Whose Attention Matters? Evidence from News Sentiment

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Abstract

This study explores the role of institutional and retail (informed and uninformed) attention in the context of the sentiment of media news releases. We find that retail attention destabilizes the market when retail investors appear to struggle digesting complex business information, in particular if these retail investors are uninformed. The attention of informed retail investors is stabilizing, as is institutional attention. We also find that many news events are not paid attention to, even with our sample of S&P 500 firms, and with inattention comes drift if the news is of positive sentiment. With negative or mixed sentiment news and investor inattention there is little evidence of reversals or drift. We also find that when news events are paid attention to, consistent sentiment across contemporaneous news stories is important to identify when anticipating price reaction.

Keywords: Retail investor attention, Institutional investor attention, financial news, sentiment analysis, stock market returns.

JEL Classification: G1; G12; G14; G4; G41

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1. Introduction

We know from a large literature[1] that the release of media news is often accompanied with mixed anomalous return responses such as return drift or reversal, interpreted as underreaction and overreaction. We also know from a growing literature[2] in finance that investor (in)attention is associated with anomalous return patterns. But the evidence on the impact of news and investor attention on markets is mixed and conflicting. For example, some studies (Cohen and Frazzini 2008, Ben-Rephael, Da, and Israelson, 2017; Ben-Rephael, Da, Easton, and Israelson, 2018) show that institutional attention plays a stabilizing role on financial markets, while others, such as Ma, Xiong, and Feng (2020) document a destabilizing role for institutional attention on news releases. Barber and Odean (2008) and Da, Engelberg, and Gao (2011) document that retail attention destabilizes financial markets but recent studies including Kelley and Tetlock (2013, 2017), Boehmer, Jones, Zhang and Zhang (2021), Liu, Peng, and Tang, (2023) and Zhou (2020) find evidence for a stabilizing role played by retail investors. The literature on the impact of the sentiment of the news suggests that negative sentiment news moves markets but the impact of positive sentiment news is more mixed (Tetlock 2007, Tetlock, Saar-Tsechansky, and Macskassy 2008, Engelberg, Reed and Ringgenber 2012, Garcia 2013).

In this study, we seek to reconcile the evidence on return responses to news and news sentiment by identifying the different types of investors paying attention, retail (informed and uninformed) versus institutional, while controlling for news sentiment, complexity and consistency of news tone across multiple news outlets. Although recent papers have explored many of these separately or in small subsets, no work to our knowledge has endeavoured to pull apart and understand the data as we do, nor does any work consider tone consistency across media outlets. This analysis leads to a nuanced understanding of the impact of news and attention on financial markets. Our core result is that when we control for who is paying

[1] Pritamani and Singal (2001); Tetlock (2007); Savor (2012); Tetlock (2014)

[2] Hirshleifer and Teo (2003), Hirshleifer, Hou, Teoh, and Zhang (2004), Hou (2007), Peng and Xiong (2008), Cohen and Frazzini (2008), Barber and Odean (2008), DellaVigna and Pollet, 2009; Hirshleifer, Lim, and Teoh (2011), Da, Engelberg, and Gao (2011)

attention, institutional and informed retail investor attention stabilizes markets, and only in the case of uninformed retail attention do we find destabilizing price impacts, and then only with positively toned, complex news, a result obscured in previous work due to various methodological shortcomings. We verify that when institutional and informed retail investors are inattentive, price drift (but not reversals) are observed.

The market response to news may vary with the type of investor paying attention due to the different roles played by institutional and retail investors. On the one hand, recent studies show that institutional investors' attention stabilizes market prices and lack of this attention leads to price underreaction to news. For example, Ben-Rephael, Da and Israelson (2017) find that the post announcement return drift weakens conditioning on institutional abnormal attention and institutional attention leads retail investor attention. On the other hand, a strand of literature finds that retail investors' attention is a source of price instability, leading to price overreaction and reversal. For instance, Da, Engelberg and Gao (2011) find that abnormal retail attention will first induce higher stock prices in the first two weeks and an eventual price reversal within the year. In sum, it suggests that institutional inattention could induce return drift and retail attention could induce return reversal, which could, at least partially, explain anomalous return responses to news. Studies that look for market reaction to news will provide unreliable conclusions if the type of investor paying attention is not controlled for, a concern that is not widely recognised. Common proxies like trading volume, previous returns, or news profiling the firm in question are indirect measures of attention and are unable to identify its' source (or indeed even its' existence). Our study shows that there are news stories that attract only retail investor attention, or only institutional investor attention, or both or neither. We determine that these situations have different implications for market price reaction to the news, itself a new finding.

Utilizing mass media news sources and textual analysis, we identify the sentiment and the complexity of the news, and we identify attention to the news from institutional and retail (informed and uninformed) investors using Bloomberg institutional investor attention indices and Google trends data. We use these data to investigate the interaction of news sentiment (positive, negative or neutral), news type

(straightforward or complex) and investor-type attention (retail or institutional). With the identification of the search intensity of local versus non-local (to the company headquarters) retail investors, we find that local retail investors appear to be informed (consistent with findings of Cziraki, Mondria and Wu, 2019) and uninformed retail investors appear to drive price reversals. To measure sentiment of the news we use the Topic-Adaptive Syntax (TASA) Approach proposed in Babolmorad and Massoud (2020) and categorize news into positive, negative, and neutral sentiment. In addition, the TASA approach is able to help us categorize news into financial-related news which is straightforward to interpret and business-related news which is complex to interpret. Distinct from the literature we analyze news stories from fifteen large news providers rather than just one or two outlets and find that market reaction to news depends on uniformity of tone across news stories, another new finding of this work.

We document the following primary results. First, we find evidence of price reversal when uninformed retail investors pay attention and informed investor attention is absent, but no reversal when institutional or local retail investor attention is high, and then only with positive valence news. Frank and Sanati (2018) explore the impact of retail traders through the use of Google search volume data as we do and find retail attention is material for positive news but not negative news, as we find. However, they do not control for institutional attention and do not separate the impact of informed from uninformed retail trading, hence they do not identify that return reversals are a result of uninformed retail investor attention combined with inattention from both institutional and informed (local) retail investors. Differently than Da, Hua, Hung and Peng (2023) who look at market returns and investor attention, controlling for overall market sentiment, we focus on stock-level attention and returns, allowing us to uncover market-stabilizing impacts from informed retail investors on firms local to them.

The fact that the reversal comes with positive news rather than negative is consistent with constraints for short-selling that face even institutional investors (see, for instance, Gervais, Kaniel, and Mingelgrin 2001). This finding suggests that the interaction of news sentiment and the type of investor attention determines the market response following the release of news. Barber and Odean (2008), while studying retail investor

behavior, do not focus on price reaction to attention as we do. Da, Engelberg and Gao (2011), like us, find reversals with retail attention, but as they do not consider the separate influence of informed versus uninformed retail investors, nor the interaction of news sentiment with attention, they do not identify the price-stabilizing impact from some retail investor attention to some kinds of news (Da, Engelberg and Gao, 2011, find low correlation of sentiment and search intensity but do not condition on this sentiment in their analysis). Bathke, Mason, and Morton (2019) document reversals following earnings announcements for atypical firms but do not explore the impact of investor attention. Huang, Nekrasov, and Teoh (2018) also document reversals from post-earnings announcements related to managerial opportunism and limited attention, but do not focus on (or measure) investor attention. Heyman, Lescrauwaet, and Stieperaere (2019) document overreaction and return reversals using surges in Google search volume but not news or institutional search volume.

Second, we observe return drift on positive news only when there is a lack of institutional attention. Ben-Rephael, Da and Israelson (2017) consider institutional and retail investor attention in the context of earnings announcements and analyst recommendation changes (a larger, partially non-overlapping set of events) and find that the post announcement return drift on earnings or recommendation changes weakens or disappears conditioning on institutional attention and leads retail attention. They measure news sentiment with standardized unexpected earnings (or analyst recommendation changes) imposing symmetric responses to positive and negative surprises, unlike our approach which finds significantly different dynamics to price responses to positive and negative news. Further, common to the literature, their base case is a news day with no institutional or retail attention, but we find important differences by considering a base case of no news and no attention versus news with attention/inattention from retail and/or institutional investors separately. Ben-Rephael, Da and Israelson (2017) also do not control for days with both abnormally high retail *and* institutional attention, introducing a possible misspecification by excluding an variable to capture the interaction of the attention of these two investor types. When we separate these days out, we are able to isolate the statistically significant impact from only retail attention in contrast to their

finding of no separate impact from retail investor attention. Cohen and Frazzini (2008) find return drift in price if institutional investors are inattentive, exploiting large return movements as a proxy for news rather than identifying news events and measuring news sentiment as we do, and they do not consider retail inattention and its interaction with institutional attention as we do. Because of this they do not identify that return drift depends on the inattention of both institutional and informed retail investors, as we do.

Our refinement of investor-type attention and news sentiment leads us to a more nuanced understanding of the impact of inattention. Rather than a blanket result, that a lack of attention results in a drift in prices, we find a price drift only for positive sentiment news, and then only if informed (versus uninformed retail investors) investors are inattentive, a new finding. We also uncover reversals with institutional inattention if we focus on events with uninformed retail attention, making use of local and non-local (to firm headquarters) search volume from Google SVI. The literature studying the impact of institutional inattention does not allow for this asymmetric response to sentiment nor does it push into events lacking institutional attention but experiencing abnormal retail attention. Nekrasov, Teoh, and Wu (2023) provide a review of the literature on limited attention and its impact, documenting that much of this literature proxies for low and high attention rather than measuring it, as we do.

