Headline Salience, Managerial Opportunism, and Over- and Underreactions to Earnings

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Abstract

Limited attention theory predicts that higher salience of earnings news implies a stronger immediate market reaction to earnings news and a weaker post-earnings announcement drift (PEAD) or reversal (PEAR). Using a new measure, *SALIENCE*, defined as the number of quantitative items in an earnings press release headline, we find strong evidence consistent with salience effects. Higher *SALIENCE* is associated with stronger announcement reaction and subsequent PEAR. Managers are more likely to choose higher *SALIENCE* before selling shares in the post-announcement period and when earnings are high but less persistent, and to choose lower *SALIENCE* before stock option grants. The results are robust to using residual salience and an extended set of control variables. The findings are consistent with managers opportunistically headlining positive financial information in the earnings press release to incite overoptimism in investors with limited attention.

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1. Introduction

Earnings press releases are a major channel for credible and timely communication between firms and investors. Indeed, volume and price movements are larger at the time of earnings announcements than at any other time of the year. In this study, we consider whether greater salience of earnings press release headlines causes stronger market reactions, and whether managers view the earnings release as an advertising opportunity to draw investor attention to the earnings news. Since investor attention is a scarce cognitive resource, more salient earnings announcements may cause greater incorporation of earnings news into price, and opportunistic managers may have an incentive to influence investor perceptions by manipulating the salience of the earnings announcement. We offer a simple measure of the salience of the earnings press release and test these hypotheses.

In limited attention theory, the equilibrium price is a weighted average of the beliefs of attentive and inattentive investors (Hirshleifer and Teoh 2003; Hirshleifer, Lim, and Teoh 2011). Upon the release of public information, the fully attentive investors revise their beliefs fully as rational Bayesians, whereas the inattentive investors neglect the signal and stick with their priors. Investor response to the public announcement of the information is therefore incomplete at the time of the announcement and corrected only over time as further news arrives and the valuations of inattentive investors are corrected. In the context of earnings news announcements, limited attention theory predicts that investor reaction to earnings news (the earnings response coefficient) is inhibited at the announcement date, and there is a post-earnings announcement drift (PEAD) towards the full information value.

We use the implications of limited attention theory to test the effects of salience of the

earnings press release on investor response to earnings news. Higher salience of the earnings news attracts greater investor attention, which implies that investor response at the earnings announcement increases with salience of the earnings news, and the post-announcement drift decreases with salience.[1] Furthermore, if salience excites investors to *overweight* salient earnings news, price overreaction at the time of the announcement may occur. If so, there will be a post-earnings announcement reversal (PEAR) for salient earnings news instead of the post-earnings announcement drift (PEAD) (Bernard and Thomas, 1990).

To test these predictions, we consider presentation characteristics of the earnings press release to obtain an empirical proxy for salience of the earnings announcement. Psychologists define salience as prominence of a stimulus relative to other stimuli in the environment (Fiske and Taylor 2016), and this prominence directs attention to the stimulus to enable the brain to encode and process the information. Psychologists have long known that location of a stimulus affects how people process the stimulus; as the old adage goes, "First impressions matter." Asch (1946) reports that items appearing earlier in a list have a greater influence on an observer than later items, and this primacy bias is very difficult to undo (Fiske and Taylor).

The headline is what investors see first of an earnings disclosure by virtue of its prominent location relative to the body of the disclosure. We therefore use the headline of the earnings press release to identify possible attributes to measure salience. Several archival and experimental studies find that prominent placement of disclosed information, such as in the headline as opposed to the main body or the footnotes, generates stronger reactions; Section 2

[1] This prediction is about the *sensitivity* of investor response to the measure of *salience* of the earnings news, and not the magnitude of the earnings announcement window abnormal returns, which is also affected by the magnitude of the earnings news.

discusses archival and experimental accounting and finance studies about the effects of placement of information on the receiver.

Currently, the earnings press release format is unregulated, except for Regulation G requiring equal prominence to be given to performance metrics estimated according to GAAP (Generally Accepted Accounting Principles) when non-GAAP measures are used. Therefore, headlines of earnings press releases vary widely across firms in format; see Exhibit 1 for examples. Some companies disclose only generic text in headlines, such as a statement that the firm is releasing its "report for the fourth quarter 2016 financial results." Some firms provide additional verbal information in the headlines without mentioning quantities. Others highlight additional information in the headlines by mentioning quantities, such as earnings or EPS numbers, or sales numbers, or growth rates such as "10% earnings growth."

We use the degree of quantification in the headline—that is, the number of numbers (excluding dates or time periods)—as a novel empirical proxy for salience. The degree of quantification in the headline has major advantages relative to other linguistic dimensions of the qualitative text that are extractable using software tools.[2] In the earnings announcement setting, the quantification of the headline has the attributes—concreteness, goal relevance, credibility, and computational ease—that increase processing fluency. Psychology and accounting research (Song and Schwarz 2008; Rennekamp 2012) has shown that subjects put more weight on cues with higher processing fluency in their decisions, and the weight that

[2] The earnings press release texts from PR Newswire and Business Wire contain only plain text without the original formatting, so we are unable to measure other visual prominence cues that affect salience such as bold or underlined text, large font size, or tables, charts, and figures. The original wire format can also be changed on the media that the investor uses to obtain the press release, though the headline will generally still appear first.

investors place upon different kinds of information is the key variable of interest capturing salience for our study. Therefore, when quantities appear in the most prominent place of the press release—the headline—they should attract investor attention. Several archival and experimental studies have found that quantification leads to stronger investor responses in various settings (Petersen 2004; Engelberg 2009; Lundholm, Rogo, and Zhang 2014; Elliott, Rennekamp, and White 2015, and other studies discussed in Section 2).

We first test the prediction of limited attention theory that higher headline salience increases the announcement earnings response coefficient (ERC) and decreases the post-earnings announcement drift (PEAD). Furthermore, we examine whether higher salience is associated with a post-earnings announcement reversal (PEAR), which would be consistent with an overreaction to earnings news at the announcement date.

We find that headline salience is associated with a larger three-day announcement stock price reaction to earnings news, and with a lower 60-day post-announcement abnormal stock price reaction to earnings news. An increase in our salience index from zero to one corresponds to about a one-third increase in the announcement market reaction to earnings news and a decrease in the subsequent 60-day abnormal return reaction from zero to −2.2%. Our sample of firms does not, on average, exhibit PEAD during the sample period, so the incremental post-announcement decrease in abnormal returns due to headline salience results in a post-earnings announcement reversal (PEAR). In other words, headlining quantitative information incites investor *over*reaction to the earnings news at the time of the earnings announcement followed by a reversal in abnormal returns. This suggests that headline salience misleads investors.

Since headline salience can attract investor attention to earnings news and boost short-

term stock returns, managers could be aware of the attention effects of salience and choose it opportunistically. To test for this endogenous opportunistic choice of salience, we examine whether managers choose high salience when they are planning to sell equity on personal account soon after the earnings release so as to profit from the sale.[3] We therefore use net insider selling after the earnings announcement as a proxy for the manager's ex ante incentive to choose high headline salience. As an alternative proxy, we use the price sensitivity of a CEO's recently vested equity as an instrument for managers' ex ante opportunistic incentive to sell equity. We find a positive association between headline salience and the proxies of managerial incentive to sell equity, consistent with managers' attempt to drive up market price prior to sale.

Furthermore, we predict that managers who expect stock option awards in the following year choose a lower level of headline salience. Managers prefer lower stock prices, and therefore lower salience, before stock options are awarded. The evidence is consistent with this prediction.

To provide further corroborative evidence as to whether salience is chosen opportunistically, we examine the earnings characteristics of high- versus low- headline-salience firms to study whether the salience of earnings news plays a different role for good news than for bad news. While it is evident that managers with good earnings news benefit from making this news more salient, managers with bad earnings news could also benefit by

[3] The theme of our research questions is parallel to that of Lou (2014), who finds that managers adjust firm advertising expenditure opportunistically to attract investor attention, which leads to investor overreaction and subsequent reversal. In contrast to Lou's study, we examine the salience of earnings press releases and its effect on the sensitivity of investor reaction to earnings news rather than the direct effect of firm advertising on stock returns.

headlining some positive aspects of firm performance, in the hope of dampening the negative reaction to bad news.[4]

We find that headline salience effects on short- and long-term stock returns are present only within the good-earnings-news sample, which suggests that managerial opportunism using headline salience to attract attention is effective only when news is good. We also find that high-headline-salience firms are more likely to have higher earnings, profits rather than losses, and positive earnings surprises. Interestingly, high-headline-salience firms with current period earnings increases have lower earnings persistence, consistent with managers trying to *make hay while the sun shines*. This finding corroborates the evidence from insider selling and stock option awards, suggesting that headline salience choice is motivated more by opportunism than by a desire to make disclosure generally more informative.

Our study contributes to several literatures. Unlike past limited attention studies that use attention variables largely external to the announcement, we identify a characteristic of the earnings press release itself as a determinant of investor attention and as a target of managerial opportunism.[5] By examining the headlines of earnings press releases, our study contributes to studies on location primacy effects in psychology and in accounting (see Section 2). Our study also contributes to the growing literature on linguistic attributes of disclosures, including

[4] Drawing attention to bad news may seem counterintuitive. However, our perusal of some headlines of negative news suggests that managers of these firms tend to headline some positive aspects of firm performance such as revenue growth, earnings growth, or positive earnings; see Exhibit 1 for examples.

[5] Some examples of attention variables used in past studies on investor limited attention include day of the week (DellaVigna and Pollet 2009), number of other same-day earnings announcements (Hirshleifer, Lim, and Teoh 2009), and firm complexity (Cohen and Lou 2012). Miao, Teoh, and Zhu (2016) use withholding of the cash flow statement in the earnings press release to proxy for lower attention to accruals at earnings announcement dates to study the accrual anomaly. Klibanoff, Lamont, and Wizman (1998) find that announcements in prominent media outlets, e.g. *The New York Times*, increase investor reaction to news.

concreteness, complexity, tone, and voice tone.[6] We focus on quantification, which increases concreteness and, in the earnings context, also increases goal relevance and computational ease, all of which contribute to greater salience. Finally, our study contributes to the literature on strategic incentives for disclosure by documenting that managers opportunistically choose the headline format of their earnings press releases.

2. Existing Studies about Salience and Quantification

Fiske and Taylor (2016) describe the initial steps in the cognition process of attention and encoding. People first need to attend to—that is, register awareness of—the presence of new information, and then encode that information into an internal mental representation before comprehension, or internal processing, can occur. In the capital market context, owing to their limited attention, investors cannot attend equally to all available information in an earnings press release.

What, then, captures our attention? Fiske and Taylor suggest that salience, defined as the extent to which a cue stands out relative to others in the environment, is important for attracting attention. They assert that "Regardless of its source, salience effects are robust and wide ranging." and that people react more strongly to salient stimuli (p. 73). Given the importance of salience for human cognition, and the compelling and intuitive view that investors have limited attention, we study how the salience of the earnings release affects how

[6] See, for example, Li (2011), Demers and Vega (2011), Huang, Teoh, and Zhang (2014), and Mayew and Venkatachalam (2012). Additional analyses in Section 5 show that our results are incremental to linguistic attributes of the earnings press release such as complexity and tone. We show that our salience effects apply only when words in headlines containing numbers pertain to earnings and not other items. The additional analyses also show that our salience effects are distinct and incremental to a wide set of other factors that past literature suggests may affect investor perceptions about the earnings news.

investors respond to earnings news.

Our empirical measure of salience draws on two distinct dimensions of earnings press releases: the headline's *primacy of location* and *degree of quantification*. We choose the headline because titles of any document naturally attract the reader's attention due to their visual prominence. Evidence of a strong presence of a primacy bias and a confirmatory bias from the psychology literature also motivate our study of headlines. When information is presented in ordered lists, earlier items are more salient to observers, and this in turn influences users' memory and judgment that are very difficult to undo (Asch 1946; Murdock 1960; Fiske and Taylor 2016). This resistance to revising beliefs is called confirmatory bias. Rabin and Schrag (1999) formally model how confirmatory bias makes overcoming first impressions very difficult, so that individuals sometimes adhere to incorrect beliefs even when presented with an infinite amount of new information.

The evidence and theory suggest that headline information will have disproportionate influence on how investors view the earnings news. An initial favorable impression from a headline can lead investors to underweight other pieces of contradictory information elsewhere in the report. Several recent studies summarized in Konnikova (2014) also provide evidence of the difficulty of overcoming first impressions.

The accounting literature has shown that the location of information presented in a disclosure matters to how investors react to the information. Files, Swanson, and Tse (2009) find that investors' three-day return response to restatement information is strongest when the information is revealed in the headlines, next strongest when revealed in the body of the text, and weakest when revealed in a footnote to operating results at the end of the press release.

Bowen, Davis, and Matsumoto (2005) compare placement of GAAP earnings versus pro forma earnings performance metrics in the earnings press release in a hand-collected sample of 253 firms for the 2001-2002 period. They find that investor return reaction to surprise in the performance metric varies with the location in the report. The reaction is strongest when the performance metric is located in the headlines, and it diminishes as the placement gets lower in the earnings report. Other accounting studies examine placement in various financial statements or in footnotes.[7] For example, Maines and McDaniel (2000) study placement of comprehensive income information in a separate statement of comprehensive income versus in the statement of shareholders' equity.

