Social media coverage and post-earnings announcement drift: Evidence from Seeking Alpha

Abstract

In this study, we investigate how social media coverage mitigates the under-reaction to an earnings surprise captured by post-earnings announcement drift. Based on the analysis of data collected over a nine-year period from Seeking Alpha, the largest crowdsourced social media platform providing third-party-generated financial commentary and analysis in the United States, we find that the market response to an earnings surprise attenuates for firms with high coverage on Seeking Alpha prior to the earnings announcement. Furthermore, such an effect is more salient for firms with lower institutional ownership and lower press coverage. The findings are consistent with the view that higher social media coverage facilitates a timely absorption of earnings-based information by stock prices, leading to a weaker under-reaction of the market.

Key words: Seeking Alpha, post-earnings announcement drift, institutional ownership, news coverage.

1. Introduction

As a longstanding capital market anomaly, post-earnings announcement drift (hereafter PEAD) is the tendency of stock prices to exhibit a delayed response to an earnings surprise (Ball and Brown, 1968; Bernard and Thomas, 1989, 1990; Foster, Olsen, and Shevlin, 1984). Although stock prices generally increase (decrease) upon the announcement of a positive (negative) earnings surprise, they do not seem to fully react, which is reflected in an abnormal stock return after the announcement. For example, Bernard and Thomas (1990) show that after a positive (negative) earnings surprise, subsequent earnings surprises tend to be predictably positive (negative) for up to three quarters after the initial earnings announcement.

The prior literature has offered two potential explanations for PEAD based on the failure to adjust abnormal returns for risk and investors' delayed response to earnings-related information (Ball, Kothari, and Watts, 1993; Bartov, Krinsky, and Radhakrishnan, 2000; Bernard and Thomas, 1989). PEAD could result from the systematic misrepresentation of abnormal returns after earnings announcements. Ball et al. (1993) provide evidence to show that investment risk increases for firms with higher unexpected earnings and decreases for firms with lower unexpected earnings. Garfinkel and Sokobin (2006) use trading volume around earnings announcements that cannot be explained by prior trading behavior to measure investors' divergent opinions, and they find that post-earnings announcement returns increase with opinion divergence. They conclude that opinion divergence is an additional risk factor that should be priced. Recent research suggests that a delayed response to earnings news due to either under-reaction or high transaction costs could be an alternative explanation for PEAD (Cao and Narayanamoorthy, 2012; DellaVigna and Pollet, 2009). However, an important underlying assumption of the under-reaction

explanation is that investors become instantaneously aware of the earnings surprise after it becomes public information. If investors fail to understand the information released in an earnings announcement, they are unlikely to update their future earnings expectations, leading to an under-reaction to earnings news. Therefore, the market under-reaction could emerge from either investor *not* paying sufficient attention to earnings news or investors failing to comprehend the implications of the current earnings for future earnings due to the high information acquisition and processing cost.

In this study, we investigate whether the coverage of public firms on Seeking Alpha, the largest crowdsourced social media platform to provide financial analyses of US listed firms, decreases the information acquisition and processing cost for general investors and facilitates the timely incorporation of earnings information into stock prices. We select Seeking Alpha as our testing ground due to the following considerations: 1) Seeking Alpha offers broad access to granular investment analysis rather than breaking news. For example, StockTwits is limited to 140 characters, the number of words in messages posted on Yahoo! Finance and Raging Bull is between 20 and 50, and Estimize concentrates on short-term earnings forecasts with no justification of the smutted forecasts. In contrast, contributors usually write long articles on listed firms that accommodate in-depth analysis including their interpretation of accounting results. As a result, we do not expect retail investors to get the similar amount of information by reading StockTwits or Yahoo! Finance. 2) Seeking Alpha employs an editorial review to ensure the quality of published articles. Inexperienced contributors might encounter serval rounds of revision to get their submission accepted. This editorial process is absent in other social media platforms. 3) Seeking Alpha, which is created in 2004, is among the first investment-related

social media platforms, therefore providing a relatively long time-series of data. Given that financial analyses and commentaries on Seeking Alpha prior to earnings announcements enable investors to access an expanded information set and better understand the implications of forthcoming earnings news, we expect earnings-related information to be effectively incorporated into stock prices, leading to an attenuated reaction to earnings announcements and reduced under-reactions (reflected by a weaker PEAD).

Based on our analysis of a large sample of firm-year observations of US public firms between 2006 and 2014, we find that when the social media coverage in the 90-day period leading up to the earnings announcement date is high (measured by the number of articles that provide an exclusive analysis of a listed firm), the market response to both an earnings surprise in the three-day earnings announcement period and the 60-day post-announcement period becomes attenuated. That is consistent with the notion that high social media coverage before an earnings announcement reduces the information acquisition and processing cost for investors, which enables them to understand better the implications of earnings information and leads to a reduced under-reaction to earnings news. Furthermore, we show that such an effect is more pronounced for firms with lower institutional ownership and lower business press coverage. Our inferences remain qualitatively unchanged after a battery of sensitivity tests.

An important innovation of our study is that we take into account investors' information acquisition and processing cost into our inquiry into PEAD, a longstanding accounting anomaly. Our contribution to the literature is three-fold. First, we add to the PEAD literature by providing evidence of the effect of investors' information acquisition and processing cost as reflected in the coverage on

crowdsourced social media on the magnitude of PEAD. To the best of our knowledge, we are among the first to explore whether a reduced information processing cost helps mitigate the under-reaction to earnings-related information from investors. Second, our finding that the role of social media coverage in alleviating PEAD is more pronounced in firms with lower institutional ownership, and lower business press coverage supports the view that ownership structure and the corporate information environment are important determinants of how earnings news affects stock returns. Finally, we extend the emerging literature that examines the capital market consequences on investors' aggregate information acquisition behavior (Bartov, Faurel, and Mohanram, 2018; Blankespoor et al., 2014; Jung et al., 2018).

The rest of the paper proceeds as follows. Section 2 introduces the background and hypotheses. Section 3 discusses the data and research design. Section 4 presents the main results. Section 5 concludes.

2. Background and hypothesis development

Although a large body of literature has examined the role of financial intermediaries, such as sell-side analysts, it is only recently that researchers have begun to explore how social media affects the financial market. For example, Blankespoor et al. (2014) document that firms disseminate firm-specific news through Twitter to reduce information asymmetry, and Lee et al. (2015) report evidence that firms employ social media to interact with investors to mitigate the negative capital market reaction to product recalls. Analyzing the choice of firms to use social media platforms as a voluntary disclosure channel to promote earnings news, Bhagwat and Burch (2016) present evidence that the corporate use of Twitter affects stock price reactions to quarterly earnings news, and the effect is much stronger for firms with lower

visibility. Using 869,733 tweets for 3,604 firms between 2009 and 2012, Bartov et al. (2018) document that aggregate opinion from individual tweets about a firm can help investors predict the firm's forthcoming quarterly earnings and stock price reaction to earnings, and such an effect is more pronounced for firms in opaque information environments. In a concurrent study, Jung et al. (2018) analyze S&P 1500 firms' use of Twitter to disseminate quarterly earnings announcements and find that firms are less likely to disseminate when the news is bad and when the magnitude of the bad news is large. Such findings are more salient for firms with a lower level of investor sophistication and firms with a larger social media presence.

There is a nascent stream of research that has used Seeking Alpha data. Chen et al. (2014), which uses articles published on Seeking Alpha between 2005 and 2012 and find that the views information contained in the articles and commentaries predicts long-window stock returns and earnings surprises. Gomez et al. (2020) provide evidence that Seeking Alpha reduces information asymmetry, and its coverage of a firm narrow sophisticated investors' information advantage. Farrell et al. (2020) find that Seeking Alpha articles faciliate informed trading by retail investors. Our research question is fundamentally different in that we are interested in whether Seeking Alpha coverage decreases the information processing cost so that value-relevant information is impounded into the stock price to mitigate an under-reaction to earnings.

We suggest that the coverage of public firms on Seeking Alpha plays the following roles in reducing the information acquisition and processing cost for investors. First, the coverage increases the visibility of the firm among investors, resulting in better investor recognition of the firm. The intuition underlying this prediction is that any registered user on Seeking Alpha who has access to the Internet can read the article, suggesting that the global access to the information should greatly increase its

visibility to a broad audience. Second, Seeking Alpha allows any registered user not only to write and read articles but also to add commentaries in response to published articles. Those who post commentaries may present alternative opinions and can even suggest corrections or debate flaws from the original article. Consequently, an article followed by more commentaries is likely to receive more attention from a broad audience. The social media coverage can thus facilitate more interaction among investors and enable a better understanding of the information released in an article, representing a reduction in information processing cost.

