The Informativeness and Monitoring Effect of Analysts' Comments on Earnings Quality

Abstract: This paper investigates the monitoring role of financial analysts in the financial reporting process by examining the informativeness and monitoring effect of their written comments on earnings quality. I find that these comments have incremental predictability with respect to future accounting restatements, and convey information to investors beyond that in the earnings forecasts, stock ratings, price targets, and other qualitative text in analyst reports. Further analyses suggest that the market's reaction to these comments is primarily driven by negative comments and comments written with certainty. In addition, controlling for accrual reversals, I find that firms significantly reduce the level of accruals-based earnings management after receiving negative comments, and this reduction is not accompanied by an increase in real activities management.

Keywords: financial analysts; monitoring; earnings quality; earnings management; textual analysis

Data Availability: Data are available from sources identified in the text.

"In the end, stock ratings and target prices are just the skin and bones of analysts' research. The meat of such reports is in the analysis, details, and tone. Investors who are willing to spend the time can easily figure out what an analyst really thinks about a stock by reading a research report."

----BusinessWeek (2002)

I. INTRODUCTION

Jensen and Meckling (1976) maintain that analysts possess comparative advantages in monitoring and play a large role in monitoring managers' behavior. Consistent with this argument, recent studies (e.g., Yu 2008; Sun 2009) find that firms followed by more analysts have lower levels of earnings management. However, Hong et al. (2014) find that firms with lower levels of earnings management attract more analysts to follow. These findings raise questions of whether the observed negative association in prior literature between analyst following and earnings management is evidence of analysts' monitoring role. In this paper, I seek novel data from analyst reports to provide direct evidence on analysts' monitoring role. Specifically, I investigate two related research questions: (1) Do analysts' written comments on earnings quality (hereafter, EQ comments) provide new information to investors? (2) If so, do EQ comments have a monitoring effect on earnings management?

The assumption throughout this study is that analysts can effectively assess earnings quality and identify incidences of earnings management. Recent developments in the analyst literature substantiate this assumption. Specifically, Lui et al. (2011) and Miller (2006) provide evidence that analysts are able to detect accounting irregularities. Dyck et al. (2010) find that analysts are more effective than the Securities and Exchange Commission (SEC) and auditors in uncovering financial fraud.[1] In addition, anecdotes suggest that the investment community is

[1] Some early studies, however, conclude differently. Most notably, Bradshaw et al. (2001) show that earnings forecasts do not incorporate the predictable future earnings declines associated with high accruals. However, note that the sample period in Bradshaw et al. (2001) is 1988 – 1998, which largely precedes Sloan (1996). Anecdotes

aware of managerial opportunistic reporting incentives and appears to have been implementing trading strategies based on in-house assessment of earnings quality (e.g., Morgan Stanley 2002, 2011; Alliance Bernstein 2005; Integrity Research 2009).

Extant evidence suggests that investors fail to correctly assess earnings quality and identify incidences of earnings management (e.g., Xie 2001; DeFond and Park 2001). Given that EQ comments directly discuss the quality of reported earnings, I expect them to be informative to investors. However, the information in EQ comments might be redundant in the sense that the information they conveyed is available in other components of analyst reports or in previously released corporate disclosures. For instance, if an analyst has fully incorporated his or her assessment of earnings quality into earnings forecasts, then his or her comments on earnings quality may not be incrementally informative to investors.

I operationalize EQ comments as text in analyst reports that discusses the quality, sustainability, predictability, or persistence of reported earnings.[2] The initial sample consists of 317,801 analyst reports issued between 2003 and 2011 for a set of non-financial firms listed on the S&P 500. I first extract EQ comments from analyst reports using a Python program. In particular, I search sentences that contain (1) "quality", "persistent", "sustainable", or "predictable" (including variants) and, at the same time, contain (2) "accounting", "earnings", "profit", "income", "bottom line", or "EPS" (including variants). After the extraction, I quantify the sentiment (favorable or unfavorable views on earnings quality) of EQ comments using the Loughran and McDonald (2011) Financial Sentiment Dictionary.

(e.g., Alliance Bernstein 2005) suggest that following Sloan (1996), the investment community has exerted more efforts to assess and exploit earnings quality. Nevertheless, to further substantiate the assumption, I run a logistic regression (untabulated) and find that firms are more likely to be negatively commented on by analysts regarding earnings quality when they exhibit higher levels of discretionary accruals.

[2] Appendix B provides several examples of EQ comments.

To mitigate the concern that the 10/K-based Loughran and McDonald (2011) Dictionary may not correctly quantify EQ comments and the concern that analysts may only care about the economic dimension (i.e., fundamental performance) of earnings quality, I conduct a validation test by examining the predictability of EQ comments with respect to accounting restatements. The results of the validation test suggest that firms with more negative comments on earnings quality have a higher likelihood of subsequent accounting restatements, mitigating these two concerns.

I find that the three-day cumulative abnormal returns around the release of analyst reports are significantly and positively associated with the favorableness of EQ comments after controlling for revisions in earnings forecasts, stock recommendations, price targets, and report length as well as the tone of other text in analyst reports. Additional tests suggest that the market's reaction to EQ comments is primarily driven by negative comments and comments written with certainty. Thus, under the efficient market framework, the findings suggest that the information in EQ comments is incremental not only to that contained in earnings forecasts, stock ratings, price targets, and other text in analyst reports but also to information contained in previously released corporate disclosures.

Having established that EQ comments are incrementally informative to investors, my second research question is: Do EQ comments have a monitoring effect on earnings management?

In a multi-period game between a manager and shareholders of a firm, the manager adjusts the levels of earnings management according to his perceived costs and benefits, which are a function of the realized costs and benefits of managing earnings in the previous periods (Stein 1989). Because earnings management is a primary source of low-quality earnings (Dechow et al. 2010; Morgan Stanley 2011; Lo 2008), when analysts make negative comments

on the earnings quality of a given firm, investors and other market participants are likely to consider the firm (hereafter, the criticized firm) as flying a red flag regarding earnings management, thus increasing scrutiny. Consequently, the manager may perceive higher costs of managing earnings and reduce the level of earnings management in subsequent periods. Therefore, I expect firms to reduce the level of earnings management after receiving negative comments on earnings quality from analysts (hereafter, the criticism).

To test this hypothesis, I follow Geiger and North (2006) and examine the levels of discretionary accruals in criticized versus non-criticized firms over the same period.[3] I find that the level of discretionary accruals in criticized firms in the year *before* being criticized is similar to that in non-criticized firms. However, in the year *of* criticism, criticized firms exhibit a significantly higher level of discretionary accruals than non-criticized firms. More importantly, in the year *after* being criticized, the level of discretionary accruals in criticized firms decreases to a level similar to that in non-criticized firms. These inter-temporal changes in discretionary accruals are consistent with the notion that, following analysts' criticisms, criticized firms substantially reduce the level of earnings management activities.

A possible alternative explanation for the aforementioned results is the "iron" rule of accrual reversals. To mitigate such concern, I employ coarsened exact matching (Iacus et al. 2011; DeFond et al. 2014) to identify a set of firms that exhibit similar patterns of discretionary accruals but are not criticized by analysts, and I use these firms to control for accrual reversals. Specifically, I match each criticized firm with a non-criticized firm based on one-year lagged changes in discretionary accruals, the level of discretionary accruals, firm size and performance. Further analyses on this matched sample reveal that both sets of firms experience some decreases

[3] Analyst reports are issued throughout the year. To test this hypothesis, I only include analyst reports issued after the annual earnings announcement and one day before the subsequent first-quarter earnings announcement. This specific timeframe allows analysts to have observed annual accounting numbers before issuing analyst reports.

in discretionary accruals following the year of criticism, but the decrease in criticized firms is significantly greater than that in non-criticized firms. Hence, it is unlikely that the documented decrease in discretionary accruals in criticized firms is purely driven by accrual reversals.

Additional analyses suggest that the results are not driven by the initiation of cash flow forecasts (McInnis and Collins 2011), the decrease in discretionary accruals persists at least into the second year after the year of criticism, and this decrease is not accompanied by an increase in real activities management. These results corroborate the main findings on the monitoring effect of EQ comments on earnings management.

The paper contributes to the literature in the following ways. First, it adds to the emerging literature on analysts' monitoring role by providing direct evidence regarding analysts' monitoring of the financial reporting process. While previous studies (e.g., Yu 2008; Sun 2009) find that firms covered by more analysts have lower levels of earnings management, those findings are subject to an alternative explanation that lower levels of earnings management attract more analysts to follow (Hong et al. 2014). By investigating how managers change their opportunistic reporting behavior after being criticized by analysts for reporting low-quality earnings, I provide direct evidence confirming Jensen and Meckling's (1976) conjecture that analysts play a monitoring role as the by-product of their information role in securities analysis.

In addition, the present study operationalizes an approach to extract analysts' comments on earnings quality from a large sample of analyst reports. The ability of EQ comments to predict *ex post* accounting restatements highlights their potential of being an alternative external indicator of earnings quality. Popular external indicators of earnings quality, such as SEC comment letters or Accounting and Auditing Enforcement Releases (AAERs), only note cases of

low-quality earnings. Unlike these indicators, EQ comments can allow researchers to identify cases of high and low earnings quality.

The rest of the paper is organized as follows. Section II discusses related literature and hypothesis development. Section III describes the data and measures of EQ comments. Sections IV and V present the main empirical results and additional tests. Section VI presents sensitivity tests. Finally, Section VII concludes.

II. RELATED LITERATURE AND HYPOTHESES

Evidence on the market's reaction to text in analyst reports

The present study is closely related to the burgeoning literature on the informativeness of text in analyst reports. In an early study, Asquith et al. (2005) examine the text in 1,126 analyst reports and manually code the text into 14 types of arguments. They find that positive (negative) arguments are associated with positive (negative) market reaction. After controlling for quantitative forecasts, they find that the market's reaction to the revisions of forecasts and stock recommendations becomes less significant or even insignificant after controlling for the information contained in the text. Using machine coding on a much larger sample of over 300,000 reports, Huang et al. (2014) provide extensive evidence that the text in analyst reports has incremental information beyond that contained in quantitative forecasts.

Twedt and Rees (2012) and De Franco et al. (2015) investigate how characteristics of the text in analyst reports affect investors' reaction to contemporaneously released quantitative forecasts. Twedt and Rees (2012) find that the tone of the text intensifies investors' reaction to revisions of stock recommendations. De Franco et al. (2015) find that the market reacts more strongly to the release of analyst reports that are more readable. Furthermore, De Franco et al.

(2015) find that investors react more strongly to revisions of stock recommendations when the revisions are accompanied by more-readable reports.

