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Distracted analysts and earnings management

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Abstract

This study examines whether firms covered by distracted analysts manage their earnings more intensively. We construct a firm-level measure of analyst distraction based on exogenous attention-grabbing events and find that analyst distraction is positively associated with earnings management. Our findings demonstrate that limited attention from analysts can negatively affect corporate financial reporting quality.

Keywords: Earnings management; Sell-side analysts; Analyst distraction

JEL Classifications: G30; G32; G34

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1. Introduction

Sell-side analysts play a critical role in externally monitoring the quality of corporate financial reporting (Yu, 2008; Irani and Oesch, 2013; Bradley et al., 2017). Analysts monitor firms directly through interactions with managers and indirectly by producing information for investors (Brown et al., 2015). However, as security analysts have time and resource constraints, they must choose which firms in their portfolio to exert more effort on and thus distract from others. Evidence suggests that distraction significantly impairs the quality of monitoring (Kempf et al., 2017; Garel et al., 2021). In response to lower level of analyst monitoring, managers could engage in activities that do not benefit shareholders. Therefore, we conjecture that higher analyst distraction is associated with more earnings management.

Our firm-level distraction measure is based on analysts' exposure to exogenous attention-grabbing events affecting firms under analyst coverage. The measure is inspired by Kempf et al. (2017), who use extreme industry returns as attention-grabbing events to study institutional distraction. Our distraction measure can be justified on two grounds. First, in a survey of sell-side analysts, Brown et al. (2015) find that client demand is the most important component in motivating analysts to provide accurate earnings forecasts and profitable stock recommendations. Since institutional investors, who are analysts' main clients, pay more attention to firms in extreme-performing industries (Kempf et al., 2017), security analysts would also focus more on these firms and get distracted from others. Second, industry return shocks could capture psychological effects. For example, retail investors and the media might focus excessively on out- and underperformers, which, in turn, could provide an incentive for security analysts to focus their attention on extreme-performing firms.

Using our measure of analyst distraction, we find that if analysts divert their attention from some firms in their portfolios, those firms will manage their earnings more. In particular, analyst distraction is positively associated with our proxy for earnings management, absolute discretionary accruals. The effect of analyst distraction on earnings management is statistically significant in the presence of analyst coverage, suggesting that analyst distraction affects corporate behaviors beyond the influence of analyst coverage documented in Yu (2008). Garel et al. (2021) find that institutional investor distraction can also influence earnings management. Therefore, we examine whether the effect of limited attention on earnings management is

due to analyst distraction or institutional investor distraction. The results show that both analyst distraction and institutional investor distraction affect earnings management. Finally, we perform several robustness checks by using signed discretionary accruals and different proxies for earnings management, redefining our attention-grabbing events, re-estimating our analyst distraction measure in an alternative estimation window, and applying different matching methods. The results confirm the positive relationship between analyst distraction and earnings management.

Our paper relates to prior studies that report evidence that analyst distraction can harm information production. Driskill et al. (2020) find that the timeliness and quality of analysts' earnings forecasts decline significantly when there are multiple concurrent earnings announcements in their coverage portfolio. Han et al. (2020) find that analysts in natural disaster-affected areas issue less accurate forecasts. Bourveau et al. (2020) provide empirical evidence that distracted analysts achieve lower forecast accuracy and produce less informative forecast revisions than non-distracted analysts. Kim et al. (2022) document that busy analysts issue lower-quality forecasts during uncertain periods. These studies, however, do not study the monitoring functions of security analysts when they are distracted, which is the focus of this paper.

We also contribute to the literature on limited attention and corporate behaviors. Kempf et al. (2017) find that firm managers with distracted shareholders engage in value-destroying activities. Related to our study are Garel et al. (2021), who find that firms with distracted institutional shareholders engage in more earnings management. We complement the empirical findings in this strand of literature by showing that analyst distraction also affects firm actions.

2. Data and Methodology

2.1. Data

The data in our analysis come from several sources. We get quarterly analyst coverage data from I/B/E/S and merge it with firm fundamental data from Compustat. We exclude financial and utility firms from our sample. We obtain Fama-French 12-industry classifications from Kenneth French's website and assign each firm to 1 of the 12 Fama-French industries based on its SIC code. The final sample consists of 51,215 firm-year observations from 1995 to 2019.