If a firm is covered by an increasing number of Seeking Alpha articles prior to its earnings announcement, investors are capable of accessing the information at a lower cost, which enables a more effective incorporation of such information into the stock price. In a recent study, Farrell et al. (2020) analyse retail trading using ten half-hour intraday event windows around the publication of Seeking Alpha article, and find that aggregate retail trading in the first half-hour window after publication is 7.73% higher than that in the half-hour before publication. As a result, value relevant information released from the Seeking Alpha article will be capitalised into stock price through trading, which results in less under-reaction to earnings news and consequently an attenuated PEAD. However, one argument against this prediction is that information posted on social media could add noise to the market.

In a recent study, Drake et al. (2017) classify Internet intermediaries into professional (i.e., Dow Jones Newswire), semi-professional (i.e., newspaper and business news websites), and non-professional (non-financial websites and blogs) and find that while the activities of professional and semi-professional intermediaries contribute to the price formation process, those of non-professional intermediaries impede price formation. In their study, Seeking Alpha and other investment research websites are

classified as semi-professional intermediaries. In fact, based on the stringent editorial process of Seeking Alpha and the high likelihood that its contributing authors are professionals, we conjecture that Seeking Alpha is much closer to straddling the border between professional and semi-professional intermediaries than it is to that between semi-professional and non-professional intermediaries, which suggests that Seeking Alpha articles would provide value-relevant information rather than noise. Our first hypothesis is formulated as follows:

H1: Seeking Alpha coverage of a firm is negatively associated with PEAD.

Furthermore, we investigate how ownership structure and press coverage moderates the relation between Seeking Alpha coverage and PEAD. Different from retail investors who rely on social media as an important source of information, institutional investors have access to professional information vendors such as Bloomberg, which suggests that the influence of Seeking Alpha coverage on PEAD is concentrated in firms with lower institutional ownership. Similarly, firms with higher investor recognition are likely to have more press coverage, which contributes to a better corporate information environment. Relatively speaking, Seeking Alpha coverage likely plays a more significant role in enhancing the flow of firm-specific information for firms that receive less press coverage, because such firms are able to benefit more from improved investor awareness and reduced information asymmetry. Based on the discussion, we expect to find support for the following hypothesis:

H2: The negative association between Seeking Alpha coverage and PEAD is more pronounced in firms with a) lower institutional ownership; and b) lower press coverage.

3. Data and research design

3.1 Data

In this study, we use data collected from the Seeking Alpha website (http://SeekingAlpha.com) to measure social media coverage. Seeking Alpha, which was launched in 2004 by David Jackson, is the largest crowdsourced social media platform disseminating third-party-generated financial analyses for publicly listed firms. Different from other social media communications, such as tweets (which has 140 characters restriction until September 2017), Seeking Alpha articles can deliver in-depth analysis of a firm, thus disseminating valuable information supported by figures and numbers. By the end of May 2021, Seeking Alpha had 15.2 million unique users and more than 40 million monthly visits. As of January 2021 there are 16,000 contributors who publish over 7,000 articles on Seeking Alpha each month (roughly 400 of whom self-identify as investment firms), while these articles are reviewed by an editorial board to verify the credentials of the authors and the quality of the submissions before they are eventually published. Since January 2011, Seeking Alpha has paid each contributor $10 per 1,000 page views of their article. Users can subscribe to stocks of interest to receive related articles, follow contributors to receive their articles, and interact with contributors and other readers by providing comments on published articles.[1]

Our key measure of interest, Seeking Alpha coverage, is defined as the number of articles exclusively related to a firm for a given year posted on the website. We use a program to download all single-ticker articles (articles exclusively related to a specific firm) into HTML format from the Seeking Alpha website. Our sample includes 133,217 single-ticker articles from 2006 to 2014. In the analysis we use log(one plus

[1] According to the information released on Seeking Alpha, the payment is USD 10 per 1,000 page views. For solid analyses of stocks that lack attention (e.g., small-cap), Seeking Alpha editors will pay a minimum of USD 150 for selected articles, and USD 500 for articles with exceptionally good quality.

the number of articles published by Seeking Alpha) to alleviate the issue of skewness. We provide a typical example of Seeking Alpha article in Appendix 1. The stock return data are collected from CRSP, firm fundamental data from COMPUSTAT, and analyst coverage data from I/B/E/S. We impose a requirement of non-missing values for key variables including Seeking Alpha coverage and the control variables (details provided in Section 3.2). The final sample contains 39,568 firm-year observations from between 2006 and 2014. To mitigate the possible issues related to outliers, all continuous variables are winsorized at 1 and 99 percentiles.

3.2 Research design

First, we test the contemporaneous market reaction to the earnings surprise with Equation (1). The dependent variable is three-day cumulative daily returns centered on the earnings announcement date over a matched portfolio with a similar size and book-to-market ratio of the prior year, and the independent variables include the ranked earnings surprise (UE), Seeking Alpha (SA) coverage, interaction between them, a set of control variables, and a set of control variables interacting with UE. If H1 is supported, we expect to find a negative and significant λ_2.

$$CAR_{(-1,+1)} = \gamma_0 + \lambda_1 UE + \lambda_2 UE * SA + \lambda_3 UE * NEWS + \lambda_4 UE * LNUM + \lambda_5 UE * SIZE + \lambda_6 UE * VOL + \lambda_7 UE * CHL + \lambda_8 UE * INSOWN + \lambda_9 UE * PRCCM + \lambda_{10} UE * RVOLAT + \sum \chi_\kappa ControlVariables_\kappa + \varepsilon \quad (1)$$

Next, we examine the coefficients from regressions of $CAR_{(+1,+60)}$ (60-day cumulative daily abnormal returns) on unexpected earnings, a set of control variables and their interactions with UE. We calculate the daily abnormal return during the post-

announcement period using the raw return minus the daily return on the portfolio of firms with approximately the same size (market capitalization) and book-to-market ratio in the prior year. The portfolio return data are obtained from Kenneth French's website. We expect to find a negative and significant β_2 to support H1.

$$CAR_{(+1,+60)} = \alpha_0 + \beta_1 UE + \beta_2 UE * SA + \beta_3 UE * NEWS + \beta_4 UE * LNUM + \beta_5 UE * SIZE + \beta_6 UE * VOL + \beta_7 UE * CHL + \beta_8 UE * INSOWN + \beta_9 UE * PRCCM + \beta_{10} UE * RVOLAT + \sum \beta_\kappa ControlVariables_\kappa + \varepsilon \quad (2)$$

In both equations, firm and year subscripts are suppressed.

In early PEAD studies, such as Bhattacharya's (2001), unexpected earnings are calculated based on a seasonal random-walk model. Later studies, such as Livnat and Mendenhall (2006), conclude that PEAD abnormal returns are more pronounced when calculated based on unexpected earnings obtained from I/B/E/S analyst earnings forecasts and I/B/E/S actual earnings. Therefore, we define the unexpected earnings ($UE_{i,t}$) of firm *i* in fiscal quarter *t* as:

$$UE_{i,t} = (EPS_{i,t} - \widetilde{E_{i,t}})/P_{i,t},$$

in which $EPS_{i,t}$ is the actual earnings per share for quarter *t* of firm *i* from the I/B/E/S, $\widetilde{E_{i,t}}$ is the median of analysts' earnings forecasts from I/B/E/S prior to the earnings announcement, and $P_{i,t}$ is the price per share obtained from COMPUSTAT at the end of each quarter *t*.

The dependent variable, CAR, is either a three-day cumulative abnormal return centered on the earnings announcement date or the 60-day cumulative daily abnormal return over a matched portfolio with a similar size and book-to-market ratio in the prior year. Our main variable of interest, SA, is the number of single-ticker Seeking Alpha articles posted in a 90-day period before the quarterly earnings announcement

date. In the analysis, we use the natural log of one plus SA. Following previous studies (e.g., Chung and Harazdil, 2011; Ng, Rusticus, and Verdi, 2008), we include a broad set of control variables. NEWS is the number of firm-specific news articles released in 90-day period before the quarterly earnings announcement date. The data are collected from RavenPack Analytics. LNUM is the natural logarithm of one plus the number of analyst coverage for a firm during the quarter before the earnings announcement month; SIZE is the closing market capitalization in the month prior to the earnings announcement date; VOL is the share price multiplied by the number of shares traded during the month before the earnings announcement month; and CHL is the bid–ask spread based on daily close, high, and low prices calculated using the approach in Abdi and Ranaldo (2017). INSOWN is the percentage of shares outstanding owned by institutional investors at the end of the quarter prior to the earnings announcement date; PRCCM is the closing share price of the month before the earnings announcement; and RVOLAT is measured as the volatility of residuals from the 12-month regression of a firm's daily returns on the market (S&P 500) returns ending in the announcement month. Following Ng et al. (2008), we employ these variables as the control and pay our attention to interpreting the coefficients of interaction. All the variables are defined in Appendix 1.

