

## **The Role of the Business Press as an Information Intermediary**

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# **The Role of the Business Press as an Information Intermediary**

## **Abstract**

This paper investigates whether the business press serves as an information intermediary in the capital markets. The press has the potential to shape a firm's information environment by packaging and disseminating information, as well as by creating new information through journalism activities. We examine the impact of the press on firms' information environments during earnings announcements. For a sample of 1,182 medium-sized growth firms with likely information problems and capital needs, we collect 608,296 press articles, which we classify as firm-initiated or press-initiated coverage. We find that greater press coverage reduces the degree of information asymmetry (measured by lower spreads and greater depth) and facilitates more of both small and large trades. Press coverage is also associated with larger stock price and trading volume reactions to the earnings announcement. These results are robust to controlling for a variety of firm characteristics such as size, the presence of other information intermediaries, and the level of firm-initiated disclosures. Our findings suggest that the press serves a role in reducing information problems related to earnings announcements.

## *1. Introduction*

We investigate whether the business press serves as an “information intermediary” in the capital markets. We use the term “information intermediary” in the sense of Healy and Palepu [2001]: an information intermediary provides information that is new and useful to other parties. The information may be new and useful due to the fact that it has not previously been publicly released, or it may be new and useful due to the fact that it has not been widely disseminated. The business press is perhaps the broadest and most widely disseminated of all potential information intermediaries, reaching both sophisticated and unsophisticated investors, as well as managers, regulators, and other market participants. Dyck and Zingales [2002] argue that the media is a mechanism through which information is aggregated and credibly communicated to the public (and across firms). However, if the business press does not add new material information beyond the firm disclosure it disseminates and/or if its information does not reach a broader class of investors than that reached by other information intermediaries, such as analysts, then press coverage will not meaningfully enrich a firm’s information environment. Thus, we examine whether the press influences the capital market information environment incremental to both firm-initiated disclosure and other commonly-examined intermediaries, such as financial analysts and institutional investors.

We test for the impact of press coverage on firms’ information environments around earnings announcements. We develop hypotheses about the role of the press in influencing the degree of information asymmetry among investors, in stimulating more small investors to trade, and in facilitating block trades. Our hypotheses are based on the conjecture that the business press provides information to market participants through the timely dissemination of firm-initiated information to a broad investor base, as well as through the creation and packaging of

new information. We focus on earnings announcements because they are a well-defined information event, which allows us to control for “normal” levels of pre-announcement press coverage, firm disclosure, and firm-specific stock market trading characteristics.

We examine press coverage for a sample of 28,979 firm-quarters of 1,182 medium-sized NASDAQ growth firms between 1993 and 2004. We select this sample because we wish to focus on firms that have sufficient cross-sectional variation in the quality of their information environments and capital needs, as well as variation in the intensity of press coverage. By comparison, an examination of the largest NASDAQ firms or firms in the S&P 500 would likely yield the result that all firms had substantial press coverage and rich information environments, irrespective of press coverage (an examination of large firms with intense press coverage would also be problematic due to the fact that our press data must be partially hand-collected). We collect data on 608,296 press articles from the Factiva database. We classify each of these articles as firm-initiated or press-initiated coverage based on the source of the article. This distinction is important to ensure that our press variables capture the impact of the media in creating and disseminating information, rather than the effects of the firms’ own disclosure practices. Reflecting the multiple roles of the press, we examine four measures of press coverage: aggregate word count, number of sources, amount of additional information packaged in the articles, and the presence of reporter-generated analysis.

Our results indicate that, *ceteris paribus*, press coverage has a significant effect on firms’ information environments around earnings announcements. We find that greater press coverage during the earnings announcement window is associated with reductions in bid-ask spreads and improvements in depth. These results are robust to controlling for a variety of firm characteristics such as the stock return and volume reaction to the earnings announcement, firm

size, firm-initiated disclosures, and the presence of other information intermediaries, such as analysts and institutional investors. Our results also suggest that broad dissemination of information by the press has a bigger impact on information asymmetry than quantity or quality of information provided by the press. These findings are consistent with a press-induced reduction in information asymmetry during the earnings announcement, presumably due to an attenuation of the information advantage of privately-informed investors, reduced incentives of investors to acquire private information, or both.

We also examine the influence of the press on the behavior of small traders and block traders during the earnings announcement period. Controlling for volume changes during the earnings announcement period, we find that greater press coverage is associated with a larger increase in the number of both small and large trades, indicating that press coverage facilitates more trading by both types of traders during the earnings announcement. For small trades, these results are consistent with the press providing information to a broader set of investors and triggering more trades. For large trades, these results are consistent with press coverage reducing spreads and increasing depth enough to reduce adverse selection costs and encourage more block traders to execute trades.

Our paper contributes to the literature on information intermediaries by documenting that the business press influences numerous aspects of firms' information environments. Our press coverage variables consistently exhibit incremental effects after controlling for the level of firm-initiated disclosure, and for the presence of other information intermediaries, such as analysts and institutional investors. Moreover, the press often has a larger impact on the information

environment than the other intermediaries or firm disclosures. These findings suggest that the press is an important information intermediary.<sup>1</sup>

The remainder of the paper is organized as follows. Section 2 discusses the roles of the press, reviews prior research, and presents our hypotheses. Section 3 provides a description of our sample and variable measurement. Section 4 presents our results and section 5 concludes.

## *2. Hypothesis development*

### 2.1 MULTIPLE ASPECTS OF PRESS COVERAGE

The business press has the potential to affect firms' information environments by creating new information through journalism activities, by packaging information from many sources, and by disseminating timely information to sophisticated and unsophisticated investors, managers, regulators, and other market participants.

To illustrate the many roles of the press, we provide the example of Activision Inc.'s disclosures through an earnings announcement period in July 2004 (see the Appendix). First, the press facilitates dissemination of Activision's earnings announcement information. The appendix shows that brief summary releases (80 - 260 words) of the key points of the earnings announcement are disseminated through multiple news wire services shortly after the firm releases its 1,993-word full-text earnings announcement on PR Newswire. The press also alerts investors to upcoming scheduled firm disclosures, such as the time of Activision's conference call and the appearance of the CEO on CNBC.

Second, the press packages information together from multiple sources. The appendix shows that the news wires update their reports of the earnings announcement by adding analyst

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<sup>1</sup> A caveat to our findings is that we do not examine how firm policies and disclosure choices affect press coverage (see, e.g., Bushee and Miller [2007]).

forecast information, price information, and management forecast information as it becomes available. The press also puts together lists of “hot stocks” during the day.

Finally, the press creates new information. In the text of the Reuters article at the end of the day (not reproduced in full), the writer has solicited quotes from management and an analyst on the implications of the earnings announcement. The writer also discusses management’s forecasts in the context of industry information to facilitate critical interpretation of the forecast. These multiple roles suggest the press’ potential to increase the amount of information flow in the market, to alert a broader set of investors to breaking news at the firm, and to reduce the level of information asymmetry across investors.

## 2.2 PRIOR LITERATURE

Recently, researchers have begun to investigate the role of the press in providing information to firms’ investors, creditors, and other constituencies. Dyck and Zingales [2002] argue that the media is one vehicle through which information is aggregated and credibly communicated to the public (and across firms), and that the media can play a substantial role in reducing the costs of contracting. Dyck and Zingales [2002] and Miller [2006] argue that there is a consumer demand for the investigative reporting role of the media. Zingales [2000] hypothesizes that readers rely on this reporting to form opinions when they believe the information provided is accurate and reliable.

Much of the prior capital markets research on the press focuses on firm-initiated earnings announcement disclosures through press releases.<sup>2</sup> For example, Francis, Schipper, and Vincent

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<sup>2</sup> Another stream of research on the business press focuses on the press’ role in facilitating corporate governance. Miller [2006] finds that the media provides the public with information about accounting fraud, and that the media is more likely to fill a watchdog role for firms with a larger public following, a richer information environment, and where the story is more likely to be sensational and interesting to the public. Dyck and Zingales [2002, 2004] provide evidence in an international setting that the media plays a role in corporate governance and influences firms’ behavior. Johnson, Porter, and Shackell [1997], Louis, Joe, and Robinson [2004], and Core, Guay, and Larcker [2008] provide evidence on the role of the media in influencing CEO pay.

[2002] document that absolute stock returns around earnings announcements are related to the number and types of comments by officers in firms' press releases. Van Buskirk [2006] documents that absolute returns and abnormal volume around earnings announcements are greater when firms provide more words in their earnings press release. Further, he finds that a greater number of words in the press release is associated with lower bid-ask spreads and greater depth. Kross, Ro, and Schroeder [1990] document that the accuracy of analysts' forecasts is greater for firms with higher levels of press coverage in the Wall Street Journal. Chan [2003] examines the predictability of stock returns following news headlines and draws inferences about investors' behavioral biases in responding to news events. Frankel and Li [2004] find an unexpected positive association between the number of news articles and various proxies for information asymmetry including the bid-ask spread. We extend these studies by examining separately the impact of firm-initiated disclosure from the role of the press in disseminating and interpreting such disclosure.<sup>3</sup>

Our study is similar in spirit to research on the information intermediary role of analysts and institutional investors in providing information to market participants. For example, Lobo and Mahmoud [1989] document that stock price variability at earnings announcements is smaller for firms with greater analyst following. Potter [1992] examines whether institutional investors provide a similar informational role, but does not find confirmatory evidence. In contrast, El-Gazzar [1998] provides evidence that price reactions around earnings announcements are smaller for firms with greater institutional ownership, a result interpreted as being consistent with institutional investors providing information to the market through trading, or alternatively drawing out voluntary firm disclosures. Brennan and Subramanyam (1995) show that greater

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<sup>3</sup> A notable exception is Dyck and Zingales [2003], who examine whether the press mimics the firm's decision to report street earnings or GAAP earnings first in its press release. They find that the market reaction is stronger to the measure reported first in the press.

analyst coverage leads to less information asymmetry, and Yohn [1998] finds that bid-ask spreads are smaller around earnings announcements for firms with greater analyst following, a finding consistent with analysts providing information that reduces information asymmetry.

Similar to this work on analysts and institutional investors, we focus on the impact of the press on the information environment around earnings announcements. This setting ensures that every firm has an information event and allows us to use pre-announcement coverage as a control for “normal” levels of press coverage, firm disclosure, and stock market trading for the firm, which reduces the potential influence of correlated omitted variables.

### 2.3 HYPOTHESES

Our first hypothesis examines the influence of the press on information asymmetry among investors. Diamond and Verrecchia [1991] show that more informative disclosures reduce the information advantage of privately informed traders, thereby reducing information asymmetry. The intuition is that information disclosures substitute for private information gathering and, therefore, lower information asymmetry. In our setting, if traders anticipate greater press coverage for a firm, they will see less advantage to gathering similar information. Moreover, if press coverage disseminates information to a broad group of traders who would not otherwise have the information, it will serve to reduce the information advantage of the informed traders, thereby lowering adverse selection and information asymmetry.<sup>4</sup> Following Lee, Mucklow and Ready [1993], we use bid-ask spreads and depth to capture the price and quantity dimensions of information asymmetry and propose the following hypothesis:

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<sup>4</sup> Alternatively, Kim and Verrecchia [1994] provide a model in which greater disclosure increases information asymmetry by allowing investors to differentially exploit their advantages in processing information during a short window. In this case, press coverage around the earnings announcement could exacerbate adverse selection and increase information asymmetry. However, it is likely that this effect is more pronounced in the presence of sophisticated market participants that possess idiosyncratic private information. In section 4.4, we condition the effect of the press on the presence of other information intermediaries, which provides a clearer test of this effect.

*H1*: Greater press coverage during the earnings announcement period lowers bid-ask spreads and increases depths during the earnings announcement period.

Our second hypothesis examines the influence of the press on the behavior of two specific types of traders—small traders and block traders—during the earnings announcement period. These tests provide additional evidence on the role of the press in disseminating information to a broad set of investors and in reducing the potential adverse selection costs of block trades. Bushee, Matsumoto, and Miller [2003] show that firms hosting conference calls that are open to all investors experience a significantly greater increase in the number of small trades during the call period than firms that restrict access to the call to select analysts and institutional investors. This evidence suggests that small investors are more likely to trade when they receive direct access to information. If the press is effective at disseminating information to a broad set of investors, we expect that the number of small trades during the earnings announcement period will be positively related to the level of press coverage during the earnings announcement, controlling for any change in overall trading volume. Second, Stoll and Schenzler [2006] document that over 55% of trades greater than 10,000 shares occurred outside of the spread on the NASDAQ in 2002. Moreover, Hasbrouck [1991] finds that large trades cause spreads to widen. These findings suggest that investors are more likely to execute block trades when spreads are narrower and depth is larger to reduce the price impact of their trades. If greater press coverage reduces the level of information asymmetry during the announcement, we expect that it should also impact the number of large trades executed during the earnings announcement window, again controlling for changes in overall trading volume. We state these hypotheses as follows:

*H2*: Greater press coverage in the earnings announcement period increases the number of small and large trades during the earnings announcement period, *ceteris paribus*.