2.2. Analyst distraction measure

Our main variable of interest is analyst distraction, which captures how much analysts are distracted from a given firm f . The intuition behind the distraction measure is similar to Kempf et al. (2017) and Renjie and Verwijmeren (2020), who focus on institutional investors and firm directors, respectively. For each analyst i , who follows firm f in fiscal quarter t , we compute an analyst-firm-level distraction score D_{ift} as:

$$D_{ift} = \sum_{j \in B_{it} \setminus \{f\}} w_{ijt}^f \times 1(Ind_{jt} \neq Ind_{ft}) \times IS_t^{Ind_{jt}}, \quad (1)$$

where $B_{it} \setminus \{f\}$ denotes the set of firms other than firm f where analyst i follows in quarter t ; $1(Ind_{jt} \neq Ind_{ft})$ indicates whether firm j is in the same Fama-French 12 industry as firm f , thereby capturing only shocks from industries other than that of firm f ; $IS_t^{Ind_{jt}}$ captures whether distracting events occur in the industry of firm j in quarter t . We define IS as an indicator variable equal to one if an industry has the highest or lowest return across all 12 Fama-French industries in a given quarter. The weight w_{ijt}^f captures how much analyst i cares about firm j relative to the focal firm f . Harford et al. (2019) find that analysts spend more time and energy on firms that are relatively more important for their careers, and firm importance is determined based on market capitalization. We sort all stocks covered by an analyst in fiscal quarter t into quintiles based on their market values. We calculate the weight of each firm j for analyst i with respect to the focal firm f in quarter t as:

$$w_{ijt}^f = \frac{mve_{jt}}{mve_{ft}}, \quad (2)$$

where mve_{jt} and mve_{ft} denote the quintile numbers of the market value of equity of firm j and that of focal firm f in fiscal quarter t . The intuition is that analysts will pay more (less) attention to firms that are more (less) important than the focal firm.

We compute firm-level distraction measure by averaging the analyst-firm-level distraction scores across all analysts that cover a firm. For firm f in quarter t , we compute the analyst distraction level as:

$$Distraction_{ft} = \frac{1}{N_{ft}} \sum_{i \in B_{ft}} D_{ift}, \quad (3)$$

where B_{ft} denotes the set of analysts following firm f in quarter t , and N_{ft} denotes the total number of analysts following firm f in quarter t . Finally, we average the measure over the last four quarters to obtain a yearly measure of analyst distraction.

Overall, our distraction measure identifies whether a distracting event occurs in an unrelated industry of a portfolio firm and whether that specific firm is important in the analyst's coverage portfolio.

2.3. Earnings management measure

Our earnings management measure follows Yu (2008). We use the Jones (1991)'s model to estimate discretionary accruals from regressions of total accruals on the inverse of total assets, changes in sales revenues, and the level of gross property, plant, and equipment. For each two-digit SIC code industry in each year, we estimate the following regression model:

$$\frac{TA_{ft}}{A_{ft-1}} = \alpha_1 \frac{1}{A_{ft-1}} + \alpha_2 \frac{\Delta REV_{ft} - \Delta AR_{ft}}{A_{ft-1}} + \alpha_3 \frac{PPE_{ft}}{A_{ft-1}} + \epsilon_{it}, \quad (4)$$

where f indexes firm and t indexes the year, TA is total accruals, calculated as the difference between net income and operating cash flows, A is the total value of assets, ΔREV is the change in sales revenues, ΔAR is the change in receivables, and PPE is gross property, plant, and equipment. Discretionary accruals are the residuals from regression 4. Managers can manage earnings upward or downward, and we are interested in manipulations in both directions. Therefore, we use the absolute value of discretionary accruals in our study.

2.4. Summary statistics

Table 1 presents the descriptive statistics of the variables we use in this study. Detailed definitions and constructions of these variables are reported in the Appendix. The mean of the absolute value of discretionary accruals and analyst distraction are 0.221 and 0.089, respectively. As for the control variables, the average firm in our sample has total assets of approximately \$3.402 billion, a market-to-book ratio of 2.166, a return to asset (ROA) of 3.9%, a growth rate in book value of total assets asset of 24.4%, a cash flow volatility of 22.9%, a ratio of external financing to total assets of 13.8%, and an institutional ownership of 50.8%. The average firm is covered by 8.03 analysts, and the average analyst covering the firm has 6.411 years of experience and 2.243 years of firm-specific experience.