(Insert Appendix 1 about here)

4. Results

4.1 Descriptive statistics

Table 1, Panel A presents the descriptive statistics of the Seeking Alpha articles in each year of the sample. It is essential to point out that the number of Seeking Alpha articles (firms covered by Seeking Alpha) increased from 4,271 (1,203) in 2006 to

21,995 (2,931) in 2014, which corroborates the substantially growing influence of Seeking Alpha during our sample period.

Table 1, Panel B provides the descriptive statistics of the other variables. The mean (median) of CAR is –0.002 (–0.010), while the mean (median) of UE is –0.038 (0.000), which suggests that the actual quarterly earnings of an average sample firm is lower than the consensus earnings forecast. The mean (median) firm has been covered by 144 (103) pieces of news and followed by 3.314 (3.401) analysts. The mean (median) of size is 4.637 (0.696), and the mean (median) of institutional ownership is 0.616 (0.662), indicating that more than 60% of the shares of an average sample firm are owned by institutional investors.

(Insert Table 1 about here)

Table 2 presents the correlation among the variables. SA is positively correlated with earnings surprise, suggesting that firms with higher reported earnings than in the earnings consensus are more likely to be covered by social media. SA is also positively correlated with news coverage, analyst following, size, trading volume, and institutional holding, which indicates that firms with more press coverage, large firms, firms followed by more analysts, firms owned more by institutional investors, and firms with higher trading volumes are more likely to be covered by social media. Consistent with the findings of previous studies (Collins and Kothari, 1989; Easton and Harris, 1991), CAR is positively correlated with earnings surprise. Earnings surprise is positively correlated with analyst following, size, trading volume, and institutional ownership. Analyst following is positively correlated with size, trading volume, and institutional ownership, but it is negatively correlated with return volatility. The correlations raise little concern regarding multi-collinearity.

(Insert Table 2 about here)

4.2 Results related to H1

In Table 3, we present the results related to the short-term market reaction to earnings surprise. In the regression, three-day CAR centered on the earnings announcement date is regressed on SA, earnings surprise, and their interaction. We include all the control variables and their interactions with earnings surprise, as well as the year and firm fixed effects. The coefficient of SA is significantly negative (–0.001, t = –2.491), which suggests that more coverage on a social media platform, such as Seeking Alpha, before the earnings announcement date reduces the short-term market reaction to earnings surprise. Furthermore, the coefficient of the interaction between Seeking Alpha coverage and earnings surprise is significantly negative (–0.002, t = –3.363), which indicates that high social media coverage measured by the number of Seeking Alpha articles posted in the 90-day period before the earnings announcement date lowers the information acquisition cost, resulting in an attenuated short-term market reaction to the earnings surprise.

In Table 4, we show the results related to the post-earnings announcement period. In the regression, CAR is regressed on SA, earnings surprise, and their interaction. We include all the control variables and their interaction with earnings surprise, as well as the year and firm fixed effect. Consistent with the findings of previous research (e.g., Easton and Harris, 1991), the coefficient of earnings surprise is positive and significant (6.626, t = 2.689). The coefficient of Seeking Alpha coverage is significantly negative (–0.141, t = –2.012). Importantly, the coefficient of the interaction between Seeking Alpha coverage and earnings surprise is negative and significant (–0.581, t = –2.012), which suggests that high social media coverage as reflected by the number of Seeking Alpha articles posted in the 90-day period before

the earnings announcement date increases the visibility of the firm to investor, thus reducing the information acquisition cost and resulting in a reduced under-reaction to the earnings surprise. It is worth mentioning that the results are obtained after controlling for the influence of press coverage, because the interaction between UE and news coverage (News) is insignificant. Our results are broadly consistent with those of Drake, Roulstone, and Thornock (2012), who focus on the association between abnormal returns in the earnings announcement window and Internet searches during the same period.[2] With respect to the control variables, the coefficients of size and institutional ownership (INSOWN) are significantly positive, whereas the coefficients of volume (Vol) and return volatility (RVOLAT) are significantly negative. The coefficient of analyst following is insignificant at 10% level. The results related to the contemporaneous market reaction and PEAD provide support to H1.

(Insert Table 3 about here)

(Insert Table 4 about here)

4.3 Results related to H2

Table 5 reports the results related to H2a. We partition the sample into low institutional ownership and high institutional ownership sub-samples based on the sample median of institutional ownership and run the baseline model in these two sub-samples. Consistent with our prediction, the coefficient of the interaction between earnings surprise and Seeking Alpha coverage is insignificant in the high institutional

[2] Drake et al. (2012) report a negative and significant coefficient on the interaction between earnings surprise and abnormal search during the announcement window [0, +1], while earnings surprise is calculated as actual earnings minus the consensus of analyst forecast before the earnings announcement.

ownership sub-sample, suggesting that Seeking Alpha coverage plays a less significant role in reducing PEAD for firms with high institutional ownership. It is plausible that institutional investors have access to professional information vendors, such as Bloomberg, so they rely less on articles posted on Seeking Alpha for their decision-making. In contrast, the coefficient of the interaction between earnings surprise and Seeking Alpha coverage is significant and negative in the low institutional ownership sub-sample (–0.584, t = –2.289), which indicates that retail investors are more dependent on information released in Seeking Alpha articles to make investment-related decisions; so higher coverage on Seeking Alpha facilitates the flow of firm-specific information to the market prior to an earnings announcement, leading to an attenuated market response to an earnings surprise. The F-test confirms that the coefficient of interaction in the high institutional ownership sub-sample is significantly different from that in the low institutional ownership sub-samples. H2a is thus supported.

(Insert Table 5 about here)

Table 6 presents the results related to H2b. Similarly, we divide the sample into low news coverage and high news coverage sub-samples based on the sample median of news coverage and run the baseline model in these two sub-samples. In line with our expectation, the coefficient of the interaction between earnings surprise and Seeking Alpha coverage is insignificant in the high news coverage sub-sample, suggesting that the influence of Seeking Alpha on the market response to an earnings surprise is less salient for firms that receive high news coverage. It is likely that the information environment of such firms is better and more transparent, so investors are less dependent on social media to access value-relevant information. In contrast, the coefficient of the interaction between earnings surprise and Seeking Alpha coverage

is significantly negative in the low news coverage sub-sample (–1.407, t = –3.570), which suggests that earnings-related information for firms receiving less press coverage has been preempted to the market and incorporated into the stock price when they are covered more by Seeking Alpha, leading to an attenuated market response to an earnings surprise. The F-test shows that the coefficients of interaction in the high and low news coverage sub-samples are significantly different. Therefore, H2b is supported.

(Insert Table 6 about here)

4.4 Robustness check

4.4.1 Propensity score matching (PSM)

The endogeneity issue may exist because Seeking Alpha does not cover firms randomly. For instance, firms with large market capitalization, or firms with a high earnings surprise are more likely to receive higher attention by Seeking Alpha users and thus covered by its articles. We employ propensity score matching (PSM) as the primary method to address the endogeneity concern. Each year, we estimate the likelihood of Seeking Alpha Coverage of each firm base on the following logit model. The dependent variable is a dummy variable which, in a given year, is coded 1 when a firm receives Seeking Alpha coverage and zero otherwise. The control variables that are used in the baseline model (see Equation (1)) are used as independent variable here. After that, we match each firm with Seeking Alpha coverage in a given year with two matching firms (firms without Seeking Alpha coverage in the given year) that rank highest in propensity scores (1% maximum distance, with replacement). Here we adopt a nearest-neighbor matching approach setting the caliper constraint at 0.01. The matched sample contains 33,750 observations, with less than 5% standardized biases for all variables after matching.

We re-examine the baseline test using the PSM matched sample and report the results in Table 7. The PSM matched sample produces qualitatively similar results as the coefficient of interaction between Seeking Alpha coverage and earnings surprise remain7s significantly negative (–1.250, t = –2.613). The results therefore add to the robustness of the baseline analysis.