Rather than examining all text in analyst reports, some studies focus specifically on the information content of text related to earnings quality. In an early study, Foster (1979) examines how the market reacts to 15 forensic accounting articles in Barron's written by Abraham Briloff. He documents a -8% abnormal return on the publication date of these articles. In a recent paper, Lui et al. (2011) manually identify sixteen analyst reports, discussing accounting issues that later result in accounting restatements. They document that the three-day cumulative abnormal returns centered on the release of these analyst reports is approximately -3%. It is notable that these studies do not take into account analysts' positive comments or information contained in quantitative forecasts. Moreover, manual collection significantly limits the sample sizes of these studies. By using a much larger sample of analyst reports, this study is able to overcome statistical issues dealing with small sample sizes. This study also explicitly controls for quantitative forecasts and the information content of other text to examine whether analysts' comments (positive and negative) on earnings quality are *incrementally* informative. In addition, this study is the first to examine the monitoring effect of analysts' comments on earnings quality.

Evidence on analysts' monitoring role

Jensen and Meckling (1976) suggest that analysts possess comparative advantages in monitoring activities and that they play a large role in monitoring managers' behavior.[4] Using a sample of US firms from 1988 to 2002, Yu (2008) finds a negative association between the level of discretionary accruals and analyst following, and he interprets the findings as consistent with

[4] Specifically, Jensen and Meckling (1976) state that "[w]e would expect monitoring activities to become specialized to those institutions and individuals who possess comparative advantages in these activities. One of the groups who seem to play a large role in these activities is composed of the security analysts[…]"

analysts' monitoring role. Extending Yu's work to an international setting of 21 countries, Degeorge et al. (2013) find that the negative association between analyst following and the level of discretionary accruals exists only in highly financially developed countries but not in less financially developed countries. Furthermore, using a sample of 24 countries, Sun (2009) finds that the negative association between analyst following and discretionary accruals is more negative in countries with weak investor protection. Taken together, both US studies and cross-country studies provide consistent evidence on the negative association between analyst following and earnings management.

However, it is well-established in the literature that analyst following is endogenous and subject to a self-selection bias (McNichols and O'Brien 1997; Kothari 2001). If earnings management distorts accounting information and makes it difficult for analysts to forecast, analysts may self-select to cover firms with lower levels of earnings management activities. Consistent with the self-selection explanation, Hong et al. (2014) find that firms with lower levels of earnings management have a better information environment, which attracts more analysts to follow, documenting also a negative association between analyst following and the level of discretionary accruals.

Hence, it is difficult to interpret analysts' monitoring role from the statistical association between analyst following and earnings management proxies. This paper overcomes the reverse-causality issue in the aforementioned studies by using a novel manually collected dataset of analysts' comments on earnings quality to examine how such comments provide information to investors regarding earnings quality and how they affect managers' reporting behavior.

Hypotheses

The first hypothesis concerns the informativeness of analysts' comments on earnings quality. In an instrumental work, Sloan (1996) shows that a hedge portfolio with a long position in firms from the highest accruals decile and a short position in firms from the lowest accruals decile significantly outperforms the market. Xie (2001) finds that the market fails to correctly price the discretionary components of accounting accruals. Furthermore, DeFond and Park (2001) document a downward post-earnings announcement drift for firms reporting income-increasing discretionary accruals. These findings strongly suggest that investors fail to correctly assess the quality of earnings. Hence, I expect analysts' comments on earnings quality to be informative for investors. Stated formally, I hypothesize that:

Hypothesis 1: The market reacts to analysts' comments on earnings quality.

However, I may not find the market's reaction to EQ comments for certain reasons. In particular, analysts assess earnings quality for the purpose of generating quantitative forecasts (Morgan Stanley 2011; de Jong et al. 2013). If an analyst has fully incorporated the assessment of earnings quality into quantitative forecasts, then this analyst's comments on earnings quality could be redundant for the market. Moreover, if an analyst is simply repeating what is readily observable from corporate disclosures (e.g., financial reports), then his or her EQ comments may not be informative for investors who have already observed those corporate disclosures.

The second hypothesis concerns the impact of EQ comments on managers' reporting behavior. In a repeated principal-agent game between a manager and shareholders, the observed costs and benefits of earnings management in previous periods affect the manager's perception about the costs and benefits of such action in subsequent periods, which in turn affects the level of earnings management chosen by the manager (e.g., Stein 1989). Among other factors, earnings management is considered a primary source of low earnings quality (Lo 2008; Dechow

et al. 2010; Morgan Stanley 2011). When analysts make negative comments on the earnings quality of a given firm, investors and other market participants are likely to see the firm as suspect, that is, as showing a red flag regarding its earnings management, and thus increase scrutiny on these firms. This, in turn, could lead the firm's manager to perceive higher costs of managing earnings and, thus, to reduce the level of earnings management in subsequent periods. Hence, I hypothesize that:

> *Hypothesis 2: Firms reduce the level of earnings management after receiving negative comments on earnings quality from analysts.*

III. DATA

Implementation of Loughran and McDonald (2011) Dictionary[5]

I use Python Natural Language Toolkit to process analyst reports.[6] First, I obtain analyst reports from Thomson InvesText, which distributes analyst reports from major investment banks and brokers. I use an algorithm to remove tables from the reports and partition the remaining text from each report into sentences.[7] These sentences are classified into two types: EQ-related or non-EQ. EQ-related sentences are those that are commenting on earnings quality. In particular, if a sentence (1) contains "quality", "persistent", "sustainable", or "predictable" (including variants) and at the same time (2) contains "accounting", "earnings", "profit", "income", "bottom line", or "EPS" (including variants), then it is considered as commenting on earnings quality and is classified as an EQ-related sentence; otherwise, it is classified as a non-EQ sentence.[8]

[5] See Loughran and McDonald (2011, 2014) for a detailed description of the dictionary and its performance.
6 The Python Natural Language Toolkit is a platform for analyzing human language in Python. http://www.nltk.org/
[7] As noted in Huang et al. (2014) and De Franco et al. (2015), analyst reports usually end with some regulatory disclosures, such as conflicts of interest disclosures and legal disclaimers, which tend to have a negative tone. Unlike Huang et al. (2014), who focus on measuring the overall tone of the text of analyst reports, I do not specifically remove these regulatory disclosures because they are highly unlikely to be commenting on earnings quality. I also follow De Franco et al. (2015) to include broker fixed effects in the report-level analyses.
[8] Results are not sensitive to including "performance" as a synonym for "earnings".

To construct report-level measures of EQ comments, I scan EQ sentences using the Loughran and McDonald (2011) dictionary to identify positive, negative, and uncertain words.[9] A sentence is classified as positive if the number of positive words is greater than that of negative words, it is negative if the number of negative words is greater than that of positive words, and it is neutral if the number of positive words equals that of negative words. A sentence is classified as uncertain if the number of uncertain words is greater than zero and is certain otherwise. Based on the sentence-level classification, the following report-level measures of EQ comments are defined as follows: *ACEQ* is the difference between the percentage of positive EQ sentences (*POS_ACEQ*) and the percentage of negative EQ sentences (*NEG_ACEQ*) in a report. A greater *ACEQ* value indicates a more favorable view on earnings quality. *CERTAINTY* is a dummy that equals one if the percentage of uncertain EQ sentences is zero, and zero otherwise. For reports without EQ comments, *ACEQ* is set to zero.

Likewise, I scan non-EQ sentences using the Loughran and McDonald (2011) dictionary to identify positive and negative words and define positive and negative non-EQ sentences. *NONEQTEXT* is the difference between the percentage of positive non-EQ sentences and the percentage of negative non-EQ sentences in a report.

Analysts issue reports throughout the year. To test H2 concerning the monitoring effect, I use only reports issued between the day of the annual earnings announcement and one day before the following first-quarter earnings announcement (hereafter year-end reports). Restricting the firm-level analyses to year-end reports allows me to assume that analysts have observed annual earnings figures before issuing the reports. For each firm-year, I calculate *FIRM_ACEQ* as the

[9] In the main analyses, I opt for using the Loughran and McDonald (2011) dictionary in its original form. Notably, however, a frequent word used to describe earnings quality, "persistent", and its variants, are classified as negative in the dictionary. As a robustness check, I modify the dictionary by reclassifying "persistent" and its variables as positive. All results remain quantitatively similar.

mean *ACEQ* of year-end reports to reflect the overall sentiment of analysts' comments on earnings quality in a given year. Firms with negative *FIRM_ACEQ* values are classified as criticized by analysts, i.e., receiving negative comments on earnings quality. Correspondingly, *NegCOMMENT* is an indicator that equals one if a firm is classified as a criticized firm in a given year, and zero otherwise. Variable definitions are detailed in Appendix A.

Sample

I begin by compiling a list of firms listed on the S&P 500 between 2003 and 2011 as reported by Compustat. I restrict the sample firms to S&P 500 firms to make the project manageable because Thomson InvesText, the database I use to retrieve analyst reports, strictly limits the data retrieval to a maximum of 50 reports per download.[10] The sample period starts in 2003 because Regulation Analyst Certification (SEC 2003), which became effective in 2003, mandates that analysts certify that the views expressed in a report accurately reflect their personal opinion. The initial list consists of 716 firms.[11] After removing 132 firms in the financial industry, 88 firms missing matched CUSIPs on InvesText, and 26 firms without a unique link among Compustat, CRSP and IBES, the final list consists of 467 unique firms. Table 1 reports in detail the sample selection procedures.

(Insert Table 1)

I retrieve 317,801 analyst reports issued between 2003 and 2011 from InvesText for the sample firms.[12] After deleting reports related to more than one firm (e.g., special reports on

[10] To the extent that the sample firms are larger firms followed by many analysts, the sample selection criteria work against finding an individual analyst report to be informative.

[11] The list includes (1) firms continuously listed on the S&P 500 over the sample period, (2) firms delisted from the S&P 500 before the end of sample period, and (3) replacement of the delisted firms. The results are very similar if I restrict the sample to include only firms that are listed on the S&P 500 throughout the entire sample period.

[12] I exclude industry reports, geographic reports, and economic reports because views in those reports are difficult to attribute to a specific firm. I also exclude non-broker analyst reports.

M&A activities) and reports that the Python program could not correctly covert into machine-readable text files (e.g., scanned documents), I have 302,940 reports, which were converted into the machine-readable format. From these 302,940 reports, I conduct further screening to remove reports that (1) are missing EPS forecasts, stock recommendations, or price targets on IBES; (2) missing data for calculating control variables; or (3) are issued simultaneously with an earnings announcement. After the screening, 119,200 reports are retained in the sample, of which 10,766 contain EQ comments.

To test the impact of EQ comments on earnings management activities, I restrict the sample to year-end analyst reports, i.e., reports issued after the Q4 earnings announcement but before the subsequent Q1 earnings announcement. Of the 302,940 reports, 73,912 are year-end analyst reports. These reports cover 3,052 firm-years.

