Face-to-Face Private Communication of Soft Information and its Association with Resolution of Investor Uncertainty at Earnings Announcements

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ABSTRACT

We propose that the combination of hard information (e.g., realized earnings) and soft information communicated through face-to-face private meetings helps resolve investor uncertainty because 1) soft information can be interpreted in one way or the other depending on specific contexts and soft information senders often feel more comfortable expressing their motives or intentions with trusted parties in a private face-to-face setting; 2) the complementary relation arises due to hard information verifying the truthfulness of soft information and soft information fulfilling the missing content in hard information. To examine this conjecture, we review press releases for a sample of 16,292 non-bundled earnings forecasts issued by 2,301 unique frequent forecasters from 2001-2014 drawn from Corporate Issued Guidance (CIG) and identify 7,779 forecasts that are in conjunction with private face-to-face meetings (e.g., investor conferences, roadshows, or investor/analyst days). The remaining forecasts are publicly disseminated via written press releases and/or remote conference calls without personal interactions. We find no significant difference in the immediate impact on uncertainty upon the issuances of earnings forecasts but a significant difference in the reduced uncertainty at the next earnings announcements. Specifically, the reduced uncertainty at earnings announcements preceded by an investor meeting forecast is at least 33 percent greater than the reduced uncertainty at earnings announcements preceded by forecasts without personal interactions, regardless of the sign of news. Additional analyses show that this result is driven by R&D intensive firms and soft (hard) information increases (reduces) uncertainty upon the release of earnings forecasts.

1. Introduction

Whether accounting information facilitates efficient capital allocation is a longstanding research question in the literature because it justifies the production of accounting information. Motivated by Lambert et al. (2011) showing that only investors average precision (rather than information asymmetry) affects a firm's cost of capital in perfectly competitive capital market, we focus on investors average precision or investor uncertainty, captured by implied stock return volatility from exchange-traded option prices, and propose a specific condition under which accounting information resolves uncertainty.[1]

The specific condition we propose is the combination of hard information and soft information communicated through face-to-face private meetings. The classification of hard and soft information relies on a multi-dimension continuum. The non-exclusive and non-exhaustive characteristics of hard (soft) information are historical (forward-looking), verifiable (non-verifiable), context independent (context dependent), quantitative (qualitative), and objective (subjective) (Schneider 1972, Ijiri 1975, Liberti and Petersen 2019). The well-known fact of implied volatility reduced following the release of quarterly earnings announcements since Patell and Wolfson (1979) is not surprising given the historical and verifiable nature of realized earnings. In contrasts, Rogers et al. (2009) document increased implied volatility following the issuance of earnings forecasts, potentially due to the forward-looking and unverifiable nature of soft information in forecasts. In this study, we argue that soft information is more effectively exchanged through face-to-face private interactions and find evidence that earnings

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[1] We define investor uncertainty as investors' average precision in Lambert et al. (2011). Following their notations, $\prod_I (\prod_U)$ is the precision of informed (uninformed) investors' posterior beliefs about a firm's future cash flow. Investor uncertainty is the average of $\prod_I$ and $\prod_U$, while information asymmetry is the difference between $\prod_I$ and $\prod_U$. We us implied volatility, derived from option prices based on the Black–Scholes pricing model, as a proxy for investors' average *expected* volatility of the firm's future cash flow, consistent with the use of this proxy in Kelly et al. (2016) and Manela and Moreia (2017) but different from the *realized* return volatility that focuses more on investors' historical perspective in Barth et al. (2019).

announcements preceded by private investor meetings resolve a greater degree of investor uncertainty than those preceded by public exchanges of soft information, such as written press releases or broadcasted conference calls.

Our conjecture is based on the following assumptions. First, soft information is better communicated by personal private interactions because it can be interpreted in one way or the other depending on specific contexts (Ijiri 1975). For example, a company's plan to expand into emerging markets or future perspectives of an R&D project can be interpreted as positive or negative news depending on the managerial ability and the corporate culture. Soft information senders, e.g., managers in this case, often feel more comfortable expressing their motives or intentions with trusted parties in a private face-to-face setting (see evidence in relationship lending summarized by Liberti and Petersen 2019). Moreover, companies and regulators tend to exclude soft information from written or publicly disseminated disclosures, e.g., conference calls, to minimize litigation risk or enforcement cost because soft information could cause disagreements or ambiguity (Schneider 1972). Therefore, private meetings become not only an effective but also a unique channel for investors to gather soft information from mangers.

Our second assumption is the complementarity relation between soft and hard information. Although soft information alone may increase disagreements or uncertainty, combining soft information with hard information potentially improves decision making (see evidence in credit market summarized by Liberti and Petersen 2019). The theoretical reasonings are grounded in twofold: hard information helps investors verify the truthfulness of soft information (Gigler and Hemmer 1998, Stocken 2000, Lundholm 2003, Ball et al. 2012) and soft information fulfills the missing content in hard information (Liberti and Petersen 2019). Referring to the previous example, realized earnings and other accounting numbers help investors evaluate the feasibility of

an expansion plan or R&D project and, at the same time, soft information helps investors interpret the missing content in the aggregated accounting numbers. Therefore, we conjecture that soft information exchanged during private face-to-face meetings resolves investor uncertainty upon the release of realized earnings.

To examine this hypothesis, we review press releases for a sample of 16,292 non-bundled earnings forecasts issued by 2,301 unique frequent forecasters from 2001-2014 drawn from the Corporate Issued Guidance (CIG) database and identify 7,779 non-bundled earnings forecasts in conjunction with investor meetings. Non-bundled forecasts are defined as forecasts issued outside of quarterly earnings announcement windows and frequent forecasters are defined as firms issuing four bundled earnings forecasts concurrently with quarterly earnings announcements. This research design is to hold constant the sample firm's ability to issue forecasts and the quality of information environment during earnings announcements.

Investor meeting forecasts account for nearly half of non-bundled forecasts issued by our sample firms, increasing from 4 percent in 2001 to 73 percent in 2014. These investor meetings occur at broker-hosted conferences (Bushee et al. 2011, 2017, Green et al. 2014), self-organized investor days (Kirk and Markov 2016), or roadshows within investors' offices (Bushee et al. 2018). Existing studies argue that investor meetings are driven by investor demand and better facilitate personal exchanges of soft information, such as managerial philosophy, than impersonal communication means (Solomon and Soltes 2015, Park and Soltes 2018). Coincided with the 2007-08 financial crisis, the number of investor meeting forecasts increases fourfold from 2006-2008, suggesting that investors demand face-to-face interactions after suspecting that the lack of soft information might cause the financial crisis. Roughly 29 percent of non-bundled forecasts mention unexpected economic events and the remaining 24 percent of forecasts appear to follow

a firm's routine practice because managers mention keywords, such as 'scheduled', 'mid-quarter', or 'no change in forecast'. Both routine and economic event forecasts are not involved in face-to-face interactions.

Investor meeting forecasts are distinctly different from routine or economic event forecasts across several attributes. First, the median horizon of investor meeting forecasts is 166 days, compared to 50 days for other forecasts, suggesting a longer horizon of forward-looking information. Second, the median width of investor meeting range forecasts is 5 percent, compared to 2-3 percent for other range forecasts, suggesting less precise information. Third, 86 percent of investor meeting forecasts confirm previously issued guidance (i.e., no news), compared to 61 percent of routine or 32 percent of economic event forecasts, suggesting less numeric news. Consistent with evidence in the existing studies, investor meeting forecasts generate only moderate short-run abnormal trading volume, compared to other forecasts or to earnings announcements (Bushee et al. 2011, Green et al. 2014). Firms with higher share turnover, followed by more analysts, or consistently meeting or beating analysts' forecasts have a greater propensity to issue investor meeting forecasts, consistent with investor meetings requested by high turnover institutional investors (Solomon and Soltes 2015) and hosted by large brokerage houses and their reputable analysts (Green et al. 2014).

We first analyze the short-window change in implied volatility around non-bundled forecasts and do not find economically significant difference between investor meeting and other forecasts, except for a smaller magnitude for investor meeting forecasts consistent with the abovementioned moderate short-window abnormal trading volume. To examine our hypothesis, the main analysis compares the next earnings announcements preceded by investor meeting forecasts to those preceded by routine or economic event forecasts. We restrict the event sample

to earnings announcements preceded by only one non-bundled forecast to hold constant the frequency of forecasts during the non-earnings announcement period. This research design choice along with the restriction to frequently forecasting firms attempts to hold constant the information environment across firms and quarters, so the treatment-control comparison captures the differential impacts between forecasts in conjunction with face-to-face private meetings and forecasts without personal interactions, such as forecasts being publicly disseminated by press releases or conference calls.

Consistent with our conjecture, the short-run reduced uncertainty at earnings announcements preceded by an investor meeting forecast is at least 33 percent greater than the reduced uncertainty at earnings announcements preceded by other forecasts, regardless of the sign of news. In terms of economic magnitude, implied volatility declines by 6.0% (3.7%) following positive (negative) news earnings announcements preceded by investor meeting forecasts, while implied volatility declines by only 4.5% (2.8%) following positive (negative) news earnings announcements preceded by other forecasts. The 0.9-1.5% incrementally reduced uncertainty associated with face-to-face private meetings is economically meaningful because the sample firm's average (median) change in implied volatility on a no-disclosure day is 0.07% (0.00%) and this magnitude is comparable to the impact of political uncertainty in Kelly et al. (2016).

