SEC comment letter review and analyst ETR forecast accuracy

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February 2020

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ABSTRACT: The Securities and Exchange Commission (SEC) issues comment letters suggesting revisions to firms' tax disclosures with the goal of improving the informativeness of these disclosures. I examine if SEC-prompted revisions to firms' tax disclosures are associated with changes in the informativeness of the disclosures. I use the accuracy of analyst effective tax rate (ETR) forecasts as a proxy for tax disclosure informativeness. I find that SEC-prompted revisions are associated with a decrease in analyst ETR forecast accuracy, indicating a decrease in the informativeness of tax disclosures. However, I find that increased tabular presentation attenuates the decrease in analyst ETR forecast accuracy. Prior literature examines benefits of the SEC comment letter process on the information environment. I extend prior literature on the outcome of SEC comment letter review by identifying reduced tax disclosure informativeness as one potential cost.

Keywords: SEC comment letter; income taxes; effective tax rate; analyst forecast accuracy
JEL Codes: H25, M41, M48

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I. INTRODUCTION

Firms use financial disclosures as a means of conveying value-relevant information to users of that information. The Securities and Exchange Commission (SEC) requires firms to "disclose meaningful financial and other information to the public" in an effort to help users of the disclosures make informed decisions (SEC.gov). To assist firms in meeting this objective, the SEC offers guidance on ways to increase the clarity and informativeness of firm disclosures, suggesting the use of "Plain English" to convey information to users (SEC 1998). Additionally, the SEC engages in frequent reviews of firms' financial disclosures and issues comment letters to firms when it requires additional information to understand the company's financial position. The letter may simply request additional information so that the SEC can better understand a firm's disclosure, or it may request changes to current and/or future disclosures with the goal of increasing informativeness to users of the disclosures. Prior research documents that firms revise their disclosures subsequent to *non-tax* comment letter review. For example, Robinson, Xue, and Yu (2011) find that firms remedy deficiencies in their proxy statement compensation disclosures when prompted by a comment letter.

The SEC often issues income tax-specific comments as part of a review, requesting that firms revise current and/or future tax-related disclosures. This paper provides descriptive evidence on firms' responses to tax comments in SEC comment letters and examines the relation between SEC-prompted revisions to firms' tax disclosures and the accuracy of analysts' effective tax rate (ETR) forecasts. Prior research suggests that comment letters generally result in an improved information environment (e.g., Bozanic Dietrich, and Johnson 2017; Johnston and Petacchi 2017). If income-tax related comment letters also result in an improved information environment, I would expect analyst ETR forecast accuracy to increase following SEC-prompted changes to tax disclosures. However, prior results may not generalize to tax-related disclosures. Analysts do not always fully incorporate available tax information into their ETR forecasts (Amir and Sougiannis 1999; Chen and Schoderbek 2000; Plumlee 2003; Kim, Schmidt, and Wentland 2019). If analysts *ignore* new tax information, I would not expect to find an association between SEC-prompted changes to tax disclosures and analyst ETR forecast accuracy. On the other hand, prior

literature suggests that the manner in which firms present new information influences users' incorporation of that information (e.g., Hirshleifer and Teoh 2003; Bradshaw, Miller, and Serafeim 2009) and that firms unwind tax positions following SEC scrutiny (Kubick, Lynch, Mayberry, and Omer 2016). To the extent that new disclosure contains new value-relevant information and deviations from previous disclosure leads to analysts incorporating less of, or not incorporating, the new information in that disclosure, I would expect a *decline* in ETR forecast accuracy following SEC-prompted changes to tax disclosures. Ex ante, the relation between SEC-prompted changes to tax disclosures and analyst ETR forecast accuracy is unclear.

To conduct my analyses, I use the AuditAnalytics SEC Comment Letter database to identify the first observable tax-related SEC comment letter for a firm related to Form 10-K filings between 2004 and 2014.[1] A tax-related SEC comment letter contains comments concerning a firm's compliance with tax-related financial reporting regulations (e.g., FIN 48, APB Opinion No. 23) in its Form 10-K filing. I consider the event year to be the fiscal year in which the SEC completes its review and the firm first issues a Form 10-K filing with revised tax disclosures. I classify the two years prior to the event year as the pre-comment letter review period and the two years following the event year as the post-comment letter review period. I exclude the event year from my analyses to allow analysts one year to observe and incorporate information from revised tax disclosures in the Form 10-K filings into their future forecasts. I require that each firm in my sample has at least one observation for the same analyst in both the pre- and post-review periods.

I first examine whether firms revise tax disclosures in their Form 10-K filings subsequent to a tax-related comment letter review. Prior literature finds that firms revise their disclosures subsequent to non-tax comment letters (Robinson et al. 2011) and the receipt of a comment letter is associated with improvements in the information environment (Bozanic et al. 2017; Johnston and Petacchi 2017). Given that more aggressive tax positions are associated with decreases in corporate transparency (Balakrishnan, Blouin, and Guay 2019), firms may also respond positively to a tax-related SEC comment letter if they

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[1] Since SEC comment letters were not available to the public prior to October 1, 2004, I am unable to observe if firms in my sample underwent a tax-related SEC comment letter review prior to this date.

believe the revised disclosure will lead to improvements in the tax information environment. However, firms may be hesitant to revise tax disclosures if they believe revisions may disclose new information to tax authorities and increase the risk of a tax audit. Along those lines, Robinson and Schmidt (2013) find that investors reward firms that have less informative tax disclosures with positive abnormal returns, suggesting that they view increased informativeness of tax disclosures as increasing the risk of an IRS audit.

To investigate whether tax-related comments prompt firms to revise their tax disclosures in a manner consistent with SEC comments, I identify tax comments included in correspondence between the SEC and each firm. I begin with a sample of firms with necessary data available in Compustat and I/B/E/S. I then use the issue list in the AuditAnalytics Comment Letter database to identify comment letters addressing tax issues and match these comment letters with the sample of firms with available data. If a firm received multiple tax-related comment letters over the sample period, I keep the first available comment letter. I then manually read through each comment letter and firm response to identify specific tax comments. I use these tax comments to examine disclosures in at least one pre-review and one post-review year for my sample of firms. Of the 365 firms in my sample, the SEC requests revisions to tax disclosures for 274 firms (75 percent). Of these 274 firms, 246 (90 percent) revise their tax-related Form 10-K disclosures following comment letter review, suggesting that firms generally comply with tax-related SEC requests. Since I am interested in the association between SEC-prompted revisions to tax disclosures and analyst ETR forecast accuracy, I focus my remaining analyses on the sample of 246 firms revising their tax disclosures following SEC review.

I next examine my primary research question of whether analyst ETR forecast accuracy changes subsequent to SEC-prompted revisions to firms' tax disclosures. I define forecast accuracy as the absolute value of the error in an individual analyst's implied forecast of a firm's annual ETR, multiplied by -1 so that higher values indicate higher accuracy. I use analysts' forecasts of pretax income and net income obtained from I/B/E/S to infer analysts' forecasts of the ETR. In my initial regression analysis, I regress forecast accuracy on an indicator variable equal to one for post-comment letter review years and zero for

pre-comment letter review years. My initial regression results indicate that analysts become less accurate in their ETR forecasts following SEC-prompted revisions to firms' tax disclosures.[2]

SEC-prompted revisions to tax disclosures can take different forms. For the 246 firms that revise disclosure, the length of the revised tax disclosures increases by 53 percent, 159 firms include new numerical information in the revised text, and 49 firms include new tabular information. I next examine if specific types of revisions incrementally increase (decrease) analyst ETR forecast accuracy. If revised disclosures require analysts to exert more effort to understand the information, they are more likely to misunderstand or ignore it. On the other hand, if firm revisions to future disclosures reduce the amount of effort needed to understand the information, analysts will incorporate more of the information into their forecasts.

To examine the association between ETR forecast accuracy and the type of disclosure revision, I re-estimate my forecast accuracy model and include variables to capture the change in the length of the disclosure, revisions that add numbers within a textual disclosure as means of providing additional context, and modifications in tabular presentation resulting from comment letter review. The independent variables of interest are the interaction of my post-comment letter indicator variable with each firm disclosure characteristic. Again, if SEC-prompted revisions that reflect that particular characteristic are associated with incremental changes in forecast accuracy, I expect a significant estimated coefficient on the interaction term.

My results suggest analysts respond differently to different revision characteristics. I do not find an incremental change in forecast accuracy when firms revise the length of disclosure or increase the numerical content within a textual disclosure, suggesting that analyst ETR forecast accuracy continues to be lower for these firms following SEC-prompted revisions to tax disclosures. However, I find that forecast accuracy incrementally increases for firms that add or modify tabular information. Additionally, I find that

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[2] In supplemental tests (Section V), I examine if firms that do not revise disclosure after receiving a tax comment letter and firms receiving a *non-tax* comment letter experience similar decreases in analyst ETR forecast accuracy following SEC review. In both settings, I fail to find a significant decrease in analyst ETR forecast accuracy, suggesting that the result is specific to firms revising tax disclosure as part of a SEC review.

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the post-revision decrease in forecast accuracy is fully mitigated for firms that increase tabular presentation following a comment letter review.

This study contributes to three streams of literature. First, this paper contributes to literature examining the SEC comment letter review process. Prior studies document consequences such as general increases in qualitative disclosure properties in Form 10-K filings (Bozanic et al. 2017), an improvement in the information environment for firms that amend their Form 10-K filings (Johnston and Petacchi 2017), and reduced tax avoidance following tax-related comment letter review (Kubick et al. 2016). I find that an additional consequence of the review process is decreased ETR forecast accuracy when a firm revises its tax disclosures in response to a comment letter review. However, my results suggest that SEC-prompted changes resulting in new tabular information mitigate this decrease in ETR accuracy.

Second, this paper contributes to the literature examining factors that influence analysts' ETR forecast accuracy. Prior studies find that forecast accuracy decreases with changes in tax regulation (Chen and Schoderbek 2000; Plumlee 2003) and tax-related disclosure regulation (Amir and Sougiannis 1999). Analyst ETR forecast accuracy also decreases as firm-specific information processing costs increase (Kim et al. 2019) and as firms increase their use of discretionary jargon in the income tax footnote (Hutchens 2018). I extend prior research by identifying revisions to tax disclosures resulting from the SEC comment letter review process as an additional mechanism that can alter analysts' ETR forecast accuracy. I find that when firms revise tax disclosures in response to a tax-related SEC review, analyst ETR forecast accuracy decreases. However, SEC-prompted revisions that result in tabular changes to a firm's tax disclosures fully attenuate the decrease in ETR forecast accuracy. This result is similar to that of Hutchens (2018) that discretionary use of quantitative information is positively associated with analyst ETR forecast accuracy.

Finally, this paper documents actual changes to the financial statements and relates these changes to changes in analyst ETR forecast accuracy. While Kubick et al. (2016) find that the number of tax mentions significantly increases in the Form 10-K and firms decrease tax avoidance following a tax-related comment letter review, they do not examine the resulting consequences on the information environment.

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This paper answers Graham, Raedy, and Shackelford's (2012) call for additional research on if and how market participants use tax-related information in firm disclosures.

II. BACKGROUND, RELATED LITERATURE, AND HYPOTHESIS DEVELOPMENT

The SEC comment letter process[3]

  The SEC issues comment letters with the goal of improving the information environment, often by prompting firms to revise their disclosures. Most firms comply with SEC comment letters asking for revised disclosure. For example, Robinson et al. (2011) document that all firms in their sample revise compensation disclosure deficiencies in their proxy statements following a comment letter review.