Validating the operationalization of EQ comments

Two potential concerns apply to the aforementioned operationalization of EQ comments. First, at the level of measurement, the algorithm may not correctly measure EQ comments. This concern arises from both the nature of machine-coding, which represents a trade-off between accuracy and efficiency (Li 2010), and the nature of the Loughran and McDonald (2011) Financial Sentiment Dictionary, which is a 10/K-based dictionary. Huang et al. (2014) find that the accuracy rate of using the Loughran and McDonald (2011) Dictionary for processing analyst reports is approximately 62%. Hence, it is possible that the algorithm, on average, fails to correctly measure EQ comments.

The second concern arises from the concept of earnings quality, which consists of an economic dimension (fundamental performance) and an accounting dimension (the quality and

application of accounting standards) (Dechow et al. 2010; Schipper and Vincent 2003; Morgan Stanley 2011; Owens et al. 2013). Because the accounting dimension of earnings quality is considered a third-order, or at best a second-order, effect in firm valuation (Zimmerman 2013) and because the focus of analysts is on firm valuation, it is also possible that analysts do not care about the accounting dimension of earnings quality.

To mitigate these concerns and validate the operationalization of EQ comments, I examine the predictability of EQ comments with respect to accounting restatements. To the extent that the algorithm has (on average) correctly measured EQ comments and that these comments do not solely address the economic dimension of earnings quality (fundamental performance), I expect that firms with more negative comments on earnings quality are more likely to have accounting restatements.

I collect data of accounting restatements from Audit Analytics. The dependent variable, *RESTATE*, is an indicator variable that equals one if a firm-year is restated, and zero otherwise.[13] Using a logistic specification, I regress *RESTATE* on *FIRM_ACEQ* and a set of firm characteristics predicting *ex post* accounting restatements, following Dechow et al. (2011) and Hribar et al. (2013). I use standardized *FIRM_ACEQ* in the regressions to facilitate the interpretation.

(Insert Table 2)

The results of the logistic regressions are reported in Table 2. I first report in the column (1) the results of regressing *RESTATE* on control variables for the purpose of benchmarking. Notably, the coefficient on Top10%DA is positive and significant, indicating that firms with the largest values of discretionary accruals are more likely to have accounting restatements. This is

[13] For example, assuming firm X in 2006 announces it has restated its 2003 earnings, and this is the only incidence of an accounting restatement for firm X. The *RESTATE* indicator takes 1 for firm X in 2003, and 0 for any other years, including 2006.

in line with prior studies (e.g., Dechow et al. 2011) documenting that firms with accounting misstatements have large values of discretionary accruals. In column (2), I regress *RESTATE* on *FIRM_ACEQ*. Note that a lower *FIRM_ACEQ* suggests that analysts have a more negative view with respect to a firm's earnings quality. The coefficient on *FIRM_ACEQ* is negative and significant, indicating that firms with more negative EQ comments have a higher likelihood of accounting restatements. In column (3) in which I include control variables, the coefficient on *FIRM_ACEQ* remains negative and significant.

Taken together, the evidence in Table 2 mitigates the concerns that the algorithm incorrectly measures EQ comments and that EQ comments address merely the economic dimension of earnings quality, validating the operationalization of EQ comments.

IV. INFORMATIVENESS OF EQ COMMENTS

Model specification for testing the informativeness of EQ comments

To test H1, I estimate an ordinary least-squares regression modeling the three-day cumulative abnormal returns as a function of the sentiment of EQ comments (*ACEQ*), controlling for news in quantitative forecasts and the sentiment of other text in analyst reports, as specified in Eq. (1):

$$CAR(\text{-}1,1) = \alpha_0 + \alpha_1 ACEQ + \alpha_2 NONEQTEXT + \alpha_3 REV\_FORECAST + \alpha_4 REV\_RATING + \alpha_5 REV\_PRICETARGET + \mu \quad (1)$$

where *CAR (-1,1)* is the three-day market-adjusted returns centered on the report release day. As defined in Section 3.2, *ACEQ* is the sentiment of EQ comments in a report, measured as the difference between the percentage of positive EQ sentences and the percentage of negative EQ sentences in a report. A higher *ACEQ* indicates an analyst report has a more positive view on earnings quality. When using the full sample to estimate Eq. (1), I set *ACEQ* to zero for reports in which the aforementioned criteria could not identify any sentences commenting on earnings

quality; however, my statistical inference focuses on the results from estimating Eq. (1) with the subsample consisting of only reports with EQ comments. A significant α1 will be consistent with the expectation that analysts' EQ comments are informative to investors. I standardize the independent variables to a zero mean and unit standard deviation to ease the comparison across different coefficients.

I include a set of variables as controls for the information conveyed in the quantitative forecasts and the other text in the analyst reports. In particular, I include revisions in earnings forecasts (*REV_FORECAST*), revisions in stock ratings (*REV_RATING*) and revisions in price targets (*REV_PRICETARGET*) as controls for the news contained in quantitative forecasts. In addition, I use *NONEQTEXT*, discussed in Section 3.2, as the control for the information in the other text in the same report. Lastly, I include year and industry fixed effects along with broker fixed effects. As articulated in De Franco et al. (2015), controlling for broker fixed effects is important because brokerage firms have in-house policies on report formatting and content as well as the disclosures of conflicts of interest. All variables are defined in detail in Appendix A.

Empirical results

Panel A of Table 3 describes the full sample, and Panel B provides a breakdown of the full sample. Of the 119,200 reports, 10,766, or 9%, contain comments on earnings quality. The relatively low percentage of reports with EQ comments may be driven by earnings quality not being viewed as a first-order factor in determining firm value (Zimmerman 2013).[14] In terms of quantitative forecasts, analyst reports with EQ comments have a significantly lower percentage of reiteration than those without EQ comments.

[14] Untabulated analysis on the unscreened sample suggests that a large proportion of reports with EQ comments were issued on the day of the earnings announcement. The screening process filtered out those reports.

Panel C of Table 3 reports the descriptive statistics for the subsample that consists of only reports with EQ comments. The univariate tests reported in Panel D of Table 3 suggest that the market's reaction to the release of analyst reports is positive (negative) for reports with positive (negative) EQ comments. However, univariate tests also evidence significant differences in the revisions of earnings forecasts and of price targets between reports with different types of EQ comments.

(Insert Table 3)

Table 4 reports the results of estimating Eq. (1) using ordinary least squares. The results reported in Column (1) through Column (3) are based on the full sample while those in Column (4) through Column (6) are based on the ACEQ sample. Note that in the full sample regressions, if a report does not contain EQ comments, the value of *ACEQ* is set to zero. In Columns (1), the coefficient on *ACEQ* is positive and significantly different from zero, indicating that the market reaction to the release of analyst reports is associated with analysts' view on earnings quality. In Columns (2), I include controls for revisions in quantitative forecasts, opinions expressed in non-EQ text (*NONEQTEXT*). The magnitude of the coefficient on *ACEQ* decreases by approximately 43% but remain significant at 1%, which suggests that EQ comments are incrementally informative beyond the information in the other text as well as the quantitative forecasts in the analyst reports released contemporaneously. To shed more lights on the informativeness of EQ comments, in Column (3), I decompose *ACEQ* into *POS_ACEQ* and *NEG_ACEQ*. Interestingly, the coefficient on *NEG_ACEQ* is negative and significant, indicating that the market reacts more negatively to the release of analyst reports with a more unfavorable view on earnings quality. However, the coefficient on *POS_ACEQ* is insignificant, indicating that the previous results of

the market reacting to EQ comments are primarily driven by the market's reaction to negative EQ comments.

(Insert Table 4)

The results reported in Column (4) through Column (6) are similar to those in the first three columns. In particular, the coefficients on *ACEQ* are positive and significant irrespective of the inclusion of the control variables. Likewise, in Column (6), when decomposing *ACEQ* into *POS_ACEQ* and *NEG_ACEQ*, the coefficient on *NEG_ACEQ* is significant but the one on *POS_ACEQ* is not. Note that all the independent variables are standardized to a zero mean and unit standard deviation in the regressions to allow meaningful comparison among coefficients. Taking Column (5) as an example, the coefficient on *ACEQ* is 0.0012, which is approximately half of the coefficient on *REV_RATING* (0.0029). Thus, a one standard deviation change in *ACEQ* is associated with approximately half of the market's reaction to a one standard deviation change in the stock rating revisions.

In sum, the evidence in Table 4 suggests that EQ comments are informative to investors beyond the contemporaneously released quantitative forecasts and other qualitative text in analyst reports, but the incremental information comes mainly from the negative rather than positive EQ comments.

Additional tests

To provide further insight into the informativeness of EQ comments, I perform a cross-sectional analysis by partitioning the sample into EQ comments written with uncertainty and those written with certainty. I conjecture that EQ comments are less informative when they are written with uncertainty, i.e., when analysts are uncertain about the quality of earnings under examination. To

test this conjecture, I modify Eq. (1) into Eq. (2) by including *CERTAINTY* and its interaction term with *ACEQ*:

$$CAR(\text{-}1,1) = \beta_0 + \beta_1 ACEQ + \beta_2 CERTAINTY + \beta_3 CERTAINTY * ACEQ + \beta_4 NONEQTEXT + \beta_5 REV\_FORECAST + \beta_6 REV\_RATING + \beta_7 REV\_PRICETARGET + \mu \quad (2)$$

where *CERTAINTY* is an indicator that equals one if EQ comments are written with certainty, and zero otherwise. The details about the classification of certain versus uncertain EQ comments are described in Section 3.1. Consistent with the conjecture, I expect the coefficient β3 to be positive and significant, which would suggest that the market's reaction to EQ comments is stronger when these comments are written with certainty.

(Insert Table 5)

Table 5 reports the results of estimating Eq. (2). The coefficient (0.0007) on *ACEQ* is positive but insignificant, while the coefficient (0.0018) on the interaction term *ACEQ*×*CERTAINTY* is positive and significant. Moreover, the linear combination (untabulated) of the coefficients on *ACEQ* and *ACEQ*×*CERTAINTY* is 0.0024 and significant at 1% (t-statistic = 3.33, p-value = 0.001).Thus, it appears that while the investors find EQ comments written with certainty incrementally informative beyond quantitative forecasts and other qualitative text in analyst reports, they do not find EQ comments informative when these comments are written with uncertainty.

In summary, under the efficient market framework, there is strong evidence suggesting that analysts' comments on earnings quality provide investors with new information beyond not only what has been included in quantitative forecasts and other text released contemporaneously in the analyst reports but also beyond information available in previously released corporate disclosures.