We re-examine the short-window change in implied volatility around non-bundled forecasts and around the next earnings announcements in multivariate regressions that include an indicator for the sign of news, the absolute magnitude by news type, the Chicago Board Options Exchange Volatility Index around the disclosure date, forecast horizon or earnings surprise, and various lagged firm characteristics. Again, we do not observe investor meeting forecasts have any differential impacts on investor uncertainty around the issuance of forecasts (except for heightened

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uncertainty based on 60-days options), but we do find greater reduced uncertainty at the next earnings announcements for investor meeting forecasts (compared to routine or economic event forecasts) and this effect is declining as the option duration increases (t-stats are -3.49, -2.88, -1.79 and -1.37 for uncertainty based on 30-days, 60-days, 91-days, and 152 days options respectively).

In additional analyses, we examine whether soft information indeed underlies the result. First, because R&D projects contain substantial soft information (Bertomeu and Marinovic 2016, Vashishtha 2019), we partition the sample into two groups based on the pre-forecast R&D intensity, measured as the capitalized R&D following the industry estimates in Lev and Sougiannis (1996). We interact the meeting indicative variable with R&D intensive indicator and find that R&D intensive firms experience higher investor uncertainty following the release of investor meeting forecasts but experience a greater reduction in uncertainty around the next earnings announcements. This cross-sectional analysis supports the notion that soft information alone increases uncertainty but combining it with hard information reduces uncertainty. Moreover, this effect is present only when soft information is exchanged through face-to-face private meetings. Second, we use textual measures from investor conference transcripts (i.e., publicly disseminated company presentations and/or Q&A held in investor conferences) to validate the differential impacts on investor uncertainty between hard and soft information. Consistent the definition of hard and soft information, we use specific entity names (e.g., location, organization, person, money, percentage, time, and date) based on the Stanford Name Entity Recognizer to capture hard information and forward-looking sentences based on the list from Bozanic et al. (2018) to capture soft information. Consistent with our expectation, specific (forward-looking) terms are associated with reduced (increased) uncertainty around the issuance of investor meeting forecasts.

Overall, our study relates to three streams of literature, First, we contribute to the investor meeting literature by documenting the capital market benefit in resolving investor uncertainty. Existing studies observe moderate short-run average market reaction in stock prices, trading volume, or analyst revisions (Bushee et al. 2011, Green et al. 2014, Kirk and Markov 2016, Bushee et al. 2018) or intra-day information asymmetry among investors reflected in the size or timing of trades (Bushee et al. 2017, Solomon and Soltes 2015, Campbell et al. 2017). Our study highlights the usefulness of face-to-face private investor meetings in communicating soft information and subsequently its association with reduced investor uncertainty.

Our study also contributes to the soft information literature by identifying a specific channel for soft information to facilitate capital allocation. Existing studies on the usefulness of soft information primarily focus on the credit market when the information environment is opaque (e.g., Campbell et al. 2019 or see the review by Liberti and Petersen 2019). Moreover, existing studies often use indirect measures like distance (e.g., Berger et al. 2005) or narrowly defined proxies like quantitative vs. qualitative (Lev and Penman 1990, Bradshaw et al. 2019) to capture hard vs. soft information. Our study presents evidence that soft information supplements hard information in resolving investor uncertainty even in information-rich equity market and provides future research textual-based measures to capture hard and soft information.

Finally, our study relates to the investor uncertainty literature. Beyond the stylized fact of reduced uncertainty at earnings announcements in Patell and Wolfson (1979), only a few accounting studies examine the relation between accounting information and investor uncertainty, particularly measured as implied volatility derived from option prices. Both Rogers et al. (2009) and Billings et al. (2015) focus on the provision of voluntary earnings forecasts. Distinct from their focus, our study emphasizes the face-to-face private interaction in communicating soft information

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contained in earnings forecasts for a group of firms already regularly issuing forecasts. Our identified specific condition---the combination of hard information and soft information communicated through face-to-face private meetings--- adds the understanding of how accounting information reduces investor uncertainty.

Section 2 discusses our hypothesis, Section 3 describes data and summary statistics, Section 4 presents empirical results, and Section 5 concludes.

2. Hypothesis development

We conjecture that the combination of hard information (e.g., realized earnings) and soft information communicated through face-to-face private meetings helps resolve investor uncertainty and discuss the following assumptions that underlie our argument: 1) Face-to-face private meeting is an effective way to communicate soft information and 2) soft information supplements hard information in resolving investor uncertainty.

2.1 Face-to-face private meeting is an effective way to communicate soft information

The classification of hard and soft information relies on a multi-dimension continuum. The non-exclusive and non-exhaustive characteristics of hard (soft) information are historical (forward-looking), verifiable (non-verifiable), context independent (context dependent), quantitative (qualitative), and objective (subjective) (Schneider 1972, Ijiri 1975). For example, audited financial statements and realized earnings contain more hard information, while prospectus and earnings forecasts contain more soft information. Specific facts, e.g., who when what where in the past, contain more hard information than motives or intentions, e.g., integrity or honesty. Due to these differential attributes, communicating soft information is more costly and often requires personal interactions (Liberti and Petersen 2019).

Studies on small business lending highlight the importance of face-to-face interactions in exchanging soft information (e.g., Petersen and Rajan 1994, Uzzi 1999). Stein (2002) argues that the distinct characteristic of small business lending is its reliance on soft information, e.g., small business owner integrity or local market strength, and shows that a decentralized organization design, which encourages personal exchange of soft information, is more suitable for small business lending than a centralized organization design. Consistent with the Stein (2002) prediction, Berger et al. (2005) find that small banks lend more money to small business based on the personal collection of soft information, while large banks rely more on impersonal communications, such as accounting reports, credit ratings, or remote telecommunications.

Although important, personal communication has become less common due to the greater usage of computers and telecommunication equipment. Petersen and Rajan (2002) observe fewer personal interactions between lenders and small business borrowers, captured by their physical distance, because technology led lenders to rely more on hard information that can be communicated and stored electronically. The substitution of hard information for soft information becomes more pervasive after 2000 when securitization further increases the distance between lenders and borrowers; consequently, over reliance on hard information led to the 2007 subprime mortgage crisis (Rajan et al. 2010). Empirical evidence in Rajan et al. (2015) shows that due to a lack of soft information, interest rate on a loan became a poor indicator of default likelihood during the period from 2001-2006 when the securitization rate of subprime mortgages increased from 58 percent to 85 percent.

In summary, the existing literature in Finance suggests the usefulness of soft information in making loan decisions but also recognizes its high collection costs compare to hard information,

especially after recent developments of technologies. More importantly, face-to-face private interactions are required to effectively communicate soft information.[2]

Coincided with the increasing awareness of personal collection of soft information since 2007, an emerging body of accounting literature documents various venues where firms and investors physically meet concerning the value of equity security. Bushee et al. (2011) highlight the unique feature of personal interactions at conferences, over 80 percent of which are organized by brokerage houses, but document a moderate stock price or volume reaction during the three days surrounding a conference. Firms owning intangible assets are more likely to be invited to broker-hosted conferences (Green et al. 2014), suggesting that soft information regarding intellectual property is better communicated by face-to-face interactions. Bushee et al. (2017) further emphasize the importance of personal interactions at conferences during scheduled private meetings that are not webcasted and present information asymmetry between investors who attended in person and those who did not.[3] The propensity of scheduling a private meeting is positively associated with the concurrent issuance of earnings forecasts, earnings announcements, or 8-K filings, suggesting that private meetings may facilitate communications of soft information regarding earnings forecasts.

In contrast to broker-hosted conference that includes 15 to 25 firms, Kirk and Markov (2016) focus on investor/analyst day hosted by the firm itself and argue that the longer duration

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[2] Schneider (1972) further argues that security regulators and companies are reluctant to include soft information in publicly disseminated disclosures, such as SEC filings or company issued press releases, because the cost of verifying soft information is much higher than that of verifying hard information for the enforcement perspective and investors are more likely to mis-interpret soft information than hard information, potentially leading to higher litigation risk.
[3] Solomon and Soltes (2015) examine 935 one-on-one meetings between a mid-sized NYSE firm and 340 institutional investors during the period from 2004-2010 (64 percent of which take place at conferences, 23 percent are road shows within investors' offices, and 13 percent are events held at the firm's own sites) and document information asymmetry between investors who physically met with management and those who did not. Campbell et al. (2017) examine 8-K filings in conjunction with investor conferences and document that certain investors were able to trade ahead of the others.

and a wider range of presenters, including mid-level managers, customers, and suppliers, better facilitate personal communication of soft information, e.g., managerial talent and credibility. They further conjecture that personal interactions appeal to firms with high valuation uncertainty and document that R&D intensive firms more likely host an investor/analyst day. The third type of personal meetings take place at investors' offices (commonly known as roadshows). Bushee et al. (2018) use corporate jet flight patterns to infer roadshows and document moderate market reactions around meeting days.

