

Are Investors Influenced by the Order of Information in Earnings Press Releases?¹

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February 2018

¹ We thank seminar participants at the Ohio State University, Syracuse University, the University of Hawaii, Indiana University, Carnegie Mellon University, the University of Colorado, the University of Texas-Austin, and the University of Illinois-Chicago for their helpful comments and suggestions.

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ABSTRACT: We examine the ordering of information within quarterly earnings announcements, and how that ordering influences investor response to those announcements. We find that managers appear to emphasize good news; on average, positive information is concentrated in the first section of the press release, rather than evenly dispersed. This emphasis does not appear to be driven by managerial incentives to manage perceptions. Instead, it appears to be informative: positive information is emphasized more when the expectations gap between the market and managers is positive (i.e., when the market is unduly pessimistic about future earnings). Investors respond to emphasized news – earnings-period returns increase with our measure of emphasis even after controlling for the earnings surprise and the aggregate news in the overall document – although that response is incomplete. Our collective evidence suggests that information placement conveys useful information to the market, and that investor response to information placement is warranted, rather than the result of an unintentional cognitive effect.

Keywords: earnings release, disclosure, order of information, underreaction

JEL Classification: G14, G41, M40

Data Availability: Data are available from the public sources cited in the text.

1. Introduction

After decades of accounting and finance research analyzing market reactions to earnings news, recent research has begun to analyze the tone and narrative structure of earnings announcements. One conclusion from this literature is that language matters – the tone (i.e., the excess of optimistic over pessimistic language) and opacity of the earnings announcement text is associated with future firm performance and with the market reaction to the earnings press release (e.g., Li 2008; Davis et al. 2012). In other words, managers’ language choices convey information beyond that captured by earnings, and investors respond accordingly.

In this paper, we study another aspect of managerial disclosure choice: the decision of what information to emphasize via placement within an earnings announcement. In particular, we ask two questions. First, does the placement of news within an earnings announcement reflect managerial efforts to inform or mislead investors? Second, do investors react appropriately to the news emphasized by managers?

Our study is motivated by the considerable discretion managers have in preparing earnings announcements, and the fact that managers may use this discretion for good or for ill. In the past, many managers used this discretion to emphasize performance measures that presented the firm in a favorable light; for example, by presenting EBITDA or pro forma earnings prominently while demoting the discussion of GAAP earnings until later in the earnings release (Bowen et al. 2005). The SEC’s concern about managers abusing this discretion led to Regulation G, which prohibits the presentation of non-GAAP measures in a way that gives them more prominence than GAAP earnings.²

² In particular, Regulation G requires SEC registrants using non-GAAP measures to provide “a presentation, with equal or greater prominence, of the most directly comparable financial measure calculated and presented in accordance with GAAP”. (<https://www.sec.gov/rules/final/33-8176.htm>)

While managers are no longer able to emphasize non-GAAP measures over their GAAP analogs, they continue to have significant discretion in what they emphasize in the more general language in their earnings announcements. As a consequence, managers can structure their earnings announcements in many different ways: they can choose to discuss positive news before negative news, discuss more important news before less important news, or discuss historical results before forward-looking results, etc. Our interest is in how the relative placement of positive information in earnings announcements influences investors, and whether it should.

We measure variation in information placement based on the extent to which positive information is concentrated in the earliest part of the earnings announcement, rather than being spread evenly throughout the document. Our definition is consistent with the SEC's view that items are more prominent when they are presented earlier in a document.³ Specifically, we use textual analysis to calculate the net tone of earnings announcements on a sentence-by-sentence basis, and then compare the tone of the earliest sentences to the tone of the sentences in the entire document. We describe earnings announcements as emphasizing positive information when the tone of the earliest portion is greater than the tone of the overall document (i.e., when positive information is concentrated in the earliest portion of the document). This approach allows us to test for the effect of disclosure information placement while holding the language of the document (the net tone) constant.⁴

We begin by noting that managers, on average, emphasize positive news: the first partition of an earnings press release is, on average, more positive than the overall document. We then

³ The SEC provides a number of examples that illustrate how a non-GAAP item would be made more prominent than its most directly comparable GAAP item. One example is, "A non-GAAP measure that precedes the most directly comparable GAAP measure". See <https://www.sec.gov/divisions/corpfin/guidance/nongaapinterp.htm> for other examples.

⁴ This does not necessarily mean that we control for the overall *information content* of the disclosure; managers may be conveying the relative importance of a particular news item via the relative placement of the item within a disclosure. In fact, one of our research questions is whether information placement *does* convey information content.

investigate the determinants of information placement, with the goal of assessing whether managers place information within a document opportunistically or whether managers use relative placement to inform investors. Based on several proxies for opportunism (e.g., a history of just meeting or beating expectations, the use of abnormally positive language throughout the document, and future restated financial statements), we find no evidence that managers emphasize good news for opportunistic purposes.

In contrast, we find consistent evidence that relative information placement conveys useful information. As expected (and as shown in prior research), the overall tone of the document is more positive when the firm's underlying performance is better. We show that this relation extends to the relative placement of positive language – when managers report good news or when investors are too pessimistic about future earnings, positive information tends to be more concentrated in early portions of the document than when managers report bad news or when investors are too optimistic about future earnings. (Again, this effect is incremental to the net tone of the overall document; our interest is in the *placement* of news holding constant the *inclusion* of that news in the disclosure.) We interpret this as evidence that information placement is primarily driven by the economics of the firm, rather than representing an opportunistic tendency to obfuscate bad news.

We next investigate whether investors act as if information placement reflects information content. We find that investors do indeed respond as if the placement of news conveys information – market reactions to earnings announcements are more positive when positive information is presented more prominently (i.e., earlier in the document), even after controlling for the earnings surprise and the net tone of the overall document. This association is consistent with investors

interpreting the placement of information as an indication of the importance of that information. In other words, investors place a greater weight on language that occurs earlier in the document.

Finally, we investigate whether investors overreact or underreact to information placement. To do so, we examine post-earnings returns (through the subsequent earnings announcement) to assess whether those returns are systematically correlated with the degree to which positive information is emphasized. We find that post-earnings returns are positively correlated with emphasized tone, just as post-earnings returns are positively correlated with the earnings surprise, the tone of the overall document, and the 3-day earnings period return. We interpret this result as evidence that investors do not overweight information located at the beginning of earnings announcements. Instead, the evidence is consistent with a more general *underreaction* to the information provided at the earnings announcement, whether that information is captured by the earnings surprise, the document's tone, the 3-day returns around the earnings announcement, or our variable of interest – the relative prominence of positive information within the document.

Taken together, our evidence suggests that the placement of information within earnings announcements conveys useful information to the market, and that investors respond to that information, albeit incompletely. Our study adds to the large body of literature related to the structure of financial disclosures, and the placement of information within those disclosures. In particular, our results speak to long-standing regulatory concerns that managers will systematically mislead investors by giving greater prominence to favorable news, while hiding bad news at the end of a disclosure. While we do find that investors are influenced by information placement, our results do not support those concerns. The investor response to emphasized information seems appropriate, given how managers choose to emphasize information in our sample; if anything, investors underreact to the news implicitly conveyed by information placement.

We emphasize three points. First, one of our results – that managers seem to be using information placement to convey a sense of information importance – is particularly noteworthy because of the legal flexibility managers have in choosing the order of their disclosures. Managers face litigation risk when they choose to make more positive statements in their earnings announcements (Rogers et al. 2011). However, conditional on the statements they choose to make, managers face very little litigation-based constraints in the ordering of those statements. The fact that managers seem to use their discretion to discuss the most important information first, rather than uniformly presenting the positive information first, suggests that they perceive some other cost (e.g., personal reputation) to engaging in a “focus on the good news first” disclosure policy.

Second, we emphasize a contrast between our study and prior experimental work that focuses on investor response to information placement, particular in terms of our study’s implications. Elliott (2006) performs an experiment in which subjects are given earnings announcements that vary in the emphasis of one particular piece of information – pro forma earnings. In that experiment, subjects respond more favorably to disclosures when those disclosures emphasize pro forma earnings relative to GAAP earnings, compared to disclosures emphasizing GAAP earnings relative to pro forma earnings. In other words, she finds, as we do, that information placement/emphasis influences investors. However, where Elliott concludes that her results are driven by unintentional cognitive effects (of the kind fueling regulators’ concerns), our empirical setting allows us to not only ask whether investors respond to emphasized information in practice, but also whether that that response is appropriate. By analyzing both investor and manager behavior, we conclude that investor response to emphasized information is *not* necessarily a sign of suboptimal information processing. Instead, our results point to an

equilibrium where investors act as if emphasized information is more important because managers use their discretion to emphasize more important information.

Third, and related to the prior point, our results do not necessarily imply that managers can manipulate investor response by increasing their emphasis on good news. Our results simply say that the current market equilibrium seems to be characterized by: (1) managers who place emphasis on information that warrants emphasis and (2) investors who respond as if managers act that way. If managers were to begin acting differently, by emphasizing positive information that did not warrant that emphasis, it's an open question whether investors would continue to respond to information placement in the way they currently do, or if they would recognize the change in managers' behavior and treat information placement as effectively uninformative cheap talk.

In the next section, we review relevant literature and develop our hypotheses. In Section 3, we discuss our sample selection and measurement. Section 4 describes our research design and presents our empirical results. We conclude our paper in Section 5.

2. Prior Research and Hypotheses Development

2.1. Prior Literature

Earnings press releases are major news events, and prior literature indicates that the information content of, and the number of words used in, earnings press releases has increased substantially over time (Francis et al. 2002; Landsman and Maydew 2002; Davis et al. 2012). For example, Francis et al. (2002) show that the number of words used in earnings press releases increased approximately five-fold between 1980 and 1999, while Davis et al. (2012) document that the median earnings press release length increased by more than 90 percent from 1998 to 2003.

These and other studies show that qualitative disclosure in earnings press releases convey

incremental information about firm performance, and that managers can use qualitative disclosure to influence analyst and investor perceptions of firm value. Specifically, Davis et al. (2012) find that the net tone (i.e., net optimistic language) in earnings press releases is positively associated with future return on assets (ROA) and that the tone is positively associated with the stock price reaction to the earnings announcement. They conclude that earnings press release language communicates credible information about expected future firm performance to the market and that the market responds to this information.