(Insert Table 7 about here)

4.4.2 Loss of coverage on Seeking Alpha

We further address the endogeneity issue by concentrating on firms that lost Seeking Alpha coverage during our sample period. Seeking Alpha authors who persistently publish articles and whose articles receive more commentaries would attract more attention from the audience. Therefore, in each quarter, we rank all contributing authors based on their number of articles, the number of firms covered, the total comments received, and the average comments received per article. Loss of Seeking Alpha coverage is defined when an author who satisfies the following criteria stops publishing articles on Seeking Alpha: 1) the author must have been publishing for at least four quarters continuously; 2) during the continuous coverage period, the author's rank in terms of quarterly number of articles published, number of firms covered, total comments received, and average comments received per article must remain in the top 50% of all contributing authors.[3] We expect that the loss of coverage by such an influential author results in a drop in firm-specific information flow to the market before an earnings announcement, leading to greater under-reaction to earnings news. For each case of loss of coverage, we calculate the quarterly average

[3] The median of our active author sample has an average quarterly coverage of three firms. An active author may discontinue publishing articles related to a specific firm due to the dynamic of company-specific information. However, the entire loss of coverage by an active author is probably due to personal reasons.

coverage of the firm that the author published articles on during their continuous-publishing period. EXO_D is defined as the natural log of 1 plus the average number of Seeking Alpha articles for a firm contributed by the author before they cease publishing articles on Seeking Alpha. Using the specified criteria, we find 366 exogenous drop events of active authors, which leads to 33,749 exogenous drops of firm-quarter observations. In order to test the potential effect of a loss of coverage by active Seeking Alpha authors, we add EXO_D and an interaction between UE and EXO_D to the baseline model. The higher the value of EXO_D, the more severe the increase in under-reaction after the loss of coverage, as evidenced by a significant and positive coefficient of the interaction term.

The results, which are presented in Table 8, are consistent with our prediction because the coefficient of interaction is significantly positive (14.761, t = 2.091). The findings show that a loss of coverage indeed results in a greater under-reaction to earnings surprise for the previously covered firm, which implies a causal relationship between Seeking Alpha coverage and a reduced under-reaction to earnings news.[4]

(Insert Table 8 about here)

4.4.3 The interaction between the author and readers making comments

An interesting feature of Seeking Alpha is that it allows registered users to read and comment on published articles. Readers who post comments on published articles may disagree with the views expressed in the articles. For example, they might point out mistakes in the original article, which reduces the credibility of the information

[4] We acknowledge that the loss of coverage on Seeking Alpha could be endogenous (e.g., the incentive of a contributing author to follow a firm could change after the initiation of coverage by other intermediaries, such as financial analysts), and we suggest that the results on the loss of Seeking Alpha coverage be interpreted with caution.

released in the article. We define information disagreement as the negative word ratio of comments posted under published articles released a quarter before each quarterly earnings announcement date. We use Loughran and McDonald's (2011) negative word list to identify negative words and calculate the negative word ratio by dividing the number of negative words by the total number of words in the comments. Then we average the ratio across all comments in the article, and a higher value would arise when readers hold a more negative view of the original article in the comments. As a result, the reliability of the information released in the article is compromised, and its impact on alleviating market under-reaction is reduced. Our results, as presented in Table 9, show a positive and significant coefficient (22.125, t = 2.616) of the triple interaction between earnings surprise, Seeking Alpha coverage, and disagreement, suggesting that the influence of Seeking Alpha on the market response to earnings surprise is impeded by the higher level of disagreement between readers and authors.

(Insert Table 9 about here)

4.4.4 Alternative measures

We employ two alternative measures of Seeking Alpha coverage to cross-validate our baseline hypothesis. Firstly, we calculate an abnormal Seeking Alpha (ABN_SA) coverage, which is the difference between the actual SA coverage and the predicted SA coverage. The SA coverage prediction is obtained by running for each year a cross-sectional regression of SA coverage on all the no-interaction terms among controlling variables in our baseline regression. Our results, as illustrated by Table 10 (column 1: Residual SA), remain robust. Secondly, we construct an SA comment measure based on the aggregated number of comments under each SA article and use it as a proxy for the intensity of interaction between author and reader. Our results, as shown by the Table 10 (column 2: comments), remain consistent with the baseline

hypothesis. Furthermore, we also re-examine our results based on an alternative form of risk-adjusted CAR. In Table 10 (column 3), our dependent variable is replaced by FF5F-CAR (Fama-French five factor risk adjusted return), the presented results remain qualitatively the same.

(Insert Table 10 about here)

4.4.5 Positive vs Negative CARs

In this section, we assess the symmetrical characteristics of information dissemination role played by Seeking Alpha. To be more specific, we split our sample into observations with the positive and negative CARs and repeat our baseline tests. The results in Table 11 suggest that our baseline results are mainly attributable to observations with negative CARs as the coefficient of interaction is significantly negative (-0.595, t = 2.003), whereas observations with positive CARs do not support the premise. It is consistent with the prior literature (e.g. Chen et al., 2014) which suggests that negative news are more likely to cause market participants to react. In our case, the results show that SA articles help reduce the PEAD by incorporate negative expectations into the stock prices before negative earnings surprises are disclosed.

(Insert Table 11 about here)

5. Conclusion

Our study provides initial evidence on the role of social media in mitigating the under-reaction to earnings surprise based on an analysis of data collected from

Seeking Alpha, the largest crowdsourced social media platform that specializes in financial analysis and commentaries. In the United States between 2006 and 2014, we find that for firms with higher Seeking Alpha coverage prior to their earnings announcements, the short-term market response to earnings surprise as well as the market response in the post-earnings announcement period become attenuated. Furthermore, we show that the negative association between Seeking Alpha coverage and PEAD is concentrated in firms with lower institutional ownership and lower news coverage. This is consistent with the prediction that Seeking Alpha articles enable investors to better understand the implications of current earnings for future earnings, resulting in less under-reaction to earnings news.

Our findings have implications for policymakers and investors. Regulators could coordinate with social media platforms to promote the disclosure of firm-specific information on social media and encourage third parties to evaluate the information and enable public access to the analysis so that value-relevant information can be fully incorporated into stock prices and alleviate unsophisticated investors' information disadvantage.

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Appendix 1: Variable definitions

Variable	Definition
SA	The number of Seeking Alpha articles released in the quarter before the quarterly earnings announcement date.
NEWS	The number of equity news articles from RavenPack with a relevance score of 100 released in the quarter before the quarterly earnings announcement date.
CAR	Firm's return less the return on the firm's 5*5 matching portfolio based on the size and market-to-book ratio.
UE	Quarterly announced earnings per share (EPS) minus the median of analyst forecasts of EPS.
LNUM	Natural log of (number of analyst coverage for a firm during the quarter before the earnings announcement month + 1).
SIZE	Closing market capitalization (in billion dollars) in the month prior to the earnings announcement date.
LMB	Natural log of (ratio of market capitalization to book value of equity).
LEVERAGE	The ratio of total long-term debt to total assets.
ROA	The ratio of Income before extraordinary items to total assets.
INSOWN	Percentage of shares owned by institutional investors.
PRCCM	Closing share price of pre-earnings announcement month.
VOL	Product of Price and the number of shares traded during the month prior to earnings announcement date.
CHL	Transaction cost measure based on readily available daily close, high, and low prices, as proposed by Abdi and Ranaldo (2017).
RVOLAT	Volatility of residuals from the 12-month regression of a firm's daily returns on the market (S&P 500) returns ending in the announcement month.
DISAGREE	Average negative word ratio of comments on Seeking Alpha articles released in the quarter before the quarterly earnings announcement date, following the dictionary of Loughran and McDonald (2011).