Although abundant evidence on the incidences of investor meetings, little is known about the content of information exchanged at these meetings until a recent field study by Park and Soltes (2018). Based on 66 private meetings between a small-cap biotechnology firm and its investors (45 percent of which take place at conferences, 26 percent are road shows, and 29 percent on phone calls), they find that managerial philosophy questions are mostly asked at conferences where investors can evaluate the body language of managers. More than 70 percent of questions seek operational details about previously disclosed news, e.g., products, R&D, or manufacturing processes, suggesting that investors demand personal interactions to collect soft information.

Overall, these studies suggest that personal communications of soft information frequently take place at various investor meetings. Distinct from the existing investor meeting literature, our study examines only investor meetings in conjunction with an issuance of earnings forecast because our primary motivation is to examine the complementary relation between soft information revealed by earnings forecasts and hard information released at earnings announcements. Moreover, the issuance of earnings forecast suggests that managers perceive material information being exchanged at the concurrent investor meetings.

After a person collects soft information, it is also not easy for her to transmit this information to others (Liberti and Petersen 2019). Hence, the soft information collector and the decision maker are often the same person. For example, investors who attended a private meeting with mangers to gather proprietary soft information about an R&D project cannot easily and credibly transmit this information to other investors because soft information depends on specific contexts, e.g., body language or facial expressions, and the trust between the sender and the original receiver. A subsequent investor gathering the second-hand soft information may doubt the credibility of information or may interpret the information in a different way. Although existing studies have documented moderate market reactions or information asymmetry around the investor meeting date, we argue that soft information needs to be combined with hard information (e.g., realized earnings) in order to improve investors' average precision, regardless of when the soft information collected from private meetings is distributed to uninformed investors.

2.2 Complementary relation between hard information and soft information

Our study focuses on investor uncertainty because Lambert et al. (2011) show that only investors average precision (rather than information asymmetry) affects a firm's cost of capital in perfectly competitive capital market. The intuition is as follows. Although some investors attended a private meeting with investors to gather soft information and these informed investors are not able to credibly transfer the collected soft information to other investors due to the abovementioned reasons, eventually when the informed investors trade to earn a profit, their privately collected soft information will be reflected in the security price and uninformed investors can learn about the information indirectly by observing the price movements. Therefore, in a perfectly competitive capital market, i.e., a large number of very small investors, privately collected soft information will gradually be impounded in the stock price, improving the overall investors' average precision

or reducing investor uncertainty. However, information asymmetry between informed and uninformed investors do not affect the investors average precision because every investor is a price-taker in a perfectly competitive capital market.[4]

Only a few accounting studies examine the impact of accounting information on investor uncertainty. Patell and Wolfson (1979, 1981) observe a run-up in investor uncertainty, captured by implied stock return volatilities from exchange-traded option prices, prior to an earnings announcement and an immediate reversal on the announcement day. They hypothesize that such pattern captures investors' anticipation of a forthcoming disclosure event. When investors observe abnormally high stock return volatilities around past earnings announcements, they would build up their uncertainty in anticipation of an upcoming earnings announcement. Upon the release of actual earnings, such anticipation is realized, and uncertainty reverses back to its normal level. In addition to this anticipation effect, they further observe implied volatility declines below its pre-announcement level, suggesting that verifiable hard information potentially resolves investor uncertainty.

Rogers et al. (2009) examine the short-run change in investor uncertainty around voluntarily disclosed non-bundled earnings forecasts but do not observe a decline in implied volatility, potentially due to the unverifiable feature of soft information. They further examine the long-run change in uncertainty from the day before earnings forecast to the day after the next earnings announcement but fail to find that the issuance of non-bundled earnings forecast helps resolve investor uncertainty at earnings announcements. They conjecture that unexpected economic events, which are unobservable to researchers, potentially contaminate earnings

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[4] Armstrong et al. (2011) propose to use the number of shareholders (Compustat: CSHR) as a proxy for the level of competition in the equity market faced by a firm. We find that only 17 percent of our sample firms are in the bottom quintile of capital market competition based on the CRSP-Compsutat universe and more then 30 percent of our sample firms are in the top quintile, suggesting that most of our sample firms face a competitive equity market.

forecasts that are issued to help resolve uncertainty and provide indirect evidence of heightened uncertainty following the issuance of negative earnings news by infrequent forecasters. Different from the Rogers et al. focus on non-bundled earnings forecasts that are not issued concurrently with earnings announcements, Billings et al. (2015) argue and find evidence that the heightened implied volatility prior to an earnings announcement encourages the firm to issue an earnings forecast in conjunction with the actual earnings release. By doing so, forecasting firms experience a greater decline in implied volatility following earnings announcement than non-forecasting firms. Both Rogers et al. (2009) and Billings et al. (2015) focus on the provision of voluntary earnings forecasts. Distinct from their focus, our study emphasizes the face-to-face private communication of soft information contained in earnings forecasts for a group of firms already issuing forecasts concurrently with quarterly earnings announcements (i.e., a subset of the treatment group in Rogers et al. and Billings et al.).

Hard information is expected to reduce investor uncertainty (consistent with reduced uncertainty at earnings announcements in Patell and Wolfson 1979), while soft information is expected to increase investor uncertainty (consistent with increased uncertainty at non-bundled earnings forecasts in Rogers et al. 2009). We argue a complementarity relation between hard and soft information and conjecture the soft information communicated through face-to-face private meetings further facilitates reduced uncertainty at earnings announcements.

The theoretical reasonings are grounded in twofold: hard information helps investors verify the truthfulness of soft information (Gigler and Hemmer 1998, Stocken 2000, Lundholm 2003, Ball et al. 2012) and soft information fulfills the missing content in hard information (Liberti and Petersen 2019). For example, on the one hand, manager's optimistic view about an R&D project can be verified at earnings announcements when investors learn about summary statistics related

to the R&D investments or whether any key milestones are reached. On the other hand, the aggregated earnings or operating expense numbers may lose important information, but investors may be able to use previously gathered R&D information to better interpret the increase (decrease) in expenses (earnings). Therefore, we expect informed investors (i.e., those attended private meetings with managers) to trade more on their collected soft information upon the release of earnings announcements because of the complementarity relation between hard and soft information.

3. Data and empirical predictions

3.1 Frequent forecasters as our sample firms

Our sample construction starts with earnings forecasts drawn from the Company Issued Guidance database, a commonly used data source for the identification of earnings forecasts (see Appendix A for a list of 29 studies using this database).[5] Our sample period starts from 2001 after Regulation Fair Disclosure became effective in August 2000 because company forecasting behaviors change drastically after the prohibition of selective disclosure by Reg. FD. Specifically, Figure 1 presents that the number of firms issuing quarterly forecasts along with earnings announcements (named bundled forecasts) increases from 192 (8% of CIG forecasting firms) in 2001 to 1,468 (59% of CIG forecasting firms) in 2014 (see the sum of the dotted red and the double green lines), while the number of firms issuing only non-bundled forecasts (that are not concurrent with earnings announcements) decreases from 1,102 in 2000 to 103 in 2014 (the solid blue line).

Our sample restricts to firms issuing quarterly bundled forecasts (the sum of the dotted red and the double green lines in Figure 1) because Rogers et al. (2009) suspect that the infrequent

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[5] Our study does not consider the omitted forecasts from the CIG database. Unless CIG systematically omits investor meeting non-bundled forecasts, relative to routine or economic event forecasts, or vice versa, our results are unlikely to be influenced by the CIG coverage issue addressed by Chuk et al. (2013).

issuance of forecasts is likely driven by unexpected economic events. These frequent forecasters account for more than 50 percent of CIG forecasting firms during the recent period (2010-2014) and they represent a subset of regular forecasters in Rogers et al., identified as firms issuing forecasts in at least three quarters of a year. Our sample of frequent forecasters holds constant firms' abilities to issue additional forecasts and focuses on firms' willingness to provide forecasts.

The quarterly forecasters in our sample are mid-cap and matured firms (average $6 billion market cap and 19 years of publicly listing, Table 2 Panel A). Half of them are listed on NYSE, their annual buy-and-hold stock returns average at 0.21 and daily return volatility at 0.03. These firms have a daily bid-ask spread of 22 basis point and a daily share turnover of about 1 percent. Their average market-to-book ratio is 3.18 and their average return-on-asset ratio is 5 percent. About 18 percent of them incur losses and 41 percent of them operating in high litigation industries (i.e., biotech, computer, electronics, and retailing). R&D expenditures, intangible assets, and long-term debts account for 5 percent, 24 percent, and 19 percent of their total assets, respectively. When comparing to the Rogers et al. identified regular forecasters, our sample firms share a similar size, age, and many other firm characteristics but are very different from their identified sporadic forecasters (see Table 2 Panel A), confirming that our sample firms represent a subset of Rogers et al. regular forecasters.