Third, we also consider the complexity of the news, something largely unexplored in the institutional and retail attention literature. Umar (2022) performs a field study with the cooperation of Seeking Alpha, emailing article links to retail investors and recording click-throughs to the article, exploring how the complexity of the title of the article impacts investor behavior and market outcomes on the day of a news story (market return, turnover and volatility), closely related to our interest in news complexity. Differently than Umar (2022) we use a broad cross-section of news stories, we differentiate between local and non-local retail investors, and we control for institutional investor attention, exploring evidence of return drift and reversal following the news event. We interact the type of news (complex versus straightforward), the sentiment of news (positive, negative, or neutral), and the type of investor paying attention (informed/uninformed retail versus institutional). We observe that the return drift is stronger for positive

financial (straightforward) news when the news is not paid attention to, while the return reversals accompanied with retail attention are stronger for positive business (complex) news. These findings are an important contribution of this study, and these are also consistent with the theoretical work of Fedyk (2021), who found that trading volume and price drift are generated in an environment of straightforward news and gradual information diffusion (inattention).

Our extension to a specific sub-type of retail attention, local retail attention, the attention of a subgroup of retail investors who may possess local information advantage and play a different role from generic retail investors, is another distinguishing feature of our analysis. Cziraki, Mondria and Wu (2019) are among the very few papers that have exploited this refinement, finding that abnormally high asymmetric attention from local versus non-local retail investors can be used to forecast future returns, implying that local retail investor's attention is informed attention. Our results are consistent with this notion, but we extend this importantly to return drift with inattention of local retail investors. We find that local retail attention's role is similar to institutional attention in that it weakens the return drift and does not induce return reversal. We also extend Cziraki, Mondria and Wu (2019) by documenting return reversals induced by "dumb" money – non-local retail investors.

The rest of the paper is organized as follows: Section 2 reviews some important studies in the literature; Section 3 introduces the dataset and methodology applied in this study; Section 4 and 5 presents main results and robustness test results. Section 6 concludes.

2. Literature Review

Our study relates to several strands of existing literature including studies on the market response to media news, the impact of attention-grabbing events, and the role of different types of investor attention in the context of market response to news.

Recent studies have documented mixed return response to the sentiment of media news. As expected, most of studies (Tetlock, 2007; Tetlock et al., 2008; Garcia, 2013; Loughran and McDonal, 2011; Engelberg,

Reed and Ringgenber 2012) find that negative return response associates to news with negative sentiment, but the association between positive response and news with positive sentiment is much weaker. Babolmorad and Massoud (2020) argues that this reflects the difficulty of accurately measuring positive sentiment, as positive words are easily negated in ways that are difficult to classify using traditional bag-of-words approaches. Babolmorad and Massoud (2020) propose a new machine learning approach called Topic-Adaptive Syntax Approach, which measures the sentiment of news considering not only the tone of words, but also word order and context. By doing so, they improve the accuracy of the measurement of sentiment and find strong association between positive return response and news with positive sentiment.

Our study also relates to a growing literature documenting reactions to attention-grabbing events. Gervais, Kaniel, and Mingelgrin (2001) find that shocks to a stock's volume of trade (which they link to visibility) lead to a rise in its price. Barber and Odean (2008) find that such events induce buying pressure from retail investors, but not institutional investors, and this trading does not produce superior returns for the retail investors. Grullon, Kanatas and Weston (2004) find that greater visibility afforded by advertising leads to improved liquidity and Lou (2014) finds advertising is used to manipulate retail attention and short term returns, similarly to Solomon (2012) and firm's use of investor relations firms. Seasholes and Wu (2007) find that attention-grabbing events lead to net buying of stocks by retail investors and trading losses by these investors, and Yuan (2015) finds that market-wide attention leads to trading and price changes.

This literature also has a strand highlighting the price-stabilizing role of institutional investors or the price-destabilizing role of retail investors. For example, Ben-Rephael, Da, and Israelson (2017) show that the post-announcement drifts caused by earning announcement and analyst recommendation change weaken conditional on abnormal attention of institutional, not retail investors. Ben-Rephael, Da, Easton, and Israelsen (2018) provide evidence that only abnormal institutional attention facilitates price discovery before the filing period of SEC 8-K filings. Chuprinin, Gorbenko, and Kang (2019) document the evidence that abnormal institutional attention improves price correction of mispricing at earning announcement. Da,

Hua, Hung, and Peng (2023) find that aggregate firm-level retail attention negatively predicts the market return whereas aggregate institutional attention weakly but positively predicts the market return.

Another strand of literature concerns the potentially stabilizing role retail attention plays on market efficiency and is closely related to this study. Evidence for price-stabilizing impacts from retail traders, through market, limit and short-selling trades and order imbalances comes from Kelley and Tetlock (2013, 2017) and Boehmer, Jones, Zhang and Zhang (2021). Liu, Peng, and Tang (2023) find that retail inattention results in lower contemporaneous return response to earning announcement even conditioning on abnormal institutional attention. They use the announcement of important macroeconomic news as an exogenous shock on retail attention to investigate the return response to earning news. Song (2020) looks at the role of retail attention to accounting information during earning announcement period. Consistent with the results in Liu, Peng, and Tang (2023), Song (2020) finds stronger contemporaneous return reactions and weaker post-announcement drift on earning news when retail investors pay abnormal attention to accounting information.

3. Data and Sample

The data used in this study comes from multiple sources. The media news are from 15 leading news providers, ranging between January 2014 and December 2018 (see Babolmorad and Massoud 2020). The news sentiment is identified using Topic-Adaptive Syntax (TASA) Approach proposed in Babolmorad and Massoud (2020). The institutional and retail attention data come from Bloomberg and Google Trends. The stock return and accounting information is from the Center for Research in Securities Prices (CRSP) and Compustat. The sample includes S&P 500 firms as of 2018 that: i) have at least one media news from at least one of the 15 news providers; ii) are not missing market equity or book equity values; iii) have valid institutional and retail attention data; iv) and are common equities with share code of 10 or 11 in CRSP.

We set the trading date on which the news released as the event date if the release time is during regular trading hours. If the news is released after market close, we assign the next available trading date as the

event date. We calculate the abnormal return for stock i on day t around event window n, $AR_{i,t,n}$ making use of the method proposed in Daniel, Grinblatt, Titman, and Wermers (1997) and Wermers (2004).

$$AR_{i,t,n} = R_{i,t,n} - R_{DGTW_i,t,n} \quad (1)$$

Where $R_{i,t,n}$ is the stock return for stock i, and $R_{DGTW_i,t,n}$ is the benchmark return of the corresponding $DGTW_i$ group including firms with similar characteristics, on day t, n days away from the media news announcement.

3.1. Media News Sentiment

We adopt Topic-Adaptive Syntax Approach (TASA) proposed in Babolmorad and Massoud (2020) to measure the news sentiment. This approach allows us to capture the tone of news headline at granular firm level and also helps us identify features of the news such as complexity.

Panel A of Table 1 provides details of the identified news features. In total, there are 130,381 media news items from 15 major news providers in our sample period between 2014 and 2018. Around 45% of news is identified as positive news, but only 15% is identified as negative news. This unbalanced distribution is consistent with the notion that firms have an incentive to manage the sentiment of news through press releases and media and tend to report more positive news than negative news (Solomon, 2012; Ahern and Sosyura, 2014). Another advantage of TASA approach is that it facilitates the identification of the focus of the news story, which we employ broken into two broad categories, complex news focusing on firm fundamentals ("Business") and news focusing on more easily digested information like market price movements ("Finance"). Panel A shows that around 70% of news can be identified as either Business news or Finance news or both. We will explore how investors respond differently to different types of news.

[Insert Table 1 about Here]

3.2. Investor Attention

We follow Ben-Rephael, Da, and Israelson (2017) who introduce the Bloomberg News Heat – Daily Max Readership variable to measure abnormal institutional attention[3]. The Daily Max Readership data measures the intensity of search and reading activity of Bloomberg users based on search and reading activity in previous 30 days. Ben-Rephael, Da, and Israelson (2017) substantiate that this measure represents institutional investors' behavior, linking it to trading volume, and document evidence that it contains unique information content relevant to institutional investors' behavior and not included in traditional attention measures such as retail attention measures. They define institutional attention as an indicator variable equal to one when the intensity of search and reading activity of Bloomberg users is equal to or above the 94th percentile of such activity over the previous 30 days. For more details about this measure, readers are referred to Ben-Rephael, Da, and Israelson (2017).

Da, Engelberg, and Gao (2011) established that the Google Search Volume Index (SVI) captures the intensity of retail investor attention. Recent studies document refinements by taking advantage of new functions provided in Google Trends. Basistha, Kurov, and Wolfe (2018) find that "related topics" and "related queries" are helpful. Cziraki, Mondria and Wu (2019) find that the geographical regions of search activity can be used to capture the attention from local retail investors. Zhou (2020) suggests using "investing" subcategory to filter out search activities irrelevant to investor attention (for instance, when looking up a stock ticker which is a common English word like CAT, for the firm Caterpillar, this filters out searches for cat videos – earlier work had no choice but to exclude firms like Caterpillar from their analysis). We follow Zhou (2020)'s approach and use the "investing" subcategory to identify search activities related to investors attention. We then construct retail attention in a similar fashion as that of institutional attention defining an indicator variable equal to one for stocks experiencing higher than 94th

[3] We will typically refer to this measure as institutional attention for brevity.

percentile search intensity in previous 30 days in Google Trends. We will also explore the attention of local retail investors making use of searches local to firm headquarters.

Panel B of Table 1 provides summary statistics of attention variable and firm characteristics at the firm-day level. Note that we categorize attention type into three groups: institutional attention only (INST); retail attention only (RETL); and both institutional and retail attention (BOTH). As these are indicator variables, the mean value suggests how frequently a firm receives different types of investor attention. We observe that firms, on average, receive non-overlapping institutional / retail attention 17.6% / 4.1% of total firm-day observations[4]. There are also 2.7% of firm-day observations are identified as receiving both types of investor attention. Other descriptive statistics on firm characteristics show that the firms in our sample are large with a $61 billion average market capitalization and liquid with very small bid-ask spreads, as we would expect given we are focused on S&P 500 firms.