Earnings press releases and other financial reports allow for wide latitude in presenting qualitative information. When agency incentives are present, the narrative disclosures of earnings press releases could be used to mislead readers. Prior research finds evidence of opportunistic use of discretion in a variety of contexts. For example, managers are more likely discuss external factors when news is negative, and take credit for results when news is positive (Baginski et al. 2000). When comparing current results to prior period results, managers strategically choose the prior-period earnings amount representing the lowest benchmark (Schrand and Walther 2000).

Opportunistic disclosure behavior appears in the use of positive vs. negative language, as well. Tama-Sweet (2014) finds that, when litigation risk is low, managers increase optimism in the tone of an earnings press release prior to exercising options. Similarly, Davis and Tama-Sweet (2012) report more pessimistic tone in the MD&A than in the earnings press release when managers have strong incentives to report strategically. Investors can be misled by opportunistic tone; Huang et al. (2014) show that investors respond to abnormal tone (i.e., positive language not justified by the firm's economic circumstances), which leads to subsequent negative returns.⁵

⁵ While managers have significant discretion in choosing how they describe their firm's performance and outlook, class action securities lawsuits offer one possible constraint. Rogers et al. (2011) show that firms are more likely to be sued when their earnings announcements use more optimistic language. However, we are unaware of any evidence

Although a growing body of literature uses textual analysis to quantify the linguistic tone at the document level, the underlying narrative structure of a document's tone is largely unexamined. By focusing on the tone of the overall document, most studies implicitly assume that a positive statement made earlier in the disclosure carries the same weight as an equally positive statement later in the disclosure. Under this assumption, the decision of *what* to say is incredibly important, but the decision of what to say *first* is irrelevant.

There are a few exceptions, though, and our paper builds on those exceptions. Bowen et al. (2005) examine the level and relative emphasis that managers place on pro forma and GAAP earnings in earnings press releases. They find evidence that managers are deliberate in the metrics they emphasize, focusing on those metrics that are more value relevant and that present the firm's financial performance in a better light. Bowen et al. also find that investors respond to the emphasis, as if they perceive the emphasized metrics to be more important. In an experimental setting, Elliott (2006) shows that emphasizing pro forma earnings led nonprofessional investors' to assess earnings performance as higher. Importantly, Elliott notes that her results "suggest that the influence of pro forma emphasis is the result of an unintentional cognitive effect as opposed to the perceived informativeness of the earnings figure emphasized." (p. 115)

Since the enactment of Regulation G in 2002, firms no longer have the discretion to emphasize non-GAAP metrics in the manner studied by Bowen et al. (2005) and Elliott (2006). However, managers continue to have discretion over the qualitative language they use and, in particular, the statements they choose to emphasize via their location in the earnings announcement. To the best of our knowledge, only two recent papers have explored that discretion.

that, conditional on a statement being included in a disclosure, the *placement* of that statement influences a firm's litigation risk.

Huang et al. (2013) study what they call “headline salience”, calculated as the number of quantitative items in an earnings press release headline. They find that higher salience disclosures are associated with more profitable firms and tend to generate stronger earnings announcement responses. Huang et al. interpret their results as evidence that managers strategically emphasize positive financial information (by placing it in the headline), and that investors with limited attention overreact to that strategic disclosure.

Allee and Deangelis (2015) take a different approach, focusing on the tone of earnings conference calls. They argue that narrative structure reflects managers’ organization of interrelated ideas and helps users interpret and comprehend their message. Allee and Deangelis (2015) develop a parsimonious measure of narrative structure which they define as the degree to which tone is spread evenly throughout a disclosure versus being concentrated in a few sections of the disclosure. They find that their measure is significantly associated with firm performance and with managers’ financial reporting choices. Moreover, they find evidence that the measure is associated with managers’ incentives to manage perceptions. Overall, Allee and Deangelis (2015) conclude that managers deliberately structure tone as part of their overall narrative and that a tone word’s *placement*, in addition to its presence or absence, provides insight into the information content of the document.

Our study builds on the Bowen et al. (2005) and Elliott (2006) studies by examining, as they do, whether information placement influences how investors respond to earnings information. Whereas those papers focus on the relative placement of two specific items – pro forma earnings relative to GAAP earnings – we employ a broader measure of information placement based on the concentration of positive (or negative) information of all types in the early part of the disclosure. Our study complements Allee and Deangelis (2015), who also explore the structure of earnings

narratives (specifically, conference calls). The difference between the Allee and Deangelis (2015) study and our study is that Allee and Deangelis focus on uniform vs. clustered tone in disclosures, without regard to where those clusters occur. (As they note, their measure “does not capture other characteristics of narrative structure, such as the order in which managers discuss good and bad news” (p. 268)) Our study is directional, in that we expect information at the beginning of the document to be more heavily weighted than information at the end of the document. Our notion of information placement and emphasis also has a direct relation to the regulatory concerns that led to the passage of Regulation G (i.e., that managers were using discretion to emphasize favorable metrics early in their disclosures).

Our study can also be viewed as a qualitative extension of papers that investigate how managers classify quantitative earnings amounts within the Income Statement. For example, McVay (2006) examines whether managers manipulate the placement of items on the income statement, a setting where the overall information of the statement—net income—is unchanged by where the items are placed. She finds evidence that managers use classification shifting to manipulate their “core” earnings in order to meet analysts’ expectations. Our study is similar in that we are holding constant the overall language of the document, and investigating how the structure of that document influences investor response.

2.2. Hypothesis Development

We first ask whether the location of news affects investors’ responses to an earnings announcement. On one hand, investors could assume that managers adopt the inverted pyramid approach from journalism, where the most important information is presented first, whether that

information is positive or negative.⁶ If managers adopt this approach, a positive statement presented earlier in the document should receive greater weight than an equally positive statement later in the document. To illustrate, if a firm has a large segment and a small segment, the inverted pyramid approach would mean discussing the results and outlook of the larger segment first. Positive language about that segment would receive greater weight from investors because that positive language applies to a larger proportion of the firm's overall value.

On the other hand, investors could assume that managers are simply adopting a "good news first" policy. If there are no regulatory or other constraints (e.g., litigation risk or reputational concerns) to discussing positive news first, investors could assume that managers will always choose to discuss positive news first, regardless of whether that news deserves more weight. The empirical results in Huang et al. (2013) suggest that managers are engaging in this type of strategic disclosure, and that such concern would be warranted. In effect, investors would place no extra weight on the more prominently-presented information because they don't view that emphasis as credible. (See, for example, Stocken (2000) and Sobel (1985).)

We state our first hypothesis in alternative form below, where we use emphasized tone as our measure of information emphasis/placement.

H1: Investors respond to emphasized tone, controlling for the net tone of the entire earnings press release.

We next ask a related question, based on the same arguments. Regardless of how investors perceive emphasized tone, does emphasized tone actually convey incremental information to investors? Our second hypothesis is:

⁶ Hutton et al. (2003) take the inverted pyramid view in collecting a sample of management earnings forecasts. They retain only those forecasts reported in the title or the header of the article, or the first two paragraphs based on the idea that forecasts not meeting that criteria are not the primary focus of the disclosure. Further discussion of the inverted pyramid can be found at <https://owl.english.purdue.edu/owl/resource/735/04/>.

H2: Earnings announcement emphasized tone conveys information about the firm's economics incremental to the net tone of the overall document.

Our third hypothesis links the first and second hypothesis. In effect, we ask whether the investor response (to the extent it exists) is warranted by the information content (to the extent it exists). Investors may suffer from limited attention or other information processing limitations (Hirshleifer and Teoh 2003; Elliott 2006). If so, investors may put more weight on emphasized tone or even overreact to emphasized tone. Alternatively, they may underreact to information in emphasized tone in the same way that investors appear to underreact to earnings news in general (i.e., the post-earnings announcement drift), particularly if they don't find the emphasis credible.

We present our third hypothesis in the null form:

H3: Investors neither under or overreact to emphasized tone.

3. Sample Selection and Variable Measurement

3.1. Sample Selection

We collect quarterly earnings announcements (as filed via 8-Ks) from the SEC EDGAR database for the sample period 2005-2012. We start with the population of 8-Ks that are identified as "Results of Operations" and that are filed within a window starting one day before and ending four days after the quarterly earnings release dates reported on Compustat (i.e., a [-1, +4] window). To ensure that the investor response we observe is due solely to the earnings announcement, we keep only those observations with a single 8-K filing within the [-1, +4] window.

We next use a Perl program to break earnings announcements into sentences and analyze the earnings announcements at the sentence-level.⁷ Specifically, following Loughran and McDonald (2011), we compute the number of negative and positive keywords for each sentence.

⁷ We use the `Lingua::EN::Sentence` module in Perl to split earnings press releases into sentences.

(We note that our results are similar if we follow Henry (2008) in determining positive and negative words.) Following prior studies (e.g., Li 2008; Lang and Stice-Lawrence 2015), we remove all tables and sentences that contain less than 50% alphabetic characters or consist of fewer than 50 alphabetic characters. We also exclude the first three lines in the regulatory filing as well as lines with more than 40% of alphabetic characters capitalized because these lines are typically company or page headings.⁸ To ensure the quality of our data, we also test the algorithm on a separate random sample of 100 observations and manually examine parsed sentences to make sure we only keep legitimate sentences from earnings announcements. Next, for each sentence in an earnings announcement, we generate a sentence sequence number that indicates the position of the sentence in the earnings announcement. Finally, we eliminate any earnings press release with fewer than 20 sentences because it is difficult to measure differences in the placement of tone in such a short earnings release.