V. MONITORING EFFECT OF EQ COMMENTS

Model specification for testing the monitoring effect of EQ comments

To test H2 regarding the impact of EQ comments on earnings management, I examine the earnings management activities in criticized firms (*NegCOMMENT* = 1) versus non-criticized firms (*NegCOMMENT* = 0) over the same period using a design similar to that in Geiger and North (2006). In particular, I estimate Eq. (3) in year t as well as in year t-1 and year t+1.

$$DA = \beta_0 + \beta_1 NegCOMMENT + \beta_2 SIZE + \beta_3 ROA + \beta_4 LEV + \beta_5 NOA + \beta_6 BANKZ + \beta_6 GROWTH + \beta_7 MTB + \beta_8 NEWISSUE + \beta_9 CFOVOL + \beta_{10} SALEVOL + \beta_{11} COVERAGE + \mu \quad (3)$$

where *DA* is the proxy for earnings management estimated using the Jones (1991) model.[15]

I include a vector of firm characteristics that have been documented by prior literature as associated with earnings management. The vector includes controls for firm size (*SIZE*), growth (*MTB* and *GROWTH*), and operating performance (*ROA* and *OCF*) (Subramanyam 1996; Lee et al. 2006). I also include controls for financial distress (*LEVERAGE* and *BANKZ*) because managers of financially distressed firms have a strong motivation to manage earnings (DeFond and Jiambalvo 1994). *BANKZ* is estimated as per Zmijewski (1984). Previous research shows that firms engage in aggressive earnings management when seeking external financing (Teoh et al. 1998a, 1998b; Liu et al. 2010). I therefore include an indicator (*NEWISSUE*) for equity or debt issuances. Prior studies also find that the cumulated accruals from prior earnings management constrain current earnings management (Barton and Simko 2002; Baber et al. 2011). I thus include net operating assets (*NOA*) as a control for the impact of cumulated earnings management on the balance sheet. I also include proxies for cash flow volatility (*CFOVOL*) and revenue volatility (*SALEVOL*) to control for the impact of operating volatility on the accruals

[15] The results are not sensitive to using absolute value or different specifications of the Jones (1991) model, such as excluding changes in receivables from estimating non-discretionary accruals (Dechow et al. 1995) or controlling for the operating performance (Kothari et al. 2005).

process (Hribar and Nichols 2007). In addition, I include the number of analysts following the firm (*COVERAGE*) given the evidence in Yu (2008), Degeorge et al. (2013) and Sun (2009) on the negative association between analyst following and the level of discretionary accruals.

Empirical results

Panel A of Table 6 reports the summary statistics for the sample used to test the impact of EQ comments on subsequent earnings management, followed by Panel B, which reports the results of the univariate tests. The univariate tests suggest that firms criticized by analysts have a significantly higher level of discretionary accruals (*DA*) than non-criticized firms. More specifically, the level of discretionary accruals in criticized firms is approximately 100% higher than that in non-criticized firms. These univariate test results are consistent with the notion that firms criticized by analysts regarding earnings quality exhibit greater levels of earnings management activities.

(Insert Table 6)

Panel C of Table 6 reports the results of estimating Eq. (3) in years t-1, t, and t+1. In Column (1), the coefficient on *NegCOMMENT* is insignificant, suggesting that in the year before receiving negative comments on earnings quality, the levels of discretionary accruals in criticized and non-criticized firms are similar. This finding is important for interpreting the evidence in the other columns because it suggests that if these two groups of firms subsequently differ in discretionary accruals in years t and t+1, this difference is not driven by the pre-existing dissimilarity in discretionary accruals between criticized and non-criticized firms.

In Column (2), the coefficient on *NegCOMMENT* is positive and statistically significant, indicating that criticized firms have a higher level of discretionary accruals than non-criticized

firms. Thus, the multivariate results confirm the evidence in the univariate tests that criticized firms have higher levels of discretionary accruals than non-criticized firms after controlling for a vector of firm characteristics that are correlated with earnings management.

More importantly, the coefficient on *NegCOMMENT* in Column (3) is insignificant, which suggests that the level of discretionary accruals in criticized firms has decreased to a level similar to that in non-criticized firms after being criticized. The Chi-square test of equality in coefficients formally confirms that the coefficient on *NegCOMMENT* in Column (2) is significantly larger than that in Column (3). In sum, the evidence in Table 6 is consistent with the notion that firms significantly cut back earnings management after receiving negative comments on earnings quality. [16]

(Insert Figure 1)

Figure 1 visualizes the level of discretionary accruals in criticized firms versus non-criticized firms. As clearly evidenced in the figure, non-criticized firms have a stable trend of discretionary accruals from year t-1 to t+1. In contrast, criticized firms experience a sharp increase in discretionary accruals from t-1 to t, the year of criticism. However, from year t to t+1, criticized firms experience a substantial decrease in discretionary accruals. Taken together, the evidence in Table 6 and Figure 1 is consistent with the hypothesis that firms reduce the level of earnings management activities after being criticized by analysts regarding earnings quality.

Controlling for accrual reversals

As evidenced in Figure 1, firms criticized by analysts have a higher level of discretionary accruals than non-criticized firms in the year of criticism (time t). Hence, an alternative explanation for observing the decrease in discretionary accruals following analyst criticism is

[16]An alternative reading of the evidence is that non-criticized firms substantially increase their earnings management activities, while criticized firms continue engaging in high-level earnings management activities. However, the evidence in Figure 1 is against this alternative.

accrual reversals. To mitigate such concern, I employ the coarsened exact matching (CEM) (Iacus et al. 2011) technique to identify a set of firms that exhibit a similar pattern of discretionary accruals but are not criticized by analysts.[17] I then use these firms to control for accrual reversals. [18] In particular, for each firm-year that is criticized by analysts (*NegCOMMENT* = 1), I use the CEM algorithm to match it with a non-criticized firm (*NegCOMMENT* = 0) based on one-year lagged changes in discretionary accruals (*ChgDA(t-1→t)*), discretionary accruals (*DA*), firm size (*SIZE*), and performance (*ROA*).[19] The process results in 246 pairs, or 492 observations.

Panel A of Table 7 reports the balance checks for matching biases. The differences between criticized firms and non-criticized firms along the four matching dimensions are neither economically nor statistically significant, indicating the effectiveness of the matching procedures. Using this matched sample, I estimate the following Eq. (4):

$$\begin{aligned} ChgDA\ (t\ \rightarrow t+1) \quad & (4)\\ &= \beta_0 + \beta_1 NegCOMMENT(t) + \beta_2 ChgSIZE(t\ \rightarrow t+1)\\ &+ \beta_3 ChgROA(t\ \rightarrow t+1) + \beta_4 ChgLEV(t\ \rightarrow t+1)\\ &+ \beta_5 ChgNOA(t\ \rightarrow t+1) + \beta_6 ChgBANKZ(t\ \rightarrow t+1)\\ &+ \beta_6 ChgGROWTH(t\ \rightarrow t+1) + \beta_7 ChgMTB(t\ \rightarrow t+1)\\ &+ \beta_8 ChgNEWISSUE(t\ \rightarrow t+1) + \beta_9 ChgCFOVOL(t\ \rightarrow t+1)\\ &+ \beta_{10} ChgSALEVOL(t\ \rightarrow t+1) + \beta_{11} ChgCOVERAGE(t\ \rightarrow t+1) + \mu \end{aligned}$$

where $ChgDA\ (t\ \rightarrow t+1)$ is changes in discretionary accruals from t to t+1. All variables are defined in detail in Appendix A. I expect β1 to be negative and significant, which would suggest

[17] The basic idea of CEM is to first assign each variable into strata so that within each stratum the values are "substantively indistinguishable" (Iacus et al. 2011), and then exact match treatments with controls based on the assigned strata. By matching on strata instead of original values, CEM circumvents the curse of dimensionality in the traditional exact matching. In this regard, it is similar to an alternative matching scheme in which a researcher first ranks and assigns each variable into different ranges (e.g., quintiles) and then exact match on the assigned range.
[18] I do not use propensity score matching (PSM) because it has been shown to be prone to the random sampling (DeFond et al. 2014). Unlike PSM, CEM matches on a coarsened range of covariates rather than a single estimated propensity score. DeFond et al. (2014) compare CEM with PSM and conclude that "CEM appears to dominate PSM in terms of the bias-variance tradeoff, consistent with CEM being less prone to random matching than PSM."
[19] The results are not sensitive to including sales growth (*GROWTH*) as another matching dimension.

a decrease in earnings management in criticized firms after controlling for the mechanical accrual reversals.

The results of estimating Eq. (4) are reported in Panel B of Table 7. Consistent with H2 and the findings in Table 6, I find a significant decrease in discretionary accruals from year t to t+1 for criticized firms relative to non-criticized firms. In particular, the coefficient (-0.0085) on *NegCOMMENT* is negative and significant, indicating a decrease in earnings management in criticized firms after controlling for accrual reversals.

(Insert Table 7)

Figure 2 plots the levels of discretionary accruals in criticized firms versus non-criticized firms using the CEM-matched sample. By the matching criteria, both groups of firms have similar increases in discretionary accruals from time t-1 to t. More importantly, despite both groups exhibiting decreases in discretionary accruals from time t to t+1, the decrease is substantially larger in criticized than non-criticized firms.

(Insert Figure 2)

Taken together, the evidence in Table 7 and the visualization in Figure 2 corroborate the findings in Table 6, suggesting that firms reduce earnings management activities after being criticized by analysts with respect to earnings quality, and the reduction in earnings management is unlikely be a simple manifestation of mechanical accrual reversals.

Additional tests

Alternative classifications of criticized firms

I explore two alternative classifications of criticized firms. First, I restrict the classification criteria and consider only firms with the most negative EQ comments as criticized firms. In

particular, I rank firms in each year into quintiles based on the average sentiment of EQ comments (*FIRM*_ACEQ). Those firms in the lowest quintile of *FIRM_ACEQ* (the most unfavorable view on earnings quality) are considered criticized by analysts with respect to earnings quality in a year. This restricted classification further eases the concern about the measurement error of EQ comments.

For the second alternative, I relax the criteria for classifying criticized firms in the sense that a firm is considered criticized by analysts with respect to earnings quality as long as there is an analyst report with negative EQ comments.

Similarly, each criticized firm under these alternative classifications is matched to a non-criticized firm based on one-year lagged changes in discretionary accruals (*ChgDA(t-1→t)*), discretionary accruals (*DA*), firm size (*SIZE*), and performance (*ROA*) using the aforementioned CEM technique.

I re-estimate Eq. (4) by replacing *NegCOMMENT* with dummy variables indicating criticized firms under these two alternatives. The re-estimation results are reported in Table 8. Consistent with the results in Table 7, the coefficients on the indicators of criticized firms are negative and significant in both alternative classifications, suggesting that firms exhibit a decrease in earnings management activities after being criticized by analysts with respect to earnings quality.