Our choice to use quantification of the headline to measure salience is motivated by the following. Psychologists argue that goal relevance increases salience, and neuroscience evidence provides support for this view (Fiske and Taylor 2016; Miller and Cohen 2001). Earnings press releases, as commentaries about firm earnings, are inherently related to quantitative information. Investors expect to see numbers in an earnings press release, and the appearance of numbers in the headline suggests to investors that they are relevant for valuing the firm. Quantification also increases concreteness, which past studies (noted in the introduction) have found increases processing fluency and computational ease.[8]

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[7] Studies evaluating placement on the face of the financial statements (recognition) versus in the footnotes (disclosure) find stronger investor reaction for the former (Aboody 1996; Ahmed, Kilic, and Lobo 2006; Davis-Friday, Liu, and Mittelstaedt 2004; Yu 2013). A rational inference is that recognized items are more value relevant than footnoted items. An alternative view consistent with a limited attention perspective is that recognized items are more salient than footnote items, and so are given more weight in investor decisions.

[8] Algorithmic software to automate this process, which has been available since Spring 2010 (Wired.com, Salmon and Stokes, December 2010), has contributed to the explosive growth in high-speed trading and constitutes well more than 50% of market volume (Wall Street Journal, Market Watch, May 6, 2011). Frino, Viljoen, Wang, Westerholm, and Zheng (2012) find that trading volume surges within the first 90 seconds of an earnings

Qualitative text, in contrast, requires an additional layer of processing as it needs to be translated into quantities.[9] The translation adds noise and delay. Furthermore, translation based on tone or other value-relevant dimensions of qualitative text is difficult to do in an objective way. The resulting ambiguity adds to the subjective experience of difficulty in processing the information. In contrast, quantification facilitates verifiability and hence increases credibility, and past studies have found that investors weight credible information more strongly (Teoh and Wong 1993).

Several archival studies provide evidence that quantification is associated with stronger reactions. Petersen (2004) and Engelberg (2009) find evidence that investors respond more quickly and strongly to quantitative information, which they consider to be objective, more easily comparable and more easily processed than qualitative information.[10] Lundholm, Rogo, and Zhang (2014) find that foreign firms that use more numbers in their earnings disclosures attract more US institutional ownership. Elliott et al. (2015) find in an experimental study that subjects are more willing to invest when information is described in concrete language, including quantification, and therefore is more salient than information described in more abstract language.

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announcement, and algorithmic traders are faster at interpreting information and more profitable than non-algorithmic traders. Processing massive amounts of textual information takes longer than processing quantities in headlines. When program traders rely on timing advantages calibrated in milliseconds, headline salience can offer a trading advantage to high-speed traders.

[9] Vividness is another aspect of cue salience; examples include larger or bold font; object color that contrasts with the background; and images, animations, tables, charts, or figures within a sea of text. These characteristics are difficult to obtain and objectively standardize in our large sample.

[10] We do not study quantification of the earnings report per se, which more likely captures the total amount of information or the precision of information. We control for the total numbers in the report in Section 5 to distinguish the salience that is coming from quantification in the headline from that coming from quantification in the entire report.

3. Sample, Variable Measurement, and Empirical Design

3.1 Sample and Data

The headline text of annual earnings press releases is from the *PR Newswire* and *Business Wire*, historical financial data are from Compustat, stock returns are from CRSP, and analysts' earnings forecasts data are from I/B/E/S. The press releases are matched by company name and announcement dates with the CRSP/Compustat merged database. The availability of the press release text data determines the start date of our sample period, 1998-2008. The total number of headline text observations is 17,332. We eliminate observations with missing accounting and financial-market data, and we drop firms with stock prices below $1. The final sample consists of 14,749 firm-year observations. All financial variables except stock returns are winsorized at the 1st and 99th percentiles to avoid the influence of extreme observations.[11]

3.2 Variable Measurements

3.2.1 Headline Salience

To code headline salience in an earnings press release, we separate the headline section of the press release from the body of the press release. It is feasible to extract the headline section accurately because the press release documents are in xml format with beginning and ending tags for the headline.

We measure raw headline salience *(RAW.SALIENCE*) as the number of times quantities appear in the headline. We winsorize raw salience at 3 because it ensures that a sufficient number of sample observations are available in each salience group, and because it is unlikely

[11] Most studies of stock return predictability do not winsorize stock returns because winsorization of a skewed return distribution may induce spurious estimated return predictability (Kothari, Sabino, and Zach, 2009; Teoh and Zhang, 2011).

that beyond a certain point more quantities would increase salience.[12, 13]

Our main measure of the headline salience index, *SALIENCE*, is the raw salience count for values below 3, and the winsorized value for raw counts 3 and above. In sum, the salience index varies from zero to three, with higher values of the index indicating higher salience.

3.2.2 Earnings Surprises

Consistent with previous literature, we measure earnings surprises using Standardized Unexpected Earnings (*SUE*) using analysts' consensus earnings forecasts to benchmark expected earnings (Kothari 2001; Livnat and Mendenhall 2006). Specifically, we calculate unexpected earnings as the announced earnings per share from I/B/E/S minus the median consensus of the most recent earnings forecasts of individual analysts, scaled by the stock price per share at the end of the previous fiscal year.[14]

3.3 Empirical Models

[12] Raw salience groups of 4, 5, and 6 contain only 1.77%, 0.62%, and 0.58% of the sample observations, respectively. The results are robust to not winsorizing *RAW.SALIENCE* or winsorizing at 1, 2, 4, 5, or the 99th percentile, which corresponds to a *RAW.SALIENCE* of 9. Our reading of headlines with a large number of quantities indicates that of the first three quantities appearing in the headline, at least one usually relates to earnings or closely related metrics such as revenue. Although it is possible that additional quantities can *distract* attention, we do not find such an effect in our sample. However, the failure to find a significant nonlinearity of the salience effect is most likely due to the small sample of headlines with a large number of quantities.

[13] Except for dates, we do not evaluate whether the numbers have a clear bearing upon earnings. In our large and heterogeneous sample, it would be impractical to try to classify accurately the nature of the quantitative item; there are no tags for the type of financial item, and the language and format of the earnings press release vary widely across firms. However, our reading of several hundred randomly selected headlines suggests that the numbers included in the headlines of earnings press releases typically pertain to earnings (for example, EPS, net income, EBIT, sales, EPS growth, and sales growth). Furthermore, our textual analysis of headlines indicates that the more numbers there are in a headline, the greater is the likelihood that some of these numbers relate to firm earnings or closely related metrics such as revenue.

[14] The results are robust when SUE is calculated as the change in quarterly earnings scaled by its time-series standard deviation calculated over the previous twenty quarters (Bernard and Thomas 1990).

3.3.1 Market Reactions

Limited attention theory predicts that salient news results in larger immediate stock price reaction and either a smaller drift in the same direction of the original reaction or a stronger reversal in the post-event period (Hirshleifer et al. 2011). Applying this to the context of headline salience, we predict:

H1: The sensitivity of announcement stock returns to earnings surprises rises with headline salience.

H2: The sensitivity of post-announcement stock returns to earnings surprises declines with headline salience, or even becomes negative.

To test how headline salience affects immediate investor response to earnings news (H1), we estimate the following regression of cumulative abnormal return around earnings announcement, *CAR*(*-1,+1*):

$$CAR(-1, +1) = \alpha + \beta_0 RSUE_{jt} + \beta_1 SALIENCE_{jt} + \beta_2 RSUE_{jt} * SALIENCE_{jt} + \beta_3 Controls + \beta_4 RSUE_{jt} * Controls + \varepsilon_{jt}, \quad (1)$$

where *CAR(-1,+1)* is the cumulative abnormal return over the three-day window centered on the earnings announcement date, and the abnormal return is calculated as the raw stock return minus the CRSP value-weighted market return;[15] *RSUE* is the decile rank of the standardized unexpected earnings, *SUE*. Control variables include the stock returns over the previous twelve months (*RET*), earnings before extraordinary items scaled by total assets at the end of the previous fiscal year (*EARN*), firm size (*SIZE*) measured as the logarithm of the market value of equity at the end of the previous fiscal year; the book-to-market ratio (*BTM*) measured at the

[15] The results are similar when we use the CRSP equally weighted return.

end of the previous fiscal year, the discretionary accruals (*AA*) calculated using the 2-digit industry cross-sectional modified Jones model, the standard deviation of monthly stock returns over the previous fiscal year (*STD.RET*), and the decile of the number of same-day earnings announcements by other firms as a distraction proxy suggested by Hirshleifer et al. (2009) (*NRANK*).

If greater headline salience results in higher investor attention, we expect a stronger initial stock price reaction to earnings news (H1). Therefore, we predict that the coefficient on the interaction of earnings news and headline salience will be positive ($\beta_2 > 0$). Since the headline salience effect can differ for positive and negative earnings news, we estimate equation (1) using the full sample and subsamples of firm-years with positive and non-positive unexpected earnings separately. To control for cross-sectional and time-series correlations, we cluster standard errors by firm and year in all our tests (Petersen 2009).

To examine the relation between headline salience and PEAD (H2), we estimate the following regression of post-announcement abnormal return, *CAR(+2,+61)* :

$$CAR(+2,\ +61) = \alpha + \beta_0\ RSUE_{jt} + \beta_1\ SALIENCE_{jt} + \beta_2\ RSUE_{jt} * SALIENCE_{jt} + \beta_3 Controls + \beta_4\ RSUE_{jt} * Controls + \varepsilon_{jt,} \quad (2)$$

where *CAR(+2, +61)* is the cumulative abnormal return over the sixty-day window starting two days after the earnings announcement date. If greater headline salience results in stronger initial investor response to earnings news, then we expect that the association between post-announcement abnormal returns and earnings news declines as headline salience increases. That is, we predict that the coefficient on the interaction of earnings news and headline salience is negative ($\beta_2 < 0$).

3.3.2 Insider Selling

When investors have limited attention, managers have incentives to headline good performance or positive aspects of firm performance in an attempt to boost the stock price at the earnings announcement so as to profit from selling shares of the firm that they own on personal account. To test for the endogenous opportunistic choice of salience whereby managers profit personally via their choice of headline salience, we examine the association of insider trading following earnings announcements with the headline salience of the earnings announcement. We choose to look at insider selling because it can be measured over a relatively short period of time subsequent to the earnings announcement when the effect of headline salience on the stock price is likely to be most important. The insider selling variable is an ex post proxy for a manager's ex ante incentives to sell equity; we use an ex ante instrument as a robustness test below. We hypothesize that managers who plan to sell company shares subsequent to earnings announcements are more likely to use salient headlines in an attempt to boost the earnings announcement stock price:

H3: There is a positive association between headline salience and insider selling subsequent to earnings announcements.

To test this hypothesis, we estimate the following regression:

$$SALIENCE_{jt} = \alpha + \beta_0 INSIDERSELL_{jt+1} + \beta_1 EARN_{jt} + \beta_2 SIZE_{jt} + \beta_3 BTM_{jt} + \beta_4 RET_{jt} + \beta_5 AA_{jt} + \beta_6 STD.RET_{jt} + \varepsilon_{jt}, \quad (3)$$

where *INSIDERSELL* is the net number of insider sale transactions (i.e., the number of insider sell transactions minus the number of insider buy transactions) during the period (+2,+30),

which starts two days after and ends thirty days after the earnings announcement date.[16, 17] We include only open market transactions by officers and directors (Richardson, Teoh, and Wysocki 2004).[18] We expect that managers who plan to sell company shares subsequent to earnings announcements use headline salience to boost the stock price (H3), so we predict a positive coefficient on *INSIDERSELL* ($\beta_0 > 0$). Because *SALIENCE* is an ordinal dependent variable, we use the ordered logit regression to estimate equation (3) and all subsequent equations where *SALIENCE* is a dependent variable.[19]

It is possible that a positive association between insider selling and headline salience is driven not by opportunistic choice of salience but by endogenous opportunistic insider selling in response to the ex post observed effects of salience on the stock price. The insider selling occurs after the earnings announcement, so the effects of salience on stock prices are observed before the insider makes the trade. To rule out this possibility, we use the price sensitivity of the company CEO's newly vested equity as an instrument for ex ante equity incentives as a robustness test (Edmans, Fang, and Lewellen 2017; Edmans, Goncalves-Pinto, Groen-Xu, and Wang 2017; Gopalan, Huang, and Maharjan 2016).[20]

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[16] Our use of the period ending thirty days after the earnings announcement date is consistent with the literature that shows insider trading is concentrated in the first month after the earnings announcement due to companies' blackout policies (Jeng 1999; Bettis, Coles, and Lemmon 2000; Roulstone 2003).

[17] We do not use the two-stage approach in which the inverse Mills ratio from the first stage is used to control for the self-selection bias (Rogers 2008), since the inverse Mills ratio does not control for variables associated with the magnitude of insider selling.

