Big news, market reactions, and attention around earnings announcements

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Abstract

Big news events can influence market returns, liquidity, trading, and reactions to earnings announcements. Using the Pew Center's News Coverage Index, we build daily indices capturing the importance of newsworthy events related to business and economics (BE), government, and other events. We find that absolute market returns, price impact, price protection, and trading volume are higher on days with bigger BE news. Market reactions to earnings announced on high BE news days tend to be larger and followed by less post-earnings announcement drift, even though there is less trading around these earnings announcements, consistent with differential attention effects on sophisticated and unsophisticated investors.

JEL classification: G14; G41; M41.

Keywords: Earnings announcements; News coverage; Investor attention; Post-earnings announcement drift.

1. Introduction

The limited investor attention theory posits that due to cognitive resource constraints, investors can neglect value relevant information and may not incorporate all available information into prices. Consistent with this theory, extant research in accounting and finance provides evidence that extraneous and unrelated events, such as earnings announcements of companies in other industries or March Madness, can distract investor attention away from corporate announcements (e.g., Hirshleifer, Lim, and Teoh 2009; Louis and Sun 2010; Drake, Gee, and Thornock 2015). In this study, we test the limited investor attention theory from a different perspective and examine whether the nature of the exogenous events play a role in whether they attract or distract investor attention to corporate announcements. In particular, we show that daily headline news events (hereafter “big news”), which are typically unrelated to specific firms, tend to attract attention to firms’ earnings announcements when the news relates to business and economic developments (e.g., a big drop in house prices, gas prices, or taxes) and distract attention when the news relates to government/politics (e.g., tobacco legislation or the Blagojevich senate seat scandal) or entertainment/other events (e.g., the solar eclipse or a plane landing in Hudson).

We have two competing predictions. First, big news events might crowd out investor attention, attenuating short-term reactions to firm-specific earnings news. For example, DellaVigna and Pollet (2009) find that the volume and two-day stock price reaction to corporate news that is released on Fridays are weaker than news released on other weekdays, and post-earnings announcement drift is stronger. Hirshleifer, Lim, and Teoh (2009) document similar findings for corporate news that is released on days with many competing announcements relative to days with few competing announcements. Alternatively, big news events can lead to greater market uncertainty, which may drive investors to seek out information. For example, Garcia (2013) finds that investor sensitivity to the tone of two financial columns in New York Times is stronger during times of greater uncertainty, and Vozlyublennaia (2014) shows that investors' probability of searching for a stock increases following shocks to index returns. With earnings-related information being relatively cheap and accessible (i.e., easily available on Yahoo! Finance), investors might be more likely to discover earnings information during big-news days. This could increase the overall price reaction to earnings information on big news days relative to other days. Our analysis focuses on whether and to what extent big news events affect market activity and price responses to earnings announcements.

We use the Pew Research Center's News Coverage Index (NCI) to capture coverage intensity for specific news. The NCI is a database of news stories in major media outlets including television, print, radio, and internet sources, and provides information about story topics and coverage length (i.e., seconds for television and radio, and number of words for newspapers and websites). NCI data is available from January 2007 and to May 2012, with over 200,000 stories appearing during this period. From the NCI, we create daily subject-specific indices of news coverage for news related to business/economics, government/politics, and entertainment/other, as well as a composite index for news coverage overall. Each news index identifies the importance of daily subject-specific events based on coverage of specific stories. We use both the breadth of coverage (i.e., the number of news outlets covering a particular story) and the depth of coverage (i.e., the within-outlet time or space devoted to the story) in constructing our daily indices.

Supporting the importance of the information related to big news events, we first show that our news index related to business/economic news is significantly related to absolute daily factor portfolio returns for the market factor, the small-minus-big factor, the high-minus-low factor, and the up-minus-down factor. The positive and significant correlations hold after controlling for year and day-of-week effects. We also find that big business/economic news events are significantly associated with greater market turnover, higher bid-ask spreads, and greater expected volatility as reflected in the VIX, even after controlling for contemporaneous raw and absolute market returns. Overall our results suggest that big business/economic news events attract attention to the stock market and provide value-relevant information, which drives trade and, potentially, short-term information asymmetry as reflected in market-makers price protecting. News indices related to government/politics and entertainment/other events, in contrast, are not significantly related to market-wide returns, factor premia, volatility, or liquidity indicators.

We next examine how big news affects market reactions to firm-specific information. We find evidence consistent with big business/economic news events driving investors to be attentive to the information contained in earnings announcements. In particular, we find that the market reacts more strongly to earnings news on days with big business/economic news. Furthermore, there is less post-earnings announcement drift following earnings released on big-news days than following earnings released on other days. These results continue to hold after controlling for various firm-specific factors as well as day-of-the-week and time fixed effects. This suggests that investors respond *more* strongly to firm-specific information on days with a high arrival of economy-wide news, at least when the firm-specific news is accessible, cheap, and salient. On these days, firm-specific news has a stronger association with current returns and a weaker association with future returns, suggesting that investors impound firm-specific information into price better on days we identify as big business/economic news event days. In contrast, big news events in the “other” category are distracting. For firms announcing earnings on these days, the market reactions to earnings surprises are somewhat dampened, which is consistent with findings of prior studies (e.g., Hirshleifer, Teoh, and Lim 2009; Drake, Gee, and Thornock 2015) on the effect of irrelevant news on investor attention.