### *3. Sample Selection and Variable Measurement*

#### 3.1 SAMPLE SELECTION

We obtain our data on press articles from the Factiva database. We use the Factiva indexing codes to find all articles for the firm and retrieve only the header information, which can be converted to a machine-readable format. Factiva data must be hand-collected and only allows 100 articles to be downloaded at a time, which imposes prohibitive costs to obtaining a universal sample of press articles. Consequently, we choose to limit our sample selection to a set of firms for which information asymmetry is likely to be an important issue and for which we expect significant cross-sectional variation in press coverage. First, we restrict our sample to NASDAQ firms. These firms are generally smaller and less followed by analysts than NYSE firms. Moreover, restricting our sample to one exchange removes any effects of exchange listing on dependent variables such as spread and depth (see Van Buskirk [2006]). Second, we require that firms be publicly traded during 1998. We select this date because intensive Factiva business coverage begins in about 1993 (see, e.g., Core, Guay, and Larcker [2008]), providing us with six years of potential coverage before and after 1998. We choose a date in the middle of the Factiva data coverage period to ensure a representative sample and the longest possible time-series of data for our firms. Selecting firms in 1993 would have biased the sample toward larger firms, as Factiva coverage was less comprehensive initially (see figure 1), and would have imposed a significant survivorship bias on the coverage data in later years. Selecting firms in

2004 would have also biased the sample toward more successful firms as there would be no firms that had failed in the sample.

Next, we require that the sample firms have CRSP and Compustat data for fiscal year 1998. Because we focus on information asymmetry around earnings announcements in our study, we also require firms to have at least one quarterly earnings announcement date on Compustat in 1998. We then restrict the sample to mid-sized NASDAQ firms. We rank the firms by market value on December 31, 1998 and eliminate the largest and smallest 20% of the distribution. We eliminate the largest 20% because these firms have extremely high levels of press coverage, which would impose high data collection costs (e.g., Microsoft had 24,550 articles on Factiva in 1998). We eliminate the smallest 20% because these firms likely have extremely low levels of press coverage (see, e.g., Bushee and Miller [2007]). Finally, to concentrate on firms with high expected information asymmetry, we rank the firms based on their market-to-book assets ratio (as a proxy for growth opportunities and information asymmetry), and select the 50% of the sample with the highest market-to-book assets ratios. This selection process yields a sample of 1,257 medium-sized NASDAQ firms with high market-to-book assets ratios.

We examine earnings announcements for firm-quarters in the period 1993 to 2004. When we restrict the sample to firm-quarters with valid Compustat quarterly earnings announcement dates and with CRSP stock price data at the fiscal quarter-end date, we obtain a sample of 37,626 firm-quarter observations on 1,257 firms.<sup>5</sup> Because our research design requires computation of an earnings surprise, we require that each firm-quarter have Compustat and CRSP data for the fiscal quarter one year before. We further require that, for each firm-year, the number of

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<sup>5</sup> We eliminate fiscal quarters when the quarterly earnings announcement date as reported on Compustat is later than the next quarter's earnings announcement date or earlier than the fiscal quarter end, since these seem likely to be recording errors.

shareholders and employees are available in Compustat. We also require CRSP daily return data through two days after the earnings announcement date. These requirements yield a final sample of 1,182 firms and 28,979 firm-quarter observations.

Finally, we merge the Factiva business press data with the CRSP and Compustat data. We match the articles' publication dates with trading dates, either in the firms' earnings announcement windows or in pre-earnings announcement windows that we define below. When an article occurs on a non-trading day (Saturday, Sunday, or holiday), we assign it to the next trading day. There are 608,296 press articles for this sample. The sample consists of 27,077 firm-quarter observations with more than one article and 1,902 firm-quarter observations with no articles.

Figure 1 shows the number of firms with and without press coverage for each quarter during the sample period. The sample peaks in 1998-1999 due to our requirement that the firms be publicly traded as of December 31, 1998. Most of the firm-quarters with no Factiva coverage occur early in the sample. To ensure that our results are not biased by changes in coverage over time, we perform all of our regressions on a firm-quarter basis (this procedure also ensures that our standard errors are robust to cross-sectional correlation in the data).

### 3.2 INFORMATION ENVIRONMENT MEASURES

We test our hypotheses about the effect of the press on firms' information environments by examining the relation between the amount of press coverage and bid-ask spreads, market depths, and the number of small and large trades during the earnings announcement period. For each of these variables, we compute abnormal values by subtracting the value of the variable during the pre-announcement period from the event-period level because we expect that these variables vary across firms for economic reasons other than press coverage; thus, the firm serves

as its own control for the level of these variables. We define the earnings announcement window (the *EVENT* period) as the three trading day period surrounding the earnings announcement date; that is, the day before the announcement, the announcement day, and the day after the announcement.<sup>6</sup> The pre-earnings announcement window (the *PRE* period) is defined as the trading days two days after the previous announcement through two days before the current announcement. When the previous *EVENT* period is not available, we set the *PRE* period to be 62 trading days prior to the *EVENT* period.

We measure abnormal bid-ask spread (*ABN\_SPREAD*) as the *EVENT* period average daily spread minus the *PRE* period average daily spread. The daily spread is the average of each quote's spread, which is calculated as the difference between an offer price and a bid price divided by the midpoint of the offer and bid price.<sup>7</sup> We measure abnormal depth (*ABN\_DEPTH*) as the log of the *EVENT* period average daily depth minus the log of the *PRE* period average daily depth. The daily depth is the average of each quote's depth, which is calculated as the sum of the dollar offer size and the dollar bid size. We obtain spread and depth data from the TAQ database.

We define small trades as trades with a dollar value less than \$5,000 and large trades as trades with a dollar value larger than \$30,000.<sup>8</sup> To reduce the correlation between trade sizes and price movements, we use the largest round-lot size less than or equal to the given dollar threshold, computed using the price at the beginning of the day (Bushee, et al., 2003). We measure the abnormal number of small trades (*ABN\_PSMALL*) as the *EVENT* period sum of the

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<sup>6</sup> We also estimated all of our analyses using a five-day window around the earnings announcement and found virtually identical results for our press coverage variables.

<sup>7</sup> To remove erroneous quotes, we first choose quotes with a positive spread between 9:30 am and 4:00pm, and remove quotes with spreads higher than 90% of the mid-point price, following Manzler [2005]. Depths are calculated with the same quotes used to calculate spreads.

<sup>8</sup> Bhattacharya [2001] uses \$5,000 as the cut-off for small trades and \$50,000 as the cut-off for large trades in his sample of NYSE and AMEX firms. Because we use mid-size NASDAQ firms, there are substantially fewer trades in excess of \$50,000. Consequently, we use \$30,000 as our cut-off for large trades.

daily frequencies of small trades minus the sum of the daily frequencies of small trades in the three trading days prior to the *EVENT* period, divided by the *EVENT* period sum of the daily frequencies of small trades. We follow Bushee et al. [2003] in using the three trading days before the *EVENT* period as a control period. Similarly, we measure the abnormal number of large trades (*ABN\_PLARGE*) as the *EVENT* period sum of the daily frequencies of large trades minus the sum of the daily frequencies of large trades in the three trading days prior to the *EVENT* period, divided by the *EVENT* period sum of the daily frequencies of large trades. We obtain trade data from the TAQ database.

### 3.3 BUSINESS PRESS COVERAGE MEASURES

The Factiva database contains both firm-initiated disclosures on press release wires and press-initiated articles on news wires and in publications. We attempt to identify firm-initiated news releases and use them to control for the effect of firm-initiated disclosure on changes in the information environment. Similar to Bushee and Miller [2007] and Core et al. [2008], we assume that all articles carried on press release wires (through which firms can directly disclose information) are firm-initiated disclosures. These wires include PR Newswire, FD Newswire, and Business Wire. All other articles are considered press-initiated, because news wires such as Reuters, Dow Jones, and the AP, as well as traditional publications, exercise editorial control over their content.<sup>9</sup> However, when there is no press release wire article available on an earnings announcement day, we consider the maximum word count article to represent the firm-initiated disclosure on that day, instead of press-initiated coverage.

We proxy for the amount of firm-initiated disclosure around the earnings announcement (*ABN\_FIRMDISC*) using the average of the daily maximum word counts of press release articles

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<sup>9</sup> Some articles on the press release wires are not firm-initiated (e.g., an investor relations firm announcing that it has been retained by the firm as a client). However, because we proxy for the level of firm-initiated disclosure using the maximum word count press release, such press releases should have little effect on our proxy.

during the *EVENT* period less the same measure computed in the *PRE* period. Subtracting the *PRE* period value controls for cross-sectional differences in the “normal” level of firm disclosure.<sup>10</sup> Because conference call transcripts often repeat the entire text of the earnings announcement press release, using the daily maximum word count reduces the chance that we double-count firm disclosure.<sup>11</sup>

Our primary variables of interest relate to press-initiated coverage. We examine four aspects of press-initiated coverage to capture the amount and type of information the press provides, as well as the breadth of dissemination of the information. First, we examine the abnormal total word count (*ABN\_WC*) of press articles as a general proxy for the total amount of information provided by press coverage. *ABN\_WC* is defined as the *EVENT* period average of the daily sum of word counts of press-initiated articles less the analogous measure in the *PRE* period.<sup>12</sup> Second, we count the number of unique sources (*ABN\_SRC*) that cover a firm as a measure of the breadth of dissemination of information by the press. *ABN\_SRC* is the *EVENT* period average of the daily counts of unique press sources less the analogous measure in the *PRE* period. Third, we use Factiva codes for the different topics included in the press articles (e.g., news related to governance, product markets, capital markets, legal issues, forecasts, analyst recommendations, etc.) to create a proxy for how many different types of information the press packages together in its coverage of the firm (*ABN\_ADDINFO*). *ABN\_ADDINFO* is defined as the *EVENT* period sum of the number of Factiva codes for the additional information, divided by the period length, less the analogous measure in the *PRE* period. Fourth, we use Factiva codes

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<sup>10</sup> For each variable using Factiva data, we take the log of one plus the measure to reduce the skewness of the distribution and to incorporate zero coverage observations into the sample.

<sup>11</sup> As discussed below in section 4.3, we also considered a number of other proxies for firm-initiated disclosure. None of these alternative proxies affect the sign or significance of our press variables.

<sup>12</sup> The amount of information can also be proxied by the number of articles. This measure is highly correlated with the word count (0.85 in the *EVENT* period and 0.81 in the *PRE* period). We find very similar results when we use the number of articles instead of the word count.

for whether the reporter has added his or her own analysis, opinion, or interviews to the press articles to proxy for the degree to which the press creates new information (*ABN\_ANALYSIS*). *ABN\_ANALYSIS* is the *EVENT* period sum of the number of articles that have author by-lines and the sum of the number of Factiva codes for analysis, opinion, editorial content, detailed content, or interviews, divided by the period length less the analogous measure in the *PRE* period.

### 3.4 FIRM CHARACTERISTICS AND CONTROL VARIABLES

We control for a number of firm and industry characteristics that prior work shows to be associated with information asymmetry. These controls also represent other possible determinants of the change in the firm's information environment around earnings announcements.

We expect that the abnormal return and trading volume around the earnings announcement could be related to changes in information asymmetry. Therefore, we control for abnormal returns and trading volume in our tests. We measure the absolute abnormal return (*ABS\_ABN\_RET*) as the absolute value of the difference between a firm's cumulative return and the cumulative equal-weighted market return during the three-day *EVENT* period around the quarterly earnings announcement (see table 1 for detailed variable definitions). We measure abnormal trading volume (*ABN\_TURN*) as the *EVENT* period market-adjusted share turnover minus the *PRE* period market-adjusted turnover, where turnover is the period average of daily dollar volume deflated by the period market capitalization.<sup>13</sup> Both of these variables are constructed using CRSP data.

We proxy for the firm's overall information environment using firm size (*LNMV*), defined as log of the market value of equity on the quarter-end date, analyst following

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<sup>13</sup> Measuring "trading volume" as turnover is common in the literature (Bamber, Barron, and Stober [1997], Chae [2005]). We also estimated our results using the difference in undeflated dollar volume between the *EVENT* and *PRE* periods, and the difference in logged (deflated and undeflated) dollar volume, and found similar results.