  The SEC reviews public company filings at least once every three years, consistent with the requirements of the Sarbanes-Oxley Act of 2002 ("SOX"). The scope of the review depends on various factors, and the SEC does not disclose how it determines the scope of review for different firms. However, SOX Section 408 paragraph (b) lists factors that should be considered in determining the appropriate scope, and recent research finds determinants of receiving comment letters consistent with these factors (Cassell, Dreher, and Myers 2013; Johnston and Petacchi 2017).[4]

  The SEC issues comment letters to firms when the staff identifies areas where the company can improve disclosure. The SEC completes many reviews without issuing a comment letter. Cassell et al. (2013) find that 23 to 37 percent of their sample firms pass through the three-year window without receiving a comment letter from the SEC. The comment letter may ask the company to provide additional information to the SEC, revise current language in disclosures, incorporate additional disclosure, or change future disclosures. The company responds to the SEC comment letter by amending its filings in some cases and by enhancing disclosure in future filings in most cases. Often, company responses to the SEC resolve issues

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[3] This discussion is based on http://www.sec.gov/corpfin/Article/filing-review-process---corp-fin.html.
[4] These factors include: (1) issuers that have issued material restatements of financial results, (2) issuers that experience significant volatility in their stock price as compared to other issuers, (3) issuers with the largest market capitalization, (4) emerging companies with disparities in price to earnings ratios, (5) issuers whose operations significantly affect any material sector of the economy, and (6) any other factors that the Commission may consider relevant.

contained within the comment letter without requiring changes to current or future disclosures.[5] The SEC

makes public both the comment letters and company responses for the prior four years.

Firms' responses to SEC tax comments

Prior literature suggests firms ultimately revise their disclosures consistent with SEC comments

(Robinson et al. 2011) and the information environment improves following receipt of a SEC comment

letter (Bozanic et al. 2017; Johnston and Petacchi 2017). Taxes are complex, and prior research suggests

that the information environment for firms with greater tax complexity suffers. Bratten, Gleason, Larocque,

and Mills (2017) find that the presence of discrete tax items decreases the informativeness of mandatory

annual ETR estimates for analysts. Balakrishnan et al. (2019) find that firms engaging in aggressive tax

planning have lower corporate transparency and managers at those firms attempt to mitigate the lower

corporate transparency with increased tax-related disclosures. Firms may revise their tax disclosures

consistent with SEC comments if they believe the changes will improve the tax information

environment.Although prior literature suggests firms ultimately revise their disclosures consistent with SEC

comments (Robinson et al. 2011), firms may be hesitant to modify their tax disclosures if managers perceive

the revisions to reveal new information to tax authorities and increase the risk of a tax audit.[6] With respect

to voluntary disclosure decisions, Ehinger, Lee, Stomberg, and Towery (2019) find that managers'

voluntary tax disclosures are decreasing in the likelihood of near-continuous IRS audit, consistent with

managers perceiving these tax disclosures as providing useful information to tax authorities. Prior research

suggests that less informative mandatory tax disclosures allow firms to engage in tax avoidance activities

with greater impunity. For example, Robinson and Schmidt (2013) find that firms that engage in more tax

avoidance adopt less informative FIN 48 disclosures. Kubick et al. (2016) find that the likelihood of

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[5] My sample consists of 365 unique firms. Company correspondence with the SEC resolves issues contained within the comment letter for 91 firms with no change to current or future disclosure. The SEC requests that the remaining 274 firms (75 percent) revise future disclosure. The SEC did not require any firms in my sample to revise current disclosure.

[6] Prior literature uses the risk of tax audit as a proxy for a firm's proprietary information costs. Proprietary information costs result from the notion that a firm's disclosure of information could weaken its competitive position. In a tax setting, including additional information in tax disclosures could weaken a firm's competitive position when negotiating with tax authorities (e.g., Robinson and Schmidt 2013).

receiving a tax-related SEC comment letter increases with tax avoidance, suggesting that firms may initially provide less informative tax disclosures to avoid tax authority scrutiny. Those firms receiving a tax-related comment letter also decrease their tax avoidance activities following comment letter review, suggesting that a firm may opt to unwind an aggressive tax position to avoid publicly disclosing information about it. If firms believe the requested revisions increase the risk of audit, they may be hesitant to revise disclosures or more likely to engage in further negotiation on how to revise their disclosures.

I document that 90 percent of the firms in my sample asked to revise their disclosure ultimately do so. Ten percent of firms asked to revise their disclosures do not do so. More than 20 percent of firms asked to revise their disclosures engage in multiple rounds of correspondence with the SEC before agreeing to revised disclosure, suggesting that these firms may use correspondence with the SEC to negotiate the extent of revised disclosure.

SEC-prompted revisions and changes in analyst ETR forecast accuracy

Prior research suggests that, in general, a comment letter review results in more informative financial disclosures, and there are observable changes in the information environment following review. Bozanic et al. (2017) find an overall increase in qualitative disclosure in a firm's Form 10-K following comment letter review.[7] These qualitative improvements are associated with decreased bid-ask spreads and increased analyst following, suggesting an overall improvement in the information environment. Similarly, Johnston and Petacchi (2017) find that firms amending their filings following a comment letter review exhibit increased earnings response coefficients and decreased abnormal trading volume and return volatility. Overall, these results suggest that SEC-prompted revisions to firms' disclosures increase the informativeness of these disclosures.

It is also possible that SEC-prompted disclosure revisions increase analysts' understanding of information in tax disclosures. Prior research suggests that particular tax disclosure characteristics are associated with increased analyst ETR forecast accuracy. For example, analyst forecast accuracy improves

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[7] Bozanic et al. (2017) measure aggregate qualitative disclosure using five attributes of annual reports: length, readability, tone, numerical intensity, and forward-looking information.

when management's ETR forecasts are free of non-recurring items (Bratten et al. 2017). Analyst ETR forecast accuracy also improves when the income tax footnote contains more quantitative information and is more readable (Hutchens 2018), both which presumably help analysts understand the tax disclosure. To the extent that disclosure revisions increase the presence of these particular tax disclosure characteristics, I would expect analyst ETR forecast accuracy to increase following SEC-prompted revisions to tax disclosures.

However, results from non-tax settings may not generalize to tax disclosures. Prior research suggests that analysts weigh the costs of incorporating all available tax information with the benefits.[8] For example, analyst forecasts do not fully incorporate signals of earnings persistence provided by tax information in financial disclosures (Hanlon 2005; Schmidt 2006; Weber 2009; Kim et al. 2019). Additionally, as firm-specific tax complexity increases, analyst ETR forecast accuracy decreases (Bratten et al. 2017). Finally, analysts do not incorporate the effect of a one-time tax rate change into their earnings forecasts (Chen and Schoderbek 2000). Analysts may therefore view the costs of incorporating new information resulting from SEC review as outweighing the benefits, thus ignoring the new information. If analysts *ignore* new tax information, I would not expect a change in analyst ETR forecast accuracy following SEC-prompted revisions to tax disclosures.

Another possibility is that SEC-prompted disclosure revisions lead to *decreases* in analyst forecast accuracy. Prior literature suggests that the format and comparability of that information (either across time or among peer firms) influences analysts' incorporation of that information. Along this line, Bradshaw et al. (2009) find that analyst forecast accuracy is lower for firms that use more atypical accounting methods as compared to their industry peers, suggesting that analyst forecast accuracy decreases when disclosure is less comparable. Accounting for income taxes is complex, and users of the information must understand both financial reporting and tax reporting standards (Graham et al. 2012), which may increase the

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[8] Prior literature refers to information processing costs associated with an individual's use of available information (Plumlee 2003; Kim et al. 2019). Information processing costs result from the amount of effort that an individual exerts to fully use the information available.

information processing costs associated with understanding changes in that information over time. Supporting this, Plumlee (2003) finds that analyst forecast accuracy decreases as the complexity of new tax laws increases. Bratten et al. (2017) find that analysts are less likely to rely on management's mandatory annual ETR forecasts in forming their annual ETR forecasts when the mandatory annual ETR forecasts contain discrete tax items. Additionally, analyst ETR forecast accuracy is lower for firms with discrete tax items. These results suggest that analyst forecast accuracy decreases with changes in the comparability of tax information over time.

If SEC-prompted firm revisions to tax disclosures increase analysts' understanding of tax information, I expect a measurable improvement in their ETR forecast accuracy. On the other hand, if comment letter review leads to changes in tax disclosures that reduce comparability, ETR forecast accuracy will decline. Finally, if analysts ignore the new information, ETR forecast accuracy will not change. I do not make a directional prediction on the association between SEC-prompted revisions and analyst forecast accuracy because the impact of the revisions on analysts' understanding of tax disclosures is unclear, ex ante. Therefore, I state my hypothesis in the null:

> **H1:** *Analyst ETR forecast accuracy is not associated with SEC-prompted changes to a firm's Form 10-K tax disclosures.*

Revision characteristics and changes in analyst ETR forecast accuracy

Disclosure revisions take on many different forms. I examine three specific types of disclosure revisions. In response to SEC comments, a firm may elect to supply the requested information by modifying the overall length of text in the disclosure. Alternatively, a firm may elect to add a new table or augment an existing table. A firm may also elect to include additional numbers within the body of a text disclosure as means of providing additional context to the disclosure. Given the complexity associated with income taxes, certain revision characteristics may result in analysts understanding more, or *less*, of the information in the revised tax disclosures.

Analysts have limits on their ability to process information (Hirshleifer and Teoh 2003), and prior research suggests that analysts do not fully process all available tax information (e.g., Plumlee 2003; Kim et al. 2019). If firm revisions to future disclosures include disclosure characteristics that require analysts to exert more effort to understand the information, they could misunderstand the information or ignore it. For example, prior literature finds a negative association between the length of disclosure, a proxy for the readability of disclosure, and the information environment. Miller (2010) finds an increase in investor uncertainty for firms with longer Form 10-K filings. Lehavy, Li, and Merkley (2011) find that analysts exert more effort to incorporate information from lengthier disclosures into their forecasts and forecast properties suffer in spite of their increased effort. Li (2008) finds that firms with longer Form 10-K filings have lower future earnings, suggesting that firms may try to hide future poor performance by increasing the complexity associated with understanding their disclosures. If firms view revising tax disclosures as potentially increasing future IRS scrutiny, they may elect to increase the length of disclosure to obfuscate such information. If increases in the length of disclosure lead to analysts ignoring or misunderstanding the information, I would expect no change or a decrease in analyst ETR forecast accuracy.

However, given the complexity associated with income taxes, increased disclosure may further analysts' understanding and lead to increases in analyst ETR forecast accuracy. Balakrishnan et al. (2019) find evidence suggesting that managers attempt to use voluntary disclosure to address the decrease in financial reporting transparency resulting from tax aggressiveness. To the extent firms use the receipt of a tax-related SEC comment letter to increase the length of disclosures in a manner that makes them more informative to analysts, I would expect an increase in analyst ETR forecast accuracy. I do not make a directional prediction on the association between increases in the length of disclosure and analyst forecast accuracy because the effect of the revisions on analysts' understanding of tax disclosures is unclear, ex ante. Therefore, I state my hypothesis in the null:

> **H2a:** *Analyst ETR forecast accuracy is not associated with SEC-prompted changes to the length of a firm's Form 10-K tax disclosures.*

Alternatively, increased numerical presentation can increase a user's ability to understand the information. Consistent with numerical disclosures being more understandable, Lundholm, Rogo, and Zhang (2014) find that U.S. institutional ownership of foreign firms increases with a foreign firm's numerical disclosure. With respect to understanding tax information, Hutchens (2018) finds that as firms increase the numerical information in their tax footnotes, analyst ETR forecast accuracy increases. Therefore, increases in numerical information resulting from comment letter review should lead to an increase in analyst ETR forecast accuracy. However, as previously stated, firms may increase the length of disclosure as an attempt to hide the information (Li 2008). If firms increase the length of disclosure containing the new numerical information in an attempt to hide this new information, I would expect no change or a decrease in analyst ETR forecast accuracy. I do not make a directional prediction on the association between increases in numerical information and analyst forecast accuracy and state my hypothesis in the null:

H2b: Analyst ETR forecast accuracy is not associated with SEC-prompted increases in the numerical content of a firm's Form 10-K tax disclosures.