Panel C of Table 1 shows pairwise Pearson correlation between these variables. Unsurprisingly, positive news is contemporaneously positively correlated with daily abnormal return (0.017) and negative news is contemporaneously negatively correlated with abnormal return (-0.023). Firms' market equity is positively correlated with institutional attention (0.390) but negatively correlated with retail attention (-0.039), suggesting that institutional investors may be more likely to pay attention to larger firms whereas retail investors tend to pay attention to smaller firms.

[4] Institutional abnormal attention is higher than retail attention by construction because of the fashion by which Bloomberg calculates it. First, the max readership is constructed in each hour of the trading day. Second, the daily max readership is the maximum value all the hourly max readership data. So, this way of construction will inflate the frequency of abnormal attention above the nominal 6% level that the 94th percentile ranking would suggest.

4. Results

4.1. Univariate Analysis

In this section, we show univariate analysis considering both the news sentiment and the types of investor attention, applying an event-based approach, presenting both contemporaneous return responses and cumulative abnormal returns after the news release. To compare the impact of news with different sentiment and investor attention, we categorize media news into positive or negative news using the Topic-Adaptive Syntax (TASA) Approach suggested in Babolmorad and Massoud (2020). We use four categorizations on attention to news, labelled Noatten, RETL, INST and BOTH. Noatten identifies events that receive neither retail nor institutional attention, RETL identifies events that only receive retail attention, INST identifies events that only receive institutional attention, and BOTH identifies events that receive both retail and institutional attention. Altogether we then have eight categories of attention and news sentiment, by interacting sentiment (positive and negative) with the four categories of attention.

4.1.1. Market responses to different news sentiment and abnormal attention

Figure 1 illustrates how market responds to media news conditioning on sentiment and attention. We document the cumulative abnormal return (CAR) starting from one day before to 20 days after news releases. The lines above and below zero are the CAR for positive and negative sentiment news respectively. To differentiate the CAR conditioning on the types of attention, we assign the dot-dash line, dash line, solid line, and dotted line to the group with no attention (Noatten), institutional attention only (INST), retail attention only (RETL), and both types of attention (BOTH) [5].

[Insert Figure 1 about Here]

[5] The CAR is calculated based on daily DGTW-adjusted abnormal returns. To highlight the comparison between groups, the CAR is provided in a relative sense by subtracting the CAR of a benchmark group without media news and without abnormal attention.

The most notable finding is that retail attention induces price overreaction on positive news, suggesting a destabilizing role of retail investors. This case is illustrated by the solid line in the upper half of Figure 1, depicting the CAR for positive news and abnormal retail attention (but no abnormal institutional attention), which exhibits a reverse U-shape. When news is released, it first draws strong contemporaneous return response, then the CAR reverses gradually to a level as low as that of news without attention. Untabulated results show that the CAR [1,20] is -59 basis points (t-stats=2.002). This return reversal documents the destabilizing role of retail attention on media news. It is consistent with the findings in Frank and Sanati (2018) that positive return shock is followed by return reversals with consideration of retail investors attention habits. This result, however, does not separate out informed retail investor attention, it does not condition on news type (simple versus complex) nor does it control for news days with multiple news releases, some positive, some negative. We will turn to more nuanced analysis making use of firm-level controls and panel time series techniques below.

In addition, we find that positive information is quickly incorporated into prices upon news announcement once institutional investors pay attention, suggesting a stabilizing role of institutional investors. The dashed line (which shows the price response when only abnormal institutional attention is observed) and dotted line in the upper half (which shows the price response when both retail investors and institutional investors pay abnormal attention), displays a sudden jump during [-1, 0] window and little fluctuation afterward. In other words, there are large contemporaneous market responses, and no further return drifts conditioning on institutional abnormal attention. Untabulated results show that the CAR [1,20] is only 6 basis points (t-stats =0.658) and 18 basis points (t-stats = 0.532) respectively, and statistically insignificant.

Similar to the findings on positive news, we observe strong contemporaneous responses and no further drifts to negative news conditioning on institutional attention. However, in contrast to positive news, we don’t observe price overreaction when only retail investors pay abnormal attention to negative news. This is consistent with the retail attention being more likely to induce buying pressure than selling pressure

because they are less likely to be involved in short selling (Baber and Odean, 2008; Cziraki, Mondria, and Wu, 2019).

4.1.2. Further analysis

Table 2 provides a closer look of return responses in the window of three days around media news. Panel A presents the abnormal return to news with positive sentiment. The results of the day of the news event (day 0 in the table) show that the contemporaneous market response conditions on the type of investor attention. When the news doesn't receive abnormal attention from either retail or institutional investors, there is insignificant abnormal return on the news event day. But the return responses are much stronger if at least one type of investor pays abnormal attention. For example, news events receiving retail (institutional) abnormal attention are associated with an abnormal return of 16 (15) basis points. If the news receives both types of attention, the return response is over three times as large, 57 basis points. Another finding is that investor (in)attention also impacts the return response after a news announcement, at least at the 3 day horizon. There is a strong, statistically significant drift when there is no attention to positive news. We will provide additional evidence below to explore if this pattern is economically significant and robust to controls.

[Insert Table 2 about Here]

Panel B of Table 2 presents the daily abnormal return to news with negative sentiment. We find that the magnitude of the impact of attention on return response is similar to positive news. When news receives neither retail nor institutional attention, the contemporaneous return response is the smallest in magnitude. The return response is larger if at least one type of investors pays attention. Not surprisingly, when both types of investors pay abnormal attention to news, there is as large as 70 basis point daily contemporaneous (negative) abnormal return. There is some evidence of reversal for the case of investor inattention, but as we will explore, this largely disappears when we introduce controls.

These results primarily tell us that our measure of sentiment is, on average, correctly identifying positive and negative news sentiment days, and consistent with the literature we see a drift with a lack of attention from investors to positive news.

4.2. Multivariate Analysis

In this section, we perform panel time series regression analysis to tease out the marginal effects of news sentiment on financial markets conditioning on different types of attention while controlling for a broad range of control variables. We first explore a very high-level view of the response of prices to news and attention then break down these price responses to explore the impact of different types of investors, different types of news (both valence and complexity), and differently informed investor attention. This analysis will help us understand conflicting results in the literature on the impact of investor attention on market prices.

4.2.1. Pure vs Mixed sentiment

To start with, we perform an analysis to explore the impact on market prices of news sentiment and overall investor attention, distinguishing news days for which the news sentiment is consistently positive (negative) or mixed. We estimate the following regression,

$$CAR_{i,t} = \alpha + \beta_1 * Pure_{i,t} + \beta_2 * Pure_{i,t} * Atten_{\mathrm{i,t}} + \gamma_1 * Mix_{i,t}$$
$$+\gamma_2 * Mix_{i,t} * Atten_{\mathrm{i,t}} + \delta_1 * Atten_{\mathrm{i,t}} + \vartheta_1 * Controls_{i,t} + \varepsilon_{i,t} \qquad (4)$$

where $CAR_{i,t}$ is cumulative abnormal return for firm *i* at date *t*. $Pure_{i,t}$ is a sentiment index variable which equals one (negative one) when there is only positive (negative) news for firm *i* at date *t*, and zero otherwise[6]. $Mix_{i,t}$ is an indicator variable equals one if there are mixed tone of news, namely both positive and negative news, for firm *i* at date *t* and zero otherwise. $Atten_{\mathrm{i,t}}$ is an indicator variable equals one if there is

[6] We ignore the neutral news by assuming that neutral news have insignificant effects on stock returns. This assumption is supported in the untabulated results that there is no significant effects of news with neutral tone.

institutional and/or retail abnormal attention for firm i at date t and zero otherwise. $Controls_{i,t}$ contain a broad range of firm characteristic variables such as log of market equity (ln(ME)), book-to-market ratio (BM), daily abnormal volume (AVOL), standard deviation of daily returns (SDRET), (high – low)/high (HLtH), daily bid-ask spread (Spread), daily stock turnover (Turnover), and lagged return (CAR[-5,-2]). Table 3 provides the estimation results for equation (4) based on full sample period between Jan 1st, 2014 and Dec 31st, 2018. The analysis is performed in the windows of [-1, 0], [1, 5], [1, 10], [1, 15], and [1, 20] around the event dates.

[Insert Table 3 about Here]

We find evidence that investor attention facilitates information incorporation of media news into asset prices. In the windows of [1, 5], [1, 10], [1, 15], and [1, 20] we observe that a pure sentiment to news, when associated with investor inattention, is followed by a statistically significant return persistence, suggesting a delay of information transmission. Specifically, the CAR has a gradual increase from 4.6 basis points to as high as 16.6 basis points from [1, 5] to [1, 20] window. However, the CAR after a pure sentiment news release is statistically insignificant when there is investor attention. This is consistent with the idea that investor attention facilitates information incorporation and removes return persistence. This finding is analogous to that of Ben-Rephael, Da, and Israelson (2017), which documents that the post earning announcement drifts weaken conditioning on institutional attention.

Also, we find that both the sentiment measure and the investor attention measure work sensibly on contemporaneous price movements. The results on CAR [-1, 0] show that a pure sentiment news is associated with a consistent contemporaneous return response, and the magnitude of the response also conditions on whether there is investor attention. Specifically, when there is no attention, a pure sentiment news is associated with a 5.9 basis points daily abnormal return within the window of [-1, 0]. The positive sign means that positive news receives positive responses and negative news receive negative responses[7],

[7] The attention and price response are contemporaneous and hence we can make no firm conclusions that one drives the other. For this reason, most of our analysis focuses on windows of time following the news event.

suggesting that the sentiment of news is incorporated into asset prices, consistent with the findings in Babolmorad and Massoud (2020). In addition, there is an additional 46 basis points return response if there is investor attention on the news day.