(*LNANALYST*), measured as the log of one plus the number of analysts, and the percentage of institutional ownership (*INST\_HOLD*). *LNANALYST* and *INST\_HOLD* are measured at the most recent available date prior to the announcement. We also include the prior quarter stock-return volatility (*Qt1\_VOLAT*), defined as the annualized standard deviation of the daily stock returns, and the daily average share turnover in the prior quarter (*Qt1\_TURN*). We control for growth opportunities using the book-to-market assets ratio (*BTM*).

To control for the information content of the earnings announcement, we measure the absolute value of the earnings surprise (*ABS\_ESURP*) using (1) the forecast error from the most recent I/B/E/S consensus forecast prior to the announcement, if available; (2) the forecast error from the most recent First Call consensus forecast prior to the announcement, if available when the I/B/E/S forecast is missing; or (3) the seasonal random walk earnings surprise if the firm is not covered by either I/B/E/S or First Call.<sup>14</sup> The earnings surprise is divided by the price at the end of the prior year's fiscal quarter. Finally, we control for industry-specific variation in the information environment variables using 48 industry classification dummy variables (Fama and French [1997]).

As additional controls in the *ABN\_SPREAD* and *ABN\_DEPTH* models, we include the log of quarter-end stock price (*LNPRC*) (Yohn [1998], Van Buskirk [2006]) and *Qt1\_DEPTH* (*Qt1\_SPREAD*), defined as the prior quarter average of daily depth (spread). The latter variable controls for the idea that market makers can protect themselves against information asymmetry by increasing spreads or reducing depths, and they can offset a change in spreads with a change in depths in the opposite direction (Yohn [1998]).

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<sup>14</sup> We use the I/B/E/S forecast error for 53% of the sample observations, the First Call forecast error for 7%, and the seasonal random walk error for 40%. As a robustness check, we estimate all of our regressions using only the seasonal random walk forecast error. The results using these alternative approaches for both the press coverage variables and earnings surprise variables are virtually identical to the tabulated results.

Finally, in our model for the determinants of press coverage (discussed in section 4.2), we proxy for the firm-specific demand for press coverage using proxies for the size of two major stakeholder groups. We proxy for the demand for press coverage by employees using the number of employees (*LNEMPLOYEE*), defined as the log of the fiscal year-end number of employees, and the demand for press coverage by shareholders using the number of shareholders (*LNOWN*) defined as the log of the fiscal year-end number of shareholders. These variables are also used as instruments to test for endogeneity in our main analyses.

#### *4. Descriptive Statistics and Results*

##### 4.1 DESCRIPTIVE STATISTICS

Table 1 provides descriptive statistics for the variables used in our analysis. In panel A, we report descriptive statistics on the abnormal press coverage and firm disclosure variables. In all but one case, the mean and median abnormal press variables are positive, indicating that the press provides deeper coverage, more analysis, and greater dissemination around earnings announcements than in pre-announcement periods. The one exception is the negative median value for *ABN\_ADDINFO*, which suggests that there is a narrower range of information provided in press articles during earnings announcement windows for the median firm. The mean and median values of abnormal firm disclosure are positive, and large in magnitude, reflecting the fact that firms' earnings announcement press releases often include disclosures of summary financial statements and/or complete transcripts of conference calls (see the appendix for an example).

In figure 2, we provide more detail on the press coverage variables, showing the unlogged levels in the *PRE* and *EVENT* periods by fiscal quarter. The figure shows a small

trend to more firm disclosure and more press coverage over the course of the fiscal year. The figure also shows that the mean values for number of press sources during earnings announcements is around 0.65, which represents two unique media outlets per day providing coverage during the earnings announcement. The mean values for counts of additional information and analysis articles are fairly low, suggesting a skewed distribution in which many firms receive a small amount of press coverage around earnings announcements, and an even smaller amount (often zero) in the *PRE* period.

Panel B of table 1 reports descriptive statistics for the dependent variables used in our tests. First, the table shows that we lose observations for some of the dependent variables, which is due to missing *PRE* period data and missing TAQ data. The mean abnormal spread is effectively zero and the mean abnormal depth is negative, suggesting that on average the earnings announcement does not significantly lower information asymmetry. The mean and median abnormal numbers of small and large trades are positive, indicating a higher level of overall trading activity during the earnings announcement window. Note that the sample size for the abnormal number of large trades is 25% smaller, reflecting the fact that many earnings announcement periods have no trade sizes larger than \$30,000.

Panel C shows the control variables for firm characteristics. Not surprisingly, the mean and median abnormal stock return and volume measures are positive, indicating that stock returns typically respond to earnings announcements, and that a higher level of trading activity exists during the earnings announcement window. As expected based on our sample selection criteria, the sample firms tend to be mid-sized firms; the mean market value and price per share are \$166 million and \$11.23, respectively. The sample firms are also generally not widely-followed by analysts and institutional investors. The mean number of analysts is 2.4 and the

mean percentage of institutional ownership is 29%, which compares to 5.3 and 39%, respectively, for Walther's [1997] broader sample of firms. Thus, these firms likely have weak public information environments and significant information asymmetries among investors, providing a powerful setting to examine the role of the press.

Table 2 reports correlations among the variables used in the analysis. The abnormal word count and abnormal source press variables are highly correlated with each other ( $r = 0.74$ ), suggesting that it may be difficult to separate a dissemination effect (number of sources) from a quantity effect (word count). *ABN\_ADDINFO* and *ABN\_ANALYSIS* are significantly correlated with each other as well as with the word count and source variables. The word count and source variables are also positively correlated with the firm-initiated disclosure variable, but to a lesser magnitude ( $r < 0.39$ ), suggesting that press coverage is not solely determined by the volume of firm disclosure. The press variables exhibit small correlations with firm size, analyst following, and institutional investors, indicating that press coverage around an earnings announcement is not merely proxying for some other aspect of firms' information environments.

#### 4.2 DETERMINANTS OF ABNORMAL PRESS COVERAGE

The coverage decisions of the press are not exogenous, but rather are expected to be a function of their incentives to write articles about a given firm. These incentives include consumer demand for the investigative reporting role of the media, and for some media outlets, a demand for interesting or entertaining stories. The general determinants of press coverage are not yet well understood. Therefore, we first provide descriptive evidence on the determinants of abnormal press coverage around earnings announcements, including whether abnormal press coverage is associated with abnormal stock price or trading volume reactions. There are at least two reasons to expect this association. First, the press could make an *ex post* decision to

provide more coverage when the initial stock price or volume reaction is large, leading the initial price and volume reactions to be a determinant of abnormal press coverage. Second, for similar reasons, press coverage could reflect the information in firm disclosure and in earnings surprises.

To provide insight into how abnormal *EVENT* press coverage varies across firms, we regress each of the four proxies for press-initiated coverage on the firm characteristics reported in panel C of table 1. These regressions are reported in table 3. We estimate regressions for each fiscal quarter in the sample period and report the mean coefficients across quarters, with significance tests based on the distribution of the quarterly regression coefficients (Fama and MacBeth [1973]). We adjust the standard errors for autocorrelation using the Newey and West [1987] procedure with four lags. We also use this model for abnormal press coverage to test whether press coverage is exogenous in our main tests of information asymmetry.

We find that press-initiated coverage around earnings announcements exhibits a consistent positive association with firm disclosure. Press coverage is also positively associated with abnormal returns and trading volume during the announcement period, but not the magnitude of the earnings surprise. This finding suggests that the press views the magnitude of market reaction as more “newsworthy” than the magnitude of the earnings surprise. Also, this finding is consistent with press coverage having some influence of the return and volume reaction, but, of course, no influence on the size of the earnings surprise.

Press coverage is also greater around earnings announcements for firms with greater analyst following and number of employees. Interestingly, larger firms (as measured by market value) are covered by a greater number of sources and have more articles with additional information, but have fewer abnormal words of press coverage during the announcement period, which is likely due to a higher level of coverage in the *PRE* period. Finally, high-growth firms

(i.e., low *BTM* ratios) experience greater word count and dissemination than low-growth firms, but low-growth firms have more additional information included in their press coverage.

### 4.3 RESULTS

We examine the impact of press coverage on firms' information environments by estimating a series of regressions of the information environment characteristics (spread, depth, small trades, and large trades) on the press coverage variables, firm-initiated disclosure proxies, and control variables. This relation has a clear causal link because it is unlikely that press coverage during an earnings announcement is influenced by changes in spreads or small trade sizes. Unlike a large initial price or volume reaction, which the press often cites in its coverage, it is difficult to identify clear incentives for the press to increase its coverage of firms with narrowing spreads or a greater frequency of small trades (and we have not seen any anecdotal evidence of this). In addition, we report a Hausman test below that does not reject the hypothesis that press coverage is exogenous in our regression models.

For each dependent variable, we report six models. First, we report benchmark models by regressing the dependent variable on firm-initiated disclosure and on the control variables.<sup>15</sup> Next, we separately estimate the regressions adding each of our four proxies for press-initiated coverage. Finally, we estimate the regressions including all four proxies for press-initiated coverage. We again estimate regressions for each sample quarter and report the mean coefficients across quarters, with significance tests based on the distribution of the quarterly

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<sup>15</sup> We exclude number of employees (*LNEMPLOYEE*) and number of shareholders (*LNOWN*) from the set of controls used in the regressions for two reasons. First, we are unaware of reasons to expect that these variables explain abnormal spreads, depth, small/large trades. Second, as we discuss below, we use these two variables as instruments in a sensitivity analysis that considers the potential endogeneity of press coverage with respect to the dependent variables in these regressions.

regression coefficients, adjusted for autocorrelation using the Newey and West [1987] procedure with four lags.

Table 4, panels A and B report results for abnormal spreads and depths during the announcement period, which test the effect of press coverage on information asymmetry. Column 1 of each table presents a baseline regression that includes the control variables, but not the press coverage variables (also note that we include prior quarter depth as a control in the abnormal spreads regressions, and we include prior quarter spreads in the abnormal depth regressions). Abnormal spreads are positively associated with absolute announcement returns and negatively associated with volume, and abnormal depths are negatively associated absolute abnormal returns and positively associated with volume, consistent with these variables proxying for market-maker holding costs. Abnormal spreads are also positively associated with prior quarter depth and turnover, and negatively associated with prior volatility, stock price, and firm size.<sup>16</sup> Abnormal depths during the announcement period are also negatively associated with prior quarter share turnover, and positively associated with prior volatility. Our proxy for firm-initiated disclosures is not significantly associated with either abnormal spreads or abnormal depth, suggesting that firm announcements alone have only a limited impact on changes in spreads and depths.<sup>17</sup>

In columns 2 through 6, of table 4, we test Hypothesis 1, which predicts a relation between press coverage and information asymmetry. In columns 2 and 3 of panel A, we find that

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<sup>16</sup> We note that analyst following and institutional ownership are not strongly related to *abnormal* spreads. However, these variables are all significantly associated with the *level* of spreads during the earnings announcement in a direction consistent with prior work; i.e., analyst following is negatively associated with the *level* of spreads, and institutional ownership is positively associated with the *level* of spreads (e.g., Yohn [1998]).

<sup>17</sup> It is possible that the lack of significance stems from a weak proxy for firm disclosure. To address this concern, we also consider a number of other proxies for firm-initiated disclosure: the average daily word count, the average daily maximum word count from each unique source, the maximum word count of any article during the period, and the average number of unique sources. In untabulated tests, we include all five proxies in the table 4 regressions, and alternatively include a firm-disclosure factor comprised of these variables. None of these alternative proxies affect the sign or significance of our press variables.

press coverage, measured as either abnormal word count or sources (*ABN\_WC* and *ABN\_SRC*) is significantly negatively associated with abnormal spreads, suggesting that the press effectively reduces information asymmetry during the earnings announcement period. In columns 4 and 5, we find that our proxies for the extent to which the press provides information and analysis beyond the basic facts of the earnings announcement, *ABN\_ADDINFO* and *ABN\_ANALYSIS*, are not significantly associated with abnormal spreads. When all of the press variables are included in the regression together (column 6), we find that the abnormal number of sources remains significantly associated with spreads whereas abnormal word count does not.<sup>18</sup> This result suggests that dissemination of information to a broad group of investors is a more important role for the press than the quantity or quality of information provided to investors.