The median daily change in implied volatility during non-disclosure days is close to zero (-0.00001). We define non-disclosure days as those outside of the three days surrounding earnings guidance, dividend announcements, and earnings announcements. The average daily change in implied volatility is 0.0007, higher than the median of zero and suggesting a potential outlier issue (also indicated by a high standard deviation of 0.0574). Due to the skewness of the sample firms' implied volatility distribution, our analysis focuses on the median change around a disclosure event

rather than the average change. The interquartile range of daily changes in implied volatility is 0.0189 (25th -0.91% and 75th 0.98%). Our sample firms' median daily change in implied volatility is one tenth of the Rogers et al. regular forecasters' median (-0.0001); hence, their event study results are generally greater than ours by a factor of ten.[6]

3.2 Three distinct types of non-bundled forecasts by sample firms

We focus on non-bundled forecasts issued by our sample firms because our goal is to examine the complementary relation between soft information in earnings forecasts and hard information in the next earnings announcements. Approximately 57 percent of our sample firms issue additional non-bundled forecasts between two quarterly earnings announcements (presented by the dotted red line in Figure 1). We read through press releases of 18,874 non-bundled forecasts issued by 8,312 firms to identify forecasts that involve investor meetings. Our hand collection scope of an average 593 firms per year across 14 consecutive years from 2001-2014 is at least ten times greater than the scope in Chuk et al. (2013) who focus on a total of 600 firm-years from six non-consecutive years (1997, 1999, 2001, 2003, 2005, and 2007). Our data potentially provides more comprehensive insights about the latest guidance practice.

Out of 18,874 non-bundled forecasts, we cannot identify the corresponding press releases for only 608 events (3 percent) and we cannot identify detailed textual descriptions for 486 events (see Table 1 Panel A). Moreover, we remove 1,488 events that are concurrent with other major disclosure events, such as earnings pre-announcements, earnings scheduling announcements, or dividend announcements, to isolate the impact of earnings guidance. We classify the remaining

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[6] Moreover, Rogers et al. report the average change while we report the median change due to concerns about outliers. Median daily change is often much smaller than daily average change. Further, their sample period spans from 1996-2006, while ours is from 2001-2014. The pre-2001 period has a greater daily change in implied volatilities because of the heightened uncertainty about future growths of technology firms in the late 1990s (Pastor and Veronesi 2006).

16,292 events, representing 7,184 firm-years or 2,105 unique firms, into three groups: routine forecasts, investor meeting forecasts, and economic event forecasts.

We classify a guidance event as routine if managers mention "mid-quarter", "end-of-year outlook", "scheduled forecast", "sales report", or "no change in forecasts" in the title or the first few paragraphs of a press release. 'Mid-quarter update' is a term frequently used by firms in their issuances of forecasts during the non-earnings announcement seasons.[7] When a firm issued a mid-quarter update in the past, investors would expect another update in the future. Therefore, we consider mid-quarter updates as a routine practice. Similarly, firms often use "end-of-year outlook" in their non-bundled forecasts prior to the release of annual earnings and investors likely expect another end-of-year outlook going forward. Scheduled forecasts mean that firms issued a notification in advance prior to the guidance, similar to earning announcement notifications examined in Chapman (2018). Such notifications suggest that investors anticipate a forthcoming guidance event and provide an opportunity for researchers to examine the investor anticipation effect. Monthly sales reports are common practices by retailers (van Buskirk 2012), so we classify these monthly updates as routine. Lastly, a guidance update confirming previously issued earnings forecasts suggests that firms may commit to a routine schedule even when there is no change in management forecasts. Overall, the total 3,858 routine forecasts account for 24 percent of the 16,292 non-bundled guidance sample. "No change in forecast" represents 41 percent of routine forecasts, followed by "sales report" 37 percent.

We identify 7,779 forecasts in conjunction with investor meetings, representing 48 percent of the 16,292 sample; for example, press release titled 'Sonus Hosts Investor Day; Introduces Financial Targets for 2015' or' ValueClick to Present at Upcoming Investor Conferences, Provides

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[7] See a discussion of mid-quarter updates in the IR magazine at https://www.irmagazine.com/reporting/scrapping-mid-quarter-updates.

Preliminary 2005 Guidance.' Approximately 10 percent of investor meetings are organized by the disclosing firm itself (e.g., investor/analyst day in Kirk and Markov 2016) and the remaining 90 percent are organized by a third party, e.g., investor/industry conferences in Bushee et al. (2011) and Green et al. (2014) or roadshows with investors in Bushee et al. (2018).[8] These forecasts are issued in conjunction with investors, potentially in compliance with Reg. FD.

Lastly, we identify 4,655 economic event forecasts, representing 29 percent of the 16,292 sample. Operational changes, delays, or improvements account for 23 percent of economic events and updates on demand for products or services represent 21 percent, consistent with firms constantly facing uncertainties in their operating input and output markets. Investing (e.g., M&A and divestures) and financing decisions together account for 27 percent of economic events. The remaining economic events are triggered by issues with various stakeholders, such as management, plaintiffs, media, counterparties, strategic partners, employees, and regulators, or by unexpected shocks like weather.

3.3 Heterogeneity among three types of non-bundled forecasts

We report various descriptive statistics across the three types of non-bundled forecasts as a validation for our proprietary identification approach and to further provide insights into the heterogeneity among routine, investor meeting, and economic event forecasts.

Investor meeting forecasts account for most non-bundled forecasts during the recent years. Figure 2 presents the number of forecasts by year. Routine forecasts start from 100 events in 2001, peak at 422 events in 2005, and then decline to 155 events in 2014, coincided with the McKinsey's commentary on the downside of issuing earnings guidance.[9] Economic event forecasts start from

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141 events in 2001 and maintain around 300-400 events per year, consistent with the random arrivals of unexpected business events. Surprisingly, investor meeting forecasts increase from 11 evens (4 percent of sample forecasts) in 2001 to 1,253 events (73 percent of sample forecasts) in 2014. The rapid increase during the 2007-2008 period coincides with poorly performing statistical models that rely heavily on hard information (Rajan et al. 2010, 2015), which potentially encourages investors to demand face-to-face meetings to collect soft information. This trend is also consistent with the increasing number of investor conference presentations held in the U.S. presented by Bushee et al. (2017).

The investor meeting forecast practice is more persistent than the routine or economic event forecast practice. On average, a firm issues investor meeting forecasts for 4.77 years (2,904 firm-years divided by 609 unique investor meeting forecasters in Table 1 Panel A), compared to 2.86 years for routine forecasters or 2.36 years for economic event forecasters. The likelihood of a firm continuing an investor meeting forecast practice in the next quarter, in the same quarter of the next year, or in any quarters during the next year, is 36%, 30% or 44% respectively, compared to 30%, 28%, 34% for the routine forecast practice or 15%, 11%, 25% for the economic event forecast practice (Table 1 Panel B). Economic events, e.g., supply chain disruptions or labor disputes, take time to resolve, so we do not expect their persistency rates to be zero. Routine forecasts are expectedly more persistent with economic event forecasts, but investor meeting forecasts are surprisingly more persistent than routine and economic event forecasts. These statistics suggest that investors and brokerage analysts persistently invite the same group of firms to meetings.

In terms of earnings forecast attributes, investor meeting forecasts are issued more frequently, contain longer run forward-looking information, and have a wider forecast range, than routine or economic event forecasts. On average, our sample frequent forecasters issue 2.68

investor meeting forecasts, 2.35 routine forecasts, or 1.76 economic event forecasts in a year (Table 1 Panel A). Roughly 70 percent of routine or economic event forecasters issue one non-bundled forecast per year, while nearly 50 percent of investor meeting forecasters issue more than one non-bundled forecasts per year (Table 1 Panel C). Moreover, the median horizon of investor meeting forecasts is 166 days or 5.5 months, suggesting that firms discuss long-run earnings forecasts during investor meetings potentially to avoid attracting transient investors (see the argument in Bushee 1998 and Brochet et al. 2015). These long-horizon forecasts correspond to the wider forecast range (median width 5%, compared to other forecasts' width of 2-3%) due to the difficulty in forecasting earnings far in the future. These statistics suggest a substantial amount of forward-looking soft information in investor meeting forecasts, relative to routine and economic event forecasts. In terms of industry breakdown, investor meeting forecasts present a similar distribution as the CRSP-Compustat universe. We include industry fixed effects in analyses to capture any industry specific practices.

Over 80 percent of investor meeting forecasts confirm previously issued management forecasts. We present the portion of positive versus negative news for each type of forecast in Table 1 Panel D. The first news measure is based on the sign of three-day cumulative abnormal returns around the forecast date (following Rogers et al. 2009) and capture surprises to investors. The second news measure is based on the difference between management forecasts and the most recent analyst forecast consensus prior to the forecast (following Kothari et al. 2009) and capture surprises to analysts. The third measure is based on the difference between management forecasts and the previously issued forecasts because managerial asymmetric disclosure behavior is more likely to be found by forecast upgrades versus downgrades. For the first two news measures, three types of non-bundled forecasts are split almost evenly between good and bad news. For the third

news proxy, 86 percent of investor meeting forecasts reiterate the previously issued forecasts, compared to 61 percent of routine forecasts and 32 percent of economic event forecasts. This suggests a substantial amount of qualitative information in investor meeting forecasts.

Investor meeting forecasts are associated with limited short-run trading activities. We examine short run realized stock return volatilities around these three types of forecasts in Table 1 Panel E, following the analysis in Beaver (1968). Abnormal realized volatility is measured as $R_s = \varepsilon_s^2 / \bar{\varepsilon}^2$ where ε_s^2 is the squared residual return on the event date s. Residual return is a firm's daily return minus the weighted average market return. $\bar{\varepsilon}^2 = \frac{1}{N} \sum_{t=1}^{N} where\ \varepsilon_t^2$ is the squared average residual return during the non-disclosure period by removing three days around earnings guidance, dividend announcements, and earnings announcements in the year prior to the forecast. We find that realized return volatilities peak at 0.94 on the issuance day of routine forecasts or peak at 0.95 on the issuance day of economic event forecasts, greater than the magnitude of 0.89 on the day after earnings announcements by all CRSP-Compustat firms during the sample period. However, realized return volatilities peak at only 0.42 on the issuance day of investor meeting forecasts, potentially due to unverifiable soft information contained in investor meeting forecasts preventing investors from trading immediately. The moderate short-run market reaction to investor meeting forecasts is consistent with the evidence in existing investor meeting studies (e.g., Bushee et al. 2011 Table 3, Green et al. 2014 Table 5 Panel A.2).

