

Making News Salient*

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Job Market Paper

Draft: September 2018

ABSTRACT

Chief Executive Officers (CEOs) have incentives to communicate with their investors after news releases if the market misinterprets the news. I examine how CEOs communicate with the market through their trading patterns. I find that CEOs are more likely to purchase shares after positive and negative news releases, suggesting that they want to confirm their positive news if the market underreacts to it and want to mitigate the market overreaction to their negative news by purchasing shares. These patterns vary conditional on the information environment and news categories. My results suggest that CEOs can make the news salient via their trading pattern.

Keywords: Communication, Investor Relations, Insider Trading, Information Asymmetry

JEL Classification: G14, G30, D82, D83

* This paper is the first chapter of my dissertation. I am deeply indebted to my advisor Renée Adams and co-advisor Chang-Mo Kang for their invaluable guidance, support, and insightful discussions. I am also grateful to Breno Schmidt, Rik Sen, Peter Pham, and all seminar participants at University of New South Wales for their comments. All remaining errors are my own.

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1. Introduction

CEOs have private information. When the private information is revealed to the market, the media play an important role in disseminating it to the market. However, because of the information asymmetry between insiders and outside investors, the investors may not be able to interpret the news correctly, even if the news media convey full information. This could result in a gap between the true information and the market reaction. CEOs are well aware of the information transfer between the media and the market, so they have incentives to fill the gap by communicating with their investors. However, this raises the following question: How do CEOs communicate with their investors?

CEOs work for companies, and they have information advantages over external investors. They know what the revealed information means, while the market may not understand the information correctly. Therefore, they immediately recognize the informational gap between the true information and the market reaction after news releases. One way that they can resolve the informational gap is to trade their firm's shares after news releases. In this paper, I examine how CEOs communicate with their investors via their trading patterns after the news is revealed.

CEOs could send a signal to the market about the news by trading their shares if the market misinterprets the news. They can see the gap and have incentives to fill it by communicating with the market if the market underreacts (overreacts) to positive (negative) information for several reasons, including the shareholders' wealth, career concerns, reputations, and the CEOs' profits. In other cases, CEOs have no incentive to send signals to the market, as the market's underreaction to negative information and overreaction to positive information would be beneficial to their shareholders' wealth. Thus, I hypothesize that CEOs will correct the market's misperception about their news by purchasing shares in the open market and that the patterns would vary conditional

on the news tone.

From the perspective of signaling theory, it is necessary that CEOs who do not have any superior information to the public information should not be able to mimic the trading patterns of CEOs with superior information. For example, CEOs could send the false positive information to pursue their own benefits. However, I can rule out this possibility because signaling through open market purchase is costly without true positive information. Since the mispricing should be fairly priced in the long run, the market can figure out whether the signal is true. CEOs should reckon for their incorrect signaling. This could have a negative effect on their wealth, career concerns, and/or reputation. Thus, CEOs are reluctant to send the signal without any additional information.

Because trading shares without the information is costly, the expected profitability of the open market purchase also could be an important part of incentives that encourages CEOs' communication with the market through their trading pattern. Since CEOs know the true information and analyze the informational gap well, they will perceive that the signaling is not costly with the additional information they have.

I first examine CEO trading patterns after news releases, regardless of the news tone. I find that CEOs are more likely to purchase shares in the open market after the news media releases firm-specific news. This suggests that CEOs may still have private information about the released news and they want to provide an additional piece of information to the market. To be specific, the empirical evidence shows that an increase in media coverage stimulates CEOs to buy their companies' shares. This can be explained in that enhanced news coverage about the firm will include positive news and negative news, and the market may underreact (overreact) to positive (negative) news. Thus, CEOs will have incentives to confirm their positive news in the case of the market underreaction to the positive news and mitigate the market overreaction to the negative

news by performing open market purchases.

Turning to news sentiment, I examine whether there are heterogeneous relations between the news tone and CEO trading pattern. I find empirical evidence that CEOs are more likely to purchase shares in the open market after positive and negative news releases. This suggests that CEOs may send the signal to the market to confirm the positive information if the market underreacts to the released positive news. In contrast, it also suggests that CEOs may send a signal to the market to mitigate the market overreaction to the negative news.

To understand the underlying economic channels driving the results, I investigate the relations above depending on the firm's information environment. To be specific, I define a transparent information environment based on analyst coverage and institutional ownership. Investors in firms with a transparent information environment would have better access to information than investors in firms with an opaque information environment. This means that information dissemination would be much more active in firms with transparent information channels and CEOs in these firms have a different incentive structure. For example, CEOs in firms with transparent information environments would have less incentive to send the signal to the market in the case of a positive news release because there is little likelihood of market underreaction to positive news. In contrast, the CEOs would have more incentive to send the signal to their investors in the case of a negative news release because there is a greater likelihood of market overreaction to negative news in the face of transparent information channels.

Using analyst coverage and institutional ownership as proxies for the information environment, I find that CEOs are less likely to perform open market purchases in firms with intensive analyst coverage and institutional ownership after positive news releases; however, I find mixed empirical results concerning CEO trading patterns in the transparent information

environment after negative news releases. I find that CEOs in firms with intensive institutional ownership are more likely to purchase shares after negative news releases than CEOs in firms with opaque information environments are. However, I find a negative and statistically significant result using intensive analyst coverage as a proxy for the transparent information environment. The results suggest that CEOs are extremely careful to send the signal to the market in the case of the market overreaction to the negative news under the transparent information environment and that intensive monitoring through high institutional ownership could motivate CEOs to correct the mispricing by purchasing shares. Overall, there are heterogeneous CEO trading patterns conditional on the information environment.

Next, I examine whether the news category is associated with the CEO trading pattern after a news release. Based on the RavenPack News Analytics category, I define news about revenue, earnings, analyst rating, and credit rating as *hard news*, and news about other topics is considered *soft news*. Hard news captures firms' fundamentals, whereas, soft news would be less value-relevant news. Thus, the market should pay more attention to hard news, with limited attention to soft news.

I find a negative relationship between positive hard news coverage and CEO open market purchases. This suggests that information transfer through the news coverage will be efficient because of the nature of hard news. Since hard news is closely related to firms' fundamentals, investors will pay sufficient attention to positive hard news. Thus, there is little possibility that there will be an informational gap between the true information and market reaction.

I find a positive relationship between positive soft news and CEO purchases, suggesting that CEOs are more likely to send the signal to the market because the market does not interpret the positive soft news well and could underreact to the news because of limited attention to soft

news. I also find a positive relationship between negative hard news coverage and CEO open market purchase. This supports the market overreaction story. Because investors pay attention to hard news, there is little possibility of a market underreaction. However, there is a higher possibility of a market overreaction to negative hard news because of the high level of investor attention and public investors' taste for negative news (e.g., Stafford 2014; Trussler and Soroka 2014).

Next, I investigate the market reaction to CEO open market purchase. I estimate cumulative abnormal returns to capture the market reaction. I find that the market positively reacts to open market purchases followed by news coverage. Moreover, the news-related purchases outperform the other CEO purchase transactions. This suggests that the CEO trading pattern makes the news salient.

I also find a positive market reaction to the CEO's open market purchase, related to positive news coverage in the pre-transaction period, but the positive market reaction disappears for the CEO's open market purchase based on a $[-5, -1]$ window. This suggests that such a CEO trading pattern would have significant credibility, but CEOs tend to react to the market underreaction to positive news and market overreaction to negative news differently.

In the case of a market underreaction, CEOs are more likely to react immediately, as they have additional positive information, which means that the cost of trading is relatively small. In contrast, I find a positive market reaction to negative news-related CEO purchase, and this result only holds for the $[-5, -1]$ window specification, suggesting that CEOs tend to send the signal to the market through their trading pattern carefully in the case of the market overreaction because of the relatively high cost of trading.

To investigate whether the market reaction is solely related to the profitability of the CEO

trading pattern, I explore the long-run market reaction to CEO open market purchase. Because the short-run market reaction is related to both news and CEO purchase transactions, I expect that the market will respond promptly to the additional information, and the news-related purchases will not outperform in the long run. I find empirical evidence that is consistent with my hypothesis.

Finally, I discuss alternative explanations for the empirical results of my paper. Some may argue that my results are driven by CEOs' incentive to exploit private information for increasing their personal wealth. To mitigate this concern, I investigate whether CEOs dispose their shares to realize profits as early as possible. I find that the average number of days between the purchase date and subsequent sale transaction is around 1,682 days, which is significantly longer than the restricted period of 180 days. In addition, I examine whether CEOs report their transactions as early as possible. They would report early if they intended to communicate with the market. I find that reporting gaps significantly decrease as cumulative news coverage increases. These results suggest that CEOs intend to communicate with their investors via their trading patterns.

The results are robust through extensive robustness checks, including analysis with different units of analysis, various time windows, analysis with alternative media measures, and sub-sample period analysis to avoid any bias caused by the pre-Sarbanes–Oxley Act (SOX) period. In addition, for mitigating a concern about post-earnings announcement drift (PEAD), I examine the analysis, excluding observations within a month of the earnings announcement, and the results are robust.

This paper contributes to the literature on insider trading. Previous studies have focused on insider trading before information releases (e.g., Ke, Huddard, and Petroni 2003; Fidrmuc, Goergen, and Renneboog 2006; Jagolinzer 2009) and return predictability of insider trading (e.g., Seyhun 1986 and 1998; Lakonishok and Lee 2001; Jenter 2005), but my study focuses on insider

trading after information releases and considers insider trading as a way of communicating with the market. Accordingly, my paper adds to the literature on investor relations by exploring how CEOs communicate with their investors via their trading patterns. Past literature on investor relations has investigated the effects of investor relations (IR) activities on firms' visibility, media coverage, investor following, and firm value (e.g., Bushee and Miller 2012; Kirk and Vincent 2014; Karolyi and Liao 2017). In contrast to these studies, my paper suggests an insider-oriented communication method that can mitigate the information asymmetry between insiders and outside investors.

This paper also contributes to the literature on the role of media in accounting and finance. Previous studies suggest that the media play a monitoring role for identifying accounting and corporate frauds (e.g., Miller 2006; Dyck, Volchkova, and Zingales 2008; Dyck, Morse, and Zingales 2010), triggering firms' self-purification of their corporate governance quality (e.g., Joe, Louis, and Robinson, 2009), disciplining CEOs' compensation packages (e.g., Kuhnen and Niessen 2012), and mitigating insiders' profitability of insider trading (e.g., Dai, Parwada, and Zhang 2015; Rogers, Skinner, and Zechman 2016). I contribute to the literature by investigating CEOs' trading patterns conditional on media coverage and media sentiment.

The remainder of the paper is organized as follows. Section 2 of the paper provides a literature review. Section 3 describes the data on insider transactions, media coverage, as well as the other data I use in the paper. Section 4 provides the main results on the relationship between media and CEO trading pattern. Section 4 also explores whether information environment of the company and types of news play an important role in the relation between media and CEO trading pattern, the market reaction to CEO trading pattern, and whether CEOs have intentions to communicate with the investors. Section 5 concludes.

2. Literature Review

2.1 CEO Trading Patterns

Most previous literature on insider trading has focused on insider trading prior to public information release (e.g., Ke, Huddard, and Petroni 2003; Fidrmuc, Goergen, and Renneboog 2006; Jagolinzer 2009). In addition, most previous studies have examined whether insiders exploit private information to realize profits when they trade shares of firms with which they are affiliated (e.g., Seyhun 1986 and 1998; Lakonishok and Lee 2001; Jenter 2005).

Distinct from insider purchases, insider sales are not informative. As previous studies suggest, insiders tend to dispose their shares for diversifying their wealth portfolios (e.g., Lakonishok and Lee 2001; Jenter 2005). In addition, insiders would be reluctant to sell the shares because of litigation risk, even though private information motivates the sales.

In contrast to previous studies, I focus on CEO trading patterns after news releases. Kolasinski and Li (2010) examine insider trading patterns after public information releases, representing the earnings announcement. They find that insiders purchase shares after good earnings surprises and sell shares after bad earnings surprises. The results suggest that managers have private information about their companies' stock prices, and their trading patterns are informative in terms of profitability. However, different from this research, my study focuses on both hard and soft news and finds that the main results are driven by soft news releases, suggesting that my results are not driven by PEAD.

There is a lack of studies about the determinants of CEO share trading. There may be several reasons why CEOs time their share transactions, and the profitability of this trading does not seem to be the only reason. Thus, in this paper, I explore how CEOs communicate with their investors using their open market share-trading pattern to fill a gap in the literature.

2.2 Media in Finance

There are several studies regarding the effects of media coverage and media sentiment in finance and accounting. From the perspective of information dissemination, the media help mitigate uncertainty in the capital market. They provide the market with both existing and new information. Previous studies have suggested that the information affects stock prices and stock returns (e.g., Bushee, Core, Guay, and Hamm 2010; Fang and Peress 2009; Huberman and Regev 2001; Peress 2014). In addition, past literature has documented the role of media in corporate governance. Miller (2006), Dyck, Volchkova, and Zingales (2008), and Dyck, Morse, and Zingales (2010) report that news coverage helps in identifying accounting and corporate frauds. In addition, studies have revealed the media's disciplinary effects; for example, Joe, Louis, and Robinson (2009) show that negative news coverage on firms' corporate governance makes firms improve their corporate governance quality by replacing their CEO and/or chairman and changing the board structure. This suggests that the negative tone of news could trigger firms' self-purification.

Core, Guay, and Larcker (2008) and Kuhnen and Niessen (2012) find mixed empirical evidence on the effects of media coverage on CEO compensation policy. Core, Guay, and Larcker (2008) find that the negative media coverage does not affect firms' executive compensation policy, but Kuhnen and Niessen (2012) stated that CEO compensation-related news coverage affects firms' compensation policies.

Dai, Parwada, and Zhang (2015) and Rogers, Skinner, and Zechman (2016) examine the effects of the media on insider trading. The former explores the role of media on the profitability of insider trading, with the study finding that news coverage negatively affects the profitability of insider trading by disseminating news to the market because of the media's monitoring function. The latter study examines the effects of news releases on the capital market, finding that insider

trading-related news affects stock prices and trading volume.

Despite the studies mentioned above, there is not enough research on insider trading patterns after news releases. The previous studies concerning the relationship between media and insider trading have focused on the profitability of insider trading after news releases. In addition, most studies have concentrated on whether insiders utilize private information to realize profits in their personal wealth, but in this paper, my focus is on how insiders use their trading patterns as a means of communicating with their investors.

There is also a lack of research regarding the different effects of news tones. I examine whether news sentiment is associated with CEO trading patterns to tease out the heterogeneous effects of positive and negative news under different information environments. The evidence in this paper contributes the literature on the determinants of insider trading patterns.

3. Data

I compile a wide-ranging data from a variety of sources. I mainly collect event-based transaction-level CEO insider trading data from the Thomson Reuters Insider Filing database. For media coverage and sentiment data, I collect the data from RavenPack News Analytics, which is widely used by research papers in accounting and finance. In addition, I obtain balance sheet data and income statement accounting data from Standard & Poor's Compustat Fundamentals, and stock prices and market capitalization data are from the Center for Research in Security Prices (CRSP). In addition, I collect CEO compensation data from Compustat ExecuComp. Institutional ownership data is collected from Thomson Reuters Institutional (13f) Holdings, and analyst data is obtained from the Institutional Brokers Estimate System (I/B/E/S).

To qualify for inclusion in the sample, a firm must be listed on NASDAQ, NYSE, and

AMEX stock markets and also be covered by the Thomson Reuters Insider Filing Database. Additionally, I eliminate observations with missing stock prices, stock returns, and number of shares outstanding.

To construct firm-person-day-level data, I start with the CRSP Daily dataset and Compustat Fundamentals annual data. I only include sample firms that have at least one CEO transaction record and at least one news coverage observation during the firms' life. Because of the shorter data coverage of RavenPack, the sample period of the final dataset is from 2000 to 2016. The final dataset consists of 5,339 sample firms, and total number of observations is 13,873,842.