(Insert Table 8)

Real activities management

The analyses above focus on earnings management through accounting accruals. Several recent studies document that managers switch to managing operating activities when the costs of managing earnings through accruals increase (Cohen et al. 2008; McInnis and Collins 2011;

Zang 2012). In particular, Cohen et al. (2008) find that firms switched from accrual-based to real activities management after the passage of the Sarbanes-Oxley Act (SOX) in 2002, which increases auditors' and regulators' scrutiny over accrual manipulations. McInnis and Collins (2011) find that firms switch from accruals-based earnings management to real activities management after analysts provide cash flow forecasts (implicit accruals forecasts) that make abnormal accruals more transparent. In theory, accruals management does not change pre-tax future cash flows. Hence, such a switch from managing accruals to managing operating activities is disturbing and could have a more negative impact on firm value.

To test whether firms switch to managing more real activities after being criticized by analysts, I follow Roychowdhury (2006) and estimate abnormal productions and abnormal discretionary expenses. Because earnings increase with abnormal productions but decrease with abnormal discretionary expenses, following Zang (2012), I use the differences between abnormal productions and abnormal discretionary expenses as the measure of real activities management (*RAM*). I then replace the dependent variable in Eq. (4) with changes in real activities management. The regression results are reported in Table 9. The coefficient on *NegCOMMENT* is positive but statistically insignificant. Thus, the evidence does not indicate that firms switch to managing more real activities after being criticized by analysts for earnings quality.

(Insert Table 9)

VI. ROBUSTNESS TESTS

In addition to the robustness tests reported in the previous footnotes, I conduct several additional tests to further gauge the robustness of the main findings that EQ comments are informative to investors and have a monitoring effect on earnings management.

First, analysts differ in their (latent) ability to conduct fundamental analysis. Chen et al. (2005) find that investors react more strongly to information from analysts with higher ability. If analysts with higher ability are also more likely to provide EQ comments, then the results may be driven by an omitted variable bias. To mitigate such concern, I include analyst fixed effects and re-estimate Eq. (1).[20] The results reported in Column (2) of Panel A are very similar to those previously reported.

Second, Mikhail et al. (1997) find that the market places more weight on information from more-experienced analysts. If more-experienced analysts have a higher likelihood of providing EQ comments, my findings could be subject to an omitted variable bias. Because experience varies with time, analyst fixed effects may not fully account for experience. To mitigate this concern, I re-estimate Eq. (1) by including proxies for analysts' general experience and firm-specific experience along with analyst fixed effects. General experience is proxied by the number of years since the analyst's first forecast appeared in IBES. Firm-specific experience is proxied by the number of years since the analyst's first forecast about the firm appeared in IBES. The results reported in Column (3) of Panel A are qualitatively similar to those reported in Table 4.

Third, McInnis and Collins (2011) find that firms significantly reduce the levels of accruals-based earnings management after analysts begin issuing cash flow forecasts, which increase the transparency of abnormal accruals. To the extent that the initiation of cash flow forecasts coincides with the incidence of making negative comments on earnings quality, the previously findings could be subject to an alternative explanation. I find only 23 cases of the aforementioned coincidences in the sample. The results of the monitoring effects are robust to

[20] I do not use historical forecast accuracy as an indicator of latent ability because brokers may assign analysts with a greater ability to cover firms that are more difficult to forecast accurately.

either including a dummy variable indicating of cash flow forecasts initiation in the regressions or excluding these 23 observations from the sample.

(Insert Table 10)

Finally, to mitigate the concern that the monitoring effect is transitory, I redo the analyses in Table 7 by replacing the dependent variable with changes in discretionary accruals from time t+1 to t+2 to examine if there is any increases in discretionary accruals. As reported in Column (1) of Panel B in Table 10, I do not find a statistically significant increase in discretionary accruals from the first to the second year following the year under criticism. For further confirmation, I also replace the dependent variable in Table 7 with changes in discretionary accruals from time t to t+2 and redo the analyses. These conforming results are reported in Column (2). The coefficient on *NegCOMMENT* remains negative and statistically significant, suggesting that the monitoring effect of EQ comments persists for at least two years.

VII. CONCLUSION

Analyst reports serve as the primary communication vehicle between financial analysts and other capital market participants. Using novel data from analyst reports, I provide direct and large sample evidence on analysts' monitoring role by examining the informativeness and monitoring effect of analysts' comments on earnings quality. I report four main findings: (1) analysts' comments on earnings quality are incrementally informative to investors beyond the information in the quantitative forecasts (earnings forecasts, stock ratings, price targets) and the other text in analysts' reports; (2) the market's reaction to analysts' comments on earnings quality is primarily driven by analysts' negative comments and comments written with certainty; (3) firms exhibit a significant decrease in accruals-based earnings management after being criticized by analysts

regarding earnings quality; and (4) this decrease in accruals-based earnings management is not accompanied by an increase in real activities management. Taken together, these findings provide direct evidence on analysts' role in monitoring financial reporting, and they point to analysts' comments on earnings quality as a channel through which the monitoring role functions.

The findings of the paper should be interpreted with caution. First, Thomson InvesText only covers a subset of investment banks and brokers who disseminate their analyst research publicly. Thus, the findings may not be generalized to analysts whose reports are kept confidential and to firms covered solely by those analysts. Second, prior literature suggests that fundamental performance could also affect the accruals process (Schipper and Vincent 2003; Dechow et al. 2010; Owens et al.; 2013). Differentiating the impact of earnings management versus fundamental performance on the accruals process is difficult if not impossible (Dechow et al. 2010). Although I follow prior literature to control for fundamental performance and the results are robust to using firms that are continuously listed on the S&P 500 throughout the whole sample period (see Section 3.2), which are a subset of sample firms that tend to have sound fundamental performance, I cannot formally rule out that the results are not partially driven by mean-reverting fundamental performance.

In light of this paper's findings, future research could examine how investors price earnings surprises and accounting accruals conditional on analysts' prior comments on earnings quality. In addition, future research can investigate how analysts' comments on earnings quality affect other market participants. For instance, do negative comments on earnings quality from analysts attract the SEC's attention and lead to SEC investigations (e.g., SEC comment letters)? Research in this direction can enrich our understanding of analysts' monitoring role and the interplay between different external monitors.

APPENDIX A
Variable Definition

Variable Name	Definition
ACEQ	Difference between POS_ACEQ and NEG_ACEQ
POS_ACEQ	The percentage of positive EQ sentences in the analyst report
NEG_ACEQ	The percentage of negative EQ sentences in the analyst report
BANKZ	Zmijewski (1984) bankruptcy score
CAR(-1, 1)	Raw returns of a three-day window centered on the report release day adjusted for the CRSP value-weight market return
CERTAINTY	=1 if EQ comments use no words from the Uncertainty Dictionary of Loughran and McDonalds (2011), and 0 otherwise
CFOVOL	Standard deviation of cash flow from operating activities scaled by lagged total assets in the last five years
ChgBANKZ(t→t+1)	Changes in BANKZ from t to t+1
ChgBANKZ(t→t+2)	Changes in BANKZ from t to t+2
ChgBANKZ(t+1→t+2)	Changes in BANKZ from t+1 to t+2
ChgCASHSALE(t-1→t)	Percentage change in cash sales from t-1 to t
ChgCFOVOL(t→t+1)	Changes in CFOVOL from t to t+1
ChgCFOVOL(t→t+2)	Changes in CFOVOL from t to t+2
ChgCFOVOL(t+1→t+2)	Changes in CFOVOL from t+1 to t+2
ChgCOVERAGE(t→t+1)	Changes in COVERAGE from t to t+1
ChgCOVERAGE(t→t+2)	Changes in COVERAGE from t to t+2
ChgCOVERAGE(t+1→t+2)	Changes in COVERAGE from t+1 to t+2
ChgDA(t→t+2)	Changes in DA from t to t+1
ChgDA(t→t+2)	Changes in DA from t to t+2
ChgDA(t+1→t+2)	Changes in DA from t+1 to t+2
ChgGROWTH(t→t+1)	Changes in GROWTH from t to t+1
ChgGROWTH(t→t+2)	Changes in GROWTH from t to t+2
ChgGROWTH(t+1→t+2)	Changes in GROWTH from t+1 to t+2
ChgINVT(t-1→t)	Changes in inventory scaled by lagged total assets from t-1 to t
ChgLEVERAGE(t→t+1)	Changes in LEVERAGE from t to t+1
ChgLEVERAGE(t→t+2)	Changes in LEVERAGE from t to t+2
ChgLEVERAGE(t+1→t+2)	Changes in LEVERAGE from t+1 to t+2
ChgMTB(t→t+1)	Changes in MTB from t to t+1
ChgMTB(t→t+2)	Changes in MTB from t to t+2
ChgMTB(t+1→t+2)	Changes in MTB from t+1 to t+2
ChgNEWISSUE(t→t+1)	Changes in NEWISSUE from t to t+1
ChgNEWISSUE(t→t+2)	Changes in NEWISSUE from t to t+2
ChgNEWISSUE(t+1→t+2)	Changes in NEWISSUE from t+1 to t+2
ChgNOA(t→t+1)	Changes in NOA from t to t+1
ChgNOA(t→t+2)	Changes in NOA from t to t+1
ChgNOA(t+1→t+2)	Changes in NOA from t+1 to t+1

Variable Name	Definition
ChgRAM(t→t+1)	Changes in RAM from t to t+1, where RAM is estimated as per Zang (2012)
ChgREC(t-1→t)	Changes in accounts receivables scaled by lagged total assets from t-1 to t
ChgROA(t-1→t)	Changes in ROA from t-1 to t
ChgROA(t→t+1)	Changes in ROA from t to t+1
ChgROA(t→t+2)	Changes in ROA from t to t+2
ChgROA(t+2→t+2)	Changes in ROA from t+1 to t+2
ChgSALEVOL(t→t+1)	Changes in SALEVOL from t to t+1
ChgSALEVOL(t→t+2)	Changes in SALEVOL from t to t+2
ChgSALEVOL(t+1→t+2)	Changes in SALEVOL from t+1 to t+2
ChgSIZE(t→t+1)	Changes in SIZE from t to t+1
ChgSIZE(t→t+2)	Changes in SIZE from t to t+2
ChgSIZE(t+1→t+2)	Changes in SIZE from t+1 to t+2
COVERAGE	Logarithm of the number of analysts following the firm
CRITICIZED_relaxed	=1 if a firm-year is covered by at least one analyst report with negative EQ comments, and 0 otherwise
CRITICIZED_restricted	=1 if a firm-year is in the lowest quintile of FIRM_ACEQ, and 0 otherwise
DA	Discretionary accruals estimated using Jones (1991) model
FIRM_ACEQ	Mean ACEQ of analyst reports issued between the day of annual earnings announcement and one day before subsequent first-quarter earnings announcement
GROWTH	Percentage change in sales
LEVERAGE	Sum of long-term and short-term debt scaled by total assets
LNPAGE	Logarithm of the number of pages in the analyst report
MTB	Market-to-book ratio
NEWISSUE	= 1 if a firm-year has stock or debt issuance, and 0 otherwise
NegCOMMENT	=1 if the FIRM_ACEQ is negative, and 0 otherwise
NOA	Net operating assets scaled by lagged sales
NONEQTEXT	Difference between the percentage of positive non-EQ sentences and the percentage of negative non-EQ sentences in a report
RESTATE	=1 if financial statements of a firm-year are restated, and zero otherwise
REV_FORECAST	Changes in annual EPS forecast from previous report to current report scaled by absolute value of previous forecast
REV_PRICETARGET	Changes in price target from previous report to current report scaled by previous price target
REV_RATING	-1 times changes in stock rating from previous report to current report scaled by previous rating
ROA	Operating income (EBIT) scaled by total assets
SALEVOL	Standard deviation of sales scaled by lagged total assets in the last five years
SIZE	Logarithm of market capitalization
Top10%DA	=1 if the firm-year is in the top DA decile, and 0 otherwise