The results in table 4, panel B, when abnormal depth is the dependent variable, are similar to those in panel A. Specifically, press coverage, measured as either abnormal word count or sources (*ABN\_WC* and *ABN\_SRC*), is significantly positively associated with abnormal depth, again suggesting that the press effectively reduces information asymmetry during the earnings announcement period. Further, our proxies for the extent to which the press provides information and analysis are not significantly associated with abnormal depth, and when all of the press variables are included in the regression together, the abnormal number of sources remains significantly associated with depth whereas abnormal word count does not. Overall, the finding that the press significantly reduces information asymmetry, whereas analysts and the level of firm disclosure have weak effects, suggests that the timely and broad dissemination of

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<sup>18</sup> The fact that only *ABN\_SRC* is significant when *ABN\_WC* and *ABN\_SRC* are included in the regression together must be interpreted with caution given the high correlation between the two variables (see table 2). As a check, we attempted to mitigate this correlation by forming quintiles based on both *ABN\_WC* and *ABN\_SRC* and adjusting *ABN\_WC* (*ABN\_SRC*) by the mean level of *ABN\_WC* (*ABN\_SRC*) in the firm's quintile of *ABN\_SRC* (*ABN\_WC*). In this case, both *ABN\_WC* and *ABN\_SRC* are positive and significant, suggesting that both quantity and dissemination affect a firm's information environment.

information facilitated by the press is a key underlying driver of the reduction in information asymmetry among investors.

A potential concern with the regressions in table 4 is that press-initiated coverage variables are endogenously determined by spreads and depth. To explore this concern, we perform a Hausman test of endogeneity. We first identify the number of employees and the number of shareholders as instrumental variables for press-initiated coverage. As shown in table 3, these variables exhibit an association with press-initiated coverage, yet are unlikely to be related to abnormal spreads and depth (and this lack of association is confirmed if we include them in the regressions). In untabulated tests, we find that the residuals from the regression of press-initiated coverage on firm characteristics and the instruments are not significantly associated with abnormal spreads and depth around earnings announcements. This analysis suggests that press-initiated coverage is exogenous in the regression of spreads and depth, and the coefficient on the press variables may be interpreted as an increase in the press causing a reduction in information asymmetry (subject to the quality of the instruments).

Table 5, panels A and B present results for abnormal changes in both the number of small trades and the number of large trades during the earnings announcement period. If press coverage increases the breadth of information dissemination, we expect small investors to respond with greater trades. Further, if the press reduces information asymmetry and adverse selection costs around earnings announcements, we expect large investors to respond with greater block trades. As in the prior tables, we first present baseline regressions that include the control variables, but not the press coverage variables. The first column in panel A shows that abnormal changes in small trades are positively associated with abnormal returns and abnormal volume during the earnings announcement, size and the book-to-market ratio; and negatively

associated with institutional holdings and prior quarter volatility. The first column of panel B shows that abnormal changes in large trades are positively associated with abnormal returns and abnormal volume during the earnings announcement, the book-to-market ratio, and institutional holdings and significantly negatively associated with firm size and prior quarter volatility. Firm-initiated disclosures have a significant positive impact on small and large trades, both with and without the inclusion of the press coverage variables.

In the remaining columns of panels A and B, we find that press coverage influences the abnormal number of small and large trades.<sup>19</sup> In panel A, the abnormal word count, number of sources, and amount of additional information, are all significantly positively related to the number of small trades. When all of the press variables are included in panel A together, the abnormal word count and number of articles with additional information beyond earnings remain significant. We find similar results for the large trade analysis in panel B, except that the number of sources is not significant in column 3. The finding that the abnormal word count is more important in the small and large trades regressions, whereas the abnormal number of sources is more important in spread and depth regression, gives an hint about the various role of business press as an information intermediary. The dissemination of information fills the information gap between informed and uninformed investors as shown in table 4, whereas the amount of information triggers the actual trading activities among various investor groups by affecting the investors' consensus as shown in table 5. Moreover, the role of the business press in general is weaker for the large trades than for the small trades, suggesting that the business press stimulates small trades more than it does large trades.

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<sup>19</sup> We perform Hausman tests on the analysis in table 5 that are analogous to the sensitivity tests described above for table 4. Specifically, we use the number of employees and the number of shareholders as instrumental variables for press-initiated coverage, and find that the residuals from the regression of press-initiated coverage on firm characteristics and the instruments are not significantly associated with abnormal small and large trades.

Overall, we find strong evidence in support of Hypothesis 2 that greater press coverage is associated with larger increases in the number of both small and large trades, indicating that press coverage facilitates more trading by both types of traders during the earnings announcement.

#### 4.4 FURTHER ANALYSIS

The results in tables 4 and 5 provide strong evidence that press coverage enriches the information environment for firms in our sample, on average. In table 6, we provide evidence on cross-sectional variation in the relations between press coverage and the firms' information environments. We construct a proxy for the richness of the information environment by computing a factor score from the following three variables: 1) the firm's analyst following (*LNANALYST*), 2) the firm's institutional holdings (*INST\_HOLD*), and 3) the firm's market value (*LNMV*). We combine these variables into a factor instead of incorporating them separately, due to their high correlations with each other (see table 2). We define an indicator variable for a rich information environment (*HI\_INFO*) that is equal to one if the factor score is greater than the median, and zero otherwise. We interact this information environment factor, *HI\_INFO*, with the press coverage variables, and estimate the regressions in table 4 with these interactive variables included. For parsimony, the control variables listed in tables 4 are included in the regressions and interacted with *HI\_INFO*, but are not tabulated. As the results in table 6 indicate, the coefficient on the *HI\_INFO* interactions are never significant. Thus, in our sample, the role of the press in affecting information asymmetry does not seem to be affected by the presence of other information intermediaries.

We also examine a number of other possible determinants of cross-sectional variation in the role of the press (not tabled). We create interaction terms based on the nature and

magnitude of the news in the earnings announcement, including negative earnings surprises, negative stock returns, above-median absolute earnings surprises, and above-median absolute stock returns. Other than a significant negative coefficient on the interaction between large earnings surprises and *ABN\_SRC* in the spread regression, none of these interaction terms are significant. Thus, in general, the role of the press is not affected by the nature or magnitude of the news in the earnings announcement.<sup>20</sup>

Overall, we view the results in table 6 and in the other untabulated interaction tests as providing little evidence that cross-sectional variation in the importance of press coverage is related to firms' information environments or the nature of the news. However, a limitation of these tests is that we have purposely selected a sample of firms that we believe suffers similarly from information problems (i.e., medium-size, high-growth, NASDAQ firms). Therefore, the cross-sectional variation in our sample firms' information environments is muted, thereby reducing the power of these tests. We conclude that press coverage is generally important to the information environment for most of our sample firms.

## 5. Conclusion

This paper examines whether the business press serves as an information intermediary and affects firms' information environments around earnings announcements. The press fulfills multiple roles, including broad dissemination of information, packaging information from multiple sources, and creating new information through journalism practices. These multiple roles provide the press with the potential to shape a firm's information environment by increasing the amount of information flow in the market, by alerting a broader set of investors to

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<sup>20</sup> We also examined two further partitions of the press coverage variables. First, we divided press coverage based on whether it is provided in "major" sources or "non-major" sources (as classified by Factiva). Second, we divided press coverage based on whether it was provided by a press wire service or a non-wire service. In both cases, there were no substantive differences in results between these measures, suggesting that all forms of press coverage serve to impact a firm's information environment.

the breaking news at the firm, and by reducing the level of information asymmetry across investors. We examine the relation between press coverage and firms' information environment for a sample of 1,182 medium-sized NASDAQ firms over the period 1993 to 2004. We find that greater press coverage increases public information about firms, reduces the degree of information asymmetry, and facilitates more small and large trades. These results are robust to controlling for a variety of firm characteristics, such as size, the presence of other information intermediaries, such as analysts and institutional holdings, and the level of firm-initiated disclosures. These findings suggest that the press is an independent information intermediary and an important factor in reducing information problems related to earnings announcements.

Our study is subject to a number of caveats. First, our results are based on a sample of mid-sized NASDAQ firms that are more likely to have weak public information environments. This sample provides a powerful setting to test for the effect of the press, but our results may not be generalizable to samples of large firms with rich information environment or small, neglected firms. Second, we focus our study around earnings announcement periods, which contain a predictable news release and cover a short-window. It is possible that the effect of the press could be stronger or weaker in other less predictable contexts, such as a merger announcement or a change in management. Holding aside these caveats, we find strong and consistent evidence that the press serves an important incremental role in shaping firms' information environments.

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## APPENDIX

### *Example of Press Coverage for Activision during the Earnings Announcement Period*<sup>21</sup>

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**July 19-20, 2004** : No Factiva disclosures

#### **July 21, 2004**

**ACTIVISION INC - ATVI: Q1 Earnings Call @ 16:30 ET Today**

297 words, 21 July 2004, 06:59 AM, Knobias

*This provided time and access information for the upcoming conference call.*

**June US video games sales up, growth seen on track.**

248 words, 21 July 2004, 02:16 PM, Reuters News

*This article provided industry sales information and cited four specific companies, including ATVI.*

**Activision's Spider-Man 2(TM) Video Game Tops Worldwide Retail Charts**

565 words, 21 July 2004, 02:55 PM, PR Newswire (U.S.)

*Company-initiated disclosure on sales ranking of Spider-Man 2 game in various countries.*

**Activision's Neversoft Studio in Development on New Intellectual Property Slated for Release in Fiscal 2006**

558 words, 21 July 2004, 03:28 PM, PR Newswire (U.S.)

*Company-initiated disclosure on a development arrangement for a new game.*

**Activision Announces Record First Quarter 2005 Results - Net Revenues Hit Q1 All Time High, Rising 33% Year Over Year - - Company Increases Q2 and Fiscal 2005 Net Revenues and E.P.S. Outlook - - FY 2005 Earnings Per Diluted Share Outlook Up 28% Year Over Year**

1993 words, 21 July 2004, 04:13 PM, PR Newswire (U.S.)

*Company-initiated earnings announcement with balance sheet and income statement, plus a management forecast for the following year.*

**Activision reports larger first-quarter profit.**

83 words, 21 July 2004, 04:24 PM, Reuters News

*This is the first press coverage of the announcement. Here is the full text:*

LOS ANGELES, July 21 (Reuters) - Video game publisher Activision Inc. (ATVI.O) on Wednesday reported a larger profit for its fiscal first quarter on strong sales of new "Spider-Man" and "Shrek" video games.

Santa Monica-based Activision posted a profit of \$12 million, or 8 cents per share, compared to a year-earlier profit of \$4.2 million, or 3 cents per share. Revenue rose to \$211.3 million from \$158.7 million a year earlier.

**UPDATE 1-Activision quarterly profit nearly triples.**

187 words, 21 July 2004, 05:03 PM, Reuters News

*Thirty minutes later, Reuters re-releases the story, adding the firm outlook and analyst information. Here is the full text:*

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<sup>21</sup> This Appendix lists the articles in the order they appear on Factiva. We believe that Factiva lists the articles in the order it receives them, rather than in chronological order. Note that the time-stamps are off in some cases. For example, two wires that refer to the earnings release have time stamps that are before the time of the release. Similarly, the transcript of the conference call appears after articles that refer to it because Factiva posted the transcript when it was received.

## APPENDIX – continued

### *Example of Press Coverage for Activision during the Earnings Announcement Period*

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LOS ANGELES, July 21 (Reuters) - Video game publisher Activision Inc. (ATVI.O) on Wednesday reported a near tripling of quarterly net income on strong sales of "Spider-Man 2" and "Shrek 2" games.

Santa Monica-based Activision posted a profit of \$12 million, or 8 cents per share, compared to a year-earlier profit of \$4.2 million, or 3 cents per share. Revenue rose to \$211.3 million in the fiscal first quarter ended June 30 from \$158.7 million a year earlier.

In addition, the company boosted its financial outlook for fiscal 2005 saying it now expects second quarter revenue of \$254 million and earnings per share of 8 cents. In the third quarter - the Christmas holiday period - it sees revenue of \$515 million, or 52 cents per share.

For all of the fiscal year, Activision now sees revenue of \$1.1 billion and earnings per share of 69 cents. That compares to analysts' consensus estimate of sales of \$1.069 billion and earnings of 68 cents per share, according to Reuters Research.

#### **Activision almost triples 1Q profit**

260 words, 21 July 2004, 05:22 PM, Associated Press Newswires

*The AP picks up the announcement with more information on the forecasts and price movements since the release. Here is the full text:*

SANTA MONICA, Calif. (AP) - Video game maker Activision Inc. posted a nearly threefold rise in first-quarter earnings Wednesday, fueled by heavy sales volume of its top-selling "Shrek 2" and "Spider-Man 2" games, but issued weak quarterly targets that sent shares sliding in after-hours activity.

