Who Pays Attention to SEC Form 8-K?

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This Version: January 27, 2018

Abstract

The extant literature provides evidence that, for many SEC 8-K filings, there is a significant market reaction on the date of the event that led to the 8-K filing, on the days between the event date and the filing date and on the filing date. We address the question, who pays attention and who trades on these days – institutional investors, retail investors, or both? We show that there is significant abnormal attention paid by institutional investors on both the filing date and the event date, more so on the event day; but there is no obvious pattern of abnormal attention from retail investors on either of these dates. Moreover, most price discovery occurs during the pre-filing period when institutional investors are paying attention; suggesting that the 8-K filing has less informational benefit, particularly to retail investors. We observe, for several events related to company senior management, that the 8-K filings appear to attract media coverage and retail attention, which has the undesirable consequence of price pressure on the filing date and this price change eventually reverts.

Key Words: SEC 8-K filings; Investor Attention; Price discovery; Price pressure
JEL Codes: D8; G1; G2; M4

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[*] We thank Ed deHaan and Suhas Sridharan and seminar participants at Indiana University, London Business School, and the University of Amsterdam and participants at the 2018 Financial Auditing and Reporting Section Midyear Meeting for helpful comments and suggestions. Please send all correspondences to Zhi Da.
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1. Introduction

Section 404 of the Sarbanes-Oxley Act of 2002 requires public companies to disclose "on a rapid and current basis" material information regarding changes in financial condition or operations as the Securities Exchange Commission, SEC, by rule, determine to be necessary or useful for the protection of investors and in the public interest.[1] The disclosure is filed with the SEC on Form 8-K, which companies must file "to announce major events that shareholders should know about." The stated goal of the filing is "[to provide] current information to help investors make informed decisions." For many of these filings the form does not have to be filed until four days after the event, which triggered the filing, occurred. The extant literature shows that, for many these filings, there is a significant market reaction on the event date, on the days between the event date and the filing date, and on the filing date. We address the question, who seeks information and who trades on these days – institutional investors, retail investors, or both?

We show that there is significant abnormal attention paid by institutional investors on both the filing date and the event date but there is no obvious pattern of abnormal attention from retail investors on either of these dates. Searches by institutional investors on Bloomberg for information on firms, which file 8-K's, increase significantly on both the event date and the filing date, but there is no significant increase in Google searches (presumably a major source of on-line information for retail investors) on either the event date or the filing date. Further, the abnormal searching by institutional investors is significantly higher on the event date than on the filing date. This evidence suggests that institutional investors learn about the event by means other than the 8-K and search for further information before the 8-K is filed; they then undertake

[1] Securities and Exchange Commission (SEC), (2004): Financial reporting release nos. 33-8400; 34-49424. Final rule: Additional Form 8-K disclosure requirements and acceleration of filing date (August 23).

further search on the filing date. The evidence is also consistent the 8-K not being an information source for retail investors.

Further analyses show that most price discovery occurs during the pre-filing period and, to a lesser extent, on the filing date when institutional investors are paying attention. There is no evidence of significant price discovery due to retail investor attention. These results suggest that the 8-K filing has limited informational benefit; institutional investors have learned about the event before the filing and retail investors do not appear to contribute to price discovery either on the event date or on the filing date. More importantly, for several events related to a company senior management, the 8-K filings appear to have the undesirable consequence of attracting media coverage and retail attention; such retail attention results in price pressure on the event date and this price change eventually reverts. We show that institutional investors appear to trade against retail investors, profiting from providing liquidity. In short, our analyses suggest that Form 8-K may not always serve to protect the interests of retail investors, especially when it does not contain incremental value relevant information.[2]

We illustrate our results in Figure 1 using Range Resources Corp as an example. On December 13, 2011 at 4:59pm, the company filed an 8-K (the Filing Day) under Item 5.02. The event involved changes in management, which occurred on December 8, 2011 (the Event Day). The firm issued a press release before the filing. Our evidence suggests that institutional investors paid attention to the event on that day. Share trading volume spiked and reached a level of 5 million shares, and the stock price dropped by -4.57%. In sharp contrast, retail attention only

[2] In her 2014 speech to the Consumer Federation of America, SEC Commissioner Mary-Jo White said: "…we are … focused on protecting the consumers in our securities markets – especially the individual investors, who we often refer to as "retail" investors – who invest their own money to save for retirement, or to buy a home or to send their children to college. The retail investor must be a constant focus of the SEC – if we fail to serve and safeguard the retail investor, we have not fulfilled our mission."

spiked on the day after the filing, seemingly responding to the post filing media coverage, which was as broad as the coverage on the filing day. The spike in retail attention coincided with more trading volume (3.8 million shares) and a further price decline of -3.47% on December 14. This additional price drop eventually reverted in a few days.[3]

Our study contributes to the current literature on Form 8-K filing by showing evidence regarding who is seeking the information contained in the 8-K and when are they searching for this information. Carter and Soo (1999) study a sample of 5,736 8-Ks from 1993 and find a strong price reaction around the event date. Lerman and Livnat (2010) examine a large sample of 8-Ks filed between 2005 and 2007 after the SEC expanded the scope of 8-K events and reduced the filing delay. They also find a strong price reaction around the event date. McMullin et al. (2017) examine the timing of the intra-quarter price formation around this SEC expansion of the scope and timeliness of 8-K filings and show that, after the expansion, price formation occurs earlier in the quarter. Our study extends these analyses in a recent sample period from 2010 to 2015. We study the relative price discovery around the pre-filing period, the filing date and the post-filing period. Most importantly, our unique data allow us to provide evidence regarding who is seeking information on those dates. Thus, we shed new light on the relevance of 8-K filings for the protection of investors.

Finally, to clarify, we certainly do not advocate the SEC to abolish the 8-K filing requirements. It is very likely that such a requirement to disclose material information has encouraged the firms to be more open to sharing information with outside investors, even though such information may be disseminated via other channels such as the firm press release, earnings

[3] We provide a more detailed discussion of this example later.

conference call, traditional news media, and social media, rather than via the 8-K filing.[4] Our findings do suggest that given other firm information disclosure channels, the incremental information value of the 8-K filing is limited in itself. Retail investors should be made aware of this fact so they do not overreact to stale news.

Our findings that institutional investors may benefit from trading opportunistically against retail investors around 8-K filings are consistent with the recent evidence in Cohen, Jackson, and Mitts (2015), Jackson, Jiang, and Mitts (2015), and Rogers, Skinner, and Zechman (2017) that investors who have paid for earlier access to regulatory filings can trade profitably.

While we focus on examining ex-post attention of different types of investors on both 8-K event dates and filing dates, we acknowledge the fact that 8-K filing dates are often chosen endogenously as modeled theoretically by Guttman, Kremer, and Skrzypacz (2014). Indeed, recent studies by Segal and Segal (2017), Niessner (2015), Goldstein and Wu (2015), Bird, Karolyi and Ma (2016) all show that firms may strategically delay or misclassify the 8-K filings to attract or distract investor attention to certain events.

Our paper proceeds as follows. We begin in Section 2 with a description of our measures of institutional and retail attention and the sources of data for these measures as well as the sources of data for subsequent analyses. We also present descriptive statistics on the number of observations for each filing type and filing lags in this section. Section 3 provides evidence of the extent of institutional and retail attention on the event and filing dates. In section 4, we provide evidence regarding the determinants of investor attention. We investigate the relation between investor attention and price discovery in Section 5. Section 6 examines retail trading on

[4] See Miller and Skinner (2015) for an excellent survey of the evolving disclosure landscape.

the filing day, subsequent return and institutional trading activity in the post-filing days. Section 7 provides a summary and conclusions.

2. Data and Summary Statistics

The focus of our analyses is on abnormal searches for information by institutional and retail investors. We use a measure of searching by institutional investors developed by Ben-Rephael et al. 2016; this measure is based on Bloomberg searches. We use a measure of searching by retail investors developed by Da et al., 2011; this measure is based on Google searches. Since the construction of our sample is primarily driven by the availability of data to calculate these measures, we describe both these measures and our sources of data in this section.

2.1 Sample Construction

Due to the availability of data used to calculate our main variables of interest, our sample period ranges from February 2010-December 2015.[5] Following Da et al. (2011), we begin with the sample of Russell 3000 stocks. We then require the stocks in our sample to satisfy the following conditions: (1) have measures of news-searching and news-reading activity on Bloomberg terminals; (2) have a share code of 10 or 11 in the Center for Research in Securities Prices (CRSP) database; and, (3) have book-to-market information for the DGTW risk adjustment (Daniel, Grinblatt, Titman, and Wermers, 1997).

Form 8-K filings are obtained from the SEC's EDGAR database.[6] We begin with the full sample of 454,014 8-K filings issued between February 17, 2010 and December 31. Eliminating

[5] Bloomberg's historical attention measures begin on 2/17/2010. Historical data are missing for the periods of 12/6/2010 – 1/7/2011 and 8/17/2011 – 11/2/2011.

[6] The Securities and Exchange Commission (SEC) mandated new disclosure requirements in Form 8-K, which became effective on August 23, 2004. The SEC expanded the list of items that must be reported under the Securities Exchange Act of 1934 and shortened the Form 8-K filing deadline for most items to four business days after the

filings with multiple item types (not counting Item 9.01) and filings that share a filing date or event date with another 8-K by the same firm reduces this number to 297,472 filings.[7] Limiting filings to those made by firms with common stock trading in the U.S. (CRSP share codes 10 and 11 and exchange codes 1, 2, and 3) further reduces this number to 139,953 filings. Limiting firms to those with Bloomberg's attention measures data reduces the sample to 90,052 filings. Finally, after applying the DGTW filters, our final sample includes 85,067 unique 8-K filings across 1,968 firms.

For each filing, we capture the filing date, the item type, and the text of the 8-K, including the text from any attached exhibits (i.e., Item 9.01). In addition, firms are required by the SEC to include the date of the earliest event reported in the 8-K. In the filing, this is called either the "date of report", the "date of earliest event reported", or the "conformed period of report." It is almost always included using that final title in the header of the filing. We collect this event date from the filings in addition to the other variables.

For most item types, firms are required to file an 8-K within four business days of the event date. There are a three important exceptions: results of operations and financial condition (Item 2.02), Regulation Fair Disclosure (Item 7.01 and 8.01), and voluntary disclosures (Item 8.01). When the release of a firm's operations or financial condition is accompanied with a conference call, the 8-K need only be released prior to the call which can be up to 48 hours following the initial release. Filings associated with Regulation Fair Disclosure must be made as soon as the intentional release of non-public information is made, or as soon as the unintentional

occurrence of an event triggering the disclosure requirements of the form. The new Form 8-K includes 33 different items across nine categories (see Lerman and Livnat, 2010).

[7] We exclude Item 9.01 from this requirement because Item 9.01 is used to provide additional financial statements and exhibits information and always accompanies another item.

release of such information is discovered. Finally, voluntary disclosures made under Item type 8.01 have no filing deadline.[8]

2.2 Abnormal Institutional Attention (AIA)

Bloomberg provides data that include transformed measures of news reading and news searching activity on Bloomberg's terminals. The majority of Bloomberg terminal users are likely to be institutional investors who have both the incentives and financial resources, which enable them to react quickly to important news about a firm (Ben-Rephael et al. 2016).[9]

In order to construct their own measure of attention, Bloomberg records the number of times news articles on a particular stock are read by users of its terminals and the number of times users actively search for news about a specific stock. Searching for news requires users to actively type the firm's stock ticker symbol followed by the function "CN" (Company News). In contrast, users may read an article without initially realizing it refers to a specific firm. In order to place more emphasis on deliberate news seeking for a specific firm, Bloomberg assigns a score of 10 when users search for news and 1 when users read a news article. These numbers are then aggregated into hourly counts. Using the hourly counts, Bloomberg then creates a numerical attention score each hour by comparing the average hourly count during the previous 8 hours to all hourly counts over the previous month for the same stock. They assign a score of 0 if the rolling average is in the lowest 80 percent of the hourly counts over the previous 30 days.

[8] Filings that are submitted to the SEC after 5:30 p.m., Eastern are considered to be filed on the next business day.
[9] Ben-Rephael et al. 2016 observe, "Since Bloomberg terminals are expensive, with annual subscriptions costing $20,000 to $24,000 per machine, and are leased on a two-year basis, they are much more likely to be used by institutional investors than retail investor. In fact, there are only about 320,000 subscriptions world-wide. A search of Bloomberg terminal user profiles reveals that almost 80 percent of users work in financial industries (including banking, asset management, and institutional financial service). Their most common job titles include portfolio/fund/investment managers, analyst, trader, executive, director, president and managing director)."

Similarly, Bloomberg assigns a score of 1, 2, 3 or 4 if the average is between 80 percent and 90 percent, 90 percent and 94 percent, 94 percent and 96 percent, or greater than 96 percent of the previous 30 days' hourly counts, respectively. Finally, Bloomberg aggregates up to the daily frequency by taking a maximum of all hourly scores throughout the calendar day. Bloomberg provides these latter transformed scores, but does not provide the raw hourly counts or scores.[10]

Since we are interested in abnormal attention, and not just the level of attention, the Ben-Rephael et al. 2016 measure of abnormal institutional attention (*AIA*), which we use, is a dummy variable that takes a value of 1 if Bloomberg's daily maximum is 3 or 4, and 0 otherwise. This captures the right tail of search activity. In other words, an *AIA* equal to one indicates the existence of a shock to institutional investor attention on a particular stock during a trading day. The dummy variable allows easier interpretation of the differential effect of high vs. low shocks to institutional attention on economic outcomes.

User requests at the Securities and Exchange Commission's (SEC) EDGAR (Electronic Data Gathering, Analysis, and Retrieval) online system have also been used to track investor attention. Investors requesting information on EDGAR are also likely to be institutional investors. The advantage of *AIA* over the EDGAR measure in the context of studying 8-K events is clear: *AIA* uniquely allows us to measure institutional investor attention on the event date.

2.3 Abnormal Attention by Retail Investors

Following Da et al. (2011), retail attention is measured using the daily Google Search Volume Index (*DSVI*), which is the search volume on a stock ticker on a particular day divided

[10] See the online data appendix to Ben-Rephael et al. 2016 for details on downloading the Bloomberg search data: http://ryan.israelsen.com or https://www3.nd.edu/~zda/

by the time-series average. Numerous studies have found that *DSVI* captures retail attention. For example, Da et al. (2011) find that *DSVI* is correlated with Dow Jones new coverage of the firm and spikes when the stock is discussed by Jim Cramer on CNBC *Mad Money*. Drake et al. (2012) find that *DSVI* spikes markedly on earnings announcements. Similarly, deHaan et al. (2015) also use *DSVI* to measure retail attention around earnings announcements. Madsen and Niessner (2016) show that *DSVI* increases when a firm advertises, especially in weekend business publications.

To further reduce the measurement error associated with ticker search on Google, we follow Niessner (2015) and require that searching for the stock ticker in Google actually brings up the stock price or a box with information about the firm in question. In addition, we exclude "noisy" tickers such as "GPS," "DNA," "A," and "ALL." Interested readers may refer to Da et al. (2011) for more discussion on measurement issues.