[Insert Table 1 here]

3. Empirical results

3.1. Analyst distraction and earnings management

To test the effect of security analyst distraction on earnings management, we estimate the following regression:

$$Abs_DA_{ft} = \beta_0 + \beta_1 Analyst\ Distraction_{ft} + \sum_k \beta_k Controls_{ft} + Firm/Industry\ Fixed\ Effects + Year\ Fixed\ Effects + \epsilon_{ft} \quad (5)$$

The dependent variable is the absolute value of discretionary accruals of firm f in year t . The coefficient of interest is β_1 , which shows the effect of analyst distraction on earnings management. Control variables include the natural log of firm size, firm market-to-book ratio, return on assets (ROA), total asset growth, cash flow volatility, and external financing activities. We control for the analyst's experience as the number of years that the analysts appear in the I/B/E/S database and the analyst's experience with the firm, which is the number of years since the analyst's first earnings forecast for the covered firm. Finally, we include the number of analysts covering the firm since Yu (2008) finds that earnings management is affected by analyst coverage.

Table 2 presents the regression results. The coefficients on *Analyst Distraction* are positive and statistically significant at the 1% level in both column 1 (where we include industry and year fixed effects) and column 2 (where we control for firm and year fixed effects). These results suggest that higher analyst distraction is associated with a higher level of earnings management. In economic terms, a standard deviation increase in analyst distraction is associated with an increase in absolute discretionary accruals of 0.9 (0.184*0.049) percentage points (in column 1) and 0.8 (0.184*0.041) percentage points (in column 2). These increases correspond to roughly 4.1 percent of the mean absolute discretionary accruals, which is economically meaningful. Consistent with previous studies, we find that the number of analysts following a firm is negatively related to earnings management (Yu, 2008; Irani and Oesch, 2013; Bradley et al., 2017). Thus, our results suggest that analyst distraction is associated with earnings management even after controlling for analyst coverage.

[Insert Table 2 here]

3.2. *Analyst distraction or institutional investor distraction?*

Garel et al. (2021) find that firms with more distracted institutional investors engage in more earnings management. To assure that our results are not driven by investor distraction, we examine the effects of analyst and institutional investor distraction on earnings management. Specifically, we add *Institutional distraction* and *Institutional ownership* as independent variables in regression 5. Table 3 shows that both analyst distraction and institutional investor distraction are positively associated with earnings management. The coefficients are positive and statistically significant at the 1% level in columns 1 and 2. We also test for the difference between the coefficient estimates for *Analyst distraction* and *Institutional distraction* and find no significant difference, suggesting that analyst distraction and institutional investor distraction are equally important determinants of earnings management.

[Insert Table 3 here]

4. Robustness

This section examines the robustness of our findings.

4.1. *Signed discretionary accruals and alternative earnings management measures*

First, we split our sample into positive and negative discretionary accruals subsamples and re-estimate equation 5. The results in Table 4, Panel A, show a positive association between analyst distraction and discretionary accruals only in the positive accruals subsample. Our findings suggest that firm managers engage in more upward (i.e., income-increasing) earnings management when analysts are distracted. In untabulated results, we also examine the signed discretionary accruals in an incentive setting, similar to Garel et al. (2021). Specifically, we examine whether, among firms with positive discretionary accruals, the relation between analyst distraction and earnings management is more pronounced for firms that meet or just beat the earnings

benchmark. We find that the positive association between *Analyst Distraction* and positive discretionary accruals exists only in firms that have just met or beaten the earnings benchmark, consistent with our previous findings that analyst distraction induces upward earnings management.

Second, in Table 4, Panel B, we use alternative measures of discretionary accruals (Kothari et al., 2005; Owens et al., 2017) and real earnings management (Cohen and Zarowin, 2010) and find that our results are insensitive to different earnings management measures.

