Headline Salience and Over- and Underreactions to Earnings

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If investors have limited attention, then greater salience of earnings news implies a stronger announcement date return reaction, and a weaker post-earnings announcement drift (PEAD) or reversal (PEAR). Using a new measure, *SALIENCE*, calculated as the number of quantitative items in an earnings press release headline, we find strong evidence consistent with salience effects. Higher *SALIENCE* firms are more likely to be profit firms, have higher current earnings and operating cash flows, lower earnings persistence, and greater post-announcement insider selling. For firms with positive earnings surprises, higher *SALIENCE* is associated with stronger announcement reaction and subsequent PEAR. These findings are consistent with investor limited attention, and managers opportunistically headlining positive financial information in the earnings press release to incite overoptimism in investors with limited attention.

1. Introduction

Soon after the close of each quarter and before the filing of mandated financial reports, many firms disclose financial performance information via earnings press releases. Stock price reactions and trading volumes tend to be larger around earnings announcements than at any other time in the year, consistent with earnings announcements conveying credible, timely, and important information to investors. Given the importance of earnings press releases to investors, managers can potentially use such announcements to influence investor perceptions about the firm. In this study, we explore whether managers strategically design the presentation of earnings press releases, and how the form of presentation affects investor perceptions. A novel feature of this study is that we focus on how managers exploit salience by highlighting quantitative information about the firm in the headline of the earnings press release.

The psychology literature emphasizes the importance of salience, which is the tendency for the features of the presentation of an information signal to capture attention. Salience effects are robust and widespread and individuals react more strongly to information that is salient (Fiske and Taylor 1991). The accounting and financial economics literatures document that salience affects equity values; see Lim and Teoh (2010) for a review. In theories of limited attention in capital markets, investors use only a subset of public information to value stocks (e.g. Hirshleifer and Teoh 2003; Della Vigna and Pollett 2009; Hirshleifer, Lim, and Teoh 2011). Salient information is more likely to be immediately processed by investors with limited attention whereas non-salient information is more likely to be neglected first and reflected in market prices only with a delay. The speed and completeness of price reactions to information therefore depend on its salience.

Rabin and Schrag (1999) suggest in their article "First Impressions Matter" that information received first, such as information contained in a title, biases the interpretation of subsequent information due to the confirmatory bias. Highlighting favorable information upfront allows a firm to distort positively readers' interpretation of the rest of the release.

We study headline format because titles are a natural focus of attention for a reader; when investors read an earnings press release, they see the title first. A title is both front matter and summary matter, and in many contexts, is expected to capture the key or most salient point of an intellectual product.[1] Conspicuous display of information in an earnings announcement headline is one means of making the information more salient.

Earnings press release headlines vary widely across firms in format and content. Some companies disclose only generic text in headlines, such as a statement that the firm is releasing its "report for the fourth quarter 2010 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 descriptions such as "10% earnings growth." (Exhibit 1 provides examples of various types of earnings press release headlines).

We focus on one simple dimension of headline format, *the degree of financial*

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[1] The importance of titles is widely recognized in the news media, social arena, and in popular literature. Newspaper editors and reporters strive for punchy headlines. Publishers and movie producers pressure authors and directors to change titles to increase commercial success. Consider the outcome if George Orwell had not changed *The Last Man in Europe* to *1984*, or Kathryn Bigelow had gone with *God and Country* instead of *Dark Zero Thirty.* There is also substantial academic research in the linguistic and natural science fields about the importance of titles for the impact factor of the article. Day (1994) states that ''first impressions are strong impressions'' and Paiva et al. (2012) find that titles predict citations in medical research journals. However, there is scant research in finance and accounting on the importance of the earnings press release headline, see later for some related papers.

quantification, to measure salience of information in the earnings press release. Specifically, our index of salience is the count of numbers relating to financial performance that appear in the press release headline. We choose the degree of quantification of the headline rather than tone of the headline language to study salience for several reasons.

Fluency, defined in psychology as what seems simple and familiar, and ease of processing are additional aspects of salience besides display prominence. Song and Scharwz (2008) show that higher fluency draws greater attention from the observer. Earnings press releases, as commentaries about firms' earnings, are inherently related to quantitative information, and therefore quantities will have higher fluency for readers. Prior accounting and finance research have also concluded that quantitative ('hard') information, being objective, is more easily comparable and more easily processed by investors than soft information (Petersen 2004; Engelberg 2009). It therefore seems intuitive that placing quantitative information pertaining to the firms' earnings into the headline will increase salience and make it easier and quicker for investors to extract the most relevant content of this information.

In addition, our salience measure is easy to implement, is objective, and conveys a sense of precision not possessed by qualitative text. Clearly a statement that earnings per share grew by $1.23 per share is more precise than a statement that earnings growth is robust. Calibrating salience from tone of the words in headlines is more challenging to do in an objective way.[2] Disclosures about specific quantities are also more credible as they are more easily verifiable by observers from financial reports in a timely manner when compared with

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[2] See Li (2011) for the various ways tone is measured in the recent literature on tone effects in accounting.

qualitative disclosures. It is therefore reasonable for observers to place greater weight on the more credible and precise numerical information.[3]

Numerical information in the earnings press release headline should also be salient for more sophisticated investors. The headline numbers can be inputted directly into the quantitative models that many investors use for valuation and trading. Having to translate qualitative text into quantities is slower and is an additional source of noise.[4]

In the empirical analysis, we obtain the headline texts of earnings press releases from *PR Newswire* and *Business Wire*. The salience index is the number of times quantitative information appears in the headline (excluding numbers that refer to dates or time periods). Our final sample covers over 11,000 firms from 1997 to 2007. Our empirical measure of headline salience counts any quantitative information items regardless of whether or not they are earnings numbers or have a clear bearing upon earnings.[5]

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[3] Consistent with the idea that investors react more strongly to information that is more credible, Teoh and Wong (1993) find that the strength of price responses to earnings surprises increases with auditor quality.

[4] Algorithmic software has been available to automate this process since Spring 2010 (Wired.com, Salmon and Stokes, January 2011), which may have contributed to the explosive growth in high speed trading in recent years. Mary Schapiro, the S.E.C. chairman stated that "In 2010, the high frequency traders who are today's liquidity providers represented well more than 50% of market volume." (Wall Street Journal, Market Watch, May 6, 2011). Frino et al. (2012) find evidence that there is a surge in trading within the first 90 seconds of an earnings announcement, that algorithmic traders are faster at interpreting information and more profitable than non-algorithmic traders. Processing massive amounts of textual information will take more time 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.

[5] 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, sales, costs, and cash from operations). Furthermore, our textual analysis of

If headlining quantitative information increases impact, then managers have an incentive to headline strategically. As a first step in understanding whether managers do so, we examine firm characteristics that are associated with headline salience. We find that firms with salient headlines in earnings press releases report better performance. They are more likely to be profit than loss firms, and have higher earnings and cash flows from operations for the fiscal period of the press release. They are also larger, less risky, and are more likely to be growth than value firms. These results are intuitive and consistent with managers of well-performing firms desiring to attract attention to the good performance disclosing it in a salient and fluent manner in the headlines.

We also examine whether headline salience is higher when the firm's earnings beats or misses market expectations. The evidence suggests that salience is higher when firms beat the consensus analysts' forecasts than when they fail to do so. Incremental to the firm's earnings, salience also increases with the magnitude of the earnings surprise

We also find that headline salience is negatively associated with earnings persistence. Greater headline salience for a good news firm is associated with a lower future earnings level than is expected from the current high earnings level, whereas greater salience for a bad news firm is associated with a higher future earnings level than is expected from the current low earnings level. If headlining quantities temporarily boosts short-term stock price when there is good news, a manager of a good news firm that expects the high earnings not to persist can make hay while the sun shines.

The incentive for headline salience in current bad news firms is less clear. Drawing

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headlines indicates that the more numbers there are in the headlines, the greater is the likelihood that some of these numbers relate to firm earnings or closely related metrics such as revenue.

attention to bad news would seem counter intuitive. However, our perusal of some headlines of negative news firms suggests that bad news managers often headline some *positive* aspects of firm performance such as revenue growth, earnings growth, or positive earnings; see Exhibit 1 for examples. Headlining positive aspects of performance for bad news firms has the potential benefit to dampen negative investor reaction to the bad news. We find that bad news managers are more likely to headline quantities when future earnings increase. Thus, it appears that managers headline positive information in an attempt to signal the temporary nature of the current bad news, as with the depression era song, "Happy days are here again."

Next, we examine whether headline salience is associated with insider net selling of their own firm's equity in the period right after the earnings announcement. We find a positive association between insider net selling and headline salience. Our evidence is consistent with managerial opportunism. If managers can correctly anticipate that headline salience will increase stock price in the short-run, then she can choose a higher headline salience for the earnings press release when she is intending to sell equity.

Regardless of whether strategic motives are at play, investors may fail to appropriately incorporate the information contained in headline salience. We examine how headline salience affects the market price reaction at the announcement date and subsequent to the announcement. We find that headline salience increases the three-day announcement stock price reaction to earnings news, and decreases the 60-day post-announcement abnormal stock price reaction to earnings news. An increase in the salience index by 1.0 corresponds to a 1.5% increase in the announcement market reaction to earnings news and a decrease of the subsequent 60-day abnormal return reaction from zero to -2.3%.

These results are consistent with limited investor attention. Our sample of firms does

not, on average, exhibit a post-earnings announcement drift (PEAD) during the time period. Therefore the incremental decrease in post-earnings announcement stock price reaction to earnings news due to headline salience results in a post-earnings announcement reversal (or PEAR). In other words, headlining quantitative information incites an *over*reaction to the earnings news by investors, who apparently overestimate the extent to which good earnings are likely to persist. This overreaction is on average followed by low returns when the failure of earnings to persist is revealed. In other words, headline salience misleads investors.