To facilitate the comparison with *AIA*, which is a dummy variable, we create a dummy variable version of *DSVI* following Bloomberg's methodology (we denote this variable, *DADSVI*). Specifically, we assign *DSVI* on day *t* one of the potential 0, 1, 2, 3, or 4 scores using the firm's past 30 trading day *DSVI* values. If *DSVI* on day *t* is in the lowest 80 percent of past *DSVI* values, it receives the score 0; if *DSVI* on day *t* is between 80 percent and 90 percent, 90 percent and 94 percent, 94 percent and 96 percent, or greater than 96 percent, it receives a score of 1, 2, 3, or 4, respectively. Then, on day *t*, the dummy variable *DADSVI* is set to one if the score is 3 or 4, and 0 otherwise. In other words, a *DADSVI* of one indicates a spike in retail attention on that day in a manner that is similar to the way *AIA* equal to one indicates a spike in institutional attention. Defining *AIA* and *DADSVI* consistently as dummy variables that capture spikes in searches has two advantages. First, spikes in search are more likely driven by firm

events rather than measurement error. Second, the dummy variable definition is robust to the fact that Bloomberg search and Google search have different underlying distributions.

The data coverage of *DADSVI* is smaller than *AIA*. To maintain statistical power and avoid creating any bias in the sample by dropping firms with no *DADSVI* information, we follow the approach of Pontiff and Woodgate (2008). That is, we define a dummy variable, which is equal to 1 whenever *DADSVI* exists and zero otherwise. Next, we replace the missing *DADSVI* observations with zero values. Finally, in the regressions we include both the dummy and the augmented *DADSVI* variable. The coefficient on this variable is an estimate of the loading on the *DADSVI* variable on the subsample for which it is available.

2.4 Other variables

We obtain news coverage of our sample stocks from RavenPack. The data include both news articles and firm press releases. We create three dummy variables: *NewsDum*, equal to one when there is news, zero otherwise; *PressRlsDum*, equal to one when there is a press release, zero otherwise; and *TotNewsDum*, which is the maximum of both dummies.

We obtain institutional trading activity data from Ancerno Ltd. Ancerno is a widely recognized firm, which consults to institutional investors regarding transaction costs. The data, which we use, includes all trades made by Ancerno's base of clients, which are primarily mutual funds and pension plans. A detailed explanation concerning Ancerno variables is provided in the appendix of Puckett and Yan (2011). Our sample of transactions from Ancerno ends in June, 2015. As a result, the sample used in our trading analysis ends on that date.

Other variables used in our analysis are constructed from the standard databases: Compustat, CRSP, and I/B/E/S. Table 1 defines all of the variables used in this paper.

2.5 Summary Statistics

Table 2 provides summary statistics. Panel A provides descriptive statistics for selected firm characteristics. The average (median) market capitalization of firms in our sample is 7 (1.3) billion dollars. The average institutional holding is 62 percent, with nine analysts covering the firm, on average. Panel B reports statistics regarding the number of 8-K filings per firm. Earnings announcements (Item 2.02) comprise four of the annual 8-K filings. There are between five and six non-2.02 8-K filings per firm, in any given year.

Table 3 provides additional statistics regarding the number of 8-K filings in our sample, conditioning on item type and filing gap. Filing gap is the number of business days between the event day and the filing day. For example, a filing gap of zero means that the event and the filing occurred on the same business day. In a similar manner, a filing gap of 1 means that the 8-K filing occurred on the next business day. In addition, although there are 33 potential items that require an 8-K filing, six of these items account for 96 percent of all observations.[11] Thus, in our analysis that explores differences across items, we focus on these major items. Of this group, earnings announcements (Item 2.02) account for almost 34 percent of the observations. Since earnings announcements are scheduled in advance and the announcement (event) is heavily covered by the media, we analyze them separately and describe the results in the last part of the paper.[12]

[11] The items are: Item 1.01 (entry into a material definitive agreement); Item 2.02 (results of operations and financial condition); Item 5.02 (departure/election of directors or principal officers); Item 5.07 (submission of matters to a vote of security holders); Item 7.01 (regulation FD disclosure); and, Item 8.01 (other events that are not specifically called for by Form 8-K that the firm considers to be of importance to security holders).
[12] We find that 70 percent (92 percent) of the earnings announcements have a press release (any type of news) on the announcement (event) day.

Panel A of Table 3 provides sample statistics, conditioning on the filing gap, for the following samples: (1) *All Items*, which includes the full sample; (2) *Major Items*, which includes the six items mentioned above; (3) *All net 202*, which excludes item 202 (earnings announcements) from the *All Items* group; and, *Major net 202*, which excludes item 202 from the *Major Items* group. Focusing on samples 3 and 4, we can immediately observe that more than half of the Form 8-Ks, excluding earnings announcements, are not filed on the event day.

Panel B of Table 3 provides a further breakdown based on item type. Items 2.02 and 7.01 stand out from the rest. For these two items, more than 80 percent of all 8-K filings are made on the event date and very few are filed more than one business day after the event date. This is consistent with the differential regulatory treatment of these two item types.

3. Institutional and Retail Attention on Event and Filing Days

We show, in Figure 2, changes in the frequency of institutional attention (*AIA*, graphs on the left-hand side of the page) and retail attention (*DADSVI*, graphs on the right-hand side) on the 8-K event and filing days. Since we are interested in the way these measures change around 8-K event and filing dates, we subtract the mean of the respective measure over days t-26 to t-5 relative to the event day. We plot the frequencies for filing gaps on 1, 2, 3, and 4 days. The graphs, which are centered on the filing date, plot the mean change in *AIA* and change in *DADSVI* (the solid line) and the 95 percent confidence interval (the dotted lines). The stark difference between the *AIA* and *DADSVI* graphs is immediately apparent. In particular, there is very little retail (*DADSVI*) attention around either the event date or the filing date but, in contrast, institutional attention (*AIA*) increases considerably on both the event and filing days.

For filing gaps greater than one day, the *AIA* is greater on the event day than on the filing day indicating that institutional investors are gathering information before it is filed in the 8-K.

Table 4 presents the results of statistical tests of the significance of investor attention and differences in attention across event and filing dates. We focus on 8-K filings with a filing gap of one or more business days. We provide data for the items for which we have most observations. These items are 1.01: "*Entry into a Material Definitive Agreement*," 5.02: "*Departure of Directors or Certain Officers; Election of Directors; Appointment of certain Officers; Compensatory Arrangements of Some Officers*," 5.07: "*Submission of Matters to a Vote of Security Holders*," 7.01: "*Regulation FD Disclosure*," and 8.01, "*Other Events*".

All items attract statistically significant institutional attention on the event day. Most noteworthy is the change in *AIA* of 0.178 (t-statistic of 9.81) on the day of the event that leads to an 8-K, Item 7.01 filing. That is, there is a 17.8 percent increase in the amount of focused institutional attention on the event day. Analysis of *AIA* provides clear evidence that some items attract more attention than others. For example, the difference in *AIA* average frequency between Item 5.02 and Item 8.01 is 0.128 (0.045) on the event (filing) day. For all Items other than Item 5.07, there is a significant increase in institutional attention on the event day; interestingly for Item 5.07 where the information regarding the matter to be put to a vote of shareholders likely is well-known by the filing date, there appears to be less than average *AIA* on the filing date. The *F-E Diff* column of Table 4, Panel A confirms that, with the exception of Item 5.02, *AIA* is significantly higher on the event day than on the subsequent filing day.

Consistent with our observations from Figure 2, the properties of *DADSVI* are noticeably different from the properties of *AIA*. With the exception of Item 7.01, where *DADSVI* is

significantly different from zero on the event day, there is very little evidence of retail attention on either the event date or on the filing date.

Panel B of Table 4 provides further statistics regarding the differences in F-E differences across *AIA* and *DADSVI.* The Wald tests confirm that *AIA* is statistically and economically significantly higher than *DADSVI* on the event day for all filing types; for example, there is 15.8 percent more abnormal institutional attention on the event day corresponding to an Item 7.01 filing than retail attention on the event day.

4. What Drives Institutional and Retail Attention?

In this section, we examine the factors, which are associated with institutional attention and retail attention on both the event date and the filing date. Our analyses are based on Probit and OLS regression models with *AIA* and *DADSVI* as dependent variables. These regressions are as follows (firm and time subscripts are omitted):

$$\begin{aligned} ISA = {} & \alpha_0 + \alpha_1 Item\_5.07 + \alpha_2 Item\_1.01 + \alpha_3 Item\_7.01 + \alpha_4 Item\_8.01 + \\ & \alpha_5 NewsDum\ t + \alpha_6 PressRlsDum\ t + \alpha_7 AbsDgtw\ t + \alpha_8 AbnHLtoH\ t + \\ & \alpha_9 AbnVol\ t + \alpha_{10} AbnES\ t + \alpha_{11} Abn|AR5|\ t + \alpha_{12} AIA\ t + \alpha_{13} LnSize + \\ & \alpha_{14} LnBM + \alpha_{15} SDRET + \alpha_{16} LnNumEst + \alpha_{17} InstHold + \alpha_{18} Tuesday + \\ & \alpha_{19} Wednesday + \alpha_{20} Thursday + \alpha_{21} Friday + \varepsilon \end{aligned} \quad (1)$$

where *ISA* is one of two indicators of search activity (either *AIA*, which is a measure of search activity by institutional investors or *DADSVI*, which is a measure of search activity by retail investors); Item_5.07, Item_1.01, Item_7.01 and Item_8.01, which are variables that indicate that the 8-K filing is a 5.07, 1.01, 7.01, or 8.01 filing leaving Item 5.02 8-K firms as the base (intercept) set of observations; *NewsDum* and *PressRlsDum,* which are dummy variables that capture news articles published on Dow Jones newswire and other press releases (as captured by

RavenPack); variables to capture characteristics of the prices of the stock for which the 8-K is filed, including: *AbsDGTW*, which is the absolute value of the DGTW difference between the CRSP daily stock return and the benchmark portfolio daily return, *AbnHLtoH*, which is the ratio of the difference between the stock's daily high and low price to the daily high price divided by the average of this ratio over the trading days t-27 to t-6, *AbnVol*, which is the abnormal trading volume calculated as the volume on the event (or filing) day relative to the volume on days t-27 to t-6, *AbnES*, which is the abnormal effective spread calculated as the daily average effective spread (based on TAQ data) divided by the average daily effective spread over days t-27 to t-6, *Abn |AR5|*, which is the absolute value of the 5-minute return autocorrelation during the day (calculated using TAQ data) divided by the daily average over days t-27 to t-6; *DADSVI*, which is included when *AIA* is the dependent variable and *AIA*, which is included when *DADSVI* is the dependent variable, to examine the extent to which institutional investors and retail investors search at the same time;[13] a number of factors to capture firm characteristics including, *LnSize*, which is the log of the average market capitalization over days t-27 to t-6, *LnBM*, which is the log of the firm's book-to-market ratio rebalanced every June following Fama and French (1992), *SDRET*, which is the standard deviation of daily returns over days t-27 to t-6, *LnNumEst*, which is the log of the number of analysts following the stock, *InstHold*, which is the percentage of shares held by institutional investors (obtained from the Thompson Reuters CDA/Spectrum institutional holdings (S34) data base); and dummy variables, *Tuesday, Wednesday, Thursday* and *Friday* to capture differences in attention across days of the week.

[13] The coefficient relating AIA to DADSVI reflects the portion of times when institutional investors and retail investors search at the same time.

In unreported tests, we also include variables that capture newsworthy events over the past 30 days to allow for delayed reaction by institutional investors to past news. The inclusion of these variables has no noticeable effect on our results.

The results of these analyses are summarized in Table 5. The results of the analyses with *AIA* as the dependent variable are in Panel A and those based on *DADSVI* as the dependent variable are summarized in Panel B. Consistent with our results summarized in Table 4, we see, in Panel A of table 5, that the probability of observing a shock in institutional attention to a Items 5.07, 1.01, 7.01 and 8.01 on the event day is much higher than the probability for Item 5.02 (the omitted dummy). For example, there is a 0.667 greater probability of observing increased institutional attention to Item 8.01 on the event day than to Item 5.02. Also consistent with Table 4, institutional attention on the event day is considerably more than institutional attention on the filing day; for Item 8.01, for example, there is a 0.326 probability of increased attention on the filing day. Further, there is increased attention when there are contemporaneous press releases and we observe that *AIA* is related to several of the stock price-related variables. Importantly, however, the attention to the 8-K event and on the 8-K filing day is still evident (in the significant coefficients on the 8-K Item dummies) after controlling for the firm characteristics. *AIA* is associated with higher levels of *DADSVI*, which likely corresponds to events, which capture attention in general. Larger firms, more volatile firms and firms with more analyst coverage have higher probability of institutional attention on the event day. Finally, we observe less institutional attention to events that occur on Fridays.

The results in Table 5, Panel B stand in stark contrast to those on Panel A; there is no evidence of significant *DADSVI* either on the event date or on the filing date.

5. Investor Attention and Price Discovery

In this section, we examine the effect of *AIA* on the price discovery process. We focus on 8-K filings with a filing gap of two or more business days (we exclude Item 2.02 filings, which only very rarely have a filing gap).[14] In particular, we examine the price discovery process during the pre-filing and filing periods. Denoting the filing day as day *t*, the pre-filing cumulative return is calculated from the event day to day *t*-1. In turn, the filing return, is calculated from day *t* to *t*+1. For completeness, we also report results for the post-filing period, where the cumulative return is calculated from day *t*+2 to *t*+30.

We begin by reporting average returns conditioning on *AIA* based on filing gap and item type. For ease of presentation, we focus on average absolute returns, where we multiply the pre-filing and filing averages by -1 if the total cumulative returns from the event day to the filing day is negative.

Panels A to C of Table 6 report the averages absolute returns for 2 to 4 business-day filing gaps, respectively. Focusing on Panel A, we can clearly see that the majority of price discovery takes place during the pre-filing period. This is especially true for Item 7.01. In addition, the ratio of pre-filing return to total return over the entire event to filing period is much higher when institutional investors are paying attention. For example, for *All Items*, this ratio increases from 60 percent to 72 percent when *AIA* is 1. Finally, the post-filing returns are neither statistically nor economically significant, suggesting the most, if not all, of the information is incorporated during the event-filing period. The results are qualitatively similar for filings with 3

[14] Events that occur after the market closes have an effect on the following trading day. Since the timing of the event is not available, requiring a 2-day gap between the event and filing allows us to measure the event day return more accurately.

or 4 business-day gap. Not surprisingly, when the gap increases, the price discovery during the pre-filing period becomes even more important.

Next, we explore the effect of AIA on price discovery using regression analysis. To explore the percentage of the price discovery that occurs during the pre-filing and filing periods, we follow Barclay and Hendershott (2003) and use the weighted-price-contribution (WPC) measure as our price discovery measure. This WPC measure is:

$$WPC_i = \sum_{s=1}^{S} \left[\left(\frac{|ret_s|}{\sum_{s=1}^{S} |ret_s|} \right) \left(\frac{ret_{i,s}}{ret_s} \right) \right] \qquad (2)$$

where i is the selected period (i.e., pre-filing or filing period) and S is the total number of firms. The intuition behind this measure is straightforward; for example, an unconditional average of 60 percent during the pre-filing period suggests that 60 percent of the total price change from the event date to the filing date (inclusive) occurred during the pre-filing period. The use of a weighted average gives more weight to more important events and reduces the noise in estimation. We also censor the upper and lower 1 percent of the distribution of *WPC* to avoid the effect of outliers.