In additional analysis, we examine whether the presence of big business/economic news events changes price impact, price protection, and trading activity around earnings announcements. We find that, on average, earnings announced on days with big business/economic news events are indistinguishable from earnings announced on other days with respect to liquidity and bid-ask spreads, our measures of price impact and price protection. In contrast, the large increase in share turnover and trading volume around earnings announcements is muted for earnings announced contemporaneously with big business/economic news events. This result, combined with our results on announcement-window and post-announcement-window returns suggest that big business news events can differentially affect sophisticated and unsophisticated investor attention, in line with Vega’s (2006) observation of the importance of the impact of information on the relative arrival rates of informed or uninformed traders.

Our study contributes to the literature on limited investor attention. Prior studies provide evidence that exogenous events that are likely unrelated to a firm’s underlying fundamentals can distract investor attention away from earnings announcements. We provide additional supporting evidence to this claim. More importantly, however, we show that exogenous events can also attract investor attention to earnings announcements when they relate to economic or business activity. In other words, we add to this literature by providing evidence that the nature of the events that are covered by the media have a significant effect on whether the news distracts or attracts attention to earnings announcements.

Our study also adds to the literature by providing a new measure of news intensity for different categories of news. Prior studies have examined the price impact of media attention (e.g., Barber and Odean 2007; Tetlock 2010), macroeconomic announcements (e.g., Savor and Wilson 2013, 2014), and other one-time or periodic events (e.g., Edmans, Garcia, and Norli 2007; Kaplanski and Levy 2010). We construct a daily metric of news intensity that takes into account the content and significance of news stories in different categories and provides a basis to compare and contrast the effect of different categories of news on stock trading.

The paper proceeds as follows. The next section provides a brief literature review and hypothesis development. Section 3 details the construction of the news indices. Section 4 examines associations between news indices and market-wide indicators. Section 5 provides analysis of how market reactions to firm-specific earnings announcements might be affected by big news events. Section 6 concludes.

2. Related literature and hypothesis development

This paper is related to studies examining market reactions to macroeconomic news and firm-specific news. In the former stream, Jones, Lamont, and Lumsdaine (1998) show that U.S. Treasury Bond returns are affected by announcements of employment and inflation statistics. Boyd, Hu, and Jagannathan (2005) show that unemployment news has differential effects on market returns in contractionary and expansionary periods. Dougal et al. (2012) show that excess returns on the Dow Jones Industrial Index are affected by media coverage, exploiting endogenous rotation of *Wall Street Journal* columnists. Savor and Wilson (2013, 2014) show that market returns and returns to riskier firms (where risk is captured by CAPM beta) tend to be higher on days with scheduled announcements of inflation, unemployment, and interest rate news. Eisensee and Stromberg (2007), focusing on government policy rather than market response, find that natural disaster relief efforts get less government attention if the disasters are concurrent with other news-attracting events, such as the Olympics.

Regarding firm-specific news, Barber and Odean (2007) show that investors are more likely to buy attention-grabbing stocks, i.e., stocks that are in the news or have recently experienced high trading volume or extremely high one-day returns. Several studies have examined market reactions to firm-specific news, including Chan (2003), Vega (2006), Fang and Peress (2009), and Tetlock (2010). These studies generally find market reactions to firm-specific news stories. An extensive stream of literature has also studied market reactions to firm-specific earnings announcements, both around the earnings announcement and in the weeks and months following the announcement (e.g., Lang (1991), Livnat and Mendenhall (2006), Hirshleifer, Lim, and Teoh (2009), and Melessa (2013)).

A related stream of research has examined how market responses to earnings announcements can be affected by factors related to investor attention, such as announcement timing and the presence of concurrent events. Francis, Pagach and Stephan (1992) find that earnings announcements that are made after market hours are impounded in stock prices more slowly than earnings announcements that are made during market hours. Louis and Sun (2010) show that the slow price reaction to announcements made on Friday extends to merger and acquisition announcements. Drake, Gee, and Thornock (2015) find that stock price response to earnings announcements is muted during March Madness. Melessa (2013) finds that market responses to earnings announcements are muted then they are immediately followed by the Employment Situation release by the Bureau of Labor Statistics (BLS). Focusing on firms' forecasts of earnings rather than announcements of earnings, Kasznik and Kremer (2012) find that firms are more likely to release bad news on days with scheduled FOMC (Federal Open Market Committee) announcements, but do not find heterogeneous reactions to earnings forecasts released on FOMC days versus other days.

3. Construction of the news indices

We construct daily indices based on news coverage to capture the importance of attention-catching events. The underlying idea behind the indices is that the importance of a story or event will be reflected in the degree of journalists' coverage. Bigger stories will be covered by multiple news outlets, and the coverage will tend to be more extensive, as reflected in coverage time for TV and radio broadcasts and length of articles for written pieces appearing online and in newspapers.

The data used for construction of the big news indices comes from the Pew Research Center's Project for Excellence in Journalism's News Coverage Index (NCI). The construction of the NCI begins with a survey of news coverage each day. The survey categorizes coverage from broadcast television news programs, newspapers, popular news websites, cable news, and radio. The unit of observation in the NCI is the Story. (Capitalized "Stories" indicates an observation in the NCI.) Each Story represents a piece of coverage on a specific day from a specific news source. For example, the ABC Evening News story on February 11, 2010 from 5:31 to 5:35pm on former President Bill Clinton's health represents one story. The CBS Evening

News coverage of the same topic on the same evening represents a different Story observation, and coverage in a newspaper or on a website would represent yet another observation.[1]

Each Story in the NCI is coded according to its Source (i.e., which newspaper, TV or radio broadcast, or website), Broad Story Topic (26 potential categories), Big Story Code (approximately 1,200 categories), date, and approximate time of broadcast, if relevant.[2,3] The NCI coverage begins on January 1, 2007, and ended in May 2012. We use a five full-year period of coverage from 1/1/2017 through 12/31/2011 in order to ensure that periodic events taking place earlier in the year are not overrepresented in the sample. We retain all Stories that have a valid Broad Story Topic and are featured in national newspapers, broadcast television, or websites during trading days, as identified in CRSP. We retain only the most prominent Stories from each source. These are the first Stories in television programs, the top right Stories in newspapers, and the topmost or biggest-headline Stories on websites. We retain only Stories for which at least five Stories that day have the same Big Story Code (e.g., Tiger Woods or the US Automobile Industry). This ensures that multiple news outlets are covering the story, implying that it is actually big news.