4.2. *Alternative definitions of industry shocks*

In the third test, we use three alternative definitions of attention-grabbing industry events: extreme positive returns, extreme negative returns, and trading volume. For extreme positive (negative) returns, we only consider industries with the highest (lowest) return across all 12 Fama-French industries in a given quarter. For trading volume, we identify the attention-grabbing industry to be the one with the highest current-quarter trading volume normalized by the average trading volume over the previous four quarters. Table 4, Panel C summarizes the results and shows that our findings remain robust to all three alternative definitions of industry shocks.

4.3. *Alternative estimation window of analyst distraction measure*

It is possible that accrual-based earnings management occurs during the time period after the fiscal year-end and before the publication of financial statements. Therefore, we re-estimate our yearly analyst distraction measure by taking the average over the last four quarters before the earnings announcement dates to align the analyst distraction period with the period when earnings management mainly takes place. Table 4, Panel D illustrates that our findings remain robust to this new estimation window of analyst distraction measure.

[Insert Table 4 here]

4.4. *Nearest-neighbor and propensity score matching strategies*

In this last robustness check, we implement the nearest-neighbor and propensity-score-matching strategies to match firms with no analyst distraction ($Distraction_{ft} = 0$) to firms with high analyst distraction ($Distraction_{ft} >$

0.086) along with other firm characteristics: size, market-to-book ratio, Fama-French 12-industry classification, and fiscal year. In Table 5, we show that the effect of analyst distraction on earnings management is positive and statistically significant in all matching methods, consistent with our baseline results in Table 2.

[Insert Table 5 here]

5. Conclusion

We find that firms with more distracted analysts manage their earnings more intensively. The effect of analyst distraction on earnings management remains significant when we control for the influence of analyst coverage (Yu, 2008) and distracted institutional investors (Garel et al., 2021). Our study highlights the role of analyst attention on firm financial reporting quality.

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Table 1: Summary statistics

This table presents summary statistics of the variables in our study for the sample period 1995-2019. All variables are winsorized at their 1st and 99th percentiles. Variable definitions are provided in the Appendix.

| Variables | N | Mean | Median | S.D. | P25 | P75 |
|---------------------------|--------|-------|--------|-------|--------|-------|
| Abs_DA | 51,215 | 0.221 | 0.087 | 0.426 | 0.037 | 0.205 |
| Analyst Distraction | 51,215 | 0.089 | 0.018 | 0.184 | 0 | 0.086 |
| Size (\$ bil) | 51,215 | 3.402 | 0.507 | 8.635 | 0.137 | 2.169 |
| Market-to-book | 51,215 | 2.166 | 1.615 | 1.616 | 1.207 | 2.471 |
| ROA | 51,215 | 0.039 | 0.052 | 0.158 | 0.01 | 0.089 |
| Total asset growth | 51,215 | 0.244 | 0.078 | 0.661 | -0.013 | 0.238 |
| Cash flow volatility | 51,215 | 0.229 | 0.091 | 0.462 | 0.052 | 0.191 |
| External financing | 51,215 | 0.138 | 0.001 | 0.524 | -0.044 | 0.076 |
| Analyst coverage | 51,215 | 8.03 | 6 | 7.047 | 3 | 11 |
| Experience as analyst | 51,215 | 6.411 | 6 | 3.777 | 3.714 | 8.75 |
| Experience with firm | 51,215 | 2.243 | 1.75 | 2.088 | 0.667 | 3.333 |
| Institutional ownership | 51,215 | 0.508 | 0.525 | 0.286 | 0.273 | 0.752 |
| Institutional distraction | 51,215 | 0.066 | 0 | 0.086 | 0 | 0.131 |

Table 2: Analyst distraction and earnings management

This table presents the results of our regression analysis on the relation between earnings management and analyst distraction. Industry or firm fixed effects and year fixed effects are included. All variables are winsorized at their 1st and 99th percentiles. Standard errors are in parentheses and clustered at the firm level. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Variable definitions are provided in the Appendix.