Table 1: Panel A

Year	Numbers of Seeking Alpha (SA) article	Numbers of Firms covered by Seeking Alpha	Number of SA articles per firm
2006	4,271	1,203	3.55
2007	10,264	1,925	5.33
2008	9,337	1,843	5.07
2009	9,957	1,759	5.66
2010	9,528	1,934	4.93
2011	10,794	2,008	5.38
2012	12,273	2,146	5.71
2013	14,782	2,370	6.24
2014	21,995	2,931	7.50

Table 1: Panel B

	SA	NEWS	CAR	UE	LNUM	SIZE	VOL	CHL	INSOWN	PRCCM	RVOLAT
mean	0.541	144	–0.002	–0.038	3.314	4.637	0.788	1.210	0.616	26	16
sd	1.669	153	0.210	0.376	1.131	14.691	2.027	0.849	0.275	26	4
min	0	0	–0.630	–4.443	0.000	0.012	0.000	0.276	0.000	0	8
p25	0	55	–0.108	–0.005	2.565	0.211	0.018	0.660	0.415	8	12
median	0	103	–0.010	0.000	3.401	0.696	0.106	0.969	0.662	18	15
p75	0	184	0.089	0.002	4.127	2.593	0.540	1.466	0.827	35	18
max	13	1011	0.972	1.121	5.620	134.164	15.256	5.794	1.000	167	32
count	118,650	118,650	118,650	118,650	118,650	118,650	118,650	118,650	118,650	118,650	118,650

Table 2: Correlations

	SA	NEWS	CAR	UE	LNUM	SIZE	VOL	CHL	INSOWN	PRCCM
NEWS	0.529***									
CAR	–0.011***	0.003								
UE	0.012***	0.042***	0.052***							
LNUM	0.306***	0.437***	0.005	0.071***						
SIZE	0.615***	0.573***	0.003	0.028***	0.354***					
VOL	0.662***	0.606***	–0.003	0.032***	0.448***	0.878***				
CHL	–0.111***	–0.234***	0.013***	–0.206***	–0.354***	–0.195***	–0.181***			
INSTOWN	0.529***	0.500***	0.004	0.018***	0.300***	0.775***	0.723***	–0.130***		
PRCCM	0.239***	0.317***	0.004	0.086***	0.426***	0.382***	0.416***	–0.422***	0.109***	
RVOLAT	–0.110***	–0.241***	–0.014***	–0.168***	–0.355***	–0.281***	–0.243***	0.757***	–0.190***	–0.493***

Table 3: Seeking Alpha coverage and short-term market reaction

$$CAR_{[-1,+1]} = \alpha_0 + \beta_1 UE + \beta_2 UE * SA + \beta_3 UE * NEWS + \beta_4 UE * LNUM + \beta_5 UE * SIZE + \beta_6 UE * VOL + \beta_7 UE * CHL + \beta_8 UE * INSOWN + \beta_9 UE * PRCCM + \beta_{10} UE * RVOLAT + \sum \beta_k \, ControlVariable_k + \varepsilon$$

VARIABLES	Baseline model
UE	0.006
	[0.586]
SA	–0.001**
	[–2.491]
UE*SA	–0.002***
	[–3.363]
NEWS	0.000
	[0.798]
UE*NEWS	0.000
	[1.017]
LNUM	0.000
	[0.076]
UE*LNUM	0.003*
	[1.736]
SIZE	0.000
	[0.293]
UE*SIZE	0.001
	[0.782]
VOL	0.000
	[0.017]
UE*VOL	0.001
	[0.275]
CHL	0.004***
	[3.596]
UE*CHL	–0.001
	[–0.773]
INSOWN	0.009***
	[6.359]
UE*INSOWN	0.006
	[0.906]
PRCCM	0.000*
	[1.896]
UE*PRCCM	0.000
	[0.489]
RVOLAT	–0.000***
	[–2.619]
UE*RVOLAT	0.000
	[0.158]
CONSTANT	–0.004
	[–1.396]
Observations	115,095
Firm fixed effects	Yes
Time fixed effects	Yes
Adj. R-squared	0.005

Table 3 presents the effect of Seeking Alpha coverage on the short-term earnings announcement reaction. The sample contains 115,095 firm-quarter observations over the period 2006–2014. The dependent variable, $CAR_{[-1,+1]}$, is defined as the three-day cumulative daily abnormal returns over the matched portfolio with a similar size and book-to-market ratio in the prior year; UE is calculated using the difference between actual earnings per share and the median of analysts' earnings forecasts prior to the quarterly earnings announcements; SA is the number of single-ticker Seeking Alpha articles for the

firm 90 days before the quarterly earnings announcement date; NEWS is the number of Ravenpack Analytics firm-specific news articles with highest relevance level for a firm 90 days before the quarterly earnings announcement date; LNUM is the natural log of 1 plus the number of analyst coverage for a firm prior to the quarterly earnings announcements; SIZE is defined as the closing market capitalization in the pre-earnings announcement quarter; VOL is calculated using price times the number of traded shares in the month prior to the earnings annoucement; and CHL is the bid–ask spread based on daily close, high, and low prices following Abdi and Ranaldo (2017). INSOWN is the percentage of shares outstanding owned by institutional investors prior to the quarterly earnings announcements. RVOLAT is the volatility of residuals from the 12-month regression of a firm's daily returns on the market (S&P 500) returns ending in the announcement month. PRCCM is the closing share price of pre-earnings announcement month; individual control variables have also been included in the regression model. T-statistics robust to heteroscedasticity and clustered by firm and time are reported in the square brackets; *, **, and *** denote significance levels at 10%, 5%, and 1%, respectively.

Table 4: SA converage and PEAD

$$CAR_{60} = \alpha_0 + \beta_1 UE + \beta_2 UE * SA + \beta_3 UE * NEWS + \beta_4 UE * LNUM + \beta_5 UE * SIZE + \beta_6 UE * VOL + \beta_7 UE * CHL + \beta_8 UE * INSOWN + \beta_9 UE * PRCCM + \beta_{10} UE * RVOLAT + \sum \beta_k \, Control\,Variable_k + \varepsilon$$

VARIABLES	Baseline model
UE	6.626***
	[2.689]
SA	-0.141**
	[-2.284]
UE*SA	-0.581**
	[-2.012]
NEWS	0.002***
	[3.517]
UE*NEWS	-0.003
	[-0.812]
LNUM	-0.097
	[-0.859]
UE*LNUM	-0.145
	[-0.398]
SIZE	0.051***
	[4.926]
UE*SIZE	-0.126
	[-0.652]
VOL	-0.378***
	[-4.207]
UE*VOL	1.901
	[1.153]
CHL	2.574***
	[6.303]
UE*CHL	-1.081***
	[-2.651]
INSOWN	2.878***
	[6.908]
UE*INSOWN	-4.646**
	[-1.970]
PRCCM	0.002
	[0.580]
UE*PRCCM	0.277*
	[1.775]
RVOLAT	-0.194***
	[-4.926]
UE*RVOLAT	0.013
	[0.136]
CONSTANT	-1.468*
	[-1.759]
Observations	118,650
Firm fixed effects	Yes
Time fixed effects	Yes
Adj. R-squared	0.008

Table 4 presents the effect of Seeking Alpha coverage on the Post earnings announcement drift. The sample contains 118,650 firm-quarter observations over the period 2006–2014. The dependent variable CAR, is defined as the 60-day cumulative daily abnormal returns over matched portfolio with similar size and Book-to-Market ratio of the prior year; UE is calculated using the difference between actual earnings per share and the median of analysts' earnings forecasts prior to the quarterly earnings announcements; SA is the number of single-ticker Seeking Alpha articles for the firm 90 days before the quarterly earnings announcement date; NEWS is the number of Ravenpack Analytics firm-specific news articles with highest relevance level for a firm 90 days before the

quarterly earnings announcement date; LNUM is the natural log of 1 plus the number of analyst coverage for a firm prior to the quarterly earnings announcements; SIZE is defined as the closing market capitalization in the pre-earnings announcement quarter; VOL is calculated using price times the number of traded shares in the month prior to the earnings annoucement; and CHL is the bid–ask spread based on daily close, high, and low prices following Abdi and Ranaldo (2017). INSOWN is the percentage of shares outstanding owned by institutional investors prior to the quarterly earnings announcements. RVOLAT is the volatility of residuals from the 12-month regression of a firm's daily returns on the market (S&P 500) returns ending in the announcement month. PRCCM is the closing share price of pre-earnings announcement month; individual control variables have also been included in the regression model. T-statistics robust to heteroscedasticity and clustered by firm and time are reported in the square brackets; *, **, and *** denote significance levels at 10%, 5%, and 1%, respectively.