[18] Thomson Financial transaction codes must be "S" or "P", and relationship codes must be "CB", "D", "DO", "H", "OD", "VC", "AV", "CEO", "CFO", "CI", "CO", "CT", "EVP", "O", "OB", "OP", "OS", "T", "OX", "P", "S", "SVP", or "VP".

[19] The results are robust when we use the Tobit model with a binary salience variable that equals one if *SALIENCE* is positive, and zero otherwise.

[20] It is unlikely that headline salience can affect equity vesting since equity vesting is typically scheduled a few years in advance, when the stocks and options are granted. Therefore, a significant association between salience

Beginning in fiscal year 2006, the SEC requires companies to disclose grant-level information about management's stock and option awards, including the information about whether an award is vested or unvested. Using the number of vesting stocks and the number of vested and unvested options for S&P 1500 firms from ExecuComp, we calculate the number of stocks and options that are vested during the previous fiscal year. We then calculate the dollar change in the value of the vesting stocks and options for a 1% change in the stock price, *VESTING.DELTA*. The delta of the vesting stocks is the number of vesting sharers times the stock price at the end of the previous fiscal year times 1%. The delta of vesting options is calculated by grouping options based on expiry dates and exercise price and using the Black-Scholes formula following Coles, Daniel, and Naveen (2006). *VESTING.DELTA* is the sum of the deltas for vesting stocks and vesting options.

3.3.3 Stock Option Awards

So far, we have focused on the situation where managers can benefit by opportunistically choosing greater headline salience before insider selling of equity. This raises the question of whether the equilibrium is a corner solution where all firms would choose a salient headline, particularly when the earnings news is positive.[21] Here, we examine the situation when stock options are to be awarded, which creates the opposite managerial

and equity vesting price will indicate the opportunistic choice of salience in response to equity incentives.

[21] There are additional reasons we do not expect all managers to choose high salience in every situation. There is a future cost from return reversal, and some managers may not benefit from a temporary short-term stock price boost, perhaps because they may not own or have newly vested shares to sell. Note that salience does not change the long-term stock price but only the path by which the price gets there: first overreaction, then reversal. Managers may also differ in their time preferences. Finally, some managers may be unaware of the effect that headline salience has on the firm's stock price. Empirical research on anomalies in the capital markets has provided managers with new insights that have affected corporate policy.

incentive—an incentive to avoid a stock price increase because the option strike price is often set at the stock price on the grant date. We hypothesize that managers expecting option awards following the earnings press release are less likely to use headline salience, and this avoidance of salience is motivated by a desire to avoid a stock price increase:

H4: There is a negative association between headline salience and stock option awards subsequent to earnings announcements.

To test this hypothesis, we estimate the following regression and predict a negative β_0:

$$SALIENCE_{jt} = \alpha + \beta_0\, OPTION.AWARDS_{jt+1} + \beta_1\, EARN_{jt} + \beta_2\, SIZE_{jt} + \beta_3\, BTM_{jt} + \beta_4\, RET_{jt} + \beta_5\, AA_{jt} + \beta_6\, STD.RET_{jt} + \varepsilon_{jt}, \quad (4)$$

where $OPTION.AWARDS_{t+1}$ is the is the log of one plus the value of a CEO's option awards in fiscal year $t+1$ (ExecuComp item OPTION_AWARDS_BLK_VALUE).

4. Empirical Results

4.1 Descriptive Statistics

Table 1 presents the descriptive statistics for our headline salience measure. Panel A shows the frequency distribution of raw headline salience. While the majority of earnings press release headlines lack quantification (72%), a substantial number (28%) contain at least one quantitative item. Around 12% of the sample headlines contain one quantity. Since only 4.8% of headlines contain 4 or more quantities, we define our main measure, the headline salience index (*SALIENCE*), by aggregating all headlines with three or more quantities in one category and assign it a value of three.

Panel B reports autocorrelations for *SALIENCE* as well as an indicator variable, *SALIENCE.Dummy*, which equals one if *SALIENCE* is positive, and zero otherwise. Though

none of the autocorrelation coefficients exceed 0.360, there is some indication of persistence in headline salience over time, which suggests that some firms may adopt a salience style.

The transition matrix in Panel C provides further information about the time-series properties of the salience index. We find that moving to zero *SALIENCE* is more common than staying at the same *SALIENCE* level as in the previous year. The only exception is the combined category of three or more, but even in this case, the probability of moving to a lower salience level is more than fifty percent.

Overall, the autocorrelations and transition matrix show that salient headlines are not unduly sticky over time, except in the zero salience category where we do not expect the action to be in the regression tests for our hypotheses. Given our premise of limited investor attention, salience levels are more appropriate to consider than salience changes, which would require investors to remember past salience levels. Nevertheless, in our robustness tests on salience choice, we find that the results are robust to including a lagged salience variable.

Panel D of Table 1 reports mean *SALIENCE* and percentage of salient headlines by year of the earnings announcement date. With the exception of a few declines, both mean *SALIENCE* and percentage of salient headlines exhibit a noticeable increase over the sample period. Highlighting quantities in earnings press release headlines has become more prevalent over time.[22]

We report the distribution of headlines across industries in an internet appendix table.

[22] The sample size varies between around one and two thousand observations per year except for the first and last sample years. The lower number of observations at the beginning and the end of our sample is due to the lower number of earnings press release texts available from the *PR Newswire* and *Business Wire* at the time of our sample collection. The results are robust when we include or exclude the first and last sample years.

The number of all headlines and salient headlines varies across industries but is not strongly dominated by a few industries. The proportion of salient headlines to all headlines ranges from a low of 7.1% for the Tobacco Products industry to a high of 58.2% for the Aircraft industry. However, it appears that extreme proportions of salient headlines are driven by industries with relatively low numbers of observations and are therefore likely to occur by chance rather than being caused by industries in certain sectors.

Table 2 reports the frequency of various accounting terms appearing in headlines for different levels of the salience index. To examine the context for quantities noted in headlines, we group closely related terms into several accounting categories and define indicator variables that equal one if the headline contains any words in the given category. For example, *EARNINGS** is an indicator variable that equals one if the headline contains one or more of the following words: "earnings", "EPS", "income", "EBITDA", "EBT", "EBIT", "profit", "profits", "loss", or "losses", and zero otherwise, and *REVENUE** is an indicator variable that equals one if the headline contains "sales", "revenue", or "revenues", and zero otherwise.[23] The frequency statistics indicate that as headline salience increases, the likelihood of occurrence of all accounting terms increases. For example, mean *EARNINGS** increases from 0.197 for zero salience to 0.871 for a salience of three. Moreover, the *EARNINGS** and *REVENUE** categories dominate other categories; the *CASH** category is a distant third. For the highest salience index, 3, 87.1%, 76.8%, and 16.9% of headlines contain words related to earnings, revenue, and cash, respectively. Overall, the results in Table 2 suggest that numbers

[23] The definitions of the remaining variables (*CASH**, *CHARGE**, *COST**, *LOSS**, *RESERVE**, and *ORDER**) are provided in the notes to Table 2.

in headlines relate to firm earnings or closely related metrics such as revenue, thereby supporting the validity of our salience measure.

Table 3 reports descriptive statistics for key variables and control variables. The numbers in the table are time-series means of the corresponding yearly statistics. The sample mean (median) of *SALIENCE* is 0.507 (0). The relatively high mean (median) of market capitalization of $2,695 million ($543 million) indicates that our sample has larger firms, for which we are able to obtain I/B/E/S analyst forecasts, than the average COMPUSTAT firm.

4.2 Headline Salience and Investor Reaction to Earnings News

We first examine whether stock prices react more strongly to earnings announcements for firms that issue earnings press releases with salient headlines (H1). Table 4 reports the results of the test of how *SALIENCE* affects the relation between announcement period return, *CAR (-1,+1)*, and earnings surprise. The first four columns show the results for the full sample. To establish the baseline for the average magnitude of the market reaction in our sample, we first estimate a regression of *CAR(-1,+1)* on decile rank of standardized unexpected earnings, *RSUE*, and commonly used controls for size, book-to-market, and momentum (Model A).

Consistent with the prior literature, *RSUE* is positively associated with the announcement period return. Consistent with the limited attention hypothesis (H1), the coefficient on *SALIENCE*RSUE* in Model B is positive and significant. This indicates that the market's reaction to earnings surprises is stronger for announcements with more salient headlines. An increase in the headline salience index of 1.0 implies an increase in the differential CAR between the top and bottom deciles of 1.4% (0.0016*(10 − 1) = 1.4%). When compared to the average differential CAR of 4.3% (0.0048*(10 − 1) = 4.3%) in Model A, the

effect of headline salience represents an economically significant increase in the immediate market reaction by one-third (1.4%/4.3% = 33%).[24] The coefficient on *NRANK*RSUE* is negative, which is consistent with the finding of Hirshleifer et al. (2009) that increased distraction, as proxied by the number of earnings announcements occurring on the same day, reduces the stock return sensitivity to earnings news.

We next examine whether *SALIENCE* effects on investors' reaction to earnings announcements differ between positive (columns five and six in Table 4) and non-positive (the last two columns in Table 4) earnings surprise sub-samples. The coefficient on *SALIENCE*RSUE* is positive and significant for positive earnings surprises but negative and insignificant for non-positive earnings surprises. In the positive subsample, an increase in the headline salience index of 1.0 corresponds to an increase in the differential CAR between the top and bottom deciles of 2.5% (0.0027 * (10 - 1) = 2.5%). Therefore, *SALIENCE* increases investors' immediate reaction to positive earnings surprises.[25]

Overall, consistent with the limited attention hypothesis, we find evidence that investors react more strongly to earnings news when the announcements have salient headlines. In addition, the immediate stock price effect of headline salience is stronger for positive earnings surprises.

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[24] Although the coefficient on salience is negative, the actual main effect of headline salience is positive: Main Effect = (Coefficient on Salience) + (Coefficient on *SALIENCE*RSUE*)*(Sample Mean *RSUE*) =-0.0061+0.0015*4.5=0.00065, where 4.5 is the mean *RSUE* (*RSUE* ranges from 0 to 9). We do not predict the sign of the main effect of the headline salience variable itself.

[25] Hutton, Miller, and Skinner (2003) find that investor responses to the additional information provided in managerial forecasts differ in good-news versus bad-news cases. Additional explanations are associated with greater investor reaction to good news, while responses to bad news are the same regardless of such explanations. Our study differs in that *SALIENCE* provides no new information and varies only with investor attention. Furthermore, we find that investors react to both positive and negative news, even when salience is zero.

Our next test provides evidence of salience effects on the post-announcement market reactions to earnings news. If headline salience causes a firm to react more strongly to earnings news, we expect less underreaction, and hence less positive (more negative) post-earnings announcement drift (H2). The first four columns of Table 5 present results for the full sample. To establish the baseline for the average PEAD in our sample, we first estimate a regression of post-announcement return, *CAR(+2,+61)* on decile rank of standardized unexpected earnings, *RSUE*, and commonly used controls for size, book-to-market, and momentum (Model A). The coefficient on *RSUE* is -0.0001 and statistically insignificant, indicating that the average PEAD for our sample announcements is indistinguishable from zero. This is consistent with prior literature, which shows that PEAD is less likely to be observed in recent years (Zhang 2010) and among relatively large and visible firms (Bernard and Thomas 1990), such as those in our sample that announce earnings via press releases. The absence of an average PEAD does not, however, preclude variation of PEAD in the cross-section in general or in the effect of *SALIENCE* on PEAD in particular.

Next, we examine the effect of *SALIENCE* on the cross-section of PEAD, controlling for firm characteristics (Model B). Consistent with H2, the coefficient on *SALIENCE*RSUE* is negative (-0.0024) and significant (t = -2.64), suggesting that the stronger initial reaction to earnings announcements due to higher *SALIENCE* is followed by subsequent stock return reversal. When we keep all other variables constant and equal to their sample means, an increase in the salience index of 1.0 corresponds to a decrease in PEAD from the sample mean of zero to a negative of 2.2% (-0.0024*(10-1) = -2.2%): in other words, an actual reversal. The 2.2% decrease in PEAD is greater than the 1.4% increase in the initial differential reaction due

to *SALIENCE* in Table 4. Taken together, these results suggest that investors not only undo their initial reaction due to salient headlines but even revise their beliefs in the opposite direction in the subsequent period.

Given the differential effect of salience on immediate market reaction in the good- and bad-news sub-samples, Table 5 also reports the regression results of the post-earnings announcement test within the positive (columns 5 and 6) and non-positive (the last two columns) SUE subsamples. Consistent with the stronger initial market response due to salience in the positive subsample in Table 4, the coefficient estimate on *SALIENCE*RSUE* in Model B indicates that there is a corresponding *reversal* in the post-earnings announcement period in the positive subsample and no significant effect of *SALIENCE* for non-positive earnings surprises. When we keep all other variables constant and equal to their subsample means, an increase in the headline salience index of 1.0 corresponds to a decrease in PEAD of 5.4% (-0.006 * (10-1) = -5.4%).

In summary, the results in Table 5 are consistent with the limited attention hypothesis, H2. The investors' stronger reaction to earnings announcements with salient headlines is followed by a lower post-earnings announcement drift. This behavior occurs predominantly for firms with positive earnings surprises.