We then sort Stories into three categories based on the Broad Story Topics provided in the NCI: business/economics; government/politics; and entertainment/other. Our indices are calculated within each category and for all stories (ALL) regardless of category. For each

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[1] See http://www.journalism.org/news_index_methodology/99/ for a comprehensive description of the data and access to it.

[2] Broad Story Topics as numbered in the NCI are: 1) government agencies, legislatures; 2) campaigns, elections, politics; 3) defense, military (domestic); 4) court, legal system; 5) crime; 6) domestic terrorism; 7) business; 8) economy, economics; 9) environment; 10) development, sprawl; 11) transportation; 12) education; 13) religion; 14) health, medicine; 15) science, technology; 16) race, gender, gay issues; 17) immigration; 18) additional domestic affairs; 19) disasters, accidents; 20) celebrity, entertainment; 21) lifestyle; 22) sports; 23) media; 24) U.S. miscellaneous; 25) U.S. foreign affairs; 26) foreign, non-U.S.

[3] Examples of Big Story Codes as numbered in the NCI include: 497) Emmy awards; 820) congressional election results; 909) Lance Armstrong, Tour de France; 1184) Toyota accelerator recall; 1297) AOL buys Huffington Post.

category on each date, we calculate the mean duration in seconds for TV news Stories and the mean number of words for online and newspaper Stories. Since missing category-date values for mean words or mean duration imply that there were no stories that satisfied our cutoffs, missing values are set to zero. For each category, we standardize the duration- and word-means so that each time series is mean zero and unit variance. The standardized mean duration and mean words for a category-date are averaged to form the daily category indices: *BE News* (business and economics), *GOV News* (government/politics), *OTHER News* (entertainment/other), and *ALL News*. *OTHER* is a category that captures news events that are not classified as *BE* or *GOV*.[4]

In our sample, the top news days for BE news occurred when: President Obama gave a speech in favor of the American Recovery and Reinvestment Act, a mid-recession stimulus package (January 8, 2009); General Motors filed for bankruptcy (June 1, 2009); and the federal government seized Washington Mutual and brokered its sale to JPMorgan Chase (September 26, 2008). The days with the largest GOV news index values capture Obama's speech at the UN charging Iran with concealing its nuclear weapons program (September 25, 2009); the Fort Hood shooting (November 6, 2009); and the leak of over 250,000 classified diplomatic cables from U.S. embassies by WikiLeaks (November 29, 2010). The days with the highest OTHER news index values capture: the royal wedding of Kate Middleton and Prince William (April 29, 2011); the death of Senator Ted Kennedy (August 26, 2009); and the Japan earthquake and tsunami (3/11/2011).

[4] BE Stories are identified by NCI Broad Story Topics 7 and 8 or Big Story Code 862 (Economy). GOV Stories are identified by NCI Broad Story Topics 1, 2, 3, 4, and 25. All other Stories are categorized as OTHER. See Footnote 2 for Broad Story Topics and NCI numbering.

4. Big news and aggregate market indicators

This section focuses on the relation between big news and market indicators related to returns and trading activity. There are two goals in this section. The first is to provide validation for the indices as capturing big events. The second is to provide initial evidence on how big events affect capital markets in aggregate.

4.1. Descriptive statistics

Table 1 presents descriptive statistics and time-series correlations for the 1,247 daily observations in our sample. As described in Section 3, we use four separate news indices: *BE News* index, which captures intensity of business and economics news, *GOV News* index, which captures intensity of government and politics related news, *OTHER News* index, which captures intensity of entertainment and all other types of news, and *ALL News* index, which measures intensity of all news on a given day. The news indices are constructed as sums of standardized (mean-zero, unit-variance) day-level means of word counts and television coverage time. The day-level word counts and coverage times are positively but not perfectly correlated. Hence, the means are zero, and the standard deviations are near but below 1.

Besides the news indices, we use raw and absolute factor returns taken from Ken French's website and proxies for aggregate price protection, trading activity, and forward-looking uncertainty. The factor returns relate to the market risk premium (*MKT*), size (*SMB*), value (*HML*), and momentum (*UMD*). The daily market indicators we focus on are: *ILLIQ*, the log of the value-weighted Amihud (2002) firm-level illiquidity measure, calculated as 10^6 times a stock's absolute return divided by a stock's dollar volume; *SPREAD*, the log of the value-weighted daily bid-ask spread, calculated as a stock's ask price minus bid price divided by the midpoint; *TURN*, the log of value-weighted average turnover, calculated as shares traded divided by shares outstanding[5]; and *VOL*, the log of total market volume. We also examine the association between our big news indices and closing values of the *VIX*, which is an option-based measure of expected S&P 500 volatility that proxies for forward-looking stock market uncertainty, risk, or volatility. Detailed definitions of each of these variables are provided in Appendix A.