We also examine the stock price effects of headline salience separately for good earnings news versus bad earnings news sample. Managers with good earnings news would benefit from increased positive stock price reaction to the earnings news, whereas managers with bad earnings news may attempt to dampen negative stock price reaction by headlining some positive aspects of firm performance. We find that headline salience effects on short and long-term stock returns are present only within the good earnings news sample.[6]

Finally, we use a response ratio of earnings announcement window returns to the total quarter returns to measure investor attention for a given firm to examine how salience effects vary by firm type and information environment. We find that the effect of salience in attracting investor attention to earnings news is robust across various firm types and information environments. We also find that the effect of salience is somewhat stronger for firms announcing earnings on days with high number of other earnings announcements (a proxy for distraction in Hirshleifer et al 2009), firms with high return volatility, and firms

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[6] In the good news sample, an increase of the salience index of one corresponds to the 2.2% increase in the announcement market reaction to earnings news and the decrease in the subsequent 60-day abnormal stock price reaction to earnings news from zero to negative 5.6%.

with high share turnover. The results are generally consistent with salience effects being stronger where it is likely to be more important for investors.

There have been only a few prior studies on earnings press release format. Bowen, Davis, and Matsumoto (2005) examine placement emphasis of alternative metrics of earnings performance, GAAP earnings versus pro forma earnings, in the firm's earnings press release. Files, Swanson, and Tse (2009) investigate placement of restatement information in earnings press releases. There is growing interest recently in studying the effects of qualitative text of firm and media disclosures on capital market participants.[7] This article differs from these studies in our focus upon the headline quantitative content of the press release.

This study also extends the literature on strategic incentives for disclosure by documenting that the headline format of earnings press releases can be used strategically by managers. Schrand and Walther (2000) find that managers strategically select prior period benchmarks with which to compare current period performance in earnings announcements. Our results indicate that managers of well-performing firms are more likely to issue salient headlines in earnings press releases to attract investor attention and incite optimism about the firm.

Our findings also contribute to the growing theoretical and empirical literature in accounting and finance on the role of investor attention. The proxies for investor attention used in these other studies include media outlet types (Klibanoff, Lamont, and Wizman 1998), media coverage (Fang and Peress 2009), day of the week (DellaVigna and Pollet

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[7] See Tetlock (2007), Li (2008, 2010), Tetlock, Saar-Tsechansky, and Macskassy (2008), Davis, Piger, and Sedor (2011), Demers and Vega (2011), Bonsall, Bozanic, and Fischer (2011), Lehavy, Li, and Merkley (2011), Mayew and Venkatachalam (2012), and Huang, Teoh, and Zhang (2012).

2009),and the number of other same-day earnings announcements (Hirshleifer, Lim, and Teoh 2009, 2011).

2. Sample, Variable Measurement, and Empirical Design

2.1 Sample and Data

We obtain the headline text of annual earnings press releases from the *PR Newswire* and *Business Wire*, historical financial data from Compustat, stock returns from CRSP, and analysts' earnings forecasts data from I/B/E/S. We first match earnings press releases with the CRSP/Compustat merged database by company name and announcement dates. The availability of the press release text data determines the start date of our sample period, 1997-2007. The total number of headline text observations is17,332. We eliminate observations without necessary accounting and financial-market data, and drop firms with stock prices below $1. The final sample consists of 11,414 firm-year observations. To avoid the influence of extreme observations, we winsorize all financial variables except stock returns at the 1st and 99th percentiles.

2.2 Variable Measurements

2.2.1 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. To avoid influence of few observations with large counts of

quantitative items, we winsorize raw salience at 3 (only 4.8% of our sample are affected).

Our main measure of headline salience index, *SALIENCE*, is the raw salience count for

values below 3, and the winsorized value for raw counts 3 and above.[8] In sum, the salience

index varies from zero to three with higher values of the index indicating higher salience.

Beginning and ending tags also are available for the lead paragraph and the entire document,

and therefore we also compute the count of quantitative items in the lead paragraph and in the

entire document.

2.2.2 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.[9]

2.2.3 Measurement of Abnormal Accruals

To examine and control for a potential relation between headline salience and

earnings management, we use abnormal accruals to proxy for unobservable earnings

management (Dechow, Sloan and Sweeney 1995). First, we calculate total accruals, *TAcc*,

using statement of cash flow data (Hribar and Collins 2002), $TAcc_{jt} = EBEI_{jt} - (CFO_{jt} - EIDO_{jt})$, where $EBEI_{jt}$ is firm *j*'s income before extraordinary items for year *t*, CFO_{jt} is firm

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[8] The results are qualitatively similar when we winsorize *RAW_SALIENCE* at 1, 2, 4, or 5.

[9] The results are qualitatively similar 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 1989, 1990).

j's cash flows from operations for year *t*, and $EIDO_{jt}$ is firm *j*'s extraordinary items and discontinued operations included in CFO_{jt}. Then we run the following cross-sectional regression for each two-digit SIC-year combination with at least fifteen observations in the industry:

$$TAcc_{jt} = \beta_0 (1/Assets_{j,t-1}) + \beta_1 (\Delta Sales_{jt} - \Delta AR_{jt}) + \beta_2 PPE_{jt} + v_{jt},$$

where $Assets_{j,t-1}$ is firm *j*'s total assets at the end of year *t-1*, $\Delta Sales_{jt}$ is change in firm *j*'s sales from year *t-1* to *t*, ΔAR_{jt} is change in firm *j*'s accounts receivable from year *t-1* to *t*, and PPE_{jt} is firm *j*'s gross property, plant, and equipment at the end of year *t*. All variables are scaled by beginning-of-year total assets. Abnormal accruals (AA) are estimated as the regression residuals.

2.3 Empirical Models

2.3.1 Firm Performance

Our first test hypothesis relates headline salience to firm performance:

H1: A firm with better financial performance during the period covered by the earnings press release is more likely to disclose salient headlines in the earnings press release.

To test this hypothesis, we estimate the following cross-sectional and time-series regression:

$$SALIENCE_{jt} = \alpha + \beta_0 PERFORMANCE_{jt} + \beta_1 SIZE_{jt} + \beta_2 BTM_{jt} + \beta_3 AA_{jt} + \beta_4 STD\_RET_{jt} + \beta_5 STD\_EARN_{jt} + \varepsilon_{jt}, \tag{1}$$

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*; $SIZE_{jt}$ is the logarithm of firm *j*'s market value of equity at the end of fiscal year

t; *BTM* $_{jt}$ is firm *j*'s book-to-market ratio measured at the end of fiscal year *t*; AA_{jt} is firm *j*'s

discretionary accruals for fiscal year *t* calculated using the 2-digit industry cross-sectional

modified Jones model; STD_RET_{jt} is firm *j*'s standard deviation of monthly stock returns

measured over fiscal year *t*; STD_EARN_{jt} is firm *j*'s standard deviation of return on assets

(earnings before extraordinary items scaled by total assets) measured over the previous five

years with at least three years of non-missing data required.

When a firm's current financial performance is good, we expect the manager to be

more likely to highlight the good performance to attract investor attention; we expect the

opposite when performance is poor. Therefore, we predict a positive association between firm

performance and headline salience ($\beta_0 > 0$). To control for cross-sectional and time series

correlations, we use standard errors clustered by firm and year as in Petersen (2009) in all our

tests.

We use four proxies of firms' current financial performance. The first measure is

earnings, *EARN*, calculated as earnings before extraordinary items scaled by total assets at the

end of the fiscal year. The second measure is an indicator variable *PROFIT* which equals one

if *EARN* is greater than zero and zero otherwise. The last two proxies separate earnings into

the operating cash flow and accrual components.

To control for firm growth opportunity, we include the book-to-market ratio (*BTM*).

We use the logarithm of market capitalization (*SIZE*), volatility of stock returns (*STD_RET*),

and volatility of earnings (*STD_EARN*) to control for firm operating environment. Abnormal

accruals (*AA*) are included to test whether earnings performance has a separate incremental

effect on headline salience apart from any effects related to accruals management. A manager

who desires capital market benefits from high earnings may headline upwardly biased

earnings to seek investor attention for its high earnings. On the other hand, a manager who has manipulated earnings upwards may be reluctant to attract additional scrutiny of its earnings by headlining to avoid potential lawsuits.

2.3.2 Earnings Surprise

We consider next how an anticipated earnings surprise by the manager affects her choice of headline salience. The manager knows the actual earnings she will be disclosing in the press release and observes the analysts' consensus forecast prior to the release. Therefore, she knows whether the upcoming earnings announcement will be good or bad news. 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 hypothesize that:

H2: A firm is more likely to disclose salient headlines in the earnings press release when it is able to beat analysts' consensus forecast than otherwise.

To test this hypothesis, we add the earnings surprise variable to regression (1) as follows.

$$SALIENCE_{jt} = \alpha + \beta_1\ EARN_{jt} + \beta_2\ SUE_{jt} + \alpha_1\ SIZE_{jt} + \alpha_2\ BTM_{jt} +$$
$$\alpha_3\ AA_{jt} + \alpha_4\ STD\_RET_{jt} + \alpha_5\ STD\_EARN_{jt} + \alpha_5\ STD\_EARN_{jt} + \varepsilon_{jt},\quad (2)$$

Consistent with H2, a positive coefficient for β_2 indicates that beating analysts' forecast increases the use of salience beyond the simple effect from the level of earnings performance. Instead of the *SUE* variable, we also use *POS·SUE,* a binary indicator for when *SUE* is positive, and separate surprise variables for when *SUE* is positive or negative, SUE^+ and SUE^-, to evaluate how salience decisions vary with the magnitude of the earnings surprise when there is good news versus when there is bad news.

