	SE	dy/dx	Coeff.	SE	dy/dx
<u>Tax Complexity Variables</u>									
<i>TA_GAAP</i>	0.0856	0.090	0.0101	0.2544 ***	0.083	0.0355	0.0258	0.095	0.0057
<i>ETR_Surp</i>	1.1530 ***	0.255	0.1362	0.9415 ***	0.235	0.1313	1.0071 ***	0.069	0.2238
<i>ETR_Volatility</i>	-0.2371	0.333	-0.0280	-0.4289	0.311	-0.0598	0.0156	0.191	0.0035
<i>Perm_Diff</i>	0.0560	0.045	0.0066	0.0844 **	0.042	0.0118	-0.0014	0.957	-0.0003
<i>Comp_Exp</i>	4.8131 ***	1.281	0.5683	4.6088 ***	1.183	0.6429	-0.9031	0.257	-0.2007
<i>Foreign</i>	0.5482 ***	0.032	0.0647	0.5409 ***	0.030	0.0755	0.0941 ***	0.023	0.0209
<i>TLCF</i>	0.0138	0.031	0.0016	0.0711 **	0.028	0.0099	-0.0856 ***	0.034	-0.0190
<u>General Complexity Variables</u>									
<i>Loss</i>	-0.4818 ***	0.047	-0.0569	-0.3444 ***	0.045	-0.0480	-0.2606 ***	0.025	-0.0579
<i>RD_Exp</i>	-0.5068 *	0.267	-0.0598	0.1037	0.249	0.0145	-1.0386 ***	0.040	-0.2308
<i>MTB</i>	-0.0018	0.004	-0.0002	-0.0052	0.004	-0.0007	0.0008	0.202	0.0002
<i>Leverage</i>	-0.4118 ***	0.088	-0.0486	-0.5598 ***	0.082	-0.0781	0.0028	0.003	0.0006
<i>Size</i>	0.0966 ***	0.013	0.0114	0.0939 ***	0.012	0.0131	0.0638 ***	0.067	0.0142
<i>Num_Segs</i>	-0.0527 ***	0.016	-0.0062	-0.0828 ***	0.014	-0.0115	0.0278 **	0.010	0.0062
<u>Information Environment Variables</u>									
<i>N_Analysts</i>	-0.0080 ***	0.003	-0.0009	-0.0080 ***	0.003	-0.0011	-0.0145 ***	0.011	-0.0032
<i>Presentation_q</i>							0.4540 ***	0.002	0.1009
<i>Presentation_{q-1}</i>	2.0879 ***	0.032	0.2465	2.3880 ***	0.029	0.3331	-0.1686 ***	0.029	-0.0375
<i>Discussion_{q-1}</i>	0.1280 ***	0.034	0.0151	-0.2405 ***	0.030	-0.0336	0.6960 ***	0.027	0.1547
<u>Analyst Characteristic Variables</u>									
<i>Broker_Size</i>	-0.2833 ***	0.077	-0.0335	-0.2547 ***	0.072	-0.0355	-0.0920	0.023	-0.0205
<i>Firm_Exp</i>	-0.0581	0.087	-0.0069	-0.0115	0.081	-0.0016	-0.1464 **	0.060	-0.0325
<i>Gen_Exp</i>	-0.1263	0.081	-0.0149	-0.0671	0.076	-0.0094	-0.2285 ***	0.066	-0.0508
<i>N_Cos</i>	0.0193	0.085	0.0023	0.0103	0.079	0.0014	0.0136	0.064	0.0030
<i>N_Inds</i>	-0.1494 **	0.075	-0.0176	-0.1528 **	0.070	-0.0213	-0.0398	0.064	-0.0088
Quarterly Fixed Effects		YES			YES			YES	
N		39,473			39,473			39,241	
Pseudo R ²		16.41%			22.73%			5.01%	
Area under the ROC Curve		79.50%			80.70%			63.40%	

TABLE 5

Effect of income tax mentions on changes in analyst ETR forecast error

This table presents the OLS results for the effect of conference call income tax mentions on changes in analyst ETR forecast errors. Panel A presents results where *Mention*, *Presentation*, and *Discussion* are measured as indicator variables. Panel B presents results where *Mention*, *Presentation* and *Discussion* are measured with continuous variables that capture the proportion of words in sentences containing income tax mentions to total words during the conference call (for *Mention*) or to total words during that session of the call (for *Presentation* and *Discussion*). ΔETR_FE equals the change in consensus forecast error calculated as FE_{Post} less FE_{Pre} . FE_{Pre} equals the annual forecast error prior to the quarter q call. FE_{Post} equals the annual forecast error after the quarter q call. See Appendix A for other variable definitions. All specifications include quarter and year fixed effects. *, **, *** indicate statistical significance at the 0.10, 0.05, and 0.01 levels, respectively (one-tailed tests for income tax mention variables, two-tailed tests for all other variables). Standard errors are clustered by firm.