(Insert Table 1 about here)

The limited amount of news space induces a negative correlation between the topic-specific news indices (*BE News*, *GOV News*, and *OTHER News*). After all, there is only so much broadcast time and print space available for top stories. Additionally, the *BE News* index is positive and significantly correlated with absolute factor values as well as indicators of market price protection (*ILLIQ* and *SPREAD*), activity (*TURN* and *VOL*), and expected volatility (*VIX*), even though it is not associated with raw factor returns. *GOV News* is mostly unrelated with these factors and *OTHER News* is negatively associated with *ILLIQ*, *SPREAD*, and *VIX*. In general, market-level proxies related to volatility (e.g., absolute factor values, price protection and trading indicators, and the VIX) are positively correlated.

The positive association reported in Table 1 between *BE News* and all of the absolute factor values suggests that risk premiums may be concentrated on days when there are important events related to the economy and business. This result should not be surprising, given prior results focusing on market reactions to macroeconomic announcements related to employment, inflation, GDP growth, and FOMC rate setting (Savor and Wilson 2013, 2014). Interestingly, *OTHER News* is negatively associated with absolute excess market returns, absolute HML factor

[5] NASDAQ turnover is corrected for multiple-counting by multiplying the turnover measure by 0.62, following Anderson and Dyl (2005 Journal of Financial Research).

returns, and price protection measures. Days with large Other News-related events may tend to have lower risk, if excess absolute market returns are a suitable proxy for daily risk.

4.2. Big news, factor returns, and trading activity

In order to validate that our topical news indices capture big news events and that different categories of news have different effects on the markets, we begin our analyses by examining whether the three topical news indices are associated with absolute factors and trading activity. In Table 2 we present regressions of absolute factors on the three topical news indices. The regressions include controls for year and day-of-week effects, and the standard errors in the regressions allow for heteroscedasticity. Similar to the univariate correlations, the *BE News* index remains positive and statistically significantly associated with all four types of absolute factor returns. In contrast to the univariate correlations, the *OTHER News* index is not significantly associated with absolute excess market returns in the Table 2 regressions, suggesting that the univariate negative correlations between *OTHER News* and absolute factor returns may be driven by the negative association between *BE News* and *Other News*. Overall, findings in Table 2 suggest that *BE News* are associated with a significant increase in absolute factor returns, consistent with news events that are related to business and economics having an impact on the stock market. We find that *GOV News* and *OTHER News* have no significant association with absolute factor returns.

(Insert Table 2 about here)

Next, we examine the association between the news indices and indicators related to trade and liquidity at the aggregate level (*ILLIQ*, *SPREAD*, *TURN*, *VOL*, and *VIX*). Each of these trade-based proxies is regressed on the news indices, market returns, absolute returns, and indicators for year and day-of-week. Estimates from these regressions are presented in Table 3.

Days with higher *BE News* are associated with lower liquidity (i.e., higher illiquidity and bid-ask spreads), greater turnover, and higher volume. The daily closing value of the VIX is also positively associated with the *BE News* index, suggesting that days with high *BE News* are associated with greater expected market volatility.

(Insert Table 3 about here)

5. Big news and firm-specific information

This section explores the relationship between big news events and market reactions to firm-specific information. We focus on quarterly earnings announcements as the source of firm-specific information and examine price reactions around earnings announcements as well as drift following announcements. Our analyses examine how big news interacts with firm-specific news in the price formation process. We generally focus on the association between market-adjusted stock returns from various windows and the earnings surprise, our news indices, the interaction between news and the earnings surprise, and a set of controls.

Our primary measure of firm-specific news related to earnings is the earnings surprise (SUE) based on IBES data. SUE is defined following Livnat and Mendenhall (2006) as:

$$SUE_{i,t} = \frac{X_{i,t} - E\left[X_{i,t}\right]}{P_{i,t}}$$

where i denotes firm, t denotes quarter, $X_{i,t}$ are IBES reported actual earnings, E[$X_{i,t}$] are expected earnings, the median of the most recent individual analysts' forecasts issued in the 90 days before the earnings announcement date, and $P_{i,t}$ is the share price at the end of quarter t.

Daily excess returns are calculated each day as the raw CRSP-reported returns minus the return to the CRSP value-weighted market index. Earnings announcement returns used for earnings response coefficient (ERC) tests are calculated as the compounded excess returns from the day of the earnings announcement through the day after (2-day window). Post-earnings announcement returns used for examining drift (PEAD) are compounded from two days after the earnings announcement date through the 7^{th}, 30^{th}, 61^{st}, and 90^{th} day after the earnings announcement. The ERC windows were chosen to capture market reactions to post-close earnings announcements on day $t+1$. The PEAD window was chosen based on Hirshleifer et al. (2009) and earlier work on PEAD, (e.g., Bernard and Thomas, 1989). As in prior studies, we use SUE deciles based on calendar-quarter sorts rather than raw values when SUE is an independent variable.

Following prior literature, we include a number of controls that may be correlated with SUE and earnings announcement returns. Specifically, our set of controls includes *Size* (market value of equity), the book-to-market ratio (*BE/ME*), earnings persistence based on estimated autocorrelation (*EPersistence*), institutional ownership (*IO*), earnings volatility (*EVOL*), the reporting lag (*ERepLag*), number of analysts following the firm defined as the number of analysts making forecasts up to 90 days before the earnings announcement *(#Estimates*), average share turnover over the preceding year (*ETurn*), a loss indicator (*Loss*), the number of concurrent earnings announcements (*#Announcements*), and day-of-week indicators. Detailed definitions of these variables are provided in Appendix A. Summary statistics for these variables are reported in Table 1. We interact each of these controls with our earnings surprise variable to mitigate concerns that the coefficient on our interaction of interest is driven by a correlated omitted interaction. We use this set of controls in our regressions with earnings announcement window and post-earnings announcement window returns.