2.3.2 Earnings Persistence

In addition to attracting investor attention to current good performance, we conjecture

that a manager may use headline salience to signal quality or persistence of current earnings. On the one hand, more persistent earnings are valued more highly by investors, and so a firm's manager may have greater incentive to attract investor attention when its earnings are persistent. This suggests that there will be a positive relation between headline salience and earnings persistence.

Alternatively, a firm's manager may face incentives to use headline salience when the earning is unlikely to persist so as to take advantage of the current temporary good performance. For temporary bad news, the manager may headline some positive aspects of firm performance to signal that firm is expected to perform better in future. In this case, we should observe a negative relation between headline salience and earnings persistence. In sum, the two alternative hypotheses are:

H3a: Firms that issue press releases with salient headlines have more persistent earnings.

H3b: Firms that issue press releases with salient headlines have less persistent earnings.

To test between these two alternative hypotheses, we use a standard definition of earnings persistence as the slope, ρ, in the following time series regression for a given firm:

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

Earnings persistence can be expressed as a function of *SALIENCE* and control variables in the following cross-sectional regression:

$$\rho = \rho_0 + \rho_1 \, SALIENCE_{jt} + \rho_2 \, EARN_{jt} + \rho_3 \, SIZE_{jt} + \rho_4 \, BTM_{jt}$$
$$+ \rho_5 \, AA_{jt} + \rho_6 \, STD\_RET_{jt} + \rho_7 \, STD\_EARN_{jt} + \rho_8 \, ABSCHEARN_{jt}$$
$$+ \rho_9 \, ABSEARN_{jt} + \rho_{10} \, LOSS_{jt}$$

Combining the above two equations and adding control variables for main effects yields the

following reduced form regression equation:[10]

$$EARN_{t+1} = a + (\rho_0 + \rho_1\,SALIENCE_t + \rho_2\,EARN_t + \rho_3\,SIZE_t + \rho_4\,BTM_t + \rho_5\,AA_t$$
$$+\rho_6\,STD\_RET_t + \rho_7\,STD\_EARN_t + \rho_8\,ABSCHEARN_t + \rho_9\,ABSEARN_t + \rho_{10}$$
$$LOSS_t\,)*EARN_t + \beta_1\,SALIENCE_t + \beta_2\,EARN_t + \beta_3\,SIZE_t + \beta_4\,BTM_t + \beta_5\,AA_t +\beta_6 \qquad (3)$$
$$STD\_RET_t + \beta_7\,STD\_EARN_t + \beta_8\,ABSCHEARN_t + \beta_9\,ABSEARN_t + \beta_{10}\,LOSS_t + \varepsilon_t$$

where $EARN_{jt}$ is firm j's earnings before extraordinary items for fiscal year t scaled by total

assets at the end of the fiscal year. We control for firm performance, proxied by firm earnings

($EARN$), and the firm characteristics used in regression (1). In addition, we control for the

following three variables that relate to earnings persistence: the absolute magnitude of

earnings level ($ABSEARN$), the absolute magnitude of change in $EARN$ from $t-1$ to t

($ABSCHEARN$), and the loss indicator that equals to one if $EARN_{jt}$ is negative and zero

otherwise ($LOSS_{jt}$). (These variables are employed by Brooks and Buckmaster 1976, Hayn

1995, and Nissim and Penman 2001).[11] If managers use headline salience to signal persistent

earnings to investors, H3a predicts a positive coefficient on the interaction of $EARN$ and

headline salience ($\rho_1 > 0$). If however managers mislead investors by headlining non-

persistent current good performance to boost short-run stock price, H3b predicts a negative

coefficient on the interaction of $EARN$ and headline salience ($\rho_1 < 0$). Since incentives to

signal earnings persistence can differ for positive and negative earnings news, we estimate

regression (3) using the full sample as well as subsamples of firm-years with positive and

non-positive unexpected earnings separately.

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[10] Using the combined equation avoids the requirement of extended time-series data necessary to estimate firm-specific earnings persistence and is similar to the approach in Frankel and Litov (2009).

[11] The result of regression (1) shows that there is no significant relation between earnings volatility and *SALIENCE*, therefore we drop *STD_EARN* as a control variable in subsequent analyses. However, because previous literature finds that earnings persistence is associated with earnings volatility (Dichev and Tang 2009; Frankel and Litov 2009), we keep *STD_EARN* in the earnings persistence regression (2). The results are similar when we include or exclude this variable.

2.3.4 Insider Selling

When investors have limited attention, managers have various incentives to attract attention to good performance in earnings press releases. These include the incentive to boost their reputations and career opportunities, and to increase the value of their personal shareholdings if they plan to sell.

To test whether managerial incentives affect the decision to headline earnings press releases saliently, 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 earnings announcement when the effect of headline salience on the stock price is likely to be most important. 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:

H4: There is a positive association between insider selling subsequent to earnings announcement and headline salience.

To test this hypothesis, we estimate the following regression:

$$SALIENCE_{jt} = \alpha + \beta_1\, EARN_{jt} + \beta_3\, INSIDERSELL_{jt} + \alpha_1\, SIZE_{jt} +$$
$$\alpha_2\, BTM_{jt} + \alpha_3\, AA_{jt} + \alpha_4\, STD\_RET_{jt} + \alpha_5\, STD\_EARN_{jt} + \qquad (4)$$
$$\alpha_5\, STD\_EARN_{jt} + \varepsilon_{jt},$$

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.[12] We

include only open market transactions by officers and directors (Richardson et al. 2004).[13]

The control variables are as in the base regression equation (1). We expect that managers who

plan to sell company shares subsequent to earnings announcement use headline salience to

boost the stock price (H4) and so we predict a positive β_3 coefficient on *INSIDERSELL*. We

expect that the use of salience before selling shares is primarily used when firm performance

is good. Since incentives to headline firm performance can differ for positive and negative

earnings news, in addition to using the full sample, we estimate regression (4) using

subsamples of firm-years with positive and non-positive unexpected earnings separately.

2.3.5 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:

H5: The sensitivity of announcement stock returns to earnings surprises rises with

headline salience.

H6: The sensitivity of post-announcement stock returns to earnings surprises declines

with headline salience, or even becomes negative.

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[12] 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' black out policies (Jeng 1998; Bettis et al. 2000; Roulstone 2003).

[13] 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", "VP".

To test how headline salience affects immediate investor response to earnings news (H4a), we estimate the following regression of cumulative abnormal return around earnings announcement, $CAR(-1,+1)$:

$$CAR(-1, +1) = \alpha + \beta_0 RSUE_{jt} + \beta_1 SALIENCE_{jt} + \beta_2 RSUE_{jt} * SALIENCE_{jt} + \beta_3 Controls + \beta_4 RSUE_{jt} * Controls + \varepsilon_{jt},$$ (5)

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; [14] $RSUE$ is the decile rank of the standardized unexpected earnings, SUE. Control variables include the stock returns over the previous twelve months (RET), earnings ($EARN$), size ($SIZE$), the book-to-market ratio (BTM), the discretionary accruals (AA), the standard deviation of monthly stock returns (STD_RET), and the decile of the number of same-day earnings announcements by other firms as a distraction proxy suggested by Hirshleifer, Lim, and Teoh (2009) ($NRANK$).

If greater headline salience results in higher investor attention, we expect a stronger initial stock price reaction to earnings news (H5). Therefore, we predict that the coefficient on the interaction of earnings news and headline salience is positive ($\beta_2 > 0$). We estimate equation (5) using the full sample and subsamples of firm-years with positive and non-positive unexpected earnings separately.

To examine the relation between headline salience and the post-earnings announcement drift (H6), we estimate the following regression of post-announcement abnormal return, $CAR(+2,+61)$:

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

$$CAR(+2, +61) = \alpha + \beta_0 \, RSUE_{jt} + \beta_1 \, SALIENCE_{jt}$$
$$+ \, \beta_2 \, RSUE_{jt} * SALIENCE_{jt} + \beta_3 Controls + \beta_4 \, RSUE_{jt} * Controls + \varepsilon_{jt}, \tag{6}$$

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 ($\beta_2 < 0$). Similar to regression (4), we also examine the effect of salience on the post-earnings announcement drift separately for firms with positive and non-positive unexpected earnings.

3. Empirical Results

3.1 Descriptive Statistics

Table 1 presents the descriptive statistics for our headline salience measure. Panel A shows the frequency distribution of raw headline salience. The majority of issued earnings press releases (72.09% of the total sample) contain no quantities in the headline. Around 12% of sample headlines contain one quantity and only 4.8% of headlines contain 4 or more quantities. Therefore, 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 exceeds 0.360, there is some indication of persistence

in headline salience over time, suggesting possibly 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. Consistent with the overall autocorrelation and prevalence of zero *SALIENCE*, 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, which is more likely to persist than to transition to zero, but even in this case, the difference is slight.

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, we include a lagged salience variable and find that the results are qualitatively similar.

Panel D of Table 1 reports the distribution of headlines across industries as defined using the Fama-French 1997 48-industry classification. For each industry, the number in the second column shows the number of all headlines, the number in third column shows the number of salient headlines (*SALIENCE* is greater than zero), and the number in the fourth column shows the proportion of salient headlines to all headlines. Missing corresponds to observations with missing industry codes. The number of all headlines and salient headlines varies greatly across industries but is not strongly dominated by few industries. The proportion of salient headlines to all headlines ranges from a low of 9.4% for the Rubber and Plastic Products industry to a high of 59.4% for the Aircraft industry. However, it appears that

extreme proportions of salient headlines are driven by industries with relatively low numbers of observations, and therefore likely to occur by chance rather than by industries in certain sectors.