4.3 Headline Salience and Managerial Incentives from Insider Selling and Equity Vesting

To examine managerial opportunism in the choice of salient headlines, we test whether firms with higher net insider selling after earnings announcements are more likely to headline performance in earnings press releases (H3). Table 6 shows the results of the ordered logistic regression of *SALIENCE* on the insider net selling during the period (+2,+30) after the earnings

announcement date, *INSIDERSELL*, and control variables. The first two columns show the results for the full sample. Consistent with H3, the coefficient on *INSIDERSELL* is positive and significant. This suggests that managers who are planning to sell firm shares are more likely to choose salient headlines to boost the stock price prior to the sale. The magnitude of the coefficient indicates that the odds of a firm using a headline with greater salience increase 1.09 times when *INSIDERSELL* increases by one standard deviation (exp(0.0070*12.796) = 1.09).[26, 27]

As in the investor reaction tests, we also examine the relation between insider trading and headline salience within the subsamples of positive (the middle two columns in Table 6) and non-positive (the last two columns in Table 6) earnings surprises separately. The positive effect of insider selling on headline salience is observed for both positive and negative earnings surprises and is somewhat stronger for positive earnings surprises. The results suggest that managers who plan to sell company shares use salient headlines in an attempt to boost the stock price by attracting investors' attention to positive aspects of firm performance both when earnings surprise is positive and when earnings surprise is negative.[28]

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[26] Alternatively, when we run a reverse regression with the same control variables, the coefficient on *SALIENCE* is 1.16, which implies that a one-unit increase in *SALIENCE* corresponds to a 1.16 increase in the number of net sale transactions.

[27] As a robustness test, we also use (i) an indicator variable that equals one if the insider net selling is positive, and zero otherwise, (ii) the number of shares sold minus the number of shares purchased by insiders, and (iii) the dollar amount of shares sold minus the dollar amount of shares purchased by insiders. We find that the coefficient on insider selling is positive and significant at the one percent level (untabulated).

[28] Comparing results in Table 6 with those in Table 4 suggests that the attempt to boost stock price by using salient headlines before selling company shares is effective only when earnings surprise is positive. The lack of stock price benefits in the negative subsample does not, however, imply that managers behave irrationally, since (i) there could be other benefits of headlining positive aspects of firm performance (e.g., reputation, career opportunities, and compensation), and (ii) the cost of using salient headlines is likely to be small. It is also possible that managers may simply be mistaken in thinking that headlining positive items dampens the negative response

The last two columns of Table 6 provide results using the price sensitivity of a CEO's newly vested stock shares and options, *VESTING.DELTA*, as an instrument for the manager's ex ante equity incentive (Edmans et al. 2017). The sample size for this analysis is reduced because grant-level information about vested and unvested equity awards is not available until fiscal year 2006 and because ExecuComp covers only S&P 1500 firms. The coefficient on *VESTING.DELTA* is positive and highly statistically significant. The economic magnitude is also large. The coefficient indicates that the odds of a firm using a headline with greater salience increase 1.31 times when *VESTING.DELTA* increases by one standard deviation (exp(0.0055*49.28) = 1.31).

Collectively, the evidence is consistent with managerial opportunism in the choice of headline salience. Firms in which managers intend to sell their firm's equity are more likely to choose headline salience to excite investor optimism about the firm. This enables them to take advantage of the high stock price when they sell after the earnings announcement.

4.3 Headline Salience and Managerial Incentives from Anticipated Stock Option Awards

Panel B of Table 6 presents the evidence for the logistic regression of headline salience for year t on the CEO's stock option awards in year t+1. Consistent with the prediction in H4, the estimated coefficient of the stock option award variable is negative and significant (-0.1401, p-value<0.001). The coefficient magnitude indicates that the odds of a firm using a headline with greater salience decrease 1.12 times when *OPTION.AWARDS* increases by one standard deviation (exp(0.1401*0.80) = 1.12).

to bad news. If they have had prior experience with headline salience in good-news situations when headlining does boost stock prices to the good news, they might be unaware of the evidence documented here that there are no positive benefits from headlining in bad-news cases.

5. Earnings Characteristics and the Choice of Salience

To provide further corroborative evidence on whether headline salience occurs more often in exploitable situations, we examine the earnings characteristics, such as earnings performance and persistence, that are associated with the managers' choice of salience. These cross-sectional tests contribute to a major stream of financial accounting research in which market misperceptions about future fundamental performance derive from misperceptions about the persistence of earnings or its components. The fundamental relation between salience and persistence provides a rational benchmark to illustrate that the market overreaction to headline salience is consistent with market misperceptions about persistence.

5.1 Firm Performance

We examine whether managers have stronger incentives to attract investor attention with high headline salience when firm performance is good and firm earnings are able to beat analysts' benchmark using the following cross-sectional and time-series regression:

$$SALIENCE_{jt} = \alpha + \beta_0 PERFORMANCE_{jt} + \beta_1 SIZE_{jt} + \beta_2 BTM_{jt} + \beta_3 RET_{jt} + \beta_4 AA_{jt} + \beta_5 STD.RET_{jt} + \beta_6 STD.EARN_{jt} + \varepsilon_{jt}, \quad (5)$$

where $SALIENCE_{jt}$ is the headline salience index of an annual earnings press release issued by firm j for fiscal year t; $PERFORMANCE_{jt}$ is firm j's current financial performance for fiscal year t. We measure firm performance using (i) earnings, *EARN*, calculated as earnings before extraordinary items scaled by total assets at the end of the fiscal year and (ii) an indicator variable *PROFIT* that equals one if *EARN* is greater than zero, and zero otherwise. When current firm performance is good, we expect the manager to be more likely to highlight the good performance to attract investor attention, $\beta_0 > 0$.

In addition to the level of earnings performance, we also consider how an anticipated earnings surprise by the manager affects her choice of headline salience. A manager is more likely to want to attract investor attention when the firm is able to beat market expectations than when it misses market expectations. Therefore, we expect a positive relationship between earnings surprise and salience ($\beta_0 > 0$) beyond the simple effect of the level of earnings performance. We use two measures of earnings surprise: the decile rank of the standardized unexpected earnings (*RSUE*) and a binary indicator for positive *SUE* (*POS.SUE*).

Table 7 presents the results of the ordered logistic regression of salience on firm performance and other firm characteristics. Consistent with our intuition, the coefficients on both earnings level and profit indicator are positive and statistically significant. The magnitude of the coefficient on *EARN* indicates that the odds of a firm using a headline with greater salience increase 1.31 times when *EARN* increases by one standard deviation (exp(1.4267*0.189) = 1.31). The coefficient estimates for the control variables suggest that large firms, growth firms, and firms with high past stock returns and low volatility are more likely to issue press releases with salient headlines.

The last two columns of Table 7 present evidence for the effect of earnings surprise incremental to the effect of earnings performance on headline salience. The coefficients on SUE rank, *RSUE*, and the positive news indicator variable, *POS.SUE*, are both positive and statistically significant. This indicates that firms prefer to headline performance when they are able to beat analysts' expectations. Overall, the results in Table 7 suggest that when firms have good financial performance and are able to beat analyst forecast over the period described by the earnings press release, management tends to place salient information in the headlines of

the press releases to attract investors' attention.

5.2 Persistence of Earnings Changes

Prior studies show that earnings increases that are more persistent are valued more highly by investors (Kormendi and Lipe 1987; Collins and Kothari 1989). If a firm's manager uses salience to signal higher persistence of current performance, headline salience would accompany persistent earnings changes. On the other hand, a manager may have the opposite incentive and use headline salience when earnings increase is unlikely to persist in order to take advantage of the current temporary good performance. In this case, headline salience and earnings persistence would be negatively correlated. We estimate persistence of earnings change as the slope, ρ, in the following time-series regression for a given firm:

$$\Delta EARN_{jt+1} = a + \rho_0 * \Delta EARN_{jt} + \varepsilon_{jt}$$

where $\Delta EARN_{jt} = EARN_{jt} - EARN_{jt-1}$ is earnings change from year *t-1* to *t*. Earnings persistence can be expressed as a function of *SALIENCE* and control variables as follows:

$$\rho = \rho_0 + \rho_1 SALIENCE_{jt} + \rho_2 EARN_{jt} + \rho_3 SIZE_{jt} + \rho_4 BTM_{jt} + \rho_5 RET_{jt} + \rho_6 AA_{jt} + \rho_7 STD.RET_{jt} + \rho_8 STD.EARN_{jt} + \rho_9 NEG.\Delta EARN_{jt}$$

Combining the above two equations and adding control variables for main effects, we estimate the following reduced form regression equation to investigate the relation between persistence and salience:[29]

$$\Delta EARN_{jt+1} = a + (\rho_0 + \rho_1 SALIENCE_{jt} + \rho_2 EARN_{jt} + \rho_3 SIZE_{jt} + \rho_4 BTM_{jt} + \rho_5 RET_{jt} \quad (6)$$

[29] In our tests examining the choice of headline salience, *SALIENCE* is the dependent variable except in the earnings persistence test. Since earnings persistence is not observable by the researcher for a given firm-year, we estimate it using the regression slope in a cross-sectional regression framework following Li (2008) and Frankel and Litov (2009). This method has the clear advantage of not requiring extended time-series data to estimate firm-specific earnings persistence. The resulting test has the reverse regression format with *SALIENCE* as the independent variable and the change in earnings as the dependent variable.

$$+ \rho_6 AA_{jt} + \rho_7 STD.RET_{jt} + \rho_8 STD.EARN_{jt} + \rho_9 NEG.\Delta EARN_{jt}) * \Delta EARN_{jt}$$
$$+ \beta_1 SALIENCE_{jt} + \beta_2 EARN_{jt} + \beta_3 SIZE_{jt} + \beta_4 BTM_{jt} + \beta_5 RET_{jt} + \beta_6 AA_{jt}$$
$$+ \beta_7 STD.RET_{jt} + \beta_8 STD.EARN_{jt} + \beta_9 NEG.\Delta EARN_{jt} + \varepsilon_{jt}$$

We control for firm performance, proxied by firm earnings (*EARN*), and the firm characteristics used in regression (5).[30] In addition, we control for the sign of earnings change since negative earnings changes are likely to be less persistent (Brooks and Buckmaster 1976; Hayn 1995; Nissim and Penman 2001). Specifically, we use anse indicator variable, *NEG.ΔEARN*, that equals one if $\Delta EARN_{jt}$ is negative, and zero otherwise. Since incentives to signal earnings persistence can differ for positive and negative earnings news, we estimate regression (6) using the full sample as well as subsamples of firm-years with positive and non-positive unexpected earnings separately.

Table 8 reports the results of the tests examining the relation between headline salience and persistence of current earnings change. The first two columns show the results for the full sample. Consistent with the previous literature, the negative coefficients on *EARN* level reflect reversion to the mean, while the negative coefficient on the interaction *NEG.ΔEARN*ΔEARN* indicates that negative earnings changes are less persistent. The coefficient on the interaction of *SALIENCE* and *ΔEARN* is negative and significant, indicating a negative association between *SALIENCE* and persistence of earnings change, and showing that the effect of *SALIENCE* is incremental to the effects of control variables. The magnitude of the coefficient on the interaction of *SALIENCE* and *ΔEARN* shows that an increase in the headline salience

[30] Although the result of regression (5) shows that there is no significant relation between earnings volatility and *SALIENCE*, we keep *STD.EARN* as a control variable in the earnings persistence regression (6), because previous literature finds that earnings persistence is associated with earnings volatility (Dichev and Tang 2009; Frankel and Litov 2009). We do not include an additional control variable for earnings surprise, *SUE*, since we use this variable to examine separately firms with positive and non-positive earnings surprises. The results are similar when we include or exclude these two variables.

index of 1.0 corresponds to a decrease in the persistence coefficient of 3.4% (1*0.0336). Therefore, it appears that firms do not on average use *SALIENCE* to signal higher persistence of current earnings change. Instead, firms headline performance when the current earnings change is less likely to persist in the future. This is consistent with the managers' opportunistic use of headline salience.[31]

Since incentives to signal earnings persistence may differ for positive and negative earnings news, we estimate the earnings persistence regression within the subsamples of positive (middle two columns in Table 8) and non-positive (last two columns in Table 8) earnings surprises separately. The results indicate that the relation between *SALIENCE* and earnings persistence is negative and significant in the positive surprise subsample and insignificant in the negative surprise subsample. Therefore, managers appear to use salient headlines strategically to attract investors' attention to temporary positive surprises.

The evidence on the return response in Tables 4 and 5 and the evidence in Table 8 provide a revealing insight into the importance of salience for investor perceptions. The immediate positive stock price effect of headline salience for good news suggests that investors mistakenly anticipate that the increase in earnings will persist. However, the evidence in Table 8 suggests that headline salience is associated with lower persistence of current earnings changes, so future increases in earnings will be smaller. Over time, the initial positive return

[31] In addition to the endogenous opportunistic choice of salience, the low earnings persistence itself can be endogenously influenced by concurrent earnings management. For example, evidence in Gopalan, Milbourn, Song, and Thakor (2014) and Edmans, Fang, and Lewellen (2017) shows that managers with shorter vesting periods and impending vesting equity are more likely to use accrual earnings management and cut R&D to boost short-term earnings and beat earnings targets.

reaction reverses when the earlier expected persistence of the high earnings does not materialize, and investors observe that the earnings increase was temporary. Thus, the return reversal in Table 5 is consistent with the evidence that *SALIENCE* is *negatively* related to earnings persistence in Table 8. To our knowledge, this is the first study to document a post-earnings announcement reversal, PEAR.