Results for announcement-window returns are presented in Table 4. Returns around earnings announcements are highly positively associated across all specifications with the earnings surprise. In Table 4, we focus on interactions between our news indices and the earnings surprise, using both our raw news indices and indicators for top-quintile news index scores. Results in Table 4 suggest that only *BE News* and *Other News* are associated with differential market responses to earnings surprises, i.e., different earnings response coefficients. Specifically, the results in Table 4 suggest the association between earnings surprises and returns is stronger on days with high BE news, and there is some support that the relation is weaker on days with high Other News. We interpret this as providing modest evidence of a distraction effect of Other News, in that earnings released on days with other news receive less attention. BE News, in contrast, appears to attract attention to earnings announcements. Overall, the most compelling evidence is that the positive effect of an earnings surprise on excess announcement returns is strengthened when the announcement occurs on a day with a high degree of BE news.

(Insert Table 4 about here)

Table 5 presents our PEAD tests. Results in Table 5 suggest that earnings announced on days with concurrent big business/economic news experience less drift over post-earnings announcement days. There is strong evidence of this over the seven-day period, and some evidence for the 60-day period. This, when combined with the result in Table 4, suggests that investors react to earnings announcement information more quickly when the announcements occur on days with big business/economic news. Other news has no discernible effects on PEAD over any of the windows examined. Interestingly, earnings announced on days with high GOV news tend to have more drift than other earnings announcements, at least in the seven days following the announcements. This is surprising given that earnings announced on days with high GOV news did not have differential market reactions relative to earnings announced on other days.

(Insert Table 5 about here)

Following the above analysis of the associations between news and common indicators of trade activity, we examine how the changes in trade indicators around earnings announcements are affected by coincident business and economic news. We estimate daily regressions of illiquidity, closing bid-ask spread, turnover, and volume on indicators for earnings announcement days, our BE news index, the interaction between the announcement indicator and the news index, the lagged value of the dependent variable, market returns, and year-month fixed effects. In general, the results for the news indices other than BE News are insignificant and not tabulated.

Table 6 provides the estimates for regressions with the BE news index. Coefficient estimates in Table 6 suggest that earnings announcements falling on days with higher BE news experience similar bid-ask spreads and illiquidity as other earnings announcements, but have less turnover and lower volume. Combined with the evidence in Tables 4 and 5, this would be consistent with less firm-specific noise trade around earnings announcements falling on big BE days. This could lead to higher spreads and price protection (illiquidity), which not supported by the estimates in columns 1 and 2 of Table 6. However, given our focus on public rather than private information, it seems plausible that market makers may not alter their behavior affecting price impact and price protection around earnings announcements on big news days irrespective of the changes in trading behavior.

(Insert Table 6 about here)

6. Conclusion

In this paper, we construct novel indicators for important events covered extensively by media outlets. We call these big news events, and build daily indices that cover big news related to business and the economy, government, and events that fall in to neither of the aforementioned categories (other). We show that days with big news/economic events tend to have larger absolute factor returns, greater price protection, and more trading despite lower liquidity. Big news events related to government or falling into the “other” category, in contrast, seem to be ignored by the market in aggregate.

In tests of market reactions to earnings announcements on big news days relative to other days, we find that business/economic news tends to attract attention to firm-specific earnings announcements, while other news tends to be distracting. Specifically, market reactions to earnings announcements tend to be stronger and followed by less post-earnings announcement drift when the earnings announcements fall on days with big business/economic news. Additionally, earnings announced on these days tend to have lower trading volume. Overall, this could suggest that unsophisticated investor or noise trader attention is drawn away from earnings announcements on days with big BE news, although null results related to price impact and price protection do not support this interpretation. For earnings announcements falling on days with big “other” news, the market reaction to the earnings announcement is attenuated relative to other days, although we find no differential drift pattern.

Our paper contributes to the literatures on market responses both to macroeconomic news and to earnings announcements. We provide evidence of significant market effects of business/economic news beyond announcements scheduled well in advance related to inflation, unemployment, or Federal Reserve Policy (e.g., Savor and Wilson, 2014). Additionally, we show that the nature of the story is an important factor in determining whether a big news event is distracting or attention-inducing. The distraction effect is consistent with prior studies showing that contemporaneous events such as other firms’ earnings announcements reduce market reactions to earnings announcements. The attention-inducing effect, in contrast, is relatively new to the empirical literature, and suggests that the causes and consequences of market participants' aggregate attention may be more nuanced than previously understood.

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Appendix A: Variable descriptions

