

## **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 plays multiple roles including broadly disseminating information, packaging information from multiple sources, and creating new information through journalism practices. Through these services, the press has 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 news at the firm, and by reducing the level of information asymmetry across investors. We examine the impact of the press on firms' information environments during earnings announcements. In order to focus on firms with likely information problems and capital needs, we examine a sample of 1,246 medium-sized NASDAQ growth firms from 1993 to 2004. We collect 672,052 articles for these firms, which we classify as firm-initiated or press-initiated coverage. Consistent with our hypotheses and theoretical predictions, we find that greater press coverage increases public information about firms (measured by greater absolute returns and trading volume at the time of an earnings announcement), reduces the degree of information asymmetry (measured by lower spreads and greater depth), and facilitates more of both 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. Our findings suggest that the press is an independent information intermediary and an important factor 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 disseminated, 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 one vehicle 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 is at a superficial level relative to the information sets of sophisticated market participants, 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 draw on theoretical and empirical literature to develop hypotheses about the role of the press in increasing the amount of publicly available information about firms, in influencing the degree of information asymmetry among investors, in stimulating more small investors to trade, and in facilitating block trades. We develop hypotheses based on the conjecture that the business press provides information to market participants through the

creation and packaging of new information, as well as the timely dissemination of firm-initiated 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, thereby reducing the potential influence of correlated omitted variables.

We examine press coverage for a 31,693 firm-quarter sample of 1,246 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 very substantial press coverage and very 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 672,052 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. Our main press variables of interest are the aggregate word count of all press articles about the firm and the number of sources that carry articles about the firm.

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 a larger absolute price response and greater trading volume consistent with the predictions of Holthausen and Verrecchia [1990].

These results are robust to controlling for a variety of firm characteristics such as size, institutional holdings, firm-initiated disclosures, and the presence of other information intermediaries, such as analysts. These findings suggest that press coverage provides new and useful public information to at least a subset of investors.

Because this evidence could also suggest that the level of press coverage is influenced by the market reaction to the earnings announcement, we control for the stock return and volume reaction to the announcement in examining the impact of press coverage on differences in information across investors. First, we examine abnormal bid-ask spreads and abnormal depth during the earnings announcement period to investigate the effect of press coverage on information asymmetry. We find that greater press coverage during an earnings announcement window is associated with reductions in spreads and improvements in depth. 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.

Next, we examine the influence of the press on the behavior of small traders and block traders during the earnings announcement period to provide additional evidence on the role of the press in broadly disseminating information and in reducing the potential adverse selection costs of block trades. 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 disseminating 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 encourage more block traders to execute large trades.

Although we have selected our sample to concentrate on firms with relatively homogeneous informational problems, we also explore whether the role of press coverage varies with cross-sectional differences in the richness of firms' information environments and the presence of other information intermediaries. We find that, in general, when firms have greater following by analysts and institutional investors, press coverage is associated with greater public information and a lower reduction in information asymmetry. These results suggest that, rather than serving as a substitute for private information collection by other intermediaries, press coverage complements their idiosyncratic private information, which increases the amount of information in the market and leads to greater information asymmetry (the latter notion is consistent with Kim and Verrecchia [1994]).

Finally, we investigate the relation between press coverage and a firm's information environment in periods between earnings announcements to provide evidence on the generalizability of our results outside of the earnings announcement context. We find that greater levels of press coverage between earnings announcement periods are associated with contemporaneously higher levels of absolute returns, trading volume, and market depth, and lower levels of bid-ask spreads. These results confirm our findings on the role of the press around earnings announcements and suggest that the press serves a broad role in shaping firms' information environments.

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 presence of other information intermediaries, such as analysts and institutional investors, and for the level of firm-initiated disclosure. 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. A caveat to our findings is that we do not examine how firm policies and disclosure choices likely affect press coverage (see, e.g., Bushee and Miller [2006]).

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*

We investigate whether the business press serves as an “information intermediary” in the capital markets. 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 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 demonstrate 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.

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>1</sup> For example, Francis, Schipper, and Vincent [2002] document that absolute stock returns around earnings announcements are related to the

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<sup>1</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 [2006] provide evidence on the role of the media in influencing CEO pay.

number and types of comments by officers in firms' press releases. Although not the primary purpose of his study, 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. One important limitation of these studies is that they do not attempt to separate the impact of firm-initiated disclosure from the role of the press in disseminating and interpreting such disclosure.<sup>2</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. Yohn [1998] finds that bid-ask spreads are smaller

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<sup>2</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.

around earnings announcements for firms with greater analyst following, a finding consistent with analysts providing information that reduces information asymmetry.

We develop hypotheses based on the conjecture that the business press provides information to market participants through the creation and packaging of new information, as well as the timely dissemination of firm-initiated information. We focus on the information environment around earnings announcements because this ensures that every firm has an information event and because we can 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.<sup>3</sup>

Consistent with Beaver [1968] and many subsequent papers, we examine stock price reactions and trading volume during the announcement period as tests of whether the press provides information. As noted by Holthausen and Verrecchia [1990] and Kim and Verrecchia [1991], both price changes and volume are associated with changes in investors’ informedness and consensus. If greater press coverage during the earnings announcement period provides the market with additional information above and beyond the information contained in the earnings announcement, and provides a larger set of investors with the information on a timely basis, we expect that absolute stock returns and trading volume will be greater during the earnings announcement window. We state this hypothesis as follows:

*H1:* Greater press coverage during the earnings announcement period is associated with greater absolute stock returns and greater trading volume during the earnings announcement period, *ceteris paribus*.

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<sup>3</sup> To ensure that our results are not solely driven by the earnings announcement context, we explore the role of the press in non-announcement periods in section 4.3 and find similar results.

We structure H1 as an association hypothesis, as opposed to a causal hypothesis, because there are alternative non-causal explanations for evidence of a positive relation between press coverage and price and volume reactions. First, in some cases, press coverage could be a better proxy for the information content of the earnings announcement than our control variables for firm disclosure and earnings surprise. For example, if significant news is reported in a brief press release (i.e., low firm disclosure but high information content), or if a small earnings surprise has large valuation implications (see, e.g., Skinner and Sloan [2002]), the level of press coverage could be the best proxy for the informativeness of the news. Second, the press could make an *ex post* decision to provide more coverage when the initial stock price or volume reaction is large, resulting in a positive relation between press coverage and price and volume reactions, but with causality running from price and volume changes to press coverage. It is difficult empirically to disentangle these alternative explanations. Thus, support for this hypothesis suggests a strong association between press coverage and information content, but does not indicate causality. However, in subsequent tests, we control for the stock return and volume reaction to the earnings announcement to provide more compelling evidence of the impact of press coverage on differences in information across investors.

Next, we test a hypothesis about 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. 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.<sup>4</sup> Consistent with this, Krinsky and Lee [1996] find that the adverse selection component of the bid-ask spread increases during earnings announcements. Because of these potential confounding effects, we do not form directional predictions about the relation between press coverage and information asymmetry during the earnings announcement period. 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:

*H2: If greater press coverage during the earnings announcement period reduces (increases) information asymmetry, bid-ask spreads will be smaller (greater) and depth will be greater (smaller) during the earnings announcement period.*

Finally, we test a hypothesis about 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. First, 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

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<sup>4</sup> It is likely that this effect is more pronounced in the presence of sophisticated market participants that possess idiosyncratic private information. In section 4.3, we condition the effect of the press on the presence of other information intermediaries, which provides a clearer test of this effect.