Table 1 shows the sample population of 62,545 earnings announcements with required variables available from 2005-2012. As shown in Table 1, the yearly distribution of earnings announcement is relatively even throughout the sample period. Table 2 shows the characteristics of the firms and earnings announcements in our sample. On average, each earnings press release has about 77 sentences (*Document Length*). The average 3-day return around an earnings announcement (*EA Returns*) is 0.17%, while post earnings announcement returns (*Post-EA Returns*) is 1.62% on average. For firm characteristics, the average market-to-book (*MTB*) ratio is 2.79, and 23.4% of the earnings announcements report a loss (*Loss Ind*). Finally, the mean

⁸ Press releases commonly begin with a headline and bullet point sentences, and we treat those headlines and bullet points as regular sentences. That is, we do not exclude these sentences. For a sample of press releases, we manually verified that our list of sentences includes the headline and any bullet points at the head of the release.

(median) pre-earnings expectation gap (*Pre-Earnings Expectation Gap*) is -0.34% (0.00%), while the earnings surprise (*Earnings Surprise*) has a mean (median) of -0.09% (0.05%).

3.2. *Measuring Emphasized Tone*

We measure the tone of *each sentence* by counting the number of positive words, subtracting the number of negative words, and scaling by the total number of words in the sentence. We label that measure as net sentence tone. To measure tone emphasis, we first partition each earnings press release into N partitions. For example, for a 75-sentence document broken down into three partitions, the tone of the first partition would be taken from the document's first 25 sentences, the tone of the second partition would be taken from sentences 26-50, and the tone of the third partition would be taken from sentences 51-75. For our main analyses, we compute emphasized tone and present the results based on earnings announcements split into five partitions.⁹

We calculate emphasized tone as the net tone of the first partition minus the net tone of the overall document. If good news is concentrated in the early (later) part of the earnings press release, emphasized tone will be positive (negative). Figure 1 shows how these positive and negative words are distributed throughout the average document, based on five partitions. The top line illustrates how tone words (whether positive or negative) are distributed. This line shows that tone words are used in about the same amount over the first, second, and third quintiles, then drop in the last two quintiles. In other words, there doesn't appear to be an obvious concentration of tone words in the first quintile.

⁹ Because it isn't obvious where to draw the line between the "early" portion of the announcement and the remainder, we calculate emphasized tone using partitions of N=3, 4, and 5. Our results are consistent across all partition choices. See Section 5.5 Additional Analyses and Robustness Tests for more discussion.

That interpretation differs when separately measuring positive and negative words. Positive words (dashed line) are used more frequently in the first quintile, then decline markedly over the remaining partitions. Negative words (dotted line) follow the opposite pattern, appearing less frequently in the first quintile, and then showing up more often later in the document. The effect of this pattern is that, even though tone words are used fairly evenly through the first three quintiles, the net tone of the document declines significantly from beginning to end. This effect is shown in Figure 2, which shows net tone by partition based on three partitions (solid line), four partitions (dashed line), and five partitions (dotted line). In each case, we document a monotonic decrease in net tone from the first partition to each subsequent partition.

Table 2 Panel B shows the summary statistics that underlie Figure 2. As illustrated in the graph, the earliest part of the earnings announcement tends to be the most optimistic in tone, while the remainder of the document exhibits decreasingly optimistic language. For example, when we split the document into 3 partitions, the first partition, the second partition, and third partition have net tone of 0.33%, 0.04%, and -0.67%, respectively. This preliminary evidence is suggestive of the concerns that drove the SEC to pass Reg G – that firms would choose to emphasize the most positive information by discussing it first.

4. Research Design and Empirical Results

4.1. Descriptive Statistics

Table 3 presents Pearson correlations of main variables. We find that an emphasis on good news at the beginning of the press release (*Emphasized Tone*) is positively correlated with both the 3-day return around an earnings announcement (*EA Returns*) and the pre-earnings expectation gap (*Pre-Earnings Expectation Gap*), which offers some univariate support for our Hypotheses 1

and 2. In addition, *Emphasized Tone* is positively correlated with post earnings announcement returns (*Post-EA Returns*). Finally, *Emphasized Tone* is also positively correlated with both *Net Document Tone* (0.03) and *Tone Dispersion* (0.05).

Before presenting our main results, we provide some descriptive information about how emphasized tone relates to other earnings announcement characteristics. This information is presented in Table 4. The three rows of Panel A show the autocorrelation of emphasized tone, net document tone, and document length from one quarter's earnings announcement to the next. Not surprisingly, each variable exhibits strong autocorrelation; document length has the strongest autocorrelation (0.87), followed by net document tone (0.76) while emphasized tone has the weakest (0.50). We interpret those relative values as evidence that managers exhibit greater discretion in what they choose to emphasize from one period to the next, compared to how they vary the length or overall tone of the disclosure from one quarter to the next.

To gain further insight about the extent of managerial discretion involved in each of these disclosure attributes, we next regress each disclosure attribute on a variety of fixed effects. Our assumption here is that if disclosure attributes are largely explained by those fixed effects, then the manager is unlikely to be exhibiting significant discretion each period when constructing the earnings announcement.

The results of these regressions are shown in Panel B of Table 4. Each cell of Panel B shows the R^2 value from regressing a particular disclosure attribute on the identified fixed effects. The fixed effects we use are firm level, industry, calendar quarter, and industry/calendar quarter. We draw several inferences from this table. First, echoing the autocorrelation results earlier, firm fixed effects explain a significant amount of variation in each of the disclosure attributes; firms tend to disclose in similar ways from period to period. The most prominent example is disclosure length,

with an R^2 of 0.774, which is consistent with firms starting with a similar earnings announcement template each period and simply updating the contents of that template accordingly.

Second, industry/calendar quarter fixed effects also explain a meaningful amount of variation in each disclosure attribute. Because firms within an industry in the same period face similar economic circumstances (and potentially similar investor and analyst demand for information), it's not surprising that they would disclose in similar ways. Third, and most relevant to our study, is that *Emphasized Tone* is the disclosure attribute that is least explained by the various fixed effects. We view this as supporting evidence for our claim that managers have significant flexibility in how they choose to sequence the information in their earnings announcements.

4.2. Investors' Response to Information Placement

To test Hypothesis 1 and investigate whether investors respond to the placement of information, we perform the following regression:

$$\begin{aligned}
 EA\ Returns = & \alpha_0 + \alpha_1 Earnings\ Surprise + \alpha_2 Negative\ Earnings\ Surprise + \alpha_3 Net\ Document\ Tone \\
 & + \alpha_4 Emphasized\ Tone + \alpha_5 Tone\ Dispersion + \alpha_6 Market\ Value \\
 & + \alpha_7 Earnings\ Surprise * Market\ Value + \alpha_8 Earnings\ Volatility \\
 & + \alpha_9 Earnings\ Surprise * Earnings\ Volatility + \alpha_{10} Market\text{-}to\text{-}Book \\
 & + \alpha_{11} Earnings\ Surprise * Market\text{-}to\text{-}Book + \varepsilon
 \end{aligned} \tag{1}$$

The dependent variable is 3-day earnings announcement returns (*EA Returns*). The independent variable of interest is *Emphasized Tone*, which is defined as the net tone of the first partition minus the net tone of the overall document. We control for *Net Document Tone* as well as *Tone Dispersion* (defined as the standard deviation of sentence-level tone in the document).¹⁰

We also control for *Earnings Surprise*, *Negative Earnings Surprise*, *Market Value*, *Earnings*

¹⁰ Note that the "Tone Dispersion" variable in Allee and Deangelis (2015) is defined differently from our variable. In their paper, tone dispersion is the difference between the clustering of positive words and the clustering of negative words. Our variable reflects how much signed tone varies at the sentence level.

Volatility, and *Market-to-Book*. In addition, because ERCs vary as a function of risk and earnings persistence, we further allow *Earnings Surprise* to interact with *Market Value*, *Earnings Volatility*, and *Market-to-Book*. If information placement affects investor response to the earnings announcement, we expect α_4 to be positive and significant. All of our analyses control for calendar quarter fixed effects, and standard errors are clustered by firm.

We present the results of our first hypothesis test in Table 5. Columns (1) and (2) report estimations of Model (1). The dependent variable is 3-day earnings announcement returns. As expected, we find a positive association between the net tone of the earnings press release (*Net Document Tone*) and 3-day Earnings Announcement returns (*EA Returns*) after controlling for the earnings surprise (*Earnings Surprise*) and negative earnings surprise (*Negative Earnings Surprise*), consistent with the results in Davis et al. (2012).

With regard to our hypothesis, we find a significant positive coefficient on *Emphasized Tone*, in both the simple model in column 1 and the full model in column 2. To provide a sense of economic magnitude, we standardize each variable and report the results of the standardized regression in column 3. Here, we see that a one-standard deviation increase in *Emphasized Tone* increases earnings announcement returns by 0.4%. For comparison, a similarly-sized increase in *Net Document Tone* increases the announcement return by 0.7%. In other words, the effect of information placement is well over half the size of the effect of the disclosure's net positivity. These results indicate that, in addition to the overall tone of the earnings announcement, the placement or emphasis of information has a statistically and economically significant effect on investor interpretation of earnings announcements.

This outcome is consistent with prior research, both empirical and experimental, that shows investors respond more strongly to pro forma earnings when pro forma earnings are presented

more prominently than GAAP earnings (Bowen et al. 2005; Elliott 2006). Our next analysis speaks to whether that response is warranted.

4.3. Informativeness of Information Placement

We examine our second hypothesis, whether emphasized news conveys information to investors, in several ways. First, we conduct univariate analyses by comparing the emphasized tone in earnings announcements when current earnings reflect good news vs. bad news. Specifically, we split our sample into good and bad news earnings announcements based on three classifications of good vs. bad news: (i) whether earnings were positive, (ii) whether earnings beat analysts' expectations, and (iii) whether analysts' expectations for next quarter earnings are optimistic or pessimistic. If managers' emphasis reflects informative disclosure, we expect emphasized tone to differ depending on whether managers have good or bad news to disclose.

Figure 3 shows how emphasized tone differs across each of these subsamples. The first split (positive earnings vs. negative earnings) is most severe. The average emphasized tone for firms reporting positive earnings is about 0.616% compared to -0.079% for firms reporting losses. A similar pattern can be seen for the other splits, although to a lesser extent. Firms reporting positive earnings surprises relative to analysts' expectations have an average abnormal emphasized tone of 0.573% compared to 0.232% for firms missing analysts' estimates. Finally, when the (unobservable) expectations gap is positive (i.e., analysts are currently too pessimistic about *next* period's earnings), abnormal emphasized tone is 0.567%, while that number drops to 0.353% when analysts are currently too optimistic about next period's earnings.