3.1 CEO Trading Measures

To construct the CEO insider trading measures, I follow previous literature concerning option exercise and share trading among CEOs and/or executives (e.g., Malmendier and Tate 2005; Malmendier and Tate 2008; Cicero 2009; Klein and Maug 2011; Malmendier, Tate, and Yan 2011; Fos and Jiang 2016). Data on CEO stock transactions and derivative transactions are collected from the Thomson Reuters Insider Filings database. Data on stock transactions are available from 1986, and data on derivative transactions are available from 1996. I match these data with the CRSP database to verify whether the transaction prices posted on the TIF database are correct. Following Heron and Lie (2007) and Bebchuk, Grinstein, and Peyer (2010), I define an insider as a CEO if she is classified either as the CEO or president of the company on the TIF database.

To identify CEO trading patterns, I only retain all open market purchases and sales by CEOs of publicly traded firms. Shares acquired through stock awards and trades with employers are excluded from my data. The TIF database provides transaction codes and acquisition/disposition indicators. To construct CEO share trading variables, I only retain

transaction codes with appropriate acquisition/disposition flags, such as observations with transaction code “P” and acquisition flags and observations with transaction code “S” and disposition flags.

Following Malmendier, Tate, and Yan (2011), I drop observations representing amendments of prior records to avoid double-counting transactions. In contrast to from Malmendier, Tate, and Yan (2011), I check transactions with multiple amendments using the Amendment Concordance of the TIF data and drop all transactions with multiple amendments. This is because I do not know whether the amendment is related to omitted transactions or inaccurate records.

Because my study investigates how CEOs communicate with their investors by trading their shares, share transactions regarding routine stock-based compensation and/or company disposition are not suitable for capturing individual CEOs’ trading patterns, which send signals to the market, under information asymmetry. *Buy* is an indicator variable that is equal to 1 if the CEO performs open market stock purchase within a specified date, and *Sell* is an indicator of daily open market sales transactions.

The TIF database provides ample information on insider stock trading and derivative trading, as well as various insiders’ position information. However, I have several concerns with using TIF database. First, the data are too noisy to retain all the transactions. Thomson Reuters provides a cleanse indicator that indicates the level of accuracy of each transaction-level data.³ I eliminate transactions without transaction price information. I also remove transactions that have lower transaction prices than the lowest trading price during the day or higher transaction prices

³ Following Malmendier, Tate, and Yan (2011), I only keep transactions with cleanse codes of “R,” “H,” “C,” “L,” or “I.”

than the highest trading price during the day.

The second concern relates to identifying each insider's position. Although the Thomson Reuters Insider Filing data provide four role code variables, the information about the insider's role is not perfectly correct. Even when I match CEOs in the TIF database to CEOs in the Execucomp data, I can see some discrepancies between the two datasets. This is why I adopt a name-matching process to identify CEOs between Thomson Reuters Insider Filing data and Execucomp. To mitigate the concern about missing CEOs with no open market transaction records in the TIF data, I include both CEOs who have at least one open market share transaction record in TIF data and all Execucomp CEOs.

3.2 Media Coverage Measures

Following previous studies investigating the effects of media or the determinants of media coverage and/or media sentiment, I construct media coverage and media sentiment variables. Since the RavenPack News Analytics comprises event-based data, I consider the number of news coverage as zero if there is no news observation in a day.

Following Dai, Parwada, and Zhang (2015), I use the number of news coverage as one of the key proxies for media coverage. In contrast to their measure, which represents the amount of news coverage scaled by 100, I employ the log transformation to mitigate skewness in the key variables. However, I also follow these researchers' original news coverage measures for the robustness checks. Because the unit of analysis of this paper is the transaction-date level, I construct the key news coverage variable, which is the natural logarithm of 1 + the cumulative number of news coverage items in certain windows. To incorporate news momentum effects, I also construct the news coverage variables that have only pre-period news coverage.

In addition to news coverage measures, I construct the news sentiment variables indicating three different tones of news. Based on RavenPack News Analytics' two main news sentiment scores, the Event Sentiment Score (ESS) and Composite Sentiment Score (CSS), I identify the tone of each news item.

The ESS represents the news sentiment for a given company by measuring diverse proxies sampled from the news. To determine the sentiment score, financial and economic experts, who are highly experienced in the firm's industry, categorize and rate each firm-specific news event. Based on the categorized and rated firm-specific news, RavenPack's unique algorithm assigns a score ranging from 0 to 100. In this setting, scores above 50 represent positive sentiment and scores below 50 represent negative sentiment. A sentiment score of 50 signifies neutral sentiment. In addition to the expert consensus survey data, the algorithm considers a wide range of factors, including the emotional factor, which is based on words and phrases in the news; weather and climate factor; analyst rating factor; credit rating factor; fundamental comparison factor, which analyzes numerical differences between the actual and estimated values in various financial and economic indicators and/or figures and values stated in the news; and casualties factor.

The CSS represents the news sentiment for a given story by combining three sentiment analysis methodologies, as follows: the traditional tagging methodology, expert-trained classifier methodology, and market response methodology. First, the traditional tagging methodology analyzes news stories and identifies positive and negative words and phrases in the news about global equities and earnings evaluations. Second, the expert consensus methodology analyzes news about mergers, acquisitions, takeovers, and corporate action announcements and short commentary and editorials on global equity markets. Finally, the market response methodology identifies and maps individual words or word combinations in the news headlines to the price

effects on the stocks of the companies mentioned in the headline. Using intraday tick data from 100 large-cap stocks, the methodology measures the relative volatility, which is the volatility divided by the mean of volatilities of all companies during the same time periods of the mentioned stocks' prices in hours following story arrival to see how markets respond to the news in the short term. Based on the methodologies, RavenPack suggests that news with a CSS above 50 is positive news, news with a CSS below 50 is negative news, and news with a CSS equal to 50 is neutral news.

Although the ESS and CSS are positively correlated at the 1% significance level, it is possible to have some conflicts between the two sentiment scores. According to the RavenPack News Analytics user manual, the two measures generally have the same sentiment direction, but they could have different directions because each measure captures different perspectives on sentiment for the same news. Since the ESS utilizes a category-based algorithm and represents the news sentiment for a given company, ESS is independent from CSS, which depends on five sentiment scores and represents the news sentiment for a given story.

Based on the ESS and CSS, I classify the news into positive, negative, and neutral news. To measure news tone, I construct ratios of positive (negative) news, defined as the number of positive (negative) news items within certain windows normalized by the number of news coverage items within the windows. In addition, I construct a natural logarithm of the number of positive (negative) news items as proxies for media sentiment. Furthermore, I construct indicator variables of positive (negative) news within certain windows. For the robustness checks, I also use the sentiment score as a proxy for media sentiment. Following Bushman, Williams, and Wittenberg-Moerman (2016), I use the average media sentiment score across all firm-specific news articles published over various periods. To be specific, I use the average ESS and average

CSS over the past 2-, 3-, 5-, and 10-day periods. Before calculating the averaged sentiment scores, I apply a linear transformation to each individual sentiment score and define the media sentiment as $\text{Sentiment Score} - 50$, scaled by 50.

3.3 Control Variables

I follow prior studies (e.g., Klein and Maug 2011; Dai, Parwada, and Zhang 2015; Fos and Jiang 2016) to control for several firm characteristics that could affect CEOs' trading behavior. Firm size ($\text{Ln}(\text{Size})$) is the natural logarithm of the firm's market capitalization. Market-to-book (MTB) is the market-to-book ratio at the prior year-end. Stock returns (Return) are stock returns over the prior 12 months, calculated using a monthly rolling window. I also control for the Amihud (2002) illiquidity measure (Illiquidity) and idiosyncratic risk (IVOL), which is the stock's annualized residual return from a regression of daily stock returns on Fama–French's three factors during the past year. To control for news size effects, I include news coverage ($\text{LN}(\text{News Coverage})$), which is the natural logarithm of $1 + \text{news coverage}$ in certain windows. To control for the information environment, I add analyst coverage and institutional ownership variables to some specifications. A table of variable definition is presented in Appendix A.

3.4 Summary Statistics

Summary statistics are presented in Tables 1 and 2. Panel A of Table 1 shows the daily-level summary statistics on news, CEO trading, and financial variables. I set three different windows to construct these variables, namely $[-2, -1]$, $[-3, -1]$, and $[-5, -1]$, based on average time spent

disseminating a unique news item.⁴ I define positive and negative news based on the CSS, which is one of the most comprehensive media sentiment scores, provided by RavenPack News Analytics. I also construct the media variables based on the ESS as alternative media variables for robustness tests. However, I only report cumulative news coverage variables based on the $[-5, -1]$ window for simplicity. I report summary statistics using the $[-2, -1]$ and $[-3, -1]$ windows in Table 2A in Appendix.

For the perspective of news sentiment, the distribution of news sentiment is different between the ESS and CSS. Figure 1 and Panel A of Table 2A show the trend in the annualized number of news coverage items and trend in news coverage by news tone based on the ESS and CSS during the sample period. The results show that news coverage increases over time, suggesting that the amount of information that investors can access also increases over time. In addition, these findings show that positive news occupies the largest portion, which is around 50% on average, based on the ESS. However, Figure 1 and Panel A of Table 2A show that neutral news occupies the largest portion, around 45% on average, based on the CSS. However, there is no significant change in the portions of positive, negative, and neutral news.

In Panel B of Table 2A, I present the trend in news coverage by news category. Following the RavenPack News Analytics categorization, I separate news into two groups, namely hard news and soft news. I define more value-relevant news topics, such as revenue, earnings, analyst rating, and credit rating, as hard news, while other topics are considered as soft news. Because hard news

⁴ RavenPack News Analytics considers an additional news item as a unique news item if the time lag between the first unique news release and the additional new release is over 24 hours. Based on its methodology, the average time spent disseminating each unique news is about 2 days. Thus, I use relatively short time windows, such as $[-2, -1]$, $[-3, -1]$, and $[-5, -1]$.

is directly related to firms' fundamentals, there will be sufficient investor attention to hard news but relatively limited attention to soft news.

Panel B of Table 2A shows that there is much more soft news coverage than hard news coverage during my sample period. Soft news occupies about 70% on average. This suggests that there is a relatively high probability of suffering a market underreaction to the positive news, such that CEOs would need to confirm the positive information by purchasing their shares. This is because it is easier to overlook soft news than hard news from the perspective of outside investors.

Table 2 shows the trend in CEO trading patterns. There are more open-market share purchases during and after the recent financial crisis from 2007 to 2009 and the dot-com bubble in 2000 than in normal periods, in terms of both quantity and proportion. These results suggest that CEOs may have more incentive to communicate with the market when companies suffer financial distress and their career concerns are exacerbated.

<< Insert Table 1 about here >>

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4. Empirical Results

4.1 CEO Trading Patterns after News Release

In this section, I report on my empirical analysis of the relationship between media and CEO trading patterns. First, I focus on whether news coverage is associated with insider trading patterns. I estimate the linear probability model outlined below.

$$LPM: Pr(Y = 1 | X_1, X_2, \dots, X_k) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k + \mu_i + v_t + \varepsilon_{it} \quad (1)$$

Dependent variables for the linear probability model are CEO share trading indicator variables, such as *Buy* and *Sell*. In the model, μ_i signifies each firm's time-invariant specific effect and v_t represent that year's specific effect. X_{it} is a set of explanatory variables including media variables and control variables, and ε_{it} is an error term. Standard errors are clustered at the firm level.

I use linear probability models to include firm fixed effects.⁵ Previous studies regarding the effects of media in finance have usually controlled for industry fixed effects because Solomon and Soltes (2012) suggest that industry-specific effects explain a significant proportion of the variation in firm media coverage. However, according to the within- and between-firm variation analysis in Panel C of Table 1, we can see that most variations in media variables come from the within-firm standard deviation. Thus, I include firm fixed effects in the main regressions. For the robustness check, I include industry fixed effects instead of firm fixed effects, and the results are robust.

Table 3 lists specifications examining the relationship between news coverage and CEO trading patterns. As the prior literature suggests, enhanced news coverage may increase CEO open market purchases, as the market can either underreact or overreact to news and CEOs will want to correct the information. The market may underreact to positive news. In this case, the CEO has

⁵ Greene (2004) suggests that the nonlinear fixed effects model has disadvantages in controlling for a vast number of dummy variables and the coefficients for the dummy variables may be estimated without the necessity of inverting a large matrix. In my sample, the number of sample firms is 5,339, which is large enough to obtain biased coefficients. Thus, in this paper, I include linear probability model specifications to control for firm fixed effects.

the incentive to send a signal to the market by purchasing company shares, as the CEO knows that the released positive news does not cover all the positive aspects of the news. Although sending the signal through open market purchase is costly, the CEO is willing to do so under the information advantage to confirm the positive information. The CEO can also send signal if the market overreacts to negative news. Because of the nature of negative news, the CEO should expect negative returns on her open market purchase. Even in this case, the CEO may have an incentive to send the signal to mitigate the market overreaction to the negative news.

In Table 3, I find that news coverage positively relates to CEOs' open market purchases. The empirical evidence supports the expectation I outlined above. The results are consistent for all specifications using various time windows. In the untabulated results, I control for industry-specific time-invariant characteristics by including the two-digit Standard Industrial Classification (SIC) code, and the results remain unchanged. In addition, I run a transaction-level analysis using open market transactions. Among all the open market transactions, I find that CEOs are more likely to purchase shares and less likely to sell shares, and the results are robust to different sets of fixed effects. The transaction-level analysis allows me to include CEO fixed effects, because Thomson Insider Filing Database provides a unique person identification number. I report the results in Table 3A of Appendix.

The above results, however, cannot show whether CEOs respond to the market underreaction or overreaction. Thus, I divide news coverage into positive, neutral, and negative news coverage in the subsequent analysis.

<< Insert Table 3 about here >>

In Table 4, I regress the CEO trading pattern on news tone, including positive news coverage and negative news coverage and various control variables. The coefficients on positive and negative news variables are all positive and statistically significant in Columns 1–6. The magnitude of coefficients is different between positive news and negative news coverage, suggesting that CEOs tend to send the signal to the market more carefully in the case of a market overreaction to negative news than in the case of a market underreaction to positive news, as sending the signal is costly in my setting and negative news will result in negative returns. The results are robust to alternative sets of fixed effects, such as industry fixed effects; alternative measures of news tone, including dummy variables that indicate whether there exists either positive or negative news coverage in the pre-transaction periods; and various time windows.

Some might argue for the possibility that CEOs purchase shares only for profitability. However, the expected profitability of the open market purchase is one of the important factors that incentivize CEOs to send the signal to the market by trading shares, as share trading is a costly signal without the expected profitability. In addition, it is hard to support this argument because of the short-swing profit rule. The Securities and Exchange Commission (SEC) requires insiders to return any profits realized from open market purchase and sale of their company shares if the transactions occur within a 6-month window, so the regulation discourages insiders' intention to pursue short-term profits. In my data, the average number of days between a purchase date and the next sale date is around 1682 days, which is over 4.5 years. This suggests that my results are not only driven by the profitability story. I address this issue in section 8.

<< Insert Table 4 about here >>

4.2 The Information Environment

To provide further evidence that the CEO responds to the media differently, I conduct analyses conditional on the firms' information environment. Lakonishok and Lee (2001) find that insiders' trades are informative for small firms. This suggests that the firms' information environment could be an important factor that constructs the informativeness of the transactions. I expect that the news will spread out in a big way when the firms' information environment is more intensive if the news tone is informative to investors. Thus, investors will have better access to the public information and have more channels for receiving the public information. This could mitigate concerns about the market underreaction, as an intensive information environment results in more efficient positive news dissemination.

To identify the intensive information environment, I use the natural logarithm of analyst coverage over the previous 12 months and institutional ownership at the previous year end. Using analyst coverage, I classify firms as having a highly intensive information environment if the analyst coverage of the firm falls into the top quintile of the sample distribution, and as less intensive otherwise. I also define the highly intensive information environment based on institutional ownership in the same way. I estimate linear probability models, including interaction terms between the news tone and information environment indicator variables, and report the results in Table 5.

<< Insert Table 5 about here >>

As evidenced from Panel A of Table 5, the coefficient on the interaction term between intensive analyst coverage and positive news coverage is negative and statistically significant, and

the coefficient on the interaction term between intensive analyst coverage and negative news coverage is positive and statistically significant. These results are consistent with my expectation.

The results show that, compared with CEOs in firms with less intensive analyst coverage, CEOs in firms with highly intensive analyst coverage are less likely to purchase their firms' shares as positive news coverage increases. This could be because of the market underreaction to the positive information. With a good information environment, CEOs may not have any additional positive information about the firm-specific positive news release that the market has not yet recognized. In this case, CEOs would not have any incentive to send the signal to their investors by trading their shares.