Following the definition of the WPC measure, we run WLS regressions (using $|ret_s|$ as the weight) of WPC_i on *AIA*, *DADSVI*, and *TotNewsDum* (which captures any type of news), controlling for other firm characteristics and a battery of fixed effects.

In particular, we are interested in exploring the effect of pre-filing *AIA* on filing day price discovery, controlling for retail attention, news and other explanatory variables. Consequently,

AIA, *DADSVI* and *TotNewsDum* are measured during the pre-filing periods, and denoted with the suffix PF. Putting all three variables together in the same regression allows us to explore the incremental effect of *AIA_PF* (abnormal institutional attention on the event date) on price discovery, and to contrast the contribution of *AIA* and *DADSVI*. Other firm controls are measured prior to the event. We add a control for abnormal trading volume because previous studies have found that trading volume increases on the event day (Lerman and Livnat, 2010). Finally, we control for pre-filing stock return, in order to ensure that *AIA* is not merely a response to the event day return.

The results of the regression are summarized in Table 7. Each of the nine specifications explore a different sub-sample; Specification 1 explores all items, Specifications 2 to 4 explore the filing gap, and Specifications 5 to 9 focus on the item type. The results are consistent with the analysis documented in Table 6. A spike in *AIA* during the pre-filing period results in less price discovery during the filing period. Importantly, the effect of *AIA* on price discovery is distinct from retail attention, news, trading volume and pre-filing return.

Focusing on Specification 1, an *AIA* coefficient of -0.128 suggests that the price discovery during the pre-filing period is higher by 12.8 percent when institutional investors are paying attention, which results is a reduction of 12.8 percent in the subsequent price discovery during the filing period. Similar to Table 6, the effect is stronger for Items 7.01 and 8.01, where the increase in price discovery during the pre-filing period is around 20 percent.

This increased price discovery on events with a spike in institutional attention (*AIA* = 1) is consistent with two potential explanations. First, institutional attention affects the information processing and, as a result, price discovery is higher. Second, *AIA* is the catalyst for larger

changes in prices (i.e., reverse causality). Importantly, the negative *AIA* coefficients on the filing day, and the fact that we control for the pre-filing returns, is consistent with the notion that institutional attention contributes to the price discovery during the pre-filing period and this, in turn, leads to less subsequent price discovery.

In a sharp contrast, *DADSVI* is not associated with economically or statistically significant price discovery. The *TotNewsDum*, however, is statistically significant in some of the specifications, but the economic significance is only around 1/3 of the price-effect of *AIA* (Specification 1).

6. Retail Attention on the Filing Day, Subsequent Stock Returns and Institutional Trading

In this section, we explore the market price reaction to the 8-K filing when the filing is delayed. We examine the relation between filing day returns and returns on subsequent days. We observe that retail investor attention is associated with price pressure, which drives prices away from fundamental values. This leads us to examine the relation between retail trades and institutional trades. In particular, we are interested in whether institutional investors take the other side of the retail trades.

6.1 Price Response in the Filing Day and Subsequent Returns

To link the price response on the filing day to subsequent returns,da we regress cumulative DGTW abnormal returns over several intervals subsequent to the filing period on the return during the filing period (*FilingRet*), *AIA*, *DADSVI* and *TotNewsDum*, all measured during the filing day and denoted with the suffix F. For simplicity, day t+1 is defined as the first day after the filing period. We also analyze the interaction between these variables and the return

during the pre-filing period (*PreFilingRet*). A positive (negative) coefficient suggests a price continuation (reversal), which indicates under (over) reaction.

Table 8 reports the regressions results. Focusing first on *AIA*: overall, the interaction terms of *AIA* with *PreFilingRet* and *FilingRet* suggest that there is neither under nor overreaction to the 8-K filing when institutional investors pay attention (none of estimate of the coefficients on *PreFilingRet*AIAF* and *FilingRet*AIAF* is significantly different from zero). In contrast, the interaction of *DADSVI* and *FilingRet* is negative and significant, both statistically (t-statistics greater than 1.96 for cumulative return intervals of 2 to 6 days) and economically. This suggests that when the filing of an 8-K triggers attention from retail investors, this attention results in price pressure that drives prices away from their fundamental value.[15]

6.2 Institutional Investor Trading

Having shown that retail investor attention results in price pressure, we next examine how institutional investors trade in general and in response to retail investors during this period. We use Ancerno data to calculate daily institutional trading for each stock and day, defined as the stock's net number of shares purchased and sold by institutional investors normalized by the stock's daily volume obtained from CRSP. We follow the analysis conducted in Table 8, replacing the cumulative returns with cumulative institutional trading. We start the trading accumulation from the filing period. For simplicity, we define the filing period as day *t*. Thus, *t_t* in Specification 1 refers to cumulative trading on the filing day.

[15] The return reversal pattern is even stronger if we run Weighted Least Square (WLS) regressions where we weight each observation by its absolute total event window return. For example, in Specification 4 of Table 8, the coefficient on *FilingRet*DADSVI* F increases from -0.194 when using OLS to -0.309 when using the WLS.

Table 9 presents the regressions results. We highlight key findings. First, institutional investors continue to trade in the same direction as the return on the 8-K filing date; the estimates of the *PreFilingRet* and *FilingRet* coefficients are positive and statistically significant (e.g., for the period *t* to *t*+1, the estimates of the coefficients on *PreFilingRet* and *FilingRet* are 0.133 and 0.760 with t-statistics of 2.91 and 10.86). Second, institutional attention on the filing date appears to attenuate this pattern. That is, greater attention on the filing day translates into less trading in the same direction of the returns. This is evident in the negative coefficient estimates on the interaction terms between *AIA* and *PreFilingRet* and *FilingRet*. Third, consistent with the price pressure of retail investors on filing day, the coefficient on *FilingRet*DADSVI* is negative and significant suggesting that institutional investors reduce their trading activity following high retail attention on the filing day and subsequent days.

Taken together, these results suggest that when retail investors pay attention on the filing date, they are likely to trade in the direction of the filing date return. Their trades demand liquidity and therefore result in the initial price pressure and subsequent price reversal as documented in Table 8. Institutional investors, on the other hand, tend to trade against the filing date return after paying attention. In other words, they likely benefit from providing liquidity to the retail investors.

6.3 Events Associated with Price Pressure and Subsequent Reversal

To explore which types of corporate events are associated with the reversal pattern documented in Table 8, we examine differences in item type as well as in the textual content of the filings. In particular, we focus on all 8-K filings with a spike in retail attention (*DADSVI* = 1)

on the filing day and a subsequent return reversal. We denote these observations as the "Reversal Sample."

Panel A of Table 10 examines the number of observations in the reversal sample for each of the five major 8-K items. As a benchmark for comparison, we identify a sample of all 8-K filings with a spike in retail attention on the filing day and without a subsequent reversal pattern. We denote these observations as the "No-Reversal BM Sample". We then calculate the differences between the reversal and no-reversal samples together with the statistical significance of the difference. The analysis reveals that Item 5.02 draws the most attention that is associated with the price reversals. Specifically, Item 5.02 accounts for 52 percent of all cases, and is 17 percent higher than its benchmark. Interestingly, Items 7.01 and 8.01 seem to draw less attention.

We use a novel textual analysis technique called topic modeling to consistently and systematically identify the types of corporate events disclosed in the 8-Ks. Topic models are used to objectively reveal a set of "topics" in a body of documents by finding latent relations between groups of words, which tend to appear together. Using a topic model, we examine the thematic content of all 8-K disclosures by publicly listed firms in the U.S. between 2010 and 2015 to extract 50 common topics as well as the frequency of each topic in a given 8-K.[16]

Panel B of Table 10 reports differences in topic frequencies between the same samples analyzed in Panel A. For brevity, we only report topics that have statistically significant differences across samples based on the Bonferroni correction (Dunn, 1961). We list the most common words for each of the 50 extracted topics in the Appendix. Topics are numbered based

[16] We use a popular topic model called Latent Dirichlet Allocation (LDA) (Blei et al. 2003) to estimate the 50 topics. See the Appendix for a list of the most common words from each of the 50 estimated topics as well as a description of LDA. Recent applications of LDA in accounting and finance include Ball, Hoberg, and Maksimovic (2014), Dyer, Lang, and Stice-Lawrence (2016), Hoberg and Lewis (2014), and Huang et al. (2017).

on the frequency within the set of 8-Ks that drew retail attention (with 1 being the most popular). Consistent with the results reported in Panel A, the most significant topic with a difference in topic frequency of 6 percent is Topic 1. The list of the top 10 most common words reveals that Topic 1 is related to Item 5.02, which is files to report resignation, appointment, and compensation of executives. Topic 4, with a frequency difference of 3.3 percent, and Topic 7, with a difference of 2.2 percent, are also related to Item 5.02, though they appear to be less general than Topic 1. Next, Topics 3 and 5, are less likely to be associated with a reversal. Topic 3 is typically a boilerplate disclaimer while Topic 5 is typically a discussion of a press release or other exhibit attached to the filing. Both of these topics are commonly found in Items 7.01 and 8.01. This is consistent with the lower frequency of Items 7.01 and 8.01 reported in Panel A of Table 10. Finally, Topic 24 is specific to disclosures from energy firms and is relatively uncommon.

We provide an illustrative example of an Item 5.02 filing that resulted in an overreaction and subsequent reversal in Figure 1 based on an event that affected Range Resources Corp. Range Resources Corp is a petroleum and natural gas exploration and production company headquartered in Fort Worth, Texas. On December 13, 2011 at 4:59pm, the company filed an 8-K (the Filing Day) under Item 5.02. The event involved changes in management, which occurred on December 8, 2011 (the Event Day). The firm issued a press release before the filing. Our evidence suggests that institutional investors paid attention to the event on that day. Share trading volume spiked and reached a level of 5 million shares, and the stock price dropped by -4.57%. In sharp contrast, retail attention only spiked on the day after the filing, seemingly responding to the post filing media coverage, which was as broad as the coverage on the filing

day.[17] The spike in retail attention coincided with more trading volume (3.8 million shares) and a further price decline of -3.47% on December 14.[18] This additional price drop eventually reverted in a few days.

In this example, Range Resources Corporation had a significant change in management. The overall response in the stock market was negative. The filing occurred after-market-close, and the reaction of retail investors on the following day resulted in an additional price drop, which reverted after a few days.

As a final set of analyses of the price pressure and subsequent reversal, we examine the effect of the media. We compare the average number of news articles over a one-hour window around the 8-K filing time across three samples: "*DADSVI* = 1," which includes all 8-K filings with a spike in retail attention on the filing day (Specification 1); "Reversal," which is our reversal sample (Specification 2); and, "Item 502," which focuses on the Item 502 cases of the reversal sample (Specification 3). The analysis shows that as we move from Specification 1 to Specification 3, Item 5.02 has more cases of news right after the filing.

7. Robustness Tests

Although we control for news in our analysis, in this section we provide further evidence that the investor reaction to the 8-K filings is not driven by other sources of news. To do so, we repeat the analysis conducted on Tables 7 and 8 for a subsample of 8-K filings without news articles or a press release during the entire period.

[17] The main news outlets included the US FED News with a link to the 8-K filing on EDGAR, MarketWatch, News Bites, and two industry specific news outlets: the Oil Daily and the NGI's Daily Gas Price Index.
[18] This price decline includes a $0.04 dividend payment (or 7 bps in return). The dividend payment carried no incremental information since it had been declared on December 1.

Panel A of Table 11 reports the results of the cumulative return analysis. Although we have only around 20 percent of the observations, the results are qualitatively similar. The coefficient on *FilingRet*DADSVI* after five days is -0.318 with a *t*-statistics of 2.01. Panel B of Table 11 reports the results of the institutional investor cumulative trading. Similar to Panel A, the *FilingRet*DADSVI* coefficients are negative and statistically significant.

As discussed earlier, Item 2.02 is materially different than other 8-K items. Earnings announcements are scheduled in advance and are accompanied by ample media coverage. In our sample period, the average frequency of *AIA* on earnings announcement (event) day is 0.61, and ranges between 0.43 and 0.65 depending on the filing gap. *DADSVI* also occurs at a higher frequency, with an average of 0.20, ranging between 014 and 0.21. Consistent with the coverage that earnings announcements receive, 71 percent of the firms have a press release on the event day, and 92 percent of the firms have some kind of news coverage.

As a robustness check, we repeat the analysis conducted in Tables 6-8 for the sample of earnings announcements with a filing gap of two or more business days. It is important to keep in mind that this covers only 4 percent of our Item 2.02 observations.

Un-tabulated result from the replication of the analyses in Table 7 for the late Item 2.02 filings shows that *AIA* plays a similar role in price discovery. The estimate of the coefficient on *AIA* on the event day is 0.092 while the coefficient on the filing day is -0.124. Similar to Table the findings in Table 7, the estimate of the coefficient on *DADSVI* is neither statistically nor economically significant.

Exploring the effect of retail attention on subsequent returns reveals a different price pattern for retail attention. The *FilingRet*DADSVI* interaction coefficient is positive and

significant, which suggests a continuation in the direction of the filing day return consistent with retail attention contributing to a price drift.

8. Conclusion

Using novel search data by institutional and retail investors during a recent period from 2010 to 2015, we provide evidence regarding who seeks information and trades on 8-K event dates and filing dates. We show that there is significant abnormal attention paid by institutional investors on both the event date and the filing date, but there is no obvious pattern of abnormal attention from retail investors on either of these dates.

We further show that most price discovery occurs on the event date and, to a lesser extent on the filing date when institutional investors are paying attention. There is no evidence of significant price discovery when retail investors are paying attention. These results suggest that the 8-K filing gives little relative informational benefit to retail investors as institutional investors have learned about the event before the filing.

Instead, for several events, the 8-K filings appear to have the undesirable consequence of attracting retail attention and price pressure on the event date and this price change eventually reverts. We show that institutional investors appear to trade against retail investors, profiting from providing liquidity. Overall, our analyses suggest that Form 8-K may not always protect the interests of retail investors, especially if retail investors fail to understand that many 8-K filings actually contain "stale" news.

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Table 1. Variable Definitions

Variable	Definition
Bloomberg Attention Variable	
AIA	Bloomberg records the number of times news articles on a particular stock are read by its terminal users and the number of times users actively search for news for a specific stock. Bloomberg then assigns a value of 1 for each article read and 10 for each news search. These numbers are then aggregated into an hourly count. Using the hourly count, Bloomberg then creates a numerical attention score each hour by comparing past 8-hour average count to all hourly counts over the previous month for the same stock. They assign a value of 0 if the rolling average is in the lowest 80 percent of the hourly counts over the previous 30 days. Similarly, Bloomberg assigns a score of 1, 2, 3 or 4 if the average is between 80 percent and 90 percent, 90 percent and 94 percent, 94 percent and 96 percent, or greater than 96 percent of the hourly counts of the previous 30 days, respectively. Finally, Bloomberg aggregates up to the daily frequency by taking a maximum of all hourly scores throughout the day. These are the data provided to us by Bloomberg. Since we are interested in abnormal attention, our *AIA* measure is a dummy variable that receives a value of 1 if Bloomberg's score is 3 or 4, and 0 otherwise. This captures the right tail of the distribution of the measure.
Google Search Attention Variable	
DADSVI	We follow Bloomberg's methodology and assign *DSVI* on day *t* one of the potential 0, 1, 2, 3, or 4 scores using the firm's past 30 trading day *DSVI* values. For example, if *DSVI* on day *t* is in the lowest 80 percent of past *DSVI* values, it receives the score 0. *DADSVI* is one on day *t* if the score is 3 or 4, and 0 otherwise.
Other Variables	
Abn |AR5|	*|AR5|* is the absolute value of the 5-minute return autocorrelation during the day using TAQ data. *Abn|AR5|* in turn, *is|AR5|* divided by its previous 21 trading day average from day *t-27* to *t-6*.
AbnES	ES is the daily average effective spread calculated using TAQ data. *AbnES* in turn, *is ES* divided by its previous 21 trading day average from day *t-27* to *t-6*.
AbnHLtoH	*HLtoH* is the ratio of the difference between the daily high and low price to the daily high price. *AbnHLtoH* in turn, *is HLtoH* divided by its previous 21 trading day average from day *t-27* to *t-6*.
AbsDGTW	Absolute value of *DGTW*.