Variable	Description
BE	Index for news associated with business and economic events. Source: Pew Research Center's News Coverage Index.
GOV	Index for news associated with government-related events. Source: Pew Research Center's News Coverage Index.
OTHER	Index for news associated with events not classified as business, economic, or government-related events. Source: Pew Research Center's News Coverage Index.
ALL	Index for news associated with all types of events. Source: Pew Research Center's News Coverage Index.
MKT	Market return factor based on excess returns to the market portfolio over the risk-free rate. Source: Kenneth French's website.
SMB	Small-minus-big return factor based on excess returns to the small firms over large firms. Source: Kenneth French's website.
HML	High-minus-low return factor based on excess returns to high value stocks over low value stocks. Source: Kenneth French's website.
UMD	Up-minus-down factor based on excess returns to firms with high rather than low momentum. Source: Kenneth French's website.
|MKT|	Absolute value of MKT
|SMB|	Absolute value of SMB
|HML|	Absolute value of HML
|UMD|	Absolute value of UMD
ILLIQ	Amihud (2002) firm-level illiquidity measure, calculated as 10^6 times a stock's absolute return divided by a stock's dollar volume. Value-weighted illiquidity used when calculated at the market level. Source: CRSP.
SPREAD	Log of daily bid-ask spread, calculated as a stock's ask price minus bid price divided by the midpoint. Value-weighted spreads used when calculated at the market level. Source: CRSP.
TURN	Log of turnover, calculated as shares traded divided by shares outstanding. Value-weighted turnover used when calculated at the market level. Source: CRSP.
VOL	Log of total volume at the firm or market level. Source: CRSP.
VIX	Closing value of VIX. Source: CRSP.
Variables used in tests involving earnings announcements	
SUE	Earnings surprise relative to analyst consensus forecasts deflated by quarter-end share price. Source: IBES, CRSP. When ranks are used, they are calculated across same-quarter announcements.
EARET	Earnings announcement return. Compound excess return over the value-weighted index for earnings announcement date and 1 day after. Source: CRSP.
PEADx	Post-earnings announcement returns. Compound excess return over the value-weighted index from 2 days after the earnings announcement to x days after. Source: CRSP.
Size	Market value of equity on the earnings announcement date. Source: CRSP.
BE/ME	Book to market ratio at end of quarter for which earnings are announced. Source: Compustat.
EPersistence	Earnings persistence based on AR(1) regression with at least 4, up to 16 quarterly earnings. Source: Compustat.
IO	Institutional ownership as a fraction of total shares outstanding. Source: Thomson-Reuters 13F Data, CRSP.
EVOL	Standard deviation of seasonally differenced quarterly earnings. Source: Compustat.
ERepLag	Days from quarter-end to earnings announcement. Source: Compustat.
#Estimates	Number of analysts forecasting in the 90 days prior to the earnings announcement. Source: IBES.
ETurn	Average monthly turnover for the 12 months preceding the earnings announcement. Source: CRSP.
Loss	Indicator for negative earnings. Source: Compustat.
#Announcements	Number of concurrent earnings announcements. Source: Compustat, IBES.

Table 1: Pearson and Spearman correlations between news indices

Descriptive statistics and correlations. Pearson (Spearman) correlations are in the bottom left (top right) part of the table. Bold correlations are significantly different form zero at the 1% level.

N=1,247	BE	GOV	OTHER	ALL	MKT	SMB	HML	UMD	|MKT|	|SMB|	|HML|	|UMD|	ILLIQ	SPREAD	TURN	VOL	VIX
MEAN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.011	0.005	0.005	0.008	-6.247	-7.310	2.679	21.921	25.728
STD	0.916	0.919	0.909	0.890	0.017	0.007	0.007	0.013	0.013	0.005	0.006	0.010	0.598	0.601	0.239	0.285	11.316
BE	1.000	**-0.140**	**-0.241**	**0.199**	-0.030	-0.016	0.018	-0.039	**0.221**	**0.143**	**0.242**	**0.210**	**0.274**	**0.121**	**0.265**	**0.377**	**0.373**
GOV	**-0.128**	1.000	**-0.165**	**0.437**	-0.014	-0.031	0.014	0.020	-0.007	0.011	-0.014	0.041	**0.106**	**0.141**	0.053	-0.057	0.015
OTHER	**-0.231**	**-0.181**	1.000	**0.474**	-0.004	-0.028	-0.003	0.015	-0.062	-0.033	-0.042	-0.005	-0.066	-0.066	-0.044	-0.021	-0.055
ALL	**0.272**	**0.442**	**0.520**	1.000	-0.040	-0.039	0.014	-0.006	**0.075**	0.062	**0.098**	**0.119**	**0.169**	**0.107**	**0.150**	**0.157**	**0.152**
MKT	-0.048	-0.024	0.009	-0.035	1.000	**0.319**	**0.418**	**-0.259**	0.017	0.048	-0.023	-0.024	-0.041	-0.058	-0.071	-0.036	**-0.114**
SMB	-0.023	-0.028	-0.034	-0.035	**0.122**	1.000	0.057	0.020	0.041	0.018	-0.034	0.009	-0.017	-0.031	0.022	0.046	-0.058
HML	0.008	-0.010	-0.012	-0.015	**0.497**	0.014	1.000	**-0.354**	-0.003	0.054	-0.043	0.013	-0.021	-0.028	-0.013	0.004	-0.065
UMD	-0.028	0.033	0.005	0.011	**-0.476**	0.011	**-0.612**	1.000	-0.015	-0.047	-0.066	0.033	0.006	0.034	**-0.090**	**-0.109**	-0.017
|MKT|	**0.346**	0.011	**-0.090**	**0.113**	-0.063	-0.025	-0.068	-0.021	1.000	**0.227**	**0.289**	**0.414**	**0.425**	**0.219**	**0.408**	**0.369**	**0.451**
|SMB|	**0.206**	0.038	-0.048	0.071	**0.106**	0.022	0.033	**-0.080**	**0.334**	1.000	**0.200**	**0.246**	**0.257**	0.049	**0.266**	**0.281**	**0.306**
|HML|	**0.328**	-0.015	**-0.073**	**0.113**	-0.029	0.021	0.067	**-0.132**	**0.464**	**0.245**	1.000	**0.425**	**0.351**	**0.109**	**0.320**	**0.439**	**0.415**
|UMD|	**0.271**	0.029	-0.041	**0.115**	0.021	0.045	**0.119**	**-0.191**	**0.530**	**0.239**	**0.665**	1.000	**0.519**	**0.342**	**0.476**	**0.412**	**0.493**
ILLIQ	**0.358**	**0.100**	**-0.084**	**0.167**	-0.061	-0.014	-0.031	-0.029	**0.482**	**0.306**	**0.431**	**0.546**	1.000	**0.529**	**0.450**	**0.367**	**0.753**
SPREAD	**0.245**	**0.124**	**-0.090**	**0.125**	-0.070	-0.017	-0.018	-0.015	**0.368**	**0.215**	**0.297**	**0.412**	**0.563**	1.000	**0.522**	**0.098**	**0.336**
TURN	**0.291**	0.036	-0.069	**0.126**	-0.051	0.049	0.022	**-0.126**	**0.434**	**0.337**	**0.403**	**0.438**	**0.361**	**0.464**	1.000	**0.720**	**0.501**
VOL	**0.390**	-0.044	-0.044	**0.147**	-0.050	0.047	0.014	**-0.117**	**0.429**	**0.339**	**0.479**	**0.409**	**0.346**	**0.153**	**0.782**	1.000	**0.560**
VIX	**0.462**	0.044	**-0.078**	**0.174**	**-0.133**	-0.037	**-0.096**	0.011	**0.577**	**0.422**	**0.444**	**0.471**	**0.759**	**0.516**	**0.448**	**0.518**	1.000