The results also show that, compared with CEOs in firms with less intensive analyst coverage, CEOs in firms with a transparent information environment are less likely to purchase shares of their firms as negative news coverage increases. This suggests that the transparent information environment effectively disseminates negative news to the market. Because of the efficient news dissemination mechanism under the transparent information environment, firm-specific negative news will spread quickly, and CEOs may not have additional information about the revealed negative news.

In Panel B of Table 5, I report the results for examining the relationship between news tone and CEO trading pattern conditional on information environment, proxied by institutional ownership. The results for positive news are consistent with the findings using analyst coverage as the proxy for information environment.

There may be concerns about the market overreaction to negative news releases, as an intensive information environment could excessively disseminate negative news to the market. As I find from Table 4, the magnitude of cumulative negative news coverage is significantly lower

than the magnitude of cumulative positive news coverage, suggesting that CEOs are more careful when they correct the information after negative news releases. The results of Panel A in Table 5 are consistent with this interpretation because CEOs are less likely to purchase shares in the open market, as negative news coverage increases when their firm's information environment is transparent. However, Panel B of Table 5 shows that, compared with CEOs in firms with opaque information environments, CEOs in firms with transparent information environments are more likely to purchase their firms' shares as negative news coverage increases. This suggests that the greatest strength of the highly intensive information environment becomes its greatest weakness in the case of negative news dissemination. Because of the efficient news dissemination mechanism under the highly intensive institutional ownership, firm-specific negative news will spread quickly and excessively for the perspective of firms. In addition, intensive institutional ownership could provide better monitoring, so CEOs would have more career concerns in the situation. Thus, in contrast to intensive analyst coverage, intensive institutional ownership could make CEOs mitigate the market overreaction to their negative news. Overall, the stronger effects of media sentiment on the likelihood of a CEO's open market purchase for the highly intensive analyst coverage and highly intensive institutional ownership reinforce the inference that CEOs utilize their trading patterns as a means of communicating with their investors to correct the public information.

4.3 The News Category

In this section, I examine whether the news category is associated with CEO trading patterns after news releases. Based on the RavenPack News Analytics category, I define news about revenue, earnings, analyst rating, and credit rating as hard news, while other topics are considered soft news.

Hard news captures firms' fundamentals, while soft news comprises less value-relevant news.

Hard news is more likely to contain numerical data that can provide direct information about firm value. For example, news about earnings provides numeric data about firms' current earnings and previous earnings. Investors can compare the current value with the previous value easily, even if they do not have enough financial knowledge to interpret it or pay limited attention to the news story. However, investors cannot clearly analyze the effect of news about mergers and acquisitions if they are not familiar with industry-specific information, such as the target value, firm value of possible alternative target firms, and so on. Thus, there will be sufficient investor attention to hard news and limited attention to soft news.

<< Insert Table 6 about here >>

Table 6 shows two different patterns depending on the news category. First, the CEO trading patterns following hard news coverage are similar to the CEO trading patterns in firms with transparent information environments, suggesting that hard news is more visible because it contains information about firms' fundamentals. Investors pay more attention to the hard news, so CEOs only need to mitigate the concerns about the market's overreaction to negative hard news. Second, the CEO trading patterns following soft news coverage show that CEOs only need to confirm positive soft news when the market underreacts to it. Because soft news is not related to firms' fundamentals, investors can pay limited attention to the soft news. In addition, outside investors may not have enough time to analyze the information on time. It is plausible that even analysts and institutional investors could overlook the soft news because of its opaqueness. Thus, CEOs have incentives to send signals to the market in the case of market underreaction. CEOs do

not have to care about the market's underreaction to negative soft news because it is beneficial to their shareholder wealth, even though the market has incomplete information.

4.4 The Market's Reaction to CEO Trading Patterns

Do CEO trading patterns have credibility? This is an important empirical question because investors can learn from CEO trading pattern if CEOs purchase shares in the open market to communicate with their investors and investors perceive that the additional information provided by CEO trading patterns is credible. CEOs cannot communicate with the investors if they ignore the signals from CEOs. Thus, in this section, I investigate the market reaction to CEO open market purchases. I estimate cumulative abnormal returns (CAR) for various time windows to capture the market reaction to the CEO trading pattern. I collect stock returns from the CRSP and conduct an event study using Eventus. I use both a market model and a constant mean return model with a 255-day estimation period ending 46 days prior to the announcement date.

Table 7 shows ordinary least squares (OLS) regressions of the CAR on news variables and firm-level control variables. For this analysis, I only include CEO open market purchases. All control variables are measured at the end of the prior fiscal year. All regressions include firm and year fixed effects. I correct all standard errors for heteroskedasticity and group correlation at the firm level.

Columns 1–3 of Panel A in Table 7 show that the market positively reacts to CEO open market purchases, which are related to news releases, among all the open market purchases. This shows that CEO's post-news purchase transactions are more informative than purchase transactions in other periods, and the market learns from the CEO trading patterns. Regardless of news releases, CEO purchases always correct mispricing in the market. CEO purchases following news make the news salient. This is why the market reacts positively to CEO purchases in the short

run.

In Columns 4–6 of Panel A in Table 7, I find a positive market reaction to CEOs' open market purchases, related to positive news coverage in the pre-transaction period, but the positive market reaction disappears in CEOs' open market purchases based on the $[-5, -1]$ window. This suggests that such CEO trading patterns would have significant credibility, but CEOs tend to react to the market underreaction immediately because they have additional positive information, which means that the cost of trading is relatively small. In contrast, I find a positive market reaction to negative news-related CEO purchases, and this result only holds for the $[-5, -1]$ window specification. This suggests that CEOs tend to send the signal through their trading patterns carefully in the case of market overreaction because of the relatively high cost of trading.

Panel B in Table 7 illustrates the long-run market reaction to CEO open market purchases. Panel A of Table 7 suggests that CEO open market purchases after news releases are more profitable than purchases in other periods. However, it only shows the short-run market reaction. Because the short-run market reaction is related to both news releases and CEO purchases, it is important to check the long-run market reaction. I expect that the market will respond promptly to the additional information through the CEO trading patterns; moreover, the news-related purchases will not outperform in the long-run because CEOs have intentions to correct the information by purchasing shares during the periods and profitability is not the only reason why they trade the shares.

The long-run market reaction analysis shows that the news-related purchases perform better only in the short run. This is consistent with the expectation I outlined above and suggests that profitability is not the only motivation for the CEO trading pattern after news releases.

<< *Insert Table 7 about here* >>

4.5 Do CEOs Intend to Communicate with the Market?

In previous sections, I have found that CEOs are more likely to purchase shares after news releases and these trading patterns vary depending on the news tone, firms' information environments, and news categories. I interpret the results as showing that CEOs have incentives to correct the market's misperception about the revealed information by purchasing shares in the open market.

A possible alternative explanation for the empirical results, however, is that CEOs pursue their profitability by exploiting private information. If CEOs have unrevealed positive information and they want to exploit it for their own wealth, then they may want to purchase shares when the market underreacts to the revealed positive news or overreacts to the revealed negative news to pursue short-term profits.

To support the alternative story, CEOs should realize positive profits after their open market purchases. This means that they have to sell the shares at a premium. Based on the short-swing profit rule, corporate insiders must return any profits through open market transactions of their firm's stock if the insiders sell the shares within 6 months after the purchase. Thus, CEOs may sell shares around 180 days after the open market purchase if they are trading only for profitability. In contrast, CEOs may not care about timing of the first sale transaction if they have intentions to communicate with the market. Panel A of Table 8 shows that average number of days between the open market purchase and the next share disposal in the open market is above 4 years, which significantly exceeds the 180 days. This suggests that profitability is not the only reason for CEOs to trade their shares in the open market.

The literature on option backdating shows that there would be significant reporting gaps if

insiders exploited the private information to increase their personal wealth (e.g., Lie 2005; Heron and Lie 2007). In contrast, CEOs would have incentives to report their transactions as early as possible if they have intentions to communicate with the market. Because CEOs want to send the signal to correct the market's misperception about the news in this case, they do not have any incentives to delay the reporting. Thus, I hypothesize that the reporting gaps will be smaller for open market purchases following news releases.

Thomson Reuters Insider Filing data provide both the transaction date and reporting date. Following previous studies (e.g., Lie 2005; Heron and Lie 2007), I define the reporting gaps as the number of days between the transaction date and reporting date.

In the pre-SOX period, the SEC requires insiders to report their transactions to the SEC within 10 days following the last day of the calendar month in which the transaction occurs. Thus, the maximum reporting gap should be around 40 days. I eliminate all pre-SOX observations with reporting gaps exceeding 40 days. In the post-SOX period, the SEC requires 2 days to report transactions, so the reporting gaps during the post-SOX period should be shorter than 2 days. However, there are reporting gap observations, exceeding 2 days, even after the implementation of the SOX. To be conservative, I drop all observations that have longer reporting gaps than 2 days in the post-SOX period.

In Panel B of Table 8, I regress the reporting gap on news variables and control variables. Columns 1–3 show that the reporting gaps decrease as the cumulative number of news before the open market purchase increases, regardless of the time windows. This is consistent with the hypothesis that CEOs would report more quickly if they intend to correct the market underreaction to the released positive news or overreaction to the released negative news. Columns 4–6 provide empirical evidence that the reverse relation between reporting gaps and cumulative number of

news in the pre-transaction periods are robust, even after controlling for time-varying firm characteristics, stock market controls, time-invariant firm characteristics, and time trends.

The empirical evidence in this section highlights that pursuing profitability is not the only reason why CEOs trade their shares in the open market. While I cannot completely rule out the profitability explanation, it appears that CEOs intend to communicate with their investors.

<< Insert Table 8 about here >>

5. Conclusion

This paper examines how CEOs communicate with investors by trading their shares. I investigate whether news coverage and sentiment are associated with CEOs' trading patterns. I find that CEOs understand news about their firms better even after the private information is revealed to the market. They utilize information on the market's reaction to news dissemination to establish their share-trading strategies for the purpose of communicating with the investors.

Using insider trading data and media data for 2000 to 2016, I find that CEOs are more likely to purchase shares in the open market after positive and negative news releases. In addition, I find that these patterns vary conditional on firms' information environments. CEOs in firms with a transparent information environment (e.g., firms with either high analyst coverage or large institutional ownership) are more likely to purchase shares after negative news releases, suggesting that CEOs try to mitigate the market overreaction to firms' negative news by performing open-market share purchases. In contrast, they are less likely to purchase shares after positive news releases, suggesting that they do not have to confirm firms' positive news under the transparent information environment.

I find that CEOs selectively send signals to investors depending on the news categories. CEOs have stronger incentives to correct the mispricing in the cases of the market overreaction and market underreaction than in other scenarios. Moreover, I find that the CEOs' trading patterns have credibility and the market learns from their signals. Finally, and importantly, I find that CEOs intend to communicate with the market through their trading patterns, and pursuing profitability may not be the only reason why CEOs trade shares in the open market. Overall, my results suggest that CEOs can make the news salient via their trading patterns.

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Figure 1. Trend in News Coverage from 2000 to 2016

This figure shows the annualized number of news coverage trend from 2000 to 2016 and the trend in tone of news coverage from 2000 to 2016. News coverage data is collected from RavenPack News Analytics. I identify positive, negative, and neutral tone of news based on either the event sentiment score (ESS), which indicates how firm-specific news events are categorized and rated as having a positive or negative effect on stock prices by experts with extensive experience and backgrounds in linguistics, finance, and economics, or the composite sentiment score (CSS), which indicates how the market responds to news articles and is estimated based on stock price reactions, which are empirically modeled using intraday data from a portfolio of approximately one hundred large-cap stocks. The sentiment score has a value ranging between 0 and 100, with a value above (or below) 50 indicating the positive (or negative) sentiment of a given news event, whereas a value of 50 represents a neutral sentiment. More detailed information about the trend in news coverage is reported in Appendix.

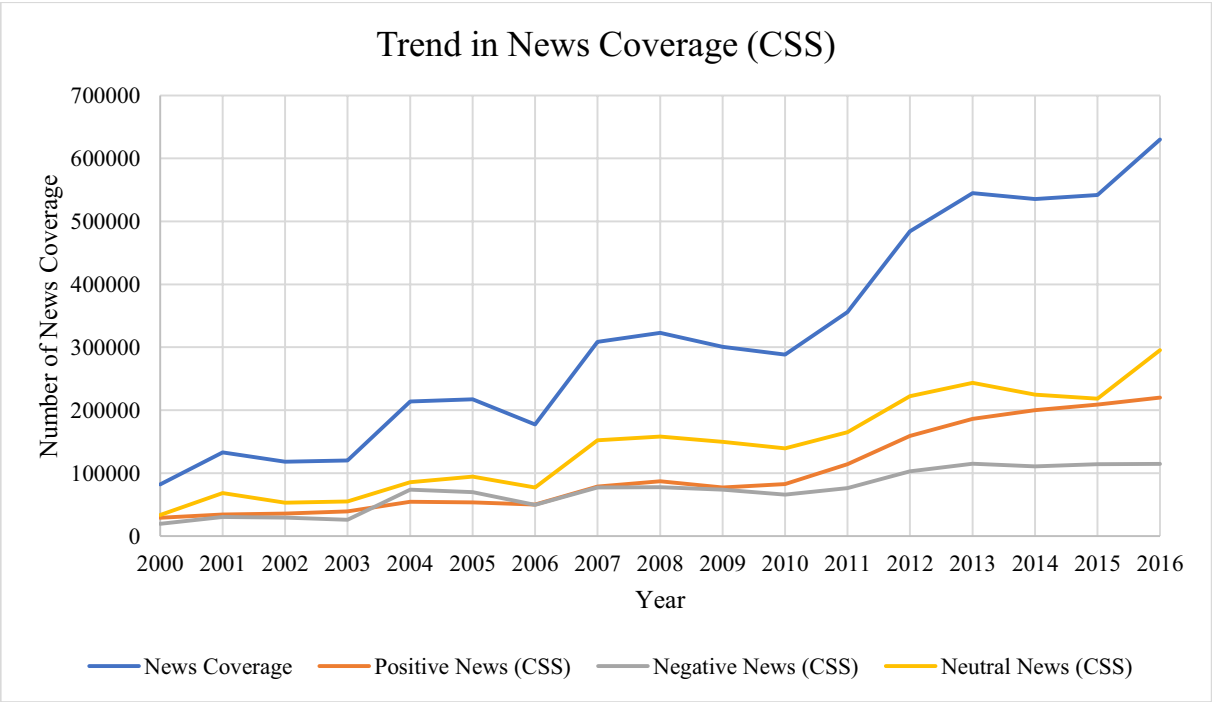
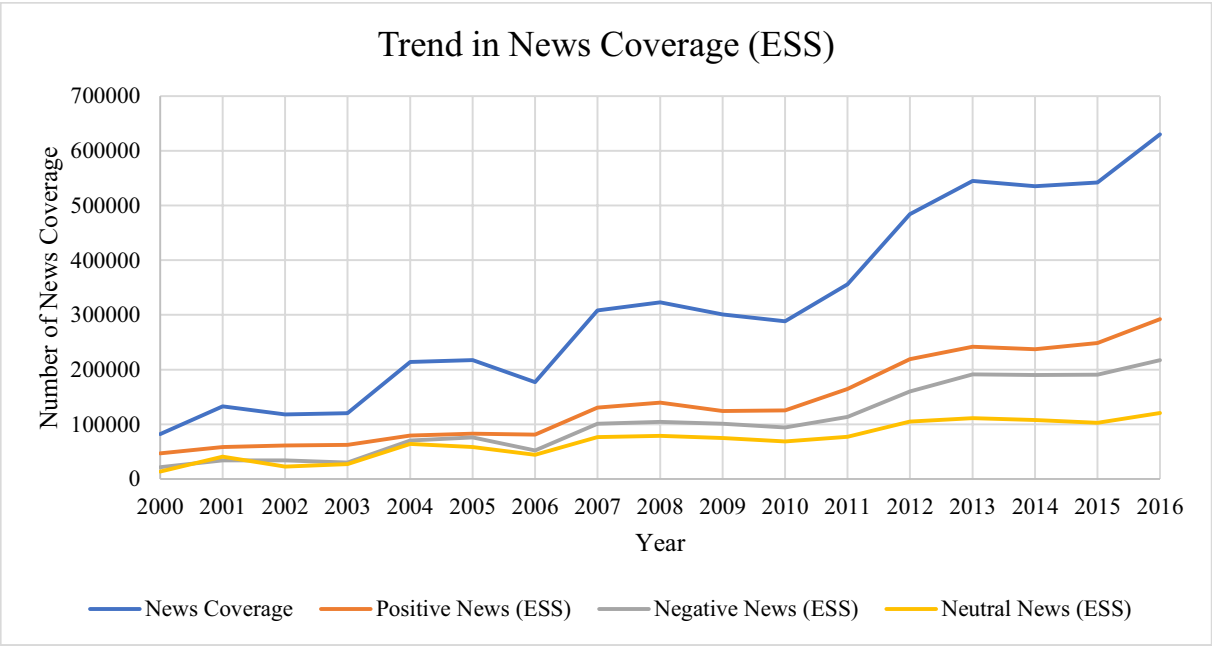


Figure 2. Trend in Corporate Press Release Coverage from 2004 to 2016

This figure shows the annualized number of corporate press release coverage trend from 2000 to 2016 and the trend in tone of corporate press release coverage from 2000 to 2016. Press release coverage data is collected from RavenPack News Analytics. I identify positive, negative, and neutral tone of news based on either the event sentiment score (ESS) or the composite sentiment score (CSS). The sentiment score has a value ranging between 0 and 100, with a value above (or below) 50 indicating the positive (or negative) sentiment of a given press release event, whereas a value of 50 represents a neutral sentiment. More detailed information about the trend in corporate press release coverage is reported in Appendix.