Quarterly earnings jumped to \$12 million, or 8 cents per share, from \$4.2 million, or 3 cents, in the year-ago period, topping analyst predictions for earnings of 5 cents per share on revenue of \$188.8 million.

Activision's revenue grew 33 percent to \$211.3 million from \$158.7 million, lifted by a 51 percent rise in U.S. sales to \$125.2 million, while international revenue rose 13 percent to \$86.1 million.

The company said it expects second-quarter earnings on target with Wall Street estimates of 8 cents per share on revenues of \$254 million, but it projected that third-quarter earnings of 52 cents on revenue of \$515 million will fall slightly below current analyst estimates of 54 cents per share. For the fourth quarter, Activision expects to report revenues of \$120 million and earnings per share of one penny. Full-year earnings are anticipated at 69 cents per share on revenue of \$1.1 billion, in line with estimates.

Shares of Activision fell 2.4 percent, or 36 cents, to \$14.55 during after-hours trading on the Nasdaq National Stock Market, after closing at \$14.91, down 5.6 percent, or 89 cents, in regular-session activity.

#### **DJ LATE TRADING: EBay Down Amid 3Q View Lower Than Seen -2-**

669 words, 21 July 2004, 04:04 PM, OsterDowJones Commodity Wire

*This is a run down of announcements and price movements for six firms, include ATVI.*

#### **Activision 1Q Rev Up 33%**

800 words, 21 July 2004, 04:13 PM, Dow Jones News Service

*This is a slightly more detailed summary of the earnings announcement information.*

**APPENDIX – continued**

*Example of Press Coverage for Activision during the Earnings Announcement Period*

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**Q1 2005 Activision Earnings Conference Call - Final**

10515 words, 21 July 2004, FD (FAIR DISCLOSURE) WIRE

*This verbatim transcript of the conference call, which also includes the earnings announcement text and the product information disclosed earlier in the day, is the max word count article initiated by the company during the day. We use this word count as the proxy for firm-initiated disclosure.*

**Event Brief of Q1 2005 Activision Earnings Conference Call - Final**

9694 words, 21 July 2004, FD (FAIR DISCLOSURE) WIRE

*This is a slightly abridged summary of the conference call.*

**Activision, Inc. Raises FY 2005 Outlook; Issues Mixed Q2, Q3, Q4 Guidance**

237 words, 21 July 2004, Reuters Significant Developments

*This article summarizes management's various forecasts and compares them to the analysts' consensus.*

**Activision, Inc.'s Neversoft Studio in Development on New Intellectual Property Slated for Release in Fiscal 2006**

91 words, 21 July 2004, Reuters Significant Developments

*This article repeats the company-initiated disclosure about the new development arrangement.*

**UPDATE 2-Activision profits jump with Spider-Man.**

By Bob Tourtellotte

608 words, 21 July 2004, 09:51 PM, Reuters News

*At the end of the day, Reuters posts a more traditional article reporting on the earnings announcement that is attributed to a writer. The article has quotes from management and an analyst. It summarizes all of the prior information and pulls in the other disclosures made by management during the day. It also adds a small amount of industry information. This is the type of article that is likely to be picked up by a newspaper and published verbatim.*

**July 22-23, 2004**

**Hot Stocks To Watch: ATVI CERN ISSX**

200 words, 22 July 2004, 07:37 AM, Dow Jones News Service

*This blurb mentions three hot stocks to watch today.*

**ACTIVISION INC - ATVI CEO Appears on CNBC's "Morning Call" Today**

160 words, 22 July 2004, 12:29 AM, Knobias

*This mentions that the CEO will be on CNBC at 10 am.*

**Technology Brief -- Activision Inc.: Sales of Movie-Based Games Help Net Income Nearly Triple**

184 words, 22 July 2004, The Wall Street Journal, English

*This is the mention of the earnings announcement in the WSJ.*

**Business Brief -- Activision Inc.: Sales of Movie-Based Games Help Net Income Nearly Triple**

182 words, 23 July 2004, The Wall Street Journal

*A similar story ran the following day in the WSJ.*

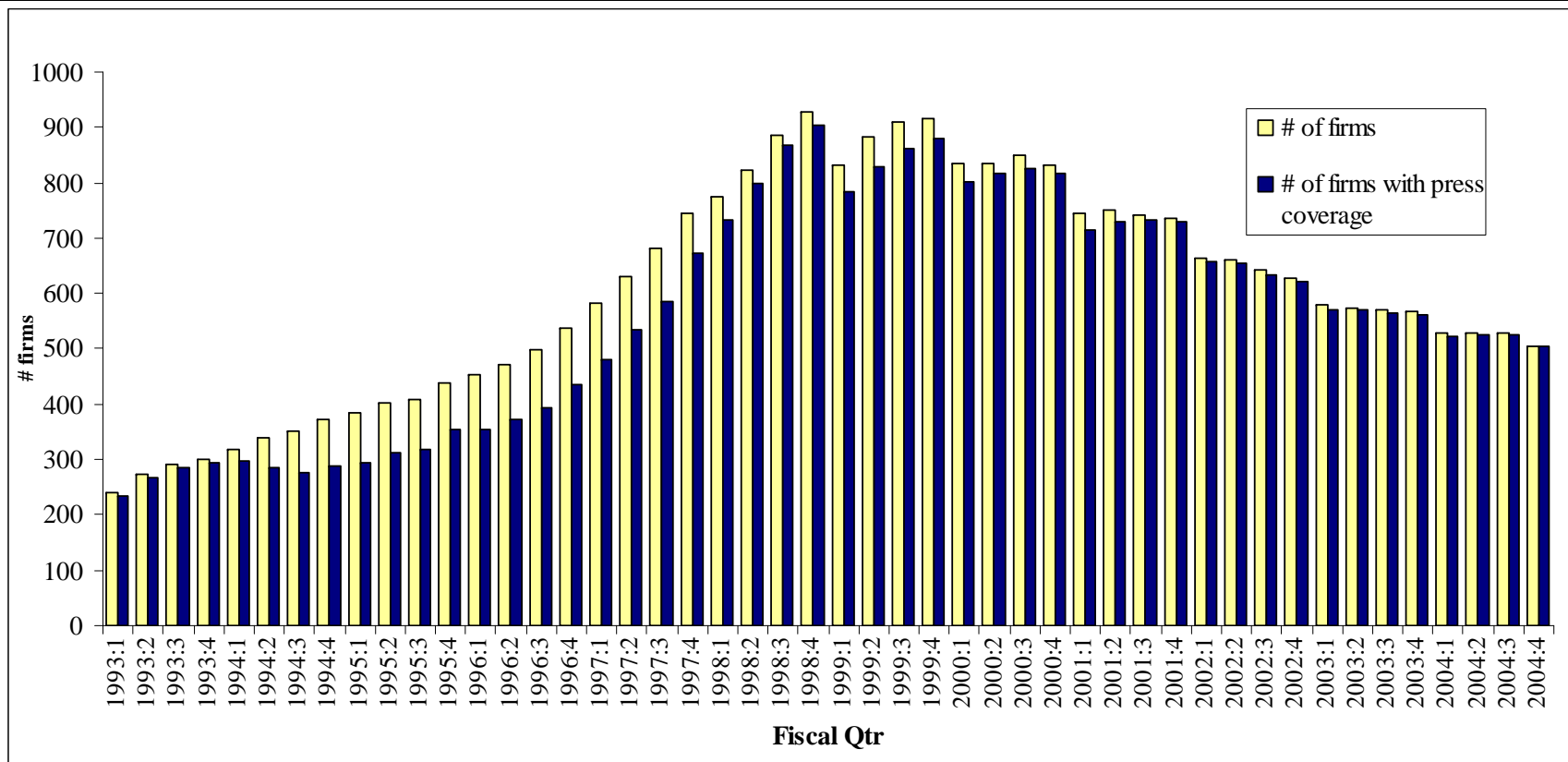
**UPDATE 1-Electronic Arts shares fall on outlook.**

378 words, 23 July 2004, 01:32 PM, Reuters News

*In reporting on Electronic Arts' earnings announcement, ATVI is mentioned as a comparator*