Overall, positive information is more heavily concentrated in the beginning of an earnings announcement when underlying economic news is positive. And we emphasize that all of these

figures are conditional on the language in the overall document – this is not a reflection of *what* firms say in their earnings announcement (which is obviously driven by their economic circumstances), but how they arrange the language within the announcement.

We next examine the determinants of emphasized tone in a multivariate regression:

$$\begin{aligned}
 \textit{Emphasized Tone} = & \eta_0 + \eta_1 \textit{Pre-Earnings Expectation Gap} + \eta_2 \textit{Earnings Surprise} \\
 & + \eta_3 \textit{Negative ES Ind} + \eta_4 \textit{Loss Ind} + \eta_5 \textit{Future Restatement} + \eta_6 \textit{JMBE} \\
 & + \eta_7 \textit{High Earnings Ind} + \eta_8 \textit{Abnormal Tone Ind} + \eta_9 \textit{Litigation_Ind} + \\
 & \eta_{10} \textit{NonGaap_Diff} + \eta_{11} \textit{Market-to-Book} \\
 & + \eta_{12} \textit{Leverage} + \eta_{13} \textit{Net Document Tone} + \eta_{14} \textit{Tone Dispersion} + \varepsilon \quad (2)
 \end{aligned}$$

The dependent variable in Model (2) is *Emphasized Tone*, which is regressed on two groups of independent variables of interest. The first group contains “information variables” including the pre-earnings expectation gap (*Pre-Earnings Expectation Gap*), current period earnings surprise (*Earnings Surprise*), and indicator variables that reflect negative earnings surprises and negative earnings (*Negative ES Ind* and *Loss Ind*). If managers use their discretion to emphasize more important/relevant information, we expect *Emphasized Tone* to be correlated with these variables in the same way that we would expect the total document tone to be correlated with these variables: positive correlations with *Pre-Earnings Expectations Gap* and *Earnings Surprise*, negative correlations with the negative earnings surprise indicator (*Negative ES Ind*) and the loss indicator (*Loss Ind*).

The second group of independent variables consists of “managerial incentives variables”, which we use to capture managerial incentives to manipulate market perceptions. Since managerial incentives are not directly observable, we use proxies that prior studies have shown to be associated with the presence of managerial incentives to bias market perceptions upward or downward. We use the occurrence of a future restatement (*Future Restatement*) since it may suggest that current earnings are manipulated (Huang et al., 2014). Similarly, we use a just-meet-or-beat indicator

(*JMBE*) because managers may have manipulated earnings to just meet or beat the consensus analyst forecast. Prior research suggests that, when firms report unusually large earnings surprises, managers have incentives to ratchet down market expectations. Therefore, we include an indicator variable representing high earnings surprise (*High Earnings Ind*) (Allee and Deangelis, 2015). In addition, Huang et al. (2014) show that managers use abnormally positive language to mislead investors so we include an indicator variable for high abnormal tone (*Abnormal Tone Ind*). Finally, we control for litigation risk (*Litigation_Ind*), the difference between non-GAAP earnings and GAAP earnings (*NonGaap_Diff*), market-to-book ratio (*Market-to-Book*), leverage (*Leverage*), net document tone (*Net Document Tone*), and tone dispersion (*Tone Dispersion*).

We report the results of our determinants analysis in Table 6. As shown in Columns (1) - (3), we find emphasized tone is associated with our information variables in the predicted directions. For example, emphasized tone is positively associated with the pre-earnings expectation gap (*Pre-Earnings Expectation Gap*) and negatively associated with indicator variables that reflect negative earnings surprises and negative earnings (*Negative ES Ind* and *Loss Ind*).

In contrast, we find virtually no evidence that any of the four managerial incentives variables (i.e., *JMBE*, *High Earnings Ind*, and *Abnormal Tone Ind*) are associated with emphasized tone. For only one of the variables, *JMBE* (a history of meeting or beating expectations), is there any statistical significance. (And in that case, the sign of that coefficient is contrary to the conjecture that emphasized tone is associated with managerial incentives to manipulate perceptions.) Overall, the evidence in Figure 3 and Table 6 suggests that managers use emphasized tone to convey useful information and not to manipulate market perceptions.

4.4. Under/Over Reaction to Emphasized News

To test Hypothesis 3 and examine whether investors respond to emphasized news appropriately, we use post-earnings announcement returns to investigate whether investors over- or underreact to information emphasized by managers. On one hand, if investors face some type of cognitive limitation and put more weight on emphasized tone, they may overreact to emphasized tone. On the other hand, investors may underreact to information in emphasized tone in the same way that they appear to underreact to earnings news in general. If investors over- or underreact to emphasized tone, we expect that over- or under-reaction to correct itself in subsequent periods. We conduct this analysis using Model (3):

$$\begin{aligned} \text{Post-EA Returns} = & \theta_0 + \theta_1 \text{Earnings Surprise} + \theta_2 \text{EA Returns} + \theta_3 \text{Market Value} + \theta_4 \text{Market-to-Book} \\ & + \theta_5 \text{Earnings Volatility} + \theta_6 \text{Lag Returns} + \theta_7 \text{Lag Returns Volatility} \\ & + \theta_8 \text{Net Document Tone} + \theta_9 \text{Emphasized Tone} + \theta_{10} \text{Tone Dispersion} + \varepsilon \quad (3) \end{aligned}$$

In Model (3), the dependent variable is *Post-EA Returns*, i.e., the returns beginning on trading day +2 relative to the current earnings announcement, and ending on the first trading day after the subsequent earnings announcement. We control for the current period earnings surprise (*Earnings Surprise*), earnings announcement returns (*EA Returns*), market value (*Market Value*), market-to-book ratio (*Market-to-Book*), earnings volatility (*Earnings Volatility*), past period returns (*Lag Returns*), past period returns volatility (*Lag Returns Volatility*), net document tone (*Net Document Tone*), and tone dispersion (*Tone Dispersion*). The independent variable of interest is *Emphasized Tone*. If investors over (under) react to emphasized tone and correct themselves in subsequent periods, we expect θ_9 to be negative (positive).

Table 7 reports the results of regressing post-EA returns on emphasized tone and control variables using Model (3). Our regressions demonstrate the following insights. First, we find that post-earnings returns (*Post-EA Returns*) are positively associated with the current earnings surprise (*Earnings Surprise*) and the net tone of the entire current earnings announcement (*Net Document*

Tone). In short, investors generally underreact to the information provided at the earnings announcement, and these measures capture some aspect of that information.

Central to our research question, we find that emphasized tone (*Emphasized Tone*) is also positively associated with post-EA returns (*Post-EA Returns*). In column (3), we standardize each variable and report the results of the standardized regression to provide a sense of economic magnitude. We find that a one-standard deviation increase in *Emphasized Tone (Net Document Tone)* increases post-EA returns (*Post-EA Returns*) by 0.2% (0.5%), which is comparable to the results in Table 5 (EA Returns) in term of economic significance.

Overall, the results in Table 7 indicate that, similar to other measures of information conveyed by the earnings announcement, investors also underreact to emphasized tone. Our interpretation is that investors *in general* do not overreact to the information in the early part of the document. This finding should alleviate regulators' concern that investors place too much weight on the placement of information within a document.

4.5. Additional Analyses and Robustness Tests

We also conduct multiple additional analyses and robustness tests. First, we acknowledge that it is not obvious where to draw the line between the “early” portion of the earnings press release and the remainder. Therefore, to calculate emphasized tone, we employ different partitioning choices (i.e., N=3, 4, and 5) and report the summary statistics of net tone for the different partitions of the document in Table 2 Panel B. For our main analyses, we compute emphasized tone by partitioning earnings announcement into five partitions. In untabulated results, we find that all of our results are qualitatively similar if we compute emphasized tone by partitioning earnings announcement into three or four partitions. Second, we conduct additional

analyses following Henry (2008) in determining positive and negative words. We find that our results are very similar if we use this alternative tone words dictionary. Third, Huang et al. (2014) show that investors respond to abnormal tone, defined as residual tone after controlling for economic determinants of tone. All of our results are qualitatively similar if we control for abnormal tone. Fourth, all of our results are robust if we use market adjusted stock returns.

Finally, we control for the presence of forward-looking statements in our sample of earnings press releases. Bozanic et al. (2017) show that the market reaction to earnings press releases increases in the amount of forward-looking statements (sentences containing forward-looking words such as “target”, “predict” or “expect”) contained in the press release. If managers choose to emphasize forward-looking disclosures in press releases, our proxy for information placement could be confounded by the type of information being presented. We define a variable (*Document FLS*) as the number of forward-looking words in the press release scaled by total words in the press release. Untabulated results show that, consistent with Bozanic et al. (2017), more forward-looking content is associated with greater, absolute earnings announcement returns. More importantly, controlling for forward-looking statements does not change the relation between announcement returns and *Emphasized Tone* which continues to be positive and significant. Thus, our results are robust to controlling for the extent of forward-looking information in the document.

5. Conclusion

In this paper, we examine how the placement of information within earnings announcements affects investor response to those earnings announcements. Our study takes into account the fact that managers have significant discretion over relative emphasis on various items within the earnings announcement, and that managerial choices will inherently be interrelated with

investor response. Specifically, we examine whether managers emphasize good news by placing it early in an earnings press release and whether this emphasis misleads or informs investors. We define a measure of news placement (“emphasized” tone) as the net tone of the first partition of the document minus the net tone of the overall document and examine whether emphasized tone affects investor response to the announcement.

First, we find that managers, on average, emphasize good news: the tone of earlier sections of the release is more positive than the tone of the overall document. Second, we find that investors respond to news that is emphasized by being placed early in a document: earnings announcement returns are positively associated with emphasized tone, even after controlling for the tone of the entire document. We then show that managers’ placement choices convey useful information about firms’ future performance. Specifically, we find that emphasized tone is more positive (negative) when the document reports positive (negative) earnings, a positive (a negative) earnings surprise, or when the expectations gap between the market and managers (proxied by the next quarter’s analyst forecast error) is positive (negative).