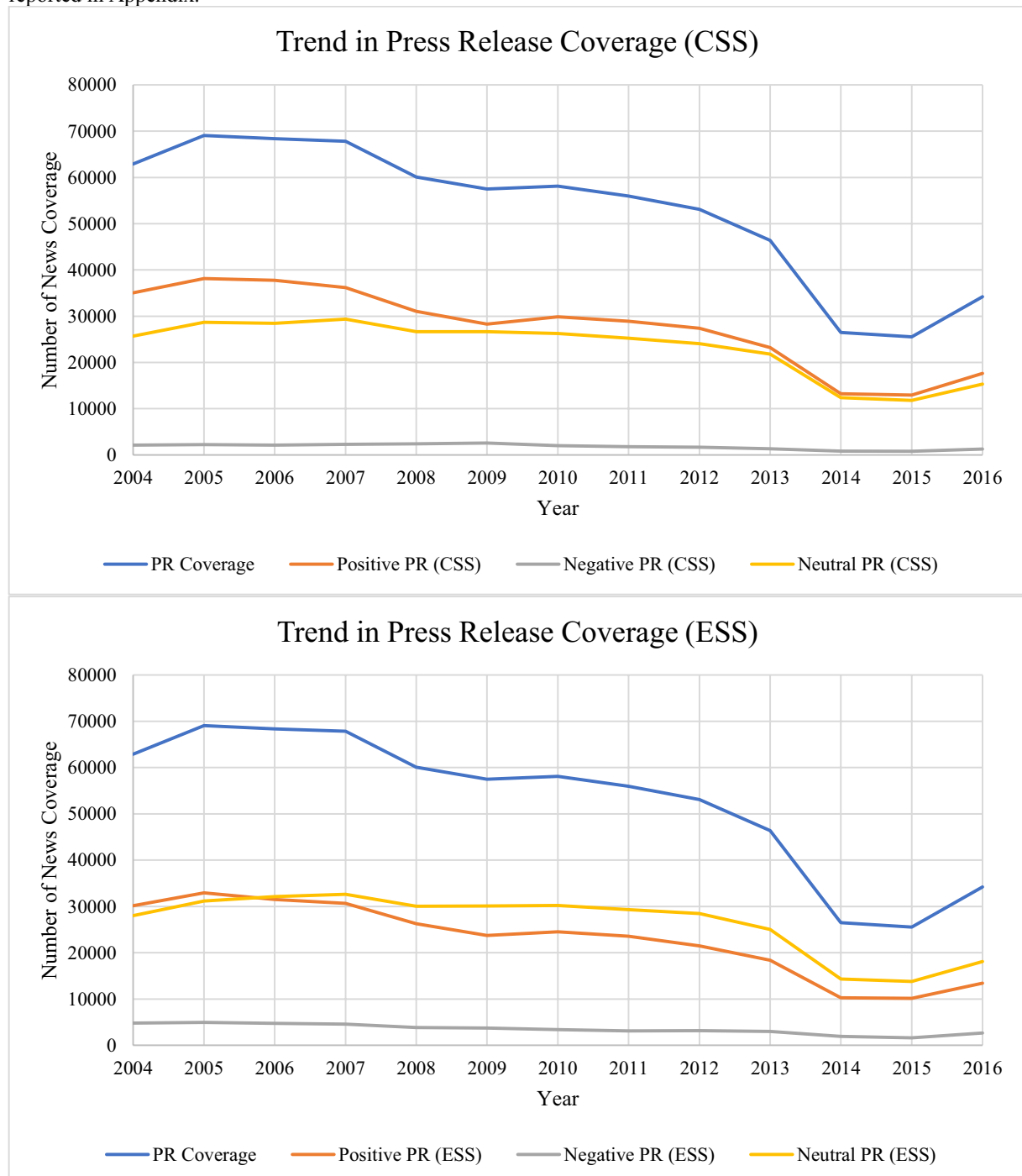


Table 1. Summary Statistics

This table presents the summary statistics about news, CEO trading pattern, firm characteristics, and cumulative abnormal returns variables. The sample consists of 5,339 firms from 2000 to 2016. Panel A presents daily-level summary statistics, and Panel B presents daily-level summary statistics by CEO trading direction. Panel C shows within- and between-firm variations in news variables. Detailed information about variables are available in Appendix.

Panel A. Summary Statistics: Daily-level

News Variables	N	Mean	SD	P25	P50	P75	Source
LN(News)	13,873,842	0.4500	0.6570	0	0	0.6930	RavenPack News Analytics
LN(Pos_News)	13,873,842	0.1810	0.4060	0	0	0	RavenPack News Analytics
LN(Neg_News)	13,873,842	0.1400	0.3470	0	0	0	RavenPack News Analytics
LN(Neu_News)	13,873,842	0.2480	0.4720	0	0	0.6930	RavenPack News Analytics
LN(Hard_Pos)	13,873,842	0.0591	0.2450	0	0	0	RavenPack News Analytics
LN(Hard_Neg)	13,873,842	0.0427	0.2050	0	0	0	RavenPack News Analytics
LN(Hard_Neu)	13,873,842	0.0602	0.2560	0	0	0	RavenPack News Analytics
LN(Soft_Pos)	13,873,842	0.1350	0.3360	0	0	0	RavenPack News Analytics
LN(Soft_Neg)	13,873,842	0.1030	0.2890	0	0	0	RavenPack News Analytics
LN(Soft_Neu)	13,873,842	0.2000	0.4160	0	0	0	RavenPack News Analytics
CEO Trading Variables							
Buy	13,873,842	0.0019	0.0441	0	0	0	Thomson Reuters Insider Filing
Sell	13,873,842	0.0069	0.0828	0	0	0	Thomson Reuters Insider Filing
Firm-Characteristics							
LN(Size)	13,740,000	13.0100	2.0350	11.5600	12.9300	14.3400	Compustat
MTB	13,610,000	2.0550	2.5520	1.0540	1.3840	2.1710	Compustat, CRSP
Return	13,740,000	0.0128	0.0600	-0.0105	0.0106	0.0316	CRSP
Illiquidity	13,830,000	0.2810	0.7310	0.0011	0.0097	0.1230	CRSP
IVOL	13,350,000	0.4410	0.3820	0.2180	0.3390	0.5420	CRSP
Earnings Month	13,873,842	0.3330	0.4710	0	0	1	Compustat
Dividend Month	13,873,842	0.1260	0.3320	0	0	0	CRSP
Analyst Coverage	11,740,000	2.9590	1.1840	2.1970	3.0910	3.8290	I/B/E/S
Institutional Ownership	8,216,000	0.5550	0.3110	0.2870	0.5970	0.8090	Thomson Reuters Institutional (13f) Holdings
Transparent_AC	11,740,000	0.2530	0.4350	0	0	1	I/B/E/S
Transparent_IO	8,216,000	0.2500	0.4330	0	0	1	Thomson Reuters Institutional (13f) Holdings
Cumulative Abnormal Returns (CAR)							
	N	Mean	SD	P25	P50	P75	Source

CAR[0, 1]	121,400	0.0044	0.0556	-0.0168	0.0007	0.0205	CRSP
CAR[0, 2]	121,400	0.0056	0.0653	-0.0201	0.0012	0.0254	CRSP
CAR[0, 3]	121,400	0.0065	0.0741	-0.0232	0.0015	0.0293	CRSP
CAR[0, 4]	121,400	0.0072	0.0809	-0.0259	0.0017	0.0328	CRSP
CAR[0, 5]	121,400	0.0076	0.0868	-0.0284	0.0020	0.0361	CRSP
CAR[0, 10]	121,400	0.0100	0.1120	-0.0373	0.0038	0.0495	CRSP
CAR[0, 20]	121,400	0.0126	0.1490	-0.0515	0.0067	0.0706	CRSP
CAR[0, 30]	121,400	0.0152	0.1870	-0.0635	0.0095	0.0872	CRSP
CAR[0, 40]	121,400	0.0175	0.2170	-0.0734	0.0118	0.1020	CRSP
CAR[0, 50]	121,400	0.0196	0.2480	-0.0821	0.0133	0.1140	CRSP
CAR[0, 60]	121,400	0.0216	0.2680	-0.0921	0.0150	0.1270	CRSP

Panel B. Summary Statistics: Purchase & Sale

News Variables	Purchase					Sale				
	N	Mean	SD	P50	P50	N	Mean	SD	P50	P50
LN(News)	26,978	0.6270	0.7330	0.6930	0.6930	95,886	0.8470	0.8100	0.6930	0.6930
LN(Pos_News)	26,978	0.3800	0.5510	0	0	95,886	0.2760	0.5220	0	0
LN(Neg_News)	26,978	0.1750	0.4130	0	0	95,886	0.3400	0.5100	0	0
LN(Neu_News)	26,978	0.2390	0.4670	0	0	95,886	0.5140	0.6280	0	0
LN(Hard_Pos)	26,978	0.0878	0.2900	0	0	95,886	0.1260	0.3750	0	0
LN(Hard_Neg)	26,978	0.1110	0.3430	0	0	95,886	0.0515	0.2240	0	0
LN(Hard_Neu)	26,978	0.1110	0.3420	0	0	95,886	0.1070	0.3520	0	0
LN(Soft_Pos)	26,978	0.3140	0.5020	0	0	95,886	0.1820	0.3960	0	0
LN(Soft_Neg)	26,978	0.0779	0.2480	0	0	95,886	0.2990	0.4790	0	0
LN(Soft_Neu)	26,978	0.1450	0.3460	0	0	95,886	0.4350	0.5760	0	0
Firm-Characteristics										
LN(Size)	26,617	11.8700	1.7650	11.7000	11.7000	95,542	13.9300	1.6900	13.7900	13.7900
MTB	26,160	2.0280	2.7360	1.2220	1.2220	94,953	3.0310	3.8120	2.0860	2.0860
Return	26,617	-0.0077	0.0647	-0.0062	-0.0062	95,542	0.0312	0.0624	0.0235	0.0235
Illiquidity	26,801	0.5870	1.0190	0.0946	0.0946	95,777	0.0452	0.2330	0.0023	0.0023
IVOL	25,408	0.5940	0.4440	0.4690	0.4690	95,519	0.4000	0.3090	0.3170	0.3170
Earnings Month	26,978	0.4090	0.4920	0	0	95,886	0.3250	0.4680	0	0
Dividend Month	26,978	0.1100	0.3130	0	0	95,886	0.1070	0.3090	0	0
Analyst Coverage	19,916	2.4260	1.1560	2.4850	2.4850	91,595	3.3130	1.0490	3.4010	3.4010
Institutional Ownership	15,889	0.4010	0.3000	0.3490	0.3490	55,596	0.6900	0.2680	0.7450	0.7450
Transparent_AC	19,916	0.1120	0.3150	0	0	91,595	0.3340	0.4720	0	0
Transparent_IO	15,889	0.1120	0.3150	0	0	55,596	0.3860	0.4870	0	0
Cumulative Abnormal Returns (CAR)										
	N	Mean	SD	P50	P50	N	Mean	SD	P50	P50

CAR[0, 1]	26,155	0.0131	0.0833	0.0054	95,286	0.0020	0.0458	-0.0001
CAR[0, 2]	26,155	0.0197	0.0969	0.0096	95,286	0.0017	0.0536	-0.0003
CAR[0, 3]	26,155	0.0254	0.1090	0.0127	95,286	0.0014	0.0609	-0.0004
CAR[0, 4]	26,155	0.0285	0.1170	0.0141	95,286	0.0013	0.0671	-0.0006
CAR[0, 5]	26,155	0.0311	0.1240	0.0156	95,286	0.0012	0.0725	-0.0005
CAR[0, 10]	26,155	0.0409	0.1540	0.0218	95,286	0.0016	0.0955	0.0003
CAR[0, 20]	26,155	0.0538	0.1950	0.0296	95,286	0.0014	0.1320	0.0022
CAR[0, 30]	26,155	0.0669	0.2300	0.0389	95,286	0.0011	0.1710	0.0036
CAR[0, 40]	26,155	0.0760	0.2610	0.0448	95,286	0.0015	0.2010	0.0049
CAR[0, 50]	26,155	0.0864	0.2860	0.0508	95,286	0.0014	0.2340	0.0055
CAR[0, 60]	26,155	0.0966	0.3130	0.0594	95,286	0.0011	0.2500	0.0060

Panel C. Within- and Between-Firm Variations in News Variables

Variable	Overall	Between	Within
LN(News) [-5, -1]	0.657	0.311	0.573
LN(Pos_News) [-5, -1]	0.406	0.153	0.373
LN(Neg_News) [-5, -1]	0.347	0.120	0.325
LN(Neu_News) [-5, -1]	0.472	0.202	0.422
LN(Pos_Hard) [-5, -1]	0.245	0.050	0.240
LN(Neg_Hard) [-5, -1]	0.205	0.028	0.203
LN(Neu_Hard) [-5, -1]	0.256	0.037	0.254
LN(Pos_Soft) [-5, -1]	0.336	0.130	0.307
LN(Neg_Soft) [-5, -1]	0.289	0.110	0.266
LN(Neu_Soft) [-5, -1]	0.416	0.188	0.365

Table 2. Trend in CEO Trading Pattern

This table presents number of CEO share transactions per year. The sample consists of 5,339 firms from 2000 to 2016. I only include open market transactions.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total	7,276	7,838	7,449	7,319	8,305	8,386	8,393	8,452	7,571	5,932	5,871	6,667	6,908	7,423	7,256	7,346	6,362
Purchase	2,627	1,829	2,089	1,254	999	1,100	1,150	1,622	2,935	2,055	924	1,766	1,603	937	1,353	1,904	1,561
	36.11%	23.34%	28.04%	17.13%	12.03%	13.12%	13.70%	19.19%	38.77%	34.64%	15.74%	26.49%	23.20%	12.62%	18.65%	25.92%	24.54%
Sale	4,649	6,009	5,360	6,065	7,306	7,286	7,243	6,830	4,636	3,877	4,947	4,901	5,305	6,486	5,903	5,442	4,801
	63.89%	76.66%	71.96%	82.87%	87.97%	86.88%	86.30%	80.81%	61.23%	65.36%	84.26%	73.51%	76.80%	87.38%	81.35%	74.08%	75.46%

Table 3. News Coverage and CEO Trading Patterns

$$\text{LPM: Pr}(Y = 1 | X_1, X_2, \dots, X_k) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k$$