It is also interesting to investigate the effects of mixed sentiment news. We observe that there is a small 2.6 basis points negative return response with investor inattention if there are both positive and negative news in the same day, suggesting that the effects of negative and positive sentiment would cancel each other on average. Interestingly, if there is investor attention during the day of news release, we find an additional negative 22 basis points of abnormal return, implying that negative news dominants positive news when it occurs with investor attention. This conflicting news is incorporated into prices quickly, as there is no statistically or economically significant return drift after the news event day.

These results give us our first indications of the importance of both attention from investors and unambiguous news sentiment, and they help us begin to understand the delicacy of price responses; news is only impactful if it is paid attention to (or perhaps only impactful news is paid attention to), and if there is conflicting news, displaying on the same day both positive and negative sentiment, the impact on prices is similar to what it would be with only negative news valence.

4.2.2. Institutional vs Retail Attention

There is a growing literature exploring the role of retail investor attention on financial markets, but no consensus on the impact of this attention. Hence, we are interested in separating out the effects of attention from different types of investors under different conditions to answer several related questions. To start, we look at the impact from retail investors relative to institutional investors. This can be investigated by simply splitting the attention (Atten) indicator variable into institution only (INST), retail only (RETL), and both attention (BOTH), and updating the specification as below:

$$CAR_{i,t} = \alpha + \beta_1 * Pure_{i,t} + \beta_2 * Pure_{i,t} * INST_{\mathrm{i,t}} + \beta_3 * Pure_{i,t} * RETL_{\mathrm{i,t}} + \beta_4 * Pure_{i,t} * BOTH_{\mathrm{i,t}} + \gamma_1 * Mix_{i,t} + \gamma_2 * Mix_{i,t} * INST_{\mathrm{i,t}} + \gamma_3 * Mix_{i,t} * RETL_{\mathrm{i,t}} + \gamma_4 * Mix_{i,t} * BOTH_{\mathrm{i,t}} + \delta_1 * INST_{\mathrm{i,t}} + \delta_2 * RETL_{\mathrm{i,t}} + \delta_3 * BOTH_{\mathrm{i,t}} + \vartheta_1 * Controls_{i,t} + \varepsilon_{i,t} \quad (5)$$

where $INST_{\mathrm{i,t}}$ is an indicator variable equaling one if there is only institutional attention on firm *i* at date *t* and zero otherwise, $RETL_{\mathrm{i,t}}$ is an indicator variable equaling one if there is only retail attention on firm *i* at date *t* and zero otherwise and $BOTH_{\mathrm{i,t}}$ is an indicator variable equaling one if there are both institutional and retail attention on firm *i* at date *t* and zero otherwise. Table 4 provides the estimation on equation (5) based on full sample period between Jan 1st, 2014 and Dec 31st, 2018.

[Insert Table 4 about Here]

Consider first retail attention. In the case that there is only retail attention, we observe an additional 48 basis points during [-1, 0] window on pure sentiment index. Interestingly, we find a conditional reversal of 49 basis points during [1, 20] window, suggesting that the retail attention will first induce a price overreaction with the news release, then the price will fully reverse. This is a striking result showing that retail investors' attention may play a destabilizing role on financial markets. It is consistent with the studies documenting retail attention's destabilizing role (Barber and Odean, 2008; Da, Engelberg, and Gao, 2011), but inconsistent with those documenting stabilizing role for retail attention (Liu, Peng, and Tang, 2023; Zhou, 2020). We will explore further analysis to show much of this reversal is due to over-reaction to positive news versus negative news, and how much of this depends on the impact of uninformed retail investors.

In contrast to retail attention, the institutional attention is associated with much smaller reversals (less than 10 bps), suggesting that institutional attention stabilizes financial markets. These results also suggest that the effect of aggregated attention reported in Table 3 are driven by institutional investors, and should we neglect to control for different investor classes we are likely to obscure important price reactions to news and investor attention.

4.2.3. Positive vs Negative Sentiment

The imposition of a symmetric response to positive and negative sentiment news is fairly common, such as we see in Ben-Rephael, Da, and Israelson (2017), but this symmetry obscures potential variation between positive and negative news sentiment. Recent studies show that there are asymmetric impacts between positive and negative shocks on financial markets (Frank and Sanati, 2008). In addition, studies on retail attention also document that there are asymmetric impacts of retail attention (Barber and Odean, 2008; Hartzmark, 2014) on positive and negative news.

In this section, we look at the effects of positive and negative news separately. To simplify the specification we look at negative news that pools pure negative news and mixed sentiment together given that negative news dominants positive news when there are multiple news stories, as shown in previous results. The specification is,

$$CAR_{i,t} = \alpha + \beta_1 * Negative_{i,t} + \beta_2 * Negative_{i,t} * INST_{\mathrm{i,t}} + \beta_3 * Negative_{i,t} * RETL_{\mathrm{i,t}} + \beta_4 * Negative_{i,t} * BOTH_{\mathrm{i,t}} + \gamma_1 * Pure\ Positive_{i,t} + \gamma_2 * Pure\ Positive_{i,t} * INST_{\mathrm{i,t}} + \gamma_3 * Pure\ Positive_{i,t} * RETL_{\mathrm{i,t}} + \gamma_4 * Pure\ Positive_{i,t} * BOTH_{\mathrm{i,t}} + \delta_1 * INST_{\mathrm{i,t}} + \delta_2 * RETL_{\mathrm{i,t}} + \delta_3 * BOTH_{\mathrm{i,t}} + \vartheta_1 * Controls_{i,t} + \varepsilon_{i,t} \quad (6)$$

where $Negative_{i,t}$ is an indicator variable equals one if there is negative news announced for firm *i* at date *t* and zero otherwise. $Pure\ Positive_{i,t}$ is an indicator variable equals one if there is positive news and no negative news announced for firm *i* at date *t* and zero otherwise. Table 5 provides the estimation on equation (6) based on full sample period between Jan 1st, 2014 and Dec 31st, 2018.

[Insert Table 5 about Here]

We observe asymmetric return responses to positive and negative news. We find that the previously documented return drifts and reversals are mainly driven by pure positive news. There is a 5 basis points contemporaneous return response for positive news in window [-1, 0], and a 21 basis points return drift in

window [1, 20] without attention, both strongly statistically significant. Conditioning on retail attention, we find an additional 48 basis points return response when the news released, which is followed by a reversal of over 55 basis points. These results suggests that retail attention destabilizes prices by inducing a price overreaction, similar to what we observe looking at pure sentiment, but now identifying this as associated with only positive sentiment. Refinements to be presented below will show that this reversal appears to be driven by uninformed retail investors, rather than informed (local) retail investors.

4.2.4. Subsample Analysis for Different News Features: Complex vs Simple News

We further investigate the effects of sentiment and investor attention from different features of news, with a categorization meant to identify differing market responses to news that is complex and news that is relatively simple to digest. The Topic-Adaptive Syntax (TASA) Approach enables us to categorize news into business related (complex) news and finance related (simple) news. According to Babolmorad and Massoud (2020), business news is that discussing firm's operations and management that are beyond the analysis of stock prices, such as launching new products, while finance news is that directly reporting the trading or fundamental financial information of stocks, such as discussion of earning reports. Untabulated results show that 14.2% (12.5%) of positive (negative) finance news are being paid retail abnormal attention, which is more frequently than that received by positive and negative business news, at 9.1% and 10.2% each. Table 6 provides the estimation of the extended analysis on Negative and Pure Positive News by splitting news by features.

[Insert Table 6 about Here]

First, we observe statistically and economically significant return reversals only for the case of positive business (complex) news when accompanied with retail abnormal attention - see row labelled "Pure Positive_Bus *RETL". Second, we find statistically and economically significant return drift only for the case of positive finance (simple) news when accompanied by a lack of investor (retail and institutional) attention - see row labelled "Pure Positive_Fin".

These results are consistent with the findings in Fedyk (2021), who documents that gradual information diffusion and investor inattention drives the trading for straightforward news. In our case, the gradual information diffusion, due to lack of attention, results in return persistence on positive non-complex news. These results also present a new stylized fact, that retail attention in absence of institutional attention is destabilizing only if the news is complex, and highlights the importance of controlling not only for who is paying attention, but who else is paying attention and how complex is the information environment. Analysis of market reaction that does not control for these covariates can easily flip results and obscure the relationship between attention, news and market responses.

4.2.5. Subsample Analysis for Local Retail Attention

Strands of the literature have documented a potentially stabilizing role for retail attention, inconsistent with much of the rest of the literature and inconsistent with the evidence we have provided so far here. In this section, we focus on the analysis of the impact of attention by identifying another type of retail investor, local retail investors, defined as retail investors who are in the same state as that of the firm headquarters. Previous studies (Cziraki et al., 2019; Zhou, 2020) show that local attention could be informed attention. Table 7 provides the estimation of the extended analysis including both local and national retail investor attention. We no longer break out situations of one type of investor attention only versus overlapping attention cases because of the number of interaction variables needed (seven versus the three we have previously considered), so we have dummy variables for only the case of institutional investor attention, local retail attention, and national retail attention. Untabulated results indicate that our main results are insensitive to this alternative specification.

[Insert Table 7 about Here]

We find that the impact of local retail attention is stabilising, similar to institutional attention, but in sharp contrast to the destabilizing impact of national retail attention. That is, local retail attention is not associated

with a return reversal while in contrast, national retail abnormal attention results in a large economic and statistically significant reversal of over 60 basis points of CAR on positive news.

5. Robustness Tests

5.1. Sentiment Measure: Textual-Based vs Return Shock

While we use a direct measure of the sentiment of the news, several papers have proxied for this sentiment by using the sign of the return when the news is released (see, for instance, Frank and Sanati, 2018; Ma, Xiong, and Feng, 2020). In this section, we explore how our textual-based approach compares to this return shock approach.