Table 2 reports the frequency of various accounting terms appearing in headlines for different levels of the salience index (Panel A) and correlations between the salience index and occurrence of accounting terms (Panel B). 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 variables that equals one if the headline contains "sales", "revenue", or "revenues", and zero otherwise.[15] The frequency statistics in Panel A 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 salience of three. *EARNINGS** and *REVENUE** categories dominate other categories with a distant third most frequent category being *CASH**. For the highest salience index, 3, words related to earnings, revenue, and cash account for 87.1%, 76.8%, and 16.9% of headlines respectively. Further, the correlation results in Panel B reveal high correlation between salience and *EARNINGS** (0.485), salience and *REVENUE** (0.496), and lower correlation between salience and *CASH**(0.172) and other categories. Overall, the results in Table 2 suggest that numbers

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

occurring 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 $2,555 million ($518 million) indicates that our sample has larger firms, for which we are able to obtain I/B/E/S analyst forecast data, than the average COMPUSTAT firm.

Table 4 shows the simple correlations amongst variables. Headline salience is positively correlated with all measures of firm profitability, firm size and insider selling and is negatively correlated with the book-to-market ratio and volatility of returns and earnings. However, none of the correlations with *SALIENCE* exceeds a relatively low level of 14.8% suggesting that headline salience is not merely a proxy or indicator for firm performance. Consistent with previous literature, the correlation between *SUE* and *CAR(-1,+1)* is significantly positive.

3.2 Multivariate Analysis

Table 5 presents the results of the regression of salience on firm performance and control variables (H1). Consistent with H1, the coefficients on both earnings level and profit indicator are positive and statistically significant. An increase in *EARN* of one standard deviation corresponds to an increase in *SALIENCE* of 0.088 (0.4950 * 0.177 = 0.088). The coefficient estimates for the control variables suggest that large firms, growth firms, and firms with low volatility are more likely to issue press releases with salient headlines. The

last two columns of Table 5 show the results for the cash flow and accrual components of earnings. The significant positive coefficients on both variables indicate that firms with higher levels of either cash flows from operations or accruals are more likely to use salient headline in their earnings press releases.[16] At the same time, the relatively low R2 in all regressions indicate that most of the cross-sectional variation in *SALIENCE* is orthogonal to firm fundamentals thereby mitigating the concern that the results of the subsequent stock return tests may be driven by differences in firm fundamentals.

Overall, the results in Table 5 support Hypothesis 1. When firms have good financial performance 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.

Table 6 presents evidence for the effect of earnings surprise incremental to effect of the earnings performance on headline salience. Consistent with H2, the coefficients on *SUE* and the positive news indicator variable *POS·SUE* are both positive and statistically significant. Firms prefer to headline performance when they are able to beat analysts' expectations.

The last column in Table 6 considers the effect of *SUE* separately for the good and bad news cases. The coefficient on SUE^+ is not statistically significant, whereas the coefficient on SUE^- is positive and strongly significant. This suggests that when firms beat expectations, there is no additional pressure to highlight the good news beyond the incentive from the earnings performance itself. However, when firms fail to beat expectations, they are

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[16] Because *SALIENCE* is an ordinal dependent variable, we check the robustness of our results by estimating the ordered logit regressions. The coefficients on all firm performance measures remain significant at the one percent level.

much more eager to highlight positive aspects of firm performance when the magnitude of the miss is smaller than when it is larger. The coefficient for SUE^- is almost four times larger than the absolute coefficient for SUE^+. This difference may be because there are more favorable quantitative items available to highlight for a near miss than for a large miss.

Table 7 describes tests examining the relation between headline salience and earnings persistence (H3a and H3b). The first two columns show the results for the full sample. The coefficient on the interaction of *SALIENCE* and *EARN* is negative and significant, indicating that there is a negative association between *SALIENCE* and earnings persistence, and that the effect of *SALIENCE* is incremental to the effects of control variables.

Consistent with the previous literature, the significant negative coefficients on *ABSEARN*EARN* indicate that extreme earnings are less persistent. The negative coefficient on *BTM*EARN* suggests that value firms, which tend to be distressed firms with low price multiples, have lower earnings persistence.

The magnitude of the coefficient on the interaction of *SALIENCE* and *EARN* indicates that an increase in the headline salience index of 1.0 corresponds to a decrease in the earnings persistence coefficient of 5.1% (1*0.0506). Therefore, it appears that firms do not on average use *SALIENCE* to signal higher persistence of earnings. Instead, firms headline performance when the earnings are less likely to persist in future. This is consistent with the managers using headline salience opportunistically, as predicted by Hypothesis H3b.

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 (the middle two columns in Table 7) and non-positive (the last two columns in Table 7) earnings surprises separately. The results indicate that the relation between *SALIENCE* and

earnings persistence is negative and significant in both the positive and negative surprise subsamples. Therefore, it appears that managers use salient headlines strategically to attract investors' attention to temporary positive earnings surprises as well as headline some positive aspect of firm performance when negative earnings surprises are temporary.

To explore more directly whether there is opportunism in the use of salient headlines, we examine whether firms with higher net insider selling after earnings announcements are more likely to headline performance in earnings press releases (H4). Table 8 displays the results of the 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 display the results for the full sample. Consistent with H4, the coefficient on *INSIDERSELL* is positive and significant. This suggests that managers who are planning to sell firm shares are more likely to use salient headlines to boost the stock price prior to the sale. The magnitude of the coefficient indicates that a one standard deviation increase in *INSIDERSELL* corresponds to an increase in *SALIENCE* of 0.055 (0.0043*12.873). Therefore, the magnitude of the effect of insider selling on headline salience is more than half (0.055/0.088 = 62.5%) of the magnitude of the earnings effect on salience reported in Table 5.[17]

In a fashion similar to the earning persistence tests in Table 6, we also examine the relation between insider trading and headline salience within the subsamples of positive (the middle two columns in Table 8) and non-positive (the last two columns in Table 8) earnings

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

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 the 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.[18]

We next examine whether market prices react more strongly to earnings announcements for firms that issue earnings press releases with salient headlines (H5). Table 9 Panel A describes the test of how *SALIENCE* affects the relation between announcement period return, *CAR (-1,+1)*, and earnings surprise for the full sample. Consistent with the limited attention hypothesis (H5), the coefficient on *SALIENCE*RSUE* in Model A 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 1.5% $(0.0017*(10 - 1) = 1.5\%)$.

To examine whether headline salience is distinct from and incremental to the effects of information precision and complexity of earnings press releases, we add two additional controls in Model B: (i) the decile rank of the number of quantitative items in the body of an earnings press release, *Total_NUM*, and (ii) the decile rank of the number of quantitative

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[18] As a robustness test, we also use (i) an indicator variable that equals to 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 five percent level or better in the full sample and positive earnings surprise subsample and positive and insignificant for the non-positive earnings surprise subsample (untabulated).

items appearing in the lead paragraph of the earnings press release, *Lead_NUM*..The coefficient on the interaction of *SALIENCE* and *RSUE* remains positive and significant suggesting that the effect of *SALIENCE* is robust to controlling for information precision and complexity of earnings press releases.[19] 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 and non-positive earnings surprise sub-samples in Panels B and C respectively in Table 9. The coefficient on *SALIENCE*RSUE* is positive and marginally significant for positive earnings surprises (Panel B) but negative and insignificant for non-positive earnings surprises (Panel C). 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 2.2% (0.0024 * (10 - 1) = 2.2%). Therefore, it appears that *SALIENCE* increases investors' immediate reaction to positive earnings surprises even though, as reported in Table 7, *SALIENCE* is negatively associated with earnings persistence for such firms. [20]

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[19] In an additional analysis, we also control for the headline tone using Loughran and McDonald's (2011) tone measure that is based on the financial-customized word list. We find qualitatively and quantitatively similar results for the effect of *SALIENCE* and an insignificant effect of the headline tone. Li (2011) provides an excellent comprehensive review of recent tone-related papers in the accounting literature, including some very early papers.

[20] Comparing results in Tables 9 with those in Table 8 suggests that the attempt to boost stock price by using salient headlines before selling company shares is effective when earnings surprise is positive but not when earnings surprise is negative. The lack of stock price benefits in the negative subsample does not however imply irrational behavior by managers since (i) there could be other benefits of headlining positive aspects of firm performance (e.g. reputations, career opportunities, and compensation) and (ii) the cost of using salient

Overall, consistent with the limited attention hypothesis, we find evidence that investors react more to earnings announcements with salient headlines. In addition, the immediate stock price effect of headline salience is stronger for positive earnings surprises, a situation where salience is shown to be associated with lower persistence of earnings. Therefore, the evidence in Table 9 on the market's reaction to earnings announcement contrasts sharply with the evidence in Table 7 on the relation between *SALIENCE* and earnings persistence.

Our next test provides evidence of salience effects on the long-term 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 (H5). Table 10 Panel A presents 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 -0.0009 and not statistically significant indicating that the average PEAD for our sample announcements is indistinguishable from zero. This is consistent with prior literature showing 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 that announce earnings via press releases that are in our sample. The absence of an average PEAD

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headlines are likely to be trivial. It is also possible that managers may simply be mistaken in thinking that headlining positive items dampens the negative response to bad news. They may have had prior experience with headline salience in good news situations when headlining does boost stock prices to the good news, and be unaware of the evidence we document here that there are no positive benefits from headlining in bad news cases.

does not, however, preclude variation of PEAD in the cross-section in general and 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 H6, the coefficient on *SALIENCE*RSUE* is negative (-0.0026) and significant (*t*-statistic = -2.73) suggesting that the stronger initial reaction to earnings announcements due to higher *SALIENCE* is followed by subsequent stock return reversal. Keeping 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 2.3% (-0.0026*(10-1) = -2.3%). The 2.3% decrease in PEAD is greater than the 1.5% increase in the initial differential reaction due to *SALIENCE* in Table 8.