Taken together, the evidence suggests that managers may have behaved opportunistically in choosing headline salience to make hay while the sun shines. They choose headline salience for firms with current good news, where the current earnings increase is temporary.

5.3 Additional Cross-Sectional and Robustness Analyses

We next perform several additional analyses to provide further insight into the effects of headline salience and how it might differ from measures that past studies have used to test how managers influence investor perceptions. First, we examine the quantification style. Headline quantities generally come in two forms, in a percentage form such as "EPS increased by 30%," or in a level form such as "EPS of $4.00."[32] Of the two formats, it seems intuitive that percentages as benchmarked quantities are easier to interpret and thus more salient than level magnitudes; therefore, we expect them to generate stronger earnings announcement reactions. We test this prediction by comparing the market reactions between counts of percentage quantities, *%SALIENCE*, and counts of non-percentage quantities,

[32] We code the first category as quantities immediately followed by "percent", "percentage", or "%" and assign all other quantities to the second category. Although in some cases non-percentage quantities may reflect change from one level to another (e.g., "EPS of $4.00 vs. $3.00 prior year"), it is impractical to classify these cases accurately due to wide variation in the headline formats.

NON%SALIENCE. Consistent with percentages having greater salience, the coefficient on *RSUE*%SALIENCE* (0.0021, t = 4.07) is almost twice as large as the coefficient on *RSUE*NON%SALIENCE* (0.0011, t = 1.96); results are not tabulated for brevity.

Next, we examine whether investor response to *SALIENCE* varies depending on the nature or type of quantities appearing in headlines. Past research has shown that firms with poor earnings news tend either to emphasize other favorable non-earnings items or to highlight qualitative information instead (Hutton et al. 2003). These behaviors may be correlated with *SALIENCE*, which may explain our salience results. Since our results are primarily in the good-news sample, this confounding is less likely. Nevertheless, we perform additional tests to distinguish salience effects for earnings versus non-earnings headlined items.

As we mentioned earlier, it is difficult in our sample of over 16,000 observations to identify which specific accounting item each individual number in a headline is about. However, we can identify the category for the accounting terms that appear in headlines with numbers; see Table 2 for definitions of the various categories of accounting terms. We then compare salience effects by re-running the returns regressions in three subsamples: at least one accounting term in the headline appears in the EARNINGS* category, none of the accounting terms in the headlines belong in the EARNINGS* category, and none of the accounting terms in the headline belong in either the EARNINGS* or the REVENUES* category.

Past research has shown that managers use other tools besides quantification to influence investor perceptions, such as managing the tone of the earnings press release (Huang et al. 2014). To examine the valence effect of the headline text on investor response to earnings news, we measure headline tone following Loughran and Macdonald (2011) and add the

interaction variable *SALIENCE*RSUE*TONE* in the return regressions for the three sub-samples above.

For brevity, the results are presented in an internet appendix table. The results show that the coefficients on *SALIENCE*RSUE* for announcement returns and long-window post-earnings returns are significant only in the subsample where salient headlines contain at least one earnings word, and not in the other two subsamples. In other words, the salience effect is present for earnings-related quantities and not otherwise. Regarding tone effects, the coefficient on *SALIENCE*TONE*RSUE* is insignificant in all settings. This suggests the unimportance of headline tone for the salience effect, reflecting perhaps the difficulty of manipulating tone in just the headline of the earnings release.

To examine whether the salience effect we document is incremental to other factors or managerial tools that past studies have shown to affect investor reactions to earnings news, we orthogonalize *SALIENCE* to a wide set of variables covering the following four broad categories: firm characteristics, earnings press release and information environment characteristics, investor type, and announcement day characteristics. Appendix 1 contains the complete list of variables. We calculate the residuals from the regression of *SALIENCE* on this expanded list of explanatory variables to obtain *RES.SALIENCE*, and then re-estimate the market reaction regressions in Tables 4 and 5 replacing *SALIENCE* with this new variable. The results presented in Table 9, Panel A show that the coefficient for *RES.SALIENCE *RSUE* is significantly positive (0.0012, t = 3.03) for announcement date returns *CAR(-1,+1)*, and significantly negative (-0.0025, t = -2.28) for the post-announcement period market returns

CAR(+2+61).[33] Thus, our salience effect is distinct and robust to inclusion of these additional explanatory variables.

To address the possibility that our findings are driven by unobservable firm characteristics or firm-specific headlining style, the next robustness test uses the firm as its own control. Specifically, we select firms that switch from a zero headline salience in year *t-1* to a non-zero salience in year *t* or from a non-zero salience in year *t-1* to a zero salience in year *t*. We use firm-years with a non-zero salience as treatment firms and the same firms when they have a zero salience as control firms. The results presented in Panel B show that the effect of salience is robust to the use of the firm as its own control: the coefficient on *RES.SALIENCE *RSUE* is 0.0021 (*t* = 2.86) in the *CAR(-1,+1)* regression and -0.0040 (*t* = -2.19) in the *CAR(+2+61)* regression. We further control for lagged salience (Panel C) and firm and year fixed effects (Panel D) as alternative methods to control for unobservable firm characteristics and firm style. The effect of headline salience remains significant. In contrast, the effect of lagged salience is insignificant.

Finally, in Panel E we compare the effect of headline salience with that of headline length.[34] When we add headline length into the model, the effect of headline salience remains

[33] We also performed tests by directly adding the expanded set of explanatory variables as well as the respective interactions with *RSUE* in the market reaction regressions. The coefficient on *SALIENCE*RSUE* is 0.0012 (*t* = 2.97) in the *CAR(-1,+1)* regression and -0.0023 (*t* = -2.21) in the *CAR(+2+61)* regression (untabulated).

[34] We do not include headline length in the set of underlying factors that potentially drive salience because the use of quantities in the headline causes greater headline length, rather than the other way around. Our reading of a sample of randomly selected headlines suggests that an average of around 5.5 additional words is used to describe each quantity. And a minimum of two additional words is usually required to describe a quantity (e.g., "EPS of $0.44", "60% Earnings Increase"). To measure an upper limit of the headline length that is not driven by the presence of quantities, we estimate headline length as the number of words minus twice the number of quantities in the headline. When we do not subtract words required to describe quantities, the correlation between headline length and headline salience is high at 64%, the effect of salience on the immediate market reaction is

significant. In contrast, the effect of headline length is insignificant (t = -0.05 and -0.59 in the immediate and delayed market reaction tests, respectively). Therefore, the length of the headline does not explain the effect of headline salience on market reaction.

Overall, our extensive tests show that the effect of headline salience is robust to the inclusion of an extended set of control variables and the use of several test methodologies, and is therefore distinct from other factors indicated in prior research. In contrast, none of the variables in the extended set of control variables is associated with both stronger immediate reaction to earnings news and post-announcement reversal. Therefore, it seems unlikely that our findings are driven by an omitted correlated variable.

6. Conclusion

We test whether firms use headlines of earnings press releases to highlight financial performance, and whether this choice affects the market's immediate and subsequent reaction to earnings announcements. We propose that headlining quantitative information in the earnings press release increases the salience of the earnings news. Inclusion of quantities increases concreteness, goal relevance, credibility, and computational ease relative to qualitative text in the earnings announcement context. The psychology literature argues that these attributes increase processing fluency so that salient quantitative items are weighted more in decisions, and the accounting and finance literatures have found archival and experimental evidence consistent with the prediction.

We therefore offer a novel measure of headline salience based on the number of

still significant at the 1% level, and the effect on PEAD is significant at the 6.0% level (two-tailed test). The effect of headline length remains insignificant.

quantitative items in the headline of an earnings press release as a proxy for greater investor attention to test predictions of limited attention theories for how investors react to earnings news with varying salience. Investors with limited attention are expected to respond more strongly to more salient news at the announcement date, so any subsequent post-announcement price reaction will be weaker or may even reverse if there is overreaction at the announcement date. Consistent with this theory, our results indicate that the initial investor reaction is stronger, and post-announcement drift is negative (a reversal), for positive earnings announcements with salient headlines. To our knowledge, ours is the first study to document post-earnings announcement reversal (PEAR).

We also find evidence consistent with managers choosing headline salience opportunistically. Managers are more likely to choose high salience when they plan to sell their firm's shares after the earnings announcement and when the current good performance is less likely to persist. These findings suggest that managers strategically headline positive aspects of firm performance even though they are not likely to persist in an attempt to boost the stock price and then profit on personal account by selling company shares. We also find that managers are less likely to use salience before receiving stock option awards, consistent with managers seeking to avoid increasing their option strike prices before grant awards.

Together, these results suggest that at the time of earnings announcements, investors do not fully appreciate managers' opportunistic incentive to highlight temporary good performance by headlining. The market overreacts to the good earnings news of firms with salient headlines at the time of the announcement, insiders profit by selling firm shares on personal account, and investors subsequently revalue the firm downwards when they discover

that the previous good earnings performance does not persist.

Our paper contributes to the growing literature on disclosure presentation. We show that managerial incentives influence the earnings release format, which affects salience of the earnings news for investors. Corporate practices in writing press releases are a promising avenue for future research, as press releases are firms' primary and most timely disclosure medium, especially after Regulation FD. Our findings have relevance for investor relations executives and other managers responsible for press release disclosures, regulators concerned about disclosure practices, money managers, and the investment community at large. Our findings about headline salience, combined with recent evidence on the tone of qualitative text and managers' verbal communications, raise the question of whether accounting and financial regulators need to consider the broader character of firm communications to protect investors.

Appendix 1: Expanded Set of Control Variables

The appendix describes the expanded set of control variables that is used to calculate the residual salience. The set contains thirty-three variables, which we classify into the following four broad categories.

The first category relates to firm characteristics. The variables are cash flow from operations (*CFO*), change in *CFO* (*ΔCFO*), normal accruals (*NAccr*), change in normal accruals (*ΔNAccr*), sales (*SALES*), change in *SALES* (*ΔSALES*), profit margin (*PM*), and change in profit margin (*ΔPM*), an indicator for positive SUE (*POS.SUE*), firm size (*SIZE*), book-to-market ratio (*BTM*), past stock returns (*RET*), abnormal accruals (*AA*), return volatility (*STD.RET*), and earnings volatility (*STD.EARN*), with all continuous variables scaled by total assets.

The second category of variables relates to the firm's general information environment, including the quantity, quality, and type of the information contained in the earnings press release. The variables are the number of line items from the income statement (*IS.NUM*), balance sheet (*BS.NUM*), and cash flow statement (*CFS.NUM*) that are disclosed in the earnings press release, scaled by the total number of line items reported in the respective financial statements in the subsequent 10-Q report to the S.E.C.; the log of the total number of quantities appearing in the body of earnings press release (*TOTAL.NUM*); the log of the number of quantities appearing in the lead paragraph of the earnings press release (*LEAD.NUM*); the log of the total number of words contained in the body of the earnings press release (*TOTAL.LENGTH*); the headline tone (*TONE*); the tone of the body of the earnings press release text (*TOTAL.TONE*); the certainty of the language of the earnings press release text as determined by Demers and Vega's (2011) certainty measure (*TOTAL.CERTAINTY*); the log of the number of analysts following the firm (*NUM.ANALYSTS*); an indicator for the use of pro forma earnings (*PRO.FORMA*); and the absolute difference between the pro forma earnings and GAAP earnings (|*GAAP-PROFORMA*|). The last two variables are designed to control for the possibility that firms that use salient headlines are more likely to use pro forma earnings.

The third category captures the type of the firm's investor base. We use the proportion of shares owned by institutional investors (*INST.OWN*), the log of the number of institutions

that own firm shares (*INST.NUM*), and the log of the number of shares held by institutional investors (*INST.SHARES*).[35]

Our fourth and final category relates to the possibility that earnings announcements with salient headlines may cluster on particular days that tend to have different investor reactions. These variables are the number of same-day earnings announcements by other firms (*NRANK*), an indicator for a Friday announcement (*FRIDAY*), and the market volatility index on the earnings announcement date (*VIX*) to control for the volume of macroeconomic information on that day.[36]

[35] Our lack of access to such data precludes us from including more detailed measures of holdings and trades by individual and institutional investors.

[36] We do not tabulate the results of the first-stage regression for brevity. Consistent with H4, untabulated results show that measures capturing a high level of firm performance (i.e., *CFO*, *NAccr*, *SALES*, *PM*, and *POS.SUE*) continue to be associated with high salience. Additionally, headline salience is positively associated with *BS.NUM*, *TOTAL.NUM*, and *LEAD.NUM*, negatively associated with *VIX,* and unrelated to *IS.NUM*, *CFS.NUM*, *TOTAL.LENGTH*, *TONE*, *NUM.ANALYSTS*, *PRO.FORMA*, |*GAAP-PROFORMA*|, *INST.OWN*, *INST.NUM*, *INST.SHARES*, *NRANK*, and *FRIDAY*. The non-results for distraction proxies suggest that managers do not vary usage of salience with the risk of investor limited attention, perhaps because the actual cost of headlining numbers is small. When the risk of investor limited attention is low, the manager's decision to highlight good performance is more likely driven by other considerations such as reputation, career opportunities, or compensation.