AncDirTrd	Ancerno daily directional trading measure, calculated for each stock as the net shares purchased and sold during the day divided by the CRSP daily volume. Ancerno data are available until June 2015.
Avol	The abnormal trading volume calculated as the daily volume for the stock divided by the previous 21-day average trading volume from day *t-27* to *t-6*.
DGTW	CRSP daily stock return minus the stock's benchmark portfolio daily return estimated as in Daniel, Grinblatt, Titman and Wermers (1997).
Dvol	The daily stock dollar trading volume in millions of dollars.
InstHold	The percentage of shares held by institutional investors obtained from the Thomson Reuters CDA/Spectrum institutional holdings' (S34) database.
LnBM	The natural logarithm of the firm's book-to-market ratio (BM) rebalanced every June following Fama-French (1992).
LnNumEst	Log(1+*NumEst*).
LnSize	The log of average size in millions of dollars from day *t-27* to *t-6.*
NewsDum	A dummy variable equal to one if the number of news articles published on the Dow Jones newswire during the day is non-zero, zero otherwise. News data are provided by RavenPack.
NumEst	The number of analysts covering the stock using the most recent information.
PressRlsDum	A dummy variable equal to one if the firm issued a press release, zero otherwise. Press release data are provided by RavenPack.
Ret	Daily stock return obtained from CRSP.
SDRET	The standard deviation of daily stock returns from day *t*-27 to day *t*-6.
Size	Market capitalization of the firm, rebalanced every June, in millions of dollars.
TotNewsDum	A dummy variable equal to one if either *NewDum* or *PrsRlsDum* are positive, zero otherwise.
Tuesday – Friday	Dummy variables equal to one if the day of the week is Tuesday-Friday, respectively, zero otherwise.
Turnover	The daily stock turnover, calculated as the number of traded shares divided by outstanding shares.

Table 2. Summary Statistics for the 8-K Filing Sample

The table reports summary statistics for our 8-K sample from February 2010-December 2015. Our initial sample includes all 8-K filings for the universe of Russell 3000 stocks with CRSP Share Codes 10 and 11, *AIA* information, and book-to-market information for the DGTW risk adjustment (Daniel et al., 1997). 8-K data are obtained from the SEC EDGAR database. We remove 8-K filing days with more than one item type (not counting Item 9.01) and filings that share a filing date or event date with another filing by the same firm. This results in 85,067 unique 8-K filings across 1,968 firms. Panel A reports the mean, median, and standard deviation of time series averages for selected firm characteristic. Panel B reports annual cross sectional statistics on the number of 8-K filings per firm. Variables are defined in Table 1.

Panel 2.A - Cross-Sectional Statistics of Selected Firm Characteristics

Variables	Mean	Median	SD
Size	6,999	1,279	24,232
BM	0.651	0.565	0.470
SDRET	2.162	1.983	0.903
Turnover	0.009	0.008	0.007
Dvol	57.445	11.111	194.780
Inst Hold	0.619	0.652	0.184
NumEst	9.407	7.235	7.187
HLtoH	0.030	0.028	0.012
# 8-K Filings	85,067		
# Firms	1,968		

Panel 2.B – Number of 8-K Filings per Firm

	All 8Ks			Excluding Item 202			Item 202		
year	Mean	Median	90%	Mean	Median	90%	Mean	Median	90%
2010	7.17	6.00	12.00	4.99	4.00	9.00	2.86	3.00	4.00
2011	7.03	6.00	12.00	5.00	4.00	10.00	2.73	3.00	4.00
2012	9.15	8.00	16.00	6.30	5.00	12.00	3.47	4.00	4.00
2013	9.03	8.00	15.00	6.30	5.00	12.00	3.44	4.00	4.00
2014	8.94	8.00	15.00	6.20	5.00	12.00	3.43	4.00	4.00
2015	6.41	6.00	11.00	4.62	4.00	9.00	2.47	2.00	4.00

Table 3. Number of 8-K Filings by Item Types and Filing Gap

The table reports the number of the 8-K filings in our sample conditioning on filing gap and item type. See Table 2 for sample definitions. Filing Gap is the number of business days between the event day and the filing day. For example, a filing gap of 0 means that the event and the filing occurred on the same business day. In a similar manner a filing gap of 1 means that the filing occurred on the next business day. *All Items* include all 8-K filings in our sample. *Major Items* include the following six items that account comprising 96.4 percent of all 8-K filings: Item 1.01 (entry into a material definitive agreement); Item 2.02 (results of operations and financial condition); Item 5.02 (departure/election of directors or principal officers); Item 5.07 (submission of matters to a vote of security holders); Item 7.01 (regulation FD disclosure); and Item 8.01(other events that are not specifically called for by Form 8-K that the firm considers to be of importance to security holders). *All Net 202* (*Major Net 202*) is *All Items* (*Major Items*) excluding Item 2.02. *Num Cases* is the number of filings. In Panel B, *% from Item* (*% from Major*) is the percentage frequency from total number of filings in the item category (from total number of filings in the *Major Items* group).

Panel A – Aggregate Statistics Conditioning on Filing Gap

	All Items		Major Items		All Net 202		Major Net 202	
	(1)		(2)		(3)		(4)	
Filing Gap	Num Cases	%	Num Cases	%	Num Cases	%	Num Cases	%
0	50,086	58.88%	49,336	60.14%	27,088	47.25%	26,338	48.51%
1	15,110	17.76%	14,432	17.59%	11,511	20.08%	10,833	19.95%
2	7,150	8.41%	6,718	8.19%	6,571	11.46%	6,139	11.31%
3	6,176	7.26%	5,688	6.93%	5,827	10.16%	5,339	9.83%
4	6,545	7.69%	5,856	7.14%	6,336	11.05%	5,647	10.40%
	85,067	100.00%	82,030	100.00%	57,333	100.00%	54,296	100.00%

Panel B – Breakdown by Item Type and Filing Gap

Filing Gap	Num Cases	% from Item	% from Major	Filing Gap	Num Cases	% from Item	% from Major	Filing Gap	Num Cases	% from Item	% from Major
Item 1.01 - Entry into a material definitive agreement				Item 2.02 - Results of operations and financial condition				Item 5.02 - Departure/election of directors or principal officers			
0	721	19.43%	0.88%	0	22,998	82.92%	28.04%	0	3,102	22.34%	3.78%
1	866	23.34%	1.06%	1	3,599	12.98%	4.39%	1	2,495	17.97%	3.04%
2	610	16.44%	0.74%	2	579	2.09%	0.71%	2	2,461	17.73%	3.00%
3	670	18.06%	0.82%	3	349	1.26%	0.43%	3	2,370	17.07%	2.89%
4	843	22.72%	1.03%	4	209	0.75%	0.25%	4	3,456	24.89%	4.21%
	3,710	100.00%	4.52%		27,734	100.00%	33.81%		13,884	100.00%	16.93%
Item 5.07 - Submission of matters to a vote of security holders				Item 7.01 - Regulation FD disclosure				Item 8.01 - Other events that are not specifically called for by Form 8-K			
0	753	14.93%	0.92%	0	11,023	80.62%	13.44%	0	10,739	59.70%	13.09%
1	1,337	26.52%	1.63%	1	1,939	14.18%	2.36%	1	4,196	23.33%	5.12%
2	1,289	25.57%	1.57%	2	397	2.90%	0.48%	2	1,382	7.68%	1.68%
3	1,097	21.76%	1.34%	3	201	1.47%	0.25%	3	1,001	5.57%	1.22%
4	566	11.23%	0.69%	4	113	0.83%	0.14%	4	669	3.72%	0.82%
	5,042	100.00%	6.15%		13,673	100.00%	16.67%		17,987	100.00%	21.93%

Table 4. AIA and DADSVI Averages Conditioning on Event and Filing days

The table reports the average frequency of *AIA* and *DADSVI* attention measures for our 8-K sample with a filing gap of 1 or more business days, for major items excluding Item 2.02 (see Table 3 for more details). *AIA* is our Abnormal Institutional Attention measure from Bloomberg and *DADSVI* is the abnormal retail attention dummy based on Google's daily Search Volume Index. See Table 1 for more details. In both panels, we adjust *AIA* and *DADSVI* frequency to reflect a deviation in attention shock from a pre-event unconditional mean. In particular, for each attention measure, we calculate the sample unconditional mean using all days during *t*-26 - *t*-5 relative to the event day. Panel A reports the *AIA* and *DADSVI* averages for the five major 8-K items. *F-E Diff* is the difference between the filing day and event day averages. Panel B reports the Wald tests together with their p-values for the difference between the *AIA* and *DADSVI* averages. For example, the number 0.155 (0.08) for Item 7.01 on the event (filing) day refers the difference between *AIA* and *DADSVI* averages on the event (filing) day. In a similar manner, *F-E Diff* refers to the difference between *AIA* and *DADSVI*'s *F-E Diff* columns. *AIA* (*DADSVI*) sample includes 27,910 (12,903) observations. Standard errors are clustered by firm and *t*-statistics are reported below the coefficient estimates.

Panel A –AIA and DADSVI Average Frequency by Item Type

	AIA			DADSVI		
Item	Event Day Mean	Filing Day Mean	F-E Diff	Event Day Mean	Filing Day Mean	F-E Diff
502	0.016	0.036	0.020	0.002	0.005	0.003
	(3.81)	(5.07)	(4.75)	(0.52)	(1.31)	(0.69)
507	0.031	-0.028	-0.059	0.011	-0.001	-0.012
	(4.68)	(-3.90)	(-8.70)	(1.64)	(-0.16)	(-1.43)
101	0.092	0.053	-0.039	-0.003	0.003	0.007
	(10.15)	(7.00)	(-3.58)	(-0.49)	(0.42)	(0.68)
701	0.178	0.077	-0.100	0.020	-0.006	-0.025
	(9.81)	(6.85)	(-5.52)	(2.09)	(-0.77)	(-2.06)
801	0.144	0.081	-0.062	0.007	-0.001	-0.007
	(14.83)	(11.61)	(-6.60)	(1.32)	(-0.11)	(-1.08)

Panel B – Wald Tests for Differences between AIA and DASVI averages

	Event Day		Filing Day		F-E Diff	
Item	Diff	P-value	Diff	P-value	Diff	P-value
502	0.014	<.0001	0.031	<.0001	0.017	0.019
507	0.020	<.0001	-0.027	<.0001	-0.047	<.0001
101	0.096	<.0001	0.050	<.0001	-0.046	0.000
701	0.158	<.0001	0.083	<.0001	-0.075	<.0001
801	0.137	<.0001	0.082	<.0001	-0.055	<.0001

Table 5. The Contemporaneous Relation between Abnormal Institutional Attention and Other Explanatory Variables on the Event and Filing days

The table reports the results of our analyses of the contemporaneous relation between our Abnormal Institutional Attention measure (*AIA*) from Bloomberg (Panel A) and abnormal retail attention (*DADSVI*) (Panel B), and selected explanatory variables. We report the analyses on the event and filing days using Probit and OLS models (see Table 1 for variable definitions). We focus on 8-K filings with a filing gap of 1 or more business days for the major items excluding Item 2.02 (see Table 3 for more details). We treat missing observations for *DADSVI* when analyzing *AIA* and *DADVI* jointly (Panel A) using Pontiff and Woodgate's (2008) approach. First, we define a dummy variable that takes a value of one whenever the *DADSVI* exists and zero otherwise. Then, we replace *DADSVI* missing values with zeros. As in Table 4, we adjust *AIA* and *DADSVI* frequency to reflect a deviation in attention from a pre-event unconditional mean. In particular, for each attention measure, we calculate the sample unconditional mean using all days during *t*-26 to *t*-5 relative to the event day. Both Panels are symmetric: Specifications 1-4 (5-8) utilize a Probit (OLS) model. We include two specifications for each of the event and filing days. The first specification only includes day *t* control variables, while the second specification also includes other firm characteristics. *P-RSQ* (*AdjRSQ*) is the Probit (OLS) model pseudo *R*-squared (Adjusted R-Squared). Standard errors are clustered by firm and *t*-statistics are reported below the coefficient estimates.