Variable	DV: ΔETR_FE							
	Panel A, Tax Mention Indicator				Panel B, Proportion of Tax Words			
	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
Intercept	0.0007	0.002	0.0008	0.002	0.0004	0.002	0.0002	0.002
<i>Mention</i>	-0.0014 ***	0.000			-0.0835 ***	0.009		
<i>Presentation</i>			-0.0011 ***	0.000			-0.0223 ***	0.006
<i>Discussion</i>			-0.0019 ***	0.000			-0.0727 ***	0.010
<u>Tax Complexity Variables</u>								
<i>TA_GAAP</i>	-0.0022 **	0.001	-0.0021 **	0.001	-0.0020 **	0.001	-0.0021 **	0.001
<i>ETR_Surp</i>	-0.0232 ***	0.003	-0.0228 ***	0.003	-0.0225 ***	0.003	-0.0224 ***	0.003
<i>ETR_Volatility</i>	-0.0133 ***	0.003	-0.0134 ***	0.003	-0.0127 ***	0.003	-0.0130 ***	0.003
<i>Comp_Exp</i>	-0.0068	0.011	-0.0073	0.011	-0.0070	0.011	-0.0082	0.011
<i>Perm_Diff</i>	-0.0013 **	0.001	-0.0013 **	0.001	-0.0012 **	0.001	-0.0012 **	0.001
<i>TLCF</i>	0.0003	0.000	0.0003	0.000	0.0003	0.000	0.0003	0.000
<i>Foreign</i>	-0.0007 ***	0.000	-0.0007 **	0.000	-0.0007 ***	0.000	-0.0007 ***	0.000
<u>General Complexity Variables</u>								
<i>Loss</i>	0.0025 ***	0.001	0.0024 ***	0.001	0.0024 ***	0.001	0.0024 ***	0.001
<i>RD_Exp</i>	-0.0050 **	0.002	-0.0054 **	0.002	-0.0049 **	0.002	-0.0048 **	0.002
<i>MTB</i>	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.0000	0.000
<i>Leverage</i>	0.0017 **	0.001	0.0017 **	0.001	0.0016 **	0.001	0.0017 **	0.001
<i>Size</i>	0.0001	0.000	0.0002 *	0.000	0.0002 *	0.000	0.0002 *	0.000
<i>Num_Segs</i>	-0.0003 ***	0.000	-0.0003 ***	0.000	-0.0004 ***	0.000	-0.0004 ***	0.000
<u>Information Environment Variables</u>								
<i>N_Analysts</i>	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.0000	0.000
<u>Analyst Characteristic Variables</u>								
<i>Broker_Size</i>	0.0005	0.001	0.0005	0.001	0.0005	0.001	0.0006	0.001
<i>Firm_Exp</i>	-0.0001	0.001	-0.0001	0.001	0.0000	0.001	-0.0001	0.001
<i>Gen_Exp</i>	-0.0005	0.001	-0.0006	0.001	-0.0005	0.001	-0.0006	0.001
<i>N_Cos</i>	-0.0006	0.001	-0.0006	0.001	-0.0005	0.001	-0.0005	0.001
<i>N_Inds</i>	-0.0007	0.001	-0.0007	0.001	-0.0007	0.001	-0.0007	0.001
R ²	0.0174		0.0191		0.0196		0.0201	
N	39,473		39,473		39,473		39,473	

TABLE 6*Effect of specific income tax issue mentions on changes in analyst ETR forecast error*

This table presents results for the effect of specific income tax issue mentions (categorized in Table 3) on analyst ETR forecast errors. Panel A presents results for the effect of tax issue mentions during the presentation and/or discussion on changes in analyst ETR forecast error. Panel B (C) presents results for the effect of tax issue mentions during the presentation (discussion) on changes in analyst ETR forecast error. ΔETR_FE equals the change in consensus forecast error calculated as FE_{Post} less FE_{Pre} . FE_{Pre} equals the annual forecast error prior to the quarter q call. FE_{Post} equals the annual forecast error after the quarter q call. See Appendix A for variable definitions. All specifications include quarter and year fixed effects. *, **, *** indicate statistical significance at the 0.10, 0.05, and 0.01 levels, respectively (one-tailed tests). Standard errors are clustered by firm.