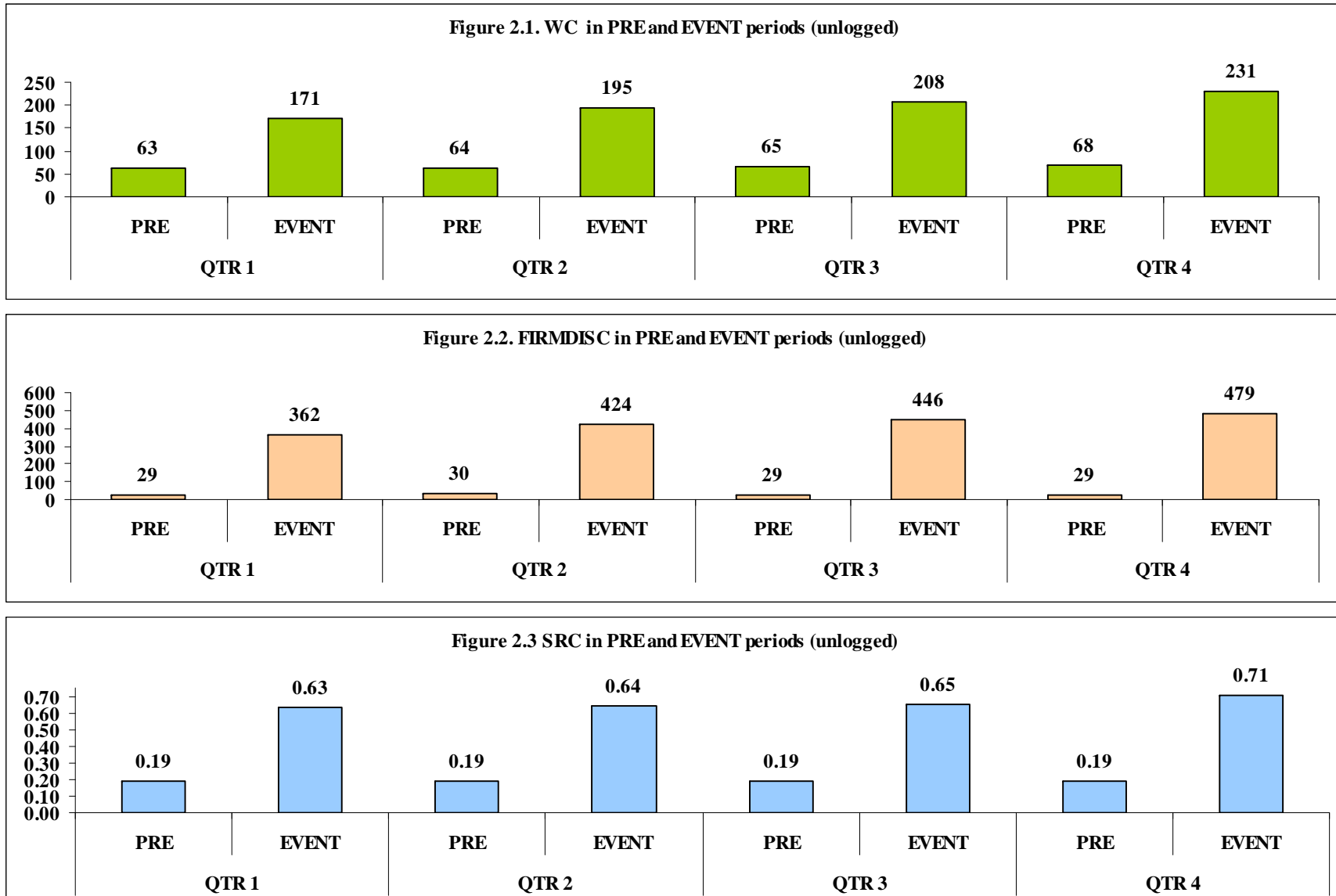
**FIGURE 1**

The Number of Firms with the Press Coverage by Fiscal Quarter

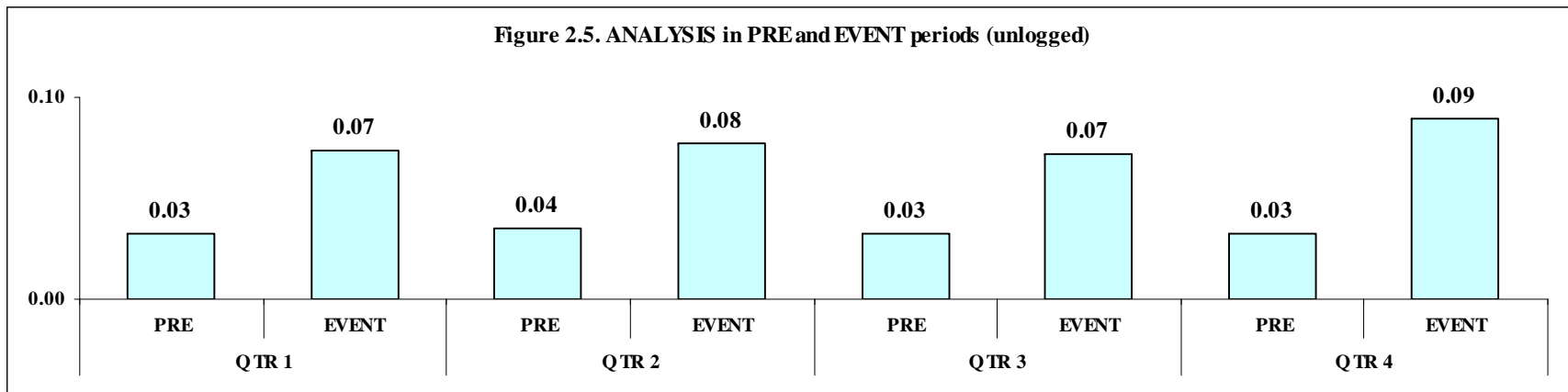
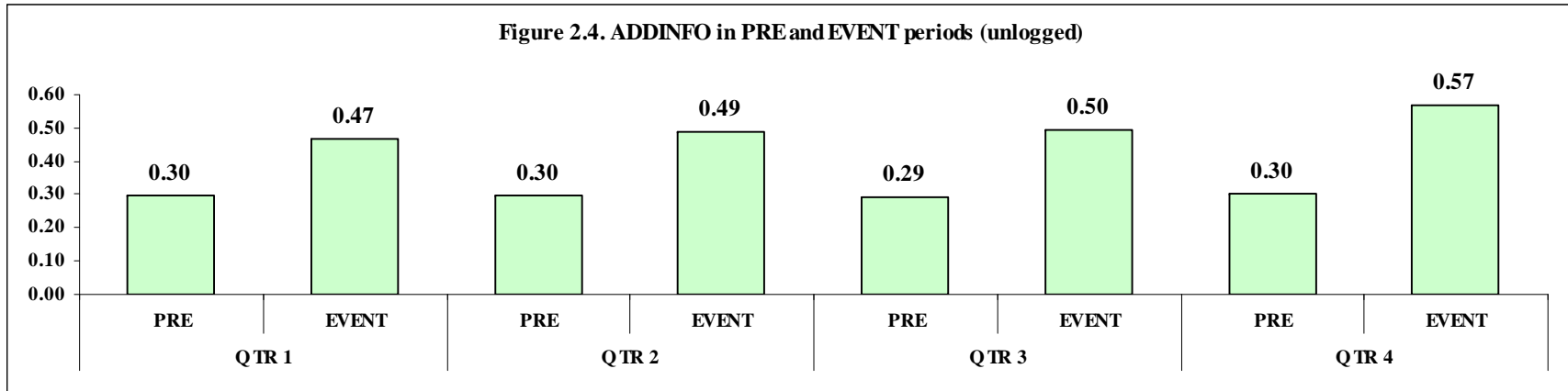


This figure presents the number of sample firms for each fiscal quarter. The light bars represent the total number of sample firms and the dark bars represent the number of sample firms with at least one article on Factiva during the fiscal quarter. We restrict our sample to mid-size NASDAQ firms that are publicly-traded during 1998 with the requisite CRSP and Compustat data for fiscal year 1998. We rank the firms by market value on December 31, 1998 and eliminate the largest and smallest 20% of the distribution. Finally, to concentrate on firms with high expected information asymmetry, we rank the firms based on their market-to-book assets ratio and select the 50% of the sample with the highest market-to-book assets ratios. This selection process yields a sample of 28,979 firm-quarter observations for 1,182 firms, of which 27,077 firm-quarter observations have more than one article on Factiva and 1,902 firm-quarter observations have no articles. As the figure shows, Factiva's breadth of coverage grows over the sample period.

**FIGURE 2**  
Press Coverage by Fiscal Quarter



**FIGURE 2 (continued)**  
Press Coverage by Fiscal Quarter



**TABLE 1**  
Descriptive Statistics

*Panel A: Press Coverage and Firm Disclosure Variables*

Variable	N	Mean	Std. Dev.	Minimum	Q1	Median	Q3	Maximum
ABN_WC	28979	0.5813	1.9778	-5.5932	-0.1657	0.8466	1.8894	5.3132
ABN_SRC	28979	0.2798	0.2924	-0.5359	0.0000	0.2566	0.4780	1.3351
ABN_ADDINFO	28979	0.0571	0.3974	-1.2550	-0.1586	-0.0253	0.2191	2.0063
ABN_ANALYSIS	28979	0.0277	0.1437	-0.3064	-0.0190	0.0000	0.0000	1.0635
ABN_FIRMDISC	28979	2.4319	2.0388	-4.5935	1.2783	2.6161	3.8015	7.2066

All variables are obtained from the Factiva database. The earnings announcement (*EVENT*) period is from -1 to +1 trading days from the earnings announcement date (Compustat *RDQE*). The pre-earnings announcement (*PRE*) period includes trading days between two *EVENT* periods or up to 62 trading days prior to the *EVENT* period when the previous quarter's *RDQE* is not available. **ABN\_WC** is the log of 1 plus the *EVENT* period sum of word counts for press-initiated articles divided by the period length, minus the log of 1 plus the *PRE* period sum of word counts for press-initiated articles divided by the period length. **ABN\_SRC** is the log of 1 plus the sum of the daily numbers of unique press sources during *EVENT* period divided by the period length, minus the log of 1 plus the sum of the daily numbers of unique press sources during *PRE* period divided by the period length. **ABN\_ADDINFO** is the log of 1 plus the *EVENT* period count of Factiva news subject codes which we identify as capital market, governance, innovation, legal issues, corporate changes, management issues, marketing, company profile, return, sales, analyst comments and recommendations, or earnings projections, divided by the period length, minus the analogous measure in the *PRE* period. **ABN\_ANALYSIS** is the log of 1 plus the *EVENT* period sum of the number of articles that have author by-lines and the count of Factiva news subject codes which we identify as analysis, opinions, editorials, detailed information, or interviews, divided by the period length, minus the analogous measure in the *PRE* period. **ABN\_FIRMDISC** is the log of 1 plus the *EVENT* period sum of the daily maximum firm-initiated article word counts divided by the period length, minus the log of 1 plus the *PRE* period sum of the daily maximum firm-initiated article word counts divided by the period length. All variables are winsorized at 1%.

*Panel B: Information Asymmetry Test variables*

Variable	N	Mean	Std. Dev.	Minimum	Q1	Median	Q3	Maximum
ABN_SPREAD	28285	0.0003	0.0164	-0.0799	-0.0057	-0.0004	0.0048	0.1350
ABN_DEPTH	28208	-0.0409	0.3570	-1.5201	-0.2346	-0.0272	0.1533	3.1081
ABN_PSMALL	28094	0.1129	0.7404	-7.0000	-0.0968	0.2851	0.5625	1.0000
ABN_PLARGE	19847	0.1439	1.2260	-12.0000	0.0000	0.5000	0.8504	1.0000

**ABN\_SPREAD** is the *EVENT* period average of daily spreads minus the *PRE* period average of daily spreads. **ABN\_DEPTH** is the *EVENT* period average of daily depths minus the *PRE* period average of daily depths. **ABN\_PSMALL** (**ABN\_PLARGE**) is the *EVENT* period sum of the daily frequencies of trades smaller than \$5,000 (larger than \$30,000) minus the sum of the daily frequencies of trades smaller than \$5,000 (larger than \$30,000) in the 5 trading days prior to the *EVENT* period, divided by the *EVENT* period sum of the daily frequencies of trades smaller than \$5,000 (larger than \$30,000). Trade frequencies are from TAQ using all trades between 9:30 and 4:00pm except the first trade. We compute the largest round-lot size less than or equal to the given dollar threshold using the price at the beginning of the day and compare it to the size of trades. All variables are winsorized at 1%.

**TABLE 1 (continued)**  
Descriptive Statistics

*Panel C: Determinants of Press Coverage and Firm Characteristic Control Variables*

Variable	N	Mean	Std. Dev.	Minimum	Q1	Median	Q3	Maximum
ABS_ABN_RET	28970	0.0766	0.0765	0.0000	0.0232	0.0534	0.1038	0.5980
ABN_TURN	28975	0.0034	0.0124	-0.0404	-0.0019	0.0004	0.0043	0.1227
ABS_ESURP	28979	0.0531	0.2677	0.0000	0.0010	0.0042	0.0178	7.5128
MV	28979	165.8713	248.3190	1.6573	39.0246	87.5453	192.7047	3426.4800
BTM	28979	0.5543	0.3230	0.0310	0.3078	0.5090	0.7441	2.2714
ANALYST	28979	2.4009	2.6886	0.0000	0.0000	2.0000	4.0000	20.0000
INST_HOLD	28979	0.2903	0.2388	0.0000	0.0876	0.2307	0.4439	0.9994
EMPLOYEE	28979	0.7864	1.5817	0.0050	0.1190	0.2850	0.7090	16.0000
OWN	28979	2.4567	4.1746	0.0320	0.3130	0.8540	2.7000	34.3540
PRC	28979	11.2268	10.6815	0.1500	3.8750	8.0000	15.0000	95.8750
Qt1_VOLAT	28979	0.7853	0.3727	0.0597	0.5255	0.7050	0.9530	2.8153
Qt1_TURN	28979	0.0014	0.0087	-0.0096	-0.0037	-0.0012	0.0033	0.0819
Qt1_SPREAD	28671	0.0384	0.0310	0.0008	0.0178	0.0299	0.0491	0.2662
Qt1_DEPTH	28585	16.9797	13.5737	0.1318	7.2577	13.2191	22.6374	93.0846

**ABS\_ABN\_RET** is the absolute abnormal return of the *EVENT* period. **ABN\_TURN** is the difference between *EVENT* period *TURNOVER* and *EVENT* period *market TURNOVER* minus the difference between *PRE* period *TURNOVER* and *PRE* period *market TURNOVER*. *TURNOVER* is the average of daily CRSP trading dollar volumes divided by the average market value of shares outstanding. The *market TURNOVER* is the *TURNOVER* calculated with all stocks in the NASDAQ. **ABS\_ESURP** is the absolute value of (1) the forecast error calculated as mean estimate minus actual EPS divided by the price on t-4 quarter end date from the most recent I/B/E/S consensus forecast prior to the announcement, if available; (2) the forecast error calculated as mean estimate minus actual EPS divided by the price on t-4 quarter end date from the most recent First Call consensus forecast prior to the announcement, if available, when the I/B/E/S forecast is missing; or (3) the seasonal random walk earnings surprise defined as  $EPS_t$  (Compustat #19/Compustat #17) minus  $EPS_{t-4}$  divided by the price on t-4 quarter end date if the firm is not covered by either I/B/E/S or First Call. **LNMV** is the log of the CRSP market value (in thousands) on the fiscal quarter end date. The figures tabulated (**MV**) are raw values (in millions) before taking logs. **BTM** is the book-to-market assets ratio (Compustat #44/(Compustat #44-Compustat #59 + Market Value)) on the fiscal quarter end date. **LNANALYST** is the log of 1 plus the number of analysts following counted from I/B/E/S on the most recent date available in three months prior to the earnings announcement. The figures tabulated (**ANALYST**) are raw values before taking logs. **INST\_HOLD** is the percentage of institutional ownership from Thomson Financial Spectrum on the most recent date available in three months prior to the earnings announcement. **LNEMPLOYEE** is the log of 1 plus the number of employees (Compustat Annual #29). **LKNOWN** is the log of 1 plus shareholders (Compustat Annual #100). The figures tabulated (**EMPLOYEE** and **OWN**) are raw values (in millions) before taking logs. **LNPRC** is the log of the fiscal quarter end price. The figures tabulated (**PRC**) are raw values before taking logs. **Qt1\_VOLAT** is quarter t-1's return volatility calculated as the standard deviation of the log of 1 plus daily return, multiplied by  $\sqrt{252}$ . **Qt1\_TURN** is quarter t-1's *TURNOVER* minus quarter t-1's *market TURNOVER*. **Qt1\_SPREAD** is the quarter t-1 average of daily spreads, where the daily spread is the daily average of each quote's spread in the TAQ database. Each quote's spread is calculated as the offer price minus the bid price divided by the midpoint of the offer price and the bid price. **Qt1\_DEPTH** is the log of the quarter t-1 average of daily depths, where the daily depth is the daily average of each quote's depth. Each quote's depth is calculated as (offer size\*offer price+ bid size\*bid price), where the offer size and bid size are multiplied by 100. The figures tabulated (**Qt1\_DEPTH**) are raw values (in thousands) before taking logs. All variables are winsorized at 1%.