These results suggest that, on average, managers use their discretion to emphasize information based on how important or relevant that information is, rather than whether that information conveys good or bad news. Finally, our results indicate that investors underreact (not overreact) to information emphasized by managers. Taken together, our evidence suggests that managers use information placement to convey useful information to the market and that investors do not inappropriately overweight that emphasized information.

While our results suggest that investors are not misled by managers’ information placement (a common concern of regulators), they also suggest that investors do not fully understand the implications of managers’ placement of information within earnings press releases. Future

research can investigate determinants of this underreaction (for example, it may be due to limited attention of the type in Hirshleifer and Teoh 2003). Another area of interest is the type of information emphasized by managers. While historical earnings news is the primary focus of earnings press releases, these documents also contain forward-looking information and a mix of quantitative and qualitative measures. Whether the choice of historical versus forward-looking information or quantitative versus qualitative language affects investors is another area for future research.

References

- Allee, K. D., and M. D. Deangelis. 2015. The Structure of Voluntary Disclosure Narratives: Evidence from Tone Dispersion. *Journal of Accounting Research* 53 (2):241-274.
- Baginski, S. P., J. M. Hassell, and W. A. Hillison. 2000. Voluntary Causal Disclosures: Tendencies and Capital Market Reaction. *Review of Quantitative Finance and Accounting* 15 (4):371-389.
- Bozanic, Z., D. T. Roulstone, and A. Van Buskirk. 2017. Management Earnings Forecasts and Other Forward-looking Statements. *Journal of Accounting and Economics*, Forthcoming.
- Bowen, R. M., A. K. Davis, and D. A. Matsumoto. 2005. Emphasis on Pro Forma versus GAAP Earnings in Quarterly Press Releases: Determinants, SEC Intervention, and Market Reactions. *The Accounting Review* 80 (4):1011-1038.
- Davis, A. K., J. M. Piger, and L. M. Sedor. 2012. Beyond the Numbers: Measuring the Information Content of Earnings Press Release Language. *Contemporary Accounting Research* 29 (3):845-868.
- Davis, A. K., and I. Tama-Sweet. 2012. Managers' Use of Language Across Alternative Disclosure Outlets: Earnings Press Releases versus MD&A. *Contemporary Accounting Research* 29 (3):804-837.
- Elliott, W. B. 2006. Are Investors Influenced by Pro Forma Emphasis and Reconciliations in Earnings Announcements? *The Accounting Review* 81 (1):113-133.
- Francis, J., K. Schipper, and L. Vincent. 2002. Expanded Disclosures and the Increased Usefulness of Earnings Announcements. *The Accounting Review* 77 (3):515-546.
- Henry, E. 2008. Are Investors Influenced by How Earnings Press Releases Are Written? *Journal of Business Communication* 45 (4): 363-407.
- Hirshleifer, D., and S. H. Teoh. 2003. Limited Attention, Information Disclosure, and Financial Reporting. *Journal of Accounting and Economics* 36 (1-3):337.
- Huang, X., A. Nekrasov, and S. H. Teoh. 2013. Headline Salience and Over- and Underreactions to Earnings. *SSRN eLibrary*.
- Huang, X., S. H. Teoh, and Y. Zhang. 2014. Tone Management. *The Accounting Review* 89 (3):1083-1113.
- Hutton, A. P., G. S. Miller, and D. J. Skinner. 2003. The Role of Supplementary Statements with Management Earnings Forecasts. *Journal of Accounting Research* 41 (5):867-890.
- Landsman, W. R., and E. L. Maydew. 2002. Has the Information Content of Quarterly Earnings Announcements Declined in the Past Three Decades? *Journal of Accounting Research* 40 (3):797-808.
- Lang, M., and L. Stice-Lawrence. 2015. Textual Analysis and International Financial Reporting: Large Sample Evidence. *Journal of Accounting and Economics* 60 (2-3):110-135.
- Li, F. 2008. Annual Report Readability, Current Earnings, and Earnings Persistence. *Journal of Accounting and Economics* 45 (2-3):221-247.
- Loughran, T., and B. McDonald. 2011. When Is a Liability Not a Liability? Textual Analysis, Dictionaries, and 10-Ks. *Journal of Finance* 66 (1):35-65.
- McVay, S. E. 2006. Earnings Management Using Classification Shifting: An Examination of Core Earnings and Special Items. *The Accounting Review* 81 (3):501-531.
- Rogers, J. L., A. Van Buskirk, and S. L. C. Zechman. 2011. Disclosure Tone and Shareholder Litigation. *The Accounting Review* 86:2155-2183.

- Schrand, C. M., and B. R. Walther. 2000. Strategic Benchmarks in Earnings Announcements: The Selective Disclosure of Prior-Period Earnings Components. *The Accounting Review* 75 (2):151-177.
- Sobel, J. 1985. A Theory of Credibility. *Review of Economics and Statistics* 52 (4):557-573.
- Stocken, P. C. 2000. Credibility of Voluntary Disclosure. *RAND Journal of Economics* 31 (2):359-374.
- Tama-Sweet, I. 2014. Changes in Earnings Announcement Tone and Insider Sales. *Advances in Accounting* 30 (2):276-282.

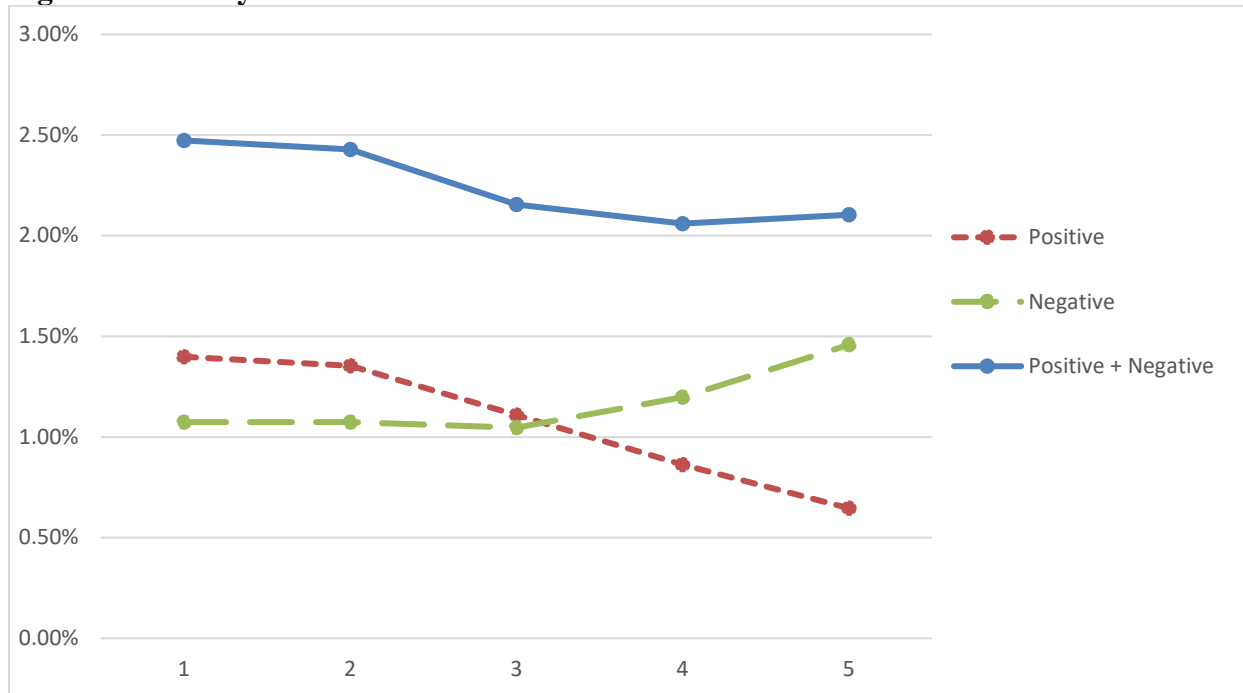
Appendix: Variable Definitions

Variable	Definition
<i>Abnormal Tone</i>	A measure of residual net tone of the earnings announcement that is not explained by the firm's economic circumstances following Huang et al. (2014).
<i>Abnormal Tone Ind</i>	An indicator variable set equal to 1 if the abnormal tone is in the highest decile of the calendar quarter, and 0 otherwise.
<i>Document Length</i>	The total number of sentences in the earnings announcement release.
<i>Document FLS</i>	The total number of forward-looking words scaled by the total number of words in the earnings announcement. The forward-looking words are computed following Bozanic, Roulstone, and Van Buskirk (2017).
<i>EA Returns</i>	3-day earnings announcement returns.
<i>Earnings Surprise</i>	Actual EPS less than IBES consensus (mean) expectations, deflated by the stock price two trading days prior to the earnings announcement.
<i>Earnings Volatility</i>	Standard deviation of quarterly earnings over the last 12 quarters.
<i>Emphasized Tone</i>	The net tone of the first of N partitions (N=3, 4, or 5) minus the net tone of the overall document, where net tone of the first partition is computed as the total number of positive words minus the total number of negative words in the first partition then scaled by the total number of words in the first partition. For our main analyses, we compute Emphasized Tone by partitioning earnings announcement into 5 partitions.
<i>Future Restatement</i>	An indicator variable set equal to 1 if the firm's quarterly or annual earnings is restated in the future periods, and 0 otherwise.
<i>High Earnings Ind</i>	An indicator variable set equal to 1 if the actual EPS less than consensus expectations is in the highest decile of the calendar quarter, and 0 otherwise.
<i>JMBE</i>	An indicator variable set equal to 1 if the firm just met or beat the consensus analyst forecast ($0 \leq (\text{actual} - \text{medest}) < 0.01$), and 0 otherwise.