This table contains OLS regressions that examine the relation between news coverage and CEO trading pattern. Dependent variable for columns 1 – 6 is CEO share purchase indicator variable, which is equal to 1 if CEO performs open market share purchase. Dependent variable for the other columns is CEO share sales indicator variable, which is equal to 1 if CEO performs open market share sales. Key independent variable is news coverage variable. LN(News) is natural logarithm of 1 + number of news coverage within a window, which specifies on the top of the table. Control variables include annualized stock returns, natural logarithm of firm size, idiosyncratic volatility, Market-to-Book ratio, The Amihud illiquidity measure, earnings announcement month indicator, dividend record month indicator, institutional ownership, and analyst coverage. In the model, μ_i means each firm's time-invariant specific effect, and v_i means that year specific effect. X_{it} is a set of explanatory variables, and ε_{it} is an error term, which assumes that $E(\varepsilon_{it})=0$ and $\text{Var}(\varepsilon_{it})=\sigma^2$. All models include time and firm fixed effects and cluster standard errors by firm. Brackets contain robust standard errors and superscripts ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

	(1) [-2, -1] Buy	(2) [-2, -1] Buy	(3) [-3, -1] Buy	(4) [-3, -1] Buy	(5) [-5, -1] Buy	(6) [-5, -1] Buy	(7) [-2, -1] Sell	(8) [-2, -1] Sell	(9) [-3, -1] Sell	(10) [-3, -1] Sell	(11) [-5, -1] Sell	(12) [-5, -1] Sell
LN(Newsp)	0.001*** (0.00)	0.001*** (0.00)	0.002*** (0.00)	0.001*** (0.00)	0.002*** (0.00)	0.002*** (0.00)	0.004*** (0.00)	0.004*** (0.00)	0.005*** (0.00)	0.004*** (0.00)	0.006*** (0.00)	0.006*** (0.00)
LN(Size)		-0.001 (0.00)		-0.001* (0.00)		-0.001* (0.00)	0.004*** (0.00)	0.004*** (0.00)		0.003*** (0.00)		0.003*** (0.00)
MTB		0.000 (0.00)		0.000 (0.00)		0.000 (0.00)	0.000 (0.00)	0.000 (0.00)		0.000 (0.00)		0.000 (0.00)
Return		-0.010*** (0.00)		-0.010*** (0.00)		-0.010*** (0.00)	0.033*** (0.00)	0.033*** (0.00)		0.033*** (0.00)		0.033*** (0.00)
Illiquidity		-0.000 (0.00)		-0.000 (0.00)		-0.000 (0.00)	0.001*** (0.00)	0.001*** (0.00)		0.001*** (0.00)		0.001*** (0.00)
IVOL		0.001*** (0.00)		0.001*** (0.00)		0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)		0.001*** (0.00)		0.001*** (0.00)
Earnings Month		0.001*** (0.00)		0.001*** (0.00)		0.000*** (0.00)	-0.000*** (0.00)	-0.000*** (0.00)		-0.001*** (0.00)		-0.001*** (0.00)
Dividend Record Month		0.000*** (0.00)		0.000*** (0.00)		0.000*** (0.00)	0.001** (0.00)	0.001** (0.00)		0.001** (0.00)		0.000 (0.00)
Institutional Ownership		-0.000 (0.00)		-0.000 (0.00)		-0.000 (0.00)	0.000 (0.00)	0.000 (0.00)		0.000 (0.00)		0.001 (0.00)
Analyst Coverage		0.000 (0.00)		0.000 (0.00)		0.000 (0.00)	0.001** (0.00)	0.001** (0.00)		0.001** (0.00)		0.001* (0.00)
Constant	0.003*** (0.00)	0.011** (0.00)	0.003*** (0.00)	0.011** (0.00)	0.002*** (0.00)	0.012** (0.00)	0.006*** (0.00)	-0.043*** (0.00)	0.006*** (0.00)	-0.041*** (0.00)	0.005*** (0.00)	-0.037*** (0.00)
Observations	13,873,842	6,970,647	13,873,842	6,970,647	13,873,842	6,970,647	13,873,842	6,970,647	13,873,842	6,970,647	13,873,842	6,970,647
Adjusted R-squared	0.019	0.026	0.019	0.026	0.020	0.027	0.033	0.044	0.033	0.045	0.034	0.046
Fixed Effects	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year

Table 4: News Tone and CEO Trading Patterns

$$\text{LPM: Pr}(Y = 1 | X_1, X_2, \dots, X_k) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k$$

This table contains OLS regressions that examine the relation between new tone and CEO trading pattern. Dependent variable for columns 1 – 6 is CEO share purchase indicator variable, which is equal to 1 if CEO performs open market share purchase. Dependent variable for the other columns is CEO share sales indicator variable, which is equal to 1 if CEO performs open market share sales. Key independent variables are news coverage variables by news tone. LN(Pos_News) is natural logarithm of 1 + number of positive news coverage, based on composite sentiment score (CSS), within a window, which specifies on the top of the table. LN(Neg_News) is natural logarithm of 1 + number of negative news coverage, based on composite sentiment score (CSS), within a window, which specifies on the top of the table. LN(Neu_News) is natural logarithm of 1 + number of neutral news coverage, based on composite sentiment score (CSS), within a window, which specifies on the top of the table. LN(News) is natural logarithm of 1 + number of news coverage within a window, which specifies on the top of the table. Control variables include annualized stock returns, natural logarithm of firm size, idiosyncratic volatility, Market-to-Book ratio, The Amihud illiquidity measure, earnings announcement month indicator, dividend record month indicator, institutional ownership, and analyst coverage. In the model, μ_i means each firm's time-invariant specific effect, and v_i means that year specific effect. X_{it} is a set of explanatory variables, and ε_{it} is an error term, which assumes that $E(\varepsilon_{it})=0$ and $\text{Var}(\varepsilon_{it})=\sigma^2$. All models include time and firm fixed effects and cluster standard errors by firm. Brackets contain robust standard errors and superscripts ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	[-2, -1]	[-2, -1]	[-3, -1]	[-3, -1]	[-5, -1]	[-5, -1]	[-2, -1]	[-2, -1]	[-3, -1]	[-3, -1]	[-5, -1]	[-5, -1]
	Buy	Buy	Buy	Buy	Buy	Buy	Sell	Sell	Sell	Sell	Sell	Sell
LN(Pos_News)	0.003*** (0.00)	0.003*** (0.00)	0.003*** (0.00)	0.003*** (0.00)	0.003*** (0.00)	0.003*** (0.00)	-0.002*** (0.00)	-0.002*** (0.00)	-0.001*** (0.00)	-0.001*** (0.00)	-0.000*** (0.00)	-0.000*** (0.00)
LN(Neg_News)	0.000*** (0.00)	0.000*** (0.00)	0.000*** (0.00)	0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)	0.006*** (0.00)	0.006*** (0.00)	0.006*** (0.00)	0.006*** (0.00)	0.006*** (0.00)	0.006*** (0.00)
LN(Neu_News)	-0.001*** (0.00)	-0.001*** (0.00)	-0.000*** (0.00)	-0.000*** (0.00)	-0.000*** (0.00)	0.000*** (0.00)	0.004*** (0.00)	0.004*** (0.00)	0.005*** (0.00)	0.004*** (0.00)	0.006*** (0.00)	0.006*** (0.00)
LN(Size)		-0.001 (0.00)		-0.001 (0.00)	-0.001* (0.00)	-0.001* (0.00)	0.004*** (0.00)	0.004*** (0.00)	0.004*** (0.00)	0.003*** (0.00)	0.003*** (0.00)	0.003*** (0.00)
MTB		0.000 (0.00)		0.000 (0.00)	0.000 (0.00)	0.000 (0.00)	0.000 (0.00)	0.000 (0.00)	0.000 (0.00)	0.000 (0.00)	0.000 (0.00)	0.000 (0.00)
Return		-0.010*** (0.00)		-0.010*** (0.00)	-0.010*** (0.00)	-0.010*** (0.00)	0.033*** (0.00)	0.033*** (0.00)	0.033*** (0.00)	0.033*** (0.00)	0.033*** (0.00)	0.033*** (0.00)
Illiquidity		-0.000 (0.00)		-0.000 (0.00)	-0.000 (0.00)	-0.000 (0.00)	0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)
IVOL		0.001*** (0.00)		0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)
Earnings Month		0.001*** (0.00)		0.000*** (0.00)	0.000*** (0.00)	0.000*** (0.00)	-0.000*** (0.00)	-0.000*** (0.00)	-0.001*** (0.00)	-0.001*** (0.00)	-0.001*** (0.00)	-0.001*** (0.00)
Dividend Record Month		0.000*** (0.00)		0.000*** (0.00)	0.000*** (0.00)	0.000*** (0.00)	0.001** (0.00)	0.001** (0.00)	0.000** (0.00)	0.000** (0.00)	0.000** (0.00)	0.000 (0.00)
Institutional Ownership		-0.000 (0.00)		-0.000 (0.00)	-0.000 (0.00)	-0.000 (0.00)	-0.000 (0.00)	-0.000 (0.00)	0.000 (0.00)	0.000 (0.00)	0.001 (0.00)	0.001 (0.00)
Analyst Coverage		0.000 (0.00)		0.000 (0.00)	0.000 (0.00)	0.000 (0.00)	0.001** (0.00)	0.001** (0.00)	0.001** (0.00)	0.001** (0.00)	0.001** (0.00)	0.001* (0.00)
Constant	0.003*** (0.00)	0.010** (0.01)	0.003*** (0.00)	0.011** (0.01)	0.003*** (0.00)	0.012** (0.00)	0.006*** (0.00)	-0.043*** (0.00)	0.006*** (0.00)	-0.041*** (0.00)	0.005*** (0.00)	-0.037*** (0.00)
Observations	13,873,842	6,970,647	13,873,842	6,970,647	13,873,842	6,970,647	13,873,842	6,970,647	13,873,842	6,970,647	13,873,842	6,970,647
Adjusted R-squared	0.019	0.026	0.020	0.026	0.020	0.027	0.033	0.045	0.033	0.045	0.034	0.046
Fixed Effects	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year

Table 5. News Tone and CEO Trading Patterns conditional on Information Environment

$$\text{LPM: Pr}(Y = 1 | X_1, X_2, \dots, X_k) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k$$

This table contains OLS regressions that examine the relation between new tone and CEO trading pattern conditional on information environment. To identify firms with good information environment, I use intensive analyst coverage for Panel A and intensive institutional ownership for Panel B. Dependent variable for columns 1 – 6 is CEO share purchase indicator variable, which is equal to 1 if CEO performs open market share purchase. Dependent variable for the other columns is CEO share sales indicator variable, which is equal to 1 if CEO performs open market share sales. Key independent variables are news coverage variables by news tone. LN(Pos_News) is natural logarithm of 1 + number of positive news coverage, based on composite sentiment score (CSS), within a window, which specifies on the top of the table. LN(Neg_News) is natural logarithm of 1 + number of negative news coverage, based on composite sentiment score (CSS), within a window, which specifies on the top of the table. LN(Neu_News) is natural logarithm of 1 + number of neutral news coverage, based on composite sentiment score (CSS), within a window, which specifies on the top of the table. LN(News) is natural logarithm of 1 + number of news coverage within a window, which specifies on the top of the table. Control variables include annualized stock returns, natural logarithm of firm size, idiosyncratic volatility, Market-to-Book ratio, The Amihud illiquidity measure, earnings announcement month indicator, dividend record month indicator, institutional ownership, and analyst coverage. In the model, μ_i means each firm's time-invariant specific effect, and v_i means that year specific effect. X_{it} is a set of explanatory variables, and ε_{it} is an error term, which assumes that $E(\varepsilon_{it})=0$ and $\text{Var}(\varepsilon_{it})=\sigma^2$. All models include time and firm fixed effects and cluster standard errors by firm. Brackets contain robust standard errors and superscripts ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Panel A: Analyst Coverage

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	[-2, -1]	[-2, -1]	[-3, -1]	[-3, -1]	[-5, -1]	[-5, -1]	[-2, -1]	[-2, -1]	[-3, -1]	[-3, -1]	[-5, -1]	[-5, -1]
	Buy	Buy	Buy	Buy	Buy	Buy	Sell	Sell	Sell	Sell	Sell	Sell
Transparent_AC X												
LN(Pos_News)	-0.003*** (0.00)	-0.004*** (0.00)	-0.002*** (0.00)	-0.004*** (0.00)	-0.002*** (0.00)	-0.004*** (0.00)	0.002*** (0.00)	0.002*** (0.00)	0.002*** (0.00)	0.002*** (0.00)	0.002*** (0.00)	0.002*** (0.00)
Transparent_AC X												
LN(Neg_News)	-0.000 (0.00)	-0.000 (0.00)	-0.000*** (0.00)	-0.000** (0.00)	-0.001*** (0.00)	-0.001*** (0.00)	-0.005*** (0.00)	-0.005*** (0.00)	-0.005*** (0.00)	-0.005*** (0.00)	-0.005*** (0.00)	-0.005*** (0.00)
Transparent_AC X												
LN(Neu_News)	0.000** (0.00)	0.001*** (0.00)	0.000 (0.00)	0.001*** (0.00)	0.000 (0.00)	0.000*** (0.00)	-0.002*** (0.00)	-0.002** (0.00)	-0.001** (0.00)	-0.001* (0.00)	-0.001** (0.00)	-0.001 (0.00)
LN(Pos_News)	0.004*** (0.00)	0.005*** (0.00)	0.004*** (0.00)	0.005*** (0.00)	0.004*** (0.00)	0.005*** (0.00)	-0.003*** (0.00)	-0.002*** (0.00)	-0.002*** (0.00)	-0.002*** (0.00)	-0.001*** (0.00)	-0.001*** (0.00)
LN(Neg_News)	0.000*** (0.00)	0.000*** (0.00)	0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)	0.009*** (0.00)	0.009*** (0.00)	0.008*** (0.00)	0.008*** (0.00)	0.008*** (0.00)	0.009*** (0.00)
LN(Neu_News)	-0.001*** (0.00)	-0.001*** (0.00)	-0.001*** (0.00)	-0.001*** (0.00)	-0.000 (0.00)	-0.000 (0.00)	0.005*** (0.00)	0.004*** (0.00)	0.005*** (0.00)	0.005*** (0.00)	0.007*** (0.00)	0.006*** (0.00)
Transparent_AC	0.000 (0.00)	0.000 (0.00)	0.000* (0.00)	0.000** (0.00)	0.000*** (0.00)	0.001*** (0.00)	-0.000* (0.00)	-0.001* (0.00)	-0.000* (0.00)	-0.001* (0.00)	-0.000* (0.00)	-0.001 (0.00)
Constant	0.003*** (0.00)	0.010* (0.01)	0.003*** (0.00)	0.010** (0.01)	0.002*** (0.00)	0.011** (0.01)	0.006*** (0.00)	-0.044*** (0.00)	0.006*** (0.00)	-0.043*** (0.00)	0.006*** (0.00)	-0.039*** (0.00)
Observations	13,873,842	6,970,647	13,873,842	6,970,647	13,873,842	6,970,647	13,873,842	6,970,647	13,873,842	6,970,647	13,873,842	6,970,647
Adjusted R-squared	0.019	0.027	0.020	0.027	0.020	0.027	0.033	0.045	0.033	0.045	0.034	0.046
Control Variables	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Fixed Effects	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year