Table 5: The moderating role of institutional ownership

$$CAR_{60} = \alpha_0 + \beta_1 UE + \beta_2 UE * SA + \beta_3 UE * NEWS + \beta_4 UE * LNUM + \beta_5 UE * SIZE + \beta_6 UE * VOL + \beta_7 UE * CHL + \beta_8 UE * INSOWN + \beta_9 UE * PRCCM + \beta_{10} UE * RVOLAT + \sum \beta_k \, Control\,Variable_k + \varepsilon$$

Institutional ownership	**high**	**low**
UE	11.601	4.245*
	[0.924]	[1.690]
SA	-0.106	-0.182**
	[-1.307]	[-2.227]
UE*SA	0.103	-0.584**
	[0.072]	[-2.289]
NEWS	0.002**	0.002**
	[2.549]	[2.127]
UE*NEWS	0.002	-0.002
	[0.094]	[-0.507]
LNUM	0.087	-0.316**
	[0.659]	[-2.088]
UE*LNUM	-2.821	-0.100
	[-1.367]	[-0.242]
SIZE	0.062***	0.031***
	[3.894]	[2.610]
UE*SIZE	-0.807	-0.175
	[-0.803]	[-0.812]
VOL	-0.468***	-0.255**
	[-3.951]	[-2.316]
UE*VOL	6.773	1.580
	[1.511]	[1.041]
CHL	3.090***	2.431***
	[6.415]	[5.215]
UE*CHL	-4.038*	-0.891**
	[-1.945]	[-2.399]
INSOWN	-3.075***	7.709***
	[-3.393]	[8.378]
UE*INSOWN	9.394	-3.187
	[1.196]	[-1.050]
PRCCM	0.004	0.007
	[1.143]	[1.332]
UE*PRCCM	-0.058	0.451***
	[-0.306]	[2.962]
RVOLAT	-0.111**	-0.200***
	[-2.146]	[-3.983]
UE*RVOLAT	0.005	0.052
	[0.012]	[0.523]
CONSTANT	0.943	-2.302**
	[0.963]	[-2.016]
Observations	59,314	59,336
Firm fixed effects	Yes	Yes
Time fixed effects	Yes	Yes
Adj. R-squared	0.013	0.009

Table 5 presents the comparison of effect of Seeking Alpha coverage on the Post earnings announcement drift between high and low institutional ownership groups. The dependent variable CAR, is defined as the 60-day cumulative daily abnormal returns over matched portfolio with similar size and Book-to-Market ratio of the prior year; UE is calculated using the difference between actual earnings per share and the median of analysts' earnings forecasts prior to the quarterly earnings announcements; SA is the number of single-ticker Seeking Alpha articles for the firm 90 days before the quarterly earnings announcement date; NEWS is the number of Ravenpack Analytics firm-specific news articles with highest relevance level for a firm 90 days before the quarterly earnings

announcement date; LNUM is the natural log of 1 plus the number of analyst coverage for a firm prior to the quarterly earnings announcements; SIZE is defined as the closing market capitalization in the pre-earnings announcement quarter; VOL is calculated using price times the number of traded shares in the month prior to the earnings annoucement; and CHL is the bid–ask spread based on daily close, high, and low prices following Abdi and Ranaldo (2017). INSOWN is the percentage of shares outstanding owned by institutional investors prior to the quarterly earnings announcements. RVOLAT is the volatility of residuals from the 12-month regression of a firm’s daily returns on the market (S&P 500) returns ending in the announcement month. PRCCM is the closing share price of pre-earnings announcement month; individual control variables have also been included in the regression model. T-statistics robust to heteroscedasticity and clustered by firm and time are reported in the square brackets; *, **, and *** denote significance levels at 10%, 5%, and 1%, respectively.

Table 6: The moderating role of news coverage

$$CAR_{60} = \alpha_0 + \beta_1 UE + \beta_2 UE * SA + \beta_3 UE * NEWS + \beta_4 UE * LNUM + \beta_5 UE * SIZE + \beta_6 UE * VOL + \beta_7 UE * CHL + \beta_8 UE * INSOWN + \beta_9 UE * PRCCM + \beta_{10} UE * RVOLAT + \sum \beta_k \, Control Variable_k + \varepsilon$$

News	high	low
UE	3.400	7.805***
	[0.958]	[2.590]
SA	-0.144**	-0.273*
	[-2.271]	[-1.947]
UE*SA	-0.019	-1.407***
	[-0.057]	[-3.570]
NEWS	0.003***	0.004*
	[4.395]	[1.750]
UE*NEWS	0.007*	-0.010
	[1.781]	[-1.025]
LNUM	-0.045	-0.292**
	[-0.297]	[-2.053]
UE*LNUM	-0.010	-0.216
	[-0.009]	[-0.577]
SIZE	0.051***	0.071***
	[4.542]	[2.637]
UE*SIZE	-0.017	-0.838***
	[-0.129]	[-2.913]
VOL	-0.455***	-0.207
	[-4.505]	[-1.092]
UE*VOL	-0.138	7.550***
	[-0.168]	[3.551]
CHL	4.149***	1.835***
	[6.649]	[5.762]
UE*CHL	-1.691**	-0.927**
	[-2.330]	[-2.060]
INSOWN	1.629***	3.630***
	[3.036]	[7.383]
UE*INSOWN	-2.930	-4.797**
	[-0.823]	[-2.098]
PRCCM	0.004	0.004
	[1.137]	[0.711]
UE*PRCCM	0.197	0.389***
	[1.293]	[2.714]
RVOLAT	-0.282***	-0.149***
	[-5.223]	[-3.282]
UE*RVOLAT	0.119	-0.036
	[0.788]	[-0.318]
CONSTANT	-1.309	-1.244
	[-1.325]	[-1.594]
Observations	58,942	59,708
Firm fixed effects	Yes	Yes
Time fixed effects	Yes	Yes
Adj. R-squared	0.012	0.008

Table 6 presents the comparison of effect of Seeking Alpha coverage on the Post earnings announcement drift between high and low public news exposures. The dependent variable CAR, is defined as the 60-day cumulative daily abnormal returns over matched portfolio with similar size and Book-to-Market ratio of the prior year; UE is calculated using the difference between actual earnings per share and the median of analysts' earnings forecasts prior to the quarterly earnings announcements; SA is the number of single-ticker Seeking Alpha articles for the firm 90 days before the quarterly earnings announcement date; NEWS is the number of

Ravenpack Analytics firm-specific news articles with highest relevance level for a firm 90 days before the quarterly earnings announcement date; LNUM is the natural log of 1 plus the number of analyst coverage for a firm prior to the quarterly earnings announcements; SIZE is defined as the closing market capitalization in the pre-earnings announcement quarter; VOL is calculated using price times the number of traded shares in the month prior to the earnings annoucement; and CHL is the bid–ask spread based on daily close, high, and low prices following Abdi and Ranaldo (2017). INSOWN is the percentage of shares outstanding owned by institutional investors prior to the quarterly earnings announcements. RVOLAT is the volatility of residuals from the 12-month regression of a firm’s daily returns on the market (S&P 500) returns ending in the announcement month. PRCCM is the closing share price of pre-earnings announcement month; individual control variables have also been included in the regression model. T-statistics robust to heteroscedasticity and clustered by firm and time are reported in the square brackets; *, **, and *** denote significance levels at 10%, 5%, and 1%, respectively.

Table 7: Propensity score matching

$$CAR_{60} = \alpha_0 + \beta_1 UE + \beta_2 UE * SA + \beta_3 UE * NEWS + \beta_4 UE * LNUM + \beta_5 UE * SIZE + \beta_6 UE * VOL + \beta_7 UE * CHL + \beta_8 UE * INSOWN + \beta_9 UE * PRCCM + \beta_{10} UE * RVOLAT + \sum \beta_k \, Control\,Variable_k + \varepsilon$$

VARIABLES	CAR
UE	12.754***
	[3.344]
SA	-0.226**
	[-2.193]
UE*SA	-1.250***
	[-2.613]
NEWS	0.003***
	[3.497]
UE*NEWS	0.007**
	[2.005]
LNUM	-0.420**
	[-2.071]
UE*LNUM	-2.358***
	[-2.577]
SIZE	0.044**
	[2.410]
UE*SIZE	-1.877***
	[-3.459]
VOL	-0.265*
	[-1.746]
UE*VOL	8.375***
	[3.491]
CHL	3.236***
	[3.501]
UE*CHL	-0.537
	[-0.552]
INSOWN	2.006***
	[2.967]
UE*INSOWN	-0.623
	[-0.236]
PRCCM	-0.001
	[-0.100]
UE*PRCCM	0.253*
	[1.780]
RVOLAT	-0.378***
	[-5.461]
UE*RVOLAT	-0.134
	[-0.804]
CONSTANT	2.162**
	[1.995]
Observations	33,750
R-squared	0.009
Firm fixed effects	Yes
Time fixed effects	Yes
Adj. R-squared	0.008