Panel A – AIA as the Dependent Variable

	Probit				OLS			
	Event		Filing		Event		Filing	
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Item_5.07	0.149	0.202	-0.514	-0.496	0.018	0.024	-0.041	-0.035
	(2.26)	(2.81)	(-6.81)	(-6.30)	(2.48)	(3.39)	(-6.38)	(-5.51)
Item_1.01	0.519	0.682	0.105	0.216	0.062	0.075	0.013	0.022
	(7.73)	(9.74)	(1.55)	(3.02)	(7.22)	(9.30)	(1.72)	(2.78)
Item_7.01	0.715	0.788	0.265	0.197	0.100	0.097	0.034	0.025
	(7.74)	(9.32)	(3.15)	(2.57)	(6.68)	(7.69)	(3.19)	(2.69)
Item_8.01	0.667	0.733	0.326	0.263	0.087	0.085	0.042	0.032
	(10.46)	(11.23)	(6.00)	(4.64)	(9.40)	(10.22)	(6.07)	(5.02)
NewsDum t	0.905	0.610	0.723	0.438	0.114	0.071	0.089	0.051
	(17.96)	(12.50)	(15.59)	(9.74)	(16.60)	(11.63)	(15.03)	(9.74)
PressRlsDum t	0.476	0.529	0.639	0.696	0.089	0.086	0.112	0.111
	(8.17)	(8.98)	(11.43)	(11.63)	(8.25)	(8.83)	(11.09)	(11.42)
AbsDgtw t	0.103	0.256	0.125	0.266	0.021	0.039	0.027	0.041
	(6.18)	(14.03)	(6.71)	(11.69)	(8.15)	(16.56)	(6.58)	(9.47)
AbnHLtoH t	0.475	0.402	0.506	0.458	0.069	0.055	0.049	0.042
	(9.36)	(6.79)	(6.93)	(5.18)	(9.40)	(7.78)	(2.57)	(2.32)
AbnVol t	0.095	0.115	0.061	0.079	0.012	0.012	0.006	0.008
	(2.62)	(2.53)	(2.87)	(3.03)	(4.03)	(4.19)	(2.39)	(3.28)
AbnES t	0.004	0.002	0.004	0.002	0.001	0.000	0.001	0.000
	(1.23)	(0.39)	(2.31)	(1.48)	(1.37)	(0.75)	(2.41)	(1.79)
Abn|AR5| t	0.104	0.126	0.068	0.070	0.015	0.016	0.008	0.008
	(5.17)	(5.77)	(3.16)	(3.01)	(5.29)	(5.94)	(2.98)	(3.29)
DADSVI t	0.316	0.280	0.355	0.307	0.056	0.047	0.056	0.049
	(4.42)	(3.74)	(4.52)	(3.67)	(4.56)	(4.23)	(4.45)	(4.14)
LnSize		0.433		0.355		0.062		0.048
		(15.80)		(14.81)		(18.47)		(17.46)
LnBM		-0.022		0.041		0.002		0.008
		(-0.63)		(1.12)		(0.58)		(2.10)
SDRET		0.019		0.029		0.002		0.001
		(1.18)		(1.55)		(1.46)		(0.34)
LnNumEst		0.341		0.445		0.028		0.033
		(5.11)		(7.15)		(4.36)		(6.13)
InstHold		-0.128		0.094		-0.073		-0.033
		(-0.74)		(0.62)		(-3.94)		(-2.24)
Tuesday		-0.046		0.022		-0.004		0.002
		(-0.77)		(0.35)		(-0.53)		(0.31)
Wednesday		-0.081		-0.004		-0.010		-0.002
		(-1.40)		(-0.06)		(-1.43)		(-0.33)
Thursday		-0.143		-0.083		-0.013		-0.009
		(-2.21)		(-1.31)		(-1.70)		(-1.27)
Friday		-0.573		0.101		-0.059		0.009
		(-7.48)		(1.43)		(-7.24)		(1.17)
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Month FE	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
N	27,910	27,910	27,910	27,910	27,910	27,910	27,910	27,910
PsdRSQ / AdjRSQ	13.39%	20.32%	10.24%	15.56%	14.82%	22.15%	11.37%	17.04%

Panel B – DADSVI as the Dependent Variable

	Probit				OLS			
	Event		Filing		Event		Filing	
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Item_5.07	0.144	0.143	0.008	0.022	0.015	0.015	0.001	0.002
	(1.38)	(1.34)	(0.08)	(0.20)	(1.33)	(1.31)	(0.05)	(0.18)
Item_1.01	-0.089	-0.077	-0.103	-0.095	-0.009	-0.007	-0.010	-0.009
	(-0.89)	(-0.76)	(-0.95)	(-0.87)	(-0.92)	(-0.77)	(-0.93)	(-0.84)
Item_7.01	0.116	0.130	-0.185	-0.225	0.013	0.014	-0.018	-0.021
	(1.10)	(1.24)	(-1.69)	(-2.00)	(1.07)	(1.19)	(-1.80)	(-2.12)
Item_8.01	-0.006	-0.006	-0.092	-0.102	-0.001	-0.001	-0.009	-0.010
	(-0.09)	(-0.09)	(-1.12)	(-1.16)	(-0.11)	(-0.10)	(-1.09)	(-1.15)
NewsDum t	0.028	0.014	-0.062	-0.068	0.003	0.001	-0.006	-0.007
	(0.43)	(0.20)	(-0.94)	(-1.03)	(0.39)	(0.14)	(-0.94)	(-1.05)
PressRlsDum t	0.010	0.005	0.096	0.105	0.001	0.000	0.011	0.011
	(0.12)	(0.06)	(0.98)	(1.03)	(0.08)	(0.03)	(1.02)	(1.06)
AbsDgtw t	0.063	0.076	0.063	0.086	0.007	0.009	0.007	0.009
	(3.36)	(3.56)	(3.16)	(4.08)	(2.97)	(3.22)	(2.97)	(3.57)
AbnHLtoH t	0.055	0.046	0.087	0.066	0.007	0.006	0.012	0.011
	(1.25)	(0.98)	(1.79)	(1.95)	(1.20)	(0.93)	(3.80)	(3.24)
AbnVol t	0.033	0.039	0.034	0.033	0.007	0.008	0.005	0.005
	(2.45)	(2.45)	(2.17)	(2.10)	(2.48)	(2.72)	(3.03)	(3.01)
AbnES t	-0.007	-0.006	-0.005	-0.005	0.000	0.000	0.000	0.000
	(-1.27)	(-1.33)	(-1.47)	(-1.40)	(-2.57)	(-2.39)	(-4.74)	(-4.78)
Abn|AR5| t	0.027	0.040	-0.020	-0.025	0.003	0.004	-0.002	-0.002
	(0.79)	(1.13)	(-0.58)	(-0.70)	(0.78)	(1.09)	(-0.47)	(-0.59)
AIA t	0.337	0.295	0.391	0.364	0.037	0.032	0.041	0.038
	(4.76)	(4.08)	(4.98)	(4.52)	(4.41)	(3.85)	(4.52)	(4.14)
LnSize		-0.002		-0.004		0.000		0.000
		(-0.06)		(-0.12)		(-0.02)		(0.01)
LnBM		-0.002		0.009		0.000		0.001
		(-0.04)		(0.20)		(-0.06)		(0.21)
SDRET		-0.017		-0.059		-0.002		-0.005
		(-0.77)		(-2.11)		(-0.91)		(-2.36)
LnNumEst		0.049		0.059		0.005		0.005
		(0.73)		(0.81)		(0.73)		(0.80)
InstHold		-0.075		-0.164		-0.007		-0.015
		(-0.40)		(-0.73)		(-0.39)		(-0.70)
Tuesday		-0.061		-0.084		-0.007		-0.008
		(-0.66)		(-0.87)		(-0.68)		(-0.89)
Wednesday		-0.075		0.021		-0.008		0.002
		(-0.81)		(0.22)		(-0.83)		(0.23)
Thursday		-0.161		-0.095		-0.017		-0.009
		(-1.66)		(-0.93)		(-1.65)		(-0.97)
Friday		-0.293		-0.040		-0.029		-0.004
		(-2.60)		(-0.38)		(-2.69)		(-0.40)
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Month FE	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
N	12,903	12,903	12,903	12,903	12,903	12,903	12,903	12,903
PsdRSQ / AdjRSQ	1.11%	1.27%	1.19%	1.31%	0.95%	1.06%	1.12%	1.17%

Table 6. Abnormal Institutional Attention and Price Discovery - Average Returns

The table reports average absolute returns for the pre-filing, filing and post filing periods based on filing gap and the five major item types. We focus on our 8-K sample where the filing gap is two or more business days excluding Item 2.02 (denoted in the panels as *All Items*). For ease of presentation, we focus on absolute average returns, where we multiply the pre-filing and filing averages by -1 if the total cumulative returns from event day to filing day is negative. Denoting the filing day as day *t*, the pre-filing cumulative return is calculated from the event day to day *t*-1, the filing return is calculated from day *t* to *t*+1, and the post-filing return is calculated from day *t*+2 - *t*+30. Panels A - C report the absolute averages for 2 to 4 business-day filing gaps, respectively.

Panel A – Absolute Return Averages for Filing with a 2-Business-Day Filing Gap

		Average Absolute Return					*Average Absolute Return*		
	N	*Pre-Filing*	*Filing*	*Post-Filling*		*N*	*Pre-Filing*	*Filing*	*Post-Filling*
		(1)	(2)	(3)			(4)	(5)	(6)
All Items	6,571	1.85%	1.23%	0.14%	*Item 5.07*	1,289	1.55%	1.11%	0.50%
AIA-Pre =0	4,948	1.44%	1.23%	0.13%	*AIA-Pre =0*	1,089	1.28%	1.09%	0.59%
AIA-Pre =1	1,623	3.12%	1.21%	0.18%	*AIA-Pre =1*	200	2.70%	1.19%	0.14%
Item 1.01	610	2.07%	1.33%	-0.25%	*Item 7.01*	397	2.54%	0.96%	0.20%
AIA-Pre =0	434	1.34%	1.34%	0.09%	*AIA-Pre =0*	265	1.78%	1.01%	0.03%
AIA-Pre =1	176	3.90%	1.31%	-1.10%	*AIA-Pre =1*	132	4.07%	0.85%	0.54%
Item 5.02	2,461	1.34%	1.35%	0.12%	*Item 8.01*	1,382	2.00%	1.16%	-0.10%
AIA-Pre =0	1,973	2.38%	1.49%	0.05%	*AIA-Pre =0*	965	1.48%	1.22%	-0.14%
AIA-Pre =1	488	1.55%	1.11%	0.39%	*AIA-Pre =1*	417	3.19%	1.02%	0.01%

Panel B – Absolute Return Averages for Filing with a 3-Business-Day Filing Gap

		Average Absolute Return					*Average Absolute Return*		
	N	*Pre-Filing*	*Filing*	*Post-Filling*		*N*	*Pre-Filing*	*Filing*	*Post-Filling*
		(1)	(2)	(3)			(4)	(5)	(6)
All Items	5,827	2.11%	1.11%	0.13%	*Item 5.07*	1,097	2.00%	0.98%	0.07%
AIA-Pre =0	4,079	1.80%	1.20%	0.08%	*AIA-Pre =0*	979	1.86%	1.01%	0.08%
AIA-Pre =1	1,748	2.83%	0.90%	0.27%	*AIA-Pre =1*	118	2.43%	0.90%	0.06%
Item 1.01	670	2.50%	1.11%	-0.17%	*Item 7.01*	201	2.77%	1.07%	0.02%
AIA-Pre =0	426	2.16%	1.30%	-0.42%	*AIA-Pre =0*	122	2.19%	1.37%	0.21%
AIA-Pre =1	244	3.09%	0.79%	0.26%	*AIA-Pre =1*	79	3.65%	0.61%	-0.27%
Item 5.02	2,370	1.90%	1.23%	0.47%	*Item 8.01*	1,001	2.08%	0.93%	0.09%
AIA-Pre =0	1,800	1.66%	1.26%	0.35%	*AIA-Pre =0*	568	1.78%	1.09%	-0.02%
AIA-Pre =1	570	2.67%	1.14%	0.86%	*AIA-Pre =1*	433	2.49%	0.73%	0.22%

Panel C – Absolute Return Averages for Filing with a 4-Business-Day Filing Gap

		Average Absolute Return					*Average Absolute Return*		
	N	*Pre-Filing*	*Filing*	*Post-Filling*		*N*	*Pre-Filing*	*Filing*	*Post-Filling*
		(1)	(2)	(3)			(4)	(5)	(6)
All Items	6,336	2.76%	1.10%	-0.07%	*Item 5.07*	566	2.61%	0.80%	-0.08%
AIA-Pre =0	4,201	2.26%	1.13%	-0.20%	*AIA-Pre =0*	406	2.37%	0.75%	-0.07%
AIA-Pre =1	2,135	3.75%	1.05%	0.18%	*AIA-Pre =1*	160	3.22%	0.93%	-0.11%
Item 1.01	843	3.11%	1.17%	-0.08%	*Item 7.01*	113	3.01%	0.90%	0.17%
AIA-Pre =0	517	2.35%	1.34%	-0.60%	*AIA-Pre =0*	58	2.27%	1.03%	1.30%
AIA-Pre =1	326	4.31%	0.90%	0.75%	*AIA-Pre =1*	55	3.78%	0.77%	-0.99%
Item 5.02	3,456	2.61%	1.17%	-0.18%	*Item 8.01*	669	2.83%	0.99%	0.61%
AIA-Pre =0	2,401	2.17%	1.11%	-0.25%	*AIA-Pre =0*	393	2.13%	1.25%	0.48%
AIA-Pre =1	1,055	3.60%	1.31%	-0.01%	*AIA-Pre =1*	276	3.82%	0.62%	0.79%

Table 7. Abnormal Institutional Attention and Price Discovery during the Filing period: Regression Analysis

The table reports the results of panel regressions of price discovery during the filing period on pre-filing abnormal institutional attention and other explanatory variables (denoted with the suffix *PF*). The pre-filing period, filing period and the 8-K sample are defined in Table 6. We focus on our 8-K sample with a filing gap of two or more business days excluding Item 2.02 and conduct the analysis based on filing gap and the five major item types. We handle *DADSVI*'s missing observations using Pontiff and Woodgate's (2008) approach. First, we define a dummy variable that takes a value of one whenever the *DADSVI* exists and zero otherwise. Then, we replace *DADSVI* missing values with zeros. We follow Barclay and Hendershott (2003) and use their weighted-price-contribution (WPC) measure as our price discovery measure. The WPC measure is,

$$WPC_i = \sum_{s=1}^{S}\left[\left(\frac{|ret_s|}{\sum_{s=1}^{S}|ret_s|}\right)\left(\frac{ret_{i,s}}{ret_s}\right)\right]$$ where i is the pre-event or filing period and S is the total number of firms. For each period i, we run WLS regressions, using $|ret_s|$ as the weight on WPC_I, on *AIA*, *DADSVI*, and *News*. We censor the upper and lower 1 percent of the distribution of *WPC* to avoid the effect of outliers. We control for the pre-filing abnormal trading volume and pre-filing return, and pre-filling firm characteristic which include *LnSize*, *LnBM*, *SDRET*, *LnNumEst*, *InstHold*, *LnPRC* and cumulative returns over the past 21 trading days, and we include Year, month, day-of-week, Item and Industry fixed effects. Standard errors are clustered by firm and *t*-statistics are reported below the coefficient estimates.

	All Items	*Gap=2*	*Gap=3*	*Gap=4*	*Item 1.01*	*Item 5.02*	*Item 5.07*	*Item 7.01*	*Item 8.01*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Intercept	0.417	0.414	0.378	0.474	0.184	0.463	0.313	0.519	0.485
	(7.03)	(4.41)	(3.98)	(4.58)	(1.08)	(5.93)	(2.14)	(2.40)	(3.94)
AIA PF	-0.128	-0.136	-0.132	-0.080	-0.130	-0.080	-0.046	-0.208	-0.186
	(-9.17)	(-6.07)	(-5.77)	(-3.74)	(-3.88)	(-4.02)	(-1.57)	(-4.01)	(-6.63)
DADSVI PF	-0.019	0.013	0.005	-0.012	0.067	-0.047	0.007	-0.007	0.016
	(1.09)	(0.36)	(0.16)	(0.48)	(1.31)	(1.81)	(0.15)	(0.14)	(0.44)
TotNewsDum PF	-0.044	-0.012	-0.013	-0.057	-0.044	-0.034	-0.044	-0.067	-0.052
	(-3.40)	(-0.57)	(-0.61)	(-2.46)	(-1.29)	(-1.80)	(-1.65)	(-1.25)	(-1.88)
Ret PF	0.133	0.160	0.153	-0.006	0.351	0.029	0.208	-0.198	0.176
	(1.76)	(1.52)	(1.22)	(-0.06)	(1.20)	(0.28)	(1.40)	(-0.95)	(1.69)
Turnover PF	-1.809	-1.470	-3.114	-3.059	-2.001	-4.062	-7.970	-4.577	-1.381
	(-4.03)	(-4.65)	(-5.80)	(-4.28)	(-2.46)	(-7.12)	(-5.23)	(-3.57)	(-4.55)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Day-of-Week FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Item FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	18,326	6,429	5,703	6,194	2,081	8,121	2,893	697	2,991
AdjRSQ	3.28%	4.05%	3.99%	3.52%	6.56%	2.50%	2.51%	5.92%	5.26%

Table 8. Abnormal Institutional Attention, Retail Attention and After Filing Cumulative Abnormal Returns

The table reports the results of panel regressions of cumulative day *t*+1 to *t*+10 *DGTW* risk adjusted returns, on *AIA* and *DADSVI*, controlling for news and other firm controls. Day t+1 is defined as the first day after the filing period. The pre-filing period, filing period and the 8-K sample are defined in Tables 6 and 7, where we focus on our 8-K sample with a filing gap of two or more business days excluding Item 2.02. We handle *DADSVI*'s missing observations using Pontiff and Woodgate's (2008) approach. First, we define a dummy variable that takes a value of one whenever the *DADSVI* exists and zero otherwise. Then, we replace *DADSVI* missing values with zeros. The suffix F highlights the fact that the variables are measured during the filing period. *PreFilingRet* is the cumulative return during the pre-filing period and *FilingRet* is the cumulative return during the filing period. In particular, we explore the interaction between these returns and *AIA*, *DADSVI* and News. For example, consider the interaction between *FilingRet and DADSVI* (*FilingRet*DADSVI F*) -- the negative and significant coefficient indicates that part for the filing returns is corrected after higher levels of retail attention. Standard errors are clustered by firm and *t*-statistics are reported below the coefficient estimates.