Panel B: Institutional Ownership

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	[-2, -1] Buy	[-2, -1] Buy	[-3, -1] Buy	[-3, -1] Buy	[-5, -1] Buy	[-5, -1] Buy	[-2, -1] Sell	[-2, -1] Sell	[-3, -1] Sell	[-3, -1] Sell	[-5, -1] Sell	[-5, -1] Sell
Transparent_IO X LN(Pos_News)	-0.003*** (0.00)	-0.003*** (0.00)	-0.003*** (0.00)	-0.003*** (0.00)	-0.002*** (0.00)	-0.003*** (0.00)	0.000 (0.00)	0.000 (0.00)	0.000 (0.00)	0.001 (0.00)	0.001** (0.00)	0.001** (0.00)
Transparent_IO X LN(Neg_News)	0.001*** (0.00)	0.001*** (0.00)	0.000** (0.00)	0.000** (0.00)	0.000* (0.00)	0.000 (0.00)	-0.002*** (0.00)	-0.002** (0.00)	-0.002*** (0.00)	-0.002** (0.00)	-0.002*** (0.00)	-0.003*** (0.00)
Transparent_IO X LN(Neu_News)	0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)	0.000*** (0.00)	0.001** (0.00)	0.001 (0.00)	0.001** (0.00)	0.001* (0.00)	0.001** (0.00)	0.001** (0.00)
LN(Pos_News)	0.005*** (0.00)	0.004*** (0.00)	0.005*** (0.00)	0.004*** (0.00)	0.005*** (0.00)	0.004*** (0.00)	-0.002*** (0.00)	-0.002*** (0.00)	-0.002*** (0.00)	-0.001*** (0.00)	-0.001*** (0.00)	-0.001** (0.00)
LN(Neg_News)	-0.000 (0.00)	0.000 (0.00)	0.000** (0.00)	0.000*** (0.00)	0.001*** (0.00)	0.001*** (0.00)	0.007*** (0.00)	0.007*** (0.00)	0.007*** (0.00)	0.007*** (0.00)	0.007*** (0.00)	0.007*** (0.00)
LN(Neu_News)	-0.001*** (0.00)	-0.001*** (0.00)	-0.001*** (0.00)	-0.000*** (0.00)	-0.001*** (0.00)	-0.000 (0.00)	0.004*** (0.00)	0.003*** (0.00)	0.004*** (0.00)	0.004*** (0.00)	0.006*** (0.00)	0.005*** (0.00)
Transparent_IO	-0.000 (0.00)	-0.000 (0.00)	0.000 (0.00)	0.000 (0.00)	0.000 (0.00)	0.000 (0.00)	0.000 (0.00)	-0.001 (0.00)	0.000 (0.00)	-0.001 (0.00)	0.000 (0.00)	-0.001 (0.00)
Constant	0.003*** (0.00)	0.010** (0.00)	0.003*** (0.00)	0.011** (0.00)	0.002*** (0.00)	0.012** (0.00)	0.006*** (0.00)	-0.043*** (0.00)	0.006*** (0.00)	-0.042*** (0.00)	0.005*** (0.00)	-0.038*** (0.00)
Observations	13,873,842	6,970,647	13,873,842	6,970,647	13,873,842	6,970,647	13,873,842	6,970,647	13,873,842	6,970,647	13,873,842	6,970,647
Adjusted R-squared	0.019	0.026	0.020	0.027	0.020	0.027	0.033	0.045	0.033	0.045	0.034	0.046
Control Variables	No Firm & Year	Yes Firm & Year	No Firm & Year	Yes Firm & Year	No Firm & Year	Yes Firm & Year	No Firm & Year	Yes Firm & Year	No Firm & Year	Yes Firm & Year	No Firm & Year	Yes Firm & Year
Fixed Effects												

Table 6. Relation between News Tone and CEO Trading Patterns by News Category

$$LPM: Pr(Y = 1 | X_1, X_2, \dots, X_k) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k$$

This table contains OLS regressions that examine the relation between new tone and CEO trading pattern by news category. Based on RavenPack News Analytics category, I define news about revenue, earnings, analyst rating, and credit rating as hard news, and the other topics are considered as soft news. Hard news would capture firms' fundamentals. On the other hand, soft news would be less value-relevant news. Dependent variable for columns 1 – 6 is CEO share purchase indicator variable, which is equal to 1 if CEO performs open market share purchase. Dependent variable for the other columns is CEO share sales indicator variable, which is equal to 1 if CEO performs open market share sales. Key independent variables are news coverage variables by news tone. LN(Hard (Soft) Pos) is natural logarithm of 1 + number of positive hard (soft) news coverage, based on composite sentiment score (CSS), within a window, which specifies on the top of the table. LN(Hard (Soft) Neg) is natural logarithm of 1 + number of negative hard (soft) news coverage, based on composite sentiment score (CSS), within a window, which specifies on the top of the table. LN(Hard (Soft) Neu) is natural logarithm of 1 + number of neutral hard (soft) news coverage, based on composite sentiment score (CSS), within a window, which specifies on the top of the table. LN(Hard (Soft) Buy) is natural logarithm of 1 + number of news coverage within a window, which specifies on the top of the table. Control variables include annualized stock returns, natural logarithm of firm size, idiosyncratic volatility, Market-to-Book ratio, The Amihud illiquidity measure, earnings announcement month indicator, dividend record month indicator, institutional ownership, and analyst coverage. In the model, μ_i means each firm's time-invariant specific effect, and ν_i means that year specific effect. X_{it} is a set of explanatory variables, and ε_{it} is an error term, which assumes that $E(\varepsilon_{it})=0$ and $Var(\varepsilon_{it})=\sigma^2$. All models include time and firm fixed effects and cluster standard errors by firm. Brackets contain robust standard errors and superscripts ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	[-2, -1]	[-2, -1]	[-3, -1]	[-3, -1]	[-5, -1]	[-5, -1]	[-2, -1]	[-2, -1]	[-3, -1]	[-3, -1]	[-5, -1]	[-5, -1]
	Buy	Buy	Buy	Buy	Buy	Buy	Sell	Sell	Sell	Sell	Sell	Sell
LN(Hard_Pos)	-0.001*** (0.00)	-0.000** (0.00)	-0.001*** (0.00)	-0.000** (0.00)	-0.000*** (0.00)	-0.000 (0.00)	0.003*** (0.00)	0.003*** (0.00)	0.003*** (0.00)	0.003*** (0.00)	0.005*** (0.00)	0.004*** (0.00)
LN(Hard_Neg)	0.002*** (0.00)	0.001*** (0.00)	0.002*** (0.00)	0.002*** (0.00)	0.003*** (0.00)	0.003*** (0.00)	-0.004*** (0.00)	-0.003*** (0.00)	-0.004*** (0.00)	-0.003*** (0.00)	-0.004*** (0.00)	-0.003*** (0.00)
LN(Hard_Neu)	-0.000* (0.00)	-0.000*** (0.00)	0.000*** (0.00)	-0.000 (0.00)	0.001*** (0.00)	0.000*** (0.00)	-0.001** (0.00)	-0.000* (0.00)	0.000 (0.00)	0.000 (0.00)	0.001*** (0.00)	0.002*** (0.00)
LN(Soft_Pos)	0.004*** (0.00)	0.004*** (0.00)	0.004*** (0.00)	0.004*** (0.00)	0.004*** (0.00)	0.004*** (0.00)	-0.002*** (0.00)	-0.001*** (0.00)	-0.001*** (0.00)	-0.001*** (0.00)	-0.001*** (0.00)	-0.000** (0.00)
LN(Soft_Neg)	-0.000 (0.00)	0.000* (0.00)	-0.000 (0.00)	0.000** (0.00)	-0.000 (0.00)	0.000*** (0.00)	0.010*** (0.00)	0.010*** (0.00)	0.010*** (0.00)	0.009*** (0.00)	0.010*** (0.00)	0.010*** (0.00)
LN(Soft_Neu)	-0.000*** (0.00)	-0.000* (0.00)	-0.000*** (0.00)	-0.000 (0.00)	-0.000*** (0.00)	0.000 (0.00)	0.006*** (0.00)	0.005*** (0.00)	0.006*** (0.00)	0.005*** (0.00)	0.007*** (0.00)	0.006*** (0.00)
Constant	0.003*** (0.00)	0.011** (0.00)	0.003*** (0.00)	0.011** (0.00)	0.003*** (0.00)	0.011** (0.00)	0.006*** (0.00)	-0.041*** (0.00)	0.006*** (0.00)	-0.039*** (0.00)	0.006*** (0.00)	-0.034*** (0.00)
Observations	13,873,842	6,970,647	13,873,842	6,970,647	13,873,842	6,970,647	13,873,842	6,970,647	13,873,842	6,970,647	13,873,842	6,970,647
Adj. R-squared	0.020	0.026	0.020	0.027	0.020	0.027	0.033	0.045	0.034	0.045	0.035	0.046
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Fixed Effects	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year

Table 7. Market Reaction to CEO Purchases around News Releases

$$\text{OLS: } Y_{it} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k + \mu_i + v_t + \varepsilon_{it}$$

Table 7 shows results of OLS regressions of cumulative abnormal returns from days 0 to +1 around CEO open market purchase on News variables and control variables. Key independent variables are news coverage variables by news tone. LN(Pos_News) is natural logarithm of 1 + number of positive news coverage, based on composite sentiment score (CSS), within a window, which specifies on the top of the table. LN(Neg_News) is natural logarithm of 1 + number of negative news coverage, based on composite sentiment score (CSS), within a window, which specifies on the top of the table. LN(Neu_News) is natural logarithm of 1 + number of neutral news coverage, based on composite sentiment score (CSS), within a window, which specifies on the top of the table. LN(News) is natural logarithm of 1 + number of news coverage within a window, which specifies on the top of the table. Control variables include annualized stock returns, natural logarithm of firm size, idiosyncratic volatility, Market-to-Book ratio, The Amihud illiquidity measure, earnings announcement month indicator, dividend record month indicator, institutional ownership, and analyst coverage. In the model, μ_i means each firm's time-invariant specific effect, and v_t means that year specific effect. X_{it} is a set of explanatory variables, and ε_{it} is an error term, which assumes that $E(\varepsilon_{it})=0$ and $\text{Var}(\varepsilon_{it})=\sigma^2$. All models include time and firm fixed effects and cluster standard errors by firm. Brackets contain robust standard errors and superscripts ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Panel A: Short-run Market Reaction

	(1)	(2)	(3)	(4)	(5)	(6)
	[-2, -1]	[-3, -1]	[-5, -1]	[-2, -1]	[-3, -1]	[-5, -1]
	CAR[0, 1]	CAR[0, 1]	CAR[0, 1]	CAR[0, 1]	CAR[0, 1]	CAR[0, 1]
	Market-Adjusted	Market-Adjusted	Market-Adjusted	Market-Adjusted	Market-Adjusted	Market-Adjusted
LN(News)	0.003** (0.00)	0.004*** (0.00)	0.004*** (0.00)			
LN(Pos_News)				0.004* (0.00)	0.004** (0.00)	0.002 (0.00)
LN(Neg_News)				0.001 (0.00)	0.004 (0.00)	0.004** (0.00)
LN(Neu_News)				0.002 (0.00)	0.002 (0.00)	0.003 (0.00)
LN(Size)	-0.015*** (0.00)	-0.015*** (0.00)	-0.015*** (0.00)	-0.015*** (0.00)	-0.015*** (0.00)	-0.015*** (0.00)
MTB	-0.001 (0.00)	-0.001 (0.00)	-0.001 (0.00)	-0.001 (0.00)	-0.001 (0.00)	-0.001 (0.00)
Illiquidity	0.004* (0.00)	0.004* (0.00)	0.004* (0.00)	0.004* (0.00)	0.004* (0.00)	0.004* (0.00)
IVOL	0.003 (0.00)	0.003 (0.00)	0.003 (0.00)	0.003 (0.00)	0.003 (0.00)	0.003 (0.00)
Constant	0.179*** (0.03)	0.180*** (0.03)	0.180*** (0.03)	0.179*** (0.03)	0.180*** (0.03)	0.181*** (0.03)
Observations	20,692	20,692	20,692	20,692	20,692	20,692
Adjusted R-squared	0.098	0.098	0.098	0.098	0.098	0.098
Fixed Effects	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year

Panel B: Long-run Market Reaction

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	[-5, -1]	[-5, -1]	[-5, -1]	[-5, -1]	[-5, -1]	[-5, -1]	[-5, -1]	[-5, -1]	[-5, -1]	[-5, -1]	[-5, -1]
	CAR[0, 1]	CAR[0, 2]	CAR[0, 3]	CAR[0, 4]	CAR[0, 5]	CAR[0, 10]	CAR[0, 20]	CAR[0, 30]	CAR[0, 40]	CAR[0, 50]	CAR[0, 60]
	Market-Adjusted	Market-Adjusted	Market-Adjusted	Market-Adjusted	Market-Adjusted	Market-Adjusted	Market-Adjusted	Market-Adjusted	Market-Adjusted	Market-Adjusted	Market-Adjusted
LN(Newsp)	0.004*** (0.00)	0.005*** (0.00)	0.006*** (0.00)	0.005*** (0.00)	0.005*** (0.00)	0.005*** (0.00)	0.005 (0.00)	0.008* (0.00)	0.009* (0.00)	0.005 (0.00)	0.003 (0.01)
LN(Size)	-0.015*** (0.00)	-0.019*** (0.00)	-0.024*** (0.00)	-0.027*** (0.00)	-0.031*** (0.00)	-0.043*** (0.01)	-0.062*** (0.01)	-0.086*** (0.01)	-0.102*** (0.01)	-0.119*** (0.01)	-0.135*** (0.02)
MTB	-0.001 (0.00)	-0.001* (0.00)	-0.002** (0.00)	-0.003** (0.00)	-0.003* (0.00)	-0.005*** (0.00)	-0.006*** (0.00)	-0.006** (0.00)	-0.006* (0.00)	-0.007** (0.00)	-0.007 (0.00)
Illiquidity	0.004* (0.00)	0.003 (0.00)	0.001 (0.00)	0.002 (0.00)	0.001 (0.00)	0.000 (0.01)	0.003 (0.01)	0.007 (0.01)	0.006 (0.01)	0.007 (0.01)	0.013 (0.01)
IVOL	0.003 (0.00)	0.011** (0.01)	0.010* (0.01)	0.016*** (0.01)	0.017** (0.01)	0.025*** (0.01)	0.024* (0.01)	0.030* (0.02)	0.037** (0.02)	0.036** (0.02)	0.023 (0.02)
Constant	0.180*** (0.03)	0.217*** (0.03)	0.287*** (0.04)	0.320*** (0.05)	0.362*** (0.05)	0.511*** (0.07)	0.760*** (0.13)	1.057*** (0.14)	1.254*** (0.17)	1.491*** (0.20)	1.699*** (0.22)
Observations	20,692	20,692	20,692	20,692	20,692	20,692	20,692	20,692	20,692	20,692	20,692
Adjusted R-squared	0.098	0.119	0.137	0.163	0.167	0.198	0.236	0.262	0.290	0.317	0.340
Fixed Effects	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year

Table 8. Do CEOs have intentions to communicate with the market?

Table 8 provides empirical evidence that CEOs have intentions to communicate with the market. Panel A of Table 8 shows average number of days between CEO open-market purchase and her following sale transaction. If there is no subsequent sale transaction after the purchase, then I use the last available date of a firm in my sample to calculate the number of days between the purchase and the subsequent sale. News-related open market purchase is a purchase transaction after news releases. I use [-5, -1] window to construct this variable. All other purchases are classified as Other open market purchase. Panel B of Table 8 shows results of OLS regressions of CEO purchase reporting gaps on news variables and control variables. Key dependent variable, Reporting Gap, is natural log of (1 + number of days between CEO open market purchase transaction date (trandate) and CEO report date to the SEC (secdate)). If there are multiple purchase transactions within a day, then I consider the shortest reporting gap as the reporting gap for the day. Key independent variable is news coverage variable. LN(News) is natural logarithm of 1 + number of news coverage within a window, which specifies on the top of the table. Control variables include annualized stock returns, natural logarithm of firm size, idiosyncratic volatility, Market-to-Book ratio, The Amihud illiquidity measure, earnings announcement month indicator, dividend record month indicator, institutional ownership, and analyst coverage. In the model, μ_i means each firm's time-invariant specific effect, and v_t means that year specific effect. X_{it} is a set of explanatory variables, and ε_{it} is an error term, which assumes that $E(\varepsilon_{it})=0$ and $Var(\varepsilon_{it})=\sigma^2$. All models include time and firm fixed effects and cluster standard errors by firm. Brackets contain robust standard errors and superscripts ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Panel A: Average Number of Days between Purchase and First Sale following the Purchase

	N	Average number of days between a purchase date and the next sales date
All open-market purchase	27,595	1681.679 days (4.61 years)
News-related open-market purchase	13,860	1418.464 days (3.89 years)
Other open-market purchase	13,735	1947.289 days (5.34 years)