References

Aboody, D. 1996. Recognition versus disclosure in the oil and gas industry. *Journal of Accounting Research* 34 (Supplement): 21–32.

Ahmed, A. S., E. Kilic, and G. J. Lobo. 2006. Does recognition versus disclosure matter? Evidence from value-relevance of banks' recognized and disclosed derivative financial instruments. *The Accounting Review* 81: 567–588.

Asch, S. E. 1946. Forming impressions of personality. *Journal of Abnormal and Social Psychology* 41: 1230–1240.

Bernard, V. L., and J. K. Thomas. 1990. Evidence that stock prices do not fully reflect the implications of current earnings for future earnings. *Journal of Accounting and Economics* 13: 305–340.

Bettis, J., J. Coles, and M. Lemmon. 2000. Corporate policies restricting trading by insiders. *Journal of Financial Economics* 57: 191–220.

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: 1011–1038.

Brooks, L. D., and D. A. Buckmaster. 1976. Further evidence of the time series properties of accounting income. *Journal of Finance* 31: 1359–1373.

Cohen, L., and D. Lou. 2012. Complicated firms. *Journal of Financial Economics* 104: 383–400.

Coles, J. L., N. D. Daniel, and L. Naveen. 2006 Managerial incentives and risk-taking. *Journal of Financial Economics* 79: 431–468.

Collins, D., and S. Kothari. 1989. An analysis of inter-temporal and cross-sectional determinants of earnings response coefficients. *Journal of Accounting and Economics* 11: 143–181.

Davis-Friday, P. Y., C. Liu, and H. F. Mittelstaedt. 2004. Recognition and disclosure reliability: Evidence from SFAS No. 106. *Contemporary Accounting Research* 21: 399–429.

DellaVigna, S., and J. Pollet. 2009. Investor inattention and Friday earnings announcements. *Journal of Finance* 64: 709–49.

Demers, E., and C. Vega. 2011. Linguistic tone in earnings announcements: News or noise? Working paper, INSEAD.

Dichev, I., and V. Tang. 2009. Earnings volatility and earnings persistence. *Journal of Accounting and Economics* 47: 160–181.

Edmans, A., V. Fang, and K. Lewellen. 2017. Equity vesting and investment. *The Review of Financial Studies* 30: 2229–2271.

Edmans, A., L. Goncalves-Pinto, M. Groen-Xu, and Y. Wang. 2017. Strategic news releases in equity vesting months. Working paper, London Business School.

Elliott, W. B., K. Rennekamp, and B. White. 2015. Does emphasizing concrete language in disclosures increase investors' comfort in their ability to evaluate a firm? *Review of Accounting Studies* 20: 839–865.

Engelberg, J. 2009. Costly information processing: Evidence from earnings announcements. Working paper, University of California, San Diego.

Fiske, S., and S. Taylor. 2016. *Social Cognition, from Brains to Culture*. New York: McGraw-Hill.

Files, R., E. Swanson, and S. Tse. 2009. Stealth disclosure of accounting restatements. *The Accounting Review* 84: 1495–1520.

Frankel, R., and L. Litov. 2009. Earnings persistence. *Journal of Accounting and Economics* 47: 182–190.

Frino, A., T. Viljoen, G. H. K. Wang, P. J. Westerholm, and H. Zheng. 2012. Are algorithmic trades informed? - An empirical analysis of algorithmic trading around earnings announcements. Working paper, the University of Sydney.

Gopalan, R., S. Huang, and J. Maharjan. 2016. The role of deferred pay in retaining managerial talent. Working paper, Washington University in St. Louis.

Gopalan, R., T. Milbourn, F. Song, and A. V. Thakor. 2014. Duration of executive compensation. *Journal of Finance* 69: 2777–2817.

Greene, W. 2003. Econometric Analysis. 5th edition. Upper Saddle River, NJ: Prentice Hall.

Hayn, C., 1995. The information content of losses. *Journal of Accounting and Economics* 20: 125–153.

Hirshleifer, D., S. S. Lim, and S. H. Teoh. 2009. Driven to distraction: Extraneous events and underreaction to earnings news. *Journal of Finance* 64: 2287–323.

Hirshleifer, D., S. S. Lim, and S. H. Teoh. 2011. Limited investor attention and stock market misreactions to accounting information. *Review of Asset Pricing Studies* 1: 35–73.

Hirshleifer, D., and S. H. Teoh. 2003. Limited attention, information disclosure, and financial reporting. *Journal of Accounting and Economics* 36: 337–386.

Huang, X., S. H. Teoh, and Y. L. Zhang. 2014. Tone management. *The Accounting Review* 89, 3: 1083–1113.

Hutton, A., G. Miller, and D. Skinner. 2003. The role of supplementary statements with management earnings forecasts. *Journal of Accounting Research* 41: 867–890.

Jeng, L. 1999. Corporate insiders and the window of opportunity. Working paper, Boston University.

Klibanoff, P., O. Lamont, and T. A. Wizman. 1998. Investor reaction to salient news in closed-end country funds. *Journal of Finance* 53: 673–699.

Konnikova, M. December 17, 2014. Headlines change the way we think. *New Yorker.* http://www.newyorker.com/science/maria-konnikova/headlines-change-way-think.

Kormendi, R., and R. Lipe. 1987. Earnings innovations, earnings persistence and stock returns. *Journal of Business* 60: 323–345.

Kothari, S. 2001. Capital markets research in accounting. *Journal of Accounting and Economics* 31: 105–231.

Li, F. 2008. Annual report readability, current earnings, and earnings persistence. *Journal of Accounting and Economics* 45: 221–247.

Li, F. 2011. Textual analysis of corporate disclosures: A survey of the literature. *Journal of Accounting Literature* 29: 143–165.

Livnat, J., and A. Mendenhall. 2006. Comparing the post-earnings announcement drift for surprises calculated from analyst and time series forecasts. *Journal of Accounting Research* 44: 177–205.

Lou, D. 2014. Attracting investor attention through advertising. *Review of Financial Studies* 27: 1797–1829.

Loughran, T., and B. McDonald. 2011. When is a liability not a liability? Textual analysis, dictionaries, and 10-Ks. *Journal of Finance* 66: 35–65.

Lundholm, R., R. Rogo, and J. L. Zhang. 2014. Restoring the tower of Babel: How foreign

firms communicate with US investors. *The Accounting Review* 89: 1453–1485.

Maines, L. A., and L. S. McDaniel. 2000. Effects of comprehensive-income characteristics on nonprofessional investors' judgments: The role of financial-statement presentation format. *The Accounting Review* 75: 179–207.

Mayew, W., and M. Venkatachalam. 2012. The power of voice: Managerial affective states and future firm performance. *Journal of Finance* 67: 1–44.

Miller, E. K., and J. D. Cohen. 2001. An integrative theory of prefrontal cortex function. *Annual Review of Neuroscience* 24: 167–202.

Miao, B., S. H. Teoh, and Z. Zhu. 2016. Limited attention, statement of cash flow disclosure, and the valuation of accruals. *Review of Accounting Studies* 21: 473–515.

Murdock, Bennet Jr. 1960. The distinctiveness of stimuli. *Psychological Review* 67: 16–31.

Nissim, D., and S. Penman. 2001. Ratio analysis and equity valuation: From research to practice. *Review of Accounting Studies* 6: 109–154.

Petersen, M. 2004. Information: Hard and soft. Working paper, Northwestern University.

Petersen, M. 2009. Estimating standard errors in finance panel data sets: Comparing approaches. *Review of Financial Studies* 22: 435–480.

Rabin, M., and J. Schrag. 1999. First impressions matter: A model of confirmatory bias. *Quarterly Journal of Economics* 114: 37–82.

Rennekamp, K. 2012. Processing fluency and investors' reactions to disclosure readability. *Journal of Accounting Research* 50: 1319–1354.

Richardson, S., S. H. Teoh, and P. Wysocki. 2004. The walkdown to beatable analysts' forecasts: The role of equity issuance and inside trading incentives. *Contemporary Accounting Research* 21: 885–924.

Rogers, J. 2008. Disclosure quality and management trading incentives. *Journal of Accounting Research* 46: 1265–1296.

Roulstone, D. 2003. The relation between insider-trading restrictions and executive compensation. *Journal of Accounting Research* 41: 525–551.

Salmon, F., and J. Stokes. 2010. Algorithms take control of Wall Street. *Wired Magazine http://www.wired.com/2010/12/ff_ai_flashtrading*.

Song, H., and N. Schwarz. 2008. If it's hard to read, it's hard to do: Processing fluency affects effort prediction and motivation. *Psychological Science* 19: 986–988.

Teoh, S. H., and T. J. Wong. 1993. Perceived auditor quality and the earnings response coefficient. *The Accounting Review* 68: 346–366.

Teoh, S. H., and Y. Zhang. 2011. Data Truncation Bias, Loss Firms, and Accounting Anomalies. *The Accounting Review* 86-4: 1445–1475.

Wall Street Journal, Market Watch, R. Orol. SEC's Schapiro eyes high frequency traders, May 6, 2011.

Yu, K. 2013. Does recognition versus disclosure affect value relevance? Evidence from pension accounting. *The Accounting Review* 88, 1095–1127.

Zhang, F. 2010. High-frequency trading, stock volatility, and price discovery. Working paper, Yale University.

Exhibit 1

Excerpts of headlines in the earnings press releases corresponding to different formats

Example 1 (Generic text of headline, Salience Index 0):

Headline:

AMAG Pharmaceuticals, Inc. Reports Financial Results for the Quarter and Year Ended December 31, 2007

Lead Paragraph:

CAMBRIDGE, Mass. - (BUSINESS WIRE) - AMAG Pharmaceuticals, Inc. (NASDAQ: AMAG), a biopharmaceutical company that utilizes its proprietary nanoparticle technology for the development and commercialization of therapeutic iron compounds to treat anemia and novel imaging agents to aid in the diagnosis of cancer and cardiovascular disease, today reported unaudited consolidated financial results for the quarter and twelve months ended December 31, 2007.

Example 2 (Headline with Salience Index 1):

Headline:

Wolverine World Wide, Inc. Announces 2005 Earnings Per Share Up 16.5%, Exceeding Company's Estimates

Lead Paragraph:

ROCKFORD, Mich., Feb. 8 /PRNewswire-FirstCall/ -- Wolverine World Wide, Inc. today reported record revenue and earnings per share for its fourth quarter and 2005 fiscal year, marking its fifth consecutive year of record results.

Example 3 (Headline with Salience Index 3):

Headline:

Coach Reports Fourth Quarter Earnings Per Share of $0.18; Up 80% and Ahead of Expectations; Raises Guidance for FY03; Results Driven by a 30% Sales Gain and Significant Margin Expansion

Lead Paragraph:

NEW YORK--(BUSINESS WIRE)--July 30, 2002--Coach, Inc. (NYSE: COH), a leading marketer of modern classic American accessories, today announced an 80% increase in net income for its fourth fiscal quarter ended June 29, 2002.