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:

*H3: Greater press coverage in the earnings announcement period is associated with a greater 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 [2006]), 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). Further, it is less likely that press coverage has an incremental effect on these firms' information environments. We eliminate the smallest 20% because these firms likely have extremely low levels of press coverage (see, e.g., Bushee and Miller [2006]). 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 also require CRSP daily return data through two days after the earnings announcement date. These requirements yield a final sample of 1,246 firms and 31,693 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 672,052 press articles for this sample. The sample consists of 29,610

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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.

firm-quarter observations with more than one article and 2,083 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 absolute market-adjusted returns, trading volume, bid-ask spreads, market depth, and the number of small and large trades during the earnings announcement period. For each of these variables (except returns), 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. For returns, we compute an abnormal value by subtracting market returns during the period. We define the earnings announcement window (the *EVENT* period) as the five trading day period from two days before to two days after the earnings announcement date. The pre-earnings announcement window (the *PRE* period) is defined as the trading days three days after the previous announcement through three days before the current announcement. When the previous *EVENT* period is not available, we set the *PRE* period to be 60 trading days prior to the *EVENT* period.

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 five-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 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>6</sup> Both of these variables are constructed using CRSP data.

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

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<sup>6</sup> Measuring "trading volume" as turnover is common in the literature (Bamber et al. [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.

<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.

measure the abnormal number of small trades (*ABN\_PSMALL*) as the *EVENT* period sum of the daily frequencies of small trades minus the sum of the daily frequencies of small trades in the five 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 five 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 five 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 [2006] and Core et al. [2006], we assume that all articles carried on press release wires through which firms can directly release information, such as PR Newswire, FD Newswire, and Business Wire, are firm-initiated disclosures. 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 a given day in the earnings announcement window, we consider the maximum word count article to represent the firm-initiated disclosure on that day, instead of press-initiated coverage.

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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.

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 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 two aspects of press-initiated coverage: (1) the amount of information the press provides and (2) the breadth of dissemination of the information. To proxy for the amount of press-initiated information around the earnings announcement, we define *ABN\_WC* 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> To proxy for the press’ dissemination of information, we define *ABN\_SRC* as the number of unique press sources during the *EVENT* period deflated by the period length, less the analogous measure in the *PRE* period.

### 3.4 FIRM CHARACTERISTIC CONTROL VARIABLES

We do not formally model the determinants of the press’ decision to cover our sample firms. Instead, we control for the “normal” level of press coverage prior to the earnings announcement, and we include a number of firm and industry characteristics that prior work shows to be associated with press coverage (see, e.g., Core et al. [2006], Miller [2006]). These

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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 4.2, 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.

controls also represent other possible determinants of the change in the information environment around earnings announcements. 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 (*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>13</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]).

We also include controls specific to each of our empirical models. As controls in both 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

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<sup>13</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.

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]). Finally, in the *ABN\_SPREAD*, *ABN\_DEPTH*, *ABN\_PSMALL* and *ABN\_PLARGE* models, we include *ABS\_ABN\_RET* and *ABN\_TURN*, as defined above, as additional controls for the information content of the earnings announcement.

#### 4. Descriptive Statistics and Results

##### 4.1 DESCRIPTIVE STATISTICS

Table 1 provides descriptive statistics for the variables used in our analysis. Panel A shows the control variables for firm characteristics. 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 \$162 million and \$11.04, 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 28%, 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.

Panel B provides descriptive statistics on the press coverage variables. In addition to reporting the abnormal variables used in the empirical tests, we report the level of *PRE* and *EVENT* variables in figure 2 to document the magnitude of coverage in both pre-announcement and earnings announcement periods. All of the press-initiated coverage variables in figure 2 exhibit skewed distributions with means higher than the medians, indicating that a significant

number of sample firms have little or no press coverage (not tabulated). Both the word counts (*WC*) and the number of sources (*SRC*) are higher, on average, in the announcement period than in the pre-announcement period. These differences are consistent with more concentrated information around earnings announcements. Similarly, firm-initiated disclosures exhibit higher word counts during the earnings *EVENT* period than in the *PRE* period; the average daily maximum word count for firm-initiated press releases is 270 words in the *EVENT* period and only 29 words in the *PRE* period. The spike in firm-initiated disclosures in the *EVENT* period is expected given that these releases often include disclosures of summary financial statements and/or complete transcripts of conference calls (see the Appendix for an example). Further, a considerable number of the sample firms do not issue any disclosures during the pre-announcement period.

Panel C 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 due to missing *PRE* period data and missing TAQ data. Not surprisingly, the mean and median abnormal volume measures are positive, indicating a higher level of trading activity during the earnings announcement window. This increased activity is also reflected in the positive values for abnormal numbers of small and large trades. 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. Finally, the mean abnormal spread is effectively zero and the mean abnormal depth is negative, suggesting that the earnings announcement does not always significantly resolve information asymmetry.

Table 2 reports correlations among the variables used in the analysis. The press variables tend to be highly correlated with each other ( $r = 0.683$ ), suggesting that it may be difficult to

separate a dissemination effect (number of sources) from a quantity effect (word count). The press variables are also positively correlated with the firm-initiated disclosure variable, but to a lesser magnitude ( $r < 0.33$ ), 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 aspect of firms' information environments. Finally, all of the pairwise correlations between the dependent variables and the press coverage variables are consistent with our hypotheses. Thus, the univariate evidence suggests that press coverage significantly impacts firms' information environments around earnings announcements.

#### 4.2 MAIN RESULTS

We examine the impact of press coverage on firms' information environments by estimating a series of regressions of information environment characteristics on the press coverage variables, firm-initiated disclosure proxies, and control variables. For each dependent variable, we report three models. First, we report benchmark models by regressing the dependent variable on firm-initiated disclosure and on the control variables. Next, we estimate the regressions adding our proxies for press-initiated coverage. We estimate the regressions separately for word count (*ABN\_WC*) and number of sources (*ABN\_SRC*). 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.

Table 3 presents results for absolute abnormal returns and abnormal volume during the earnings announcement period, providing evidence on the information content of press coverage.

Columns 1 and 4 present baseline regressions that include the control variables, but not the press coverage variables. The first column shows that the absolute return during the earnings announcement is significantly higher for small growth firms with large earnings surprises, high prior volatility, high prior turnover, and high following by analysts and institutional investors. These coefficients are consistent with prior work (e.g., Potter [1992], Francis et al. [2002]). The fourth column shows that abnormal volume is significantly higher for small growth firms with high prior turnover, high analyst following and institutional ownership. There is no significant relation between abnormal volume and the earnings surprise, which is again consistent with prior work (e.g., Bamber, Barron, and Stober [1997], Chae [2005]). In both regressions, the coefficient on firm-initiated disclosures during the earnings announcement (*ABN\_FIRMDISC*) is positive and significant, suggesting that more extensive firm disclosures concurrent with the earnings announcement are associated with larger return and volume reactions to the announcement (Francis et al. [2002] find this for absolute returns).

When we add the press-initiated coverage variables to the regressions (columns 2, 3, 5, and 6), we find significant positive coefficients on both *ABN\_WC* and *ABN\_SRC*. These results strongly support Hypothesis 1 and indicate that both the word count and number of sources are associated with the amount of information in the market around earnings announcements.<sup>14</sup> The addition of the press coverage variables changes the significance of the firm-initiated disclosure variables, whereas press coverage does not generally change the signs or significance levels of the other control variables. Thus, these results indicate that greater press coverage significantly

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<sup>14</sup> When we include *ABN\_WC* and *ABN\_SRC* in the regression together, only *ABN\_SRC* is significant, suggesting that dissemination is more important than quantity of reporting in explaining the effect of the press. However, these results 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.

increases the amount of information in the market during the coverage period, as evidenced by greater trading volume and return reactions, regardless of the presence of other information intermediaries or the level of firm disclosure.