**TABLE 2**  
Pearson Correlations among Variables

	ABN_SRC	ABN_ADD_INFO	ABN_ANA_LYSIS	ABN_FIRM_DISC	ABN_S_PREAD	ABN_DEPTH	ABN_P_SMALL	ABN_P_LARGE	ABS_ABN_RET	ABS_TURN	ABS_ESURP	LN MV	BTM	LNANA_LYST	INST_HOLD	LNEMP_LOYEE	LNOWN	LNPRC	Qt1_VOLAT	Qt1_TURN	Qt1_SP_READ	Qt1_D_EPTH
ABN_WC	0.736	0.418	0.248	0.373	-0.025	0.066	0.084	0.064	0.043	0.119	-0.056	0.019	-0.013	0.058	0.051	0.066	-0.017	0.102	-0.093	-0.012	-0.003	0.076
ABN_SRC		0.599	0.409	0.381	-0.042	0.077	0.112	0.076	0.079	0.210	-0.059	0.202	-0.050	0.194	0.212	0.147	0.033	0.177	-0.135	0.062	-0.146	0.101
ABN_ADDINFO			0.351	0.173	-0.019	0.060	0.126	0.103	0.134	0.246	-0.027	0.101	0.027	0.133	0.154	0.121	0.016	0.092	-0.071	0.034	-0.078	0.044
ABN_ANALYSIS				0.086	-0.007	0.020	0.059	0.050	0.060	0.158	-0.021	0.134	0.023	0.121	0.162	0.133	0.047	0.085	-0.066	0.045	-0.086	0.018
ABN_FIRMDISC					-0.004	0.015	0.059	0.042	-0.003	0.040	-0.047	0.037	0.053	0.052	0.109	0.104	-0.011	0.084	-0.142	-0.077	-0.028	0.016
ABN_SPREAD						-0.197	-0.023	-0.027	0.040	-0.108	0.018	-0.005	0.022	0.002	0.006	0.000	0.001	-0.007	-0.027	0.012	-0.074	0.018
ABN_DEPTH							0.027	0.057	0.014	0.187	-0.020	-0.001	-0.025	0.013	0.005	0.003	-0.001	0.016	-0.031	-0.014	0.053	-0.054
ABN_PSMALL								0.374	0.216	0.218	-0.022	0.054	0.014	0.067	0.065	0.062	0.001	0.048	-0.040	0.038	-0.046	0.036
ABN_PLARGE									0.129	0.206	-0.007	-0.042	0.071	0.001	0.033	0.041	-0.011	-0.003	-0.027	-0.012	0.055	-0.022
ABS_ABN_RET										0.388	0.068	-0.062	0.021	0.005	-0.024	-0.044	0.005	-0.131	0.201	0.083	0.035	-0.071
ABN_TURN											-0.008	0.128	-0.051	0.156	0.155	0.044	0.017	0.122	-0.038	0.178	-0.097	0.108
ABS_ESURP												-0.191	0.060	-0.163	-0.122	-0.063	0.013	-0.236	0.196	-0.007	0.158	-0.193
LN MV													-0.451	0.612	0.615	0.304	0.119	0.769	-0.318	0.348	-0.684	0.649
BTM														-0.110	-0.025	0.233	-0.066	-0.361	0.024	-0.258	0.282	-0.319
LNANALYST															0.605	0.295	0.048	0.489	-0.212	0.282	-0.492	0.486
INST_HOLD																0.360	0.007	0.546	-0.295	0.196	-0.425	0.390
LNEMPLOYEE																	0.023	0.293	-0.256	-0.026	-0.186	0.227
LNOWN																		-0.043	0.016	0.085	-0.118	-0.002
LNPRC																			-0.478	0.248	-0.532	0.778
Qt1_VOLAT																				0.253	0.347	-0.360
Qt1_TURN																					-0.337	0.362
Qt1_SPREAD																						-0.589

This table provides Pearson correlations among variables used in the analyses. See table 1 for variable definitions. Correlations greater than |0.012| are significant at a p=0.05 level.

**TABLE 3**  
Regressions of Press Coverage Variables on Determinants of Press Coverage Variables

	ABN_WC	ABN_SRC	ABN_ADDINFO	ABN_ANALYSIS
	1	2	3	4
INTERCEPT	0.7741 (0.96)	-0.0349 (-0.47)	-0.2132 *** (-4.53)	-0.0427 (-1.52)
ABN_FIRMDISC	0.3419 *** (14.62)	0.0474 *** (12.42)	0.0265 *** (8.26)	0.0033 *** (4.12)
ABS_ABN_RET	0.7088 *** (3.69)	0.1763 *** (5.39)	0.3960 *** (6.9)	0.0322 *** (2.85)
ABN_TURN	14.3997 *** (7.87)	3.3449 *** (9.49)	6.0108 *** (13.04)	1.4098 *** (4.57)
ABS_ESURP	-0.3276 * (-1.86)	-0.0136 (-1.03)	-0.0053 (-0.34)	0.0124 (1.52)
LNMV	-0.0969 ** (-2.12)	0.0118 ** (2.59)	0.0065 * (1.86)	0.0035 (1.52)
BTM	-0.1409 ** (-2.25)	-0.0179 ** (-2.12)	0.0207 ** (2.54)	-0.0034 (-0.73)
LNANALYST	0.0633 (1.08)	0.0285 *** (4.2)	0.0237 ** (2.55)	0.0051 *** (3.09)
INST_HOLD	-0.0076 (-0.09)	-0.0168 (-0.85)	0.0232 (1.52)	-0.0059 (-0.8)
LNEMPLOYEE	0.1294 *** (3.56)	0.0343 *** (6.88)	0.0205 ** (2.62)	0.0177 *** (3.24)
LNOWN	-0.0268 (-1.07)	0.0029 (0.9)	0.0054 ** (2.53)	0.0036 ** (2.07)
Qt1_TURN	-12.2664 *** (-2.8)	-0.4468 (-1.05)	-0.8709 (-1.21)	0.4233 (0.95)
Qt1_VOLAT	-0.0521 (-0.81)	-0.0095 (-1.42)	-0.0050 (-0.39)	-0.0088 (-1.52)
<i>Adjusted R<sup>2</sup></i>	0.2236	0.2550	0.0917	0.0484

\*, \*\*, \*\*\* Significant at the 0.10, 0.05, and 0.01 level, respectively. This table provides regressions of press coverage on determinants of press coverage variables. See table 1 for variable definitions. We estimate 48 quarterly regressions and report the mean coefficients, with t-statistics in parentheses. Fama and MacBeth (1973) standard errors are corrected for autocorrelation using the Newey and West (1987) adjustment with four lags.

**TABLE 4**

Regressions of Abnormal Bid-Ask Spreads and Abnormal Depth on Press Coverage Variables and Control Variables

*Panel A: Regressions of Abnormal Bid-Ask Spreads : ABN\_SPREAD*

	Predicted Sign	1	2	3	4	5	6
INTERCEPT		0.0016 (0.31)	0.0015 (0.3)	0.0015 (0.3)	0.0014 (0.28)	0.0015 (0.29)	0.0011 (0.22)
ABN_WC	-		<b>-0.0001 **</b> (-2.54)				<b>0.0001</b> (1.5)
ABN_SRC	-			<b>-0.0020 ***</b> (-4.22)			<b>-0.0036 ***</b> (-4.68)
ABN_ADDINFO	-				<b>-0.0004</b> (-1.57)		<b>0.0004</b> (0.89)
ABN_ANALYSIS	-					<b>-0.0002</b> (-0.25)	<b>0.0008</b> (0.96)
ABN_FIRMDISC		0.0000 (0.15)	0.0001 (1.29)	0.0001 * (1.76)	0.0000 (0.33)	0.0000 (0.13)	0.0001 * (1.96)
ABS_ABN_RET		0.0231 *** (7.11)	0.0233 *** (6.96)	0.0237 *** (6.97)	0.0232 *** (7.06)	0.0230 *** (7.08)	0.0234 *** (7.01)
ABN_TURN		-0.2221 *** (-10.06)	-0.2204 *** (-9.94)	-0.2165 *** (-9.69)	-0.2192 *** (-10.2)	-0.2220 *** (-10.29)	-0.2166 *** (-10.35)
ABS_ESURP		0.0021 (0.97)	0.0023 (1.01)	0.0021 (0.98)	0.0021 (0.95)	0.0021 (0.97)	0.0023 (0.98)
LNMV		-0.0006 ** (-2.41)	-0.0006 ** (-2.5)	-0.0005 ** (-2.37)	-0.0005 ** (-2.37)	-0.0005 ** (-2.44)	-0.0004 ** (-2.19)
BTM		0.0000 (-0.01)	0.0000 (0.06)	0.0000 (0.01)	0.0000 (0.01)	0.0000 (0.01)	0.0000 (0.05)
LNANALYST		0.0001 (0.47)	0.0001 (0.57)	0.0001 (0.82)	0.0001 (0.42)	0.0001 (0.43)	0.0001 (0.8)
INST_HOLD		0.0002 (0.28)	0.0003 (0.28)	0.0002 (0.27)	0.0003 (0.3)	0.0002 (0.27)	0.0003 (0.32)
LNPRC		-0.0006 * (-1.68)	-0.0006 (-1.59)	-0.0006 (-1.6)	-0.0007 * (-1.74)	-0.0006 (-1.67)	-0.0007 * (-1.75)
Qt1_TURN		0.1590 *** (4.86)	0.1574 *** (4.75)	0.1599 *** (4.75)	0.1579 *** (4.86)	0.1587 *** (4.99)	0.1596 *** (4.68)
Qt1_VOLAT		-0.0051 *** (-3.8)	-0.0052 *** (-3.74)	-0.0051 *** (-3.81)	-0.0052 *** (-3.79)	-0.0051 *** (-3.81)	-0.0052 *** (-3.69)
Qt1_DEPTH		0.0010 * (1.74)	0.0010 * (1.69)	0.0010 (1.63)	0.0010 * (1.73)	0.0010 * (1.74)	0.0010 (1.64)
<i>Adjusted R2</i>		0.0718	0.0725	0.0722	0.0714	0.0705	0.0714

\*, \*\*, \*\*\* Significant at the 0.10, 0.05, and 0.01 level, respectively. This table provides regressions of abnormal bid-ask spreads on press coverage and control variables. See table 1 for variable definitions. We estimate 48 quarterly regressions and report the mean coefficients, with t-statistics in parentheses. Fama and MacBeth (1973) standard errors are corrected for autocorrelation using the Newey and West (1987) adjustment with four lags.