APPENDIX B
Examples of Analysts' Comments on Earnings Quality

Broker	Covered Firm	Comments
JP Morgan (2006)	Home Depot	"These types of expenses are normally non-cash accruals/reserves and tend to be relatively subjective, in terms of timing. This points to the continuation of low earnings quality."
Technology Research Group (2005b)	Nextel	"We will also be paying close attention to earnings quality, which has become increasingly erratic. The variance between reported and "Real" earnings totaled a startling $0.86 per share over the past two quarters; equivalent to 52% of total EPS and reflective of aggressive earnings management as well as a recurring use of non-operating items to inflate the bottom-line."
Technology Research Group (2005a)	Cisco, Inc.	"In our view, Cisco has as strong an operating model as any company in the tech sector with transparent accounting and consistent earnings quality."
Cowen and Company (2007)	SPSS, Inc.	"We believe forecasted full year top line growth of 11% is enjoying a significant currency tailwind, and earnings quality is poor due to atypical benefits from capitalized software and ongoing "one time" pro forma write offs."
Bear Stearns (2005)	Kraft Foods	"Last night, however, the company reported a $0.47 number, in line with consensus only with the help of $0.04 from a onetime lower tax rate. The quality of this number will disappoint many investors, we believe, who might see few immediate catalysts to drive the stock price significantly higher."
JP Morgan (2011)	MedAssets	"Management maintained overall 2011 guidance including EBITDA of $185M-$193M, but on the call stated that it was extending the amortization period for capitalized software to five years from three years, yielding an annual benefit of $5-6M. Offsetting this benefit somewhat was an increase in the length of the revenue recognition for implementation revenue from four years to six years, which results in a $1-2M lag to EBITDA. Netting the two items yields a pre-tax benefit of ~$4M annually, effective 1Q11. We view this as a deterioration in earnings quality, especially since the software cap rate is already at a lofty 44%."

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FIGURE 1
Discretionary Accruals and EQ Comments

This figure displays the mean discretionary accruals in criticized firms (*NegCOMMENT*= 1) versus non-criticized firms (*NegCOMMENT* = 0) using a sample of firms listed on the S&P 500 from 2003 to 2011. Horizontal axis displays the time relative to the year of criticism (t). Vertical axis displays the value of discretionary accruals (*DA*). Variable definitions are outlined in Appendix A.

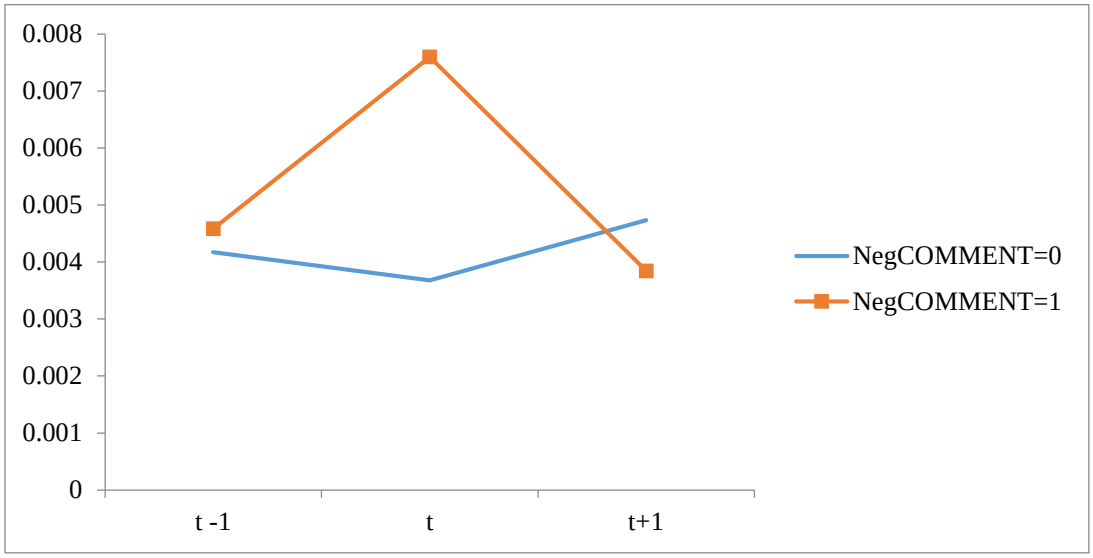

FIGURE 2
Discretionary Accruals and EQ Comments in CEM-Matched Sample

This figure displays the mean discretionary accruals in criticized firms (*NegCOMMENT* = 1) versus non-criticized firms (*NegCOMMENT* = 0) after matching on lagged changes in discretionary accruals (*ChgDA (t-1→t)*), discretionary accruals (*DA*), firm size (*SIZE*) and performance (*ROA*) using CEM. Horizontal axis displays the time relative to the year of criticism (t). Vertical axis displays the value of discretionary accruals (*DA*). Variable definitions are outlined in Appendix A.

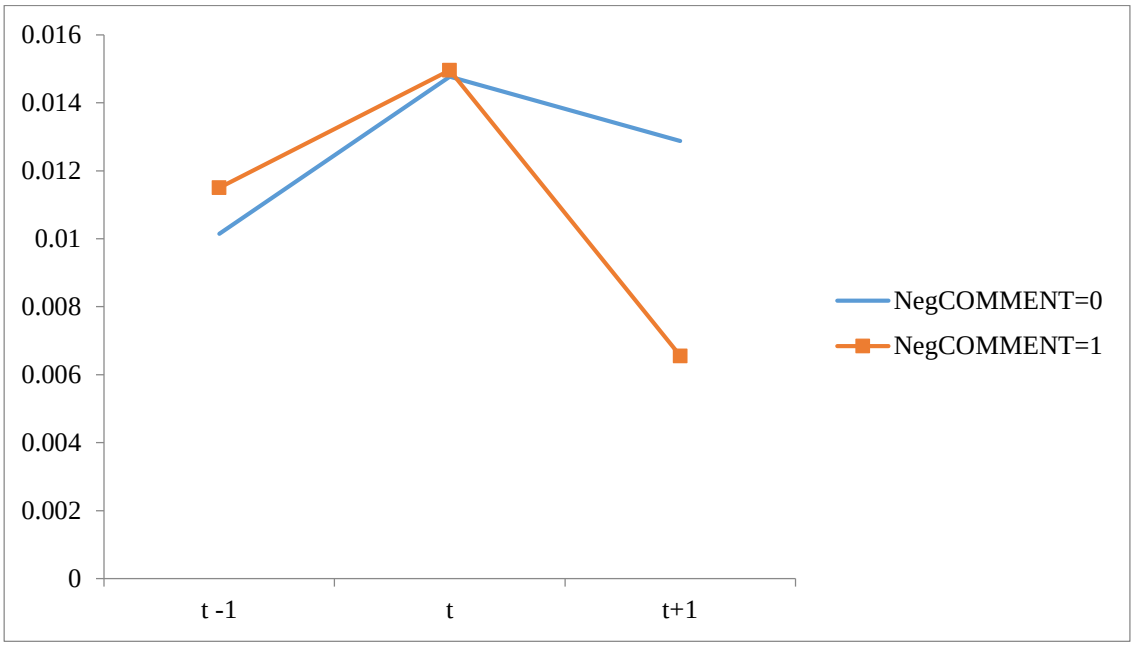

TABLE 1
Sample Selection

Sample Selection	# Firm	# Report	# Firm-year
Panel A: Sample firms			
All firms on the S&P 500 index as reported by Compustat between 2003 and 2011	716		
(-) firms in financial industry (SIC = 6xxx)	-132		
(-) firms without matched CUSIP in Thomson InvesText	-88		
(-) firms without unique matches in IBES, CRSP and Compustat	-29		
Firms included in the sample	467		
Panel B: Sample for the tests of informativeness			
Analyst reports issued between 2003 and 2011 for sample firms		317,801	
(-) reports covering multiple firms or not-convertible*		-14,861	
Reports converted into machine-readable format		302,940	
(-) reports without matched IBES records		-146,128	
(-) reports issued simultaneously with an earnings announcement		-30,819	
(-) reports missing data for stock returns and forecast revisions		-6,793	
Sample for the tests of informativeness (Full sample)		119,200	
reports with EQ comments		10,766	
reports without EQ comments		108,434	
Panel C: Sample for testing monitoring effect (starting from 302,940 reports converted into machine-readable format)			
Analyst reports issued between Q4 FY0 earnings announcement and Q1 FY1 earnings announcement (year-end reports)		73,912	
Firm-years covered in year-end reports			3,052
(-) firm-years missing data for estimating earnings management and real activities management proxies			-1,134
(-) firm-years missing data for control variables			-40
Sample for testing monitoring effect			1,878

* Some analyst reports retrieved from InvexText are scanned documents that cannot be converted into text.

TABLE 2
Validation: EQ Comments and Accounting Restatements

This table reports the results of logistic regressions of accounting restatements on the firm-level measure of EQ comments using a sample of firms listed on the S&P 500 from 2003 to 2011. The sample selection procedures are summarized in Table 1, and the variables are defined in Appendix A. The standard errors reported in parentheses are clustered at the firm-level. ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively, in two-tailed tests.