Finally, presenting information in a tabular format increases a user's ability to draw comparisons from that information and use that information in analytical assessments, which should increase a user's understanding of that information. Supporting this intuition, individuals perform better on analytical tasks when information is presented in a tabular format (Lusk and Kersnick 1979). With respect to accounting information, investors' understanding of information in a disclosure also increases with tabular presentation (Rennekamp 2012). To the extent that SEC-prompted changes to tabular information result in increased comparability of the information, I expect analyst ETR forecast accuracy to increase. Stated formally:

H2c: Analyst ETR forecast accuracy is positively associated with SEC-prompted changes to tabular information in a firm's Form 10-K tax disclosures.

III. RESEARCH DESIGN

Sample selection

I use the AuditAnalytics Comment Letter database to identify firms that receive an SEC comment letter that relates to the Form 10-K filing and contains tax-related comments. I perform a search on all comment letters relating to Form 10-K filings using tax issue taxonomies provided by AuditAnalytics to identify tax-related comment letters.[9] My sample period begins in 2004, the first year in which SEC comment letter data became publicly available, and continues through 2014.[10] I keep only the first instance in I observe a firm undergo a tax-related comment letter review in my sample period.[11] I remove observations where I cannot determine the date that the SEC completed its review and observations missing firm identifiers needed to obtain Compustat data. This results in an initial sample of 1,926 unique firms.

Table 1 presents the sample selection procedures for my event window data, which spans the two years preceding the event year and the two years following it. My analyses require that firms be listed in both Compustat and I/B/E/S. These requirements result in an initial sample containing 9,182 firm-year and 47,429 analyst-firm-year observations for 1,926 firms. I first remove firms with negative pretax income or negative tax expense because these components make the effective tax rate difficult to interpret. This requirement reduces my sample by 263 firms, 3,302 firm-years, and 11,946 analyst-firm-year observations. I require that all observations have the required data in Compustat and I/B/E/S to calculate my dependent variable of interest and control variables. I lose 611 firms, 2,671 firm-years, and 6,866 analyst-firm-year observations that do not have sufficient data. I remove observations where the firm is not present in my sample both before and after comment letter review, reducing my sample by 452 firms, 791 firm-years, and 5,156 analyst-firm-year observations.

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[9] I identify 19,809 unique comment letter reviews (both tax and non-tax) over my sample period. Of these, 3,037, or approximately 15 percent, contain tax-related comments.

[10] Since my event window includes analyst forecast data for two years following comment letter review, my event window ends in 2016. I do not extend my event window past 2016 in order to avoid any changes in firm tax planning resulting from the Tax Cut and Jobs Act of 2017.

[11] Since the SEC reviews all public firms at least every three years, firms may receive comment letters for different Form 10-K filings during my sample period.

[Insert Table 1 here]

FIN 48 became effective during my sample period and resulted in substantial revisions to firms' tax disclosures. Therefore, I remove observations spanning the implementation of FIN 48.[12] This requirement reduces my sample by 183 firms, 755 firm-years, and 6,667 analyst-firm-years. I also require that the same analyst provides a forecast for a firm prior to and following comment letter review to be included in the sample. This screen reduces my sample by 18 firms, 81 firm-years, and 7,204 analyst-firm-years. Next, I verify that all comment letters contain a tax-related comment directed at the Form 10-K filing and remove any observations that do not meet this requirement.[13] I lose 34 firms, 136 firm-years, and 624 analyst-firm-year observations. I remove all event year observations from my sample, which is the fiscal year in which the SEC finalizes correspondence with the firm and the first year in which analysts will have the opportunity to observe the revised Form 10-K disclosures. I remove the event year to allow analysts time to incorporate the new information into their forecasts. Figure 1 illustrates this timeline of events. This screen reduces the sample by 299 firm-years and 1,855 analyst-firm-years, resulting in a sample containing 365 firms, 1,147 firm-year observations, and 7,111 analyst-firm-year observations. Since I am interested in examining changes to analyst ETR forecast accuracy following SEC-prompted changes to tax disclosure, I remove firms that are not asked to revise their tax disclosures and those that do not revise their tax disclosures after being asked to do so by the SEC. This screen reduces the sample by 119 firms, 366 firm-years, and 2,254 analyst-firm-years. My final sample contains 246 firms, 781 firm-years, and 4,857 analyst-firm-year observations. On average, each firm in my final sample has three years of data available and an analyst following of 13 analysts.

[Insert Figure 1 here]

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[12] I remove any firm-year that occurs in the FIN 48 adoption year. I also require the remaining observations for a firm to all occur prior to the implementation of FIN 48 or following the implementation of FIN 48. If, after removing these firm-years, the firm does not have at least one observation occurring both before and after comment letter review, I drop the firm from my sample.

[13] SEC comment letters often contain comments on multiple firm filings (e.g., Form 10-K, Form 8-K, etc.). Therefore, it is possible that firms in my sample receive a comment letter with non-tax comments directed at the Form 10-K filing and tax comments directed at a separate filing.

SEC-prompted revisions and changes in analyst ETR forecast accuracy

To investigate if SEC-prompted revisions to tax disclosures are associated with changes in analyst ETR forecast accuracy, I follow prior literature examining determinants of analyst ETR forecast accuracy (e.g., Bratten et al. 2017; Hutchens 2018) and estimate the following OLS regressions:

$$ETRAccuracy_{i,j,t} = \beta_0 + \beta_1 Post_{j,t} + \beta_{2\text{-}10} TaxComplexity_{j,t} + \beta_{11\text{-}14} GeneralComplexity_{j,t}$$
$$+ \beta_{15\text{-}16} InformationEnvironment_{j,t} + \beta_{17\text{-}21} AnalystCharacteristics_{i,j,t} + Year\ fixed\ effects$$
$$+ Industry\ fixed\ effects + \varepsilon \tag{1}$$

$$MeanAccuracy_{j,t} = \beta_0 + \beta_1 Post_{j,t} + \beta_{2\text{-}10} TaxComplexity_{j,t} + \beta_{11\text{-}14} GeneralComplexity_{j,t}$$
$$+ \beta_{15\text{-}16} InformationEnvironment_{j,t} + Year\ fixed\ effects + Industry\ fixed\ effects + \varepsilon \tag{2}$$

The dependent variables measure analyst forecast accuracy. In equation (1), *ETRAccuracy* equals the absolute value of the error in the *individual* analyst's implied forecast of a firm's annual ETR, multiplied by -1. In equation (2), *MeanAccuracy* equals the *consensus* forecast accuracy, calculated as the average value of *ETRAccuracy* across analysts forecasting for a particular firm-year.[14] Similar to Bratten et al. (2017) and Hutchens (2018), I identify analysts that provide both pretax and net income forecasts in I/B/E/S. I calculate each analyst's implied ETR forecast as the pretax income forecast less the net income forecast, scaled by the pretax income forecast. I employ a similar approach using actual pretax and net income values reported in I/B/E/S to calculate the actual ETR. I use the absolute value of the difference because I am interested in the magnitude of the change in accuracy, not the sign. I expect a change in ETR forecast accuracy both for analysts that forecast above and below actual ETR. I use the most recent analyst forecast of pretax and net income issued after the third quarter earnings announcement in year *t* and before the year *t* earnings announcement to eliminate potentially stale forecasts from the sample and reduce the likelihood that additional sources of information account for differences in analyst forecast accuracy.[15]

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[14] Prior literature uses consensus accuracy to proxy for changes in the precision of common information available to analysts (e.g., Bowen, Davis, and Matsumoto 2002). If SEC-prompted revisions to tax disclosures increase (decrease) the precision of common information available to analysts, I expect an increase (decrease) in consensus ETR forecast accuracy.

[15] For example, Firm A issues quarterly earnings guidance. Analyst 1 provides a forecast after the second quarter for Firm A, while Analyst 2 provides a forecast after the third quarter for Firm A. If I select the most recent forecast for each analyst at any point prior to the annual earnings announcement, Analyst 2's forecast incorporates additional earnings guidance that is not included in Analyst 1's forecast.

In order to examine the association between analyst ETR forecast accuracy and SEC-prompted changes to tax disclosures, I read tax disclosures included in Form 10-K filings for my sample of firms and determine if firms revise tax disclosures in a manner consistent with SEC comments. For those firms revising tax disclosures, I use an indicator variable, *Post*, to classify observations into a pre-comment letter review period and a post-comment letter review period. I consider the event year to be the fiscal year in which the SEC completes its review. I exclude the event year from my analysis to allow analysts one year to observe and incorporate information from revised tax disclosures in the Form 10-K filing into their future forecasts.[16] *Post* equals one for observations occurring after the event year, and zero for observations occurring prior to the event year. I limit observations to two years prior to and two years following comment letter review. I require that each firm in my sample has at least one observation prior to comment letter review and one observation subsequent to comment letter review for the same individual analyst. If SEC-prompted revisions to tax disclosures are associated with changes in analysts' ETR forecast accuracy, I expect a significant estimated coefficient on *Post*. A positive (negative) coefficient on *Post* is indicative of an increase (decrease) in analyst forecast accuracy for the sample of firms that revise tax disclosures in the period following comment letter review as compared to the period prior to comment letter review.

To isolate the incremental effect of SEC-prompted revisions to tax disclosures on analysts' ETR forecast accuracy, I control for other influences on forecast accuracy that have been documented in the literature. Bratten et al. (2017) and Hutchens (2018) suggest that analyst ETR forecast accuracy is negatively associated with the complexity of the firm's tax situation. Thus, my first set of control variables relates to tax complexity. I control for year-over-year changes in the ETR (*ETRSurp*), variability in the GAAP ETRs (*σETR*), measured as the standard deviation of the GAAP ETR from year *t-4* to year *t*, stock option-related compensation expense (*CompExp*) (Austin 2014), permanent differences between GAAP and tax income (*PermDiff*), foreign operations (*Foreign*), research and development expenditures (*RD*), and tax loss carryforwards (*TLCF*) (Dhaliwal, Kaplan, Laux, and Weisbrod 2013).

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[16] In my sample, all firms that revise their disclosures do so beginning in the event year.

In addition to these tax complexity variables, I include a one year measure of *CashETR* (cash taxes paid scaled by pretax income) to control for a firm's level of tax avoidance. Balakrishnan et al. (2019) find that firms that engage in greater levels of tax avoidance have less transparent information environments relative to their peers. This result suggests that analyst ETR forecast accuracy should decrease with a decrease in the level of *CashETR*, or as firms engage in more tax avoidance. However, Balakrishnan et al. (2019) also find that firms attempt to mitigate the transparency problems with increased tax disclosure, which may increase analysts' understanding of tax disclosures for firms with lower levels of *CashETR* (firms that engage in more tax avoidance). Therefore, I do not make a prediction on the relation between *ETRAccuracy* and *CashETR*. Kubick et al. (2016) find evidence suggesting that firms decrease their tax avoidance following a tax-related comment letter review. I include the interaction of *CashETR* and *Post* to control for changes in forecast accuracy relating to changes in tax avoidance following a tax-related comment letter review.