| | (1) | (2) |
|------------------------|----------------------|----------------------|
| | Abs_DA | Abs_DA |
| Analyst distraction | 0.049*** [0.000] | 0.041*** [0.010] |
| Log(Size) | -0.001 [-0.885] | -0.018*** [0.000] |
| Market-to-book | 0.009*** [0.000] | 0.023*** [0.000] |
| ROA | -0.026* [0.166] | -0.057*** [0.004] |
| Total asset growth | 0.004 [0.541] | 0.001 [0.921] |
| Cash flow volatility | 0.021*** [0.000] | 0.026*** [0.001] |
| External financing | 0.039*** [0.000] | 0.027** [0.011] |
| Analyst coverage | -0.003*** [0.000] | -0.005*** [0.000] |
| Experience as analyst | 0.002 [0.132] | 0.003 [0.117] |
| Experience with firm | -0.002*** [0.001] | -0.001 [0.454] |
| Industry fixed effects | Yes | No |
| Firm fixed effects | No | Yes |
| Year fixed effects | Yes | Yes |
| Number of observations | 51215 | 51215 |
| R-squared | 0.1382 | 0.1101 |

Table 3: Analyst distraction or institutional investor distraction?

This table reports the results of our regression analysis on the relation between earnings management and analyst distraction and institutional investor distraction. Industry or firm fixed effects and year fixed effects are included. All variables are winsorized at their 1st and 99th percentiles. Standard errors are in parentheses and clustered at the firm level. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Variable definitions are provided in the Appendix.

| | (1) | (2) |
|--|----------------------|----------------------|
| | Abs_DA | Abs_DA |
| Analyst distraction | 0.047*** [0.000] | 0.041*** [0.006] |
| Institutional distraction | 0.058*** [0.000] | 0.065*** [0.000] |
| Log(Size) | -0.002 [-0.335] | -0.017*** [0.000] |
| Market-to-book | 0.008*** [0.000] | 0.023*** [0.000] |
| ROA | -0.023 [0.147] | -0.058*** [0.004] |
| Total asset growth | 0.004 [0.566] | 0.002 [0.846] |
| Cash flow volatility | 0.019*** [3.92] | 0.027*** [0.000] |
| External financing | 0.038*** [4.26] | 0.027*** [0.010] |
| Institutional ownership | -0.034*** [0.000] | -0.008 [0.506] |
| Analyst coverage | -0.003*** [0.000] | -0.005*** [0.000] |
| Experience as analyst | 0.002 [0.122] | 0.002 [0.120] |
| Experience with firm | -0.002*** [0.001] | -0.001 [0.536] |
| Industry fixed effects | Yes | No |
| Firm fixed effects | No | Yes |
| Year fixed effects | Yes | Yes |
| Test-of-difference in coefficients between analyst distraction and in- stitutional distraction: <i>p</i> – value | 0.358 | 0.221 |
| Number of observations | 51215 | 51215 |
| R-squared | 0.1389 | 0.1112 |

Table 4: Robustness: Signed discretionary accruals, alternative earnings management measures, definitions of industry shocks, and estimation window of analyst distraction

This table reports the results of our regression analysis on the relation between earnings management and analyst distraction. In Panel A, we split our sample into positive and negative discretionary accruals subsamples. In Panel B, we use alternative earnings management measures. We apply alternative definitions of industry shocks in Panel C. In Panel D, we estimate our analyst distraction measure by taking the average over the last four quarters before the earnings announcement dates. For the sake of brevity, we only report coefficients on *Analyst distraction*. Industry or firm fixed effects and year fixed effects are included. All variables are winsorized at their 1st and 99th percentiles. Standard errors are in parentheses and clustered at the firm level. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

| Panel A: Signed discretionary accruals | Industry & year fixed effects | Firm & year fixed effects |
|---|-------------------------------|---------------------------|
| Absolute discretionary accruals (Positive discretionary accruals subsample) | 0.091*** [0.000] | 0.089*** [0.002] |
| Absolute discretionary accruals (Negative discretionary accruals subsample) | 0.015 [0.126] | -0.013 [0.451] |
| Panel B: Alternative earnings management measures | Industry & year fixed effects | Firm & year fixed effects |
| Absolute discretionary accruals (Kothari et al., 2005) | 0.013** [0.015] | 0.011** [0.031] |
| Absolute discretionary accruals (Owens et al., 2017) | 0.011** [0.013] | 0.009** [0.038] |
| Real earnings management (Cohen and Zarowin, 2010) | 0.172*** [0.007] | 0.184** [0.013] |
| Panel C: Alternative definitions of industry shocks | Industry & year fixed effects | Firm & year fixed effects |
| Extreme positive returns | 0.038*** [0.000] | 0.031** [0.024] |
| Extreme negative returns | 0.073*** [0.000] | 0.067*** [0.008] |
| Trading volume | 0.051*** [0.000] | 0.039** [0.043] |
| Panel D: Alternative estimation window | Industry & year fixed effects | Firm & year fixed effects |
| Absolute discretionary accruals | 0.057*** [0.000] | 0.049*** [0.001] |