<i>Variable</i>	<i>DV: ΔETR_FE</i>					
	<i>Panel A, Mention</i>		<i>Panel B, Presentation</i>		<i>Panel C, Discussion</i>	
	<i>Coeff.</i>	<i>SE</i>	<i>Coeff.</i>	<i>SE</i>	<i>Coeff.</i>	<i>SE</i>
<i>Intercept</i>	0.0011	0.002	0.0006	0.002	0.0003	0.002
<i>Forward Looking</i>	-0.0010 ***	0.000	-0.0005 **	0.000	-0.0016 ***	0.000
<i>Comparison</i>	-0.0007 ***	0.000	-0.0008 ***	0.000	-0.0014 ***	0.000
<i>Transitory</i>	-0.0002	0.000	0.0000	0.000	-0.0003	0.001
<i>Persistent</i>	-0.0008 **	0.000	-0.0004	0.001	-0.0009	0.001
<i>Legislation</i>	-0.0011 ***	0.000	-0.0011 ***	0.000	-0.0014 ***	0.000
<i>Valuation Allowance</i>	0.0006	0.001	0.0007	0.001	0.0016	0.002
<i>Settlement</i>	-0.0009 ***	0.000	-0.0011 ***	0.000	-0.0005	0.001
<i>Deferred Taxes</i>	0.0003	0.000	0.0001	0.001	0.0007	0.001
<i>Reserves</i>	-0.0014 ***	0.001	-0.0013 ***	0.001	-0.0002	0.001
<i>Losses</i>	-0.0012 **	0.001	-0.0011 *	0.001	-0.0015 *	0.001
<i>Cash Taxes</i>	0.0004	0.000	0.0005	0.000	0.0005	0.001
<i>State, Local, and Foreign</i>	0.0002	0.000	0.0004	0.000	0.0003	0.000
<i>Operations/Historical</i>	0.0002	0.000	0.0003	0.000	-0.0014 **	0.001
<i>Other</i>	0.0010	0.001	-0.0003	0.001	0.0011	0.001
Controls	YES		YES		YES	
R ²	0.0196		0.0185		0.0203	
N	39,473		39,473		39,473	

TABLE 7*Effect of earnings announcement tax mentions on changes in analyst ETR forecast error*

This table presents results on the effect of earnings announcement tax mentions on changes in analyst ETR forecast errors. Panel A summarizes the incidence of tax mentions for sample firms with earnings announcement data. Panel B presents results for the effect of tax mentions in the earnings announcement and conference call tax mentions on changes in analyst ETR forecast error. ΔETR_FE equals the change in consensus forecast error calculated as FE_{Post} less FE_{Pre} . FE_{Pre} equals the annual forecast error prior to the quarter q call. FE_{Post} equals the annual forecast error after the quarter q call. See Appendix A for variable definitions. All specifications include quarter and year fixed effects. *, **, *** indicate statistical significance at the 0.10, 0.05, and 0.01 levels, respectively (one-tailed tests). Standard errors are clustered by firm.

Panel A, Incidence of tax mentions for firms with Earnings Announcement data

	N	Mean
<i>Mention</i>	35,808	0.8238
<i>Presentation</i>	35,808	0.7497
<i>Discussion</i>	35,808	0.3672
<i>EA Mention</i>	35,808	0.6947

Panel B, OLS regression of average analyst change in forecast error

<i>Variable</i>	DV: ΔETR_FE					
	<i>Coeff.</i>	<i>Std. Error</i>	<i>Coeff.</i>	<i>Std. Error</i>	<i>Coeff.</i>	<i>Std. Error</i>
Intercept	-0.0006	0.002	0.0004	0.002	0.0005	0.002
<i>Mention</i>			-0.0016 ***	0.000		
<i>Presentation</i>					-0.0012 ***	0.000
<i>Discussion</i>					-0.0020 ***	0.000
<i>EA Mention</i>	-0.0002	0.000	0.0000	0.000	0.0001	0.000
Controls		YES		YES		YES
R ²	0.0168		0.0175		0.0195	
N	35,808		35,808		35,808	