My second set of control variables relates to firm-specific general complexity that prior literature suggests is associated with analysts' earnings forecast accuracy (e.g., Balakrishnan et al. 2019). I control for firm growth, measured as the market-to-book ratio (*MTB*), and leverage (*Leverage*), measured as long-term debt scaled by total assets. I also control for *Size*, measured as the natural log of total assets (Atiase 1985), and the firm's level of diversification, measured as the firm's number of segments (*NumSegs*) (Bushman, Piotroski, and Smith 2004).

My third set of control variables measures the general information environment. I control for *NAnalysts*, the number of analysts providing a forecast for the firm in year *t*, because prior research suggests that greater analyst following increases forecast accuracy in general (Lang and Lundholm 1996) and specifically with respect to analysts' understanding of the persistence of ETRs (Kim et al. 2019). I control for *Guidance*, an indicator variable equal to one if the firm issues earning guidance in year *t*, as a proxy for firms with richer information environments (Hassell, Jennings, and Lasser 1988).

My final set of controls measures analyst forecasting resources, ability, and portfolio complexity (Clement 1999; Clement and Tse 2005). To measure analyst forecasting resources, I include *BrokerSize*, a

ratio capturing the number of analysts forecasting for analyst i's brokerage firm relative to other brokerage firms. To measure analyst forecasting ability, I include *FirmExp,* a ratio capturing analyst i's experience forecasting for firm j relative to other analysts following firm j. I also include *GenExp*, a ratio capturing analyst i's years of forecasting experience relative to the experience of other analysts. Finally, to measure portfolio complexity, I include *NCos* (*NInds*), a ratio capturing the number of firms (industries) that analyst i follows relative to other analysts following firm j. I exclude these variables from equation (2) since these variables are based on individual analyst characteristics and equation (2) is based on average analyst characteristics.

I winsorize all continuous variables at one and 99 percent and truncate all ETR measures at zero and one. I include year fixed effects and industry fixed effects based on the Fama and French twelve industry classification and cluster standard errors by firm. Appendix A provides detailed definitions for all variables.

Revision characteristics and changes in analyst ETR forecast accuracy

To examine if different firm revision characteristics are differentially associated with changes in analyst ETR forecast accuracy, I estimate the following OLS regression:

$$
\begin{aligned}
ETRAccuracy_{i,j,t} = {}& \beta_0 + \beta_1 Post_{j,t} + \beta_2 Characteristic_{j,t} \\
& + \beta_3 Post_{j,t}*Characteristic_{j,t} + \beta_{4\text{-}12}TaxComplexity_{j,t} + \beta_{13\text{-}16}GeneralComplexity_{j,t} \\
& + \beta_{17\text{-}18}InformationEnvironment_{j,t} + \beta_{19\text{-}23}AnalystCharacteristics_{i,j,t} + Year\ fixed\ effects \\
& + Industry\ fixed\ effects + \varepsilon
\end{aligned} \tag{3}
$$

The variable *Characteristic* indicates the type of changes a firm makes to its tax disclosures following comment letter review. I include measures of the change in length, increase in numerical content, and addition/modification of tabular information in a firm's Form 10-K tax disclosures. To proxy for changes in the length of disclosure, I use $\Delta Length$, which equals the word count in the revised tax disclosure in the event year less the word count in the original tax disclosure prior to comment letter review, scaled by the word count in the original tax disclosure prior to comment letter review.[17] *Numerical* is an indicator

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[17] In constructing my ΔLength variable, I only include the text specifically addressed in the SEC's comment.

variable equal to one if the firm expands text in a disclosure to include new numbers following comment letter review, and zero otherwise.[18] *Tabular* is an indicator variable equal to one if the firm adds tabular information to an existing table or creates a new table in its revised disclosure following comment letter review, and zero otherwise. If a firm expands a current table to include new numerical information, I include this revision in *Tabular*, not *Numerical*. If SEC-prompted changes to the length of a firm's tax disclosures incrementally increase (reduce) analyst ETR forecast accuracy, I expect a significant, positive (negative) estimated coefficient on the interaction of *Post* and Δ*Length*. If SEC-prompted increases in numerical content incrementally increase (reduce) analyst ETR forecast accuracy, I expect a significant, positive (negative) estimated coefficient on the interaction of *Post* and *Numerical*. If SEC-prompted increases in tabular content incrementally increase analyst ETR forecast accuracy, I expect a significant, positive estimated coefficient on the interaction of *Post* and *Tabular*.

IV. RESULTS

Descriptive statistics and correlations

Table 2 presents descriptive statistics on the SEC comment letters for my sample of firms. In Panel A, I analyze the number of rounds, number of tax-related comments, and number of revision requests from the SEC for the 365 firms with data available to provide some insight on the costs associated with engaging in the SEC comment letter process. The average (median) number of *Rounds* for firms in this sample is 1.23 (1.00), indicating that most firms adequately address the SEC's comments in their first response letter.[19] Most SEC comment letters contain 1.55 (1.00) comments relating to income taxes (*TaxComment*). On average, the SEC requests that 75 percent of the firms in my sample (274 firms) revise a tax-related disclosure (*RevRequest*).

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[18] This variable captures firm revisions that add numbers within a textual disclosure as means of providing additional context. For example, the SEC may ask the firm to expand discussion of year-over-year changes in the effective tax rate in Management's Discussion and Analysis by quantifying the impact of items within the discussion.

[19] Cassell et al. (2013) find that the average (median) number of rounds for firms in their sample is 3 (3), while Bozanic et al. (2017) document an average (median) of 1.5 (1.0).

Panel B presents findings for the 274 firms specifically asked to revise tax disclosures. The average (median) number of *Rounds* and *TaxComment* are similar to the firms presented in Panel A at 1.26 (1.00) and 1.61 (1.00). Of the 274 firms asked to revise, 190 firms, or 69 percent, revise their tax disclosures consistent with SEC comments in the first round (*Compliance*).[20] Approximately 20 percent of firms, or 56 firms, engage in multiple rounds of correspondence with the SEC (*Negotiation*), suggesting that some firms do not immediately agree with the SEC on revisions to their tax disclosures. Approximately 10 percent of firms asked to revise their tax disclosures do not do so (*NonCompliance*).

Panel C presents findings for the 246 firms that ultimately revise their tax disclosures following SEC review. Kubick et al. (2016) examine changes to tax disclosure following a tax-related comment letter review and find that firms significantly increase the mention of tax issues in the entire Form 10-K, and more specifically, in the MD&A and tax footnote.[21] Consistent with comment letter review resulting in an increase in the discussion of tax issues, I find that the average (median) disclosure increases in length by 53 percent (Δ*Length*).[22] I also find that approximately 65 percent of firms add numerical elements within the text of their disclosures (*Numerical*), and approximately 20 percent add or modify tabular information in response to the SEC comment letter (*Tabular*).[23]

[Insert Table 2 here]

Table 3 presents descriptive statistics for dependent and independent variables used in tests of my hypotheses partitioned into analyst-firm-year observations used in equations 1 and 3 (Panel A) and firm-year observations used in equation 2 (Panel B). In Panel A, the mean (median) value of *ETRAccuracy* is -0.0379 (-0.0102), suggesting that the individual analyst ETR forecast is 3.79 (1.02) percentage points away

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[20] While prior literature does not directly identify firms asked to revise future disclosures by the SEC, Bozanic et al. (2017) separately examine firms requesting confidential treatment on at least part of comment letter correspondence. They fail to find an association between a firm requesting confidential treatment and future changes in qualitative disclosure, which may be indicative of firms not revising future disclosures in response to an SEC comment letter. No firms in my sample requested confidential treatment with respect to revisions requested by the SEC.

[21] In my sample, SEC comments relate to disclosure in Management's Discussion and Analysis 51.5 percent of the time, in the income tax footnote 41.9 percent of the time, and in other areas (i.e., Risk Factors, Significant Accounting Policies, etc.) 6.6 percent of the time.

[22] The average increase in word count is 137 words (untabulated).

[23] Of the 49 firms that add or modify tabular information, 24 firms add new tables, while 25 modify existing tables.

from the actual ETR. In Panel B, the mean (median) value of *MeanAccuracy* is -0.0449 (-0.0193), suggesting that the consensus ETR forecast is 4.49 (1.93) percentage points away from the actual ETR.

[Insert Table 3 here]

Table 4 provides correlations for the dependent and independent variables used in my regressions based on analyst-firm-year observations. I report Spearman correlations above the diagonal and Pearson correlations below the diagonal. I discuss Pearson correlations for brevity. I generally find that analyst ETR forecast accuracy (*ETRAccuracy, MeanAccuracy*) is decreasing as tax complexity increases (*ETRSurp, σETR,* and *PermDiff*) and increasing as tax complexity decreases (*TLCF*). Interestingly, I find that *ETRAccuracy* (*MeanAccuracy*) is increasing in research and development expenditures (*RD*). Analyst ETR forecast accuracy is also decreasing in *CashETR*.[24] I find that *ETRAccuracy* (*MeanAccuracy*) is increasing in firm size (*Size*), diversification (*NumSegs*), analyst following (*NAnalysts*), and firm-issued guidance (*Guidance*), and decreasing in leverage (*Leverage*). *ETRAccuracy* is increasing in firm-specific experience (*FirmExp*) and decreasing in brokerage firm size (*BrokerSize*), and the number of industries (*NInds*) that an analyst follows. Using Pearson correlations, I find that both individual and consensus analyst ETR forecast accuracy decrease subsequent to a comment letter review resulting in changes to tax disclosures (*Post*). Using Spearman correlations, I find similar results for *MeanAccuracy* but fail to find a significant negative correlation between *ETRAccuracy* and *Post*. While I find conflicting correlations between analyst ETR forecast accuracy and *ΔLength/Numerical* across correlation measures, I find that analyst ETR forecast accuracy is generally lower for firms that make tabular revisions (*Tabular*). While the descriptive statistics and correlation analysis suggests that analyst ETR forecast accuracy decreases following revisions to tax disclosures from a comment letter review (*Post*), I perform a multivariate analysis to isolate the incremental effect of comment letter review (*Post*) on analyst ETR forecast accuracy.

[Insert Table 4 here]

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[24] This result suggests that *ETRAccuracy* increases for lower levels of *CashETR*. Since lower levels of *CashETR* represent more tax avoidance relative to higher levels of *CashETR*, this result is consistent with firms attempting to mitigate transparency problems from increased tax avoidance noted by Balakrishnan et al. (2019) with increases in tax disclosure.

SEC-prompted revisions and changes in analyst ETR forecast accuracy

Table 5 presents multivariate results for hypothesis one, which examines the level of analyst ETR forecast accuracy following SEC-prompted revisions to future tax disclosures. A finding that *Post* is significant suggests that SEC-prompted revisions to tax disclosures are associated with incremental changes in ETR forecast accuracy. Column 1 estimates equation 1 using *ETRAccuracy* as the dependent variable. The estimated coefficient on *Post* is negative and significant, indicating that individual analyst ETR forecast accuracy decreases following a tax-related comment letter review. On average, following SEC-prompted revisions to tax disclosures, analysts' ETR forecasts are 2.4 percentage points further away from the actual ETR than in years prior to comment letter review. Given that the mean I/B/E/S pretax income for this sample is $2.371 billion, a decrease of 2.4 percentages points is associated with a $56.9 million decrease in tax expense forecast accuracy. In column 2, I present multivariate results for hypothesis one using consensus analyst ETR forecast accuracy (*MeanAccuracy*) in place of individual analyst ETR forecast accuracy. Results in column 2 are consistent with those presented in column 1. The estimated coefficient on *Post* is negative and significant, indicating that consensus ETR forecast accuracy decreases following a tax-related comment letter review. Overall, these results suggest that firms that revise their disclosures following SEC comment letter review experience a decrease in analyst ETR forecast accuracy.