Table 2: Topical news indices and absolute factor return regressions
This table presents coefficient estimates from regressions of absolute factor returns on the news indices. Year and day-of-week fixed effects are included but their estimates are suppressed. White heteroscedasticity-robust standard errors are shown below coefficient estimates. ***, **, and * indicate statistical significance at the two-sided 1%, 5%, and 10% levels, respectively.

	Absolute Factor Returns			
Dependent Variable:	|MKT|	|SMB|	|HML|	|UMD|
BE News	0.00430***	0.00084***	0.00143***	0.00194***
	(0.00062)	(0.00021)	(0.00026)	(0.00040)
GOV News	0.00003	0.00015	-0.00026	-0.00040
	(0.00038)	(0.00016)	(0.00017)	(0.00030)
Other News	0.00009	0.00005	-0.00009	0.00017
	(0.00033)	(0.00013)	(0.00014)	(0.00028)
Year FE	Yes	Yes	Yes	Yes
Weekday FE	Yes	Yes	Yes	Yes
Number of obs.	1,247	1,247	1,247	1,247
R-square	0.174	0.082	0.211	0.242

Table 3: Big news and aggregate trade-based indicators
This table presents results from regressions of trade-based indicators (ILLIQ, SPREAD, TURN, VOL) on the news indices and controls for daily value-weighted market returns and absolute returns, year effects, and day-of-week effects. White heteroscedasticity-robust standard errors are shown below coefficient estimates. ***, **, and * indicate statistical significance at the two-sided 1%, 5%, and 10% levels, respectively.

	Aggregate Price Protection, Trade, and Expected Volatility Indicators				
Dependent Variable:	ILLIQ	SPREAD	TURN	VOL	VIX
BE News	0.067***	0.102***	0.035***	0.060***	2.824***
	(0.017)	(0.015)	(0.008)	(0.009)	(0.379)
GOV News	-0.002	-0.011	-0.009*	-0.009	0.240
	(0.013)	(0.011)	(0.006)	(0.006)	(0.284)
Other News	-0.011	0.001	0.002	0.010	0.346
	(0.013)	(0.011)	(0.006)	(0.007)	(0.245)
Return	-1.091	-0.982	-0.246	-0.490	-61.998***
	(0.762)	(0.641)	(0.355)	(0.360)	(18.208)
Absolute Return	15.508***	11.196***	6.081***	7.026***	376.052***
	(1.127)	(0.965)	(0.550)	(0.557)	(25.340)
Year FE	Yes	Yes	Yes	Yes	Yes
Day-of-week FE	Yes	Yes	Yes	Yes	Yes
Number of obs.	1,247	1,247	1,247	1,247	1,247
R-square	0.580	0.683	0.336	0.461	0.523

Table 4: Big news and earnings announcement returns

This table shows results of regressions of earnings announcement returns on indicators for unexpected earnings deciles based on quarterly sorts interacted with the news deciles and indicators for top-quintile news days. Controls include: Size, BE/ME, Earnings Persistence, IO, Earnings Volatility, Reporting Lag, # Estimates, Share Turnover, Loss, # Concurrent Announcements. Standard errors for the coefficients are clustered by date. All coefficients are multiplied by 100. ***, **, and * indicate statistical significance at the two-sided 1%, 5%, and 10% levels, respectively.

	Earnings announcement 2-day window excess returns							
	Raw News Index Scores				News Index Top Quintile Indicators			
Parameter	BE	GOV	OTHER	All	BE	GOV	OTHER	All
Earnings Surprise Decile (SUE Decile)	1.08***	1.08***	1.09***	1.08***	1.04***	1.07***	1.11***	1.10***
	(0.13)	(0.13)	(0.13)	(0.13)	(0.13)	(0.14)	(0.13)	(0.13)
News Index	-0.54***	-0.18	0.45***	-0.14	-1.34***	-0.43	0.72**	0.45
	(0.19)	(0.15)	(0.14)	(0.16)	(0.43)	(0.34)	(0.32)	(0.33)
Earnings Surprise Decile * News Index	0.09***	0.02	-0.06**	0.01	0.20***	0.04	-0.09	-0.10*
	(0.03)	(0.02)	(0.02)	(0.03)	(0.06)	(0.06)	(0.06)	(0.06)
Controls interacted with SUE decile	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Day-clustered SE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of obs.	30,540	30,540	30,540	30,540	30,540	30,540	30,540	30,540
R-square	0.142	0.141	0.142	0.141	0.142	0.141	0.142	0.142

Table 5: Post-earnings announcement drift split by news quintile
This table presents results of regressions of post-earnings announcement returns on indicators for unexpected earnings deciles interacted with the news indices. Controls include: Size, BE/ME, Earnings Persistence, IO, Earnings Volatility, Reporting Lag, # Estimates, Share Turnover, Loss, # Concurrent Announcements. Standard errors for the coefficients are clustered by date. All coefficients are multiplied by 100. ***, **, and * indicate statistical significance at the two-sided 1%, 5%, and 10% levels, respectively.