We note that there are alternative interpretations of our finding that the press coverage variables change the significance of the firm disclosure variable. First, press coverage is independent of the firm, and as a consequence is likely to be more credible than firm disclosure. Under this explanation, it is not surprising that the press subsumes firm disclosure. A second explanation is that our firm disclosure proxy is weak, and the press disclosure variables appear to subsume it because press disclosure functions as a less noisy 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 3 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.

Table 4 reports results for abnormal spreads and depths, which test the effect of press coverage on changes in information asymmetry. As in table 3, columns 1 and 4 present baseline regressions that include the control variables, but not the press coverage variables. Note that we add *ABS\_ABN\_RET* and *ABN\_TURN* as control variables to proxy for any indirect effects of press coverage on market-maker holding costs that could result from the association between press coverage and volume and returns. The first column shows that abnormal spreads are positively associated with the earnings surprise, prior quarter depth and turnover, and the abnormal return during the earnings announcement; and negatively associated with prior

volatility, abnormal volume during the earnings announcement, stock price, and firm size.<sup>15</sup> The fourth column shows that abnormal depth during the *EVENT* period is negatively associated with prior share turnover, and positively associated with prior volatility and contemporaneous abnormal volume. Firm-initiated disclosures are not associated with either abnormal spreads or abnormal depth. To the extent that these measures are good proxies for the level of firm-initiated disclosure, these results suggest that firm disclosure alone has only a limited impact on changes in spreads and depths.

In columns 2, 3, 5, and 6, we test Hypothesis 2, which predicts a relation between press coverage and information asymmetry. We find that press coverage is significantly negatively (positively) associated with abnormal spreads (depths), suggesting that the press effectively reduces information asymmetry during the earnings announcement. 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 information facilitated by the press is a key underlying driver of the reduction in information asymmetry among investors.

Table 5 presents results for abnormal changes in both the number of small 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 shows that abnormal changes in small trades are positively

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<sup>15</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]).

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

We find strong evidence in support of Hypothesis 3 when we add the press coverage variables to the regression. We find 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. For small trades, these results are consistent with the press disseminating information to a broader set of investors and triggering more trades. These results also explain one of the mechanisms behind the findings in table 3. Holthausen and Verrecchia [1990] show that greater informedness, which is positively associated with the number of traders entering the market, leads to higher volume and return volatility. Thus, part of the significant impact of the press on volume and volatility is attributable to its role in stimulating more small investors to trade. For large trades, these results are consistent with press coverage reducing spreads and increasing depth enough to encourage more block traders to execute large trades. Overall, the results suggest that the press plays an important role in facilitating both small and large trades.

#### 4.3 FURTHER ANALYSIS

The results in tables 3-5 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. One argument is that firms with relatively richer information environments should be less likely to be affected by press coverage as the presence of other information intermediaries will have already impounded much of the news covered by the press into price. Alternatively, the press could complement the idiosyncratic private information gathering activities of other information intermediaries, such that greater press coverage leads to more information in prices and greater information asymmetry for firms with greater following by analysts and institutional investors (analogous to the Kim and Verrecchia [1994] model for firm disclosure). 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 main regressions in tables 3-5 with these interactive variables included.

Table 6 presents the results of this analysis. For parsimony, the control variables listed in tables 3-5 are included in the regressions and interacted with *HI\_INFO*, but are not tabulated. We find a negative and significant coefficient on the main effect *HI\_INFO* in both the absolute abnormal returns and abnormal volume regressions. This confirms earlier results that firms with rich information environments have less new information at earnings announcements. We find a positive and significant coefficient on the interaction between *HI\_INFO* and *ABN\_WC* in the

abnormal volume regression. This result provides some evidence that, rather than serving as a substitute, press coverage complements the private information of other information intermediaries and leads to more informative market reactions to earnings announcements. In the spread regression, the coefficients on the *HI\_INFO* interaction terms are consistently significant and of opposite sign to the press coverage variables. Thus, press coverage reduces information asymmetry less in the presence of other information intermediaries, either because the presence of analysts and institutional investors has already reduced information asymmetry, or because press coverage complements the idiosyncratic private information of other information intermediaries (which is consistent with Kim and Verrecchia [1994]). Finally, in the small trade regression, the *HI\_INFO* interaction is negative and significant when interacted with *ABN\_SRC*. This result suggests that the positive effect of broad dissemination of press coverage on small trades is negated by the presence of other intermediaries, suggesting that other intermediaries, such as analysts, serve a similar function to the press in disseminating information to small traders.

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.

Overall, we view the results in table 6 and in the other untabulated interaction tests as providing some evidence that cross-sectional variation in the importance of press coverage is related to firms' information environments, but little evidence that the nature of the news affects the importance of press coverage. 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.<sup>16</sup>

One potential limitation of our study is that we study earnings announcements, which may give the press an unusually central role due to its ability to anticipate the news release and to disseminate information on a timely basis. To provide some evidence on the importance of the press outside of this context, we examine the relation between press coverage and information environment in the pre-earnings announcement periods, which are essentially the periods in between earnings announcement periods. In table 7, we regress the level of absolute returns, market-adjusted volume, spreads, and depth on the contemporaneous level of press coverage (*PRE\_WC* and *PRE\_SRC*), firm disclosure, and control variables. The coefficients on *PRE\_WC* (*PRE\_SRC*) are significant and in the predicted direction in all four (three of four) regressions, supporting Hypotheses 1 and 2 that press coverage increases the amount of information in the market and reduces information asymmetry. Thus, the evidence suggests that our findings on the

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<sup>16</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.

informational role of the press during earnings announcement periods are generalizable to periods outside of the earnings announcement context.

### *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 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 1,246 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 different or weaker in other contexts, such as a merger announcement or change in management, but the fact that our results hold in the general pre-announcement period somewhat mitigates this concern. Finally, the decisions of the press to provide a certain level of coverage to a firm are not exogenous and are likely a function of other aspects of the information environment. We do not attempt to model the press' coverage decisions, but rather include a number of controls for confounding effects. Holding aside these caveats, we find strong and consistent evidence that the press serves an important incremental role in shaping firms' information environments. These results suggest that future work should attempt to incorporate measures of press coverage into studies of the determinants and consequences of firms' information environments.

## References

- BAMBER, L.; O. BARRON; AND T. STOBER. "Trading Volume and Different Aspects of Disagreement Coincident with Earnings Announcements." *The Accounting Review* 72 (1997): 575-596.
- BEAVER, W. "The Information Content of Annual Earnings Announcements." *Journal of Accounting Research* 4 (1968): 75-111.
- BHATTACHARYA, N. "Investors' Trade Size and Trading Responses around Earnings Announcements: An Empirical Investigation." *The Accounting Review* 76 (2001): 221-244.
- BUSHEE, B.; D. MATSUMOTO; AND G. MILLER. "Open versus Closed Conference Calls: The Determinants and Effects of Broadening Access to Disclosure." *Journal of Accounting & Economics* 34 (2003): 149-180.
- BUSHEE, B., AND G. MILLER. "Investor Relations, Firm Visibility, and Investor Following." Working paper, University of Pennsylvania, 2006.
- CHAE, J. "Trading Volume, Information Asymmetry, and Timing Information." *The Journal of Finance* 60 (2005): 413-442.
- CHAN, W. "Stock Price Reaction to News and No-News: Drift and Reversal after Headlines." *Journal of Financial Economics* 70 (2003): 223-260.
- CORE, J.; W. GUAY; AND D. LARCKER. "The Power of the Pen and Executive Compensation." Working paper, University of Pennsylvania, 2006.
- DIAMOND, D., AND R. VERRECCHIA. "Disclosure, Liquidity, and the Cost of Capital." *The Journal of Finance* 46 (1991): 1325-1359.
- DYCK, A., AND L. ZINGALES. "The Corporate Governance Role of the Media." Working paper, Harvard University, 2002.
- DYCK, A., AND L. ZINGALES. "The Media and Asset Prices." Working paper, Harvard University, 2003.
- DYCK, A., AND L. ZINGALES. "Private Benefits of Control: An International Comparison." *Journal of Finance* 59 (2004): 537-600.
- EL-GAZZAR, S. "Predisclosure Information and Institutional Ownership: A Cross-Sectional Examination of Market Revaluations during Earnings Announcement Periods." *The Accounting Review* 73 (1998): 119-130.