[Insert Table 5 here]

Revision characteristics and changes in analyst ETR forecast accuracy

The results in Table 5 suggest that firms that revise their tax disclosures following SEC review experience a decrease in analyst ETR forecast accuracy. My second hypothesis examines if different revision characteristics are associated with differential changes to analyst ETR forecast accuracy. A finding that *Post*ΔLength* is significantly positive (negative) suggests analyst ETR forecast accuracy incrementally increases (decreases) as firms increase the length of their tax disclosures following a tax-related comment letter review. A finding that *Post*Numerical* (*Post*Tabular*) is significantly positive (negative) suggests that analyst ETR forecast accuracy incrementally increases (decreases) for firms that increase numerical (tabular) content in their tax disclosures.

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Table 6 presents multivariate results for my second hypothesis examining the changes in analyst ETR forecast accuracy associated with specific revision characteristics. In each analysis, I find a negative, significant estimated coefficient on *Post*, consistent with a decrease in analyst ETR forecast accuracy following SEC-prompted revisions to tax disclosures. Column 1 presents results from the analysis of the association between a change in the length of disclosure and analyst ETR forecast accuracy. I do not find a significant association between a change in the length of the revised tax disclosure in the post-review period and analyst ETR forecast accuracy (the coefficient on *Post*ΔLength* is insignificant). Taken together with the primary result that analyst ETR forecast accuracy decreases for firms that revise post-review, this result suggests that, on average, changes in the length of tax disclosure do not moderate the decrease in analyst ETR forecast accuracy in the post-review period.

Column 2 analyzes the association between an increase in numerical presentation and analyst ETR forecast accuracy. I do not find that an increase in numerical disclosure is associated with incremental gains (losses) in analyst ETR forecast accuracy (*Post*Numerical*). This result suggest that both firms that do and do not revise their tax disclosures to include new numerical information following a tax-related SEC comment letter review experience a similar decrease in analyst ETR forecast accuracy.

Column 3 analyzes the association between modifications in tabular information and analyst ETR forecast accuracy. I find a negative, significant estimated coefficient on *Tabular*. This result suggests that firms that ultimately revise tax disclosures to include new tabular information have lower analyst ETR forecast accuracy prior to receiving the comment letter than firms that ultimately engage in other types of revisions. In support of hypothesis 2c, I find a positive, significant relation between an increase in tabular information following comment letter review (*Post*Tabular*) and analyst ETR forecast accuracy. This result suggests that firms that revise tax disclosures to include new tabular information experience an incremental increase in analyst ETR forecast accuracy following comment letter review relative to firms that do not include new tabular information. In untabulated analysis, I find that an *F*-test of the combined estimated coefficients on *Post* and *Post*Tabular* is not significant (*p*-value = 0.327). This result suggests that firms that revise their tax disclosures to increase tabular information following a tax-related SEC

comment letter do not experience the same decrease in analyst ETR forecast accuracy as firms that do not increase tabular information following a tax-related SEC comment letter.

For completeness, in column 4 I include all three types of disclosure characteristics and continue to find similar results. I continue to find a negative, significant estimated coefficient on *Post,* suggesting that analyst ETR forecast accuracy decreases following SEC-prompted revisions to tax disclosures. I do not find a significant association between changes in the length of disclosure or an increase in numerical presentation following a comment letter review and analyst ETR forecast accuracy. I continue to find a positive, significant relation between an increase in tabular information following comment letter review and analyst ETR forecast accuracy. I do not find a significant result on the *F*-test of the combined estimated coefficients on *Post* and *Post*Tabular* (untabulated, *p*-value = 0.633). Overall, these results suggest that analysts experience a decrease in ETR forecast accuracy following SEC-prompted revisions to a firm's tax disclosures, but this decrease in accuracy is fully mitigated for firms that make tabular revisions.

[Insert Table 6 here]

V. ADDITIONAL ANALYSIS

The relation between pre-tax income forecast accuracy and ETR forecast accuracy

Firms may revise additional disclosures as part of a comment letter review. If firms revise disclosures that provide new information with respect to pretax income, pretax income forecast accuracy may decline following a tax-related SEC comment letter review. Due to the mechanical relation between pretax income and the effective tax rate, ETR forecast accuracy may, at least in part, be driven by pretax income forecast accuracy. To address this concern, I create a matched sample of firms that revise their tax disclosures following SEC review (revise firms) with control firms that receive a comment letter that does not contain *tax-related* comments (non-tax firms).[25] I use entropy balancing to determine weights for my

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[25] I classify a firm as receiving a comment letter that does not contain tax-related comments if it receives a comment letter and AuditAnalytics does assign any of its primary tax issue taxonomies to the letter.

control sample to equalize the distribution of determinants across my treatment and control firms (Hainmueller 2012). I use the following logistic regression to identify weights for my control sample:

$$TaxReview_j = \beta_0 + \beta_1 Size_j + \beta_2 StdRet_j + \beta_3 MWeak_j + \beta_4 Restate_j + \beta_5 GAAPETR_j + \varepsilon \qquad (4)$$

I set *TaxReview* equal to one for revise firms and zero for non-tax firms. I include the SOX 408 criteria identified by Cassell et al. (2013) as general determinants of receiving a comment letter. These factors include firm size (*Size*), return volatility (*StdRet*), reported material weaknesses (*Mweak*), and restatements (*Restate*). Finally, I also include the firm's GAAP ETR (*GAAPETR*) since Kubick et al. (2016) find that *GAAPETR* is a determinant of receiving a tax-related comment letter.

Table 7, Panel A presents descriptive statistics for the sample of firms partitioned by *TaxReview* prior to using entropy balancing to weight variables for the non-tax firms. Panel B presents descriptive statistics for both samples after using entropy balancing to weight variables for the non-tax firms. The few small differences between mean, variance, and skewness across firms suggests that entropy balancing successfully reweighted the non-tax firms to match the moments of the revise firms.

To examine if decreases in pretax income forecast accuracy drive the decreases in ETR forecast accuracy for my sample of firms revising tax disclosure, I estimate the following equation on the pooled sample of revise and non-tax firms:

$$ETRAccuracy_{i,j,t} = \beta_0 + \beta_1 Post_{j,t} + \beta_2 TaxReview_j + \beta_3\ Post_{j,t} * TaxReview_j + \beta_{4\text{-}12} TaxComplexity_{j,t} + \beta_{13\text{-}16} GeneralComplexity_{j,t} + \beta_{17\text{-}18} InformationEnvironment_{j,t} + \beta_{19\text{-}23} AnalystCharacteristics_{i,j,t} + \beta_{24\text{-}26} TaxLetterDeterminants_{i,j,t} + Year\ fixed\ effects + Industry\ fixed\ effects + \varepsilon \qquad (5)$$

Similar to equation 1, I include *Post*, an indicator variable equal to one for observations occurring after the event year (e.g., the receipt of either a tax or nontax comment letter), and zero for observations occurring prior to the event year. I also include *TaxReview* and the interaction of *Post* and *TaxReview*. If decreases in ETR forecast accuracy are associated with decreases in pretax income forecast accuracy, I expect the estimated coefficient on *Post* to be significantly negative, suggesting that both revise and non-tax firms experience decreases in analyst ETR forecast accuracy. If revise firms in the post-review period experience an incrementally greater (lesser) decreases in analyst ETR forecast accuracy relative to non-tax firms, I

expect the estimated coefficient on *Post*TaxReview* to be significantly negative (positive). In addition to the control variables originally included in equation 1, I also control for determinants of receiving a tax-related SEC comment letter (*GAAPETR*, *StdRet*, *MWeak*, and *Restate*). I do so to further capture any differences between the firms undergoing a tax-related SEC review and matched control firms. All other variables are as previously defined.

Table 7, Panel C presents multivariate results from estimation of equation 5. The estimated coefficient on *Post* is not significant, suggesting that there is not an overall decrease in analyst ETR forecast accuracy following a comment letter review (either tax or non-tax). The estimated coefficient on *TaxReview* is also not significant, suggesting that both sets of firms experience similar levels of analyst ETR forecast accuracy prior to a comment letter review. The estimated coefficient on the interaction of *Post* and *TaxReview* is negative and significant, suggesting that analyst ETR forecast accuracy is incrementally lower for firms revising their tax disclosures following a comment letter review. Taken together, these results suggest that the decrease in analyst ETR forecast accuracy in the post-review years is only present for firms that revise their tax disclosures following a tax-related SEC review, and not for firms that undergo a nontax-related SEC review. Overall, these results provide some evidence that decreases in pretax income forecast accuracy do not fully explain the decrease in ETR forecast accuracy documented in Table 5.

[Insert Table 7 here]

Falsification test: Firms not revising tax disclosures

To provide additional evidence that my results are attributable to revisions in tax disclosures, I re-estimate equation 1 on the sample of firms that did not revise their tax disclosures following receipt of a tax-related SEC comment letter. This sample includes firms not asked to revise their disclosures and firms that declined to revise their disclosures when asked to do so. When I estimate equation 1 on this sample of firms, I fail to find a significant estimated coefficient on *Post*. Additionally, when I test the differences in estimated coefficients across the sample of firms in Table 5 and the sample of firms not revising their tax disclosures, I find a significant difference between these two estimated coefficients (p-value = 0.063).

These results provide additional evidence that the decrease in analyst ETR forecast accuracy is associated with revisions to tax disclosures.

Tax authority scrutiny and changes in analyst ETR forecast accuracy

Firms have discretion in how they revise future tax disclosures to address SEC comments. In addition to being informative to analysts and investors, tax disclosures also have the potential to be informative to tax authorities and increase the risk of a tax audit. Prior literature suggests that firms perceive tax disclosures as informative to tax authorities (e.g. McGuire 2009; Robinson and Schmidt 2013; Kubick et al. 2016; Ehinger et al. 2019). If firms that engage in greater tax planning perceive their risk of tax audit to be higher than firms engaging in less tax planning, these firms should have greater incentives to revise their future tax disclosures in a manner that is less informative.

I expect firms engaging in more tax planning (i.e., firms with lower cash ETRs) will perceive their risk of a tax audit to be higher, thus providing less informative revisions to tax disclosures relative to firms with higher cash ETRs. To test this assertion, I estimate equation 1 replacing *CashETR* and *Post*CashETR* with *LowCashETR* and *Post*LowCashETR*. To proxy for firms with the greatest perceived risk of tax audit, I set *LowCashETR* equal to one for firms whose average cash ETR prior to SEC comment letter review is in the bottom quartile of the distribution, and zero otherwise. If these firms provide less informative disclosures relative to firms with higher cash ETRs, I expect analyst forecast accuracy to be lower for this sample of firms following SEC-prompted changes to tax disclosures (*Post*LowCashETR*). In untabulated results, I find a negative and significant estimated coefficient on the interaction of *Post* and *LowCashETR* (*p*-value = 0.034), suggesting that analyst forecast accuracy is lower following SEC-prompted revisions to tax disclosures for firms engaging in more tax planning than for firms engaging in less tax planning pre-comment letter review. Overall, this result provides evidence consistent with firms that perceive their risk of tax audit to be greater providing less informative revisions to tax disclosures.