[Insert Table 8 about Here]

Table 8 provides the estimation results using the specification outlined in equation (6) by measuring the sentiment using return shock approach. Negative (Positive) is an indicator variable equals one if the contemporaneous return response is negative (positive) during the day news announced. The estimation results are qualitatively similar to those we reported in Table 5 but lacks statistical significance. In another words, the statistical significance for positive news without attention and for positive news with retail attention disappears although the sign remains consistent with the results in Table 5. Considering that the magnitude on the coefficients for positive news with retail attention are also very similar between table 5 and table 8, the main take away for us is that using return sign as a proxy for news sentiment is consistent with directly measuring sentiment of news through textual based approach with machine learning techniques used in our study, but perhaps unsurprisingly, appears to be a noisy measure. This finding reinforces our choice of using textual-based approach to measure sentiment as it provides a more accurate measure and helps us understand why some impacts from attention and news have gone unnoticed.

5.2. Fama-MacBeth Approach

Table 9 provides the estimation results using the specification outlined in equation (6) by using Fama and MacBeth approach and Newey-West heteroskedasticity and autocorrelation consistent standard errors, to account for the overlapping return windows we have with the CAR analysis. The results are consistent with what found using panel regression approach. Again we see strong day-of returns on the news event, consistent with the sentiment, by far the largest magnitude day-of returns happen with positive sentiment news events, there is strong drift if there is both no abnormal institutional or abnormal retail attention, and there is a strong reversal when there is only retail investor attention, consistent with overall retail investor attention destabilizing markets, at least if we do not separate out informed retail investor attention. We find that both the magnitude and statistical significance are like those we reported in table 5. This suggests that our results are insensitive to the method we use for the estimation.

[Insert Table 9 about Here]

6. Conclusion

There is a debate in the literature on the impact of the attention of different types of investors on market efficiency, and with conflicting results in particular for retail investor attention. While institutional attention is typically found to be stabilizing, some work demonstrates that retail attention is destabilizing and some work finds it stabilizing to financial markets. This paper contributes to the debate by considering the type of media news (complex versus simple), the sentiment of that news (positive versus negative versus mixed or neutral), and investor attention to news (institutional versus local retail versus national retail). Work in the field has typically considered proxies for news rather than direct measures as we do, typically ignores news complexity, typically imposes a symmetric price response to negative and positive sentiment, often obscures the impact of retail investors on market prices by not considering them separately from institutional investors, when retail investors are considered only a very few papers have disentangled

informed retail investors from the uninformed, and no papers to our knowledge have considered the simple modification of adding an interaction variable to capture the impact of news to which both institutional and retail investors are attentive.

We show that retail attention does indeed destabilize financial markets by inducing price overreactions to positive news, but only if it is from uninformed retail investors. We find that when retail attention destabilizes the market it is when retail investors appear to struggle digesting complex business information and then only if the news is of a positive sentiment; negative sentiment news and retail investor attention are not associated with market instability, likely an outcome of retail investor's well-documented reluctance to short sell on negative news. This also likely reflects the retail investors' incapacity to correctly interpret the usefulness of the complicated information as well as their tendency of overreacting to attention-grabbing positive media news. Studies that do not find statistical significance for the destabilizing role of retail attention likely obscure this by mixing positive and negative news events together or by failing to isolate informed from uninformed retail investors.

We find that institutional attention plays a stabilizing role in any context we explore, complex or simple news, positive or negative news sentiment, with or without retail investor attention, consistent with institutional investors being smart money. Studies that find investor attention is associated with market instability are almost surely obscuring the stabilizing effect of institutional attention if they do not separate out news events to which only retail investors are attentive. We also find that the price overreaction induced by retail attention is only apparent when institutional attention is absent. Studies that fail to find retail attention to be destabilizing likely do not focus on news which institutional investors ignore or by failing to isolate informed from uninformed retail investors.

Our exploration of the role of a specific type of retail attention – local retail attention, is particularly important. These are retail investors possessing an informational advantage for local firms. We find this subgroup of retail investors appear to be smart investors and appear to improve market efficiency (prices move with their attention to news and does not subsequently drift or reverse). This may explain why

previous studies show mixed results on the role played by retail investors. Retail investors are a complicated set of investors who can, in the right context, stabilize markets for some firms (local to these investors) and simultaneously destabilize financial markets for other firms (that they are not local to). The aggregated effects of retail attention is therefore context specific as to which subgroup of retail investors play the dominant role and to what the sentiment of the news is, positive or negative, and to how consistent the tone of the news is across the news stories available.

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Figure 1. Cumulative Abnormal Return and News Sentiment and Abnormal Attention

Figure 1 illustrates the market responses to news with different sentiment and with different types of abnormal attention. This figure draws the trajectory of DGTW-adjusted CAR in the window of [-1, 20]. The dot-dash line, dash line, solid line, and dotted line represent the CAR [-1,20]] with no attention (Noatten), institutional attention only (INST), retail attention only (RETL), and both attention (BOTH). The lines in the upper and lower half represent the CAR [-1,20] for the media news identified as positive and negative respectively.

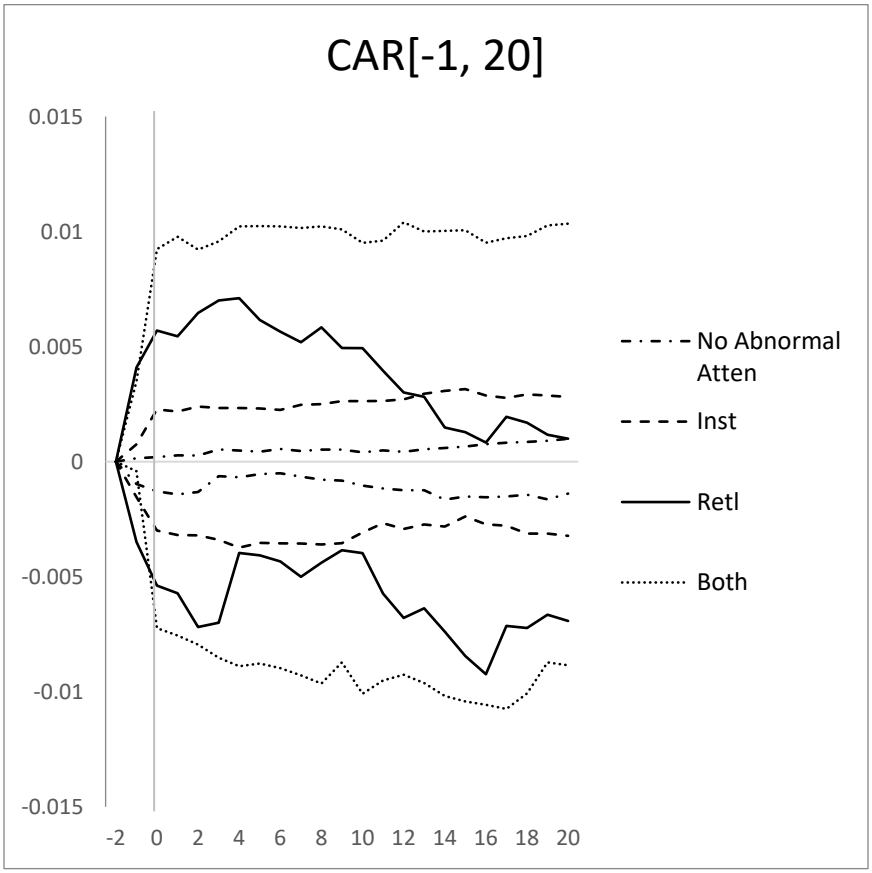

Table 1. Summary Statistics

This table provides the summary statistics for the data sample between January 2014 and December 2018. Panel A provides the tone of media news identified using the Topic-Adaptive Syntax (TASA) Approach in Babolmorad and Massoud (2020) and the categorization of news. Panel B provides the summary statistics of investor attention and firm characteristics in firm-day level. INST, RETL, and BOTH are indicator variables equals one if there is institutional attention only, retail attention only, and both types of attention for the stock. AR is daily DGTW-adjusted Abnormal Return. ME and BM are market equity and book-to-market ratio. AVOL is daily abnormal trading volume. SDRET is the standard deviation of daily stock returns. HLtH is the ratio of (High - Low)/High of daily price. Spread and Turnover is daily bid-ask spread and daily stock turnover. Panel C provides pairwise Pearson correlation between all the variables.

Panel A: News Tone and News Features Category

	Business	Finance	Business & Finance	Unverified	Total	%Total
Negative	5748	5979	2947	6048	20722	15.89%
Neutral	14097	12282	6154	17564	50097	38.42%
Positive	16532	16735	9453	16842	59562	45.68%
Total	36377	34996	18554	40454	130381	100.00%
%Total	27.90%	26.84%	14.23%	31.03%	100%	

Panel B: Firm Characteristics

Variable	Descriptions	Nobs	Mean	Std	Median	P10	P90
INST	Institutional Attention Only	233,065	17.60%	38.08%	0	0	1
RETL	Retail Attention Only	233,065	4.07%	19.76%	0	0	0
BOTH	Both Institutional and Retail Attention	233,065	2.73%	16.29%	0	0	0
AR	Daily DGTW-adjusted Abnormal Return	233,065	0.009	1.697	-0.006	-1.426	1.456
ME	Market Equity (Million in USD)	233,065	61,235	91,960	24,722	1,441	174,744
BM	Book-to-Market Ratio	233,065	0.560	0.788	0.351	0.106	1.024
AVOL	Abnormal Volume	233,065	1.023	1.296	0.867	0.516	1.598
SDRET	Standard Deviation of Daily Return	233,065	0.017	0.011	0.014	0.008	0.028
HLtH	(High - Low)/High	233,065	0.022	0.016	0.018	0.009	0.040
Spread	Bid-Ask Spread (bps)	233,065	2.5391	4.8636	1.1711	0.4528	5.299
Turnover	Daily Turnover	233,065	0.010	0.020	0.006	0.003	0.020