We develop a determinant model to further shed light on the nature of firms adopting a certain type of forecasting practice.[10] Table 2 Panel B presents a multinomial logistic regression with a sample of 8,692 firm-years during 2001-2014 that have available data in CRSP,

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[10] Out of 7,184 firm-years, 73 percent adopt a pure practice, i.e., issuing only routine, investor meeting, or economic event forecasts in a year. Descriptive statistics in Tables 1-4 include mixed practices firms; however, our main analysis in Tables 5-6 and 8-9 restricts to earnings announcements preceded by only one type of non-bundled forecast.

OptionMetrics, and relevant databases to calculate firm characteristics. The benchmark group includes 4,035 firm-years that issue quarterly bundled forecasts without any non-bundled forecasts released between earnings announcements. We examine the choice to issue routine non-bundled forecasts, the choice to issue investor meeting forecasts, and the choice to issue economic event forecasts.[11] We include a list of firm characteristic determinants based on Francis et al. (1994), Rogers et al. (2009), Houston et sl. (2010), Chen et al. (2011), Bushee and Miller (2012), Kirk and Vincent (2014), Ali et al. (2014), Kirk and Markov (2016) and follow Green et al. (2014) to include year and industry (SIC two-digit) fixed effects and cluster standard errors by firm.

Our pseudo-R^2 of 0.21 is higher than 0.16 in Chen et al. (2011) and similar to 0.21 in Houston et al. (2010) when they examine the decision to terminate quarterly guidance. We find that in general non-bundled forecasters have a lower bid-ask spread than bundled-only forecasters. Moreover, routine and investor meeting forecasters are larger in size, more likely listed on the NYSE, and have higher past returns, consistent with high return momentum firms less likely to terminate guidance in Chen et al. (2011) and Houston et al. (2010). Routine and investor meeting forecasters tend to issue more press releases, consistent with their stronger internal investor relations because forecasts are often issued in press releases (Kirk and Vincent 2014).

However, investor meeting forecasters are distinctly different across several firm characteristics. They have higher share turnover, consistent with the observation in Solomon and Soltes (2015) Table 5 that high turnover investors are more likely to meet with firms, especially hedge funds. They are followed by more analysts and consistently meeting/beating analysts' forecasts, consistent with the observation that larger brokerage houses and experienced reputable analysts are more likely to host conferences (Green et al. 2014) and that analysts sometimes pay

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[11] In a robustness check, we find similar results when including only pure practice firms in the determinant model.

for in-house meetings or road shows in addition to conferences (Solomon and Soltes 2015). Less visible firms, captured by fewer media articles, are more likely to issue investor meeting forecasts, consistent with these firms hiring external investor relations to enhance their visibility by soliciting investor meeting invitations (Bushee and Miller 2012). In contrasts, firms operating in high litigation industries (i.e., biotech, computer, electronics, and retailing) or having higher profitability (deep pocket) are more likely to issue economic event forecasts, consistent with the argument in Skinner (1994). Lastly, firms tend to follow the same practice over time as indicated by the significant diagonal trend in the past forecasting history, consistent with the persistency rates presented in Table 1 Panel B. Moreover, when more peer firms issuing investor meeting forecasts, a firm is less likely to do so, consistent with limited space in a conference and suggesting an intra-industry substitution effect.

4. Empirical results

4.1 Investor uncertainty at non-bundled earnings forecasts

Our first analysis is on the short-run change in implied volatilities around the three types of non-bundled forecasts. Specifically, we report the median change in implied volatilities during four days prior to a disclosure event [-4,-1] and the median change during three days upon the release of disclosure [-1,+1]. The sum of changes across the two windows [-4,+1] examines whether a disclosure resolves investor uncertainty. We choose to focus on the median change rather than the average change because the distribution of the sample firms' daily implied volatility change is skewed (see Table 2 Panel A). Although median change presents a smaller magnitude, it is less likely to be driven by influential observations.

Implied volatility is measured as the average of thirty-day call and put at-the-money options from OptionMetrics. Untabulated analyses based on longer durations of options are

available upon request. In general, we find weaker results as the duration of options extends, consistent with the evidence in Patell and Wolfson (1979, 1981). We rely on three approaches to identify the sign of news: the three-day cumulative abnormal returns around the disclosure, the difference between management forecasts and the most recent analyst forecast consensus, and the difference between management forecasts and the previously issued forecasts. Our reported table is based on the three-day CAR because this news measure is less influenced by the disclosing firm's management, unlike the other two news proxies. However, we obtain consistent results using the other two news proxies and these untabulated analyses are available upon request. Our primary sample requires available data in CRSP and OptionMetrics, and we lose 14 percent and 13 percent of the events respectively. We further match investor meeting forecasts with the other two types of forecasts within the same SIC two-digit industry based on the control variables listed in Table 7.

We find a significant anticipation effect leading up to the issuance of routine forecasts, but not prior to investor meeting or economic event forecasts, confirming that routine practices are anticipated by investors. Specifically, implied volatility increases 38 basis points during the four days [-4,-1] prior to good news (including no news) routine forecasts (Table 3 and Figure 3) and increases 55 basis points prior bad news routine forecasts (Table 4 and Figure 4).[12] Upon the release of routine forecasts, implied volatility immediately reverses back to its pre-forecast level, consistent with the pattern observed by Patten and Wolfson (1979, 1981) around quarterly earnings announcement although the magnitude is smaller.[13] In contrasts, the run-up in implied volatility

[12] Figure 3 reports the median level of implied volatilities and Table 3 reports the median change in implied volatilities, so numbers do not exactly correspond to each other. Similarly, all the following figures report the median level and tables report the median change. Since our empirical predictions focus on the changes, we examine statistical and economic significance on changes and report levels in figures for illustration.
[13] This anticipation effect holds for each routine subcategory ("mid-quarter", "end-of-year outlook", "scheduled forecast", "sales report", or "no change in forecasts") except for mid-quarter updates or end-of-year outlooks conveying positive news. We also examine firms that issued at least a routine non-bundled forecast in the previous

prior to investor meeting or economic event forecasts is much weaker because economic events are mostly unexpected and investor meetings are pre-scheduled within a small group of investors and analysts.

When a forecast conveys positive news, a greater reduction in uncertainty occurs following routine forecasts, but there is mixed evidence regarding whether investor meeting forecasts have a differential impact on the short-run investor uncertainty from economic event forecasts (see Table 3). When a forecast conveys negative news, the increased uncertainty around economic event forecasts is greater than that around routine forecasts, and investor meeting forecasts experience a moderate climb-up in investor uncertainty (see Table 4). In general, we find that investor meeting forecasts are associated with only moderate changes in implied volatility and their impact on investor uncertainty is not significantly different from that by routine or economic event forecasts, suggesting that soft information alone does not necessarily reduce investor uncertainty.

4.2 Investor uncertainty at the next earnings announcements

We examine our main hypothesis around the next earnings announcements following the non-bundled earnings forecasts in our sample. Since the three types of non-bundled forecasts have heterogeneous frequencies, we restrict our sample to earnings announcements preceded by only one non-bundled forecast during the ninety days window. We hypothesize that investor meeting forecasts are associated with a greater reduction in investor uncertainty at earnings announcements

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quarter but stop doing so in the current quarter to see if investors anticipated effect occurs around the expected forecasting date, based on a time lag or a certain weekday relative to the fiscal reporting end date (Givoly and Palmon 1982, Chambers and Penman 1984, Begley and Fischer 1998, Cohen et al. 2007 Appendix A). We find a significant run-up of 25-26 basis points leading up to the expected forecasting date (even ex-post no forecast was issued) and this result is robust to excluding sales reports or using a longer-duration of options.

because face-to-face private meetings more effectively communicate soft information than written press releases or remote conference calls used to disseminate routine or economic event forecasts.

Conditional on earnings announcements conveying positive news, we find that EAs preceded by an investor meeting forecast experience a reduction of 6.07% in investor uncertainty, compared to 4.31% for those preceded by a routine forecast or 4.48% for those preceded by an economic event forecast (Table 5). On average, investor uncertainty is reduced by 17 percent at positive news earnings announcements with earlier personal interactions but reduced by only 11 percent at those without earlier personal interactions (Figure 5). The difference between positive news EAs preceded by investor meeting forecasts and positive news EAs preceded by routine or economic event forecasts is significantly different from zero (p-value<0.01 for either the unmatched or matched sample).