- FAMA, E., AND K. FRENCH. "Industry Costs of Equity." *Journal of Financial Economics* 43 (1997):153-193.
- FAMA, E., AND J. MACBETH. "Risk, Return, and Equilibrium: Empirical Tests." *Journal of Political Economy* 81 (1973): 607-636.
- FRANCIS, J.; K. SCHIPPER; AND L. VINCENT. "Expanded Disclosures and the Increased Usefulness of Earnings Announcements." *The Accounting Review* 77 (2002): 515-547.
- FRANKEL, R., AND X. LI. "Characteristics of a Firm's Information Environment and the Information Asymmetry between Outsiders and Insiders." *Journal of Accounting & Economics* 37 (2004): 229-259.
- HASBROUCK, J. "The Summary Informativeness of Stock Trades: An Econometric Analysis." *The Review of Financial Studies* 4 (1991): 571-594.
- HEALY, P., AND K. PALEPU. "Information Asymmetry, Corporate Disclosure, and the Capital Markets: A Review of the Empirical Disclosure Literature." *Journal of Accounting & Economics* 31 (2001): 405-440.
- HOLTHAUSEN, R., AND R. VERRECCHIA. "The Effect of Informedness and Consensus on Price and Volume Behavior." *The Accounting Review* 65 (1990): 191-209.
- JOHNSON, M.; S. PORTER; AND M. SHACKELL. "Stakeholder Pressure and the Structure of Executive Compensation." Working paper, University of Notre Dame, 1997.
- KIM, O., AND R. VERRECCHIA. "Trading Volume and Price Reactions to Public Announcements." *Journal of Accounting Research* 29 (1991): 302-321.
- KIM, O., AND R. VERRECCHIA. "Market Liquidity and Volume around Earnings Announcements." *Journal of Accounting & Economics* 17 (1994): 41-68.
- KRINSKY, I., AND J. LEE. "Earnings Announcements and Components of the Bid-Ask Spread." *Journal of Finance* 51 (1996): 1523-1535.
- KROSS, W.; B. RO; AND D. SCHROEDER. "Earnings Expectations: The Analysts' Information Advantage." *The Accounting Review* 65 (1990): 461-477.
- LEE, C.; B. MUCKLOW; AND M. READY. "Spreads, Depths, and the Impact of Earnings Information: An Intraday Analysis." *The Review of Financial Studies* 6 (1993): 345-364.
- LOBO, G., AND A. MAHMOUD. "Relationship Between Differential Amounts of Prior Information and Security Return Variability." *Journal of Accounting Research* 27 (1989): 116-134.
- LOUIS, H.; J. JOE; AND D. ROBINSON. "Managers' and Investors' Responses to Media Exposure of Board Ineffectiveness." Working paper, Pennsylvania State University, 2004.

- MANZLER, D. L. "Liquidity, Liquidity Risk and the Closed-End Fund Discount." Working paper, University of Cincinnati, 2005.
- MILLER, G. "The Press as a Watchdog for Accounting Fraud." *Journal of Accounting Research* 44 (2006): 1001-1033.
- NEWKEY, W., AND K. WEST. "A Simple, Positive Semi-Definite Heteroscedasticity and Autocorrelation Consistent Covariance Matrix." *Econometrica* 55 (1987): 703-708.
- POTTER, G. "Accounting Earnings Announcements, Institutional Investor Concentration, and Common Stock Returns." *Journal of Accounting Research* 30 (1992): 146-155.
- SKINNER, D., AND R. SLOAN. "Earnings Surprises, Growth Expectations, and Stock Returns or Don't Let an Earnings Torpedo Sink Your Portfolio" *Review of Accounting Studies* 7 (2002): 289-312.
- STOLL, H., AND C. SCHENZLER. "Trades Outside the Quotes: Reporting Delay, Trading Option, or Trade Size?" *Journal of Financial Economics* 79 (2006): 615-653.
- VAN BUSKIRK, A. "Capital Market Effects of More Frequent Disclosure." Working paper, University of Chicago, 2006.
- WALTHER, B. "Investor Sophistication and Market Earnings Expectations." *Journal of Accounting Research* 35 (1997): 157-179.
- YOHAN, T. "Information Asymmetry Around Earnings Announcements." *Review of Quantitative Finance and Accounting* 11 (1998): 165-182.
- ZINGALES, L. "In Search of New Foundations." *The Journal of Finance* 55 (2000): 1623-1653.

## APPENDIX

### *Example of Press Coverage for Activision during the Earnings Announcement Period*<sup>17</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>17</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.*

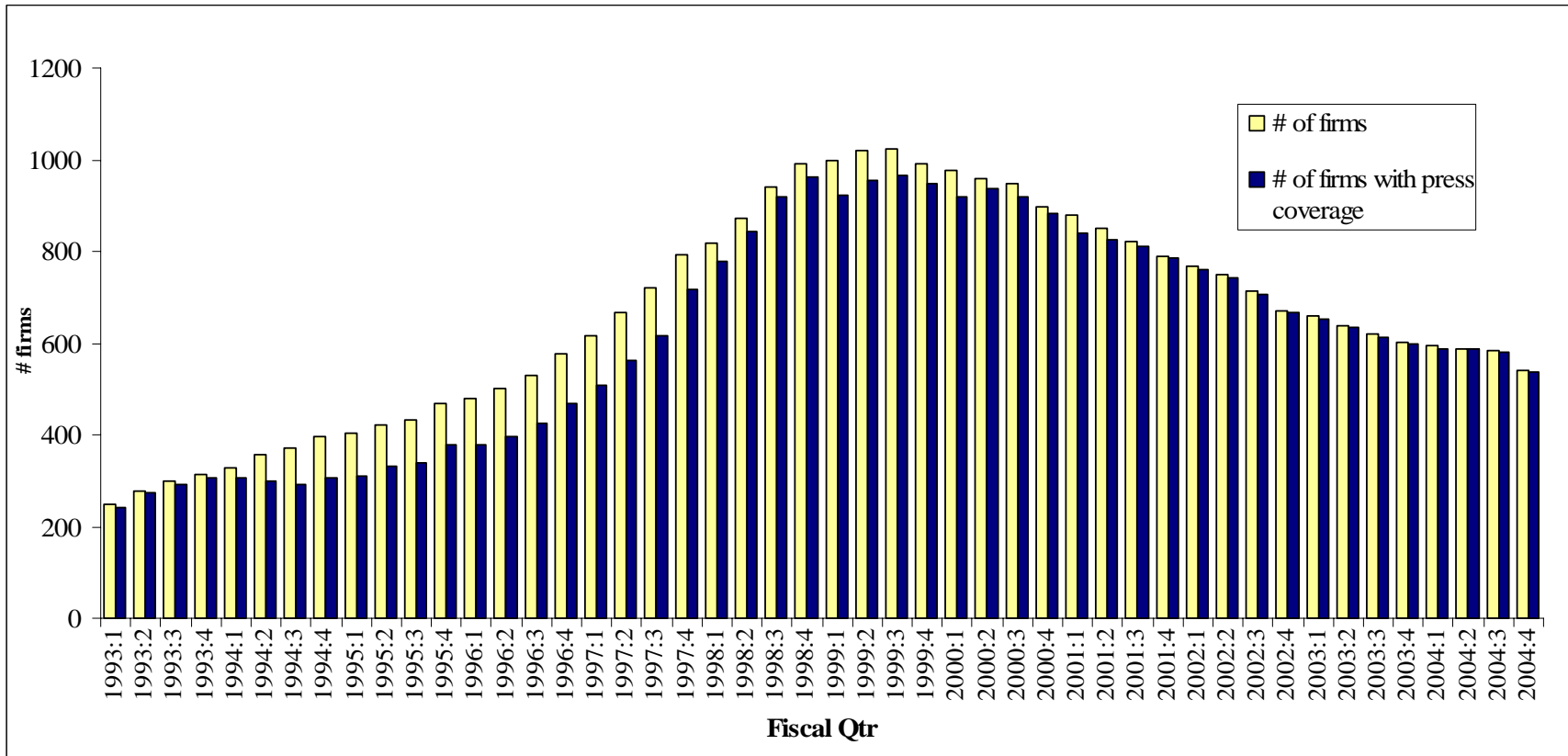
##### **UPDATE 1-Electronic Arts shares fall on outlook.**