Panel A: BE News

	Post-earnings cumulative excess returns from day t+2 through day t+x			
Parameter	x=7	x=30	x=61	x=90
Earnings Surprise Decile	0.36***	1.01***	1.36***	1.17**
	(0.13)	(0.33)	(0.47)	(0.55)
BE News	0.32*	0.14	1.88***	1.51*
	(0.19)	(0.40)	(0.68)	(0.80)
Earnings Surprise*BE News	-0.07***	-0.07	-0.15*	-0.08
	(0.02)	(0.06)	(0.09)	(0.11)
Controls interacted with SUE decile	Yes	Yes	Yes	Yes
Day-clustered SE	Yes	Yes	Yes	Yes
Number of obs.	30,533	30,445	30,294	30,153
R-square	0.009	0.018	0.024	0.017

Panel B: GOV News

	Post-earnings cumulative excess returns from day t+2 through day t+x			
Parameter	x=7	x=30	x=61	x=90
Earnings Surprise Decile	0.37***	1.02***	1.36***	1.17**
	(0.13)	(0.33)	(0.47)	(0.55)
GOV News	-0.11	0.04	0.17	0.70
	(0.16)	(0.30)	(0.48)	(0.62)
Earnings Surprise*GOV News	0.04*	0.06	0.06	0.00
	(0.02)	(0.04)	(0.07)	(0.08)
Controls interacted with SUE decile	Yes	Yes	Yes	Yes
Day-clustered SE	Yes	Yes	Yes	Yes
Number of obs.	30,533	30,445	30,294	30,153
R-square	0.008	0.019	0.022	0.016

Panel C: OTHER News

Parameter	Post-earnings cumulative excess returns from day t+2 through day t+x			
	x=7	x=30	x=61	x=90
Earnings Surprise Decile	0.36***	1.01***	1.34***	1.17**
	(0.13)	(0.33)	(0.47)	(0.55)
OTHER News	-0.09	-0.49*	-1.19***	-0.98*
	(0.14)	(0.28)	(0.41)	(0.50)
Earnings Surprise*OTHER News	0.02	0.04	0.07	0.01
	(0.02)	(0.04)	(0.06)	(0.07)
Controls interacted with SUE decile	Yes	Yes	Yes	Yes
Day-clustered SE	Yes	Yes	Yes	Yes
Number of obs.	30,533	30,445	30,294	30,153
R-square	0.008	0.018	0.022	0.016

Panel D: ALL News

Parameter	Post-earnings cumulative excess returns from day t+2 through day t+x			
	x=7	x=30	x=61	x=90
Earnings Surprise Decile	3.59***	1.01***	1.35***	1.18**
	(0.13)	(0.33)	(0.47)	(0.55)
ALL News	-0.18	-0.36	0.45	0.85
	(0.16)	(0.29)	(0.46)	(0.54)
Earnings Surprise*ALL News	0.03	0.04	0.00	-0.03
	(0.02)	(0.04)	(0.07)	(0.08)
Controls interacted with SUE decile	Yes	Yes	Yes	Yes
Day-clustered SE	Yes	Yes	Yes	Yes
Number of obs.	30,533	30,445	30,294	30,153
R-square	0.008	0.018	0.022	0.016

Table 6: BE News and indicators of price protection and trade activity around earnings announcements

This table presents regressions of firm-day level price protection or trading indicators on an indicator for whether the day features an earnings announcement for the firm (Earnings Announcement), the BE News index, the interaction between the earnings announcement indicator and BE, the lagged price protection or trading indicator, market returns, and year-month fixed effects. Standard errors are clustered by date. ***, **, and * indicate statistical significance at the two-sided 1%, 5%, and 10% levels, respectively.

	Price Protection or Trade Indicator			
Dependent Var.:	ILLIQ	SPREAD	TURN	VOL
Earnings Announcement	-0.068 ***	-0.066 ***	0.483 ***	0.537 ***
	(0.018)	(0.009)	(0.007)	(0.008)
BE News	0.017	0.007	0.011	0.010
	(0.018)	(0.004)	(0.008)	(0.009)
Earnings Announcement*BE News	-0.002	-0.017	-0.020 **	-0.027 ***
	(0.024)	(0.012)	(0.008)	(0.009)
Lag (Dependent var.)	0.881 ***	0.801 ***	0.842 ***	0.912 ***
	(0.001)	(0.003)	(0.002)	(0.001)
Market Return	-3.452 ***	-1.655 ***	-0.578	-0.583
	(1.071)	(0.289)	(0.390)	(0.430)
Year-Month FE	Yes	Yes	Yes	Yes
Day-clustered SE	Yes	Yes	Yes	Yes
Number of obs.	1,872,393	1,940,830	1,938,510	1,978,474
R-Square	0.782	0.676	0.719	0.834