The result suggests 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, when the high expected earnings do not materialize. The reversal is therefore consistent with our findings in Table 7 that *SALIENCE* is *negatively* related to earnings persistence. The result is robust to controlling for the proxies for information precision and complexity of earnings press releases, *Total_NUM* and *Lead_NUM* (Model C).

Given the differential effect of salience on immediate market reaction in the good and bad news sub-samples, Panels B and C of Table 10 report the regression results of the post-earnings announcement test within the positive and non-positive SUE subsamples respectively. The results of Model A indicate that the average PEAD is insignificant in both the positive and non-positive subsamples. Furthermore, consistent with the stronger market's initial response due to salience in the positive subsample in Table 9, 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. Keeping 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 from the subsample mean of zero to a negative of 5.6% (-0.0062 * (10-1) = -5.6%), in other words an actual reversal.

In summary, the results in Table 10 are consistent with the limited attention hypothesis H6. The stronger investors' reaction to earnings announcements with salient headlines is followed by a lower post-earnings announcement drift. This behavior predominantly happens for firms with positive earnings surprises.

Overall, Tables 7, 9, and 10 provide evidence that headline salience is associated with lower earnings persistence, yet investors tend to react more to salient headlines; these effects are especially strong when earnings news are positive. The stronger initial reaction is subsequently reversed in the post-earnings announcement period resulting in Post Earnings Announcement Reversal (PEAR). To our knowledge, this is the first study to document PEAR.

3.3 Additional Robustness Checks

In our final analysis, we explore how limited attention effects of salience vary across different firm types and information environments. We construct a response ratio that scales announcement window response by the magnitude of the total market response over the (-1, +61) days surrounding the earnings announcement as a measure of the degree of investor attention for each firm as follows:

$$RR = CAR(-1,+1)/((abs(CAR(-1,+61)+abs(CAR(-1,+1))/2)$$

where *CAR(-1,+61)* is the total cumulative abnormal return over the window starting one day before the earnings announcement and ending sixty-one days after the earnings announcement date, and *CAR(-1,+1)* is as defined previously. A greater magnitude of the response ratio corresponds to a greater immediate market response relative to the total market response and response ratios with magnitudes greater (less) than 100% indicate over(under)reaction to earnings announcements.[21]

We regress the response ratio on *SALIENCE*, the interaction variable of interest *RSUE*SALIENCE*, and control variables within various subsamples of stocks grouped by firm types and information environment characteristics. We use the salience index as a measure of investor attention to earnings news, and the magnitude of the coefficient on the interaction variable to compare salience effects across firm types or information environments.

The results are reported in Table 11. With the exception of the subsample with low return volatility the effect of salience on response ratio is positive and significant in all subsamples. Therefore it appears that the effect of salience in drawing quicker investor response to earnings news is robust across various firm types and information environments. With respect to differences across subsamples the significance level and the magnitude of the coefficient on the interaction variable *RSUE*SALIENCE* appears to be somewhat larger for firms announcing earnings on days with high number of other earnings announcements, firms with high return volatility, and firms with high share turnover. This is consistent with a larger

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[21] Using the average absolute magnitude, *(abs(CAR(-1,+61)+abs(CAR(-1,+1))/2*, avoids the problem of small, zero, or negative denominator, thereby resulting in a well behaved measure that ranges from −200% to +200%.

role for headline salience when investor attention is more likely to be distracted by high number of other earnings announcements on the same day, and for firms subject to greater uncertainty about the stock value.[22]

Finally, we perform the following robustness analysis. First, we extend and re-estimate regression equation (1) for *SALIENCE* to include an expanded set of other explanatory variables that may be correlated with *SALIENCE*. The additional variables include past salience index, asset turnover, change in sales, profit margin, change in profit margin, cash flow from operations, change in cash flow from operations, tone of headline text, as well as *Total_NUM*, *Lead_NUM*, *POS.SUE* and NRANK that were also considered as controls in some of the earlier tests. We find that high firm performance continues to be associated with high salience. Second, we compute a new variable, *RES_SALIENCE*, from the estimated residual observations in the expanded equation (1) regression. We then substitute *RES_SALIENCE* for the *SALIENCE* variable and re-estimated regression equations (2) through (6) for the overall sample. We find that the residual salience has significant negative association with earnings persistence, significant positive association with insider selling, significant positive association with the announcement period market reaction, and significant negative association with the post-announcement period market reaction (untabulated). Thus, our main results are robust to inclusion of an extended set of control variables.

4. Conclusion

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[22] Using the announcement window abnormal return, *CAR(-1,+1)*, instead of *RR* leads to substantially similar conclusions with the following difference in the individual subsample results. The effect of salience becomes insignificant in the subsample with low share turnover.

We examine 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. Managers generally have incentives to headline strong firm performance, in order to enhance their reputations, career opportunities, and compensation. We propose that headlining quantitative information in the earnings press release increases the salience of the earnings news. We therefore offer a measure of headline salience based on the number of quantitative items in the headline of an earnings press release. We find that firms with stronger performance (as measured by higher earnings, cash flows, or accruals; and by profits rather than losses) are more likely to use salient headlines in earnings press releases.

Although it can plausibly be argued that managers may use salient headlines to signal a higher persistence of current performance, we find that headline salience has a negative association with earnings persistence and a positive association with net selling of the firm's shares by insiders. 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.

If investors have limited attention, they should respond more strongly to higher salient information, so that the immediate price reaction to news is stronger, and the subsequent post-announcement price reaction is weaker or even reversed. Consistent with this theory, our results show the initial investor reaction is stronger and the post-announcement drift is negative (a reversal) for positive earnings announcements with salient headlines.

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 subsequently investors 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 the presentation format of earnings press releases is influenced by managers' incentives and, in its turn, affects information salience for investors. Corporate practices in writing press releases are a promising avenue for future research because press releases are firms' primary and most timely disclosure medium, especially after Regulation FD. The findings in this study should be of interest to investor relations executives and other corporate managers with responsibility for press release disclosure, besides regulators concerned about disclosure practices, money managers, and the investment community at large. Recent evidence on tone of qualitative text and verbal communications of managers, and our finding about headline salience raise the question of whether accounting and financial regulators need to consider the broader character of firm communications to protect the average investor.

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Exhibit 1

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

Example 1 (Generic text of headline):

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 or more	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	58.69%	6.87%	4.36%	3.10%
1	6.75%	2.92%	1.49%	1.03%
2	4.04%	1.30%	1.80%	1.36%
3	1.93%	0.56%	0.88%	2.91%

Panel D Distribution of headlines across industries

Industry	All	Salient	Proportion of Salient	Industry	All	Salient	Proportion of Salient
Aero	64	38	59.4%	Hshld	210	71	33.8%
Agric	16	2	12.5%	Insur	186	60	32.3%
Autos	171	57	33.3%	LabEq	351	84	23.9%
Banks	243	89	36.6%	Mach	496	140	28.2%
Beer	26	13	50.0%	Meals	237	54	22.8%
BldMt	196	51	26.0%	MedEq	496	145	29.2%
Books	106	19	17.9%	Mines	37	7	18.9%
Boxes	44	13	29.5%	Misc	171	33	19.3%
BusSv	1933	608	31.5%	Paper	125	29	23.2%
Chems	257	84	32.7%	PerSv	157	41	26.1%
Chips	1001	265	26.5%	RlEst	23	4	17.4%
Clths	185	64	34.6%	Rtail	907	313	34.5%
Cnstr	78	22	28.2%	Rubber	106	10	9.4%
Coal	22	9	40.9%	Ships	22	3	13.6%
Comps	606	194	32.0%	Smoke	10	1	10.0%
Drugs	869	143	16.5%	Soda	26	7	26.9%
ElcEq	130	36	27.7%	Steel	179	34	19.0%
Enrgy	465	114	24.5%	Telcm	339	91	26.8%
FabPr	30	7	23.3%	Toys	80	15	18.8%
Fin	169	66	39.1%	Trans	305	88	28.9%
Food	220	50	22.7%	Txtls	57	10	17.5%
Fun	176	43	24.4%	Util	484	91	18.8%
Gold	20	9	45.0%	Whlsl	417	138	33.1%
Guns	33	18	54.5%	Missing	4600	1273	27.7%
Hlth	251	82	32.7%	Total	17332	4838	27.9%

Notes: Panel A reports frequency distribution of the raw headline salience, *RAW_SALIENCE*, which measures the number of times quantities appear in the headline of earnings press release. Panel B reports Pearson autocorrelations. The salience index, *SALIENCE*, equals to *RAW_SALIENCE* if *RAW_SALIENCE* is less than or equal to three and three otherwise. The salience indicator, *SALIENCE_Dummy*, takes on value one if *SALIENCE* is greater than or equal to one and zero otherwise. Variables with subscript t (t - 1) correspond to year t (t - 1). Panel C reports the transition matrix for the headline salience index. Rows (columns) of the transition matrix correspond to the salience index in the previous year, $SALIENCE_{t-1}$ (current year, $SALIENCE_t$). Numbers in the transition matrix indicate percentage frequencies of observations with specified levels of $SALIENCE_{t-1}$ and $SALIENCE_t$. Panel D reports distribution of headlines across industries. Industries are defined using the Fama-French 1997 48-industry classification. For each industry, the number in the second column shows the number of all headlines, the number in third column shows the number of salient headlines (*SALIENCE* is greater than zero), and the percentage in the fourth column shows the proportion of salient headlines to all headlines. Missing corresponds to observations with missing industry codes or industry codes not assigned by Fama and French (1997).