Table 7 presents the effect of Seeking Alpha coverage on the Post earnings announcement drift for PSM matched sample. The sample contains 33,749 firm-quarter observations over the period 2006–2014. The dependent variable CAR, is defined as the 60-day cumulative daily abnormal returns over matched portfolio with similar size and Book-to-Market ratio of the prior year; UE is calculated using the difference between actual earnings per share and the median of analysts' earnings forecasts prior to the quarterly earnings announcements; SA is the number of single-ticker Seeking Alpha articles for the firm 90 days before the

quarterly earnings announcement date; NEWS is the number of Ravenpack Analytics firm-specific news articles with highest relevance level for a firm 90 days before the quarterly earnings announcement date; LNUM is the natural log of 1 plus the number of analyst coverage for a firm prior to the quarterly earnings announcements; SIZE is defined as the closing market capitalization in the pre-earnings announcement quarter; VOL is calculated using price times the number of traded shares in the month prior to the earnings annoucement; and CHL is the bid–ask spread based on daily close, high, and low prices following Abdi and Ranaldo (2017). INSOWN is the percentage of shares outstanding owned by institutional investors prior to the quarterly earnings announcements. RVOLAT is the volatility of residuals from the 12-month regression of a firm’s daily returns on the market (S&P 500) returns ending in the announcement month. PRCCM is the closing share price of pre-earnings announcement month; individual control variables have also been included in the regression model. T-statistics robust to heteroscedasticity and clustered by firm and time are reported in the square brackets; *, **, and *** denote significance levels at 10%, 5%, and 1%, respectively.

Table 8: Loss of SA Coverage

$$CAR_{60} = \alpha_0 + \beta_1 UE + \beta_2 UE * SA + \beta_3 UE * NEWS + \beta_4 UE * LNUM + \beta_5 UE * SIZE + \beta_6 UE * VOL + \beta_7 UE * CHL + \beta_8 UE * INSOWN + \beta_9 UE * PRCCM + \beta_{10} UE * RVOLAT + \beta_{11} UE * EXO\_D + \sum \beta_k \, Control\,Variable_k + \varepsilon$$

VARIABLES	CAR
UE	6.857***
	[2.751]
EXO_D	0.558
	[0.645]
UE*EXO_D	14.761**
	[2.091]
SA	-0.148**
	[-2.515]
UE*SA	-0.721**
	[-2.330]
NEWS	0.002***
	[3.527]
UE*NEWS	-0.003
	[-0.826]
LNUM	-0.095
	[-0.842]
UE*LNUM	-0.141
	[-0.388]
SIZE	0.051***
	[4.913]
UE*SIZE	-0.108
	[-0.589]
VOL	-0.382***
	[-4.240]
UE*VOL	1.815
	[1.153]
CHL	2.577***
	[6.308]
UE*CHL	-1.054***
	[-2.594]
INSOWN	2.879***
	[6.911]
UE*INSOWN	-4.672**
	[-1.986]
PRCCM	0.002
	[0.591]
UE*PRCCM	0.278*
	[1.792]
RVOLAT	-0.195***
	[-4.938]
UE*RVOLAT	-0.000
	[-0.003]
CONSTANT	-1.466*
	[-1.756]
Observations	118,650
R-squared	0.009
Firm fixed effects	Yes
Time fixed effects	Yes
Adj. R-squared	0.008

Table 8 presents the effect of Seeking Alpha coverage along with its exogenous drop on the Post earnings announcement drift. The sample contains 118,650 firm-quarter observations over the period 2006–2014. The dependent variable CAR, is defined as the 60-

day cumulative daily abnormal returns over matched portfolio with similar size and Book-to-Market ratio of the prior year; UE is calculated using the difference between actual earnings per share and the median of analysts' earnings forecasts prior to the quarterly earnings announcements; SA is the number of single-ticker Seeking Alpha articles for the firm 90 days before the quarterly earnings announcement date; EXO_D is the number of exogenous drop of single-ticker Seeking Alpha articles for a firm 90-days before the quarterly earnings announcement date caused by influential authors; NEWS is the number of Ravenpack Analytics firm-specific news articles with highest relevance level for a firm 90 days before the quarterly earnings announcement date; LNUM is the natural log of 1 plus the number of analyst coverage for a firm prior to the quarterly earnings announcements; SIZE is defined as the closing market capitalization in the pre-earnings announcement quarter; VOL is calculated using price times the number of traded shares in the month prior to the earnings annoucement; and CHL is the bid–ask spread based on daily close, high, and low prices following Abdi and Ranaldo (2017). INSOWN is the percentage of shares outstanding owned by institutional investors prior to the quarterly earnings announcements. RVOLAT is the volatility of residuals from the 12-month regression of a firm's daily returns on the market (S&P 500) returns ending in the announcement month. PRCCM is the closing share price of pre-earnings announcement month; individual control variables have also been included in the regression model. T-statistics robust to heteroscedasticity and clustered by firm and time are reported in the square brackets; *, **, and *** denote significance levels at 10%, 5%, and 1%, respectively.

Table 9: Level of Disagreement

$$CAR_{60} = \alpha_0 + \beta_1 UE + \beta_2 UE * SA + \beta_3 UE * DISAGREE + \beta_4 UE * SA * DISAGREE + \beta_5 UE * NEWS + \beta_6 UE * LNUM + \beta_7 UE * SIZE + \beta_8 UE * VOL + \beta_9 UE * CHL + \beta_{10} UE * INSOWN + \beta_{11} UE * PRCCM + \beta_{12} UE * RVOLAT + \sum \beta_k \, Control\,Variable_k + \varepsilon$$

VARIABLES	CAR
UE	6.850***
	[2.753]
SA	-0.138*
	[-1.945]
DISAGREE	-15.095
	[-1.397]
UE*SA	-1.039*
	[-1.920]
UE* DISAGREE	-30.119
	[-1.356]
SA*DISAGREE	1.395
	[0.436]
UE*SA*DISAGREE	22.125***
	[2.616]
NEWS	0.002***
	[3.581]
UE*NEWS	-0.001
	[-0.254]
LNUM	-0.090
	[-0.794]
UE*LNUM	-0.140
	[-0.387]
SIZE	0.051***
	[4.891]
UE*SIZE	-0.078
	[-0.597]
VOL	-0.380***
	[-4.217]
UE*VOL	1.685
	[1.379]
CHL	2.568***
	[6.288]
UE*CHL	-1.089***
	[-2.697]
INSOWN	2.861***
	[6.889]
UE*INSOWN	-4.563*
	[-1.945]
PRCCM	0.002
	[0.616]
UE*PRCCM	0.280*
	[1.815]
RVOLAT	-0.193***
	[-4.890]
UE*RVOLAT	0.001
	[0.007]
CONSTANT	-1.484*
	[-1.777]
Observations	118,650
R-squared	0.009
Firm fixed effects	Yes
Time fixed effects	Yes

Adj. R-squared	0.008

Table 9 presents the moderating effect of Seeking Alpha comment disagreement on the relation between SA's coveage and Post earnings announcement drift. The sample contains 118,650 firm-quarter observations over the period 2006–2014. The dependent variable CAR, is defined as the 60-day cumulative daily abnormal returns over matched portfolio with similar size and Book-to-Market ratio of the prior year; UE is calculated using the difference between actual earnings per share and the median of analysts' earnings forecasts prior to the quarterly earnings announcements; DISAGREE is the Negative word proportion in comments of SA articles released a quarter before the quarterly earnings announcement date; SA is the number of single-ticker Seeking Alpha articles for the firm 90 days before the quarterly earnings announcement date; NEWS is the number of Ravenpack Analytics firm-specific news articles with highest relevance level for a firm 90 days before the quarterly earnings announcement date; LNUM is the natural log of 1 plus the number of analyst coverage for a firm prior to the quarterly earnings announcements; SIZE is defined as the closing market capitalization in the pre-earnings announcement quarter; VOL is calculated using price times the number of traded shares in the month prior to the earnings annoucement; and CHL is the bid–ask spread based on daily close, high, and low prices following Abdi and Ranaldo (2017). INSOWN is the percentage of shares outstanding owned by institutional investors prior to the quarterly earnings announcements. RVOLAT is the volatility of residuals from the 12-month regression of a firm's daily returns on the market (S&P 500) returns ending in the announcement month. PRCCM is the closing share price of pre-earnings announcement month; individual control variables have also been included in the regression model. T-statistics robust to heteroscedasticity and clustered by firm and time are reported in the square brackets; *, **, and *** denote significance levels at 10%, 5%, and 1%, respectively.