Robustness test: Alternative information environment proxies

My primary dependent variable is analyst ETR forecast accuracy. To verify the robustness of my results, I examine additional proxies for the firm's information environment. Prior literature uses analyst

forecast dispersion to proxy for changes in the precision of common information available to analysts (e.g., Bowen et al. 2002). In equation 2, I replace *MeanAccuracy* with *ETRDispersion*, calculated as the standard deviation of the implied ETR forecast for all individual analysts following firm *j* in year *t*. If SEC-prompted revisions to tax disclosures increase analyst dispersion, I expect a significantly positive association between *Post* and *ETRDispersion*. In untabulated analysis, I find an increase in forecast dispersion following SEC-prompted revisions to tax disclosures, although it is not significant at conventional levels (*p*-value = 0.182).

Prior literature uses bid-ask spread to proxy for investor uncertainty (e.g., Bozanic et al. 2017). In equation 2, I replace *MeanAccuracy* with *BidAskSpread*, calculated as the bid-ask spread in the event-period following the Form 10-K filing date less the bid-ask spread over the period prior to the Form 10-K release. If investor uncertainty increases following SEC-prompted revisions to tax disclosures, I expect a significantly positive association between *Post* and *BidAskSpread*. In untabulated analysis, I find a positive and significant estimated coefficient on *BidAskSpread* (*p*-value = 0.088), suggesting an increase in investor uncertainty following SEC-prompted revisions to tax disclosures. This result is consistent with the results in Table 5 suggesting a decrease in the informativeness of disclosure following SEC-prompted revisions to tax disclosures.

Robustness test: Balanced sample

In my original regression analysis, I require that analyst *i* forecasts for firm *j* at least once in the pre-review period and at least once in the post-review period. However, this requirement allows analyst *i* to potentially appear once in the pre-review period and twice in the post-review period (or vice-versa). To address the concern that an unequal number of forecasts may be driving my results, I re-estimate equations 1 and 3 on a balanced sample of individual analyst forecasts. In untabulated analysis, I find results consistent with those presented in Tables 5 and 6.

Robustness test: Analyst ETR forecast accuracy in years t+1 and t+2

To examine if the decrease in analyst ETR forecast accuracy is concentrated in either year *t+1* or year *t+2*, I separately estimate Table 5 on analyst forecasts from *t+1* and analyst forecasts from *t+2*. I find a decrease in analyst ETR forecast accuracy in both *t+1* and *t+2*. I also fail to find a significant difference

between the decrease at *t+1* and the decrease at *t+2*, suggesting that the decrease in analyst ETR forecast accuracy persists for both years in the post-review period.

Persistence of changes in analyst ETR forecast accuracy

Overall, the results in Table 5 suggest that SEC-prompted revisions to firms' tax disclosures reduce the informativeness of the tax disclosures in the years immediately following revision. If this reduction in informativeness persists into the future, I would expect to continue to see a negative association between *Post* and *ETRAccuracy* in a later time period. To test the persistence of decreases in analyst ETR forecast accuracy, in untabulated analysis I replicate Table 5 after re-defining the post-event period as years *t+3* and *t+4*. I fail to find a significant association between *ETRAccuracy* and *Post*, suggesting that analyst ETR forecast accuracy eventually reverts to pre-SEC review levels.[26]

VI. CONCLUSION

Prior research documents consequences of the comment letter review process. Studies find that subsequent to a general comment letter review, qualitative disclosure in the Form 10-K increases (Bozanic et al. 2017), and the information environment improves for firms that increase qualitative disclosure (Bozanic et al. 2017) and firms that amend their disclosures (Johnston and Petacchi 2017). Kubick et al. (2016) find that firms engage in less tax avoidance following a tax-related comment letter review and include more mention of taxes in subsequent Form 10-K disclosures. However, prior studies do not directly link specific SEC comments to specific changes in the information environment. I focus on tax-related SEC comment letters and directly link these tax comments to changes in future tax disclosures and analysts' ETR forecast accuracy.

I find that analysts' ETR forecast accuracy decreases following SEC-prompted revisions to firms' tax disclosures, suggesting a decrease in the informativeness of tax disclosures for firms that revise following SEC review. The decrease in analyst ETR forecast accuracy is mitigated when new tabular

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[26] Results are robust to only using analyst forecasts in year *t+3* or in year *t+4* in isolation or combining both years *t+3* and *t+4*.

information is included in the revised tax disclosures. This supports the findings of Hutchens (2018), who finds that greater quantitative information disclosed in the income tax footnote increases analyst ETR forecast accuracy. To my knowledge, my paper is the first to examine the tax comments contained in SEC comment letters and the consequences of SEC-prompted revisions to tax disclosures on analyst ETR forecast accuracy. My results suggest that the comment letter review process results in an additional consequence – decreased analyst ETR forecast accuracy resulting from SEC-prompted revisions to tax disclosures.

My analyses specifically relate to analysts' incorporation of tax information and may not be generalizable to other line items that analysts regularly forecast. Future research can further examine the SEC-prompted revisions to tax disclosures. For example, do revisions addressing the tax footnote versus other portions of the Form 10-K differentially influence analysts' understanding of tax information? Do tax authorities also view tabular disclosures as more understandable, and does audit risk subsequently increase for firms making these revisions? Although prior research provides evidence of improvements in the information environment from the comment letter review process, my study is the first to my knowledge to provide evidence of a decline. As noted by Johnston and Petacchi (2017), whether comment letter costs outweigh the benefits is still an open question.

Dependent Variables

ETRAccuracy	=	The absolute value of the difference between the implied ETR forecast and the actual ETR for analyst i in year t, multiplied by -1. 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. Pretax income and net income forecasts are limited to forecasts made after the year t third quarter earnings announcement but prior to the year t fourth quarter earnings announcement.
MeanAccuracy	=	The absolute value of the difference between the consensus implied ETR forecast and the actual ETR for analysts following firm j in year t, multiplied by -1. 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. Pretax income and net income forecasts are limited to forecasts made after the year t third quarter earnings announcement but prior to the year t fourth quarter earnings announcement.
ETRDispersion	=	The standard deviation of the implied ETR forecasts for all individual analysts following firm j in year t.
BidAskSpread	=	Abnormal bid-ask spread calculated as the event period average daily percent spread minus the pre-period average daily percent spread. I use trading days (0, +2) relative to the annual Form 10-K filing date as the event period and the 45 trading days prior as the pre-period. I calculate the daily percent spread as ((ASKHI – BIDLO)/(ASKHI + BIDLO)/2) *100 using the CRSP daily stock file.

Independent Variables

ΔLength	=	The word count in the revised tax disclosure in the event year less the word count in the original tax disclosure prior to comment letter review scaled by the word count in the original tax disclosure prior to comment letter review.
Numerical	=	Equal to one if the firm includes new numbers in its revised disclosure following comment letter review, and zero otherwise.
Post	=	Equal to one for fiscal years occurring after comment letter review, and zero otherwise.
Tabular	=	Equal to one if the firm adds or modifies tabular information in its revised disclosure following comment letter review, and zero otherwise.

Tax Complexity Variables

CashETR	=	Cash taxes paid (TXPD) scaled by pretax income (PI).
CompExp	=	The firm's prior year stock compensation expense (STKCO) plus implied option expense (XINTOPT/0.65), scaled by total assets (AT).
ETRSurp	=	The absolute value of *GAAPETR* from the current year less the prior year *GAAPETR*.
Foreign	=	Equal to one for firms with non-zero pretax foreign income (PIFO) in the prior year, and zero otherwise.
GAAPETR	=	Tax expense (TXT) scaled by pretax income (PI).

LowCashETR	=	One if the firm's average cash ETR over years *t-1* and *t-2* is in the bottom quartile of all firms' average cash ETRs over years *t-1* and *t-2*, and zero otherwise.
PermDiff	=	The absolute value of the difference between a firm's prior year *GAAPETR* and 35 percent.
RD	=	A firm's prior year R&D expenditures (XRD) scaled by prior year sales (SALE). If R&D expenditures exceed sales, I set the variable equal to one.
σETR	=	The standard deviation of *GAAPETR* over the five year period from *t-4* to *t*.
TLCF	=	Equal to one for firms with non-zero tax loss carryforwards (TLCF) in the prior year, and zero otherwise.

General Complexity Variables

Leverage	=	Prior year long-term debt (DLTT) scaled by prior year total assets (AT).
MTB	=	A firm's prior year market value (PRCC_F*CSHO) scaled by prior year book value (CEQ).
NumSegs	=	The number of 4-digit SIC segments for a firm in the current year as reported in Compustat.
Size	=	The natural log of prior year total assets (AT).

General Information Environment Variables

Guidance	=	Equal to one if the firm is listed as issuing an earnings forecast in I/B/E/S Guidance for year *t*.
NAnalysts	=	The number of analysts following a firm in year *t* as reported in I/B/E/S Summary History dataset.

Analyst Characteristics Variables

BrokerSize	=	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*, with this difference scaled by the range of brokerage size for analysts following firm *j* in year *t* (Clement and Tse 2005).
FirmExp	=	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,* with this difference scaled by the range of years of firm-specific experience for analysts following firm *j* in year *t* (Clement and Tse 2005).
GenExp	=	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,* with this difference scaled by the range of years of experience for analysts following firm *j* in year *t* (Clement and Tse 2005).

NCos	=	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,* with this difference scaled by the range in the number of companies followed by analysts following firm *j* in year *t* (Clement and Tse 2005).
NInds	=	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,* with this difference scaled by the range in the number of two-digit SICs followed by analysts following firm *j* in year *t* (Clement and Tse 2005).

Comment Letter Determinant Variables

MWeak	=	Equal to one if the internal control audit opinion as reported in AuditAnalytics is qualified for a material weakness in year *t*, and 0 otherwise.
Restate	=	Equal to one if the company filed a Form 10-K restatement in year *t*, and 0 otherwise.
StdRet	=	The standard deviation of daily abnormal stock returns for the 250 trading day period ending two trading days before the 10-K release date. Abnormal stock returns are calculated using the error term from the market model, with a firm-specific coefficient on market returns.
TaxReview	=	Equal to one for firms revising their tax disclosures following SEC review, and zero for firms receiving a non-tax comment letter.