	(1) RESTATE	(2) RESTATE	(3) RESTATE
FIRM_ACEQ		-0.2168**	-0.2167***
		(0.0905)	(0.0821)
Top10%DA	0.6538**		0.5879**
	(0.2815)		(0.2752)
ChgREC	-0.2287		-0.3383
	(3.9016)		(3.9676)
ChgINVT	1.2327		2.0172
	(5.6351)		(5.5135)
ChgCASHSALE	0.3327		0.3160
	(0.5036)		(0.5026)
ChgROA	-0.1538		-0.0579
	(1.0056)		(1.0081)
SIZE	-0.1439		-0.1409
	(0.1482)		(0.1479)
MTB	0.0256		0.0238
	(0.0493)		(0.0496)
LEV	-0.5780		-0.5407
	(1.0577)		(1.0777)
CFOVOL	1.7168		2.4599
	(4.3512)		(4.3349)
SALEVOL	2.1353***		2.0882***
	(0.6764)		(0.6688)
Constant	-17.3234***	-16.5995***	-16.6376***
	(1.8307)	(0.3944)	(1.5077)
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Observations	1,878	1,878	1,878
Pseudo R2	0.1965	0.1694	0.2015

TABLE 3
Descriptive Statistics

This table reports the descriptive statistics and the univariate tests. Panel A provides the summary statistics for the full sample. Panel B describes the differences in analyst reports with and without EQ comments. Panel C provides the summary statistics for the subsample of reports with EQ comments. Panel D describes the differences in variables across three *ACEQ* subgroups. The sample selection procedures are summarized in Table 1, and the variables are defined in Appendix A. ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively, in two-tailed tests.

Panel A: Descriptive statistics for the full sample

	N	Mean	S.D.	Q1	Median	Q3
CAR (-1,1)	119,200	0.0000	0.0458	-0.0204	0.0007	0.0226
ACEQ	119,200	-0.0002	0.0045	0.0000	0.0000	0.0000
POS_ACEQ	119,200	0.0006	0.0031	0.0000	0.0000	0.0000
NEG_ACEQ	119,200	0.0007	0.0039	0.0000	0.0000	0.0000
REV_FORECAST	119,200	0.0114	0.1204	0.0000	0.0000	0.0000
REV_RATING	119,200	-0.0029	0.0988	0.0000	0.0000	0.0000
REV_PRICETARGET	119,200	0.0070	0.0835	0.0000	0.0000	0.0000
NONEQTEXT	119,200	-0.1887	0.2018	-0.3171	-0.1846	-0.0556

Panel B: Differences in characteristics between reports with and without EQ comments

		Reports without EQ comments N = 108,434	Reports with EQ comments N = 10,766	Tests of Differences in Frequency χ^2
Earnings	Downward	16.32%	15.45%	
Forecasts	Reiterate	60.14%	57.10%	82.7304***
Revision	Upward	23.54%	27.46%	
Stock	Downward	2.64%	3.52%	
Ratings	Reiterate	94.57%	92.38%	90.4663***
Revision	Upward	2.79%	4.10%	
Price	Downward	10.11%	15.45%	
Targets	Reiterate	73.92%	57.10%	83.5018***
Revision	Upward	15.97%	27.46%	

Panel C: Descriptive statistics of the subsample of reports with EQ comments

	N	Mean	S.D.	Q1	Median	Q3
CAR (-1,1)	10,766	-0.0001	0.0452	-0.0197	0.0008	0.0225
ACEQ	10,766	-0.0021	0.0222	-0.0135	0.0000	0.0101
POS_ACEQ	10,766	0.0078	0.0130	0.0000	0.0000	0.0122
NEG_ACEQ	10,766	0.0098	0.0152	0.0000	0.0000	0.0149
REV_FORECAST	10,766	0.0165	0.1176	0.0000	0.0000	0.0065
REV_RATING	10,766	-0.0070	0.1495	0.0000	0.0000	0.0000
REV_PRICETARGET	10,766	0.0116	0.0866	0.0000	0.0000	0.0000
NONEQTEXT	10,766	-0.1575	0.1693	-0.2727	-0.1594	-0.0435

Panel D: Univariate tests

	(1) ACEQ > 0 N = 3802 Mean	(2) ACEQ = 0 N = 2469 Mean	(3) ACEQ < 0 N = 4495 Mean	Test of Differences in Means (1) = (2) t-value	(1) = (3) t-value	(2) = (3) t-value
CAR (-1,1)	0.0029	-0.0005	-0.0023	2.98***	5.20***	1.60
REV_FORECAST	0.0235	0.0179	0.0098	1.77*	5.33***	2.84***
REV_RATING	-0.0045	-0.0064	-0.0094	0.48	1.49	0.79
REV_PRICETARGET	0.0151	0.0152	0.0068	-0.04	4.40***	3.81***
NONEQTEXT	-0.1217	-0.1568	-0.1882	8.17***	17.99***	7.57***
CERTAINTY	0.4666	0.4901	0.2917	-1.82*	16.70***	16.81***

TABLE 4
Market's Reaction to EQ Comments

This table reports the ordinary least squares results of testing the market's reaction to the release of analyst reports using a sample of firms listed on the S&P 500 from 2003 to 2011. The sample selection procedures are summarized in Table 1, and the variables are defined in Appendix A. The standard errors reported in parentheses are clustered at the firm-level. ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively, in two-tailed tests.

	(1)	(2)	(3)	(4)	(5)	(6)
	CAR(-1, 1)	CAR(-1, 1)	CAR(-1, 1)	CAR(-1, 1)	CAR(-1, 1)	CAR(-1, 1)
ACEQ	**0.0007*** **	**0.0004*** **		**0.0024*** **	**0.0012*** **	
	(0.0001)	**(0.0001)**		**(0.0005)**	**(0.0004)**	
POS_ACEQ			**0.0001**			**0.0008**
			(0.0001)			**(0.0005)**
NEG_ACEQ			**-0.0005*** **			**-0.0008***
			(0.0001)			**(0.0005)**
REV_FORECAST		0.0029***	0.0029***		0.0029***	0.0029***
		(0.0003)	(0.0003)		(0.0006)	(0.0006)
REV_RATING		0.0025***	0.0025***		0.0029***	0.0029***
		(0.0002)	(0.0002)		(0.0005)	(0.0005)
REV_PRICETARGET		0.0064***	0.0064***		0.0061***	0.0061***
		(0.0003)	(0.0003)		(0.0006)	(0.0006)
NONEQTEXT		0.0051***	0.0051***		0.0059***	0.0059***
		(0.0002)	(0.0002)		(0.0006)	(0.0006)
Constant	-0.0087***	-0.0072***	-0.0072***	-0.0091	-0.0023	-0.0023
	(0.0029)	(0.0028)	(0.0028)	(0.0064)	(0.0058)	(0.0058)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Broker fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	119,200	119,200	119,200	10,766	10,766	10,766
Adjusted R-squared	0.0049	0.0545	0.0545	0.0141	0.0682	0.0681

TABLE 5
Market's Reaction to Certain versus Uncertain EQ Comments

This table reports the ordinary least squares results of testing the market's reaction to the release of analyst reports with certain versus uncertain EQ comments using a sample of firms listed on the S&P 500 from 2003 to 2011. The sample selection procedures are summarized in Table 1, and the variables are defined in Appendix A. The standard errors reported in parentheses are clustered at the firm-level. ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively, in two-tailed tests.

	CAR(-1, 1)
CERTAINTY	-0.0012
	(0.0009)
ACEQ	0.0007
	(0.0006)
ACEQ×CERTAINTY	**0.0018***
	(0.0009)
REV_FORECAST	0.0029***
	(0.0006)
REV_RATING	0.0029***
	(0.0005)
REV_PRICETARGET	0.0061***
	(0.0006)
NONEQTEXT	0.0059***
	(0.0005)
Constant	-0.0025
	(0.0057)
Year fixed effects	Yes
Industry fixed effects	Yes
Broker fixed effects	Yes
Observations	10,766
Adjusted R-squared	0.0685

TABLE 6
The Monitoring Effect of EQ Comments on Earnings Management

This table reports the results of testing the monitoring effect of EQ comments on earnings management using a sample of firms listed on the S&P 500 from 2003 to 2011. Panel A reports the summary statistics. Panel B provides the univariate results of testing the differences in earnings management between criticized firms versus non-criticized firms. Panel C reports the ordinary least squares results of testing the differences in earnings management between criticized firms versus non-criticized firms at time t-1, t and t+1, with t being the year of criticism. The sample selection procedures are summarized in Table 1, and the variables are defined in Appendix A. The standard errors reported in parentheses are clustered at the firm-level. ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively, in two-tailed tests, unless one-tailed tests are specified.

Panel A: Descriptive statistics

	N	Mean	S.D.	Q1	Median	Q3
NegCOMMENT	1878	0.3403	0.4739	0.0000	0.0000	1.0000
DA	1878	0.0050	0.0519	-0.0174	0.0095	0.0357
FIRM_ACEQ	1878	0.0000	0.0021	-0.0005	0.0000	0.0004
SIZE	1878	9.1745	1.0335	8.4625	9.1377	9.7949
ROA	1878	0.1218	0.0722	0.0755	0.1206	0.1696
LEVERAGE	1878	0.2093	0.1461	0.0991	0.1979	0.3015
NOA	1878	0.7860	0.6407	0.3944	0.6166	0.9467
BANKZ	1878	-1.6233	1.2604	-2.5059	-1.5671	-0.8418
GROWTH	1878	0.0891	0.1694	0.0068	0.0771	0.1513
MTB	1878	3.6504	3.6030	2.0018	3.1033	4.6463
NEWISSUE	1878	0.5948	0.4911	0.0000	1.0000	1.0000
CFOVOL	1878	0.0445	0.0327	0.0208	0.0354	0.0576
SALEVOL	1878	0.1603	0.1568	0.0699	0.1169	0.1893
COVERAGE	1878	3.0403	0.4569	2.7726	3.0445	3.3673

Panel B: Univariate tests

	(1) NegCOMMENT = 1 (N = 639) Mean	(2) NegCOMMENT = 0 (N = 1239) Mean	Difference in Means	Tests of Differences (1) > (2) p-value
DA	0.0076	0.0037	-0.0039	0.0605*

Panel C: Regression results

	(1) Time (t-1) DA	(2) Time (t) DA	(3) Time (t+1) DA
NegCOMMENT (t)	**0.0027**	**0.0064*** **	**0.0011**
	(0.0025)	**(0.0022)**	**(0.0028)**
SIZE (t-1, t, t+1)	0.0039*	0.0033	0.0054**
	(0.0022)	(0.0021)	(0.0026)
ROA (t-1, t, t+1)	0.0106	0.0219	-0.0402
	(0.0341)	(0.0340)	(0.0492)
LEVERAGE (t-1, t, t+1)	0.1301***	0.1186***	0.1216***
	(0.0290)	(0.0285)	(0.0337)
NOA (t-1, t, t+1)	-0.0046*	-0.0038	-0.0097
	(0.0027)	(0.0045)	(0.0065)
BANKZ (t-1, t, t+1)	-0.0181***	-0.0174***	-0.0225***
	(0.0040)	(0.0037)	(0.0053)
GROWTH (t-1, t, t+1)	-0.0368***	-0.0646***	-0.0462***
	(0.0121)	(0.0117)	(0.0147)
MTB (t-1, t, t+1)	0.0001	0.0001	0.0001
	(0.0001)	(0.0004)	(0.0001)
NEWISSUE (t-1, t, t+1)	0.0014	0.0061**	0.0070**
	(0.0033)	(0.0030)	(0.0032)
CFOVOL (t-1, t, t+1)	-0.1459**	-0.1398*	-0.1717**
	(0.0690)	(0.0775)	(0.0847)
SALEVOL (t-1, t, t+1)	-0.0100	-0.0075	-0.0001
	(0.0116)	(0.0120)	(0.0148)
COVERAGE (t-1, t, t+1)	-0.0273***	-0.0264***	-0.0333***
	(0.0051)	(0.0047)	(0.0060)
Constant (t-1, t, t+1)	0.0433**	0.0559***	0.0613***
	(0.0210)	(0.0197)	(0.0227)
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Observations	1,828	1,878	1,815
Adjusted R-squared	0.1487	0.1737	0.1406