Panel B: Relation between Reporting Gap and Pre-Purchase News Coverage

	(1) [-2, -1] Reporting Gap	(2) [-3, -1] Reporting Gap	(3) [-5, -1] Reporting Gap	(4) [-2, -1] Reporting Gap	(5) [-3, -1] Reporting Gap	(6) [-5, -1] Reporting Gap
LN(News)	-0.073*** (0.01)	-0.088*** (0.01)	-0.027*** (0.01)	-0.061*** (0.01)	-0.074*** (0.01)	-0.022** (0.01)
LN(Size)				0.015 (0.02)	0.017 (0.02)	0.012 (0.02)
MTB				-0.012 (0.01)	-0.012 (0.01)	-0.012 (0.01)
Return				-0.294 (0.19)	-0.313 (0.19)	-0.272 (0.19)
Illiquidity				-0.013 (0.02)	-0.013 (0.02)	-0.014 (0.02)
IVOL				0.009 (0.02)	0.010 (0.02)	0.008 (0.02)
Earnings Month				0.041*** (0.01)	0.045*** (0.01)	0.041*** (0.01)
Dividend Record Month				0.003 (0.02)	0.002 (0.02)	0.004 (0.02)
Institutional Ownership				-0.197*** (0.08)	-0.199*** (0.08)	-0.194*** (0.07)
Analyst Coverage				-0.002 (0.02)	-0.002 (0.02)	-0.002 (0.02)
Constant	0.719*** (0.10)	0.718*** (0.10)	0.722*** (0.10)	0.692*** (0.26)	0.672** (0.26)	0.737*** (0.26)
Observations	14,847	14,847	14,847	7,905	7,905	7,905
Adjusted R-squared	0.235	0.240	0.230	0.244	0.248	0.240
Fixed Effects	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year	Firm & Year

Internet Appendix for “Making News Salient: Evidence from Insider Trades around News Releases”

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This internet appendix presents detailed summary statistics and additional analysis tables about the results of robustness tests using different sets of fixed effects to accompany the paper “Making News Salient: Evidence from Insider Trades around News Releases.” The contents are as follows:

Table 1A. Variable Definitions

News Variables	Definition	Source
LN(News)	Natural log of (1+News Coverage within [-5, -1], [-3, -1], or [-2, -1])	RavenPack News Analytics
LN(Pos_News)	Natural log of (1+ Number of cumulative positive news within [-5, -1], [-3, -1], or [-2, -1])	RavenPack News Analytics
LN(Neg_News)	Natural log of (1+ Number of cumulative negative news within [-5, -1], [-3, -1], or [-2, -1])	RavenPack News Analytics
LN(Neu_News)	Natural log of (1+ Number of cumulative neutral news within [-5, -1], [-3, -1], or [-2, -1])	RavenPack News Analytics
LN(Hard_Pos)	Natural log of (1+ Number of cumulative positive hard news within [-5, -1], [-3, -1], or [-2, -1])	RavenPack News Analytics
LN(Hard_Neg)	Natural log of (1+ Number of cumulative negative hard news within [-5, -1], [-3, -1], or [-2, -1])	RavenPack News Analytics
LN(Hard_Neu)	Natural log of (1+ Number of cumulative neutral hard news within [-5, -1], [-3, -1], or [-2, -1])	RavenPack News Analytics
LN(Soft_Pos)	Natural log of (1+ Number of cumulative positive soft news within [-5, -1], [-3, -1], or [-2, -1])	RavenPack News Analytics
LN(Soft_Neg)	Natural log of (1+ Number of cumulative negative soft news within [-5, -1], [-3, -1], or [-2, -1])	RavenPack News Analytics
LN(Soft_Neu)	Natural log of (1+ Number of cumulative neutral soft news within [-5, -1], [-3, -1], or [-2, -1])	RavenPack News Analytics
Ratio_Pos_News	Number of cumulative positive news/News Coverage	RavenPack News Analytics
Ratio_Neg_News	Number of cumulative negative news/News Coverage	RavenPack News Analytics
LN(News)	Natural log of (1+News Coverage within [-5, -1], [-3, -1], or [-2, -1])	RavenPack News Analytics
CEO Trading Variables		
Buy	An indicator of open market stock purchase	Thomson Reuters Insider Filing
Sell	An indicator of open market stock sales	Thomson Reuters Insider Filing
Firm-Characteristics		
LN(Size)	Natural log of (1+The firm's market capitalization at the prior year-end)	Compustat
MTB	Market-to-book ratio at the prior year-end	Compustat, CRSP
Return	Stock returns over the prior 12 months calculated using a monthly rolling window	CRSP
Illiquidity	The Amihud (2002) illiquidity measure, or the yearly average of the daily square root of (Price × Volume)/ Return	CRSP
IVOL	The stock's annualized residual return from a regression of daily stock returns on the Fama-French three factors during the past year	CRSP
Earnings Month	A dummy variable equal to one if the firm announces quarterly earnings during the month	Compustat
Dividend Month	A dummy variable equal to one if there was a dividend record date during the month	CRSP
Institutional Ownership	The percentage of outstanding shares held by institutional investors	Thomson Reuters Institutional (13f) Holdings
Analyst Coverage	Natural log of (1+the number of analysts covering the firm over the one-year period ending on the most recent month-end before the transaction)	I/B/E/S
Transparent_AC	An indication variable that is equal to one if the analyst coverage of the firm falls into the top quintile of the sample distribution, and zero otherwise	I/B/E/S
Transparent_IO	An indication variable that is equal to one if institutional ownership of the firm falls into the top quintile of the sample distribution, and zero otherwise	Thomson Reuters Institutional (13f) Holdings

Table 2A. Trend in News Coverage and CEO Trading Pattern
Panel A. Trend in News Coverage

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
News Coverage	82086	132992	117963	120069	213981	217230	177339	308361	323058	300571	288181	355701	484174	544709	535396	541820	630069
Positive News (ESS)	46916 57.15%	58174 43.74%	61449 52.09%	62534 52.08%	79555 37.18%	82757 38.10%	81220 45.80%	130814 42.42%	139808 43.28%	124478 41.41%	125538 43.56%	164623 46.28%	218845 45.20%	241749 44.38%	237180 44.30%	248402 45.85%	292205 46.38%
Negative News (ESS)	21566 26.27%	34061 25.61%	33864 28.71%	30142 25.10%	70550 32.97%	76006 34.99%	52154 29.41%	101203 32.82%	104506 32.35%	101005 33.60%	94040 32.63%	113764 31.98%	160229 33.09%	191541 35.16%	190247 35.53%	190954 35.24%	217234 34.48%
Neutral News (ESS)	13604 16.57%	40757 30.65%	22650 19.20%	27393 22.81%	63876 29.85%	58467 26.91%	43965 24.79%	76344 24.76%	78744 24.37%	75088 24.98%	68603 23.81%	77314 21.74%	105100 21.71%	111419 20.45%	107969 20.17%	102464 18.91%	120630 19.15%
Positive News (CSS)	29094 35.44%	34340 25.82%	35630 30.20%	39404 32.82%	54314 25.38%	53297 24.53%	50300 28.36%	78905 25.59%	86990 26.93%	77172 25.68%	82837 28.74%	114381 32.16%	159170 32.87%	186342 34.21%	199839 37.33%	209051 38.58%	220011 34.92%
Negative News (CSS)	19488 23.74%	30450 22.90%	29538 25.04%	25784 21.47%	73876 34.52%	69563 32.02%	49669 28.01%	77081 25.00%	77945 24.13%	73667 24.51%	65782 22.83%	76100 21.39%	102937 21.26%	114948 21.10%	110665 20.67%	114312 21.10%	114677 18.20%
Neutral News (CSS)	33504 40.82%	68202 51.28%	52795 44.76%	54881 45.71%	85791 40.09%	94370 43.44%	77370 43.63%	152375 49.41%	158123 48.95%	149732 49.82%	139562 48.43%	165220 46.45%	222067 45.87%	243419 44.69%	224892 42.00%	218457 40.32%	295381 46.88%

Panel B. Trend in News Coverage by News Category

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Hard News Coverage	33885 41.28%	60597 45.56%	63799 54.08%	60587 50.46%	67309 31.46%	69785 32.12%	72732 41.01%	91774 29.76%	97769 30.26%	92264 30.70%	87057 30.21%	95793 26.93%	109689 22.65%	103346 18.97%	99982 18.67%	111186 20.52%	189047 30.00%
Positive News (ESS)	20922 61.74%	29954 49.43%	31389 49.20%	31592 52.14%	37882 56.28%	38174 54.70%	40026 55.03%	47837 52.12%	46612 47.68%	38081 41.27%	44347 50.94%	48729 50.87%	54548 49.73%	50160 48.54%	47338 47.35%	54408 48.93%	96946 51.28%
Negative News (ESS)	7904 23.33%	17480 28.85%	17624 27.62%	15288 25.23%	15860 23.56%	16869 24.17%	18822 25.88%	26685 29.08%	30918 31.62%	32001 34.68%	18231 20.94%	21018 21.94%	26469 24.13%	26284 25.43%	23405 23.41%	28868 25.96%	54522 28.84%
Neutral News (ESS)	5059 14.93%	13163 21.72%	14786 23.18%	13707 22.62%	13567 20.16%	14742 21.12%	13884 19.09%	17252 18.80%	20239 20.70%	22182 24.04%	24479 28.12%	26046 27.19%	28672 26.14%	26902 26.03%	29239 29.24%	27910 25.10%	37579 19.88%
Positive News (CSS)	10221 30.16%	16470 27.18%	17773 27.86%	17945 29.62%	24562 36.49%	27790 39.82%	28428 39.09%	32075 34.95%	31975 32.70%	27579 29.89%	34419 39.54%	37897 39.56%	39612 36.11%	37222 36.02%	38374 38.38%	41631 37.44%	76708 40.58%
Negative News (CSS)	11133 32.86%	21431 35.37%	21407 33.55%	17181 28.36%	17669 26.25%	17244 24.71%	18439 25.35%	26103 28.44%	29971 30.65%	29663 32.15%	18352 21.08%	20124 21.01%	25886 23.60%	24871 24.07%	21426 21.43%	26203 23.57%	41113 21.75%
Neutral News (CSS)	12531 36.98%	22696 37.45%	24619 38.59%	25461 42.02%	25078 37.26%	24751 35.47%	25865 35.56%	33596 36.61%	35823 36.64%	35022 37.96%	34286 39.38%	37772 39.43%	44191 40.29%	41253 39.92%	40182 40.19%	43352 38.99%	71226 37.68%
Soft News Coverage	48201 58.72%	72395 54.44%	54164 45.92%	59482 49.54%	146672 68.54%	147445 67.88%	104607 58.99%	216587 70.24%	225289 69.74%	208307 69.30%	201124 69.79%	259908 73.07%	374485 77.35%	441363 81.03%	435414 81.33%	430634 79.48%	441022 70.00%
Positive News (ESS)	25994 53.93%	28220 38.98%	30060 55.50%	30942 52.02%	41673 28.41%	44583 30.24%	41194 39.38%	82977 38.31%	93196 41.37%	86397 41.48%	81191 40.37%	115894 44.59%	164297 43.87%	191589 43.41%	189842 43.60%	193994 45.05%	195259 44.27%
Negative News (ESS)	13662 28.34%	16581 22.90%	16240 29.98%	14854 24.97%	54690 37.29%	59137 40.11%	33332 31.86%	74518 34.41%	73588 32.66%	69004 33.13%	75809 37.69%	92746 35.68%	133760 35.72%	165257 37.44%	166842 38.32%	162086 37.64%	162712 36.89%
Neutral News (ESS)	8545 17.73%	27594 38.12%	7864 14.52%	13686 23.01%	50309 34.30%	43725 29.66%	30081 28.76%	59092 27.28%	58505 25.97%	52906 25.40%	44124 21.94%	51268 19.73%	76428 20.41%	84517 19.15%	78730 18.08%	74554 17.31%	83051 18.83%
Positive News (CSS)	18873 39.15%	17870 24.68%	17857 32.97%	21459 36.08%	29752 20.28%	25507 17.30%	21872 20.91%	46830 21.62%	55015 24.42%	49593 23.81%	48418 24.07%	76484 29.43%	119558 31.93%	149120 33.79%	161465 37.08%	167420 38.88%	143303 32.49%
Negative News (CSS)	8355 17.33%	9019 12.46%	8131 15.01%	8603 14.46%	56207 38.32%	52319 35.48%	31230 29.85%	50978 23.54%	47974 21.29%	44004 21.12%	47430 23.58%	55976 21.54%	77051 20.58%	90077 20.41%	89239 20.50%	88109 20.46%	73564 16.68%
Neutral News (CSS)	20973 43.51%	45506 62.86%	28176 52.02%	29420 49.46%	60713 41.39%	69619 47.22%	51505 49.24%	118779 54.84%	122300 54.29%	114710 55.07%	105276 52.34%	127448 49.04%	177876 47.50%	202166 45.80%	184710 42.42%	175105 40.66%	224155 50.83%

Panel C. Summary Statistics (Daily-level)

News Variables	N	Mean	SD	P25	P50	P75	Source
LN(News) [-2, -1]	13,873,842	0.2300	0.4870	0	0	0	RavenPack News Analytics
LN(Pos_News) [-2, -1]	13,873,842	0.0892	0.2860	0	0	0	RavenPack News Analytics
LN(Neg_News) [-2, -1]	13,873,842	0.0668	0.2400	0	0	0	RavenPack News Analytics
LN(Net_News) [-2, -1]	13,873,842	0.1230	0.3380	0	0	0	RavenPack News Analytics
LN(Hard_Pos) [-2, -1]	13,873,842	0.0289	0.1720	0	0	0	RavenPack News Analytics
LN(Hard_Neg) [-2, -1]	13,873,842	0.0205	0.1420	0	0	0	RavenPack News Analytics
LN(Hard_Neu) [-2, -1]	13,873,842	0.0297	0.1810	0	0	0	RavenPack News Analytics
LN(Soft_Pos) [-2, -1]	13,873,842	0.0651	0.2310	0	0	0	RavenPack News Analytics
LN(Soft_Neg) [-2, -1]	13,873,842	0.0485	0.1950	0	0	0	RavenPack News Analytics
LN(Soft_Neu) [-2, -1]	13,873,842	0.0973	0.2910	0	0	0	RavenPack News Analytics
LN(News) [-3, -1]	13,873,842	0.3070	0.5540	0	0	0.693	RavenPack News Analytics
LN(Pos_News) [-3, -1]	13,873,842	0.1200	0.3320	0	0	0	RavenPack News Analytics
LN(Neg_News) [-3, -1]	13,873,842	0.0912	0.2800	0	0	0	RavenPack News Analytics
LN(Net_News) [-3, -1]	13,873,842	0.1650	0.3900	0	0	0	RavenPack News Analytics
LN(Hard_Pos) [-3, -1]	13,873,842	0.0380	0.1970	0	0	0	RavenPack News Analytics
LN(Hard_Neg) [-3, -1]	13,873,842	0.0272	0.1640	0	0	0	RavenPack News Analytics
LN(Hard_Neu) [-3, -1]	13,873,842	0.0385	0.2060	0	0	0	RavenPack News Analytics
LN(Soft_Pos) [-3, -1]	13,873,842	0.0895	0.2730	0	0	0	RavenPack News Analytics
LN(Soft_Neg) [-3, -1]	13,873,842	0.0673	0.2310	0	0	0	RavenPack News Analytics
LN(Soft_Neu) [-3, -1]	13,873,842	0.1330	0.3400	0	0	0	RavenPack News Analytics
LN(News) [-5, -1]	13,873,842	0.4500	0.6570	0	0	0.6930	RavenPack News Analytics
LN(Pos_News) [-5, -1]	13,873,842	0.1810	0.4060	0	0	0	RavenPack News Analytics
LN(Neg_News) [-5, -1]	13,873,842	0.1400	0.3470	0	0	0	RavenPack News Analytics
LN(Net_News) [-5, -1]	13,873,842	0.2480	0.4720	0	0	0.6930	RavenPack News Analytics
LN(Hard_Pos) [-5, -1]	13,873,842	0.0591	0.2450	0	0	0	RavenPack News Analytics
LN(Hard_Neg) [-5, -1]	13,873,842	0.0427	0.2050	0	0	0	RavenPack News Analytics
LN(Hard_Neu) [-5, -1]	13,873,842	0.0602	0.2560	0	0	0	RavenPack News Analytics
LN(Soft_Pos) [-5, -1]	13,873,842	0.1350	0.3360	0	0	0	RavenPack News Analytics
LN(Soft_Neg) [-5, -1]	13,873,842	0.1030	0.2890	0	0	0	RavenPack News Analytics
LN(Soft_Neu) [-5, -1]	13,873,842	0.2000	0.4160	0	0	0	RavenPack News Analytics

Panel D. Summary Statistics (Transaction-level)