FIGURE 1

Timeline of SEC review and firm revision

This figure illustrates a hypothetical timeline of events surrounding a Form 10-K SEC comment letter review. Year *t-1* represents the year prior to SEC comment letter review. The SEC references the year *t-1* Form 10-K filing in its comment letter. Year *t* represents the year in which the SEC issues a comment letter and a firm responds with proposed changes to disclosure. The year *t* Form 10-K contains the new disclosure. Year *t+1* represents the first year in which the analyst has an opportunity to incorporate information from the new disclosure into forecasts.
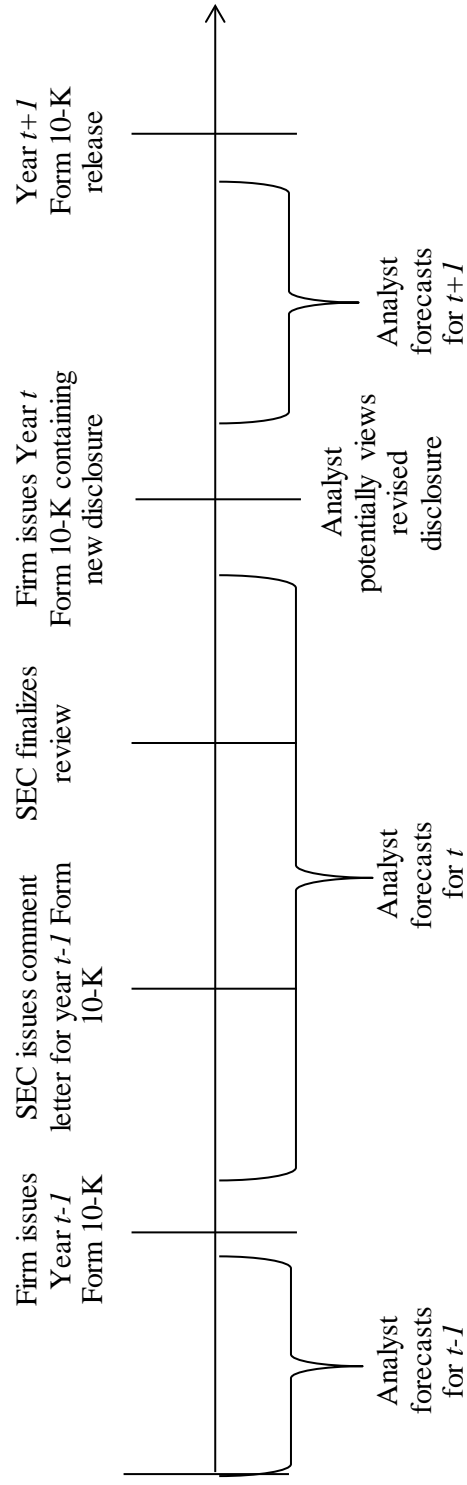
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TABLE 1
Sample derivation

This table presents the sample selection procedures for firms in my sample. I identify firms that receive an SEC comment letter that relates to the Form 10-K filing and contains tax-related comments. The sample begins in 2004, the first year in which SEC comment letter data became publicly available, and continues through 2014. I keep only the first instance in which a firm undergoes a tax-related SEC review in my sample period. My initial sample of 1,926 firms consists of all firms not missing firm identifier information and not missing date information to determine when the SEC completed its review. I remove observations missing necessary data to compute variables included in the regression analysis and event year observations. Finally, I remove firms that do not change their tax disclosures as a result of the SEC comment letter review.

	Number of firms	Number of firm-years	Number of analyst-firm-years
Total observations using [-2,2] year event window for 1,926 comment letters	1,926	9,182	47,429
Observations with negative pretax income or tax expense	(263)	(3,302)	(11,946)
Observations missing I/B/E/S data to compute dependent variable	(498)	(2,125)	(3,038)
Observations missing data to compute tax complexity variables	(63)	(389)	(2,393)
Observations missing data to compute general complexity variables	(50)	(157)	(1,435)
Observations without information available in both the pre- and post-event window	(452)	(791)	(5,156)
Observations spanning the implementation of FIN 48	(183)	(755)	(6,667)
Observations without the same individual analyst forecasting in both the pre- and post-event window for a firm	(18)	(81)	(7,204)
Comment letters erroneously coded using AuditAnalytics classifications	(34)	(136)	(624)
Remaining event year observations	0	(299)	(1,855)
Sample receiving tax-related comment letter with necessary data	365	1,147	7,111
Observations for firms not asked to revise tax disclosures	(91)	(274)	(1,581)
Observations for firms that did not revise tax disclosures	(28)	(92)	(673)
Final sample of observations for regressions	246	781	4,857

TABLE 2
Comment letter descriptive statistics

This table presents descriptive statistics on the comment letter process for firms receiving tax-related comment letters. Panel A presents results for the full sample of 365 firms. Panel B presents results for the subsample of 274 firms specifically asked to revise tax disclosures during the comment letter process. Panel C presents results for the subsample of 246 firms that ultimately revise their tax disclosures. See Appendix A for variable definitions.

Panel A, Descriptive statistics for the full sample of firms receiving tax-related comment letters

	Obs.	Mean	Std. Dev.	25th Pctl	Median	75th Pctl
Rounds	365	1.2274	0.4864	1.0000	1.0000	1.0000
TaxComment	365	1.5452	0.9146	1.0000	1.0000	2.0000
RevRequest	365	0.7507	0.4332	1.0000	1.0000	1.0000

Panel B, Descriptive statistics for the sample of firms requested to revise tax-related disclosures

	Obs.	Mean	Std. Dev.	25th Pctl	Median	75th Pctl
Rounds	274	1.2555	0.5068	1.0000	1.0000	1.0000
TaxComment	274	1.6095	0.9002	1.0000	1.0000	2.0000
Compliance	274	0.6934	0.4619	0.0000	1.0000	1.0000
Negotiation	274	0.2044	0.4040	0.0000	0.0000	0.0000
NonCompliance	274	0.1022	0.3035	0.0000	0.0000	0.0000

Panel C, Descriptive statistics for the sample of firms revising tax-related disclosures

	Obs.	Mean	Std. Dev.	25th Pctl	Median	75th Pctl
ΔLength	246	0.5305	0.3825	0.2917	0.5263	0.9627
Numerical	246	0.6463	0.4791	0.0000	1.0000	1.0000
Tabular	246	0.1992	0.4002	0.0000	0.0000	0.0000

TABLE 3

Descriptive statistics

This table presents descriptive statistics for the sample of 246 firms revising their tax disclosures subsequent to comment letter review. Panel A presents descriptive statistics on 4,857 analyst-firm-year observations. Panel B presents descriptive statistics on 781 firm-year observations. See Appendix A for variable definitions.

Panel A, Descriptive statistics: Analyst-firm-year observations

	Obs.	Mean	Std. Dev.	25th Pctl	Median	75th Pctl
ETRAccuracy	4,857	-0.0379	0.0733	-0.0319	-0.0102	-0.0035
ETRSurp	4,857	0.1538	0.4275	0.0130	0.0299	0.0922
σETR	4,857	0.2196	0.5397	0.0255	0.0466	0.1428
CompExp	4,857	0.0113	0.0124	0.0033	0.0066	0.0147
PermDiff	4,857	0.1601	0.2453	0.0371	0.0907	0.1794
TLCF	4,857	0.6376	0.4807	0.0000	1.0000	1.0000
CashETR	4,857	0.2377	0.1785	0.1232	0.2199	0.3079
Foreign	4,857	0.8369	0.3695	1.0000	1.0000	1.0000
RD	4,857	0.0529	0.0710	0.0000	0.0162	0.0845
MTB	4,857	3.9488	5.0236	1.6949	2.6410	4.2564
Size	4,857	8.6097	1.6309	7.4578	8.4820	9.7693
NumSegs	4,857	1.9529	1.2529	1.0000	1.0000	3.0000
Leverage	4,857	0.1687	0.1440	0.0443	0.1514	0.2481
NAnalysts	4,857	18.036	9.6835	11.000	17.000	23.000
Guidance	4,857	0.6146	0.4867	0.0000	1.0000	1.0000
BrokerSize	4,857	0.4988	0.3346	0.1892	0.5000	0.8028
FirmExp	4,857	0.8685	0.1717	0.7500	1.0000	1.0000
GenExp	4,857	0.5936	0.3196	0.3333	0.6250	0.8750
NCos	4,857	0.4782	0.3278	0.2000	0.5000	0.7143
NInds	4,857	0.4565	0.4059	0.0000	0.5000	1.0000

Panel B, Descriptive statistics: Firm-year observations

	Obs.	Mean	Std. Dev.	25th Pctl	Median	75th Pctl
MeanAccuracy	781	-0.0449	0.0637	-0.0508	-0.0193	-0.0074
ETRSurp	781	0.2039	0.5147	0.0137	0.0384	0.1202
σETR	781	0.2861	0.6374	0.0271	0.0633	0.2034
CompExp	781	0.0102	0.0125	0.0030	0.0060	0.0125
PermDiff	781	0.1699	0.2755	0.0295	0.0828	0.1849
TLCF	781	0.6044	0.4893	0.0000	1.0000	1.0000
CashETR	781	0.2525	0.1911	0.1228	0.2341	0.3325
Foreign	781	0.7900	0.4076	1.0000	1.0000	1.0000
RD	781	0.0391	0.0600	0.0000	0.0096	0.0566
MTB	781	3.2341	4.1233	1.5208	2.2880	3.5983
Size	781	8.0764	1.6604	6.9774	7.9940	9.0501
NumSegs	781	1.8656	1.1191	1.0000	2.0000	2.0000
Leverage	781	0.1742	0.1556	0.0379	0.1522	0.2631
NAnalysts	781	12.676	8.1992	6.0000	11.000	17.000
Guidance	781	0.5915	0.4919	0.0000	1.0000	1.0000