	Cumulative DGTW Returns After Filing Day									
	t+1_t+1	*t+1_t+2*	*t+1_t+3*	*t+1_t+4*	*t+1_t+5*	*t+1_t+6*	*t+1_t+7*	*t+1_t+8*	*t+1_t+9*	*t+1_t+10*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
AIA F	-0.001	-0.001	0.000	0.001	0.001	0.000	0.001	0.000	0.001	0.001
	(-1.22)	(-1.26)	(0.17)	(0.64)	(1.12)	(0.30)	(0.74)	(0.21)	(0.46)	(0.47)
DADSVI F	0.000	0.001	0.001	0.000	0.000	0.001	0.000	-0.001	-0.001	-0.001
	(0.21)	(1.24)	(0.86)	(0.35)	(0.38)	(0.69)	(0.10)	(-0.31)	(-0.59)	(-0.83)
TotNewsDum F	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001
	(-0.26)	(-0.82)	(-0.66)	(-0.21)	(-0.01)	(-0.05)	(-0.05)	(0.34)	(1.21)	(1.13)
PreFilingRet	-0.002	-0.006	-0.004	0.001	0.007	0.012	0.006	0.017	0.011	0.009
	(-0.24)	(-0.37)	(-0.19)	(0.06)	(0.29)	(0.54)	(0.26)	(0.76)	(0.49)	(0.37)
FilingRet	-0.029	-0.018	-0.063	-0.056	-0.016	-0.049	-0.057	-0.010	-0.013	-0.047
	(-1.31)	(-0.58)	(-1.78)	(-1.58)	(-0.38)	(-1.08)	(-1.15)	(-0.21)	(-0.26)	(-0.82)
*PreFilingRet*AIA F*	0.024	0.026	0.041	0.034	0.060	0.066	0.099	0.066	0.060	0.032
	(1.17)	(1.08)	(1.42)	(0.89)	(1.42)	(1.54)	(2.35)	(1.33)	(1.21)	(0.66)
*PreFilingRet*DADSVI F*	0.008	0.014	0.003	-0.044	-0.060	-0.085	-0.087	-0.058	-0.058	-0.044
	(0.26)	(0.32)	(0.08)	(-1.08)	(-1.37)	(-1.82)	(-1.61)	(-1.03)	(-0.97)	(-1.03)
*PreFilingRet*TotNewsDum F*	0.012	0.009	-0.001	0.005	0.006	-0.021	-0.018	-0.038	-0.035	-0.043
	(0.92)	(0.43)	(-0.04)	(0.21)	(0.24)	(-0.79)	(-0.65)	(-1.27)	(-1.16)	(-1.37)
*FilingRet*AIA F*	-0.012	0.028	0.077	0.083	0.019	0.048	0.039	0.033	0.015	-0.043
	(-0.58)	(0.89)	(1.25)	(1.07)	(0.52)	(0.78)	(0.67)	(0.57)	(0.25)	(-0.82)
*FilingRet*DADSVI F*	-0.092	-0.120	-0.167	-0.194	-0.158	-0.139	-0.130	-0.129	-0.108	-0.078
	(-1.71)	(-2.01)	(-2.06)	(-2.31)	(-2.17)	(-1.99)	(-1.85)	(-1.88)	(-1.59)	(-1.28)
*FilingRet*TotNewsDum F*	0.042	0.043	0.088	0.103	0.037	0.087	0.094	0.064	0.053	0.067
	(1.52)	(1.17)	(2.06)	(2.27)	(0.77)	(1.61)	(1.63)	(1.23)	(0.92)	(1.10)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Day-of-Week FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Item FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	18,326	18,326	18,326	18,326	18,326	18,326	18,326	18,326	18,326	18,326
AdjRsq	0.41%	0.34%	0.56%	0.53%	0.36%	0.33%	0.31%	0.28%	0.20%	0.20%

Table 9. Abnormal Institutional Attention, Retail Attention and Cumulative Institutional Trading on Filing and subsequent days

In this table, we examine institutional investor trading on the filing day and subsequent days conditioning on institutional and retail attention. We use Ancerno data to calculate daily institutional trading for each stock and day, defined as the net number of shares of the stock purchased and sold normalized by the CRSP daily volume for the stock (see Table 1 for more details). We handle *DADSVI*'s missing observations using Pontiff and Woodgate's (2008) approach. First, we define a dummy variable that takes a value of one whenever the *DADSVI* exists and zero otherwise. Then, we replace *DADSVI* missing values with zeros. We repeat the analysis conducted in Table 8, where we replace the cumulative returns with cumulative institutional trading and start the trading accumulation from the filing period. For simplicity, we define the filing period as day *t*. Thus, *t_t* in Specification 1 refers to cumulative trading on the filing day. Standard errors are clustered by firm and *t*-statistics are reported below the coefficient estimates.

	Cumulative Directional Ancerno Trading from Filing Day										
	t_t	*t_t+1*	*t_t+2*	*t_t+3*	*t_t+4*	*t_t+5*	*t_t+6*	*t_t+7*	*t_t+8*	*t_t+9*	*t_t+10*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
AIA F	0.001	0.000	0.000	-0.004	-0.005	-0.005	-0.008	-0.008	-0.002	0.000	0.005
	(0.33)	(-0.11)	(-0.04)	(-0.68)	(-0.70)	(-0.69)	(-0.88)	(-0.79)	(-0.15)	(-0.02)	(0.43)
DADSVI F	-0.004	0.000	0.002	0.011	0.009	-0.001	-0.009	-0.009	-0.009	-0.008	-0.014
	(-1.10)	(0.05)	(0.24)	(1.22)	(0.83)	(-0.06)	(-0.63)	(-0.56)	(-0.55)	(-0.42)	(-0.66)
TotNewsDum F	0.000	0.001	0.003	0.003	0.002	0.001	0.003	-0.001	0.000	0.000	-0.003
	(0.30)	(0.34)	(0.84)	(0.61)	(0.41)	(0.08)	(0.39)	(-0.13)	(-0.04)	(-0.05)	(-0.25)
PreFilingRet	0.071	0.106	0.134	0.170	0.210	0.213	0.313	0.339	0.365	0.415	0.462
	(3.42)	(2.84)	(2.51)	(2.60)	(2.75)	(2.41)	(3.13)	(3.11)	(3.15)	(3.35)	(3.44)
FilingRet	0.407	0.707	0.737	0.821	0.870	0.912	0.917	0.914	0.937	0.916	0.894
	(10.69)	(11.21)	(8.71)	(7.68)	(6.73)	(6.29)	(5.54)	(5.08)	(4.86)	(4.49)	(4.11)
*PreFilingRet*AIA F*	0.019	0.032	0.027	-0.025	-0.259	-0.154	-0.313	-0.371	-0.512	-0.579	-0.588
	(0.45)	(0.48)	(0.26)	(-0.21)	(-1.82)	(-0.89)	(-1.58)	(-1.66)	(-2.15)	(-2.35)	(-2.13)
*PreFilingRet*DADSVI F*	0.062	0.024	0.063	0.100	-0.022	0.170	0.150	0.107	0.004	0.156	0.166
	(0.74)	(0.22)	(0.45)	(0.52)	(-0.09)	(0.64)	(0.49)	(0.32)	(0.01)	(0.38)	(0.37)
*PreFilingRet*TotNewsDum F*	-0.045	-0.070	-0.045	-0.084	-0.124	-0.090	-0.185	-0.245	-0.168	-0.195	-0.178
	(-1.41)	(-1.24)	(-0.59)	(-0.85)	(-1.13)	(-0.69)	(-1.22)	(-1.43)	(-0.95)	(-1.02)	(-0.84)
*FilingRet*AIA F*	-0.173	-0.266	-0.374	-0.368	-0.433	-0.427	-0.517	-0.510	-0.459	-0.390	-0.329
	(-3.22)	(-3.07)	(-3.09)	(-2.21)	(-1.90)	(-1.72)	(-1.92)	(-1.75)	(-1.46)	(-1.17)	(-0.95)
*FilingRet*DADSVI F*	-0.202	-0.374	-0.395	-0.409	-0.636	-0.888	-0.906	-0.787	-0.635	-0.518	-0.580
	(-2.44)	(-2.78)	(-2.23)	(-1.83)	(-2.01)	(-2.32)	(-1.94)	(-1.39)	(-0.97)	(-0.79)	(-0.84)
*FilingRet*TotNewsDum F*	-0.027	-0.149	0.012	0.055	0.134	0.072	0.152	0.157	0.195	0.208	0.269
	(-0.49)	(-1.70)	(0.10)	(0.32)	(0.55)	(0.27)	(0.55)	(0.53)	(0.63)	(0.64)	(0.79)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Day-of-Week FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Item FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	14,846	14,846	14,846	14,846	14,846	14,846	14,846	14,846	14,846	14,846	14,846
AdjRsq	1.88%	1.74%	1.38%	1.20%	1.09%	0.90%	0.90%	0.77%	0.77%	0.68%	0.67%

Table 10. Reversal Sample – Item Frequency, Topic Model Analysis, and News around Filing

The table analyzes the reversal pattern reported in Table 8. In particular, we focus on what we define as the "Reversal Sample," which includes all 8-K filings with a spike in retail attention on the filing day and a subsequent reversal. Panel A reports the frequency of the five major 8-K items. As a benchmark for comparison, we identify a sample of 8-K filings with a spike in retail attention on the filing day without a subsequent reversal pattern ("No-Reversal BM Sample"). "Difference" is the differences in item frequencies between the two samples. Panel B employs a probabilistic topic model with 50 topics to explore which are the topics that are associated with the reversal pattern. To this end, Panel B reports the differences in topic frequencies between the "Reversal" and "No-Reversal BM" samples. "Most common words in topic" reports the top 10 most common words of each topic. For brevity, we only reports topics with statistically significant differences across samples using the Bonferroni correction (Dunn, 1961) for 50 tests. For example, Topic 1 appears more in the reversal sample. The list of the top 10 common words indicates that the topic is related to Item 502. Finally, Panel C reports the average number of news articles over a one-hour window around the 8-K filing time. To reduce noise, we focus on filings that did not have a press release on the filing day, and filings that occurred after market close. The panel includes three samples: "*DADSVI* = 1," which includes all 8-K filings with a spike in retail attention on the filing day (Specification 1); "Reversal" which is the reversal sample defined above (Specification 2); and "Item 502" which focuses on the Item 502 cases of the reversal sample (Specification 3). "Window Differences" reports the difference in average articles for various windows. "Diff (3)-(1)" is the difference between Specifications 3 and 1 window averages.

Panel A - Item Type Frequency

	Item Frequency				
	Item 101	Item 502	Item 507	Item 701	Item 801
Reversal Sample	10.6%	52.3%	14.9%	5.1%	17.1%
No-Reversal BM Sample	10.0%	35.7%	12.8%	11.8%	29.8%
Difference	0.6%	16.6%	2.2%	-6.7%	-12.7%
t-statistic	(0.30)	(5.90)	(1.10)	(3.90)	(4.98)

Panel B – Topic Frequency

		Topic Frequency					
		Topic 1	Topic 3	Topic 4	Topic 5	Topic 7	Topic 24
Reversal Sample		21.9%	4.2%	8.2%	3.8%	4.9%	0.5%
No-Reversal BM Sample		15.8%	7.6%	4.8%	6.5%	2.8%	1.6%
Difference		6.0%	-3.5%	3.3%	-2.7%	2.2%	-1.0%
t-statistic		(3.91)	(-4.41)	(3.48)	(3.72)	(3.33)	(-3.08)
Most common	1	company	statement	executive	exhibit	stock	gas
words in topic	2	officer	forward	company	release	award	oil
	3	director	looking	agreement	company	company	production
	4	board	company	employment	press	share	natural
	5	president	result	employee	financial	option	energy
	6	chief	risk	termination	information	unit	rig
	7	certain	factor	section	service	performance	drilling
	8	vice	security	date	statement	agreement	reserve
	9	executive	future	benefit	investor	date	resource
	10	financial	including	payment	corporation	restricted	price

Panel C – News around Filing Time

	Average number of News Articles Around Filing			
	DADSVI=1	Reversal	Item 502	Diff (3)-(1)
	(1)	(2)	(3)	
One Hour Before Filing				
[F-1H] - F	0.220	0.223	0.028	
One Hour After Filing				
F - [F+1H]	0.325	0.476	0.750	
Difference				
[F+1H] - [F-1H]	0.105	0.252	0.722	0.617
	(4.71)	(1.48)	(2.36)	(2.01)

Table 11. Form 8-K Filings vs. other Information Dissemination Channels

In this table, we repeat the analysis conducted in Tables 8 (Panel 10.A) and 9 (Panel 10.B), for 8-K filings without any type of news during the event-filing period.