	N	Mean	SD
Exercise	142,487	0.396	0.489
Sell	142,487	0.681	0.466
Buy	142,487	0.194	0.396
Exercise-and-Sell	142,487	0.267	0.442
Company Disposition	142,487	0.035	0.182
Exercise-and-Hold	142,487	0.095	0.293
MTB	140,358	2.78	3.570
LN(Size)	141,496	13.48	1.911
Return	141,496	0.023	0.067
Analyst Coverage	128,582	3.132	1.131
Institutional Ownership	81,841	0.620	0.300
Earnings Announcement Month	142,487	0.331	0.471
Dividend Record Month	142,487	0.114	0.318
IVOL	140,081	0.440	0.352
Illiquidity	142,096	0.164	0.560
CAR[0, 2]	140,765	0.006	0.066
CAR[0, 3]	140,765	0.007	0.075
CAR[0, 5]	140,765	0.008	0.087

Table 3A. News Coverage and CEO Trading Patterns (Transaction-level)

$$\text{OLS: } Y_{it} = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \dots + \beta_k X_{kt} + \mu_t + v_t + \varepsilon_{it}$$

This table contains OLS regressions that examine the relation between news coverage and CEO trading pattern. Dependent variable for columns (1), (2), (5), (6), (9), and (10) is CEO share purchase indicator variable, which is equal to 1 if CEO performs open market share purchase. Dependent variable for the other columns is CEO share sales indicator variable, which is equal to 1 if CEO performs open market share sales. Key independent variable is news coverage variable. LN(Coverage) is natural logarithm of 1 + number of news coverage within a window, which specifies on the top of the table. Control variables include annualized stock returns, natural logarithm of firm size, idiosyncratic volatility, Market-to-Book ratio, The Amihud illiquidity measure, earnings announcement month indicator, dividend record month indicator, institutional ownership, and analyst coverage. In the model, μ_t means each firm's time-invariant specific effect, and v_t means that year specific effect. X_{it} is a set of explanatory variables, and ε_{it} is an error term, which assumes that $E(\varepsilon_{it})=0$ and $\text{Var}(\varepsilon_{it})=\sigma^2$. All models include time and firm fixed effects and cluster standard errors by firm. Brackets contain robust standard errors and superscripts ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

VARIABLES	(1) [-2, -1] Buy	(2) [-2, -1] Buy	(3) [-3, -1] Buy	(4) [-3, -1] Buy	(5) [-5, -1] Buy	(6) [-5, -1] Buy
LN(Coverage)	-0.003** (0.00)	0.004** (0.00)	0.001 (0.00)	0.007*** (0.00)	0.003 (0.00)	0.011*** (0.00)
LN(Size)		-0.107*** (0.01)		-0.107*** (0.01)		-0.108*** (0.01)
MTB		-0.003 (0.00)		-0.003 (0.00)		-0.002 (0.00)
Return		-0.863*** (0.08)		-0.861*** (0.08)		-0.860*** (0.08)
Illiquidity		0.036** (0.02)		0.036** (0.02)		0.036** (0.02)
IVOL		0.067*** (0.01)		0.066*** (0.01)		0.066*** (0.01)
Earnings Month		0.017*** (0.00)		0.017*** (0.00)		0.015*** (0.00)
Dividend Record Month		0.009 (0.01)		0.009 (0.01)		0.009 (0.01)
Institutional Ownership		-0.002 (0.02)		-0.001 (0.02)		-0.000 (0.02)
Analyst Coverage		0.014* (0.01)		0.014* (0.01)		0.014* (0.01)
Constant	0.272*** (0.02)	1.629*** (0.14)	0.272*** (0.02)	1.635*** (0.14)	0.271*** (0.02)	1.643*** (0.14)
Observations	124,639	65,396	124,639	65,396	124,639	65,396
Adjusted R-squared	0.673	0.749	0.673	0.749	0.673	0.749
Control Variables	No	Yes	No	Yes	No	Yes
Fixed Effects	Firm, Year	Firm, Year	Firm, Year	Firm, Year	Firm, Year	Firm, Year

Table 4A: News Tone and CEO Trading Patterns (Transaction-level)

$$\text{LPM: Pr}(Y = 1 | X_1, X_2, \dots, X_k) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k$$

This table contains OLS regressions that examine the relation between new tone and CEO trading pattern. Dependent variable for columns (1), (3), and (5) is CEO share purchase indicator variable, which is equal to 1 if CEO performs open market share purchase. Dependent variable for the other columns is CEO share sales indicator variable, which is equal to 1 if CEO performs open market share sales. Key independent variables are news coverage variables by news tone. LN(Pos_News) is natural logarithm of 1 + number of positive news coverage, based on event sentiment score (ESS), within a window, which specifies on the top of the table. LN(Neg_News) is natural logarithm of 1 + number of negative news coverage, based on event sentiment score (ESS), within a window, which specifies on the top of the table. LN(Coverage) is natural logarithm of 1 + number of news coverage within a window, which specifies on the top of the table. Control variables include annualized stock returns, natural logarithm of firm size, idiosyncratic volatility, Market-to-Book ratio, The Amihud illiquidity measure, earnings announcement month indicator, dividend record month indicator, institutional ownership, and analyst coverage. In the model, μ_i means each firm's time-invariant specific effect, and v_i means that year specific effect. X_{it} is a set of explanatory variables, and ε_{it} is an error term, which assumes that $E(\varepsilon_{it})=0$ and $\text{Var}(\varepsilon_{it})=\sigma^2$. All models include time and firm fixed effects and cluster standard errors by firm. Brackets contain robust standard errors and superscripts ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

VARIABLES	(1) [-2, -1] Buy	(2) [-2, -1] Buy	(3) [-3, -1] Buy	(4) [-3, -1] Buy	(5) [-5, -1] Buy	(6) [-5, -1] Buy
LN(Pos_News)	0.073*** (0.01)	0.045*** (0.00)	0.074*** (0.01)	0.047*** (0.00)	0.070*** (0.01)	0.047*** (0.00)
LN(Neg_News)	0.022*** (0.00)	0.018*** (0.00)	0.024*** (0.00)	0.020*** (0.00)	0.028*** (0.00)	0.021*** (0.00)
LN(Coverage)	-0.041*** (0.00)	-0.022*** (0.00)	-0.040*** (0.00)	-0.021*** (0.00)	-0.041*** (0.00)	-0.020*** (0.00)
LN(Size)		-0.107*** (0.01)		-0.108*** (0.01)		-0.109*** (0.01)
MTB		-0.002 (0.00)		-0.002 (0.00)		-0.002 (0.00)
Return		-0.855*** (0.08)		-0.851*** (0.08)		-0.845*** (0.08)
Illiquidity		0.035** (0.02)		0.034** (0.02)		0.033** (0.02)
IVOL		0.067*** (0.01)		0.066*** (0.01)		0.065*** (0.01)
Earnings Month		0.015*** (0.00)		0.014*** (0.00)		0.012*** (0.00)
Dividend Record Month		0.009 (0.01)		0.010 (0.01)		0.009 (0.01)
Institutional Ownership		-0.000 (0.02)		0.001 (0.02)		0.001 (0.02)
Analyst Coverage		0.014* (0.01)		0.014* (0.01)		0.014* (0.01)
Constant	0.273*** (0.02)	1.635*** (0.14)	0.274*** (0.02)	1.642*** (0.14)	0.275*** (0.02)	1.655*** (0.14)
Observations	124,639	65,396	124,639	65,396	124,639	65,396
Adjusted R-squared	0.675	0.749	0.675	0.750	0.676	0.750
Control Variables	No	Yes	No	Yes	No	Yes
Fixed Effects	Firm, Year	Firm, Year	Firm, Year	Firm, Year	Firm, Year	Firm, Year

Table 5A. News Tone and CEO Trading Patterns conditional on Information Environment (Transaction-level)

$$\text{LPM: Pr}(Y = 1 | X_1, X_2, \dots, X_k) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k$$

This table contains OLS regressions that examine the relation between new tone and CEO trading pattern conditional on information environment. To identify firms with good information environment, I use intensive analyst coverage for Panel A and intensive institutional ownership for Panel B. Dependent variable for columns (1), (3), and (5) is CEO share purchase indicator variable, which is equal to 1 if CEO performs open market share purchase. Dependent variable for the other columns is CEO share sales indicator variable, which is equal to 1 if CEO performs open market share sales. Key independent variables are news coverage variables by news tone. LN(Pos_News) is natural logarithm of 1 + number of positive news coverage, based on event sentiment score (ESS), within a window, which specifies on the top of the table. LN(Neg_News) is natural logarithm of 1 + number of negative news coverage, based on event sentiment score (ESS), within a window, which specifies on the top of the table. LN(Coverage) is natural logarithm of 1 + number of news coverage within a window, which specifies on the top of the table. Control variables include annualized stock returns, natural logarithm of firm size, idiosyncratic volatility, Market-to-Book ratio, The Amihud illiquidity measure, earnings announcement month indicator, dividend record month indicator, institutional ownership, and analyst coverage. In the model, μ_i means each firm's time-invariant specific effect, and v_i means that year specific effect. X_{it} is a set of explanatory variables, and ε_{it} is an error term, which assumes that $E(\varepsilon_{it})=0$ and $\text{Var}(\varepsilon_{it})=\sigma^2$. All models include time and firm fixed effects and cluster standard errors by firm. Brackets contain robust standard errors and superscripts ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Panel A: Analyst Coverage

VARIABLES	(1) [-2, -1] Buy	(2) [-2, -1] Sell	(3) [-3, -1] Buy
LN(Pos_News)	0.053*** (0.01)	-0.053*** (0.01)	0.058*** (0.01)
Transparent_AC X LN(Pos_News)	-0.019*** (0.01)	0.020*** (0.01)	-0.025*** (0.01)
LN(Neg_News)	0.014*** (0.00)	-0.014*** (0.00)	0.018*** (0.00)
Transparent_AC X LN(Neg_News)	0.013** (0.01)	-0.014** (0.01)	0.010* (0.01)
Transparent_AC	0.024** (0.01)	-0.025** (0.01)	0.027** (0.01)
LN(Coverage)	-0.022*** (0.00)	0.022*** (0.00)	-0.022*** (0.00)
LN(Size)	-0.108*** (0.01)	0.108*** (0.01)	-0.108*** (0.01)
MTB	-0.002 (0.00)	0.002 (0.00)	-0.002 (0.00)
Return	-0.851*** (0.08)	0.857*** (0.08)	-0.848*** (0.08)
Illiquidity	0.034** (0.02)	-0.034** (0.02)	0.033** (0.02)
IVOL	0.067*** (0.01)	-0.067*** (0.01)	0.066*** (0.01)
Earnings Month	0.015*** (0.00)	-0.015*** (0.00)	0.014*** (0.00)
Dividend Record Month	0.009 (0.01)	-0.010 (0.01)	0.009 (0.01)
Institutional Ownership	0.000 (0.02)	-0.000 (0.02)	0.000 (0.02)
Analyst Coverage	0.010 (0.01)	-0.010 (0.01)	0.010 (0.01)
Constant	1.653*** (0.14)	-0.651*** (0.14)	1.655*** (0.14)
Observations	65,396	65,396	65,396
Adjusted R-squared	0.750	0.750	0.750
Control Variables	Yes	Yes	Yes
Fixed Effects	Firm, Year	Firm, Year	Firm, Year

Panel B: Institutional Ownership

VARIABLES	(1)	(2)	(3)
	[-2, -1] Buy	[-2, -1] Sell	[-3, -1] Buy
LN(Pos_News)	0.049*** (0.01)	-0.050*** (0.01)	0.052*** (0.01)
Transparent_IO X LN(Pos_News)	-0.015** (0.01)	0.015** (0.01)	-0.017*** (0.01)
LN(Neg_News)	0.011** (0.00)	-0.011** (0.00)	0.013*** (0.00)
Transparent_IO X LN(Neg_News)	0.023*** (0.01)	-0.022*** (0.01)	0.020*** (0.01)
Transparent_IO	-0.001 (0.01)	0.001 (0.01)	-0.000 (0.01)
LN(Coverage)	-0.022*** (0.00)	0.022*** (0.00)	-0.021*** (0.00)
LN(Size)	-0.107*** (0.01)	0.107*** (0.01)	-0.108*** (0.01)
MTB	-0.002 (0.00)	0.002 (0.00)	-0.002 (0.00)
Return	-0.856*** (0.08)	0.862*** (0.08)	-0.853*** (0.08)
Illiquidity	0.034** (0.02)	-0.035** (0.02)	0.034** (0.02)
IVOL	0.067*** (0.01)	-0.067*** (0.01)	0.066*** (0.01)
Earnings Month	0.015*** (0.00)	-0.015*** (0.00)	0.014*** (0.00)
Dividend Record Month	0.009 (0.01)	-0.010 (0.01)	0.009 (0.01)
Institutional Ownership	-0.002 (0.03)	0.002 (0.02)	-0.001 (0.02)
Analyst Coverage	0.014* (0.01)	-0.014* (0.01)	0.014* (0.01)
Constant	1.634*** (0.14)	-0.632*** (0.14)	1.640*** (0.14)
Observations	65,396	65,396	65,396
Adjusted R-squared	0.749	0.750	0.750
Control Variables	Yes	Yes	Yes
Fixed Effects	Firm, Year	Firm, Year	Firm, Year

Table 6. Relation between News Tone and CEO Trading Patterns by News Category

$$\text{LPM: Pr}(Y = 1 | X_1, X_2, \dots, X_k) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k$$

This table contains OLS regressions that examine the relation between new tone and CEO trading pattern by news category. Based on RavenPack News Analytics category, I define news about revenue, earnings, analyst rating, and credit rating as hard news, and the other topics are considered as soft news. Hard news would capture firms' fundamentals. On the other hand, soft news would be less value-relevant news. Dependent variable for columns (1), (3), and (5) is CEO share purchase indicator variable, which is equal to 1 if CEO performs open market share purchase. Dependent variable for the other columns is CEO share sales indicator variable, which is equal to 1 if CEO performs open market share sales. Key independent variables are news coverage variables by news tone. LN(Pos_News) is natural logarithm of 1 + number of positive news coverage, based on event sentiment score (ESS), within a window, which specifies on the top of the table. LN(Coverage) table. LN(Neg_News) is natural logarithm of 1 + number of negative news coverage, based on event sentiment score (ESS), within a window, which specifies on the top of the table. LN(Coverage) is natural logarithm of 1 + number of news coverage within a window, which specifies on the top of the table. Control variables include annualized stock returns, natural logarithm of firm size, idiosyncratic volatility, Market-to-Book ratio, The Amihud illiquidity measure, earnings announcement month indicator, dividend record month indicator, institutional ownership, and analyst coverage. In the model, μ_i means each firm's time-invariant specific effect, and ν_i means that year specific effect. X_{it} is a set of explanatory variables, and ε_{it} is an error term, which assumes that $E(\varepsilon_{it})=0$ and $\text{Var}(\varepsilon_{it})=\sigma^2$. All models include time and firm fixed effects and cluster standard errors by firm. Brackets contain robust standard errors and superscripts ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	[-2, -1] Buy	[-2, -1] Buy	[-2, -1] Sell	[-2, -1] Sell	[-3, -1] Buy	[-3, -1] Buy
LN(Pos_Hard)	-0.015*** (0.00)	-0.015*** (0.01)	0.015*** (0.00)	0.015*** (0.00)	-0.015*** (0.00)	-0.014*** (0.00)
LN(Pos_Soft)	0.083*** (0.01)	0.050*** (0.01)	-0.083*** (0.01)	-0.050*** (0.01)	0.080*** (0.01)	0.049*** (0.01)
LN(Neg_Hard)	0.113*** (0.01)	0.082*** (0.01)	-0.113*** (0.01)	-0.082*** (0.01)	0.125*** (0.01)	0.088*** (0.01)
LN(Neg_Soft)	-0.008** (0.00)	-0.002 (0.00)	0.008** (0.00)	0.002 (0.00)	-0.014*** (0.00)	-0.004 (0.00)
LN(Coverage)	-0.031*** (0.00)	-0.014*** (0.00)	0.031*** (0.00)	0.014*** (0.00)	-0.028*** (0.00)	-0.012*** (0.00)
Constant	0.273*** (0.02)	1.618*** (0.14)	0.729*** (0.02)	-0.616*** (0.14)	0.274*** (0.02)	1.614*** (0.14)
Observations	124,639	65,396	124,639	65,396	124,639	65,396
Adjusted R-squared	0.676	0.750	0.676	0.751	0.678	0.751
Control Variables	No	Yes	No	Yes	No	Yes
Fixed Effects	Firm, Year	Firm, Year	Firm, Year	Firm, Year	Firm, Year	Firm, Year