Chi-square test of equality in coefficients

Test: (2) NegCOMMENT = (3) NegCOMMENT

$\chi 2$ (1) = 3.11*

p-value = 0.0777

TABLE 7
CEM and Difference-in-Difference Analysis

This table reports the results of testing the monitoring effect of EQ comments on earnings management using a sample of firms listed on the S&P 500 from 2003 to 2011 after matching on lagged changes in discretionary accruals (ChgDA (t-1→t)), discretionary accruals (DA), firm size (SIZE), and performance (ROA), using Coarsened Exact Matching (CEM). Panel A reports balance checks for the four matching criteria. Panel B reports the ordinary least squares results of testing changes in earnings management from time t to t+1 between criticized firms versus non-criticized firms, with t being the year of criticism. The sample selection procedures are summarized in Table 1, and the variables are defined in Appendix A. The standard errors reported in parentheses are clustered at the firm-level. ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively, in two-tailed tests.

Panel A: Balance checks for the matching dimensions

	NegCOMMENT = 1 (N = 353) Mean	NegCOMMENT = 0 (N = 353) Mean	Difference in Means	Test of Differences in Means p-value
ChgDA (t-1→t)	0.0035	0.0046	0.0012	0.6834
DA	0.0150	0.0148	-0.0002	0.9329
SIZE	9.2795	9.2851	0.0056	0.9304
ROA	0.1297	0.1288	-0.0009	0.8087

Panel B: Regression results

	(1) ChgDA (t→t+1)
NegCOMMENT (t)	**-0.0085****
	(0.0034)
ChgSIZE (t→t+1)	-0.0294***
	(0.0091)
ChgROA (t→t+1)	-0.0799
	(0.0868)
ChgLEVERAGE (t→t+1)	0.4200***
	(0.0671)
ChgNOA (t→t+1)	0.0105
	(0.0133)
ChgBANKZ (t→t+1)	-0.0910***
	(0.0107)
ChgGROWTH (t→t+1)	-0.0586***
	(0.0183)
ChgMTB (t→t+1)	0.0005
	(0.0005)
ChgNEWISSUE (t→t+1)	0.0026
	(0.0036)
ChgCFOVOL (t→t+1)	0.1315
	(0.1774)
ChgSALEVOL (t→t+1)	0.0033
	(0.0279)
ChgCOVERAGE (t→t+1)	0.0126
	(0.0112)
Constant	-0.0041
	(0.0105)
Year fixed effects	Yes
Industry fixed effects	Yes
Observations	706
Adjusted R-squared	0.3297

TABLE 8
Alternative Classifications of Criticized Firms

This table reports the results of testing the monitoring effect of EQ comments using alternative classifications of criticized firms and a CEM-matched sample. Under the restricted classification, only firms that are in the bottom quintile of the sentiment of EQ comments are considered criticized by analysts. Under the relaxed classification, a firm is considered criticized by analysts as long as there is an analyst report with negative EQ comments. The sample selection procedures are summarized in Table 1, and the variables are defined in Appendix A. The standard errors reported in parentheses are clustered at the firm-level. ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively, in two-tailed tests.

	(1) Restricted Classification ChgDA (t→t+1)	(2) Relaxed Classification ChgDA (t→t+1)
CRITICIZED_restricted	**-0.0087****	
	(0.0042)	
CRITICIZED_relaxed		**-0.0082****
		(0.0033)
ChgSIZE (t→t+1)	-0.0385***	-0.0249***
	(0.0123)	(0.0093)
ChgROA (t→t+1)	0.0191	-0.1228
	(0.1287)	(0.0928)
ChgLEVERAGE (t→t+1)	0.4420***	0.4465***
	(0.0730)	(0.0684)
ChgNOA (t→t+1)	0.0211	0.0090
	(0.0185)	(0.0120)
ChgBANKZ (t→t+1)	-0.0879***	-0.0918***
	(0.0141)	(0.0109)
ChgGROWTH (t→t+1)	-0.0581**	-0.0513***
	(0.0253)	(0.0173)
ChgMTB (t→t+1)	0.0001	0.0006
	(0.0005)	(0.0004)
ChgNEWISSUE (t→t+1)	-0.0005	0.0008
	(0.0035)	(0.0035)
ChgCFOVOL (t→t+1)	0.1237	0.1222
	(0.2354)	(0.2052)
ChgSALEVOL (t→t+1)	0.0022	0.0121
	(0.0349)	(0.0359)
ChgCOVERAGE (t→t+1)	0.0027	0.0119
	(0.0120)	(0.0114)
Constant	-0.0055	-0.0073
	(0.0140)	(0.0108)
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
Observations	492	718
Adjusted R-squared	0.3088	0.3215

TABLE 9
Do Managers Switch to Real Activities Management?

This table reports the ordinary least squares results of testing changes in real activities management from time t to t+1 in criticized versus non-criticized firms, with t being the year of criticism, using the CEM-matched sample reported in Table 7. The sample selection procedures are summarized in Table 1, and the variables are defined in Appendix A. The standard errors reported in parentheses are clustered at firm-level. ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively, in two-tailed tests.

	(1) ChgREM (t→t+1)
NegCOMMENT (t)	**0.0018**
	(0.0064)
ChgSIZE (t→t+1)	-0.0084
	(0.0162)
ChgROA (t→t+1)	-0.4770***
	(0.1360)
ChgLEVERAGE (t→t+1)	0.1378
	(0.1209)
ChgNOA (t→t+1)	-0.0377
	(0.0265)
ChgBANKZ (t→t+1)	-0.0278**
	(0.0139)
ChgGROWTH (t→t+1)	-0.0382
	(0.0345)
ChgMTB (t→t+1)	0.0005
	(0.0010)
ChgNEWISSUE (t→t+1)	-0.0135**
	(0.0067)
ChgCFOVOL (t→t+1)	-0.2168
	(0.3215)
ChgSALEVOL (t→t+1)	0.1309**
	(0.0564)
ChgCOVERAGE (t→t+1)	-0.0019
	(0.0219)
Constant	0.0020
	(0.0187)
Year fixed effects	Yes
Industry fixed effects	Yes
Observations	692
Adjusted R-squared	0.0726

TABLE 10
Sensitivity Analyses

This table reports the results of sensitivity analyses. Panel A reports the ordinary least squares results of testing the market's reaction to the release of analyst reports after controlling for analysts fixed effects and analyst experiences. Panel B reports the ordinary least squares results of testing changes in earnings management from time t to t+2 in criticized versus non-criticized firms, with t being the year of criticism, using the CEM-matched sample reported in Table 7. The sample selection procedures are summarized in Table 1, and the variables are defined in Appendix A. The standard errors reported in parentheses are clustered at the firm-level. ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively, in two-tailed tests.

Panel A: Analyst fixed effects and analyst experiences

	(1)	(2)
	CAR(-1, 1)	CAR(-1, 1)
ACEQ	**0.0013****	**0.0013****
	(0.0005)	**(0.0005)**
REV_FORECAST	0.0027***	0.0028***
	(0.0007)	(0.0007)
REV_RATING	0.0029***	0.0029***
	(0.0005)	(0.0005)
REV_PRICETARGET	0.0059***	0.0059***
	(0.0007)	(0.0007)
EXPERIENCE (General)		-0.0026
		(0.0032)
EXPERIENCE (Firm-specific)		-0.0002
		(0.0010)
NONEQTEXT	0.0058***	0.0058***
	(0.0006)	(0.0006)
Constant	0.0008	0.0051
	(0.0071)	(0.0090)
Broker fixed effects	No	No
Analyst fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
Observations	10,766	10,766
Adjusted R-squared	0.0928	0.0927

Panel B: Is the monitoring effect of EQ comments transitory?

	(1) ChgDA(t+1→t+2)		(2) ChgDA(t→t+2)
NegCOMMENT (t)	0.0030	**NegCOMMENT (t)**	-0.0058*
	(0.0034)		(0.0033)
ChgSIZE(t+1→t+2)	-0.0289***	ChgSIZE(t→t+2)	-0.0074
	(0.0096)		(0.0070)
ChgROA(t+1→t+2)	-0.0064	ChgROA(t→t+2)	-0.1110*
	(0.0867)		(0.0606)
ChgLEVERAGE(t+1→t+2)	0.4785***	ChgLEVERAGE(t→t+2)	0.3196***
	(0.0632)		(0.0519)
ChgNOA(t+1→t+2)	0.0040	ChgNOA(t→t+2)	-0.0041
	(0.0053)		(0.0064)
ChgBANKZ(t+1→t+2)	-0.1002***	ChgBANKZ(t→t+2)	-0.0683***
	(0.0097)		(0.0082)
ChgGROWTH(t+1→t+2)	-0.0537***	ChgGROWTH(t→t+2)	-0.0173
	(0.0159)		(0.0159)
ChgMTB(t+1→t+2)	0.0001	ChgMTB(t→t+2)	0.0000
	(0.0001)		(0.0001)
ChgNEWISSUE(t+1→t+2)	0.0043	ChgNEWISSUE(t→t+2)	0.0032
	(0.0038)		(0.0033)
ChgCFOVOL(t+1→t+2)	0.0310	ChgCFOVOL(t→t+2)	-0.1824
	(0.2084)		(0.1176)
ChgSALEVOL(t+1→t+2)	-0.0247	ChgSALEVOL(t→t+2)	0.0138
	(0.0247)		(0.0184)
ChgCOVERAGE(t+1→t+2)	-0.0201	ChgCOVERAGE(t→t+2)	-0.0151
	(0.0166)		(0.0116)
Constant	-0.0018	Constant	-0.0236**
	(0.0107)		(0.0098)
Year fixed effects	Yes	Year fixed effects	Yes
Industry fixed effects	Yes	Industry fixed effects	Yes
Observations	671	Observations	671
Adjusted R-squared	0.4289	Adjusted R-squared	0.3314