Table 5: Robustness: Matching strategies

This table reports the results from nearest-neighbor and propensity-score-matching estimations. The outcome variable is *Abs_DA*. Firms with high analyst distraction ($Distraction_{ft} > 0.086$) are in the treatment group, and firms with no analyst distraction ($Distraction_{ft} = 0$) are placed in the control group and are matched to treated firms along with a set of firm characteristics: size, market-to-book ratio, Fama-French 12-industry classification, and fiscal year. Each panel reports the estimated average treatment effect (ATE) of high analyst distraction, corresponding z-statistic, and the number of observations. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

| | |
|---|----------|
| Panel A. Nearest-Neighbor matching | |
| ATE | 0.037*** |
| z-statistics | 5.34 |
| Number of observations | 28,338 |
| Panel B. (Logistic) propensity-score matching | |
| ATE | 0.018*** |
| z-statistics | 2.68 |
| Number of observations | 28,338 |
| Panel C. (Probit) propensity-score matching | |
| ATE | 0.019*** |
| z-statistics | 2.83 |
| Number of observations | 28,338 |

Appendix: Variable definitions

| Variables | Description | Source |
|---------------------------|--|------------------|
| Abs.DA | Absolute value of discretionary accruals using the Jones (1991)'s model including the inverse of total assets, the change in revenues, the change in receivables, and the level of gross property, plant and equipment as the determinants of nondiscretionary accruals as in Yu (2008). | Compustat |
| Analyst distraction | We compute an analyst-level distraction score based on whether a distracting event occurs, taking into account the importance of firms in the analyst's coverage portfolio. We then average across all analysts following a firm to construct a firm-level analyst distraction measure. A detailed description is provided in Section 2.2. | I/B/E/S, CRSP |
| Log(Size) | Natural logarithm of total assets. | Compustat |
| Market-to-book | Market value of equity divided by book value of equity. | Compustat |
| ROA | Net income scaled by total assets. | Compustat |
| Total asset growth | The growth of total assets, defined as total assets at year t minus total assets at year $t-1$ divided by total assets at year $t-1$. | Compustat |
| Cash Flow volatility | The standard deviation of cash flows of a firm in the entire sample period, scaled by lagged total assets. | Compustat |
| External financing | The sum of net cash received from equity and debt issuance scaled by lagged total assets. | Compustat |
| Analyst coverage | The number of analysts who issue at least one earnings forecast for the firm during the fiscal year. | I/B/E/S |
| Experience as analyst | Number of years that an analyst has worked as an analyst (i.e., the number of years that an analyst has appeared in I/B/E/S). We average across analysts to construct a firm-level measure. | I/B/E/S |
| Experience with firm | Number of years that an analyst has followed the firm (i.e., the number of years since an analyst issued the first earnings forecast for the firm). We average across analysts to construct a firm-level measure. | I/B/E/S |
| Institutional ownership | Institutional investor ownership as a percentage of a firm's total shares outstanding, measured at the end of the fiscal year. We assume that the institutional holdings remain unchanged until the subsequent quarter holdings data become available in 13F quarterly files. | 13F |
| Institutional distraction | We calculate the measure of institutional investor distraction following Kempf et al. (2017). | 13F, CRSP |

Highlights

Distracted analysts and earnings management

- Firms with more distracted analysts engage in more earnings management.
- Analyst distraction affects earnings management beyond the influence of analyst coverage and institutional investor distraction.
- The relation between analyst distraction and earnings management is more pronounced for firms that meet or just beat the earnings benchmark.

Author Contribution Statement

Distracted Analysts and Firm Earnings Management (by Thanh Dat Le and Tri Trinh)

Thanh Dat Le: Conceptualization, Formal analysis, Writing-original draft

Tri Trinh: Conceptualization, Formal analysis, Methodology, Writing- review & editing