Appendix: Variable Definitions (Continued)

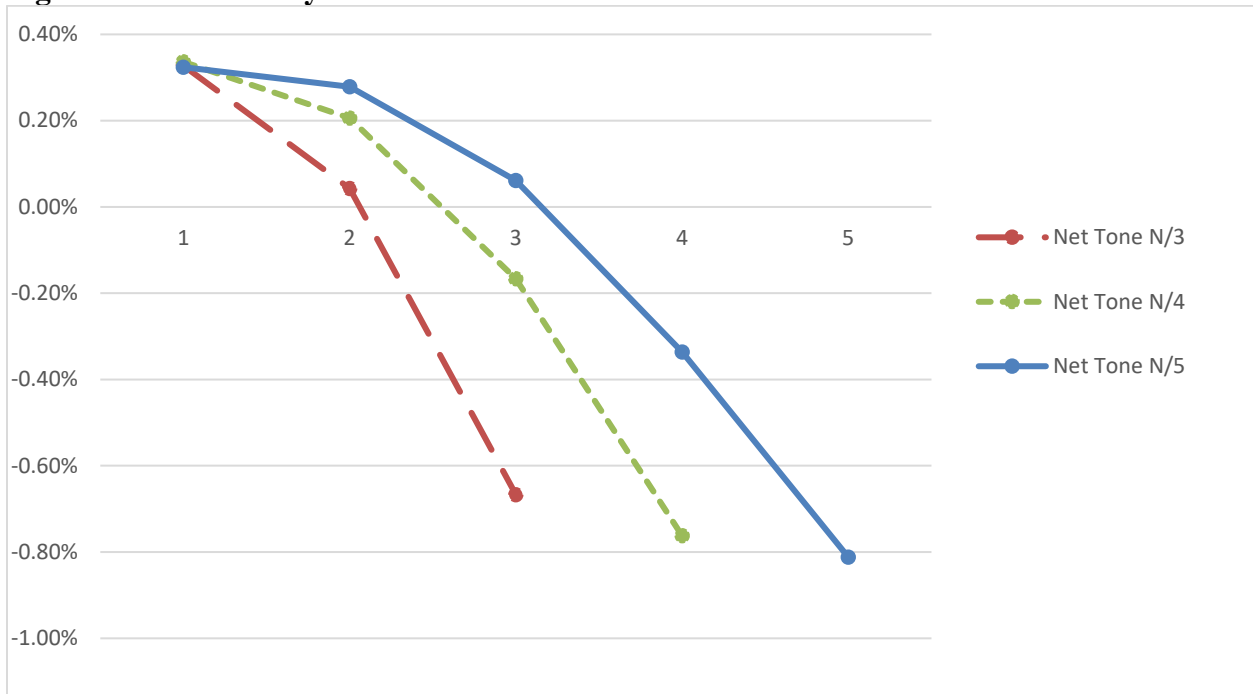
<i>Lag Returns</i>	The market returns of the firm in quarter t-1.
<i>Lag Returns Volatility</i>	The standard deviation of daily market returns of the firm in quarter t-1.
<i>Leverage</i>	Total liabilities divided by total assets.
<i>Litigation Ind</i>	An indicator variable set equal to 1 if the firm is in the biotech (SIC codes 2833-2836 and 8731-8734), computer (3570-3577 and 7370-7374), electronics (3600-3674), or retail (5200-5961) industry, and 0 otherwise.
<i>Loss Ind</i>	An indicator variable set equal to 1 if the quarterly earnings is negative, and 0 otherwise.
<i>Market Value</i>	The natural log of market value of the firm.
<i>Market-to-Book</i>	The market to book ratio, defined as market value of equity scaled by book value of equity.
<i>Negative Earnings Surprise</i>	Actual EPS less than IBES consensus (mean) expectations, deflated by the stock price two trading days prior to the earnings announcement. This variable is set to 0 if the earnings surprise is positive.
<i>Negative ES Ind</i>	An indicator variable set equal to 1 if the earnings surprise is negative, and 0 otherwise.
<i>Net Document Tone</i>	The total number of positive words minus the total number of negative words then scaled by the total number of words in the earnings announcement. The positive and negative words are computed following Loughran and McDonald (2011).
<i>NonGaap Diff</i>	The difference between non-GAAP earnings (Operating Income After Depreciation) and GAAP earnings (Net Income), scaled by total assets.
<i>Post-EA Returns</i>	The returns beginning on trading day +2 relative to the current earnings announcement, and ending on the first trading day after the subsequent earnings announcement.
<i>Pre-Earnings Expectations Gap</i>	The difference between period t+1 earnings and analysts' estimates of t+1 earnings, where the estimates are measured prior to the period t earnings announcement.
<i>Tone Dispersion</i>	The standard deviation of net sentence tone of the earnings announcement, where net sentence tone is computed as the number of positive words minus the number of negative words in the sentence then scaled by the total number of words in the sentence.

Figure 1: Tone by Partition Location



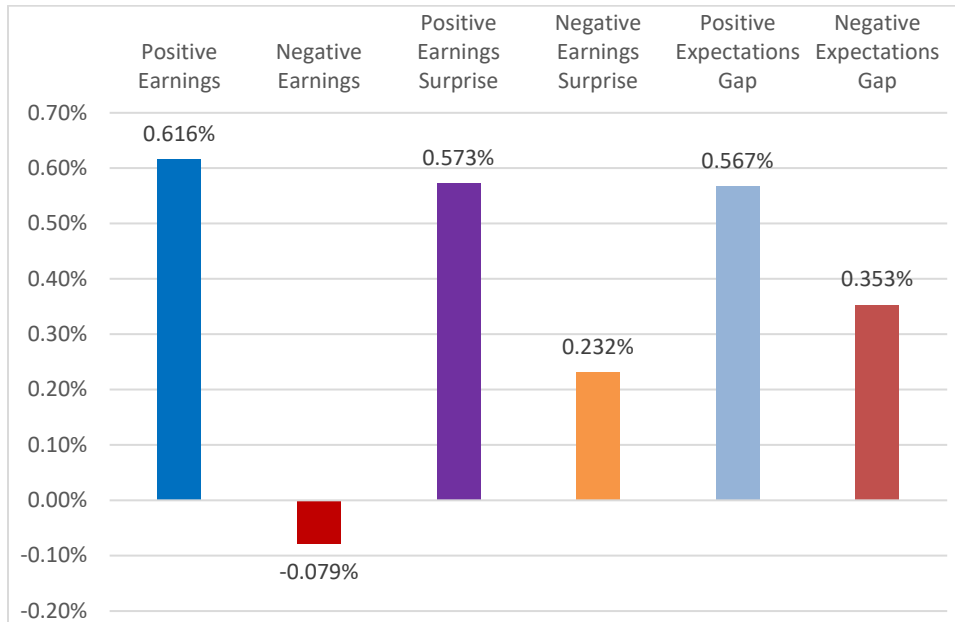
Note: Figure 1 illustrates summary statistics for positive, negative, and total tone across five partitions. Positive tone (negative tone; total tone) is positive word, scaled by total words in the partition (negative words, scaled by total words in the partition; the sum of positive and negative words, scaled by total words in the partition).

Figure 2 – Net Tone by Partition Location



Note: Figure 2 illustrates summary statistics for partition-level net tone based on 3 different partition choices: splitting the document into 3, 4, and 5 partitions. Net tone is positive words minus negative words, scaled by total words in the partition.

Figure 3 – Emphasized Tone by Nature of Earnings News



Note: Figure 3 compares emphasized tone between sub-samples of good vs. bad news earnings announcements based on three criteria: (i) whether earnings were positive, (ii) whether earnings beat analysts' expectations, and (iii) whether analysts' expectations for next quarter earnings are optimistic or pessimistic.

Table 1 – Sample Population by Year

Year	Observations
2005	7,506
2006	8,109
2007	8,071
2008	8,664
2009	6,287
2010	8,285
2011	7,880
2012	7,743
Total	62,545

Note: This table shows the distribution across years of the sample population of 62,545 earnings announcements with required data available from 2005-2012.

Table 2 – Summary Statistics
Panel A: Firm and Announcement Characteristics

Variable	N	25th Pctl	50th Pctl	75th Pctl	Mean	Std Dev
<i>EA Returns</i>	62,545	-4.22%	0.00%	4.50%	0.17%	9.43%
<i>Pre-Earnings Expectations Gap</i>	58,093	-0.35%	0.00%	0.24%	-0.34%	2.27%
<i>Post-EA Returns</i>	62,510	-10.14%	1.67%	12.93%	1.62%	23.90%
<i>Emphasized Tone</i>	62,545	-0.29%	0.47%	1.24%	0.45%	1.29%
<i>Net Document Tone</i>	62,545	-0.62%	-0.10%	0.39%	-0.13%	0.80%
<i>Tone Dispersion</i>	62,545	2.82%	3.44%	4.15%	3.54%	1.05%
<i>Abnormal Tone</i>	57,463	-0.45%	0.01%	0.47%	0.00%	0.73%
<i>Document Length</i>	62,545	48.000	67.000	94.000	77.116	43.992
<i>Earnings Surprise</i>	62,545	-0.10%	0.05%	0.25%	-0.09%	1.70%
<i>Negative Earnings Surprise</i>	62,545	-0.10%	0.00%	0.00%	-0.38%	1.47%
<i>Market Value</i>	62,545	5.687	6.756	7.932	6.849	1.664
<i>Earnings Volatility</i>	52,926	0.46%	1.02%	2.39%	2.21%	6.27%
<i>MTB</i>	62,545	1.265	2.009	3.353	2.790	3.760
<i>Litigation Ind</i>	62,545	0.000	0.000	1.000	0.283	0.451
<i>NonGaap Diff</i>	61,970	0.003	0.008	0.015	0.011	0.035
<i>Lag Returns</i>	62,545	-8.77%	1.90%	12.30%	2.66%	23.82%
<i>Lag Returns Volatility</i>	62,545	1.60%	2.24%	3.18%	2.64%	1.63%
<i>Negative ES Ind</i>	62,545	0.000	0.000	1.000	0.350	0.477
<i>Loss Ind</i>	62,545	0.000	0.000	0.000	0.234	0.423
<i>Future Restatement</i>	62,545	0.000	0.000	0.000	0.141	0.348
<i>JMBE</i>	62,545	0.000	0.000	0.000	0.123	0.329
<i>High Earnings Ind</i>	62,545	0.000	0.000	0.000	0.101	0.301
<i>Leverage</i>	62,537	0.350	0.541	0.729	0.553	0.290
<i>Document FLS</i>	62,545	0.40%	0.58%	0.80%	0.62%	0.32%