Panel C: Pearson Correlation between Variables

	AR	Negative	Neutral	Positive	INST	RETL	BOTH	SIZE	BM	AVOL	SDRET	HLtH	Spread
Negative	-0.023												
Neutral	0.003	0.365											
Positive	0.017	0.356	0.449										
INST	0.011	0.110	0.142	0.149									
RETL	0.007	-0.018	-0.019	-0.018	-0.095								
BOTH	0.005	0.094	0.101	0.111	-0.077	-0.035							
ME	-0.001	0.323	0.404	0.390	0.189	-0.039	0.056						
BM	-0.005	-0.048	-0.061	-0.063	0.029	0.002	-0.009	-0.129					
AVOL	-0.068	0.039	0.038	0.046	0.074	0.013	0.162	-0.010	0.003				
SDRET	0.000	-0.050	-0.072	-0.079	-0.076	-0.015	-0.024	-0.217	-0.033	0.083			
HLtH	0.006	-0.016	-0.039	-0.035	0.092	0.016	0.153	-0.199	-0.064	0.281	0.488		
Spread	-0.007	-0.056	-0.084	-0.086	-0.082	0.015	-0.019	-0.213	0.083	0.013	0.297	0.306	
Turnover	0.021	0.020	0.021	0.029	0.074	-0.006	0.169	-0.143	0.004	0.290	0.311	0.439	0.057

Table 2. DGTW-Adjusted Abnormal Return

This table provides the market responses to media news. The DGTW-Adjusted Abnormal Return is calculated using two-stage approach discussed in section 4. AR[-3], ..AR[3] are abnormal returns calculated as AR_n in equation (3). The t-stats are Newey-West standard errors that is adjusted for heteroskedasticity and autocorrelation correction. Panel A and Panel B shows the results on news with positive and negative tone respectively. Noatten, RETL, INST, and BOTH presents groups of news with no attention, retail attention only, institutional attention only and both types of attention.

Panel A: DGTW-Adjusted Abnormal Return for Positive News

Sentiment	Attention	Trading Days	DGTW-Adjusted Abnormal Return						
			AR [-3]	AR [-2]	AR [-1]	AR [0]	AR [1]	AR [2]	AR [3]
One or More Positive News	Noatten	1223	0.02%	0.05%***	0.01%	0.00%	0.02%*	0.01%	0.03%***
			(1.48)	(3.09)	(1.22)	(0.00)	(1.73)	(0.81)	(3.06)
	RETL	679	0.13%***	0.15%*	0.41%***	0.16%**	-0.02%	0.11%*	0.06%
			(2.90)	(1.72)	(2.67)	(2.01)	(-0.28)	(1.70)	(1.30)
	INST	1210	0.05%***	0.01%	0.07%***	0.15%***	0.00%	0.03%*	0.00%
			(2.70)	(0.54)	(3.14)	(6.28)	(-0.02)	(1.90)	(0.01)
	BOTH	898	0.14%***	0.12%*	0.35%***	0.57%***	0.06%	-0.05%	0.04%
			(2.76)	(1.83)	(3.33)	(4.24)	(0.83)	(-0.77)	(0.74)

Panel B: DGTW-Adjusted Abnormal Return for Negative News

Sentiment	Attention	Trading Days	DGTW-Adjusted Abnormal Return						
			AR [-3]	AR [-2]	AR [-1]	AR [0]	AR [1]	AR [2]	AR [3]
One or More Negative News	Noatten	1210	-0.03%	-0.04%*	-0.10%***	-0.04%***	0.00%	0.02%	0.07%***
			(-1.59)	(-1.79)	(-4.72)	(-2.63)	(-0.26)	(1.07)	(3.90)
	RETL	309	0.14%*	-0.13%	-0.35%**	-0.19%	-0.02%	-0.14%	0.02%
			(1.75)	(-1.20)	(-1.96)	(-1.38)	(-0.19)	(-1.42)	(0.32)
	INST	1165	-0.02%	-0.05%**	-0.15%***	-0.15%***	-0.01%	0.01%	-0.01%
			(-0.80)	(-2.16)	(-5.14)	(-4.76)	(-0.49)	(0.41)	(-0.52)
	BOTH	669	0.10%**	0.15%***	-0.04%	-0.69%***	-0.02%	-0.03%	-0.05%
			(1.97)	(2.82)	(-0.37)	(-4.35)	(-0.28)	(-0.47)	(-0.94)

Table 3 The Effect of Pure vs Mix Sentiment News Conditioning on Abnormal Attention

This table provides estimation results of panel regression analysis for equation (4) in the sample period between Jan 1st, 2014 and Dec 31st, 2018. The dependent variables are DGTW-adjusted cumulative abnormal returns in the window of [-1, 0], [1, 5], [1, 10], [1, 15], and [1, 20]. Pure is a sentiment index equals one and negative one if there is only positive or negative news and zero otherwise. Mix is an indicator variable equals one if there are both positive and negative news announced for the same firm in the same date. Atten is an indicator variable equals on if there is either institutional or retail attention for the related firm in the same date as the news released. The standard errors are clustered at firm and date level. *, **, *** indicates significance at 10%, 5%, and 1% level.

	DGTW-Adjusted Cumulative Abnormal Return				
	(1) **[-1, 0]**	**(2)** **[1, 5]**	**(3)** **[1, 10]**	**(4)** **[1, 15]**	**(5)** **[1, 20]**
Pure	0.059***	0.046*	0.078*	0.142**	0.166**
	(3.81)	(1.66)	(1.81)	(2.48)	(2.49)
Pure*Atten	0.460***	0.037	-0.009	-0.075	-0.093
	(8.21)	(1.00)	(-0.16)	(-1.00)	(-1.23)
Mix	-0.026	0.037	0.010	-0.036	-0.011
	(-0.81)	(0.43)	(0.06)	(-0.17)	(-0.04)
Mix*Atten	-0.222***	-0.027	-0.022	0.072	0.041
	(-2.78)	(-0.32)	(-0.19)	(0.46)	(0.22)
Atten	0.063***	-0.003	0.042	0.042	0.051
	(2.80)	(-0.14)	(1.07)	(0.80)	(0.92)
Ln(ME)	-0.002	0.005	0.010	0.018	0.030
	(-0.33)	(0.35)	(0.38)	(0.46)	(0.59)
BM	-0.007	-0.063***	-0.123***	-0.187***	-0.243***
	(-1.13)	(-4.98)	(-5.14)	(-5.35)	(-5.28)
AVOL	-0.129**	-0.010	-0.020	-0.002	-0.003
	(-2.12)	(-1.07)	(-1.02)	(-0.07)	(-0.11)
SDRET	-1.385	-0.219	-1.722	3.132	11.260
	(-0.93)	(-0.08)	(-0.30)	(0.36)	(1.02)
HLtH	4.506*	-0.478	0.553	-4.139	-6.496
	(1.73)	(-0.29)	(0.25)	(-1.29)	(-1.59)
Spread	0.0017	0.0161**	0.0301*	0.0504**	0.0657**
	(0.64)	(2.15)	(1.90)	(2.16)	(2.20)
Turnover	-1.453	0.473	2.305	3.385	1.414
	(-1.44)	(0.18)	(0.29)	(0.27)	(0.09)
CAR[-5,-2]	17.153***	-1.422***	-1.844**	-1.375	-1.743
	(54.56)	(-2.75)	(-2.43)	(-1.48)	(-1.37)
Constant	0.037	0.015	-0.003	-0.059	-0.210
	(0.32)	(0.09)	(-0.01)	(-0.12)	(-0.32)
Observations	219,487	219,487	219,487	219,487	219,487
Adj R^2	0.091	0.002	0.003	0.003	0.004
DATE FE	Yes	Yes	Yes	Yes	Yes

Table 4 The Effect of Pure vs Mix Sentiment News Conditioning on Attention Types

This table provides estimation results of panel regression analysis for equation (5) in the sample period between Jan 1st, 2014 and Dec 31st, 2018. The dependent variables are DGTW-adjusted cumulative abnormal returns in the window of [-1, 0], [1, 5], [1, 10], [1, 15], and [1, 20]. Pure is a sentiment index equals one and negative one if there is only positive or negative news and zero otherwise. Mix is an indicator variable equals one if there are both positive and negative news announced for the same firm in the same date. INST is an indicator variable equals one if there is only institutional abnormal attention and zero otherwise. RETL is an indicator variable equals one if there is only retail abnormal attention and zero otherwise. BOTH is an indicator variable equals one if there are both institutional and retail abnormal attention and zero otherwise. Controls contain a broad range of firm characteristic variables such as log of market equity (ln(ME)), book-to-market ratio (BM), daily abnormal volume (AVOL), standard deviation of daily returns (SDRET), (high – low)/high (HLtH), daily bid-ask spread (Spread), daily stock turnover (Turnover), and lagged return (CAR[-5,-2]). The standard errors are clustered at firm and date level. *, **, *** indicates significance at 10%, 5%, and 1% level.