Table 10: Alternative measures

$$CAR_{60} = \alpha_0 + \beta_1 UE + \beta_2 UE * SA + \beta_3 UE * NEWS + \beta_4 UE * LNUM + \beta_5 UE * SIZE + \beta_6 UE * VOL + \beta_7 UE * CHL + \beta_8 UE * INSOWN + \beta_9 UE * PRCCM + \beta_{10} UE * RVOLAT + \sum \beta_k \, Control Variable_k + \varepsilon$$

VARIABLES	(1) Residual_SA	(2) Comments	(3) FF5F-CAR
UE	6.697***	6.467***	0.272***
	[2.634]	[2.596]	[2.748]
SA	-0.135**	-0.001	-0.003***
	[-2.174]	[-1.499]	[-2.831]
UE*SA	-0.570*	-0.005*	-0.007**
	[-1.912]	[-1.720]	[-1.977]
NEWS	0.002***	0.002***	0.000
	[2.898]	[2.981]	[0.323]
UE*NEWS	-0.004	-0.002	-0.000
	[-0.669]	[-0.488]	[-0.869]
LNUM	-0.099	-0.087	-0.002
	[-0.852]	[-0.769]	[-0.549]
UE*LNUM	-0.163	-0.271	-0.012
	[-0.444]	[-0.723]	[-0.801]
SIZE	0.049***	0.051***	0.001***
	[4.847]	[5.001]	[3.161]
UE*SIZE	-0.134	0.046	-0.002
	[-0.672]	[0.560]	[-0.758]
VOL	-0.434***	-0.457***	-0.002
	[-4.824]	[-5.002]	[-1.494]
UE*VOL	1.646	0.402	0.032
	[1.069]	[0.550]	[1.318]
CHL	2.581***	2.585***	0.066***
	[6.285]	[6.293]	[5.442]
UE*CHL	-1.077***	-1.102***	-0.052***
	[-2.679]	[-2.700]	[-3.197]
INSOWN	2.990***	3.019***	0.043***
	[7.266]	[7.333]	[5.426]
UE*INSOWN	-4.837**	-4.679*	-0.069
	[-2.032]	[-1.937]	[-1.208]
PRCCM	0.002	0.002	0.000
	[0.642]	[0.610]	[0.399]
UE*PRCCM	0.299*	0.315*	-0.000
	[1.825]	[1.940]	[-0.088]
RVOLAT	-0.202***	-0.201***	-0.004***
	[-5.119]	[-5.147]	[-4.698]
UE*RVOLAT	0.009	0.023	-0.002
	[0.091]	[0.230]	[-0.785]
CONSTANT	-1.434*	-1.481*	-0.018
	[-1.729]	[-1.782]	[-1.059]
Observations	118,650	118,650	118,650
Firm fixed effects	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes
Adj. R-squared	0.008	0.008	0.007

Table 10 replicates the baseline results using several alternative measures. The sample contains 118,650 firm-quarter observations over the period 2006–2014. The dependent variable CAR in column (1) and (2), is defined as the 60-day cumulative daily abnormal returns over matched portfolio with similar size and Book-to-Market ratio of the prior year; UE is calculated using the difference

between actual earnings per share and the median of analysts' earnings forecasts prior to the quarterly earnings announcements; SA is the number of single-ticker Seeking Alpha articles for the firm 90 days before the quarterly earnings announcement date; NEWS is the number of Ravenpack Analytics firm-specific news articles with highest relevance level for a firm 90 days before the quarterly earnings announcement date; LNUM is the natural log of 1 plus the number of analyst coverage for a firm prior to the quarterly earnings announcements; SIZE is defined as the closing market capitalization in the pre-earnings announcement quarter; VOL is calculated using price times the number of traded shares in the month prior to the earnings annoucement; and CHL is the bid–ask spread based on daily close, high, and low prices following Abdi and Ranaldo (2017). INSOWN is the percentage of shares outstanding owned by institutional investors prior to the quarterly earnings announcements. RVOLAT is the volatility of residuals from the 12-month regression of a firm's daily returns on the market (S&P 500) returns ending in the announcement month. PRCCM is the closing share price of pre-earnings announcement month; individual control variables have also been included in the regression model. In column (1), the alternative SA meauser ABN_SA is calculated as the difference between SA coveargе and a predicted SA coverage, which is obtained by regressing SA coverage on all the non-interaction terms among controlling variables in the baseline model. In column (2), the SA coverage is replaced by a comment measure which aggregates the number of comments under each article. In column (3), the dependent variable FF5F-CAR is the Fama-French five factor risk adjusted return. T-statistics robust to heteroscedasticity and clustered by firm and time are reported in the square brackets; *, **, and *** denote significance levels at 10%, 5%, and 1%, respectively.

Table 11: Positive and negative CAR

$$CAR_{60} = \alpha_0 + \beta_1 UE + \beta_2 UE * SA + \beta_3 UE * NEWS + \beta_4 UE * LNUM + \beta_5 UE * SIZE + \beta_6 UE * VOL + \beta_7 UE * CHL + \beta_8 UE * INSOWN + \beta_9 UE * PRCCM + \beta_{10} UE * RVOLAT + \sum \beta_k \, ControlVariable_k + \varepsilon$$

News	Positive UE	Negative UE
UE	-38.185***	7.096***
	[-3.491]	[2.695]
SA	-0.064	-0.204**
	[-0.861]	[-2.234]
UE*SA	-0.277	-0.595**
	[-0.231]	[-2.003]
NEWS	0.002**	0.002***
	[2.548]	[2.785]
UE*NEWS	-0.037	-0.001
	[-1.399]	[-0.304]
LNUM	-0.851***	0.584***
	[-6.865]	[3.696]
UE*LNUM	0.071	0.213
	[0.035]	[0.572]
SIZE	0.029**	0.074***
	[2.457]	[4.889]
UE*SIZE	-0.080	-0.134
	[-0.155]	[-0.614]
VOL	-0.245**	-0.528***
	[-2.407]	[-3.906]
UE*VOL	4.910	1.795
	[1.274]	[0.981]
CHL	1.409***	2.838***
	[3.459]	[6.279]
UE*CHL	7.240***	-1.304***
	[2.724]	[-2.862]
INSOWN	0.045	4.193***
	[0.097]	[7.235]
UE*INSOWN	20.849*	-5.339**
	[1.779]	[-2.279]
PRCCM	-0.012***	-0.001
	[-3.000]	[-0.228]
UE*PRCCM	-0.247	0.236
	[-0.763]	[1.591]
RVOLAT	-0.083*	-0.233***
	[-1.775]	[-4.131]
UE*RVOLAT	0.706*	-0.035
	[1.751]	[-0.343]
CONSTANT	4.950***	-5.954***
	[5.917]	[-5.894]
Observations	57,804	60,846
Firm fixed effects	Yes	Yes
Time fixed effects	Yes	Yes
Adj. R-squared	0.012	0.015

Table 11 presents the comparison of effect of Seeking Alpha coverage on the Post earnings announcement drift between positive and negative UE groups. The dependent variable CAR, is defined as the 60-day cumulative daily abnormal returns over matched portfolio with similar size and Book-to-Market ratio of the prior year; UE is calculated using the difference between actual earnings per share and the median of analysts' earnings forecasts prior to the quarterly earnings announcements; SA is the number of single-ticker Seeking Alpha articles for the firm 90 days before the quarterly earnings announcement date; NEWS is the number of

Ravenpack Analytics firm-specific news articles with highest relevance level for a firm 90 days before the quarterly earnings announcement date; LNUM is the natural log of 1 plus the number of analyst coverage for a firm prior to the quarterly earnings announcements; SIZE is defined as the closing market capitalization in the pre-earnings announcement quarter; VOL is calculated using price times the number of traded shares in the month prior to the earnings annoucement; and CHL is the bid–ask spread based on daily close, high, and low prices following Abdi and Ranaldo (2017). INSOWN is the percentage of shares outstanding owned by institutional investors prior to the quarterly earnings announcements. RVOLAT is the volatility of residuals from the 12-month regression of a firm’s daily returns on the market (S&P 500) returns ending in the announcement month. PRCCM is the closing share price of pre-earnings announcement month; individual control variables have also been included in the regression model. T-statistics robust to heteroscedasticity and clustered by firm and time are reported in the square brackets; *, **, and *** denote significance levels at 10%, 5%, and 1%, respectively.