We find consistent results for earnings announcements conveying negative news. EAs preceded by an investor meeting forecast experience a reduction of 3.71% in investor uncertainty, compared to 2.80% for those preceded by a routine forecast or 2.54% for those preceded by an economic event forecast (Table 6). On average, investor uncertainty is reduced by 12 percent at negative news earnings announcements with earlier personal interactions but reduced by only 9 percent at those without earlier personal interactions (Figure 6). The difference between negative news EAs preceded by investor meeting forecasts and negative news EAs preceded by routine or economic event forecasts is significantly different from zero (p-value<0.01 for the unmatched sample and p-value=0.3 or 0.7 for the matched sample).

In summary, we find consistent evidence with our conjecture than earnings announcements preceded by face-to-face private exchange of soft information experience a greater degree of reduced uncertainty, regardless of the sign of news. The 0.91-1.76% incrementally reduced

uncertainty associated with face-to-face private meetings is economically meaningful because the sample firm's average (median) no-disclosure day's change in implied volatility is 0.07% (0.00%) and is similar to the impact of political uncertainty documented in Kelly et al. (2016).

4.3 Multivariate regressions

We pool three types of non-bundled forecasts from Tables 3-4 in an OLS regression and create a dummy variable that equals one for investor meeting forecasts and zero for the other two types of forecasts. The advantage of a multivariate regression is that we can control for market-level uncertainty, captures by the change in VIX during the event window and year fixed effects. The type and magnitude of news, captured by the three-day stock price reaction, and determinants of uncertainty used in Rogers et al. are included. Please refer to Appendix B for their definitions. Moreover, standard errors are clustered by firms to capture correlated corporate policies and industry fixed effects are included to capture industry practices.

We use a variety of option durations: 30 days, 60 days, match option duration with the difference between the forecast date and the next EA date, match with the expected EA date based on a time lag or a certain weekday. Following the expected earnings announcement literature, we identify expected earnings announcement dates based on two approaches. First, time lag is the difference between the earnings announcement date and the fiscal quarter end date (Givoly and Palmon 1982, Chambers and Penman 1984, Begley and Fischer 1998). For example, an earnings announcement was issued on May 1 for the fiscal quarter ended on March 31. The expected earnings announcement date for the same quarter in the future year is 31 days after March 31. Second, certain weekday is a particular day of the Nth month relative to the fiscal quarter end date, e.g., the first Monday of May after the fiscal quarter ended on March 31 (see Cohen et al. 2007 Appendix A for details).

In Table 7, we find that investor meeting forecasts do not have significantly differential impacts on investor uncertainty upon the release of forecasts, except for a heightened uncertainty based on the 60-days option prices. In Table 8, we switch to examine the change in implied volatility around the next earnings announcements following the non-bundled earnings forecasts examined in Table 7. We restrict the sample to include earnings announcements preceded by only one non-bundled forecasts during the ninety days window to hold constant the frequency of earnings forecasts. All control variables are consistently measured as those in Table 7, except for an additional variable, earnings surprise, measured as the difference between realized earnings and average analyst consensus prior to earnings announcements to capture hard information in earnings. We find that earnings announcements preceded by investor meetings experience a greater reduction in uncertainty by 1.6 percent for 30 days options (p-value<0.01), by 1.0 percent for 60 days options (p-value<0.01), by 0.5 percent for 91 days options (p-value<0.10), and by 0.3 percent for 152 days options (insignificant). The declining effect as duration increases is consistent with the evidence in Patell and Wolfson (1979, 1981) because another earnings announcement is expected to be issued within ninety days and potentially another investor meeting is scheduled in a near future where investors can update their information. This result is robust to an extensive regression model that includes all lagged firm characteristics from the Table 2 determinant model. Taken together, we find consistent evidence that the reduced uncertainty at earnings announcements preceded by an investor meeting forecast is greater than the reduced uncertainty at earnings announcements preceded by other forecasts, regardless of the sign of news.

4.4 R&D intensive firms

In this additional analysis, we attempt to shed light on soft information underlies the abovementioned results. Motivated by Bertomeu and Marinovic (2016) and Vashishtha (2019),

we use R&D intensity to identify firms with substantial soft information. Specifically, we partition the event sample into two groups based on prior-disclosure R&D intensity, measured as the capitalized R&D following the industry estimates in Lev and Sougiannis (1996) divided by lagged total assets. In Table 9, we find that R&D intensive firms experience higher investor uncertainty following the investor meeting forecasts but experience a greater reduction in uncertainty following the next earnings announcements. This cross-sectional analysis supports the notion that soft information alone increases uncertainty but combining it with hard information at earnings announcements reduces uncertainty. Moreover, this effect is present only when soft information is exchanged through face-to-face private meetings.

4.5 Investor conference transcripts

Our last analysis validates the differential impacts on investor uncertainty between hard and soft information. According to the definition of hard and soft information from the law, finance, and accounting literature, we use specific entity names (e.g., location, organization, person, money, percentage, time, and date) based on the Stanford Name Entity Recognizer to capture hard information and forward-looking sentences based on the list from Bozanic et al. (2018) to capture soft information. We collect investor conference transcripts (i.e., publicly disseminated company presentations and/or Q&A held in investor conferences) and assume that transcripts containing more specific (forward-looking) terms reflect business events that require more hard (soft) information to communicate. In Table 10, we find that specific (forward-looking) terms are associated with reduced (increased) uncertainty around the issuance of investor meeting forecasts after controlling for various firm characteristics (see Table 7) and several commonly used textual measures (length, Fog index, or tone). This within investor meeting forecasts cross-sectional analysis validates that soft information in earnings forecasts increases investor

uncertainty while hard information in earnings forecasts reduces uncertainty.[14] Taken together with our R&D intensity analysis, our previous evidence on the resolved uncertainty at earnings announcements is likely to be driven by soft information exchanged in face-to-face private meetings.

5. Conclusion

We argue and present evidence that face-to-face private interactions at investor meetings are associated with a greater reduction in investor uncertainty at earnings announcements, potentially due to the more effective communication of soft information during private meetings. Specifically, in a sample of firms already issuing quarterly earnings forecasts in conjunction with earnings announcements, we find that the reduced uncertainty at earnings announcements preceded by an investor meeting forecast is at least 33 percent greater than the reduced uncertainty at earnings announcements preceded by other forecasts, regardless of the sign of news. This result is driven by R&D intensive firms who potentially possess substantial soft information. The textual analysis on the investor conference transcripts validates that soft (hard) information increases (reduces) uncertainty upon the issuance of earnings forecasts.

Our findings provide several implications for future research. First, the interaction between soft and hard information has received limited attention in the literature (Vashishtha 2019) and recent theoretical studies often argue a substitution relation between the *provisions* of hard and soft information (Bertomeu and Marinovic 2016, Edmans et al. 2016). Our study switches gear to focus on the complementarity relation between the *usages* of hard and soft information. However,

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[14] We also use uncertain words from Loughran and McDonald and a subjectivity measure from political science to capture soft information, but do not find any significant impacts on investor uncertainty.

more work is needed to further understand the interaction between hard and soft information because the two types of information are often blended together in various corporate disclosures.

Our study also takes an initial step to measure both hard and soft information based on texts. Existing studies often use narrowly defined proxies such as quantitative vs. qualitative (Lev and Penman 1990, Bradshaw et al. 2019) to capture hard vs. soft information. We use specific entity names (people, place, time, organization) to capture hard information and forward-looking terms to capture soft information. Future researchers may consider using creative approaches to identify non-verbally communicated soft information, e.g., verbal cues in Mayew and Venkatachalam (2012), body movements, or using field experiments to open the black box of private meetings, e.g., Park and Soltes (2018).

Lastly, the heterogeneity among investor meeting, routine, and economic event forecasts provides an important implication for researchers relying on the count of CIG earnings forecasts as a proxy for managerial willingness to disclose (see Appendix A for a list of 29 published accounting papers using this empirical proxy from 2013-2018) and fruitful opportunities for researchers to exploit the differential natures among earnings forecasts. Investor meetings are potentially driven by investor demand or brokerage house financial analysts' choice. Economic events are caused by business shocks that are often unobservable to researchers but are correlated with the firm's operations. Routine forecasts are probably closer to the firm's willingness to disclose construct researchers attempt to capture. Future researchers may consider removing non-bundled earnings forecasts that are in conjunction with investor meetings or economic events to have a cleaner empirical proxy for managerial disclosure propensity.