Table 2 – Summary Statistics (continued)
Panel B: Net Tone by Document Partition

Variable	N	Mean	25th Pctl	50th Pctl	75th Pctl	Std Dev
Net EA Tone - 1st 1/3	62,545	0.33%	-0.42%	0.36%	1.13%	1.31%
Net EA Tone - 2nd 1/3	62,545	0.04%	-0.67%	0.00%	0.74%	1.24%
Net EA Tone - 3rd 1/3	62,545	-0.67%	-1.25%	-0.55%	0.00%	1.10%
Net EA Tone - 1st 1/4	62,545	0.34%	-0.46%	0.37%	1.22%	1.45%
Net EA Tone - 2nd 1/4	62,545	0.21%	-0.60%	0.15%	1.00%	1.43%
Net EA Tone - 3rd 1/4	62,545	-0.17%	-0.87%	-0.12%	0.54%	1.32%
Net EA Tone - 4th 1/4	62,545	-0.76%	-1.39%	-0.61%	0.00%	1.24%
Net EA Tone - 1st 1/5	62,545	0.32%	-0.51%	0.36%	1.26%	1.55%
Net EA Tone - 2nd 1/5	62,545	0.28%	-0.60%	0.22%	1.16%	1.57%
Net EA Tone - 3rd 1/5	62,545	0.06%	-0.72%	0.00%	0.83%	1.47%
Net EA Tone - 4th 1/5	62,545	-0.34%	-1.04%	-0.26%	0.43%	1.39%
Net EA Tone - 5th 1/5	62,545	-0.81%	-1.48%	-0.62%	0.00%	1.38%

Note: This table provides summary statistics of the sample. Panel A shows firm and announcement characteristics. Panel A shows the summary statistics of net tone for the different partitions of the document. See the Appendix for variable definitions.

Table 3 – Correlations

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
<i>EA Returns (1)</i>	1.00																						
<i>Pre-Earnings Expectations Gap (2)</i>	<i>0.14</i>	1.00																					
<i>Post-EA Returns (3)</i>	<i>0.05</i>	<i>0.19</i>	1.00																				
<i>Emphasized Tone (4)</i>	<i>0.06</i>	<i>0.08</i>	<i>0.01</i>	1.00																			
<i>Net Document Tone (5)</i>	<i>0.07</i>	<i>0.13</i>	0.00	<i>0.03</i>	1.00																		
<i>Tone Dispersion (6)</i>	0.01	<i>-0.05</i>	<i>0.02</i>	<i>0.05</i>	<i>-0.20</i>	1.00																	
<i>Abnormal Tone (7)</i>	<i>0.04</i>	<i>0.03</i>	0.01	<i>-0.04</i>	<i>0.92</i>	<i>-0.13</i>	1.00																
<i>Document Length (8)</i>	0.00	<i>-0.02</i>	<i>0.01</i>	<i>0.11</i>	<i>-0.13</i>	<i>0.11</i>	<i>-0.10</i>	1.00															
<i>Earnings Surprise (9)</i>	<i>0.18</i>	<i>0.36</i>	<i>0.04</i>	<i>0.11</i>	<i>0.14</i>	<i>-0.05</i>	0.00	<i>-0.02</i>	1.00														
<i>Negative Earnings Surprise (10)</i>	<i>0.12</i>	<i>0.39</i>	<i>0.03</i>	<i>0.13</i>	<i>0.20</i>	<i>-0.09</i>	<i>0.02</i>	<i>-0.02</i>	<i>0.91</i>	1.00													
<i>Market Value (11)</i>	<i>0.01</i>	<i>0.17</i>	0.01	<i>0.18</i>	<i>0.11</i>	<i>-0.01</i>	0.00	<i>0.31</i>	<i>0.13</i>	<i>0.26</i>	1.00												
<i>Earnings Volatility (12)</i>	<i>-0.02</i>	<i>-0.03</i>	<i>0.02</i>	<i>-0.03</i>	<i>-0.03</i>	<i>-0.01</i>	-0.01	<i>-0.04</i>	<i>-0.02</i>	<i>-0.06</i>	<i>-0.12</i>	1.00											
<i>MTB (13)</i>	-0.02	0.06	-0.02	0.02	0.12	-0.08	0.03	-0.03	0.03	0.08	0.16	0.08	1.00										
<i>Litigation Ind (14)</i>	<i>-0.01</i>	<i>0.04</i>	0.00	<i>-0.04</i>	<i>0.07</i>	<i>-0.06</i>	<i>0.05</i>	<i>-0.13</i>	<i>0.04</i>	<i>0.03</i>	<i>-0.03</i>	<i>0.13</i>	<i>0.12</i>	1.00									
<i>NonGaap Diff (15)</i>	<i>-0.01</i>	<i>-0.02</i>	<i>0.01</i>	<i>-0.03</i>	<i>-0.03</i>	<i>0.01</i>	-0.01	<i>0.01</i>	<i>-0.14</i>	<i>-0.13</i>	<i>0.02</i>	<i>0.01</i>	<i>0.01</i>	<i>-0.02</i>	1.00								
<i>Lag Returns (16)</i>	<i>0.02</i>	<i>0.15</i>	<i>0.07</i>	<i>0.03</i>	<i>0.03</i>	<i>0.02</i>	0.01	-0.01	<i>0.08</i>	<i>0.09</i>	<i>0.07</i>	<i>0.02</i>	<i>0.04</i>	0.00	<i>-0.01</i>	1.00							
<i>Lag Returns Volatility (17)</i>	<i>0.01</i>	<i>-0.22</i>	0.00	<i>-0.13</i>	<i>-0.16</i>	<i>0.06</i>	<i>-0.01</i>	<i>-0.07</i>	<i>-0.15</i>	<i>-0.31</i>	<i>-0.43</i>	<i>0.15</i>	<i>-0.07</i>	<i>0.09</i>	<i>0.05</i>	<i>-0.03</i>	1.00						
<i>Negative ES Ind (18)</i>	<i>-0.26</i>	<i>-0.19</i>	<i>-0.04</i>	<i>-0.13</i>	<i>-0.15</i>	<i>0.02</i>	<i>-0.06</i>	<i>0.01</i>	<i>-0.43</i>	<i>-0.35</i>	<i>-0.13</i>	<i>0.02</i>	<i>-0.04</i>	<i>-0.07</i>	<i>0.02</i>	<i>-0.06</i>	<i>0.08</i>	1.00					
<i>Loss Ind (19)</i>	<i>-0.11</i>	<i>-0.18</i>	<i>-0.03</i>	<i>-0.23</i>	<i>-0.26</i>	<i>0.14</i>	0.00	<i>-0.02</i>	<i>-0.26</i>	<i>-0.34</i>	<i>-0.32</i>	<i>0.17</i>	<i>-0.02</i>	<i>0.16</i>	<i>0.09</i>	-0.01	<i>0.34</i>	<i>0.22</i>	1.00				
<i>Future Restatement (20)</i>	<i>-0.01</i>	<i>-0.02</i>	<i>-0.01</i>	<i>-0.02</i>	<i>-0.02</i>	<i>0.01</i>	<i>-0.02</i>	<i>0.02</i>	<i>-0.01</i>	<i>-0.01</i>	-0.01	<i>0.02</i>	<i>-0.02</i>	<i>0.03</i>	<i>0.01</i>	0.00	<i>0.01</i>	<i>0.02</i>	<i>0.04</i>	1.00			
<i>JMBE (21)</i>	<i>-0.02</i>	<i>0.03</i>	<i>0.01</i>	<i>0.01</i>	<i>0.07</i>	<i>-0.04</i>	<i>0.03</i>	<i>-0.04</i>	<i>0.03</i>	<i>0.10</i>	<i>0.02</i>	<i>-0.01</i>	<i>0.04</i>	<i>0.06</i>	0.00	0.00	<i>-0.05</i>	<i>-0.28</i>	<i>-0.06</i>	-0.01	1.00		
<i>High Earnings Ind (22)</i>	<i>0.14</i>	<i>0.05</i>	0.00	<i>0.04</i>	<i>-0.02</i>	<i>0.05</i>	<i>-0.03</i>	<i>0.05</i>	<i>0.30</i>	<i>0.09</i>	<i>0.01</i>	<i>0.01</i>	<i>-0.03</i>	<i>-0.04</i>	<i>-0.03</i>	<i>0.03</i>	<i>0.04</i>	<i>-0.25</i>	<i>-0.02</i>	0.01	<i>-0.13</i>	1.00	
<i>Leverage (23)</i>	<i>0.02</i>	<i>-0.07</i>	<i>-0.01</i>	<i>0.06</i>	<i>-0.15</i>	<i>0.12</i>	<i>-0.12</i>	<i>0.21</i>	<i>-0.08</i>	<i>-0.13</i>	<i>0.02</i>	<i>-0.05</i>	<i>-0.10</i>	<i>-0.23</i>	<i>0.09</i>	0.00	<i>0.04</i>	<i>0.06</i>	<i>0.03</i>	0.00	<i>-0.05</i>	<i>0.06</i>	1.00

Note: This table provides Pearson correlations of main variables. Correlations significant at the 5% level are shown in bold and italic. See the Appendix for variable definitions.

Table 4-Additional Statistics on Press Release Characteristics

Panel A: Autocorrelation of Emphasized Tone, Net Document Tone, and Document Length

Variables	Autocorrelations
<i>Emphasized Tone</i>	0.504
<i>Net Document Tone</i>	0.755
<i>Document Length</i>	0.872

Panel B: Regressing Emphasized Tone, Net Document Tone, and Document Length on Firm, Industry, Calendar Quarter, or Industry-Calendar Quarter Fixed Effects

Variables	Firm Fixed Effects (R²)	Industry Fixed Effects (R²)	Calendar Quarter Fixed Effects (R²)	Industry Calendar Quarter Fixed Effects (R²)
<i>Emphasized Tone</i>	0.369	0.061	0.015	0.228
<i>Net Document Tone</i>	0.560	0.143	0.032	0.300
<i>Document Length</i>	0.774	0.197	0.027	0.294

Note: This table provides additional summary statistics of emphasized tone, net document tone, and document length in earnings press releases. Panel A shows the autocorrelation of emphasized tone, net document tone, and document length. Panel B shows the R-squared when regressing emphasized tone, net document tone, and document length on firm fixed effects, industry fixed effects, calendar quarter fixed effects, or industry-calendar quarter fixed effects. See the Appendix for variable definitions.