Negative SUE Headline Examples:

Dataram Reports 60% Earnings Increase, 43% Sales Growth in Fourth Quarter

CommNet Cellular Reports Robust Fiscal 1998 Growth of 21% in Proportionate New Subscribers and 26% in Proportionate Operating Cash Flow

PLATO Learning, Inc. Reports Fiscal Year 2002 Results; Quarterly and Annual Revenue Growth of 6%; Deferred Revenues Increase 82% During Year

Table 1 Distribution of Headline Salience

Panel A Frequency Distribution of Raw Headline Salience

RAW.SALIENCE	0	1	2	3	4	5	6	7	8	9
Number of observations	12494	2055	1464	491	306	108	101	56	54	48
%	72.09%	11.86%	8.45%	2.83%	1.77%	0.62%	0.58%	0.32%	0.31%	0.28%
RAW.SALIENCE	10	11	12	13	14	15	16	17	≥18	Total
Number of observations	41	28	18	23	10	7	10	3	15	17332
%	0.24%	0.16%	0.10%	0.13%	0.06%	0.04%	0.06%	0.02%	0.09%	100%

Panel B Autocorrelations of Headline Salience

Salience Variable	$SALIENCE_t$	$SALIENCE.Dummy_t$
$SALIENCE_{t-1}$	**0.360**	**0.339**
$SALIENCE.Dummy_{t-1}$	**0.340**	**0.326**

Panel C Transition Matrix for Headline Salience

	$SALIENCE_t$			
	0	1	2	3
$SALIENCE_{t-1}$				
0	80.38%	9.41%	5.97%	4.25%
1	55.37%	23.95%	12.22%	8.45%
2	47.53%	15.29%	21.18%	16.00%
3	30.73%	8.92%	14.01%	46.34%

Panel D Average Salience by Earnings Announcement Year

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
N	376	1663	1874	1796	1914	1791	2034	1966	2026	1143	749
Mean	0.293	0.320	0.387	0.402	0.316	0.256	0.659	0.712	0.765	0.613	1.041
% Salient	18.7%	21.6%	23.9%	25.3%	19.9%	17.2%	35.2%	34.8%	37.0%	27.3%	44.9%

Table 2 Salience and Accounting Terms

SALIENCE	0	1	2	3
N	12494	2055	1464	1319
*EARNINGS**	0.197	0.542	0.720	0.871
*REVENUE**	0.131	0.454	0.639	0.768
*CASH**	0.018	0.042	0.051	0.169
*CHARGE**	0.004	0.032	0.038	0.058
*COST**	0.004	0.011	0.011	0.045
*LOSS**	0.006	0.019	0.040	0.077
*RESERVE**	0.005	0.018	0.010	0.029
*ORDER**	0.003	0.008	0.009	0.021

The table reports frequency of accounting terms for different levels of the salience index, *SALIENCE*. *EARNINGS** is an indicator variable that equals one if the headline contains one or more of the following words: "earnings", "EPS", "income", "EBITDA", "EBT", "EBIT", "profit", "profits", "loss", or "losses", and zero otherwise. *REVENUE** is an indicator variable that equals one if the headline contains one or more of the following words: "sales", "revenue", or "revenues", and zero otherwise. *CASH** is an indicator variable that equals one if the headline contains the word "cash" (the category includes "operating cash flow", "free cash flow", and "cash flow"), and zero otherwise. *CHARGE** is an indicator variable that equals one if the headline contains one or more of the following words: "charge", or "charges" (the category includes "one-time charge", "special charge", and "unusual charge"), and zero otherwise. *COST** is an indicator variable that equals one if the headline contains one or more of the following words: "cost", "costs", "expense", or "expenses" (the category includes "restructuring cost", "reserve cost", and "merger-related cost"), and zero otherwise. *LOSS** is an indicator variable that equals one if the headline contains one or more of the following words: "loss" or "losses" (the category is a subcategory of *EARNINGS**), and zero otherwise. *RESERVE** is an indicator variable that equals one if the headline contains one or more of the following words: "reserve", "reserves", or "production" (the category includes "proved reserves", "reserve replacement", and "oil and gas production and reserves"), and zero otherwise. *ORDER** is an indicator variable that equals one if the headline contains one or more of the following words: "order" or "orders" (the category includes "new orders", "order backlog", and "order bookings"), and zero otherwise.

Table 3 Descriptive Statistics

Variable	Mean	Median	STDDEV	P10	P25	P75	P90
SALIENCE	0.507	0.000	0.859	0.000	0.000	0.727	2.000
SUE	-0.011	0.000	0.059	-0.024	-0.003	0.002	0.008
EARN	0.010	0.043	0.189	-0.176	-0.013	0.103	0.156
PROFIT	0.679	1.000	0.469	0.000	0.045	1.000	1.000
CFO	0.070	0.090	0.187	-0.107	0.002	0.174	0.243
MV	2695	543	6824	67	164	1791	6163
BTM	0.565	0.450	0.475	0.163	0.273	0.716	1.075
RET	0.181	0.062	0.640	-0.436	-0.214	0.388	0.880
AA	-0.006	-0.003	0.110	-0.117	-0.052	0.055	0.102
STD.RET	0.035	0.032	0.016	0.018	0.023	0.044	0.056
STD.EARN	0.070	0.039	0.086	0.005	0.015	0.092	0.176
INSIDERSELL	4.204	0.000	12.796	-0.818	0.000	2.636	12.364
VESTING.DELTA	19.601	1.303	49.282	0	0	15.508	55.733
# EA	161	162	95	42	82	211	294
CAR (-1,+1)	0.005	-0.001	0.100	-0.101	-0.046	0.054	0.119
CAR(+2,+60)	0.016	-0.001	0.244	-0.246	-0.118	0.126	0.281

The table reports time-series means of by-year univariate statistics of key variables over the sample period, 1998 to 2008. *SALIENCE* is the salience index that measures the number of times quantities appear in the headline of an earnings press release, and its measurement is as explained in Table 1. *SUE* is the standardized unexpected earnings, calculated as the difference between announced earnings as reported by I/B/E/S and the consensus earnings forecast, scaled by stock price at the end of the previous fiscal year. *EARN* is the annual earnings scaled by the book value of assets at the beginning of the year. *PROFIT* is equal to 1 if *EARN* is positive, and zero otherwise. *CFO* is cash flows from operations scaled by the book value of assets at the beginning of the year. *MV* is market value of equity at the end of the fiscal year. *SIZE* is the logarithm of market value of equity at the end of the fiscal year. *BTM* is the book-to-market ratio measured at the end of the previous fiscal year. *AA* is the discretionary accruals calculated using the 2-digit industry cross-sectional modified Jones model. *NAccr* is normal accruals calculated as total accruals, *TAcc*, minus abnormal accruals, *AA*, scaled by the book value of assets at the beginning of the year. *STD.RET* is the standard deviation of monthly stock returns over the previous fiscal year. *STD.EARN* is the standard deviation of *EARN* measured over the last five years. *INSIDERSELL* is the net number of insider sale transactions during the period (+2,+30) after the earnings announcement date. *VESTING.DELTA* is the dollar change of the CEO's stock shares and options vesting in the previous fiscal year for a 1% change in the stock price, calculated as the delta of the vesting shares (the number of vesting shares times the stock price at the end of the previous fiscal year times 1%) plus the aggregate delta of the vesting options (calculated by grouping vesting options based on expiry dates and exercise price and using the Black-Scholes formula). *# EA* is the number of same-day earnings announcements by other firms. *CAR(-1,+1)* is the cumulative abnormal returns over the three-trading-day window centered on the earnings announcement date. *CAR (+2,+61)* is the cumulative abnormal return over the sixty-trading-day window starting two days after the earnings announcement date.

Table 4 Effect of Headline Salience on Announcement Period *CAR* (*-1, +1*)

$$CAR(-1,+1) = \alpha + \beta_0 RSUE_{jt} + \beta_1 SALIENCE_{jt} + \beta_2 RSUE_{jt} * SALIENCE_{jt} + \beta_3 Controls + \beta_4 RSUE_{jt} * Controls + \varepsilon_{jt}$$

Sample	Full sample				SUE > 0		SUE ≤ 0	
Model	Model A		Model B		Model B		Model B	
DEP. VAR.	*CAR (-1,+1)*	*t-stats*	*CAR (-1,+1)*	*t-stats*	*CAR (-1,+1)*	*t-stats*	*CAR (-1,+1)*	*t-stats*
INTERCEPT	-0.028	**-7.41**	-0.0209	**-2.09**	-0.055	-1.64	-0.0037	-0.28
RSUE	0.0048	**16.54**	0.0058	**2.88**	0.0111	**2.22**	-0.0046	-0.83
SALIENCE			-0.007	**-3.58**	-0.014	**-2.87**	-0.0023	-0.78
*SALIENCE*RSUE*			0.0016	**4.51**	0.0027	**3.51**	-0.0002	-0.24
EARN			-0.0017	-0.17	-0.0098	-0.25	0.0364	**2.78**
SIZE	-0.0002	-0.42	-0.0026	**-2.25**	0.0043	1.36	-0.0056	**-3.33**
BTM	0.0107	**6.06**	0.0122	**4.05**	0.0064	0.57	0.0062	**1.72**
RET	0.0133	**10.96**	0.016	**6.6**	0.0126	1.52	0.0164	**5.04**
AA			0.0061	0.33	-0.07	-1.08	-0.0344	-1.43
STD.RET			-0.0653	-0.51	-0.2261	-0.5	0.1153	0.69
NRANK			0.0015	**2.09**	0.0011	0.52	0.0012	1.26
*EARN*RSUE*			0.0054	**2.95**	0.0075	1.4	-0.0212	**-3.08**
*SIZE*RSUE*			0.0002	1.09	-0.0008	-1.62	0.002	**3.29**
*BTM*RSUE*			-0.0008	-1.44	-0.0004	-0.25	0.0039	**2.28**
*RET*RSUE*			-0.0007	-1.64	-0.0003	-0.27	-0.0004	-0.33
*AA*RSUE*			-0.0069	**-2.03**	0.0014	0.15	0.0264	**2.32**
*STD.RET*RSUE*			-0.01	-0.4	0.0141	0.22	-0.157	**-2.27**
*NRANK*RSUE*			-0.0003	**-2.14**	-0.0002	-0.78	-0.0001	-0.21
#obs	16,424		14,677		7,826		6,851	
Adj. R^2	3.88%		4.51%		2.89%		2.52%	

The dependent variable, *CAR*(-1,+1), is the announcement window reaction to the earnings news, and it is regressed on *SALIENCE*, the interaction variable *SALIENCE*RSUE* and controls. *NRANK* is the number-of-announcements decile. All other variables are as defined in Table 3. The *t*-statistics are based on standard errors clustered by firm and year. *t*-statistics reported in bold are significant at the 10% level or lower based on the two-tailed *t*-test.

Table 5 Effect of Headline Salience on Post-Announcement Period CAR (+2, +61)

$$CAR(+2,+61) = \alpha + \beta_0 RSUE_{jt} + \beta_1 SALIENCE_{jt} + \beta_2 RSUE_{jt} * SALIENCE_{jt} + \beta_3 Controls + \beta_4 RSUE_{jt} * Controls + \varepsilon_{jt}$$

Sample	Full sample				SUE > 0		SUE ≤ 0	
Model	Model A		Model B		Model B		Model B	
DEP. VAR.	*CAR (+2,+61)*	*t-stats*	*CAR (+2,+61)*	*t-stats*	*CAR (+2,+61)*	*t-stats*	*CAR (+2,+61)*	*t-stats*
INTERCEPT	-0.0455	**-3.86**	-0.026	-0.78	0.0543	0.61	-0.0308	-0.64
RSUE	-0.0001	-0.14	0.0111	**1.75**	-0.0015	-0.11	0.0009	0.05
SALIENCE			-0.0007	-0.13	0.023	**2.2**	-0.0128	-1.52
*SALIENCE*RSUE*			-0.0024	**-2.64**	-0.006	**-3.62**	0.0026	0.93
EARN			0.062	1.62	0.0899	0.93	0.1107	**1.94**
SIZE	0.0035	**2.68**	0.004	1.12	-0.0014	-0.17	0.0059	1.06
BTM	0.0671	**10.71**	0.0684	**6.04**	0.1081	**3.03**	0.0586	**4.21**
RET	0.0382	**10.32**	0.0259	**3.59**	0.0707	**3.07**	0.0226	**2.33**
AA			-0.0323	**-0.55**	0.1491	**0.89**	-0.0813	-0.98
STD.RET			0.032	0.07	-5.0516	**-5.06**	0.5844	0.95
NRANK			-0.0033	-1.54	-0.0014	-0.25	-0.0051	-1.61
*EARN*RSUE*			0.0059	0.9	0.0074	0.54	-0.0183	-0.8
*SIZE*RSUE*			-0.0012	**-1.83**	-0.0001	-0.1	-0.0009	-0.46
*BTM*RSUE*			-0.0009	-0.42	-0.0067	-1.29	0.0048	0.78
*RET*RSUE*			0.0025	**1.91**	-0.0034	-1.01	0.0042	1.03
*AA*RSUE*			-0.0161	-1.49	-0.0427	**-1.72**	0.0104	0.31
*STD.RET*RSUE*			-0.15	**-1.9**	0.5259	**3.43**	-0.3015	-1.22
*NRANK*RSUE*			0.0005	1.19	0.0002	0.22	0.0017	1.46
#obs	16,424		14,677		7,826		6,851	
Adj. R^2	2.58%		3.55%		5.47%		2.54%	

The dependent variable, *CAR*(*+2,+61*), is the cumulative abnormal return over the sixty-trading-day window starting two days after the earnings announcement date. It is regressed on *SALIENCE,* the interaction variable *SALIENCE*RSUE* and controls. All variables are as defined in Table 3 or Table 4. The *t*-statistics are based on standard errors clustered by firm and year. *t*-statistics reported in bold are significant at the 10% level or lower based on the two-tailed *t*-test.