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Appendix A Studies Using the CIG Guidance Counts as the Main Empirical Proxy

Paper	Main Empirical Proxy
Ali, A., Klasa, S. and Yeung, E., 2014. Industry concentration and corporate disclosure policy. Journal of Accounting and Economics, 58(2-3), pp.240-264.	Use the frequency counts of management forecasts to proxy for the willingness to disclose (Table 2)
Aobdia, D., 2018. Employee mobility, noncompete agreements, product-market competition, and company disclosure. Review of Accounting Studies, 23(1), pp.296-346.	Use the dichotomous variable and the frequency counts of management forecasts to proxy for the willingness to disclose (Table 3)
Baginski, S.P. and Hinson, L.A., 2016. Cost of capital free-riders. The Accounting Review, 91(5), pp.1291-1313.	Use the number of quarters in which a quarterly management forecast occurs (Table 4)
Billings, M.B. and Cedergren, M.C., 2015. Strategic silence, insider selling and litigation risk. Journal of Accounting and Economics, 59(2-3), pp.119-142.	Use the dichotomous variable of management forecasts to proxy for the willingness to disclose (Table 4)
Billings, M.B., Jennings, R. and Lev, B., 2015. On guidance and volatility. Journal of Accounting and Economics, 60(2-3), pp.161-180.	Use the dichotomous variable of management forecasts to proxy for the willingness to disclose (Table 3)
Bourveau, T., Lou, Y. and Wang, R., 2018. Shareholder litigation and corporate disclosure: Evidence from derivative lawsuits. Journal of Accounting Research, 56(3), pp.797-842.	Use the frequency counts of management forecasts to proxy for the willingness to disclose (Table 4)
Bova, F., Dou, Y. and Hope, O.K., 2015. Employee ownership and firm disclosure. Contemporary Accounting Research, 32(2), pp.639-673.	Use the frequency counts of management forecasts to proxy for the willingness to disclose (Table 3)
Brochet, F., Loumioti, M. and Serafeim, G., 2015. Speaking of the short-term: Disclosure horizon and managerial myopia. Review of Accounting Studies, 20(3), pp.1122-1163.	Use the number of quarters per year during which the firm issues earnings guidance to proxy for short-term pressure (Table 5)
Cai, Y., Dhaliwal, D.S., Kim, Y. and Pan, C., 2014. Board interlocks and the diffusion of disclosure policy. Review of Accounting Studies, 19(3), pp.1086-1119.	Use the dichotomous variable of stopping management forecasts to proxy for the willingness to disclose (Table 3)
Cassell, C.A., Huang, S.X. and Sanchez, J.M., 2013. Forecasting without consequence? Evidence on the properties of retiring CEOs' forecasts of future earnings. The Accounting Review, 88(6), pp.1909-1937.	Use the dichotomous variable and the frequency counts of management forecasts to proxy for the willingness to disclose (Table 4)
Chapman, K. and Green, J.R., 2017. Analysts' Influence on Managers' Guidance. The Accounting Review, 93(1), pp.45-69.	Use the dichotomous variable of management forecasts to proxy for the willingness to disclose (Table 4)
Clinton, S.B., White, J.T. and Woidtke, T., 2014. Differences in the information environment prior to seasoned equity offerings under relaxed disclosure regulation. Journal of Accounting and Economics, 58(1), pp.59-78.	Use the dichotomous variable and the frequency counts of management forecasts to proxy for the willingness to disclose (Table 4)
Ertimur, Y., Sletten, E. and Sunder, J., 2014. Large shareholders and disclosure strategies: Evidence from IPO lockup expirations. Journal of Accounting and Economics, 58(1), pp.79-95.	Use the dichotomous variable of management forecast to proxy for the willingness to disclose (Table 3)
Heflin, F., Kross, W.J. and Suk, I., 2015. Asymmetric effects of regulation FD on management earnings forecasts. The Accounting Review, 91(1), pp.119-152.	Use the dichotomous variable of management forecasts and the fraction of quarters with MFs that contain downward guiding MFs to proxy for the strategic disclosure behavoir(Table 3)

Appendix A Studies Using the CIG Guidance Counts as the Main Empirical Proxy (Cont.)

| Paper	Main Empirical Proxy
Hilary, G. and Shen, R., 2013. The role of analysts in intra-industry information transfer. The Accounting Review, 88(4), pp.1265-1287.	Use the frequency counts of management forecasts to proxy for the information the analysts have (Table 3)
Hribar, P. and Yang, H., 2016. CEO overconfidence and management forecasting. Contemporary Accounting Research, 33(1), pp.204-227.	Use the dichotomous variable of management forecasts to proxy for the willingness to disclose (Table 4)
Huang, Y., Jennings, R. and Yu, Y., 2016. Product market competition and managerial disclosure of earnings forecasts: Evidence from import tariff rate reductions. The Accounting Review, 92(3), pp.185-207.	Use the frequency counts of management forecast to proxy for the willingness to disclose (Table 3)
Kim, J.B., 2016. Accounting flexibility and managers' forecast behavior prior to seasoned equity offerings. Review of Accounting Studies, 21(4), pp.1361-1400.	Use the dichotomous variable and the frequency counts of management forecasts to proxy for the willingness to disclose (Table 4)
Kim, Y., Su, L.N. and Zhu, X.K., 2017. Does the cessation of quarterly earnings guidance reduce investors' short-termism?. Review of Accounting Studies, 22(2), pp.715-752.	Use the dichotomous variable of stopping management forecasts to proxy for the willingness to disclose (Table 4)
Koo, D.S. and Lee, D., 2017. Influential Chief Marketing Officers and Management Revenue Forecasts. The Accounting Review.	Use the dichotomous variable and the frequency counts of management forecasts to proxy for the willingness to disclose (Table 2)
Li, Y. and Zhang, L., 2015. Short selling pressure, stock price behavior, and management forecast precision: Evidence from a natural experiment. Journal of Accounting Research, 53(1), pp.79-117.	Use the dichotomous variable of management forecasts to proxy for the willingness to disclosure (Table 3)
Lin, Y., Mao, Y. and Wang, Z., 2017. Institutional Ownership, Peer Pressure and Voluntary Disclosures. The Accounting Review.	Use the dichotomous variable and the frequency counts of management forecasts to proxy for the willingness to disclose (Table 3)
Lo, A.K., 2014. Do declines in bank health affect borrowers' voluntary disclosures? Evidence from international propagation of banking shocks. Journal of Accounting Research, 52(2), pp.541-581.	Use the dichotomous variable of management forecasts to proxy for the willingness to disclosure (Table 3)
Nagar, V., Schoenfeld, J. and Wellman, L., 2018. The effect of economic policy uncertainty on investor information asymmetry and management disclosures. Journal of Accounting and Economics.	Use the frequency counts of management forecast to proxy for the willingness to disclose (Table 7)
Pae, S., Song, C.J. and Yi, A.C., 2016. Career concerns and management earnings guidance. Contemporary Accounting Research, 33(3), pp.1172-1198.	Use the dichotomous variable of management forecasts to proxy for the willingness to disclose (Table 3)
Schoenfeld, J., 2017. The effect of voluntary disclosure on stock liquidity: New evidence from index funds. Journal of Accounting and Economics, 63(1), pp.51-74.	Use the number of quarters in observation period T for which management issued EPS guidance (Table 3)
Sengupta, P. and Zhang, S., 2015. Equity Based Compensation of Outside Directors and Corporate Disclosure Quality. Contemporary Accounting Research, 32(3), pp.1073-1098.	Use the dichotomous variable and the frequency counts of management forecasts to proxy for the willingness to disclose (Table 4)
Shroff, N., Sun, A.X., White, H.D. and Zhang, W., 2013. Voluntary disclosure and information asymmetry: Evidence from the 2005 securities offering reform. Journal of Accounting Research, 51(5), pp.1299-1345.	Use the frequency counts of management forecasts to proxy for the willingness to disclose (Table 4)
Vashishtha, R., 2014. The role of bank monitoring in borrowers' discretionary disclosure: Evidence from covenant violations. Journal of Accounting and Economics, 57(2-3), pp.176-195.	Use the dichotomous variable of management forecast to proxy for the willingness to disclose (Table 3)

Appendix B Variable Definitions

Variable	Definition	Source
Size	natural logarithm of market capitalization in million	CRSP
Age	natural logarithm of one plus the number of years since first listed on CRSP	CRSP
NYSE	equals one for firms listed on NYSE	CRSP
Momentum	twelve-month cumulative returns over the prior calendar year	CRSP
Volatility	standard deviation of daily returns over the prior calendar year	CRSP
Spread	average daily quoted spread, (ask-bid)/midpoint, over the prior calendar year, multiplied by 1000	CRSP
Turnover	average daily number of traded shares divided by outstanding shares over the prior calendar year, multiplied by 1000	CRSP
Market-to-book	natural logarithm of the market-to-book ratio	CRSP, Compustat
Return-on-assets	income before extraordinary items divided by beginning total assets, based on the prior fiscal year	Compustat
ΔEarnings	percentage change in income before extraordinary items during the prior fiscal year	Compustat
Loss	equals one if income before extraordinary items is negative in the prior fiscal year	Compustat
R&D	research and development expenses deflated by beginning total assets, based on the prior fiscal year	Compustat
Intangible	book value of intangible assets, including goodwill deflated by beginning total assets, based on the prior fiscal year	Compustat
Leverage	book value of long-term debt divided by beginning total assets, based on the prior fiscal year	Compustat
Litigation	equals one if a firm operates in a high-litigation industry: biotechnology (SIC codes 2833-2836), computers (3570-3577 and 7370-7374), electronics (3600-3674), and retailing (5200-5961), based on the prior year	Compustat
Segments	natural logarithm of one plus the number of business segments, based on the prior fiscal year. Set to one if missing	Compustat
Analysts following	natural logarithm of one plus the number of unique analysts at the end of the prior year	IBES
Analyst dispersion	standard deviation of analyst annual earnings forecast consensus at the end of the prior year	IBES
Meet or beat	natural logarithm of one plus the number of consecutive quarters when a firm meet or beat analyst quarterly earnings consensus over the prior calendar year	IBES

Appendix B Variable Definitions (Cont.)