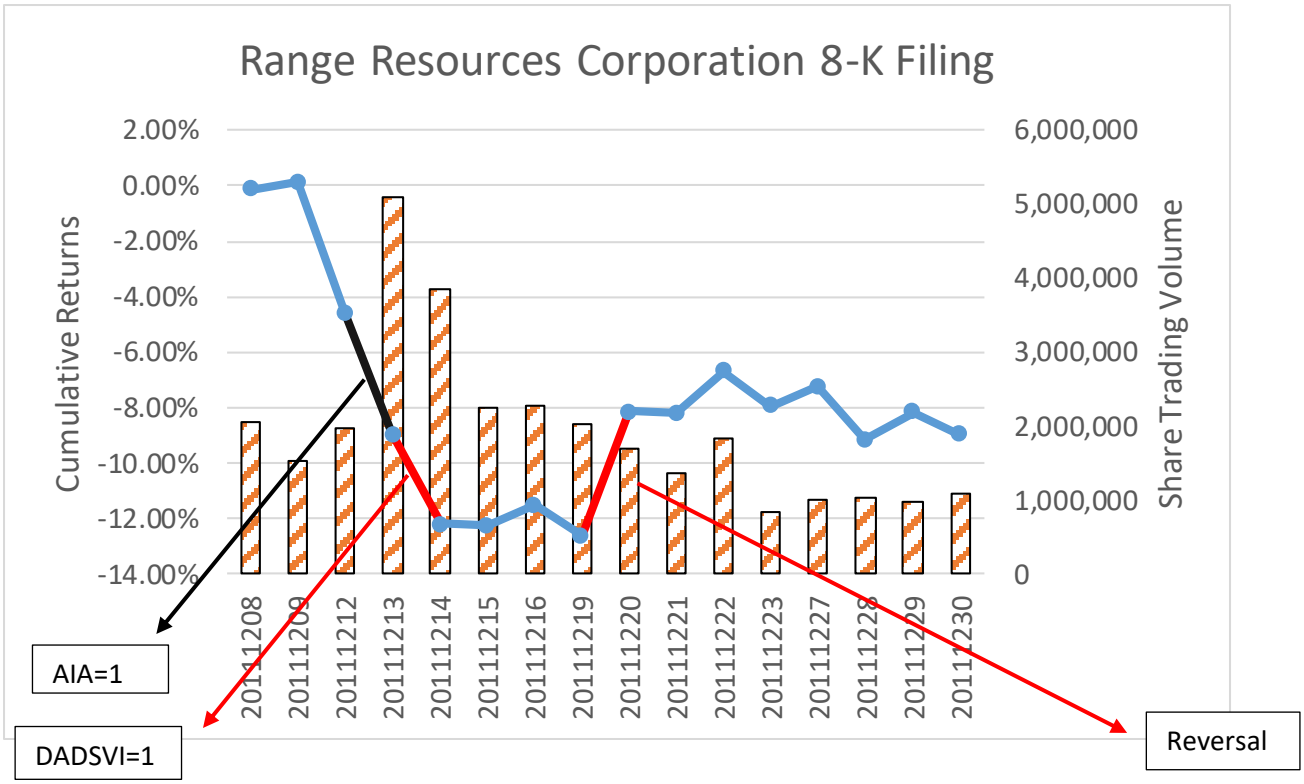
Panel 11.A – Filings Day and Subsequent Cumulative Abnormal Returns

	Cumulative DGTW Returns After Filing Day									
	t+1_t+1	*t+1_t+2*	*t+1_t+3*	*t+1_t+4*	*t+1_t+5*	*t+1_t+6*	*t+1_t+7*	*t+1_t+8*	*t+1_t+9*	*t+1_t+10*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
AIA F	-0.002	0.001	0.001	0.000	0.001	0.000	0.001	-0.001	-0.001	-0.001
	(-1.09)	(0.40)	(0.33)	(-0.06)	(0.45)	(-0.07)	(0.26)	(-0.16)	(-0.21)	(-0.23)
DADSVI F	0.000	0.002	0.004	0.002	0.001	0.002	0.000	0.001	0.000	-0.002
	(0.15)	(0.74)	(1.14)	(0.39)	(0.29)	(0.44)	(0.07)	(0.21)	(-0.04)	(-0.38)
PreFilingRet	-0.016	-0.029	-0.015	0.003	0.009	-0.004	0.003	-0.008	0.006	-0.012
	(-0.79)	(-0.96)	(-0.48)	(0.08)	(0.19)	(-0.10)	(0.07)	(-0.16)	(0.11)	(-0.22)
FilingRet	-0.003	-0.014	-0.024	0.000	0.016	-0.052	-0.072	-0.026	-0.043	-0.064
	(-0.07)	(-0.29)	(-0.40)	(0.01)	(0.20)	(-0.66)	(-0.83)	(-0.30)	(-0.46)	(-0.62)
*PreFilingRet*AIA F*	0.057	0.127	0.128	0.063	0.074	0.130	0.132	0.117	0.124	0.192
	(1.05)	(1.78)	(1.75)	(0.75)	(0.92)	(1.44)	(1.29)	(1.05)	(1.07)	(1.45)
*PreFilingRet*DADSVI F*	-0.049	-0.023	-0.001	-0.111	-0.073	-0.061	-0.011	-0.006	0.007	-0.100
	(-1.06)	(-0.40)	(-0.02)	(-1.77)	(-1.19)	(-0.83)	(-0.13)	(-0.07)	(0.07)	(-0.91)
*FilingRet*AIA F*	-0.045	-0.002	0.022	0.032	0.062	0.188	0.147	0.110	0.117	0.124
	(-0.73)	(-0.02)	(0.21)	(0.29)	(0.51)	(1.51)	(1.05)	(0.84)	(0.81)	(0.74)
*FilingRet*DADSVI F*	-0.023	-0.102	-0.181	-0.286	-0.318	-0.266	-0.218	-0.234	-0.249	-0.114
	(-0.27)	(-0.77)	(-1.15)	(-2.24)	(-2.01)	(-1.70)	(-1.39)	(-1.28)	(-1.32)	(-0.70)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Day-of-Week FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Item FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	3,674	3,674	3,674	3,674	3,674	3,674	3,674	3,674	3,674	3,674
AdjRsq	1.12%	0.48%	0.67%	0.70%	0.75%	0.93%	0.55%	0.57%	0.46%	0.35%

Panel 11.B – Filings Day and Cumulative Institutional Trading

	Cumulative Directional Ancerno Trading from Filing Day										
	t_t	*t_t+1*	*t_t+2*	*t_t+3*	*t_t+4*	*t_t+5*	*t_t+6*	*t_t+7*	*t_t+8*	*t_t+9*	*t_t+10*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
AIA F	-0.009	-0.016	-0.024	-0.023	-0.024	-0.027	-0.036	-0.039	-0.034	-0.040	-0.047
	(-2.15)	(-2.32)	(-2.69)	(-1.92)	(-1.61)	(-1.57)	(-1.86)	(-1.84)	(-1.49)	(-1.66)	(-1.83)
DADSVI F	-0.010	-0.004	-0.006	0.009	0.003	-0.018	-0.055	-0.043	-0.030	-0.023	-0.042
	(-1.18)	(-0.36)	(-0.36)	(0.37)	(0.12)	(-0.60)	(-1.53)	(-1.10)	(-0.72)	(-0.50)	(-0.78)
PreFilingRet	0.170	0.231	0.314	0.377	0.470	0.595	0.698	0.853	0.860	0.933	1.079
	(2.58)	(2.29)	(2.11)	(2.13)	(2.30)	(2.68)	(2.99)	(3.24)	(3.02)	(3.13)	(3.26)
FilingRet	0.386	0.641	0.765	0.781	0.894	1.063	1.228	1.360	1.283	1.122	1.072
	(6.73)	(6.54)	(5.55)	(4.73)	(4.66)	(4.81)	(4.71)	(4.53)	(4.11)	(3.39)	(2.91)
*PreFilingRet*AIA F*	-0.081	-0.260	-0.386	-0.443	-0.784	-1.123	-1.259	-1.450	-1.393	-1.492	-1.652
	(-0.79)	(-1.74)	(-1.77)	(-1.56)	(-2.10)	(-2.68)	(-2.61)	(-2.78)	(-2.53)	(-2.47)	(-2.52)
*PreFilingRet*DADSVI F*	-0.008	0.022	0.032	0.099	-0.051	0.260	0.517	0.081	-0.125	-0.297	0.003
	(-0.06)	(0.10)	(0.11)	(0.24)	(-0.09)	(0.39)	(0.59)	(0.10)	(-0.16)	(-0.35)	(0.01)
*FilingRet*AIA F*	-0.266	-0.305	-0.555	-0.288	-0.458	-0.523	-0.979	-1.067	-1.193	-0.832	-0.824
	(-2.97)	(-1.79)	(-2.66)	(-0.99)	(-1.34)	(-1.36)	(-2.11)	(-2.16)	(-2.33)	(-1.45)	(-1.29)
*FilingRet*DADSVI F*	-0.189	-0.197	-0.378	-0.573	-1.103	-1.498	-2.146	-2.000	-1.533	-1.445	-1.526
	(-1.30)	(-1.08)	(-1.37)	(-1.58)	(-2.29)	(-2.65)	(-2.79)	(-2.43)	(-1.71)	(-1.69)	(-1.53)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Day-of-Week FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Item FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	3,068	3,068	3,068	3,068	3,068	3,068	3,068	3,068	3,068	3,068	3,068
AdjRsq	1.66%	0.76%	0.27%	0.62%	0.34%	0.11%	0.45%	0.41%	0.28%	0.19%	0.22%

Figure 1 – Range Resources Corporation Reversal Example

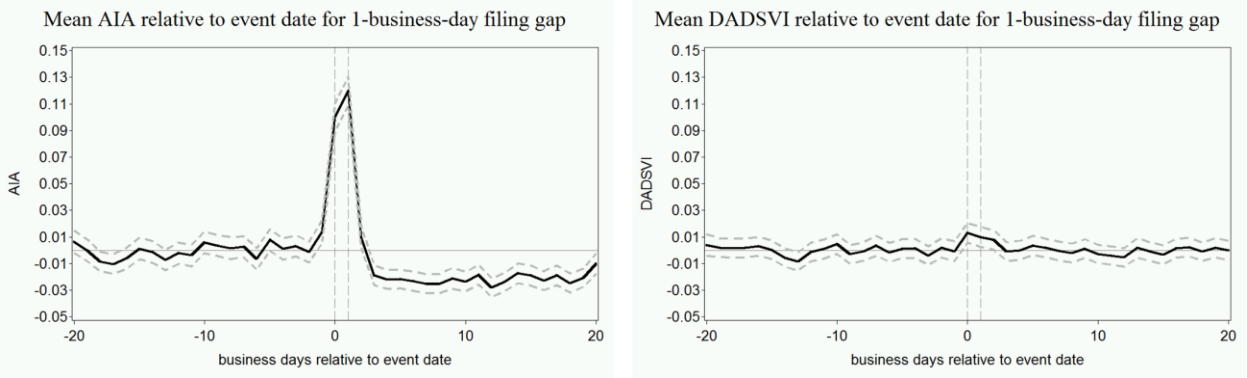


The figure plots the cumulative return and daily share trading volume of Range Resources Corporation from 12/8/2011 (the 8-K Event Day) to 12/30/2011. Range Resources Corp is a petroleum and natural gas exploration and production company headquartered in Fort Worth, Texas. On December 13, 2011 at 4:59pm, the company filed an 8-K (the Filing Day) under Item 5.02, which involved changes in management that occurred on December 8, 2011 (the Event Day). In particular, Jeff Ventura, current president and COO was to assume role as CEO; John Pinkerton, current CEO was to assume role as Executive Chairman; and Ray Walker was to assume role as Senior Vice president and COO. Institutional investors paid attention before the filing. Share trading volume spiked and reached a level of 5 million shares, and the stock price dropped by -4.57% on December 13 (Black line on the graph). Retail attention only spiked on the following day (*DADSVI* = 1), which was the first regular trading day after the after-market-close filing. Share trading volume reached 3.8 million shares and the price further declined by -3.47% (first Red line in the graph). There was an additional price drop on 14 December. After a few days, the price reverted to the pre-filing price (second Red line).

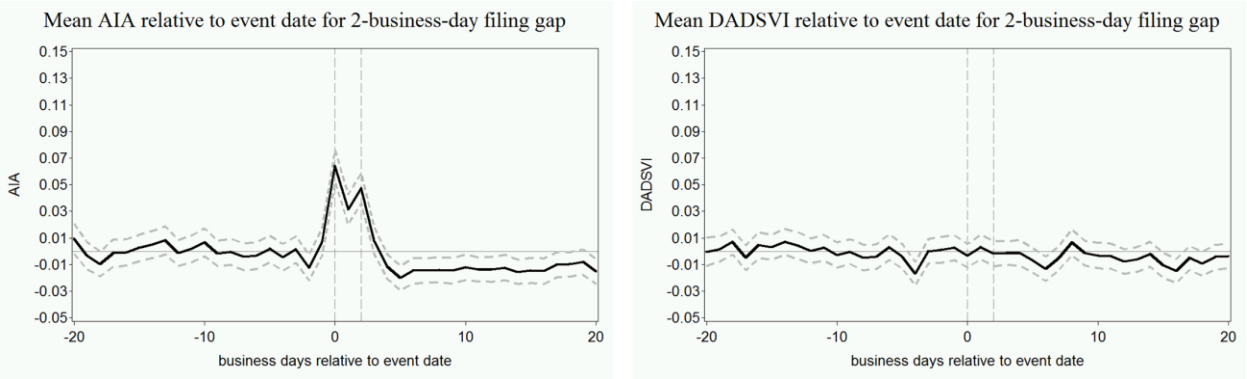
Figure 2. AIA and DADSVI Frequency Relative to Event Day Conditioning on Filing Gap

The figures plots the average frequencies of *AIA* and *DADSVI* for 20 days before and after the 8-K event day (day 0) for all 8-K filings in our sample excluding earnings announcements (Item 2.02), conditioning on the filing gap. Graphs A-D plot the *AIA* and *DADSVI* average frequencies for 8-K filings with 1 to 4 business-day filing gaps, respectively. In each graph, the solid black line represents the average and the dashed gray lines represent the 95 percent confidence intervals.

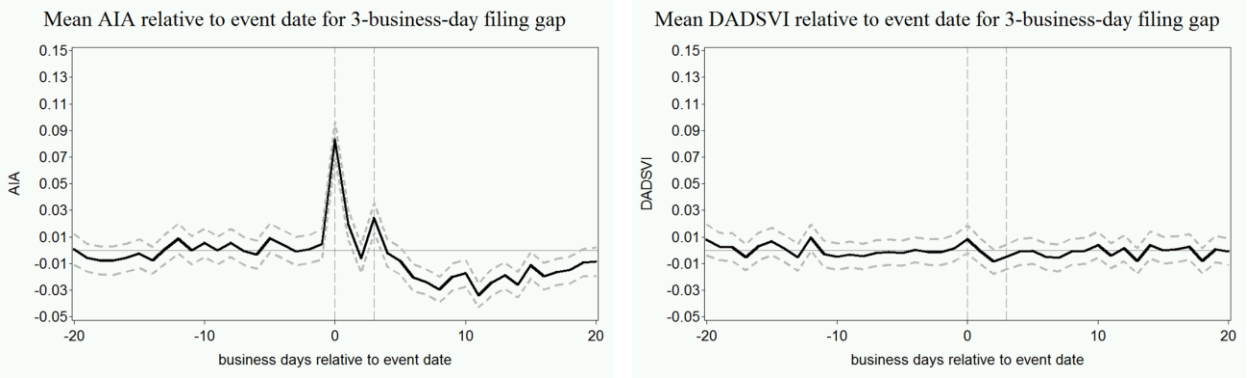
Graph 2.A –AIA and DADSVI Averages for Filing with a 1-Business-Day Filing Gap



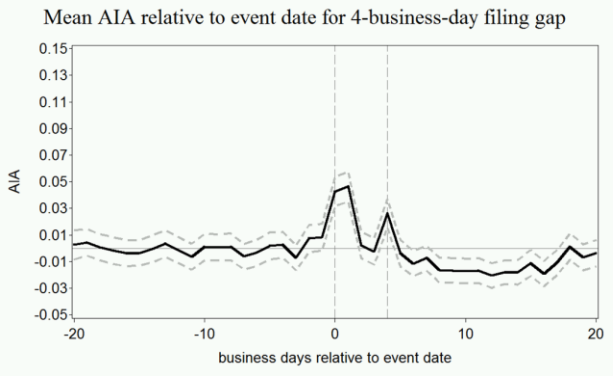
Graph 2.B –AIA and DADSVI Averages for Filing with a 2-Business-Day Filing Gap

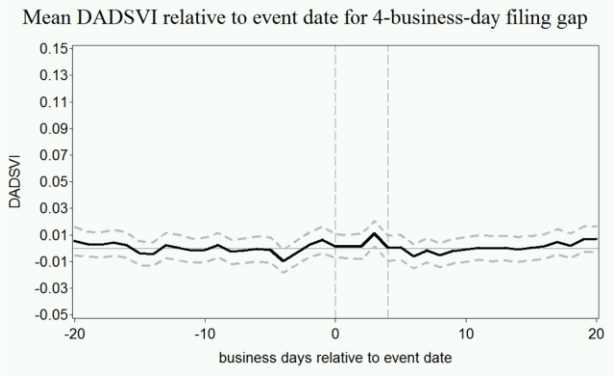


Graph 2.C –AIA and DADSVI Averages for Filing with a 3-Business-Day Filing Gap



Graph 2.D –AIA and DADSVI Averages for Filing with a 4-Business-Day Filing Gap





Appendix: Identifying 8-K Topics

Latent Dirichlet Allocation

Topic models are probabilistic generative models used to describe a set of latent "topics" that occur in a given collection of documents. Documents are modeled as mixtures of a smaller number of topics and topics as probability distributions over words. In generating a document, words are assumed to have been randomly chosen from the topics given the specific document's distribution over topics, $\theta^{(d)}$, and the word distribution for the drawn topics, ϕ. Based on these models, Bayesian statistics can be used to "uncover" the latent document-topic and topic-word distributions. These models are particularly useful when the number of words and documents to be understood are large and when there are many topics. One benefit of using a topic model is the classification technique is standardized and objective. Topic models allow the data to determine the classifications, which may include latent connections that a researcher might otherwise miss. By contrast, the results of a manual classification may depend on the individual performing the classification and may not be internally consistent.