Table 6 Headline Salience and Management Incentives

Panel A: Insider Selling

$$SALIENCE_{jt} = \alpha + \beta_0\, INSIDERSELL_{jt+1} + \beta_1\, EARN_{jt} + \beta_2\, SIZE_{jt} + \beta_3\, BTM_{jt} + \beta_4\, RET_{jt} + \beta_5\, AA_{jt} + \beta_6\, STD.RET_{jt} + \varepsilon_{jt}$$

Model	Full Sample		SUE > 0		SUE ≤ 0		Equity Vesting Subsample	
DEP. VAR.	*SALIENCE*	*p-value*	*SALIENCE*	*p-value*	*SALIENCE*	*p-value*	*SALIENCE*	*p-value*
INTERCEPT	1.2287	**<0.001**	0.9882	**<0.001**	1.4686	**<0.001**	1.6593	**0.0048**
INSIDERSELL	0.0070	**<0.001**	0.0071	**<0.001**	0.0052	**0.0294**		
VESTING.DELTA							0.0055	**<0.001**
EARN	1.3511	**<0.001**	1.2964	**<0.001**	1.3983	**<0.001**	1.0061	0.2151
SIZE	0.0756	**<0.001**	0.0662	**0.0023**	0.0789	**0.0010**	0.0927	0.1103
BTM	-0.2494	**<0.001**	-0.2036	**0.0112**	-0.2953	**<0.001**	-0.0818	0.7302
RET	0.0927	**<0.001**	0.0771	**0.0038**	0.1088	**0.0011**	-0.2461	0.1922
AA	-0.4415	**0.0694**	-0.4097	0.1917	-0.4238	0.2251	-1.2550	0.1580
STD.RET	-4.3079	**0.0070**	-8.6757	**<0.001**	0.9222	0.6513	14.6546	0.0863
$Threshhold_1$	1.9486	**<0.001**	1.6739	**<0.001**	2.2408	**<0.001**	2.0881	**<0.001**
$Threshhold_2$	2.8052	**<0.001**	2.5186	**<0.001**	3.1221	**<0.001**	2.5447	**<0.001**
#obs	14,749		7,836		6,913		1,128	
Pseudo-R^2	3.76%		3.74%		3.02%		3.39%	

Panel B: Option Grants

$$SALIENCE_{jt} = \alpha + \beta_0\, OPTION.AWARDS_{jt+1} + \beta_1\, EARN_{jt} + \beta_2\, SIZE_{jt} + \beta_3\, BTM_{jt} + \beta_4\, RET_{jt} + \beta_5\, AA_{jt} + \beta_6\, STD.RET_{jt} + \varepsilon_{jt}$$

Model	Full Sample		SUE > 0		SUE ≤ 0	
DEP. VAR.	*SALIENCE*	*p-value*	*SALIENCE*	*p-value*	*SALIENCE*	*p-value*
INTERCEPT	1.5491	**<0.001**	2.0125	**<0.001**	1.2132	**<0.001**
$OPTION.AWARDS_{t+1}$	-0.1401	**<0.001**	-0.1776	**0.0047**	-0.1155	**0.0132**
EARN	1.1842	**<0.001**	1.5500	**<0.001**	0.8713	**0.0225**
SIZE	0.1380	**<0.001**	0.1650	**<0.001**	0.1159	**<0.001**
BTM	-0.2405	**0.0235**	-0.2541	**0.0528**	-0.2168	**0.0991**
RET	0.0988	**0.0020**	0.0983	0.1311	0.0748	**0.0424**
AA	-0.7494	**0.0423**	-1.6285	**0.0076**	-0.1708	0.6913
STD.RET	-5.2649	**0.0352**	-0.4422	0.9015	-8.0327	**0.0077**
$Threshhold_1$	2.2589	**<0.001**	2.7856	**<0.001**	1.8914	**<0.001**
$Threshhold_2$	3.0474	**<0.001**	3.5555	**<0.001**	2.6927	**<0.001**
#obs	8,035		4,740		3,295	
Pseudo-R^2	2.76%		3.06%		2.14%	

Panel A reports results of the ordered logistic regression to test the relation between headline salience and insider selling. The last two columns of the table report results using an instrument-variable approach, in which we use price sensitivity of recently vested equity as an instrument for ex ante equity incentives. *VESTING.DELTA* is the sum of the delta of the CEO's stocks and options that are vested in

the previous fiscal year. The analysis uses the grant-level data on vesting stocks and vested and unvested options available on ExecuComp for S&P 1500 firms beginning fiscal year 2006. Panel B reports results of the ordered logistic regression to test the relation between headline salience and CEO options grants. $OPTION.AWARDS_{t+1}$ is the log of one plus the value of a CEO's option awards in fiscal year $t+1$ (ExecuComp item OPTION_AWARDS_BLK_VALUE). All other variables are as defined in Table 3. $Threshhold_{1,2}$ are threshold parameters required for identification of the ordered logit model (Greene 2003, section 21.8). The *p*-values are based on a two-tailed test with standard errors clustered by firm and year.

Table 7 Headline Salience, Firm Performance, and Earnings Surpise: Ordered Logistic Regression

$$SALIENCE_{jt} = \alpha + \beta_0 PERFORMANCE_{jt} + \beta_1 SIZE_{jt} + \beta_2 BTM_{jt} + \beta_3 RET_{jt} + \beta_4 AA_{jt} + \beta_5 STD.RET_{jt} + \beta_6 STD.EARN_{jt} + \varepsilon_{jt}$$

Model	Model A		Model B		Model C		Model D	
DEP. VAR.	*SALIENCE*	*p-value*	*SALIENCE*	*p-value*	*SALIENCE*	*p-value*	*SALIENCE*	*p-value*
INTERCEPT	1.2681	**<0.001**	1.7128	**<0.001**	1.3924	**<0.001**	1.3271	**<0.001**
EARN	1.4267	**<0.001**			1.3663	**<0.001**	1.3653	**<0.001**
PROFIT			0.5354	**<0.001**				
RSUE					0.0294	**<0.001**		
POS.SUE							0.1602	**<0.001**
SIZE	0.0861	**<0.001**	0.0911	**<0.001**	0.0842	**<0.001**	0.0816	**<0.001**
BTM	-0.2446	**<0.001**	-0.2306	**<0.001**	-0.2395	**<0.001**	-0.2383	**<0.001**
RET	0.1107	**<0.001**	0.1136	**<0.001**	0.1000	**<0.001**	0.0992	**<0.001**
AA	-0.5099	**0.0355**	-0.1330	0.5397	-0.5155	**0.0328**	-0.4869	**0.0400**
STD.RET	-5.2030	**0.0015**	-4.2051	**0.0105**	-5.0861	**0.0020**	-5.1601	**<0.001**
STD.EARN	0.3636	0.2029	0.3578	0.1989	0.3226	0.2599	0.3551	0.2132
$Threshhold_1$	1.9862	**<0.001**	2.4302	**<0.001**	2.1106	**<0.001**	2.0460	**<0.001**
$Threshhold_2$	2.8406	**<0.001**	3.2839	**<0.001**	2.9666	**<0.001**	2.9011	**<0.001**
#obs	14,749		14,749		14,706		14,749	
Pseudo-R^2	3.52%		3.43%		3.61%		3.64%	

The table reports results of the ordered logistic regression to test the relation between headline salience and firm performance and earnings surprise. *RSUE* is the decile rank of the standardized unexpected earnings, *SUE*. *POS.SUE* is an indicator variable that equals one if earnings surprise is positive, and zero otherwise. All other variables are as defined in Table 3. $Threshhold_{1,2}$ are threshold parameters required for identification of the ordered logit model (Greene 2003, section 21.8). The *p*-values are based on a two-tailed test with standard errors clustered by firm and year.

Table 8 Headline Salience and Earnings Persistence

$$\Delta EARN_{t+1} = a + (\rho_0 + \rho_1 SALIENCE_t + \rho_2 EARN_t + \rho_3 SIZE_t + \rho_4 BTM_t + \rho_5 RET_t + \rho_6 AA_t + \rho_7 STD.RET_t + \rho_8 STD.EARN_t + \rho_9 NEG.\Delta EARN_t) * \Delta EARN_t + MAIN\ EFFECTS + \varepsilon_t$$

Model	Full Sample		SUE > 0		SUE ≤ 0	
DEP. VAR.	$\Delta EARN_{t+1}$	*t-stats*	$\Delta EARN_{t+1}$	*t-stats*	$\Delta EARN_{t+1}$	*t-stats*
INTERCEPT	0.0309	**4.03**	0.0347	**3.15**	0.0270	**2.47**
*SALIENCE*ΔEARN*	-0.0336	**-2.48**	-0.0395	**-2.16**	-0.0210	-1.04
*EARN*ΔEARN*	-0.0539	-0.88	-0.2048	**-2.17**	0.0414	0.51
*SIZE*ΔEARN*	-0.0165	**-1.84**	-0.0278	**-2.41**	-0.0001	-0.01
*BTM*ΔEARN*	-0.0565	**-1.73**	-0.0522	-1.05	-0.0577	-1.33
*RET*ΔEARN*	0.0166	**1.75**	0.0169	1.28	0.0226	**1.71**
*AA*ΔEARN*	0.1641	1.50	0.2980	**2.06**	0.0975	0.62
*STD.RET*ΔEARN*	-1.4552	**-1.92**	-2.0559	**-1.94**	-0.8456	-0.77
*STD.EARN*ΔEARN*	-0.0434	-0.51	0.0493	0.42	-0.1002	-0.84
*NEG.ΔEARN*ΔEARN*	-0.1128	**-2.20**	-0.2399	**-3.27**	-0.0096	-0.13
ΔEARN	0.2003	**2.33**	0.2715	**2.27**	0.0859	0.68
EARN	-0.2703	**-18.02**	-0.2485	**-13.14**	-0.2863	**-11.92**
SALIENCE	0.0018	**1.89**	0.0023	2.02	0.0009	0.56
SIZE	0.0004	0.54	0.0002	0.19	0.0002	0.21
BTM	0.0001	0.04	-0.0042	-1.36	0.0038	1.23
RET	0.0176	**6.77**	0.0174	**4.73**	0.0163	**4.78**
AA	-0.2571	**-13.09**	-0.2441	**-9.67**	-0.2706	**-8.85**
STD.RET	-1.1389	**-10.92**	-1.0897	**-7.39**	-1.1491	**-7.75**
STD.EARN	-0.0758	**-3.48**	-0.0707	**-2.49**	-0.0828	**-2.49**
NEG.ΔEARN	-0.0060	**-2.20**	-0.0089	**-2.52**	-0.0015	-0.37
#obs	11,611		6,293		5,318	
Adj. R^2	30.33%		31.18%		30.44%	

The dependent variable, $\Delta EARN_{t+1}$, is change in *EARN* from year *t* to year *t+1*. $NEG.\Delta EARN_t$ is an indicator variable that equals one if $\Delta EARN_t$ is negative, and zero otherwise. All other variables are as defined in Table 3. The first two columns report regression results for the full sample. The third and fourth (fifth and sixth) columns report results for the subsample of firm-years with positive (non-positive) SUE, respectively. The *t*-statistics are based on standard errors clustered by firm and year. *t*-statistics in bold are significant at the ten percent level or lower based on the two-tailed *t*-test.

Table 9 Additional Analysis: Incremental Effect of Salience

$$CAR(-1,+1) \text{ or } CAR(+2,+61) = \alpha + \beta_0 RSUE_{jt} + \beta_1 SALIENCE_{jt} + \beta_2 RSUE_{jt} * SALIENCE_{jt} + \beta_3 Controls + \beta_4 RSUE_{jt} * Controls + \varepsilon_{jt},$$

DEP. VAR.	*CAR(-1,+1)*	*t-stats*	*CAR(+2,+61)*	*t-stats*
Panel A: Using Residual Salience				
*RES.SALIENCE*RSUE*	0.0012	**3.03**	-0.0025	**-2.28**
#obs	10,801		10,801	
Adj. R^2	5.65%		3.42%	
Panel B: Using Firm as Its Own Control				
*SALIENCE*RSUE*	0.0021	**2.86**	-0.0040	**-2.19**
#obs	4,302		4,302	
Adj. R^2	5.33%		3.79%	
Panel C: Controlling for Lagged Salience				
*SALIENCE*RSUE*	0.0014	**3.26**	-0.0025	**-2.56**
*LAG.SALIENCE*RSUE*	0.0003	0.73	0.0002	0.13
#obs	12,467		12,467	
Adj. R^2	5.00%		3.87%	
Panel D: Controlling for Firm and Year Fixed effects				
*SALIENCE*RSUE*	0.0020	**5.27**	-0.0024	**-2.33**
#obs	14,677		14,677	
Adj. R^2	29.42%		34.81%	
Panel E: Controlling for Headline Length				
*SALIENCE*RSUE*	0.0017	**3.96**	-0.0024	**-2.08**
*HEAD.LENGTH*RSUE*	0.0000	0.05	-0.0001	-0.59
#obs	14,677		14,677	
Adj. R^2	4.43%		3.67%	

CAR(-1,+1) is the announcement window reaction to the earnings news, and *CAR*(*+2,+61*) is the cumulative abnormal return over the sixty-trading-day window starting two days after the earnings announcement date. All regressions include the base set of control variables (*EARN*, *SIZE*, *BTM*, *RET*, *AA*, *STD.RET*, *NRANK*) and additional controls when indicated. *RES.SALIENCE* in Panel A is estimated as the residuals from the regression of headline salience on the extended set of Appendix 1 variables. Panel B reports the results for the sample of firms that switch from a zero headline salience in year *t-1* to a non-zero salience in year *t* or from a non-zero salience in year *t-1* to a zero salience in year *t*. Firm-years with a non-zero salience are used as treatment firms, and the same firms when they have a zero salience are used as control firms. Panel C further controls for lagged salience. Panel D includes firm and year fixed effects. Panel E includes headline length calculated as the number of words minus 2*number of quantities in the headline. Standard errors of the *t*-statistics are clustered by firm and year. *t*-statistics reported in bold are significant at the 10% level or lower based on the two-tailed *t*-test.