Table 5 – Emphasized Tone and Earnings Announcement Returns

Variable	(1) <i>EA Returns</i>	(2) <i>EA Returns</i>	(3) <i>EA Returns</i>
<i>Earnings Surprise</i>	2.410*** (23.31)	2.557*** (21.91)	0.044*** (21.91)
<i>Negative Earnings Surprise</i>	-1.859*** (-16.00)	-2.075*** (-15.96)	-0.030*** (-15.96)
<i>Net Document Tone</i>	0.825*** (15.42)	0.846*** (15.30)	0.007*** (15.30)
<i>Emphasized Tone</i>	0.355*** (11.17)	0.333*** (9.87)	0.004*** (9.87)
<i>Tone Dispersion</i>	0.065* (1.73)	0.049 (1.25)	0.001 (1.25)
<i>Market Value</i>		0.001*** (2.83)	0.001*** (2.83)
<i>Earnings Surprise*Market Value</i>		0.003 (0.99)	0.001 (0.99)
<i>Earnings Volatility</i>		-0.039*** (-2.63)	-0.002*** (-2.63)
<i>Earnings Surprise*Earnings Volatility</i>		0.188 (-1.26)	-0.002 (-1.26)
<i>Market-to-Book</i>		0.000* (-1.76)	-0.001* (-1.76)
<i>Earnings Surprise*Market-to-Book</i>		0.000 (-0.43)	0.000 (-0.43)
Intercept		-0.014*** (-4.63)	-0.003 (-1.44)
Calendar Quarter Fixed Effects	YES	YES	YES
Firm Clustering	YES	YES	YES
N	62,545	52,926	52,926
Adjusted R ²	0.073	0.077	0.077

Note: This table shows the results of testing Hypothesis 1, that investors respond to emphasized tone, using Model (1).

$$EA\ Returns = \alpha_0 + \alpha_1 Earnings\ Surprise + \alpha_2 Negative\ Earnings\ Surprise + \alpha_3 Net\ Document\ Tone$$

$$+ \alpha_4 Emphasized\ Tone + \alpha_5 Tone\ Dispersion + \alpha_6 Market\ Value + \alpha_7 Earnings\ Surprise * Market\ Value + \alpha_8 Earnings\ Volatility + \alpha_9 Earnings\ Surprise * Earnings\ Volatility + \alpha_{10} Market\text{-}to\text{-}Book + \alpha_{11} Earnings\ Surprise * Market\text{-}to\text{-}Book + \varepsilon \quad (1)$$

The dependent variable is 3-day earnings announcement returns (*EA Returns*). The independent variable of interest is *Emphasized Tone* which is defined as the net tone of the first partition minus the net tone of the overall document. All regressions include calendar quarter fixed effects whose coefficients are suppressed for brevity. In Column (3), all independent variables are standardized to have a mean of zero and standard deviation of one. Standard errors are

clustered by firm and presented below the coefficients. *, **, *** Denote significance at the 10%, 5% and 1% levels, respectively. See the Appendix for variable definitions.

Table 6: Determinants of Emphasized Tone

Variable	(1) <i>Emphasized Tone</i>	(2) <i>Emphasized Tone</i>	(3) <i>Emphasized Tone</i>
<i>Pre-Earnings Expectations Gap</i>	0.010*** (3.59)	0.007** (2.57)	0.005* (1.67)
<i>Earnings Surprise</i>	0.008* (1.74)	0.008* (1.68)	-0.003 (-0.72)
<i>Negative ES Ind</i>	-0.002*** (-13.46)	-0.001*** (-10.91)	-0.001*** (-10.58)
<i>Loss Ind</i>	-0.007*** (-30.79)	-0.006*** (-27.34)	-0.004*** (-15.00)
<i>Future Restatement</i>	-0.000 (-0.95)	-0.000 (-0.59)	-0.000 (-0.53)
<i>JMBE</i>	-0.001*** (-3.26)	-0.000** (-2.57)	-0.000** (-2.48)
<i>High Earnings Ind</i>	0.000 (1.49)	0.000 (1.04)	0.000 (1.10)
<i>Abnormal Tone Ind</i>			-0.419*** (-8.65)
<i>Litigation Ind</i>		-0.001 (-1.00)	0.001 (-1.11)
<i>NonGaap Diff</i>		0.001 (0.43)	0.002 (1.13)
<i>Market-to-Book</i>		0.000 (0.17)	0.000 (-0.69)
<i>Leverage</i>		0.002** (2.41)	0.001 (1.37)
<i>Net Document Tone</i>		0.268*** (15.96)	0.671*** (13.83)
<i>Tone Dispersion</i>		0.090*** (8.24)	0.092*** (8.34)
Intercept	0.009*** (31.09)	0.005*** (7.07)	0.006*** (8.41)
Firm Fixed Effects	YES	YES	YES
Calendar Quarter Fixed Effects	YES	YES	YES
Firm Clustering	YES	YES	YES
N	58,093	57,558	56,930
Adjusted R ²	0.362	0.375	0.378

Note: This table shows the results of analyses on the determinants of emphasized tone, using Model (2).

$$\begin{aligned}
\textit{Emphasized Tone} = & \eta_0 + \eta_1 \textit{Pre-Earnings Expectation Gap} + \eta_2 \textit{Earnings Surprise} \\
& + \eta_3 \textit{Negative ES Ind} + \eta_4 \textit{Loss Ind} + \eta_5 \textit{Future Restatement} + \eta_6 \textit{JMBE} \\
& + \eta_7 \textit{High Earnings Ind} + \eta_8 \textit{Abnormal Tone Ind} + \eta_9 \textit{Litigation Ind} \\
& + \eta_{10} \textit{NonGaap Diff} + \eta_{11} \textit{Market-to-Book} + \eta_{12} \textit{Leverage} + \eta_{13} \textit{Net Document Tone} \\
& + \eta_{14} \textit{Tone Dispersion} + \varepsilon \quad (2)
\end{aligned}$$

The dependent variable is *Emphasized Tone* which is defined as the net tone of the first partition minus the net tone of the overall document. The independent variables of interest are “information variables” (*Pre-Earnings Expectation Gap*, *Earnings Surprise*, *Negative ES Ind*, and *Loss Ind*) and “managerial incentives variables” (*Future Restatement*, *JMBE*, *High Earnings Ind*, and *Abnormal Tone Ind*). All regressions include calendar quarter fixed effects and firm fixed effects whose coefficients are suppressed for brevity. Standard errors are clustered by firm and presented below the coefficients. *, **, *** Denote significance at the 10%, 5% and 1% levels, respectively. See the Appendix for variable definitions.

Table 7– Emphasized Tone and Post Earnings Announcement Returns

Variable	<i>Post-EA Returns</i> (1)	<i>Post-EA Returns</i> (2)	<i>Post-EA Returns</i> (3)
<i>Earnings Surprise</i>	0.531*** (4.65)	0.477*** (4.17)	0.008*** (4.17)
<i>EA Returns</i>		0.052*** (3.10)	0.005*** (3.10)
<i>Market Value</i>	0.001* (1.92)	0.001* (1.95)	0.002* (1.95)
<i>Market-to-Book</i>	-0.001*** (-2.66)	-0.001*** (-2.62)	-0.003*** (-2.62)
<i>Earnings Volatility</i>	0.036* (1.81)	0.038* (1.91)	0.002* (1.91)
<i>Lag Returns</i>	-0.006 (-0.74)	-0.005 (-0.59)	-0.001 (-0.59)
<i>Lag Returns Volatility</i>	0.394* (1.86)	0.379* (1.81)	0.006* (1.81)
<i>Net Document Tone</i>	0.648*** (5.54)	0.608*** (5.25)	0.005*** (5.25)
<i>Emphasized Tone</i>	0.183** (2.45)	0.165** (2.22)	0.002** (2.22)
<i>Tone Dispersion</i>	0.186** (2.20)	0.178** (2.12)	0.002** (2.12)
Intercept	0.108*** (11.55)	0.108*** (11.67)	0.133*** (26.56)
Calendar Quarter Fixed Effects	YES	YES	YES
Firm Clustering	YES	YES	YES
N	52,897	52,897	52,897
Adjusted R ²	0.202	0.203	0.203

Note: This table shows the results of testing Hypothesis 3, i.e., whether investors over- or under-react to emphasized tone, using Model (3).

$$\begin{aligned}
\text{Post-EA Returns} = & \theta_0 + \theta_1 \text{Earnings Surprise} + \theta_2 \text{EA Returns} + \theta_3 \text{Market Value} + \theta_4 \text{Market-to-Book} \\
& + \theta_5 \text{Earnings Volatility} + \theta_6 \text{Lag Returns} + \theta_7 \text{Lag Returns Volatility} \\
& + \theta_8 \text{Net Document Tone} + \theta_9 \text{Emphasized Tone} + \theta_{10} \text{Tone Dispersion} + \varepsilon \quad (3)
\end{aligned}$$

The dependent variable is *Post-EA Returns*, i.e., the returns beginning on trading day +2 relative to the current earnings announcement, and ending on the first trading day after the subsequent earnings announcement. The independent variable of interest is *Emphasized Tone* which is defined as the net tone of the first partition minus the net tone of the overall document. All regressions include calendar quarter fixed effects whose coefficients are suppressed for brevity. In Column (3), all independent variables are standardized to have a mean of zero and standard deviation of one. Standard errors are clustered by firm and presented below the coefficients. Standard errors are clustered by firm and presented below the coefficients. *, **, *** Denote significance at the 10%, 5% and 1% levels, respectively. See the Appendix for variable definitions.