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

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

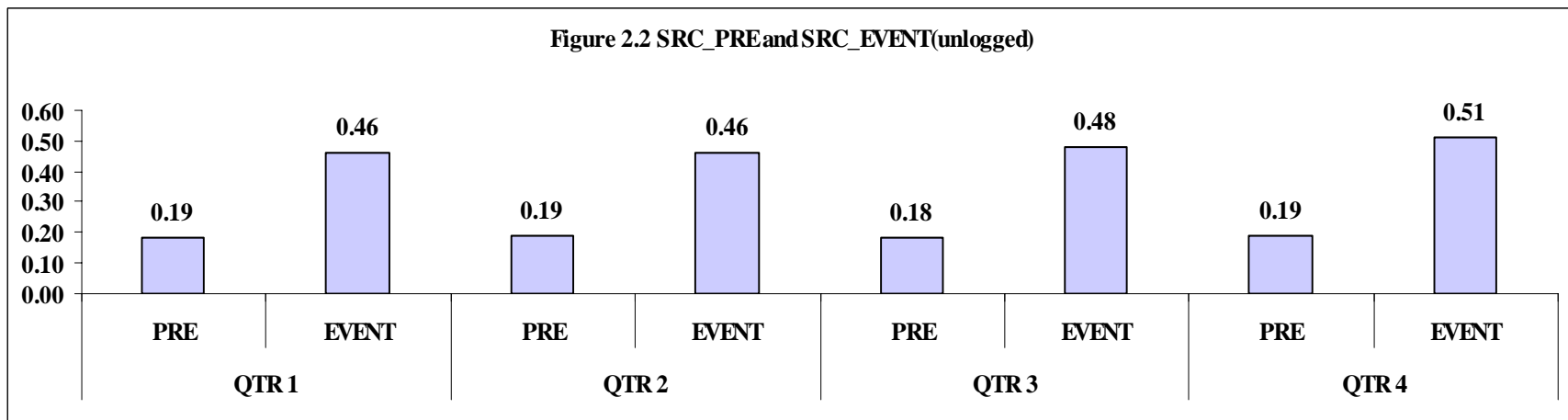
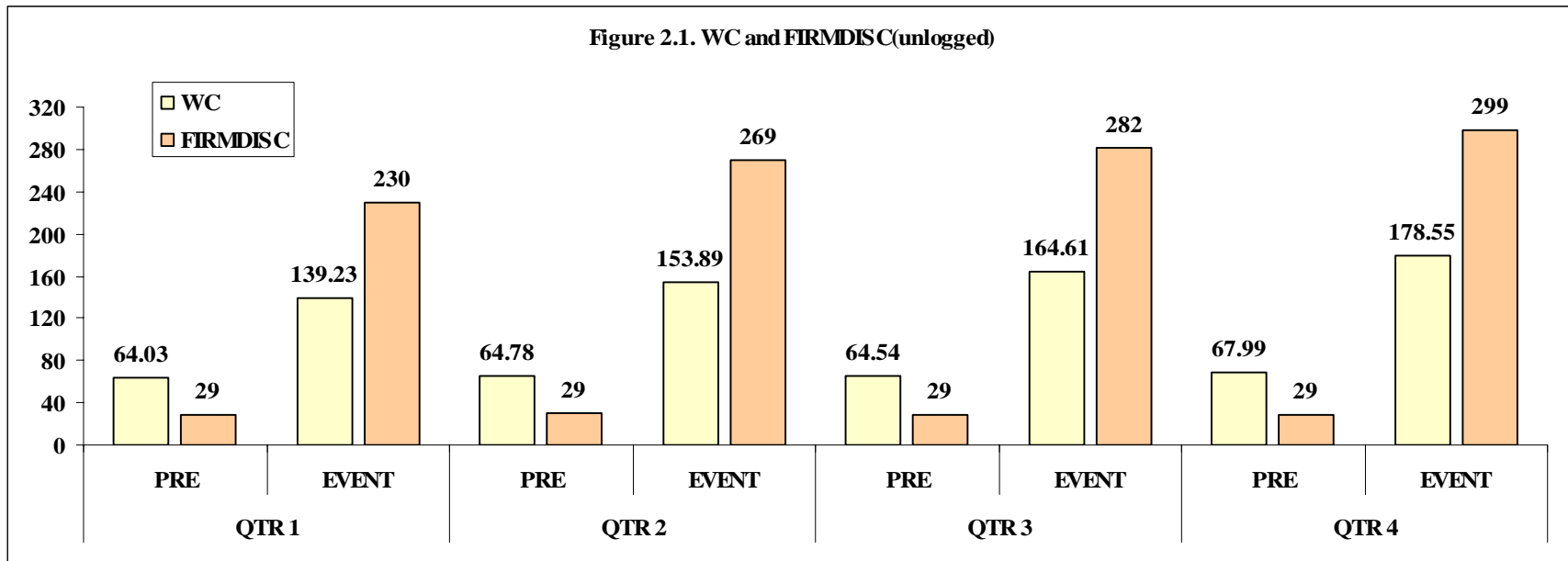
**FIGURE 1**

*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 were 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 31,693 firm-quarter observations for 1,246 firms, of which 29,610 firm-quarter observations have more than one article on Factiva and 2,083 firm-quarter observations have no articles. As the figure shows, Factiva's breadth of coverage grows over the sample period.