Table 2 Salience and accounting terms

Panel A Frequency of accounting terms occurring in headlines

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

Panel B Spearman correlations among variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) SALIENCE								
(2) EARNINGS*	**0.485**							
(3) REVENUE*	**0.496**	**0.356**						
(4) CASH*	**0.172**	**0.118**	**0.122**					
(5) CHARGE*	**0.148**	**0.113**	**0.036**	**0.041**				
(6) COST*	**0.090**	**0.062**	**0.049**	**0.047**	**0.037**			
(7) LOSS*	**0.146**	**0.178**	**0.062**	**0.062**	**0.164**	**0.054**		
(8) RESERVE*	**0.067**	**0.028**	-0.012	**0.070**	**0.020**	**0.058**	**0.028**	
(9) ORDER*	**0.056**	**0.032**	**0.080**	**0.052**	0.004	**0.026**	-0.003	0.026

Notes: Panel A reports frequency of accounting terms for different levels of the salience index, *SALIENCE*. Panel B reports Spearman correlations among salience index and accounting terms. Correlations significant at the 10% level or lower are reported in bold. *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 variables 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 word "cash" (the category includes "operating cash flow", "free cash flow", "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", "charges" (the category includes "one-time charge", "special charge", "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", "expenses" (the category includes "restructuring cost", "reserve cost", "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", "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", "production" (the category includes "proved reserves", "reserve replacement", "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", "orders" (the category includes "new orders", "order backlog", "order bookings"), and zero otherwise.

Table 3 Descriptive Statistics

Variable	Mean	Median	STDDEV	P10	P25	P75	P90
SALIENCE	0.507	0.000	0.855	0.000	0.000	0.727	2.000
SUE	-0.011	0.000	0.059	-0.024	-0.003	0.002	0.008
EARN	0.012	0.042	0.177	-0.175	-0.012	0.102	0.154
PROFIT	0.682	1.000	0.469	0.000	0.045	1.000	1.000
CFO	0.070	0.089	0.182	-0.104	0.000	0.171	0.240
MV	2555	518	6557	66	163	1702	5681
BTM	0.569	0.456	0.458	0.168	0.278	0.724	1.091
AA	-0.005	-0.003	0.107	-0.115	-0.052	0.056	0.103
NAccr	-0.053	-0.047	0.043	-0.107	-0.075	-0.023	-0.009
STD_RET	0.035	0.032	0.016	0.018	0.023	0.044	0.056
STD_EARN	0.069	0.038	0.085	0.005	0.015	0.090	0.173
INSIDERSELL	4.209	0.000	12.873	-0.818	0.000	2.636	12.364
# EA	161	162	95	42	82	211	294
CAR (-1,+1)	0.005	-0.001	0.101	-0.103	-0.045	0.055	0.123
CAR(+2,+60)	0.013	-0.005	0.243	-0.245	-0.120	0.119	0.279

Notes: The table reports time series means of by-year univariate statistics of key variables over the sample period, 1997 to 2007. *SALIENCE* is the salience index that measures the number of times quantities appear in the headline of 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 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. *# 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 Spearman Correlations of Variables

VARIABLE	SALIENCE	SUE	EARN	PROFIT	CFO	MV	BTM	AA	NAccr	STD_RET	STD_EARN	INSIDER SELL	NRANK	CAR (-1,+1)
SUE	**0.062**													
EARN	**0.148**	**0.174**												
PROFIT	**0.126**	**0.154**	**0.789**											
CFO	**0.114**	**0.131**	**0.716**	**0.563**										
MV	**0.133**	**0.133**	**0.353**	**0.341**	**0.337**									
BTM	**-0.114**	**-0.079**	**-0.228**	-0.014	**-0.185**	**-0.371**								
AA	0.008	**0.055**	**0.303**	**0.303**	**-0.195**	-0.006	0.036							
NAccr	**0.045**	0.017	**-0.034**	-0.012	**-0.270**	**0.049**	**0.017**	**-0.168**						
STD_RET	**-0.112**	**-0.093**	**-0.351**	**-0.467**	**-0.305**	**-0.516**	0.013	**-0.088**	-0.038					
STD_EARN	**-0.042**	**-0.024**	**-0.197**	**-0.349**	**-0.135**	**-0.208**	**-0.166**	**-0.123**	0.000	**0.385**				
INSIDER SELL	**0.115**	**0.143**	**0.221**	**0.162**	**0.189**	**0.293**	**-0.221**	-0.011	**0.045**	**-0.192**	**-0.049**			
NRANK	0.008	**0.061**	**0.025**	**0.026**	**0.037**	**0.148**	**-0.051**	**-0.029**	**0.027**	0.012	-0.014	**0.065**		
CAR (-1,+1)	**0.040**	**0.181**	**0.083**	**0.082**	**0.082**	**0.039**	0.014	0.002	-0.006	**-0.052**	**-0.038**	**0.172**	0.009	
CAR(+2,+60)	**-0.028**	0.009	**0.069**	**0.099**	**0.116**	**0.051**	**0.080**	-0.013	**-0.046**	**-0.095**	**-0.068**	-0.011	0.011	**0.047**

Notes: The table reports Spearman correlations among key variables. Correlations significant at the 10% level or lower are reported in bold. All the variables are as defined in Table 3.

Table 5 Firm Performance and Headline Salience

$$SALIENCE_{jt} = \alpha + \beta_0 \, PERFORMANCE_{jt} + \beta_1 \, SIZE_{jt} + \beta_2 \, BTM_{jt} + \beta_3 \, AA_{jt} + \beta_4 \, STD\_RET_{jt} + \beta_5 \, STD\_EARN_{jt} + \varepsilon_{jt}$$

Model	Model A		Model B		Model C	
DEP. VAR.	*SALIENCE*	*t-stats*	*SALIENCE*	*t-stats*	*SALIENCE*	*t-stats*
INTERCEPT	0.3575	**6.90**	0.1988	**3.71**	0.4017	**7.53**
EARN	0.4950	**10.42**				
PROFIT			0.2026	**9.56**		
CFO					0.5130	**10.58**
NAccr					1.1632	**5.98**
SIZE	0.0438	**7.09**	0.0440	**7.13**	0.0421	**6.80**
BTM	-0.1025	**-7.21**	-0.0894	**-6.31**	-0.1052	**-7.39**
AA	-0.2729	**-3.05**	-0.1304	-1.53	0.2942	**3.52**
STD_RET	-2.1191	**-3.98**	-1.8086	**-3.36**	-2.0015	**-3.76**
STD_EARN	0.1751	1.79	0.1566	1.63	0.1690	1.72
#obs	11,414		11,414		11,414	
Adj. R^2	3.44%		3.41%		3.57%	

Notes: The dependent variable is the salience index, *SALIENCE*, and it is regressed on various separate firm performance variables, *EARN, PROFIT,* and *CFO* and *NAccr* with control variables. All variables are as defined in Table 3. The *t*-statistics (in parentheses) are based on standard errors clustering 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 6 Earnings Surprise and Headline Salience

$$SALIENCE_{jt} = \alpha + \beta_0\, SUE_{jt} + \beta_1\, EARN_{jt} + B_2\, SIZE_{jt} + \beta_3\, BTM_{jt} + \beta_4\, AA_{jt} + \beta_5\, STD\_RET_{jt} + \beta_6\, STD\_EARN_{jt} + \varepsilon_{jt}$$

Model	Model A		Model B		Model C	
DEP. VAR.	*SALIENCE*	*t-stats*	*SALIENCE*	*t-stats*	*SALIENCE*	*t-stats*
INTERCEPT	0.3062	**5.80**	0.3308	**6.37**	0.4554	**7.55**
SUE	0.0126	**4.46**				
POS·SUE			0.0820	**4.65**		
SUE$^+$					-0.0106	-1.39
SUE$^-$					0.0381	**4.92**
EARN	0.4708	**9.94**	0.4694	**9.86**	0.4380	**9.18**
SIZE	0.0424	**6.81**	0.0408	**6.56**	0.0353	**5.28**
BTM	-0.0972	**-6.75**	-0.0976	**-6.84**	-0.0877	**-6.05**
AA	-0.2745	**-3.07**	-0.2668	**-2.98**	-0.2671	**-2.99**
STD_RET	-2.0886	**-3.92**	-2.1173	**-3.97**	-1.9532	**-3.66**
STD_EARN	0.1627	1.65	0.1705	1.74	0.1848	1.87
#obs	11,374		11,374		11,374	
Adj. R^2	3.54%		3.62%		3.63%	

Notes: The dependent variable is the salience index, *SALIENCE*, and it is regressed on various separate earnings surprise variables, *SUE, POS.SUE, SUE$^+$* and *SUE$^-$* and *EARN* with control variables. *POS· SUE* is the indicator variable that equals one if earnings surprise is positive and zero otherwise. *SUE$^+$* equals SUE if earnings surprise is positive and zero otherwise. *SUE$^-$* equals SUE if earnings surprise is negative and zero otherwise. All other variables are as defined in Table 3. The *t*-statistics (in parentheses) are based on standard errors clustering 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 7 Headline Salience and Earnings Persistence

$$EARN_{t+1} = a + (\rho_0 + \rho_1 SALIENCE_t + \rho_2 EARN_t + \rho_3 SIZE_t + \rho_4 BTM_t + \rho_5 AA_t + \rho_6 STD\_RET_t + \rho_7 STD\_EARN_t + \rho_8 ABSCHEARN_t + \rho_9 ABSEARN_t + \rho_{10} LOSS_t) * EARN_t$$
$$+ MAIN\ EFFECTS + \varepsilon_t$$