**TABLE 4 (continued)**

Regressions of Abnormal Bid-Ask Spreads and Abnormal Depth on Press Coverage Variables and Control Variables

*Panel B: Regressions of Abnormal Depths : ABN\_DEPTH*

	Predicted Sign	1	2	3	4	5	6
INTERCEPT		-0.1012 (-0.85)	-0.0981 (-0.84)	-0.0988 (-0.85)	-0.1024 (-0.88)	-0.0957 (-0.78)	-0.0976 (-0.84)
ABN_WC	+		<b>0.0026 **</b> (2.32)				<b>-0.0033</b> (-1.22)
ABN_SRC	+			<b>0.0495 ***</b> (5.46)			<b>0.0733 ***</b> (4.57)
ABN_ADDINFO	+				<b>0.0026</b> (0.14)		<b>-0.0122</b> (-0.66)
ABN_ANALYSIS	+					<b>-0.1259</b> (-1.29)	<b>-0.1442 *</b> (-1.72)
ABN_FIRMDISC		0.0018 (1.3)	0.0008 (0.53)	-0.0005 (-0.34)	0.0017 (1.01)	0.0018 (1.28)	0.0001 (0.05)
ABS_ABN_RET		-0.2246 *** (-4.99)	-0.2288 *** (-5.17)	-0.2340 *** (-5.22)	-0.2331 *** (-5.1)	-0.2244 *** (-5)	-0.2355 *** (-5.16)
ABN_TURN		5.2210 *** (8.46)	5.1881 *** (8.55)	5.0679 *** (8.35)	5.1995 *** (8.85)	5.2671 *** (8.89)	5.2039 *** (9.01)
ABS_ESURP		-0.0307 (-1.55)	-0.0304 (-1.52)	-0.0298 (-1.49)	-0.0295 (-1.44)	-0.0297 (-1.51)	-0.0281 (-1.34)
LNMV		0.0039 (0.39)	0.0041 (0.41)	0.0034 (0.34)	0.0043 (0.43)	0.0035 (0.34)	0.0030 (0.31)
BTM		-0.0097 (-0.8)	-0.0097 (-0.8)	-0.0095 (-0.77)	-0.0096 (-0.79)	-0.0091 (-0.75)	-0.0070 (-0.58)
LNANALYST		-0.0034 (-0.77)	-0.0044 (-1.08)	-0.0050 (-1.19)	-0.0034 (-0.84)	-0.0038 (-0.85)	-0.0061 (-1.41)
INST_HOLD		-0.0018 (-0.13)	-0.0012 (-0.09)	-0.0006 (-0.05)	-0.0026 (-0.19)	-0.0029 (-0.22)	-0.0009 (-0.06)
LNPRC		-0.0007 (-0.07)	-0.0012 (-0.13)	-0.0010 (-0.11)	-0.0009 (-0.1)	-0.0008 (-0.08)	-0.0010 (-0.11)
Qt1_TURN		-3.1870 *** (-10.78)	-3.1799 *** (-11.07)	-3.1287 *** (-10.6)	-3.1608 *** (-10.64)	-3.2473 *** (-10.49)	-3.1478 *** (-10.88)
Qt1_VOLAT		0.0370 * (1.69)	0.0367 (1.67)	0.0362 (1.66)	0.0369 (1.63)	0.0359 * (1.7)	0.0344 (1.58)
Qt1_SPREAD		-0.0306 (-0.11)	-0.0376 (-0.14)	-0.0252 (-0.09)	-0.0238 (-0.09)	-0.0355 (-0.13)	-0.0088 (-0.03)
<i>Adjusted R<sup>2</sup></i>		0.0730	0.0732	0.0741	0.0749	0.0732	0.0763

\*, \*\*, \*\*\* Significant at the 0.10, 0.05, and 0.01 level, respectively. This table provides regressions of abnormal depth on press coverage and control variables. See table 1 for variable definitions. We estimate 48 quarterly regressions and report the mean coefficients, with t-statistics in parentheses. Fama and MacBeth (1973) standard errors are corrected for autocorrelation using the Newey and West (1987) adjustment with four lags.

**TABLE 5**

**Regressions of Abnormal Changes in the Number of Small and Large Trades on Press Coverage Variables and Control Variables**

*Panel A: Regressions of Abnormal Changes in the Number of Small Trades : ABN\_SMALLT*

	Predicted Sign	1	2	3	4	5	6
INTERCEPT		-0.4555 *** (-3.26)	-0.4644 *** (-3.62)	-0.4393 *** (-3.27)	-0.4320 *** (-3.11)	-0.4479 *** (-3.16)	-0.4406 *** (-3.27)
ABN_WC	+		<b>0.0176 ***</b> <b>(5.11)</b>				<b>0.0139 ***</b> <b>(3.31)</b>
ABN_SRC	+			<b>0.1013 ***</b> <b>(5.37)</b>			<b>-0.0203</b> <b>(-0.59)</b>
ABN_ADDINFO	+				<b>0.0999 ***</b> <b>(6.4)</b>		<b>0.0771 ***</b> <b>(4.04)</b>
ABN_ANALYSIS	+					<b>0.0873</b> <b>(1.45)</b>	<b>-0.0107</b> <b>(-0.19)</b>
ABN_FIRMDISC		0.0153 *** (6.48)	0.0091 *** (3.35)	0.0104 *** (3.92)	0.0129 *** (5.53)	0.0151 *** (6.33)	0.0101 *** (3.52)
ABS_ABN_RET		1.8747 *** (20.06)	1.8681 *** (19.75)	1.8585 *** (19.74)	1.8398 *** (20.11)	1.8776 *** (19.79)	1.8429 *** (19.35)
ABN_TURN		9.7421 *** (8.22)	9.4736 *** (7.99)	9.3540 *** (7.81)	9.1474 *** (7.7)	9.6598 *** (8.29)	9.1328 *** (7.74)
ABS_ESURP		-0.0118 (-0.38)	-0.0060 (-0.2)	-0.0129 (-0.41)	-0.0114 (-0.37)	-0.0099 (-0.31)	-0.0038 (-0.12)
LNMV		0.0293 ** (2.48)	0.0305 *** (2.78)	0.0269 ** (2.36)	0.0281 ** (2.39)	0.0287 ** (2.41)	0.0294 ** (2.58)
BTM		0.0741 *** (3.13)	0.0770 *** (3.31)	0.0751 *** (3.14)	0.0700 *** (2.97)	0.0736 *** (3.08)	0.0730 *** (3.11)
LNANALYST		0.0156 (1.35)	0.0150 (1.28)	0.0125 (1.06)	0.0132 (1.13)	0.0154 (1.32)	0.0132 (1.09)
INST_HOLD		-0.0850 * (-1.97)	-0.0834 * (-1.96)	-0.0820 * (-1.92)	-0.0849 ** (-2.01)	-0.0831 * (-1.98)	-0.0862 ** (-2.01)
Qt1_TURN		-0.1838 (-0.26)	0.0471 (0.07)	-0.1432 (-0.19)	-0.0429 (-0.06)	-0.0924 (-0.13)	0.1668 (0.23)
Qt1_VOLAT		-0.0802 *** (-3.7)	-0.0803 *** (-3.8)	-0.0789 *** (-3.69)	-0.0804 *** (-3.61)	-0.0809 *** (-3.68)	-0.0836 *** (-3.79)
<i>Adjusted R<sup>2</sup></i>		0.0996	0.1011	0.1006	0.1014	0.0994	0.1009

\*, \*\*, \*\*\* Significant at the 0.10, 0.05, and 0.01 level, respectively. This table provides regressions of abnormal changes in the number of small trades on press coverage and control variables. See table 1 for variable definitions. We estimate 48 quarterly regressions and report the mean coefficients, with t-statistics in parentheses. Fama and MacBeth (1973) standard errors are corrected for autocorrelation using the Newey and West (1987) adjustment with four lags.

**TABLE 5 (continued)**

Regressions of Abnormal Changes in the Number of Small and Large Trades on Press Coverage Variables and Control Variables

Panel B: Regressions of Abnormal Changes in the Number of Large Trades : ABN\_TARGET

	Predicted Sign	1	2	3	4	5	6
INTERCEPT		0.4131 (1.47)	0.3569 (1.19)	0.4770 * (1.74)	0.4106 (1.41)	0.4565 * (1.68)	0.4088 (1.43)
ABN_WC	+		<b>0.0220 **</b> <b>(2.51)</b>				<b>0.0290 *</b> <b>(1.97)</b>
ABN_SRC	+			<b>0.0407</b> <b>(0.59)</b>			<b>-0.1941</b> <b>(-1.42)</b>
ABN_ADDINFO	+				<b>0.0930 ***</b> <b>(3.07)</b>		<b>0.0781 *</b> <b>(1.75)</b>
ABN_ANALYSIS	+					<b>-0.0661</b> <b>(-0.36)</b>	<b>-0.1673</b> <b>(-0.82)</b>
ABN_FIRMDISC		0.0217 ** (2.66)	0.0155 * (1.78)	0.0196 * (1.97)	0.0191 ** (2.27)	0.0214 ** (2.62)	0.0212 * (1.89)
ABS_ABN_RET		0.8788 *** (7.75)	0.8650 *** (7.31)	0.8291 *** (7.25)	0.8442 *** (6.97)	0.8792 *** (7.72)	0.7565 *** (6.14)
ABN_TURN		20.1237 *** (8.11)	19.7967 *** (7.87)	20.0372 *** (7.5)	19.4699 *** (7.63)	20.1018 *** (7.9)	19.9691 *** (7.11)
ABS_ESURP		-0.4382 (-1.22)	-0.4333 (-1.22)	-0.4612 (-1.27)	-0.4316 (-1.22)	-0.4530 (-1.24)	-0.4733 (-1.3)
LNMV		-0.0387 ** (-2.02)	-0.0351 * (-1.75)	-0.0451 ** (-2.47)	-0.0379 * (-1.93)	-0.0417 ** (-2.25)	-0.0382 ** (-2.06)
BTM		0.1471 *** (4.09)	0.1491 *** (3.92)	0.1375 *** (3.76)	0.1447 *** (4.02)	0.1446 *** (3.93)	0.1405 *** (3.68)
LNANALYST		-0.0367 (-1.61)	-0.0391 (-1.65)	-0.0350 * (-1.85)	-0.0395 * (-1.74)	-0.0395 (-1.63)	-0.0336 * (-1.69)
INST_HOLD		0.1191 ** (2.58)	0.1236 ** (2.59)	0.1161 ** (2.37)	0.1142 ** (2.51)	0.1291 *** (2.75)	0.1068 * (1.95)
Qt1_TURN		-4.5897 ** (-2.02)	-4.3746 * (-1.89)	-4.7043 ** (-2.14)	-4.5070 ** (-2.02)	-4.8065 ** (-2.12)	-4.5444 * (-1.99)
Qt1_VOLAT		-0.0154 (-0.35)	-0.0079 (-0.18)	-0.0141 (-0.32)	-0.0090 (-0.2)	-0.0189 (-0.44)	-0.0131 (-0.29)
<i>Adjusted R</i> <sup>2</sup>		0.0638	0.0647	0.0654	0.0641	0.0631	0.0689

\*, \*\*, \*\*\* Significant at the 0.10, 0.05, and 0.01 level, respectively. This table provides regressions of abnormal changes in the number large trades on press coverage and control variables. See table 1 for variable definitions. We estimate 48 quarterly regressions and report the mean coefficients, with t-statistics in parentheses. Fama and MacBeth (1973) standard errors are corrected for autocorrelation using the Newey and West (1987) adjustment with four lags.

**TABLE 6**  
Regressions with Interactions between Information Environment Factors and All Variables

	ABN_SPREAD				ABN_DEPTH			
	1	2	3	4	5	6	7	8
INTERCEPT	0.0066 (0.74)	0.0058 (0.66)	0.0059 (0.66)	0.0058 (0.66)	-0.2286 ** (-2.2)	-0.2319 ** (-2.19)	-0.2217 * (-2)	-0.2337 ** (-2.04)
HI_INFO	-0.0101 (-1.12)	-0.0099 (-1.08)	-0.0104 (-1.13)	-0.0102 (-1.13)	0.1350 (1.13)	0.1419 (1.15)	0.1324 (1.19)	0.1608 (1.29)
ABN_WC	-0.0002 (-1.38)				0.0033 ** (2.2)			
ABN_WC * HI_INFO	0.0000 (0.47)				-0.0015 (-0.49)			
ABN_SRC		-0.0019 ** (-2.1)				0.0458 *** (3.06)		
ABN_SRC * HI_INFO		0.0005 (0.54)				-0.0006 (-0.03)		
ABN_ADDINFO			-0.0008 (-0.93)				-0.0030 (-0.15)	
ABN_ADDINFO * HI_INFO			0.0002 (0.29)				0.0131 (1.09)	
ABN_ANALYSIS				-0.0140 (-1.49)				-0.1228 (-1.15)
ABN_ANALYSIS * HI_INFO				0.0161 (1.47)				0.0126 (0.19)
ABN_FIRMDISC	0.0001 (0.49)	0.0001 (0.68)	0.0000 (0.05)	0.0000 (0.12)	0.0025 (0.73)	0.0016 (0.49)	0.0037 (0.94)	0.0034 (0.95)
ABN_FIRMDISC * HI_INFO	-0.0001 (-0.49)	0.0000 (-0.27)	0.0000 (-0.23)	-0.0001 (-0.53)	-0.0006 (-0.17)	-0.0015 (-0.44)	-0.0015 (-0.4)	-0.0008 (-0.21)
<i>Adjusted R<sup>2</sup></i>	0.0914	0.0906	0.0908	0.0888	0.0940	0.0950	0.0950	0.0940

\*, \*\*, \*\*\* Significant at the 0.10, 0.05, and 0.01 level, respectively. This table provides regressions on press coverage, control variables, and their interaction terms with HI\_INFO. HI\_INFO is the dummy variable defined as 1 when the factor formed by aggregating three measures of the information environment (LNMV, LNaNALYST, and INST\_HOLD) is larger than the median of the factor score, and 0 otherwise. See table 1 for other variable definitions. Control variables and interaction terms with control variables are not tabulated. We estimate 48 quarterly regressions and report the mean coefficients, with t-statistics in parentheses. Fama and MacBeth (1973) standard errors are corrected for autocorrelation using the Newey and West (1987) adjustment with four lags.