**FIGURE 2**  
*The Press Coverage by Fiscal Quarter*



**TABLE 1**  
*Descriptive Statistics*

<b>Panel A: Firm Characteristics Control Variables</b>								
Variable	N	Mean	Std. Dev.	Minimum	Q1	Median	Q3	Maximum
ABS_ESURP	31693	0.0484	0.1821	0.0000	0.0011	0.0044	0.0184	1.4529
MV	31693	162.3206	219.5395	4.5341	38.4067	87.0315	192.4612	1381.2500
BTM	31693	0.5577	0.3201	0.0631	0.3114	0.5136	0.7483	1.6075
ANALYST	31693	2.3889	2.6535	0.0000	0.0000	2.0000	4.0000	13.0000
INST_HOLD	31693	0.2827	0.2381	0.0000	0.0818	0.2205	0.4326	0.9994
Qt1_VOLAT	31693	0.7909	0.3748	0.0195	0.5268	0.7085	0.9606	2.1748
Qt1_TURN	31693	0.0013	0.0084	-0.0079	-0.0038	-0.0013	0.0033	0.0407
PRC	31693	11.0437	10.3198	0.4300	3.7500	7.9063	15.0000	53.8125
Qt1_SPREAD	31378	0.0392	0.0346	0.0009	0.0178	0.0300	0.0494	0.6517
Qt1_DEPTH	31289	17.0784	14.6871	0.1318	7.1505	13.1188	22.4972	460.4733

The earnings announcement period (*EVENT* period) is from -2 to +2 trading days from the earnings announcement date (Compustat *RDQE*). The pre-earnings announcement period (*PRE* period) includes trading days between two *EVENT* periods or up to 60 trading days prior to the *EVENT* period when the previous quarter's *RDQE* is not available. **ABS\_ESURP** is the absolute value of (1) the forecast error calculated as mean estimation 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 estimation 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 the log. **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  $\log(1+\text{variable})$ . **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. **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*. *TURNOVER* is the average of daily CRSP trading dollar volumes divided by the average of the market value of shares outstanding. *Market TURNOVER* is *TURNOVER* calculated with all stocks in the NASDAQ with the CRSP exchange code 3. **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 the log. **LNPRC** is the log of the fiscal quarter end price. The figures tabulated (**PRC**) are raw values before taking the log. All variables are winsorized at 1%.

**TABLE 1 – continued**  
*Descriptive Statistics*

**Panel B: Press Coverage Variables**

Variable	N	Mean	Std. Dev.	Minimum	Q1	Median	Q3	Maximum
ABN_WC	31693	0.4863	1.7859	-7.6895	-0.2158	0.6350	1.6270	4.2739
ABN_SRC	31693	0.1852	0.2305	-1.5181	0.0000	0.1582	0.3280	0.8398
ABN_FIRMDISC	31693	2.1120	1.8779	-5.8021	0.8809	2.1836	3.3742	5.8141

All press variables are from news articles from the Factiva database. **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 number of unique press sources during the *EVENT* period divided by the period length, minus the log of 1 plus the number of unique press sources during the *PRE* period divided by the period length. **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 C: Information Environment Test variables**

Variable	N	Mean	Std. Dev.	Minimum	Q1	Median	Q3	Maximum
ABS_ABN_RET	31682	0.0899	0.0882	0.0011	0.0279	0.0635	0.1218	0.4670
ABN_TURN	31687	0.0027	0.0207	-0.3018	-0.0018	0.0003	0.0035	1.9368
ABN_SPREAD	31201	0.0001	0.0152	-0.0498	-0.0055	-0.0004	0.0046	0.0626
ABN_DEPTH	31115	-0.0333	0.3297	-0.9600	-0.2200	-0.0224	0.1514	0.9884
ABN_PSMALL	30979	0.0800	0.6717	-3.0000	-0.1429	0.2308	0.5056	1.0000
ABN_PLARGE	23115	0.0417	1.2832	-7.0000	-0.1308	0.4286	0.7793	1.0000

**ABS\_ABN\_RET** is the absolute abnormal return of the *EVENT* period. **ABN\_TURN** is *TURNOVER* minus *market TURNOVER* in the *EVENT* period) minus (*TURNOVER* minus *market TURNOVER* in the *PRE* period). **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 five 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 2**  
*Pearson Correlations among Variables*

<b>Panel A: Press Coverage and Control Variables</b>												
	ABN _SRC	ABN_ FIRMDISC	ABS_ ESURP	LNMV	BTM	LNAN ALYST	INST_ HOLD	Qt1_ VOLAT	Qt1_ TURN	LNPRC	Qt1_ SPREAD	Qt1_ DEPTH
ABN_WC	0.683	0.326	-0.045	0.010	0.005	0.041	0.040	-0.089	-0.028	0.079	0.004	0.054
ABN_SRC		0.323	-0.053	0.174	-0.028	0.166	0.178	-0.132	0.037	0.144	-0.116	0.076
ABN_FIRMDISC			-0.055	0.029	0.065	0.043	0.098	-0.142	-0.088	0.078	-0.020	0.018
ABS_ESURP				-0.219	0.058	-0.210	-0.156	0.223	0.002	-0.269	0.167	-0.217
LNMV					-0.444	0.608	0.600	-0.331	0.350	0.771	-0.647	0.661
BTM						-0.102	-0.026	0.023	-0.258	-0.350	0.263	-0.312
LNANALYST							0.591	-0.213	0.298	0.487	-0.462	0.489
INST_HOLD								-0.289	0.216	0.541	-0.390	0.389
Qt1_VOLAT									0.241	-0.487	0.358	-0.365
Qt1_TURN										0.256	-0.327	0.380
LNPRC											-0.511	0.782
Qt1_SPREAD												-0.569

**Panel B: Dependent Variables with Press Coverage and Control Variables**

	ABN _WC	ABN_ _SRC	ABN_ FIRMDISC	ABS_ ESURP	LNMV	BTM	LNAN ALYST	INST_ HOLD	Qt1_ VOLAT	Qt1_ TURN	LNPRC	Qt1_ SPREAD	Qt1_ DEPTH
ABS_ABN_RET	0.035	0.070	-0.016	0.075	-0.076	0.017	-0.004	-0.034	0.217	0.083	-0.149	0.041	-0.085
ABN_TURN	0.086	0.149	0.022	-0.005	0.044	-0.020	0.061	0.067	-0.018	0.081	0.047	-0.035	0.049
ABN_SPREAD	-0.025	-0.043	-0.009	0.019	-0.002	0.007	0.004	0.004	-0.023	0.019	-0.006	-0.083	0.021
ABN_DEPTH	0.061	0.084	0.018	-0.015	-0.015	-0.011	0.003	-0.005	-0.029	-0.029	0.008	0.052	-0.064
ABN_PSMALL	0.092	0.118	0.063	-0.010	0.044	0.018	0.056	0.065	-0.055	0.022	0.051	-0.033	0.031
ABN_PLARGE	0.064	0.081	0.046	-0.005	-0.029	0.065	0.017	0.042	-0.043	-0.018	0.004	0.042	-0.016

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 Absolute Abnormal Return and Abnormal Turnover on Press Coverage Variables and Control Variables*

	ABS_ABN_RET			ABN_TURN		
Intercept	0.1256 *** (7.78)	0.1247 *** (7)	0.1294 *** (7.33)	0.0120 *** (3.59)	0.0112 *** (3.27)	0.0124 *** (3.58)
ABN_WC		<b>0.0033 *** (8.11)</b>			<b>0.0010 *** (5.5)</b>	
ABN_SRC			<b>0.0448 *** (8.07)</b>			<b>0.0130 *** (7.31)</b>
ABN_FIRMDISC	0.0009 *** (2.86)	-0.0001 (-0.2)	-0.0008 * (-1.76)	0.0002 *** (3.81)	-0.0001 (-1.14)	-0.0003 *** (-3.01)
ABS_ESURP	0.0104 ** (2.45)	0.0106 ** (2.55)	0.0100 ** (2.4)	0.0000 (-0.04)	0.0000 (0.02)	-0.0001 (-0.11)
LNMV	-0.0077 *** (-6.38)	-0.0075 *** (-5.75)	-0.0083 *** (-6.29)	-0.0009 *** (-3.85)	-0.0008 *** (-3.38)	-0.0010 *** (-3.97)
BTM	-0.0047 * (-1.75)	-0.0045 * (-1.68)	-0.0045 * (-1.72)	-0.0014 *** (-5.09)	-0.0014 *** (-4.71)	-0.0014 *** (-4.71)
LNANALYST	0.0085 *** (4.67)	0.0082 *** (4.82)	0.0073 *** (4.3)	0.0008 *** (3.19)	0.0008 *** (3.19)	0.0005 ** (2.26)
INST_HOLD	0.0069 ** (2.28)	0.0066 ** (2.23)	0.0073 ** (2.32)	0.0031 *** (3.63)	0.0031 *** (3.61)	0.0032 *** (3.83)
Qt1_VTIL	0.0417 *** (15.25)	0.0419 *** (15.4)	0.0419 *** (15.69)	-0.0011 (-1.46)	-0.0010 (-1.37)	-0.0009 (-1.36)
Qt1_TURN	0.5343 *** (4.87)	0.5570 *** (5.06)	0.5181 *** (4.65)	0.2521 *** (7.12)	0.2585 *** (7.42)	0.2496 *** (7.39)
<i>Adjusted R2</i>	0.0601	0.0637	0.0718	0.0482	0.0601	0.0813