Model	Full Sample		SUE > 0		SUE ≤ 0	
DEP. VAR.	*EARN_{t+1}*	*t-stats*	*EARN_{t+1}*	*t-stats*	*EARN_{t+1}*	*t-stats*
INTERCEPT	0.0332	**3.76**	0.0234	1.61	0.0464	**4.09**
EARN	1.3117	**12.42**	1.4563	**8.48**	1.1406	**8.45**
*SALIENCE*EARN*	-0.0506	**-3.47**	-0.0552	**-3.00**	-0.0438	**-2.04**
*EARN*EARN*	-0.5058	**-4.46**	-0.4814	**-3.24**	-0.5081	**-2.99**
*SIZE*EARN*	-0.0222	**-2.04**	-0.0364	**-1.98**	-0.0073	-0.54
*BTM*EARN*	-0.1556	**-4.14**	-0.1593	**-2.10**	-0.1581	**-3.80**
*AA*EARN*	0.1129	1.03	0.1084	0.60	0.1192	1.06
*STD_RET*EARN*	-2.1183	**-2.26**	-3.7793	**-2.88**	-1.1790	-0.84
*STD_EARN*EARN*	-0.0892	-0.56	0.0538	0.21	-0.2656	-1.49
*ABSEARN*EARN*	-0.8394	**-7.12**	-0.7747	**-4.76**	-0.8621	**-4.95**
*ABSCHEARN*EARN*	-0.0770	-0.94	-0.2167	**-1.71**	0.0322	0.34
*LOSS*EARN*	-0.0151	-0.19	-0.0204	-0.18	0.0551	0.51
MAIN EFFECTS	YES		YES		YES	
#obs	10,689		5,741		4,948	
Adj. R²	54.65%		52.06%		55.68%	

Notes: The dependent variable, *EARN_{t+1}*, is earnings for year *t+1* scaled by the book value of assets at the end of the year *t*. All variables are as defined in Table 3 with the exception of the following additional control variables. *ABSEARN* is the absolute value of *EARN_t*. *ABSCHEARN* is the absolute value of change in *EARN* from year *t-1* to *t*. *LOSS* is the indicator variable that equals to one if *EARN_t* is less than negative and zero otherwise. With exception of *EARN_t* the coefficients for the main effects are not shown for brevity. The measurement of other independent variables is as described 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 (in parentheses) are based on standard errors clustering 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 8 Headline Salience and Insider Selling

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

Model	Full Sample		SUE > 0		SUE ≤ 0	
DEP. VAR.	*SALIENCE*	*t-stats*	*SALIENCE*	*t-stats*	*SALIENCE*	*t-stats*
INTERCEPT	0.3844	**7.50**	0.5269	**7.04**	0.2752	**3.95**
INSIDERSELL	0.0043	**5.81**	0.0044	**4.83**	0.0031	**2.37**
EARN	0.4509	**10.01**	0.4298	**6.33**	0.4536	**7.58**
SIZE	0.0368	**5.92**	0.0331	**3.71**	0.0349	**4.06**
BTM	-0.1019	**-7.37**	-0.1039	**-4.60**	-0.1069	**-6.08**
AA	-0.2424	**-2.71**	-0.1778	-1.37	-0.2610	**-2.12**
STD_RET	-1.8129	**-3.48**	-4.4097	**-5.80**	0.6773	0.96
#obs	11414		6065		5349	
Adj. R²	3.90%		4.07%		2.94%	

Notes: The dependent variable *SALIENCE* is regressed on *INSIDERSELL* and control variables. All variables are measured as described in Table 3. The *t*-statistics are based on standard errors clustering by firm and year. *t*-statistics in bold are significant at the ten percent level or lower based on the two-tailed *t*-test.

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Table 9 Headline Salience on Announcement Period *CAR (-1, +1)*

Panel A: Full sample

Model	Model A		Model B	
DEP. VAR.	*CAR (-1,+1)*	*t-stats*	*CAR (-1,+1)*	*t-stats*
INTERCEPT	-0.0153	**-1.35**	0.0236	1.20
RSUE	0.0050	**2.17**	-0.0003	**-0.09**
SALIENCE	-0.0073	**-3.37**	-0.0067	**-3.05**
*SALIENCE*RSUE*	0.0017	**4.24**	0.0016	**3.99**
NRANK	0.0013	**1.67**	0.0014	**1.74**
SIZE	-0.0030	**-2.33**	-0.0026	**-1.91**
BTM	0.0125	**3.66**	0.0130	**3.79**
AA	0.0112	0.60	0.0101	0.54
RET	0.0166	**5.93**	0.0166	**5.95**
STD_RET	-0.1547	-1.11	-0.1963	-1.40
*EARN*RSUE*	0.0054	**4.57**	0.0054	**4.56**
*NRANK*RSUE*	-0.0003	**-1.73**	-0.0003	**-1.79**
*SIZE*RSUE*	0.0003	1.35	0.0003	1.01
*BTM*RSUE*	-0.0011	**-1.73**	-0.0012	**-1.80**
*AA*RSUE*	-0.0077	**-2.22**	-0.0076	**-2.17**
*RET*RSUE*	-0.0008	-1.63	-0.0008	-1.63
*STD_RET*RSUE*	0.0016	0.06	0.0067	0.24
Total_NUM			-0.0054	**-2.24**
*Total_NUM*RSUE*			0.0008	**1.81**
Lead_NUM			-0.0054	-1.30
*Lead_NUM*RSUE*			0.0006	0.81
#obs	11,346		11,346	
Adj. R^2	5.10%		5.17%	

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Panel B: Subsample of firm-years with positive earnings surprise

Model	Model A		Model B	
DEP. VAR.	*CAR (-1,+1)*	*t-stats*	*CAR (-1,+1)*	*t-stats*
INTERCEPT	-0.0214	-0.59	0.0022	0.04
RSUE	0.0062	1.12	0.0032	0.41
SALIENCE	-0.0115	**-2.17**	-0.0107	**-2.00**
*SALIENCE*RSUE*	0.0024	**2.84**	0.0022	**2.68**
NRANK	-0.0001	-0.03	0.0000	0.01
SIZE	0.0012	0.33	0.0019	0.54
BTM	0.0023	0.18	0.0035	0.27
AA	-0.0339	-0.49	-0.0365	-0.53
RET	0.0126	1.36	0.0126	1.36
STD_RET	-0.4680	-1.03	-0.5234	-1.13
*EARN*RSUE*	0.0064	**4.89**	0.0065	**4.90**
*NRANK*RSUE*	-0.0001	-0.16	-0.0001	-0.20
*SIZE*RSUE*	-0.0003	-0.57	-0.0004	-0.77
*BTM*RSUE*	-0.0001	-0.04	-0.0002	-0.13
*AA*RSUE*	-0.0033	-0.35	-0.0029	-0.31
*RET*RSUE*	-0.0003	-0.25	-0.0003	-0.25
*STD_RET*RSUE*	0.0467	0.70	0.0532	0.79
Total_NUM			-0.0086	**-1.67**
*Total_NUM*RSUE*			0.0013	1.58
Lead_NUM			0.0093	0.81
*Lead_NUM*RSUE*			-0.0015	-0.86
#obs	6055		6055	
Adj. R^2	3.13%		3.18%	

Panel C: Subsample of firm-years with non-positive earnings surprise

Model	Model A		Model B	
DEP. VAR.	*CAR (-1,+1)*	*t-stats*	*CAR (-1,+1)*	*t-stats*
INTERCEPT	-0.0068	-0.45	0.0390	1.39
RSUE	-0.0015	-0.24	-0.0096	-0.94
SALIENCE	-0.0024	-0.71	-0.0020	-0.60
SALIENCE*RSUE	-0.0004	-0.37	-0.0004	-0.35
NRANK	0.0018	1.64	0.0019	1.70
SIZE	-0.0052	**-2.72**	-0.0050	**-2.50**
BTM	0.0096	**2.38**	0.0098	**2.43**
AA	0.0050	0.22	0.0043	0.19
RET	0.0171	**4.53**	0.0169	**4.54**
STD_RET	-0.0829	-0.46	-0.1206	-0.66
EARN*RSUE	-0.0051	-1.36	-0.0050	-1.34
NRANK*RSUE	-0.0005	-1.13	-0.0005	-1.14
SIZE*RSUE	0.0018	**2.69**	0.0019	**2.69**
BTM*RSUE	0.0023	1.19	0.0025	1.31
AA*RSUE	0.0109	1.07	0.0106	1.05
RET*RSUE	-0.0003	-0.20	-0.0002	-0.13
STD_RET*RSUE	-0.1065	-1.42	-0.1067	-1.40
Total_NUM			-0.0042	-1.20
Total_NUM*RSUE			0.0001	0.11
Lead_NUM			-0.0111	-1.89
Lead_NUM*RSUE			0.0033	1.62
#obs	5,291		5,291	
Adj. R^2	2.85%		3.05%	

Notes: 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. All variables are as defined in Table 3 with the exception of the following additional control variables. *NRANK* is the number-of-announcements decile. *Total_NUM* is the decile rank of the number of times quantities appear in the body of earnings press release. *Lead_NUM* is the decile rank of the number of times quantities appear in the lead paragraph of earnings press release. Panel A reports regression results for the full sample. Panel B (Panel C) reports results for the subsample of firm-years with positive (non-positive) SUE. The *t*-statistics (in parentheses) are based on standard errors clustering 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 10 Headline Salience on Subsequent Announcement Period CAR (+2, +61)