TABLE 4

Correlation Matrix

This table presents correlations for firms revising tax disclosures in response to SEC comment letters during my sample period. I report Spearman correlations above the diagonal and Pearson correlations below the diagonal. These results are based on 4,857 analyst firm-year observations for 246 distinct firms. See Appendix A for variable definitions. Values in bold indicate statistical significance at the 0.10 level.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
(1) ETRAccuracy		0.73	-0.22	-0.19	0.10	-0.12	-0.02	-0.02	-0.04	0.09	0.13	0.05	0.03	-0.07	0.15	0.14	-0.06	0.06	0.02	-0.02	-0.02	0.01	0.02	0.01	-0.06
(2) MeanAccuracy	0.79		-0.30	-0.27	0.02	-0.16	-0.05	0.01	-0.06	0.03	0.15	0.05	0.09	-0.07	0.10	0.16	-0.01	0.07	-0.01	0.00	-0.02	-0.04	-0.04	0.01	-0.05
(3) ETRSurp	-0.17	-0.21		0.59	-0.03	0.44	0.07	-0.05	0.08	0.09	-0.18	-0.07	-0.10	0.07	-0.12	-0.04	-0.01	0.00	0.00	0.01	0.03	0.00	0.04	-0.03	0.03
(4) σETR	-0.12	-0.16	0.66		0.07	0.38	0.03	-0.12	0.11	0.13	-0.15	-0.18	-0.14	-0.01	-0.15	-0.08	-0.01	0.01	0.00	0.04	0.04	-0.04	0.08	0.01	0.04
(5) CompExp	-0.01	-0.02	0.06	0.16		0.04	0.13	-0.11	0.23	0.56	0.39	-0.30	-0.25	-0.33	0.26	0.12	-0.05	0.03	0.02	-0.01	-0.02	0.00	0.26	0.03	-0.09
(6) PermDiff	-0.12	-0.14	0.71	0.39	0.03		0.07	-0.39	0.18	0.24	-0.10	0.27	-0.07	0.11	0.18	-0.08	0.01	-0.01	0.02	0.04	0.02	0.05	0.10	-0.01	0.01
(7) TLCF	0.05	0.07	0.05	0.03	0.11	0.05		-0.07	0.35	0.18	-0.02	0.05	-0.02	-0.05	0.10	0.06	-0.01	0.06	-0.02	0.04	0.01	0.12	0.17	0.14	-0.14
(8) CashETR	-0.09	-0.14	0.26	0.20	-0.13	-0.15	-0.05		-0.03	-0.22	0.00	-0.17	0.09	0.00	-0.21	0.10	0.00	0.01	0.00	-0.02	0.02	0.02	-0.15	-0.01	-0.01
(9) Foreign	0.02	0.02	0.04	0.03	0.16	0.05	0.35	0.01		0.31	0.14	0.08	0.10	-0.06	0.12	0.03	-0.02	0.06	0.00	0.04	0.05	0.08	0.14	0.20	-0.20
(10) RD	0.04	0.06	0.02	0.04	0.58	0.11	0.20	-0.23	0.24		0.33	0.00	-0.14	-0.16	0.28	0.06	-0.02	0.05	0.03	0.02	-0.02	0.02	0.34	0.12	-0.15
(11) MTB	0.00	0.01	-0.06	0.00	0.19	-0.09	-0.13	-0.03	0.01	0.07		-0.14	-0.09	-0.08	0.17	0.11	-0.04	-0.03	0.02	-0.04	-0.03	0.01	-0.01	0.05	-0.09
(12) Size	0.06	0.07	-0.10	-0.18	-0.33	0.04	0.05	-0.15	0.07	0.06	-0.09		0.24	0.28	0.51	-0.09	0.04	-0.03	-0.01	-0.04	-0.04	0.08	-0.06	0.02	-0.06
(13) NumSegs	0.09	0.12	-0.06	-0.10	-0.26	-0.05	-0.04	0.00	0.10	-0.18	-0.07	0.30		0.06	-0.06	0.11	0.02	0.03	-0.01	0.01	0.03	-0.01	-0.01	0.03	0.04
(14) Leverage	-0.12	-0.14	0.01	-0.03	-0.35	0.04	-0.06	0.01	-0.10	-0.23	0.02	0.20	0.00		-0.09	0.09	0.04	-0.05	0.00	0.00	0.07	0.10	-0.15	-0.03	-0.07
(15) NAnalysts	0.12	0.16	-0.14	-0.13	0.23	0.00	0.10	-0.19	0.14	0.44	0.11	0.50	0.04	-0.13		-0.04	-0.06	-0.02	-0.01	-0.06	-0.08	0.10	0.13	0.02	-0.11
(16) Guidance	0.09	0.12	-0.02	0.00	-0.01	-0.05	0.06	0.06	0.03	-0.02	0.01	-0.05	0.14	0.09	-0.10		0.02	-0.01	-0.02	0.01	0.06	0.03	-0.06	-0.07	-0.01
(17) BrokerSize	-0.04	-0.01	0.00	-0.01	-0.05	0.00	-0.01	0.00	-0.02	-0.04	-0.03	0.04	0.00	0.03	-0.07	0.02		0.06	0.11	0.24	0.10	-0.02	-0.01	-0.02	0.03
(18) FirmExp	0.06	0.05	-0.01	-0.03	0.00	0.01	0.06	-0.01	0.07	0.04	-0.08	-0.02	0.04	-0.05	-0.01	-0.01	0.07		0.21	0.14	0.04	-0.01	0.10	0.03	-0.06
(19) GenExp	0.00	-0.02	-0.01	-0.01	0.02	0.02	-0.01	0.01	0.01	0.04	0.00	0.00	-0.01	-0.01	0.03	-0.01	0.10	0.22		0.17	0.10	0.19	0.01	-0.01	0.00
(20) NCos	-0.01	0.00	0.03	0.02	-0.01	0.04	0.03	-0.02	0.04	0.00	-0.05	-0.05	-0.01	0.00	-0.08	0.01	0.24	0.15	0.18		0.53	0.00	0.03	0.03	0.01
(21) NInds	-0.03	-0.03	0.06	0.03	-0.03	0.04	0.01	0.01	0.08	0.03	-0.03	-0.04	-0.04	0.02	-0.11	0.06	0.11	0.04	0.10	0.52		0.03	-0.03	0.03	0.06
(22) Post	-0.04	-0.05	-0.05	-0.07	-0.01	0.01	0.12	0.01	0.13	0.36	-0.01	0.08	-0.05	0.07	0.20	0.03	-0.02	0.00	0.01	0.00	0.04		0.00	-0.01	0.00
(23) ΔLength	0.01	0.01	-0.04	-0.05	0.25	-0.01	0.16	-0.11	0.20	0.08	-0.12	-0.04	-0.02	-0.12	0.13	-0.04	0.00	0.09	0.01	0.02	-0.02	0.03		0.12	-0.07
(24) Numerical	0.04	0.06	0.02	0.05	0.09	-0.01	0.14	0.01	0.20	0.08	0.05	0.00	0.00	-0.04	0.03	-0.07	-0.02	0.03	-0.01	0.03	0.03	0.00	0.10		-0.25
(25) Tabular	-0.05	-0.07	-0.02	-0.01	-0.03	0.00	-0.14	-0.03	-0.20	-0.09	-0.06	-0.06	0.03	-0.08	-0.12	-0.01	0.03	-0.05	-0.01	0.01	0.07	0.00	-0.05	-0.25	

TABLE 5

OLS regression of analyst implied ETR forecast accuracy

This table presents the results from an OLS regression of analysts' implied ETR forecast accuracy on *Post*, an indicator variable equal to one for fiscal years occurring after a tax-related comment letter review. Column 1 presents results based on analysts' individual ETR forecast accuracy (*ETRAccuracy*). Column 2 presents results based on analysts' consensus ETR forecast accuracy (*MeanAccuracy*). See Appendix A for variable definitions. All regressions control for industry and year fixed effects. I winsorize all continuous variables and cluster standard errors by firm. *, **, *** indicate statistical significance at the 0.10, 0.05, and 0.01 levels, respectively (two-tailed tests).

Variable	[1] Dependent variable: ETRAccuracy		[2] Dependent variable: MeanAccuracy	
	Coefficient	t- statistic	Coefficient	t- statistic
Post	-0.0243 ***	-3.00	-0.0234 **	-2.48
Tax Complexity				
ETRSurp	-0.0134	-1.17	-0.0149	-1.45
σETR	-0.0006	-0.13	-0.0023	-0.37
CompExp	-0.4101	-1.45	-0.7199	-1.22
PermDiff	-0.0157	-0.69	0.0082	0.55
TLCF	0.0046	0.79	-0.0039	-0.59
CashETR	-0.0539 ***	-3.09	-0.0438 *	-1.84
Post*CashETR	0.0387	1.28	0.0492	1.35
Foreign	-0.0112	-1.29	-0.0035	-0.32
RD	-0.0575	-0.94	-0.0569	-0.71
General Complexity				
MTB	0.0003	0.59	-0.0007	-0.99
Size	0.0014	0.71	-0.0008	-0.25
NumSegs	-0.0002	-0.09	0.0003	0.11
Leverage	-0.0868 ***	-3.30	-0.0519 *	-1.94
Information Environment				
NAnalysts	0.0008 **	2.40	0.0015 **	2.43
Guidance	0.0123 **	2.24	0.0136 **	1.98
Analyst Characteristics				
BrokerSize	-0.0093 **	-2.44		
FirmExp	0.0192 **	2.26		
GenExp	0.0012	0.33		
NCos	0.0001	0.02		
NInds	-0.0026	-0.66		
Year, Industry FE	YES		YES	
N	4,857		781	
R^2	12.88%		17.95%	

TABLE 6

OLS regression of analyst implied ETR forecast accuracy on disclosure characteristics

This table presents the results from an OLS regression of analysts' implied ETR forecast accuracy (*ETRAccuracy*) on *Post*, an indicator variable equal to one for fiscal years occurring after a tax-related comment letter review, *ΔLength*, equal to the word count in the revised tax disclosure in the event year less the word count in the original tax disclosure prior to comment letter review, scaled by the word count in the original tax disclosure prior to comment letter review, *Numerical*, an indicator variable equal to one if the firm includes new numbers in its revised disclosure following comment letter review, *Tabular*, an indicator variable equal to one if the firm adds tabular information in its revised disclosure following comment letter review, and controls. See Appendix A for variable definitions. All regressions control for industry and year fixed effects. I winsorize all continuous variables and cluster standard errors by firm. *, **, *** indicate statistical significance at the 0.10, 0.05, and 0.01 levels, respectively (two-tailed tests).

Variable	[1] Coefficient	t-statistic	[2] Coefficient	t-statistic	[3] Coefficient	t-statistic	[4] Coefficient	t-statistic
Post	-0.0215 **	-2.12	-0.0188 **	-2.06	-0.0271 ***	-3.22	-0.0223 *	-1.81
ΔLength	-0.0008	-0.10					-0.0023	-0.31
Post*ΔLength	-0.0053	-0.47					0.0111 ***	0.74
Numerical			0.0089	1.46			0.0049	0.84
Post*Numerical			-0.0067	-0.84			0.0079 ***	0.69
Tabular					-0.0218 ***	-2.70	-0.0200 ***	-2.61
Post*Tabular					0.0176 **	1.99	0.0165 *	1.84
Controls	YES		YES		YES		YES	
Year, Industry FE	YES		YES		YES		YES	
N	4,857		4,857		4,857		4,857	
R^2	12.92%		13.02%		13.37%		13.45%	

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TABLE 7

Entropy balanced sample: Revise firms and Nontax Letter firms

This table presents results for the entropy balanced sample of firms revising disclosure after receipt of a tax-related SEC comment letter (*TaxReview* = 1) and firms receiving a nontax comment letter (*TaxReview* = 0). Panel A provides descriptive statistics on determinants of receiving a tax comment letter prior to entropy balancing. Panel B provides descriptive statistics on determinants of receiving a tax comment letter after entropy balancing. Panel C presents results from an OLS regression of analysts' implied ETR forecast accuracy (*ETRAccuracy*) on *Post*, an indicator variable equal to one for fiscal years occurring after a comment letter review, *TaxReview*, the interaction of *Post* and *TaxReview*, and controls. See Appendix A for variable definitions. All regressions control for industry and year fixed effects. I winsorize all continuous variables and cluster standard errors by firm. *, **, *** indicate statistical significance at the 0.10, 0.05, and 0.01 levels, respectively (two-tailed tests).

Panel A, Descriptive statistics prior to entropy balancing

	TaxReview=1				TaxReview=0			
	Obs.	**Mean**	**Var.**	**Skew.**	**Obs.**	**Mean**	**Var.**	**Skew.**
Size	4,857	8.6020	2.6500	0.0723	33,326	7.6510	2.8760	0.2395
StdRet	4,857	0.0163	0.0001	1.3800	33,326	0.0208	0.0001	0.9582
MWeak	4,857	0.0037	0.0037	16.340	33,326	0.0256	0.0250	6.0040
Restate	4,857	0.0404	0.0387	4.6710	33,326	0.0357	0.0344	5.0070
GAAPETR	4,857	0.2761	0.0216	2.2460	33,326	0.3219	0.0197	1.3950

Panel B, Descriptive statistics after entropy balancing

	TaxReview=1				TaxReview=0			
	Obs.	**Mean**	**Var.**	**Skew.**	**Obs.**	**Mean**	**Var.**	**Skew.**
Size	4,857	8.6020	2.6500	0.0723	33,326	8.6010	2.6530	0.0711
StdRet	4,857	0.0163	0.0001	1.3800	33,326	0.0163	0.0001	1.3800
MWeak	4,857	0.0037	0.0037	16.340	33,326	0.0038	0.0038	16.080
Restate	4,857	0.0404	0.0387	4.6710	33,326	0.0404	0.0387	4.6710
GAAPETR	4,857	0.2761	0.0216	2.2460	33,326	0.2762	0.0216	2.2460

Panel C, OLS regression of implied ETR forecast accuracy: Revise firms and non-tax firms

Variable	*Coefficient*		*t-statistic*
Post	-0.0022		-0.41
TaxReview	0.0043		0.94
Post*TaxReview	-0.0148	**	-2.12
Controls	YES		
Year, Industry FE	YES		
N	38,183		
R^2	9.29%		