\*, \*\*, and \*\*\* indicate significance at the 0.10, 0.05, and 0.01 level, respectively. This table provides regressions of absolute abnormal returns and abnormal volume 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**

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

	ABN_SPREAD			ABN_DEPTH		
Intercept	-0.0015 (-0.43)	-0.0013 (-0.39)	-0.0017 (-0.48)	-0.0481 (-0.61)	-0.0494 (-0.67)	-0.0446 (-0.6)
ABN_WC		<b>-0.0002 ***</b> <b>(-3.24)</b>			<b>0.0038 **</b> <b>(2.24)</b>	
ABN_SRC			<b>-0.0027 ***</b> <b>(-4.19)</b>			<b>0.0812 ***</b> <b>(6.55)</b>
ABN_FIRMDISC	0.0000 (0.27)	0.0001 (1.05)	0.0001 (1.43)	0.0017 (1.42)	0.0005 (0.38)	-0.0010 (-0.95)
ABS_ESURP	0.0017 * (1.79)	0.0017 * (1.82)	0.0017 * (1.83)	-0.0191 (-1.49)	-0.0181 (-1.46)	-0.0183 (-1.47)
LNMV	-0.0005 ** (-2.43)	-0.0005 ** (-2.48)	-0.0004 ** (-2.28)	-0.0011 (-0.15)	-0.0007 (-0.1)	-0.0018 (-0.27)
BTM	-0.0008 (-1.34)	-0.0008 (-1.38)	-0.0008 (-1.41)	-0.0022 (-0.22)	-0.0011 (-0.12)	-0.0012 (-0.13)
LNANALYST	0.0001 (1.05)	0.0001 (1.1)	0.0002 (1.42)	0.0003 (0.06)	-0.0008 (-0.18)	-0.0018 (-0.41)
INST_HOLD	0.0005 (0.57)	0.0005 (0.55)	0.0004 (0.46)	-0.0104 (-0.95)	-0.0090 (-0.79)	-0.0082 (-0.67)
Qt1_VOLAT	-0.0043 *** (-4.22)	-0.0043 *** (-4.22)	-0.0043 *** (-4.25)	0.0297 * (1.92)	0.0300 * (1.92)	0.0298 * (1.92)
Qt1_TURN	0.1062 *** (3.93)	0.1034 *** (3.88)	0.1050 *** (3.92)	-2.5654 *** (-8.41)	-2.5155 *** (-8.78)	-2.4765 *** (-8.2)
ABS_ABN_RET	0.0131 *** (3.71)	0.0133 *** (3.72)	0.0135 *** (3.85)	-0.0646 (-1.67)	-0.0697 * (-1.82)	-0.0740 * (-1.94)
ABN_TURN	-0.1557 *** (-6.4)	-0.1546 *** (-6.39)	-0.1494 *** (-6.33)	3.6493 *** (6.58)	3.6009 *** (6.77)	3.4499 *** (6.5)
LNPRC	-0.0012 *** (-3.15)	-0.0012 *** (-3.13)	-0.0012 *** (-3.17)	0.0062 (0.9)	0.0060 (0.87)	0.0065 (0.93)
Qt1_DEPTH	0.0013 ** (2.65)	0.0013 ** (2.58)	0.0013 ** (2.58)			
Qt1_SPREAD				0.0142 (0.09)	0.0114 (0.07)	0.0197 (0.13)
<i>Adjusted R2</i>	0.0591	0.0597	0.0597	0.0649	0.0655	0.0673

\*, \*\*, and \*\*\* indicate significance at the 0.10, 0.05, and 0.01 level, respectively. This table provides regressions of abnormal bid-ask spreads and abnormal depths 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*

	ABN_PSMALL			ABN_PLARGE		
Intercept	-0.4208 *** (-3.19)	-0.4502 *** (-3.65)	-0.4157 *** (-3.28)	0.2428 (1.27)	0.2162 (1.12)	0.2702 (1.37)
ABN_WC		<b>0.0212 *** (6.74)</b>			<b>0.0193 ** (2.24)</b>	
ABN_SRC			<b>0.1521 *** (6.18)</b>			<b>0.1667 ** (2.39)</b>
ABN_FIRMDISC	0.0176 *** (9.96)	0.0115 *** (5.07)	0.0120 *** (4.98)	0.0275 *** (3.75)	0.0231 ** (2.63)	0.0216 ** (2.37)
ABS_ESURP	0.0286 (0.67)	0.0310 (0.7)	0.0282 (0.65)	-0.2590 ** (-2.01)	-0.2495 ** (-2.04)	-0.2596 * (-1.98)
LNMV	0.0266 *** (2.72)	0.0289 *** (3.17)	0.0250 ** (2.66)	-0.0344 *** (-2.75)	-0.0332 *** (-2.7)	-0.0379 *** (-2.95)
BTM	0.0579 *** (2.98)	0.0605 *** (3.06)	0.0581 *** (2.94)	0.1232 *** (2.87)	0.1244 *** (2.82)	0.1207 *** (2.78)
LNANALYST	0.0096 (1.16)	0.0082 (0.94)	0.0056 (0.68)	-0.0011 (-0.05)	-0.0017 (-0.08)	-0.0057 (-0.28)
INST_HOLD	-0.0634 (-1.62)	-0.0598 (-1.57)	-0.0568 (-1.52)	0.0695 (1.26)	0.0749 (1.4)	0.0827 (1.58)
Qt1_VOLAT	-0.1190 *** (-5.06)	-0.1175 *** (-5.05)	-0.1169 *** (-5.05)	-0.0936 ** (-2.31)	-0.0867 ** (-2.16)	-0.0963 ** (-2.48)
Qt1_TURN	-0.4414 (-0.67)	-0.1608 (-0.26)	-0.3422 (-0.52)	-1.6565 (-0.94)	-1.4937 (-0.83)	-1.4995 (-0.87)
ABS_ABN_RET	1.5085 *** (22.86)	1.4976 *** (23.2)	1.4892 *** (23.3)	1.2059 *** (11.09)	1.1843 *** (11.32)	1.1717 *** (11.28)
ABN_TURN	8.1779 *** (7.51)	7.9348 *** (7.42)	7.8079 *** (7.23)	17.8734 *** (5.93)	17.7980 *** (5.73)	17.5693 *** (5.64)
<i>Adjusted R2</i>	0.0970	0.0995	0.0987	0.0562	0.0569	0.0574