	DGTW-Adjusted Cumulative Abnormal Return				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
	[-1, 0]	**[1, 5]**	**[1, 10]**	**[1, 15]**	**[1, 20]**
Pure	0.058***	0.045	0.077*	0.141**	0.165**
	(3.73)	(1.62)	(1.78)	(2.46)	(2.47)
Pure*INST	0.270***	0.013	-0.027	-0.081	-0.095
	(6.43)	(0.32)	(-0.46)	(-1.03)	(-1.15)
Pure*RETL	0.480***	0.013	-0.144	-0.377*	-0.491*
	(3.17)	(0.11)	(-0.88)	(-1.83)	(-1.96)
Pure*BOTH	1.448***	0.216	0.222	0.207	0.223
	(8.02)	(1.52)	(1.36)	(1.07)	(1.26)
Mix	-0.028	0.035	0.007	-0.038	-0.014
	(-0.87)	(0.40)	(0.05)	(-0.18)	(-0.05)
Mix*INST	-0.156**	-0.007	0.016	0.119	0.065
	(-2.41)	(-0.09)	(0.14)	(0.73)	(0.32)
Mix*RETL	-0.514**	-0.120	-0.043	-0.471	-0.453
	(-2.02)	(-0.40)	(-0.13)	(-1.12)	(-0.90)
Mix*BOTH	-0.301	0.001	-0.035	0.203	0.227
	(-1.48)	(0.00)	(-0.15)	(0.71)	(0.70)
INST	0.060**	-0.011	0.038	0.053	0.048
	(2.19)	(-0.36)	(0.78)	(0.83)	(0.68)
RETL	0.118***	0.050	0.111	0.103	0.138
	(3.05)	(1.08)	(1.48)	(1.24)	(1.39)
BOTH	-0.018	-0.074	-0.091	-0.198	-0.125
	(-0.18)	(-0.80)	(-0.72)	(-1.50)	(-0.83)
Observations	219,487	219,487	219,487	219,487	219,487
Adj R^2	0.092	0.002	0.003	0.003	0.004
Controls	Yes	Yes	Yes	Yes	Yes
DATE FE	Yes	Yes	Yes	Yes	Yes

Table 5 The Effect of Negative vs Pure Positive Sentiment Conditioning on Attention Types

This table provides estimation results of panel regression analysis for equation (6) in the sample period between Jan 1st, 2014 and Dec 31st, 2018. The dependent variables are DGTW-adjusted cumulative abnormal returns in the window of [-1, 0], [1, 5], [1, 10], [1, 15], and [1, 20]. Negative is an indicator variable equals one if there is negative news released and zero otherwise. Pure Positive is an indicator variable equals one if there is only positive news announced for the same firm in the same date. INST is an indicator variable equals one if there is only institutional attention and zero otherwise. RETL is an indicator variable equals one if there is only retail attention and zero otherwise. BOTH is an indicator variable equals one if there are both institutional and retail attention and zero otherwise. Controls contain a broad range of firm characteristic variables such as log of market equity (ln(ME)), book-to-market ratio (BM), daily abnormal volume (AVOL), standard deviation of daily returns (SDRET), (high – low)/high (HLtH), daily bid-ask spread (Spread), daily stock turnover (Turnover), and lagged return (CAR[-5,-2]). The standard errors are clustered at firm and date level. *, **, *** indicates significance at 10%, 5%, and 1% level.

	DGTW-Adjusted Cumulative Abnormal Return				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
	[-1,0]	**[1, 5]**	**[1, 10]**	**[1, 15]**	**[1, 20]**
Negative	-0.113***	0.055	0.003	-0.015	0.007
	(-3.13)	(1.02)	(0.03)	(-0.12)	(0.04)
Negative*INST	-0.444***	-0.133	-0.024	0.010	-0.126
	(-4.98)	(-1.26)	(-0.19)	(0.06)	(-0.64)
Negative*RETL	-0.806**	-0.215	-0.275	-0.489	-0.433
	(-2.57)	(-0.65)	(-0.67)	(-0.94)	(-0.66)
Negative*BOTH	-1.931***	-0.064	-0.035	0.146	-0.069
	(-6.66)	(-0.24)	(-0.11)	(0.42)	(-0.22)
Pure Positive	0.050***	0.068*	0.100*	0.178**	0.210**
	(2.94)	(1.95)	(1.73)	(2.27)	(2.29)
Pure Positive*INST	0.250***	-0.021	-0.041	-0.095	-0.155
	(5.48)	(-0.37)	(-0.54)	(-1.04)	(-1.53)
Pure Positive*RETL	0.479***	0.006	-0.182	-0.455**	-0.552**
	(3.15)	(0.05)	(-1.06)	(-2.03)	(-2.01)
Pure Positive*BOTH	1.362***	0.216	0.233	0.227	0.186
	(6.21)	(1.35)	(1.15)	(0.93)	(0.77)
INST	0.061**	-0.001	0.042	0.063	0.068
	(2.23)	(-0.04)	(0.82)	(0.96)	(0.93)
RETL	0.113***	0.051	0.120	0.113	0.148
	(2.87)	(1.04)	(1.56)	(1.34)	(1.47)
BOTH	0.017	-0.081	-0.111	-0.201	-0.097
	(0.15)	(-0.83)	(-0.82)	(-1.37)	(-0.62)
Observations	219,487	219,487	219,487	219,487	219,487
Adjusted R-squared	0.093	0.002	0.003	0.003	0.004
Controls	Yes	Yes	Yes	Yes	Yes
DATE FE	Yes	Yes	Yes	Yes	Yes

Table 6 The Effect of Business vs Finance Sentiment Conditioning on Attention Types

This table provides the estimation of the extended analysis on Negative and Pure Positive News by splitting news by features in the sample period between Jan 1st, 2014 and Dec 31st, 2018. The dependent variables are DGTW-adjusted cumulative abnormal returns in the window of [-1, 0], [1, 5], [1, 10], [1, 15], and [1, 20]. Negative_Bus / Negative_Fin is an indicator variable equals one if there is negative business/finance news released and zero otherwise. Pure Positive_Bus / Pure Positive_Fin is an indicator variable equals one if there is only positive business / finance news announced for the same firm in the same date. INST is an indicator variable equals one if there is only institutional attention and zero otherwise. RETL is an indicator variable equals one if there is only retail attention and zero otherwise. BOTH is an indicator variable equals one if there are both institutional and retail attention and zero otherwise. Controls contain a broad range of firm characteristic variables such as log of market equity (ln(ME)), book-to-market ratio (BM), daily abnormal volume (AVOL), standard deviation of daily returns (SDRET), (high – low)/high (HLtH), daily bid-ask spread (Spread), daily stock turnover (Turnover), and lagged return (CAR[-5,-2]). The standard errors are clustered at firm and date level. *, **, *** indicates significance at 10%, 5%, and 1% level.

	DGTW-Adjusted Cumulative Abnormal Return				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
	[-1,0]	**[1, 5]**	**[1, 10]**	**[1, 15]**	**[1, 20]**
Negative_Bus	-0.016	-0.079	-0.056	0.012	0.047
	(-0.51)	(-1.20)	(-0.50)	(0.08)	(0.23)
Negative_Bus*INST	-0.182***	0.033	0.137	0.131	0.032
	(-2.63)	(0.36)	(1.00)	(0.80)	(0.14)
Negative_Bus*RETL	-0.775**	-0.511*	-0.482	-0.387	-0.404
	(-2.52)	(-1.68)	(-1.28)	(-0.72)	(-0.61)
Negative_Bus*BOTH	-0.394	0.125	-0.292	-0.043	0.028
	(-1.26)	(0.56)	(-0.96)	(-0.13)	(0.07)
Negative_Fin	-0.071*	0.169**	-0.010	-0.044	-0.031
	(-1.72)	(2.08)	(-0.07)	(-0.22)	(-0.13)
Negative_Fin*INST	-0.308***	-0.087	0.034	0.047	0.090
	(-3.24)	(-0.87)	(0.25)	(0.25)	(0.41)
Negative_Fin*RETL	-0.301	0.094	-0.288	-0.674	-0.475
	(-0.93)	(0.14)	(-0.60)	(-1.57)	(-0.80)
Negative_Fin*BOTH	-0.643***	-0.411	-0.397	-0.229	-0.432
	(-2.64)	(-1.61)	(-1.42)	(-0.76)	(-1.17)
Pure Positive_Bus	-0.013	0.040	0.111	0.180*	0.161
	(-0.51)	(0.87)	(1.54)	(1.66)	(1.30)
Pure Positive_Bus *INST	0.065	-0.093	-0.021	-0.016	-0.032
	(1.00)	(-1.16)	(-0.18)	(-0.11)	(-0.20)
Pure Positive_Bus *RETL	0.273	-0.156	-0.310	-0.856**	-0.994**
	(1.22)	(-0.59)	(-0.92)	(-1.99)	(-2.24)
Pure Positive_Bus *BOTH	0.455	0.355	0.002	-0.107	0.002
	(1.46)	(1.46)	(0.01)	(-0.24)	(0.00)
Pure Positive_Fin	0.060**	0.132***	0.192***	0.207**	0.240**
	(2.00)	(2.74)	(2.88)	(2.22)	(2.16)
Pure Positive_Fin*INST	0.194***	0.029	-0.125	-0.154	-0.154

	(3.37)	(0.32)	(-0.96)	(-0.97)	(-1.00)
Pure Positive_Fin *RETL	0.249	-0.385*	-0.568*	-0.563	-0.585
	(1.10)	(-1.87)	(-1.76)	(-1.54)	(-1.35)
Pure Positive_Fin *BOTH	1.453***	-0.034	0.007	0.075	-0.074
	(4.56)	(-0.14)	(0.03)	(0.24)	(-0.21)
INST	0.079***	-0.003	0.038	0.050	0.050
	(2.83)	(-0.11)	(0.73)	(0.76)	(0.67)
RETL	0.123***	0.060	0.128*	0.124	0.152
	(2.97)	(1.24)	(1.67)	(1.44)	(1.48)
BOTH	0.018	-0.054	-0.038	-0.131	-0.040
	(0.17)	(-0.55)	(-0.28)	(-0.94)	(-0.25)
Observations	219,487	219,487	219,487	219,487	219,487
Adjusted R-squared	0.094	0.002	0.003	0.003	0.004
Controls	Yes	Yes	Yes	Yes	Yes
DATE FE	Yes	Yes	Yes	Yes	Yes

Table 7 The Effect of Sentiment Conditioning on Attention (With Local Retail Attention)

This table provides estimation results of panel regression analysis in the sample period between Jan 1st, 2014 and Dec 31st, 2018. The dependent variables are DGTW-adjusted cumulative abnormal returns in the window of [-1, 0], [1, 5], [1, 10], [1, 15], and [1, 20]. Negative is an indicator variable equals one if there is negative news released and zero otherwise. Pure Positive is an indicator variable equals one if there is only positive news announced for the same firm in the same date. Institutional is an indicator variable equals one if there is institutional attention and zero otherwise. Local Retail is an indicator variable equals one if there is local retail attention and zero otherwise. National Retail is an indicator variable equals one if there is national retail attention and zero otherwise. Controls contain a broad range of firm characteristic variables such as log of market equity (ln(ME)), book-to-market ratio (BM), daily abnormal volume (AVOL), standard deviation of daily returns (SDRET), (high – low)/high (HLtH), daily bid-ask spread (Spread), daily stock turnover (Turnover), and lagged return (CAR[-5,-2]). The standard errors are clustered at firm and date level. *, **, *** indicates significance at 10%, 5%, and 1% level.