Panel A: Full Sample

Model	Model A		Model B		Model C	
DEP. VAR.	*CAR (+2,+61)*	*t-stats*	*CAR (+2,+61)*	*t-stats*	*CAR (+2,+61)*	*t-stats*
INTERCEPT	-0.0409	**-2.96**	-0.0163	-0.42	0.0471	0.76
RSUE	-0.0009	-0.85	0.0071	0.96	-0.0050	-0.44
SALIENCE			-0.0018	-0.34	-0.0010	-0.19
*SALIENCE*RSUE*			-0.0026	**-2.73**	-0.0028	**-2.90**
NRANK			-0.0035	-1.41	-0.0034	-1.38
SIZE	0.0035	**2.31**	0.0035	0.83	0.0039	0.90
BTM	0.0628	**8.49**	0.0697	**5.40**	0.0700	**5.46**
AA			-0.0165	-0.28	-0.0176	-0.30
RET	0.0371	**8.80**	0.0317	**3.89**	0.0317	**3.88**
STD_RET			-0.2470	-0.55	-0.3037	-0.68
*EARN*RSUE*			0.0181	**5.50**	0.0181	**5.50**
*NRANK*RSUE*			0.0007	1.53	0.0007	1.50
*SIZE*RSUE*			-0.0010	-1.23	-0.0011	-1.30
*BTM*RSUE*			-0.0016	-0.66	-0.0016	-0.69
*AA*RSUE*			-0.0230	**-2.08**	-0.0228	**-2.06**
*RET*RSUE*			0.0013	0.90	0.0013	0.91
*STD_RET*RSUE*			-0.1005	-1.20	-0.0895	-1.08
Total_NUM					-0.0066	**-0.82**
*Total_NUM*RSUE*					0.0014	**0.95**
Lead_NUM					-0.0138	-1.11
*Lead_NUM*RSUE*					0.0024	1.02
#obs	12,679		11,366		11,366	
Adj. R^2	2.47%		3.75%		3.78%	

Panel B: Subsample of firm-years with positive earnings surprise

Model	Model A		Model B		Model C	
DEP. VAR.	*CAR (+2,+61)*	*t-stats*	*CAR (+2,+61)*	*t-stats*	*CAR (+2,+61)*	*t-stats*
INTERCEPT	-0.0760	**-3.04**	0.2010	**2.12**	0.1982	1.44
RSUE	0.0029	1.27	-0.0223	-1.50	-0.0239	-1.10
SALIENCE			0.0205	**1.85**	0.0203	**1.81**
*SALIENCE*RSUE*			-0.0062	**-3.51**	-0.0062	**-3.49**
NRANK			-0.0060	-0.99	-0.0057	-0.95
SIZE	0.0045	**2.21**	-0.0121	-1.27	-0.0108	-1.10
BTM	0.0604	**6.04**	0.0492	1.31	0.0509	1.34
AA			0.1114	0.62	0.1115	0.62
RET	0.0419	**7.28**	0.0786	**3.02**	0.0786	**3.03**
STD_RET			-4.9658	**-4.74**	-5.0156	**-4.73**
*EARN*RSUE*			0.0206	**5.75**	0.0206	**5.74**
*NRANK*RSUE*			0.0010	1.02	0.0009	0.99
*SIZE*RSUE*			0.0013	0.89	0.0011	0.72
*BTM*RSUE*			0.0006	0.10	0.0003	0.06
*AA*RSUE*			-0.0417	-1.56	-0.0416	-1.55
*RET*RSUE*			-0.0047	-1.26	-0.0047	-1.26
*STD_RET*RSUE*			0.5151	**3.17**	0.5223	**3.17**
Total_NUM					-0.0098	-0.69
*Total_NUM*RSUE*					0.0016	0.71
Lead_NUM					0.0232	0.79
*Lead_NUM*RSUE*					-0.0029	-0.62
#obs	6742		6062		6062	
Adj. R²	3.00%		6.01%		6.03%	

Panel C: Subsample of firm-years with non-positive earnings surprise

Model	Model A		Model B		Model C	
DEP. VAR.	CAR (+2,+61)	t-stats	CAR (+2,+61)	t-stats	CAR (+2,+61)	t-stats
INTERCEPT	-0.0459	**-2.36**	-0.0057	-0.10	0.0910	0.96
RSUE	0.0019	0.58	-0.0133	-0.62	-0.0391	-1.17
SALIENCE			-0.0191	**-2.13**	-0.0183	**-2.05**
SALIENCE*RSUE			0.0048	1.56	0.0046	1.50
NRANK			-0.0062	**-1.69**	-0.0061	-1.65
SIZE	0.0039	1.58	0.0031	0.48	0.0033	0.50
BTM	0.0635	**6.12**	0.0680	**4.41**	0.0684	**4.48**
AA			-0.0498	-0.64	-0.0518	-0.67
RET	0.0301	**5.06**	0.0345	**3.03**	0.0342	**3.01**
STD_RET			-0.0157	-0.02	-0.0942	-0.15
EARN*RSUE			0.0213	**1.74**	0.0213	**1.74**
NRANK*RSUE			0.0026	**1.94**	0.0025	**1.91**
SIZE*RSUE			0.0001	0.06	0.0001	0.04
BTM*RSUE			0.0011	0.15	0.0010	0.14
AA*RSUE			-0.0003	-0.01	0.0004	0.01
RET*RSUE			-0.0021	-0.44	-0.0020	-0.42
STD_RET*RSUE			-0.0252	-0.10	-0.0065	-0.03
Total_NUM					-0.0086	**-0.65**
Total_NUM*RSUE					0.0023	**0.52**
Lead_NUM					-0.0240	-1.29
Lead_NUM*RSUE					0.0064	1.01
#obs	5937		5304		5304	
Adj. R^2	2.12%		2.68%		2.75%	

Notes: 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 8. Panel A reports regression results for the full sample. Panel B (Panel C) reports results for the subsample of firm-years with positive (non-positive) SUE. The *t*-statistics (in parentheses) are based on standard errors clustering 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 11 Cross-Sectional Variation in the Effect of Headline Salience on the Market Response Ratio

$$RR = \alpha + \beta_0 \, RSUE_{jt} + \beta_1 \, SALIENCE_{jt} + \beta_2 \, RSUE_{jt} * SALIENCE_{jt} + \beta_3 Controls + \beta_4 \, RSUE_{jt} * Controls + \varepsilon_{jt,}$$

DEP. VAR.	RR	t-stats	RR	t-stats
Small versus Large Firms (based on market value of equity)				
	Small		Large	
*SALIENCE*RSUE*	0.011	**2.78**	0.013	**2.50**
#obs	5670		5676	
Adj. R²	3.83%		3.70%	
Growth (low book-to-market) versus Value (high book-to-market)				
	Growth		Value	
*SALIENCE*RSUE*	0.010	**2.23**	0.012	**2.87**
#obs	5677		5669	
Adj. R²	3.84%		3.90%	
Low versus High Past Returns				
	Low		High	
*SALIENCE*RSUE*	0.013	**2.76**	0.010	**2.25**
#obs	5670		5676	
Adj. R²	2.84%		4.01%	
Low versus High Number of Earnings Announcements on the same Day				
	Low		High	
*SALIENCE*RSUE*	0.007	**1.70**	0.015	**3.53**
#obs	5632		5714	
Adj. R²	4.38%		3.09%	
Low versus High Analyst Following				
	Low		High	
*SALIENCE*RSUE*	0.010	**2.60**	0.013	**2.71**
#obs	5519		5827	
Adj. R²	4.50%		3.35%	
Low versus High Institutional Ownership				
	Low		High	
*SALIENCE*RSUE*	0.009	**2.35**	0.014	**2.84**
#obs	5670		5676	
Adj. R²	3.26%		4.17%	

Table 11 (continued)

DEP. VAR.	RR	t-stats	RR	t-stats
Low versus High Return Volatility				
	Low		High	
SALIENCE*RSUE	0.006	1.26	0.016	**3.77**
#obs	5674		5672	
Adj. R^2	4.93%		2.88%	
Low versus High Earning Volatility				
	Low		High	
SALIENCE*RSUE	0.010	**2.06**	0.013	**3.27**
#obs	5671		5675	
Adj. R^2	4.53%		3.20%	
Low versus High Share Turnover				
	Low		High	
SALIENCE*RSUE	0.008	**1.81**	0.015	**3.65**
#obs	5673		5670	
Adj. R^2	4.71%		3.19%	

Notes: The table reports results of the regression of the response ratio, *RR*, on *SALIENCE*, the interaction variable of interest *RSUE*SALIENCE*, and control variables within various subsample of stocks. The market response ratio, *RR*, is calculated as the announcement window market response, *CAR(-1,+1)*, scaled by the average magnitude of the total market response, *CAR(-1,+61)*, and the announcement window market response, *CAR(-1,1)*: *RR = CAR(-1,1)/((abs(CAR(-1,+61)+abs(CAR(-1,+1))/2)*. The subsamples are formed by assigning firms below (above) the median based on the specified variable to Low (High) subsamples. Past return is the stock return over the previous twelve months. Analyst following is the number of analysts following the firm. Institutional ownership is the percentage of outstanding shares held by institutional investors. Share turnover is the ratio of share volume to the number of shares outstanding. The remaining variables are as defined in Table 3. The *t*-statistics (in parentheses) are based on standard errors clustering by firm and year. *t*-statistics reported in bold are significant at the 10% level or lower based on the two-tailed *t*-test.