\*, \*\*, and \*\*\* indicate significance at the 0.10, 0.05, and 0.01 level, respectively. This table provides regressions of abnormal changes in the number of small and 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 and All Variables*

	ABS_ABN_RET		ABN_TURN		ABN_SPREAD		ABN_DEPTH		ABN_PSMALL		ABN_PLARGE	
Intercept	0.1541***	0.1564***	0.0172***	0.0173***	-0.0026	-0.0034	-0.0891	-0.0903	-0.5921***	-0.5594***	0.6049	0.7061
	(10.1)	(10.69)	(3.72)	(3.57)	(-0.46)	(-0.59)	(-1.04)	(-1.03)	(-3.05)	(-2.85)	(1.2)	(1.42)
HI_INFO	-0.0695***	-0.0675***	-0.0191***	-0.0175***	-0.0029	-0.0025	0.0141	0.0283	0.4171**	0.4057**	-1.1931*	-1.2450*
	(-3.02)	(-2.8)	(-3.55)	(-2.98)	(-0.49)	(-0.42)	(0.21)	(0.39)	(2.17)	(2.08)	(-1.85)	(-1.95)
ABN_FIRMDISC	-0.0004	-0.0010**	-0.0001	-0.0003**	0.0002	0.0002*	0.0007	-0.0006	0.0114**	0.0104**	0.0284**	0.0292**
	(-0.99)	(-2.5)	(-0.9)	(-2.36)	(1.51)	(1.68)	(0.33)	(-0.28)	(2.34)	(2.24)	(2.16)	(2.06)
ABN_FIRMDISC *HI_INFO	0.0009**	0.0005	0.0001	0.0001	-0.0003	-0.0002	0.0008	-0.0004	-0.0018	-0.0006	-0.0096	-0.0148
	(2.38)	(1.22)	(0.53)	(1.06)	(-1.67)	(-1.65)	(0.33)	(-0.17)	(-0.29)	(-0.1)	(-0.81)	(-1.15)
ABN_WC	<b>0.0029***</b>		<b>0.0008***</b>		<b>-0.0003**</b>		<b>0.0043*</b>		<b>0.0278***</b>		<b>0.0147</b>	
	<b>(6.64)</b>		<b>(2.97)</b>		<b>(-2.58)</b>		<b>(2)</b>		<b>(4.22)</b>		<b>(0.92)</b>	
ABN_WC * HI_INFO	<b>0.0008</b>		<b>0.0005**</b>		<b>0.0002*</b>		<b>-0.0016</b>		<b>-0.0140</b>		<b>0.0005</b>	
	<b>(1.53)</b>		<b>(2.16)</b>		<b>(1.99)</b>		<b>(-0.56)</b>		<b>(-1.32)</b>		<b>(0.03)</b>	
ABN_SRC		<b>0.0452***</b>		<b>0.0138***</b>		<b>-0.0038***</b>		<b>0.0812***</b>		<b>0.2999***</b>		<b>0.1040</b>
		<b>(8.72)</b>		<b>(4.09)</b>		<b>(-3.2)</b>		<b>(4.1)</b>		<b>(4.92)</b>		<b>(0.7)</b>
ABN_SRC * HI_INFO		<b>0.0015</b>		<b>-0.0016</b>		<b>0.0021*</b>		<b>0.0025</b>		<b>-0.2275**</b>		<b>0.1066</b>
		<b>(0.27)</b>		<b>(-0.52)</b>		<b>(1.74)</b>		<b>(0.12)</b>		<b>(-2.44)</b>		<b>(0.68)</b>
Adjusted R2	0.0628	0.0708	0.0724	0.0957	0.0752	0.0751	0.0805	0.0822	0.1088	0.1092	0.0744	0.0759

\*, \*\*, and \*\*\* indicate significance 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 a 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.

**TABLE 7**

*Regressions of pre-announcement period variables on Press Coverage Variables and Control Variables*

	PRE_RETURN		PRE_TURN		PRE_SPREAD		PRE_DEPTH	
Intercept	0.2197 *** (5.3)	0.2714 *** (6.08)	-0.0077 *** (-6.65)	-0.0052 *** (-5.15)	0.2118 *** (17.51)	0.2150 *** (17.5)	5.8292 *** (37.19)	5.8389 *** (38.27)
PRE_WC	<b>0.0163 ***</b> <b>(5.76)</b>		<b>0.0006 ***</b> <b>(7.11)</b>		<b>-0.0004 ***</b> <b>(-5.11)</b>		<b>0.0075 **</b> <b>(2.25)</b>	
PRE_SRC		<b>0.2309 ***</b> <b>(8.11)</b>		<b>0.0108 ***</b> <b>(10.84)</b>		<b>0.0070 ***</b> <b>(3.97)</b>		<b>0.0278</b> <b>(0.31)</b>
PRE_FIRMDISC	-0.0006 (-0.28)	-0.0029 (-1.15)	0.0000 (-0.37)	-0.0002 ** (-2.56)	-0.0004 *** (-3.25)	-0.0009 *** (-5.53)	-0.0089 *** (-4.5)	-0.0082 *** (-5.66)
LNMV	-0.0099 ** (-2.42)	-0.0122 *** (-3.24)	0.0000 (0.27)	-0.0001 * (-1.74)	-0.0139 *** (-22.87)	-0.0143 *** (-22.07)	0.2549 *** (12.14)	0.2553 *** (12.29)
BTM	-0.0378 *** (-4.83)	-0.0376 *** (-4.93)	-0.0019 *** (-7.54)	-0.0019 *** (-8.29)	0.0019 ** (2.02)	0.0016 * (1.71)	-0.0003 (-0.02)	0.0029 (0.24)
LNANALYST	-0.0016 (-0.57)	-0.0023 (-0.81)	0.0001 ** (2.07)	0.0001 (1.33)	-0.0014 *** (-3.19)	-0.0015 *** (-3.54)	-0.0148 (-1.03)	-0.0154 (-1.06)
INST_HOLD	-0.0242 *** (-3.29)	-0.0173 ** (-2.34)	0.0013 *** (3.74)	0.0017 *** (4.77)	0.0060 *** (5.45)	0.0066 *** (6.04)	-0.0526 (-1.17)	-0.0511 (-1.14)
Qt1_VTIL	0.1208 *** (13.87)	0.1208 *** (13.51)	0.0001 (0.79)	0.0001 (0.81)	0.0278 *** (5.57)	0.0279 *** (5.57)	-0.1692 *** (-7.81)	-0.1684 *** (-7.84)
Qt1_TURN	0.7922 ** (2.04)	0.5536 (1.4)	0.6645 *** (56.38)	0.6422 *** (56.95)	-0.6785 *** (-6.03)	-0.6788 *** (-6.02)	-1.8467 (-0.72)	-1.7068 (-0.68)
PRE_RETURN					0.0033 *** (2.94)	0.0031 ** (2.63)	-0.0542 *** (-3.55)	-0.0554 *** (-3.6)
PRE_TURN					-0.4015 *** (-3.88)	-0.4400 *** (-4.18)	16.3238 *** (13.26)	16.1674 *** (12.11)
Qt1_LNPRC					0.0054 ** (2.45)	0.0055 ** (2.52)	0.4640 *** (6.13)	0.4635 *** (6.13)
Qt1_DEPTH					-0.0046 *** (-2.87)	-0.0046 *** (-2.98)		
Qt1_SPREAD							0.6228 ** (2.06)	0.6061 ** (2.05)
<i>Adjusted R2</i>	0.0809	0.0849	0.5703	0.5830	0.6670	0.6671	0.8244	0.8247

\*, \*\*, and \*\*\* indicate significance at the 0.10, 0.05, and 0.01 level, respectively. 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.