	DGTW-Adjusted Cumulative Abnormal Return				
	(1)	(2)	(3)	(4)	(5)
	[-1,0]	[1, 5]	[1, 10]	[1, 15]	[1, 20]
Negative	-0.108***	0.053	-0.015	-0.022	-0.005
	(-2.74)	(0.96)	(-0.14)	(-0.16)	(-0.03)
Negative*Institutional	-0.721***	-0.158	-0.038	0.020	-0.132
	(-7.11)	(-1.39)	(-0.27)	(0.11)	(-0.67)
Negative*Local Retail	-0.005	0.269	-0.100	-0.360	-0.369
	(-0.03)	(0.74)	(-0.26)	(-0.75)	(-0.70)
Negative*National Retail	-0.762**	-0.174	0.005	-0.073	0.227
	(-2.21)	(-0.44)	(0.01)	(-0.12)	(0.30)
Pure Positive	0.044**	0.068*	0.108*	0.185**	0.214**
	(2.32)	(1.79)	(1.71)	(2.17)	(2.10)
Pure Positive*Institutional	0.410***	0.007	-0.010	-0.050	-0.098
	(6.39)	(0.12)	(-0.12)	(-0.47)	(-0.85)
Pure Positive*Local Retail	0.185	-0.094	-0.199	-0.134	0.013
	(1.34)	(-0.81)	(-1.06)	(-0.59)	(0.05)
Pure Positive*National Retail	0.414***	-0.087	-0.255	-0.612**	-0.650*
	(3.09)	(-0.57)	(-1.33)	(-2.20)	(-1.91)
Institutional	0.056	-0.008	0.013	0.026	0.051
	(1.53)	(-0.26)	(0.23)	(0.36)	(0.61)
Local Retail	0.113**	0.048	0.044	0.071	0.017
	(2.43)	(0.96)	(0.60)	(0.85)	(0.17)
National Retail	0.065*	0.037	0.130	0.100	0.122
	(1.94)	(0.70)	(1.58)	(1.07)	(1.07)
Observations	181,314	181,314	181,314	181,314	181,314
Adjusted R-squared	0.094	0.002	0.002	0.002	0.003
Controls	Yes	Yes	Yes	Yes	Yes
DATE FE	Yes	Yes	Yes	Yes	Yes

Table 8 The Effect of Negative vs Pure Positive Sentiment Conditioning on Attention Types – Alternative Measure of Sentiment

This table provides estimation results of panel regression analysis for equation (6) in the sample period between Jan 1st, 2014 and Dec 31st, 2018, using alternative measure of sentiment. The dependent variables are DGTW-adjusted cumulative abnormal returns in the window of [-1, 0], [1, 5], [1, 10], [1, 15], and [1, 20]. Negative (Positive) is an indicator variable equals one if the contemporaneous market return is negative (positive) during the day news announced. INST is an indicator variable equals one if there is only institutional attention and zero otherwise. RETL is an indicator variable equals one if there is only retail attention and zero otherwise. BOTH is an indicator variable equals one if there are both institutional and retail attention and zero otherwise. Controls contain a broad range of firm characteristic variables such as log of market equity (ln(ME)), book-to-market ratio (BM), daily abnormal volume (AVOL), standard deviation of daily returns (SDRET), (high – low)/high (HLtH), daily bid-ask spread (Spread), daily stock turnover (Turnover), and lagged return (CAR[-5,-2]). The standard errors are clustered at firm and date level. *, **, *** indicates significance at 10%, 5%, and 1% level.

	DGTW-Adjusted Cumulative Abnormal Return				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
	[-1,0]	**[1, 5]**	**[1, 10]**	**[1, 15]**	**[1, 20]**
Negative	-0.519***	0.065	0.115	0.139	0.182
	(-15.31)	(1.64)	(1.60)	(1.41)	(1.52)
Negative*INST	-0.523***	-0.103*	-0.186**	-0.171*	-0.238*
	(-7.74)	(-1.69)	(-2.23)	(-1.66)	(-1.95)
Negative*RETL	-0.206	-0.073	-0.100	-0.199	-0.231
	(-1.28)	(-0.48)	(-0.52)	(-0.79)	(-0.80)
Negative*BOTH	-2.445***	-0.021	-0.071	-0.113	-0.228
	(-9.84)	(-0.16)	(-0.38)	(-0.52)	(-0.94)
Positive	0.506***	0.032	0.051	0.061	0.093
	(17.07)	(0.88)	(0.74)	(0.62)	(0.77)
Positive*INST	0.504***	0.040	0.041	0.079	0.008
	(7.58)	(0.64)	(0.48)	(0.73)	(0.06)
Positive*RETL	0.482***	0.041	-0.048	-0.324	-0.439
	(3.27)	(0.33)	(-0.27)	(-1.40)	(-1.57)
Positive*BOTH	2.592***	0.135	0.029	0.157	0.156
	(10.21)	(0.72)	(0.15)	(0.73)	(0.69)
INST	0.066**	-0.002	0.054	0.059	0.071
	(2.28)	(-0.05)	(1.00)	(0.82)	(0.89)
RETL	0.109***	0.050	0.111	0.108	0.148
	(2.73)	(0.99)	(1.36)	(1.19)	(1.38)
BOTH	0.030	-0.070	-0.059	-0.161	-0.059
	(0.28)	(-0.67)	(-0.41)	(-1.04)	(-0.34)
Observations	219,487	219,487	219,487	219,487	219,487
Adjusted R-squared	0.133	0.002	0.003	0.003	0.004
Controls	Yes	Yes	Yes	Yes	Yes
DATE FE	Yes	Yes	Yes	Yes	Yes

Table 9 The Effect of Negative vs Pure Positive Sentiment Conditioning on Attention Types estimated using Fama MacBeth Approach

This table provides estimation results of equation (6) in the sample period between Jan 1st, 2014 and Dec 31st, 2018 using Fama Macbeth (1973) approach. The dependent variables are DGTW adjusted cumulative abnormal returns in the window of [-1, 0], [1, 5], [1, 10], [1, 15], and [1, 20]. Negative is an indicator variable equals one if there is negative news released and zero otherwise. Pure Positive is an indicator variable equals one if there is only positive news announced for the same firm in the same date. INST is an indicator variable equals one if there is only institutional attention and zero otherwise. RETL is an indicator variable equals one if there is only retail attention and zero otherwise. BOTH is an indicator variable equals one if there are both institutional and retail attention and zero otherwise. Controls contain a broad range of firm characteristic variables such as log of market equity (ln(ME)), book-to-market ratio (BM), daily abnormal volume (AVOL), standard deviation of daily returns (SDRET), (high – low)/high (HLtH), daily bid-ask spread (Spread), daily stock turnover (Turnover), and lagged return (CAR[-5,-2]). The standard errors are Newey West HAC standard errors. *, **, *** indicates significance at 10%, 5%, and 1% level.

	DGTW-Adjusted Cumulative Abnormal Return				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
	[-1,0]	**[1, 5]**	**[1, 10]**	**[1, 15]**	**[1, 20]**
Negative	-0.087***	0.058	0.038	0.019	0.054
	(-3.52)	(1.30)	(0.60)	(0.26)	(0.62)
Negative*INST	-0.174***	-0.128*	-0.087	0.038	-0.009
	(-3.52)	(-1.80)	(-0.86)	(0.30)	(-0.06)
Negative*RETL	-0.524**	-0.060	0.071	-0.496	-0.292
	(-2.31)	(-0.20)	(0.19)	(-1.09)	(-0.58)
Negative*BOTH	-0.516**	-0.036	-0.108	-0.053	0.160
	(-2.32)	(-0.16)	(-0.37)	(-0.17)	(0.45)
Pure Positive	0.011	0.037	0.099**	0.185***	0.245***
	(0.66)	(1.24)	(2.31)	(3.64)	(4.24)
Pure Positive*INST	0.283***	-0.009	-0.079	-0.080	-0.106
	(6.51)	(-0.14)	(-0.84)	(-0.70)	(-0.78)
Pure Positive*RETL	0.441***	-0.029	-0.195	-0.535**	-0.597*
	(2.62)	(-0.18)	(-0.87)	(-1.96)	(-1.86)
Pure Positive*BOTH	1.229***	0.314	0.188	0.184	0.000
	(5.42)	(1.61)	(0.72)	(0.58)	(0.00)
INST	0.042*	0.000	0.091*	0.059	0.056
	(1.91)	(0.00)	(1.69)	(0.97)	(0.81)
RETL	0.070**	0.014	0.048	0.093	0.118
	(2.36)	(0.27)	(0.63)	(1.00)	(1.11)
BOTH	-0.007	-0.141	-0.121	-0.188	-0.036
	(-0.06)	(-1.12)	(-0.77)	(-1.05)	(-0.18)
Observations	1213	1213	1213	1213	1213
Controls	Yes	Yes	Yes	Yes	Yes