One of the most commonly used topic models in machine learning and computational linguistics is Latent Dirichlet Allocation (LDA) (Blei et al., 2003). LDA is a hierarchical model, which chooses the latent topics as well as probability distributions in order to maximize the likelihood of observing a given set of *D* documents. In particular, if we have *K* topics, we can write the probability of the *i*th word in the *d*th document as

$$P(\omega_{di}) = \sum_{k=1}^{K} P(\omega_{di}|z_d = k)P(z_d = k)$$

Here z_d is a latent variable indicating the topic from which the *i*th word in document *d* was potentially drawn and $P(\omega_d \mid z_d = k)$ is the probability of the word ω_i under the kth topic. $P(z_i = k)$ gives the probability of drawing a word from topic *j* in the current document, which will vary across documents.

The K topics are defined as categorical distributions over *W* words with parameter vector ϕ, such that $P(\omega|z = k) = \phi_{\omega}^{(k)}$, and the *d*th document is defined as multinomial distributions over the *K* topics with parameter vector θ_d, such that $P(z) = \theta_d$. LDA augments the model with the addition of Dirichlet priors on both θ and ϕ Specifically, $\theta \sim$ Dirichlet(α) and $\phi \sim$ Dirichlet(β) where α and β are hyperparameters. Dirichlet priors are assumed. These priors are conjugate to the categorical distributions which means posterior distributions are Dirichlet. The inferential problem that needs to be solved is to analyze the posterior distribution

$$P(z, \theta, \phi|\omega, \alpha, \eta)$$

With the introduction of the Dirichlet priors, estimation is a matter of maximizing the total probability of the model

$$P(W, Z, \theta, \phi; \alpha, \beta) = \prod_{i=1}^{K} P(\phi_i; \beta) \prod_{j=1}^{M} P(\theta_j; \alpha) \prod_{t=1}^{N} P\left(Z_{j,t}|\theta_j\right) P(W_{j,t}|\phi_{Z_{j,t}})$$

By choosing the set of parameter vectors θ and ϕ. These two sets of estimates provide the document's probability distribution across topics, and the topic's probability distribution across words, respectively. We set *K* equal to 50 when estimating LDA. While somewhat arbitrary, results in the paper are broadly similar when choosing *K* between 25 and 75. In particular, the most common topics contain similar words and behave much the same as in Table 10, Panel B.

Table A. A list of the Top Ten Words for Each of the 50 Estimated Topics.

This table lists the ten most common words for each of the 50 extracted topics using LDA on 54,296 8-K filings from 2010 to 2015. Next to each word is the probability of observing the word conditional on the topic. Topics are ordered according to the frequency with which each topic appears in the sample of 8-Ks for which *DADSVI* = 1 on the filing date with Topic 1 being the most common and Topic 50 the least common.

Topic 1		Topic 2		Topic 3		Topic 4		Topic 5		Topic 6		Topic 7		Topic 8		Topic 9		Topic 10	
company	4.3%	vote	6.5%	statement	4.5%	executive	3.9%	exhibit	3.0%	performance	4.2%	stock	3.7%	agreement	9.7%	exchange	3.7%	share	10.9%
officer	3.9%	meeting	4.2%	forward	3.2%	company	3.8%	release	2.7%	company	2.9%	award	3.5%	amendment	4.6%	act	3.6%	stock	7.6%
director	3.8%	company	3.0%	looking	3.0%	agreement	3.0%	company	2.7%	target	2.7%	company	3.3%	amended	2.4%	security	2.9%	common	5.2%
board	2.9%	director	2.9%	company	2.8%	employment	1.9%	press	1.6%	officer	2.6%	share	3.0%	party	2.0%	pursuant	2.6%	price	2.4%
president	2.6%	annual	2.7%	result	1.9%	employee	1.6%	financial	1.2%	compensation	2.3%	option	1.8%	term	1.7%	report	2.5%	date	1.8%
chief	2.0%	non	2.6%	risk	1.7%	termination	1.5%	information	1.2%	bonus	2.2%	unit	1.7%	dated	1.4%	registrant	2.4%	warrant	1.5%
certain	1.8%	proposal	2.4%	factor	1.3%	section	1.3%	service	1.0%	award	2.2%	performance	1.6%	title	1.4%	form	1.8%	dividend	1.5%
vice	1.6%	stockholder	2.1%	security	1.3%	date	1.3%	statement	0.9%	plan	2.2%	agreement	1.6%	exhibit	1.3%	rule	1.8%	number	1.4%
executive	1.5%	shareholder	1.9%	future	1.2%	benefit	1.2%	investor	0.9%	executive	2.1%	date	1.5%	credit	1.2%	filing	1.4%	transaction	1.3%
financial	1.1%	broker	1.7%	including	1.2%	payment	1.1%	corporation	0.8%	incentive	2.1%	restricted	1.5%	date	1.2%	cfr	1.4%	company	1.3%

Topic 11		Topic 12		Topic 13		Topic 14		Topic 15		Topic 16		Topic 17		Topic 18		Topic 19		Topic 20	
sale	2.4%	company	3.9%	energy	2.7%	lender	3.0%	court	2.7%	note	5.9%	patient	1.7%	company	4.3%	growth	1.7%	plan	7.4%
product	1.7%	prospectus	2.3%	rate	2.0%	loan	2.5%	settlement	2.0%	offer	5.6%	clinical	1.5%	agreement	2.5%	gaap	1.6%	participant	5.9%
market	0.9%	statement	2.1%	gas	1.7%	borrower	2.2%	claim	1.8%	senior	2.3%	study	1.2%	subsidiary	1.9%	revenue	1.3%	section	2.0%
new	0.9%	security	1.8%	cost	1.3%	agent	2.2%	action	1.8%	security	2.2%	trial	1.2%	section	1.8%	non	1.3%	benefit	1.6%
brand	0.9%	underwriter	1.7%	electric	1.2%	credit	1.7%	state	1.2%	offering	2.2%	treatment	1.1%	parent	1.8%	market	1.3%	employee	1.4%
customer	0.8%	registration	1.3%	utility	1.1%	administrative	1.4%	party	1.1%	tender	2.1%	pharmaceutical	1.0%	merger	1.3%	financial	1.1%	payment	1.4%
store	0.8%	agreement	1.3%	power	1.1%	section	1.4%	plaintiff	1.0%	purchase	1.3%	drug	1.0%	material	1.0%	net	1.1%	date	1.1%
industry	0.8%	act	1.2%	customer	1.1%	agreement	1.1%	order	1.0%	exchange	1.2%	fda	0.9%	party	0.9%	business	1.1%	year	1.1%
global	0.7%	material	1.0%	coal	0.8%	obligation	1.0%	attorney	0.9%	principal	1.2%	phase	0.9%	respect	0.9%	adjusted	1.0%	employer	0.9%
year	0.7%	time	0.9%	earnings	0.8%	date	1.0%	district	0.9%	release	1.2%	development	0.8%	time	0.8%	income	1.0%	account	0.9%

Topic 21		Topic 22		Topic 23		Topic 24		Topic 25		Topic 26		Topic 27		Topic 28		Topic 29		Topic 30	
merger	4.6%	income	1.8%	quarter	2.6%	gas	3.1%	seller	2.5%	note	4.2%	bank	9.6%	loan	5.9%	health	4.5%	product	11.6%
transaction	4.0%	net	1.8%	year	2.2%	oil	2.4%	party	2.5%	security	2.9%	financial	2.8%	security	2.0%	service	2.5%	technology	4.4%
statement	3.7%	tax	1.6%	call	0.9%	production	2.1%	agreement	2.5%	indenture	2.5%	deposit	1.7%	mac	1.8%	care	2.2%	patent	2.4%
sec	3.5%	company	1.6%	vessel	0.7%	natural	1.4%	section	1.7%	date	2.1%	bancorp	1.6%	credit	1.7%	contract	1.6%	system	2.2%
proxy	3.0%	asset	1.6%	analyst	0.7%	energy	1.4%	purchaser	1.5%	company	2.1%	banking	1.6%	interest	1.7%	plan	1.2%	development	2.0%
proposed	2.1%	financial	1.4%	good	0.7%	rig	1.3%	closing	1.5%	interest	1.9%	national	1.3%	total	1.6%	provider	1.1%	sale	1.8%
information	1.9%	cash	1.3%	time	0.6%	drilling	1.3%	date	1.1%	principal	1.5%	asset	1.3%	asset	1.5%	program	1.1%	customer	1.7%
filed	1.9%	december	1.3%	market	0.6%	reserve	1.2%	business	1.0%	payment	1.2%	loan	1.2%	loss	1.4%	healthcare	1.1%	software	1.5%
shareholder	1.6%	year	1.2%	business	0.6%	resource	1.0%	buyer	1.0%	redemption	1.1%	corporation	1.1%	mortgage	1.2%	hospital	1.0%	manufacturing	1.5%
stockholder	1.3%	expense	1.2%	new	0.6%	price	0.8%	respect	0.9%	time	0.9%	branch	1.1%	net	1.1%	medical	1.0%	license	1.4%

Table A. A list of the Top Ten Words for Each of the 50 Estimated Topics, con't.

Topic 31		Topic 32		Topic 33		Topic 34		Topic 35		Topic 36		Topic 37		Topic 38		Topic 39		Topic 40	
security	3.0%	owner	2.0%	partner	9.7%	group	5.6%	insurance	4.4%	tenant	4.3%	vehicle	4.2%	llc	10.7%	bond	5.8%	service	4.0%
company	2.9%	work	1.8%	partnership	6.4%	clause	1.3%	loss	2.5%	landlord	3.4%	gaming	2.1%	guarantor	9.9%	mining	2.2%	network	3.2%
trustee	2.9%	contractor	1.7%	member	5.9%	scheme	1.3%	life	2.1%	lease	3.1%	contract	2.0%	guarantee	2.5%	west	2.1%	customer	2.3%
section	2.6%	design	1.4%	general	3.9%	agreement	1.1%	aig	2.0%	premise	1.7%	year	1.9%	delaware	2.4%	gold	1.6%	aircraft	2.2%
note	2.4%	cost	1.3%	investor	3.8%	share	1.0%	investment	1.7%	building	1.1%	red	1.8%	indenture	2.4%	company	1.6%	equipment	2.0%
indenture	2.1%	project	1.3%	unit	3.1%	member	1.0%	premium	1.6%	rent	1.1%	automotive	1.7%	supplemental	2.1%	exh	1.5%	class	1.9%
holder	1.9%	water	1.1%	limited	2.6%	company	1.0%	claim	1.4%	term	1.1%	ford	1.6%	holding	2.0%	mineral	1.5%	system	1.9%
interest	1.3%	construction	1.1%	dollar	2.3%	relevant	0.9%	company	1.2%	property	0.9%	semiconductor	1.4%	subsidiary	1.8%	waste	1.5%	air	1.7%
series	1.2%	contract	1.0%	interest	1.7%	limited	0.9%	reserve	1.2%	cost	0.8%	term	1.4%	company	1.8%	canada	1.5%	wireless	1.7%
payment	1.1%	client	1.0%	oneok	1.7%	finance	0.8%	policy	1.1%	expense	0.8%	intel	1.3%	corp	1.6%	south	1.4%	communication	1.4%

Topic 41		Topic 42		Topic 43		Topic 44		Topic 45		Topic 46		Topic 47		Topic 48		Topic 49		Topic 50	
farmer	13.1%	raymond	2.1%	ton	2.3%	agent	5.1%	sterling	6.0%	dynegy	3.0%	horizon	3.1%	reference	4.9%	type	3.4%	type	3.6%
farm	2.3%	value	2.0%	fuel	2.0%	agreement	2.8%	exco	3.0%	plan	2.2%	leucadia	2.6%	accounting	4.1%	reference	1.9%	fasb	3.5%
arrow	1.9%	james	1.9%	cvr	1.5%	purchase	2.3%	scientific	3.0%	claim	1.6%	decker	2.3%	fasb	3.1%	benefit	1.8%	reference	2.9%
molycorp	1.3%	mylan	1.5%	spinco	1.5%	account	1.6%	harbinger	2.3%	bankruptcy	1.4%	sei	1.9%	standard	2.8%	plan	1.7%	gaap	2.7%
rural	1.3%	resort	1.2%	agilent	1.2%	collateral	1.4%	paper	2.0%	debtor	1.4%	isip	1.7%	publisher	2.3%	value	1.6%	section	2.0%
material	1.1%	field	1.2%	cost	1.2%	section	1.4%	fisher	1.8%	sandridge	1.2%	questar	1.6%	presentationref	2.3%	balance	1.5%	presentationref	2.0%
crown	1.0%	aetna	1.1%	price	1.2%	date	1.3%	baker	1.6%	lease	1.2%	owen	1.2%	role	2.2%	fair	1.5%	publisher	2.0%
metal	1.0%	financial	0.9%	keysight	1.2%	receivables	1.1%	hughes	1.6%	timeshare	1.2%	pva	1.2%	codification	2.2%	member	1.5%	role	2.0%
coca	0.9%	graphic	0.9%	capacity	1.2%	contract	1.1%	boston	1.5%	facility	1.1%	omega	1.1%	paragraph	2.1%	period	1.4%	asc	1.9%
cola	0.9%	anaren	0.9%	ebitda	1.1%	time	1.1%	packaging	1.5%	trust	1.1%	jefferies	1.1%	type	2.1%	asset	1.4%	uri	1.8%