Variable	Definition	Source
ΔManagement	equals one if a firm changes its CEO or CFO during the prior year	ExecuComp
Herfindahl index	Herfindahl-Hirschman index based on NAICS six-digit industries, based on the prior year	US Census, Compustat
Media articles	natural logarithm of one plus the number of media-initiated articles over the prior calendar year	RavenPack
Press releases	natural logarithm of one plus the number of firm-initiated press releases over the prior calendar year	RavenPack
Public offerings	natural logarithm of one plus the number of public equity and debt issuances over the prior calendar year	Thomson Reuters SDC Platinum
M&A deals	natural logarithm of one plus the number of M&A transactions over the prior calendar year	Thomson Reuters SDC Platinum
Institutional investor	average percentage of outstanding shares held by institutional investors, based on the prior year	Thomson Reuters, CRSP
History - Routine	equals one if issuing any routine non-bundled forecasts during the prior year	Proprietary
History - Investor meeting	equals one if issuing any investor meeting driven non-bundled forecasts during the prior year	Proprietary
History - Economic event	equals one if issuing any economic event driven non-bundled forecasts during the prior year	Proprietary
Peer pressure - Routine	the sales-weighted portion of peer firms providing routine forecasts in a SIC four-digit industry, based on the prior year	Proprietary
Peer pressure - Investor meeting	the sales-weighted portion of peer firms providing investor-meeting driven forecasts in a SIC four-digit industry, based on the prior year	Proprietary
Peer pressure - Economic event	the sales-weighted portion of peer firms providing economic event driven non-bundled forecasts in a SIC four-digit industry, based on the prior year	Proprietary
Time trend	equals the year of forecast minus 2000	IBES CIG

Figure 1 Number of Firm Issuing Bundled and/or Non-Bundled Forecasts

We classify firms having at least one management earnings forecast from IBES CIG for a given year into the following groups: 1) issuing non-bundled forecasts only (4% as of 2014), 2) issuing only one bundled forecast (10%), 3) issuing two bundled forecasts (7%), 4) issuing three bundled forecasts (12%), 5) issuing four bundled forecasts but no non-bundled forecasts (26%), 6) issuing four bundled forecasts and additional non-bundled forecasts (33%), 7) issuing more than four bundled forecasts (8%). Bundled forecasts are identified as those issued within five days around an earnings announcement (Rogers et al. 2009). The number of forecasting firms maintains at around 2,500 firms during the period of 2001-2014. The solid blue line represents the number of firms issuing non-bundled forecasts only (group 1), the double green line represents the number of firms issuing four bundled forecasts but no non-bundled forecasts (group 5), and the dotted red line represents the number of firms issuing four bundled forecasts and additional non-bundled forecasts (group 6). We collect stated reasons behind 18,874 non-bundled forecasts issued by 8,312 firms (the dotted red line below).

Firms Issuing Bundled and/or Non-Bundled Earnings Forecasts by Year
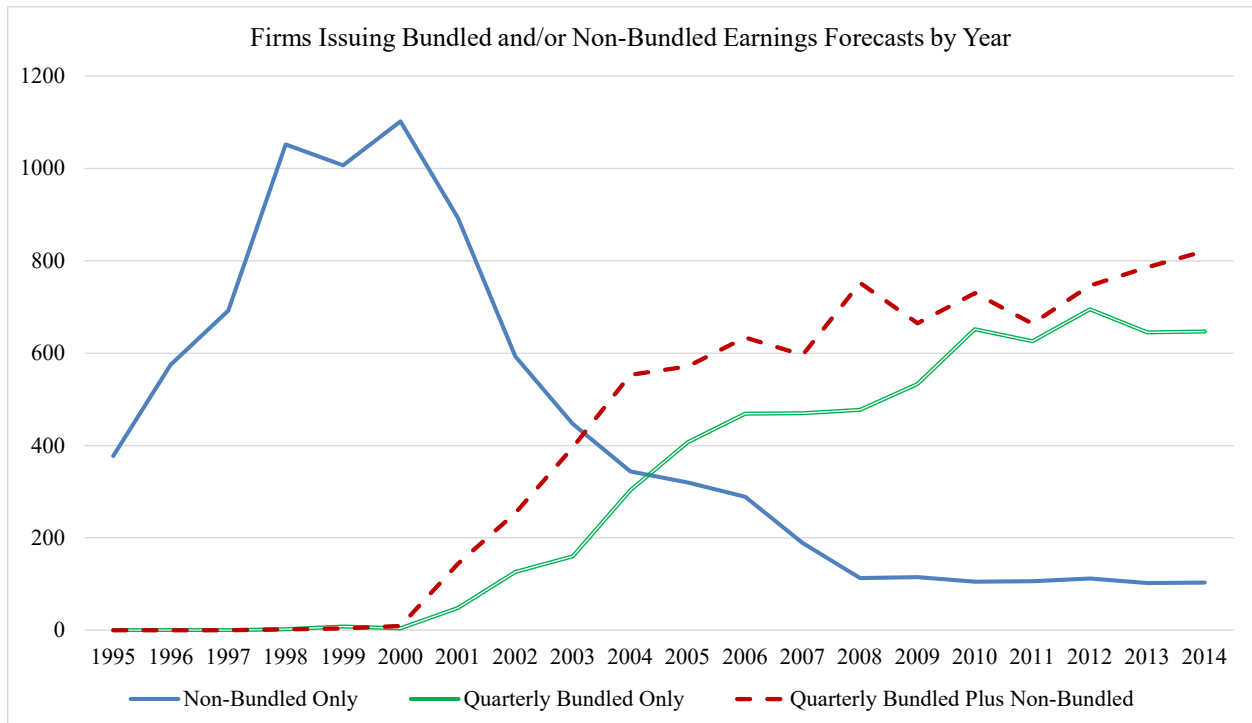
Figure 2 Routine, Investor Meeting, and Economic Event Forecasts by Year

This figure represents the number of routine, investor meeting, and economic event non-bundled forecasts by year for our sample firms.
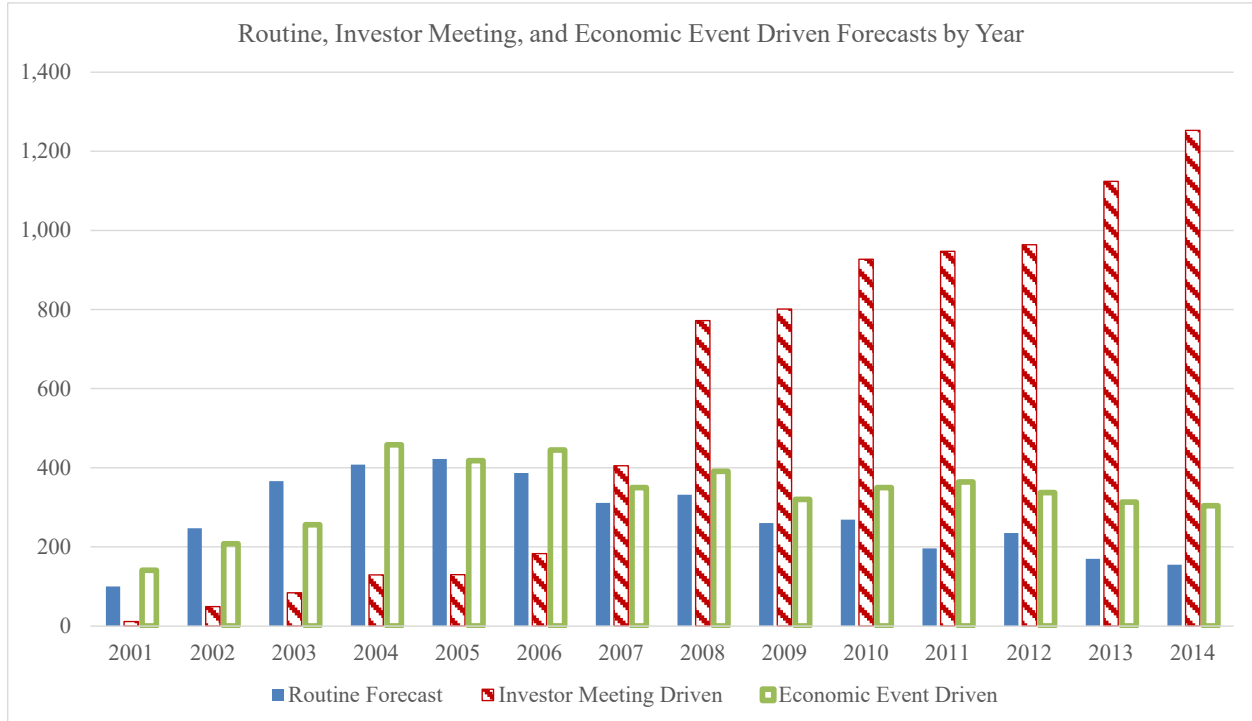
Figure 3 Implied Volatility around Non-Bundled Forecasts Conveying Positive News

This figure represents the median implied volatility around non-bundled forecasts conveying positive news from day -4 to day +4 when day 0 represents the forecast issuance date. Implied volatility is the average 30-day at-the-money call and put options from OptionMetrics. News is captured by the sign of three-day cumulative abnormal returns around the forecast event. The solid blue line represents *routine* non-bundled forecasts conveying good news (N=1,334), the dotted red line represents *investor meeting* forecasts conveying good news (N=3,308), and the double green line represents *economic event* forecasts conveying good news (N=1,497).

Implied Volatility around Good News Non-Bundled Forecasts
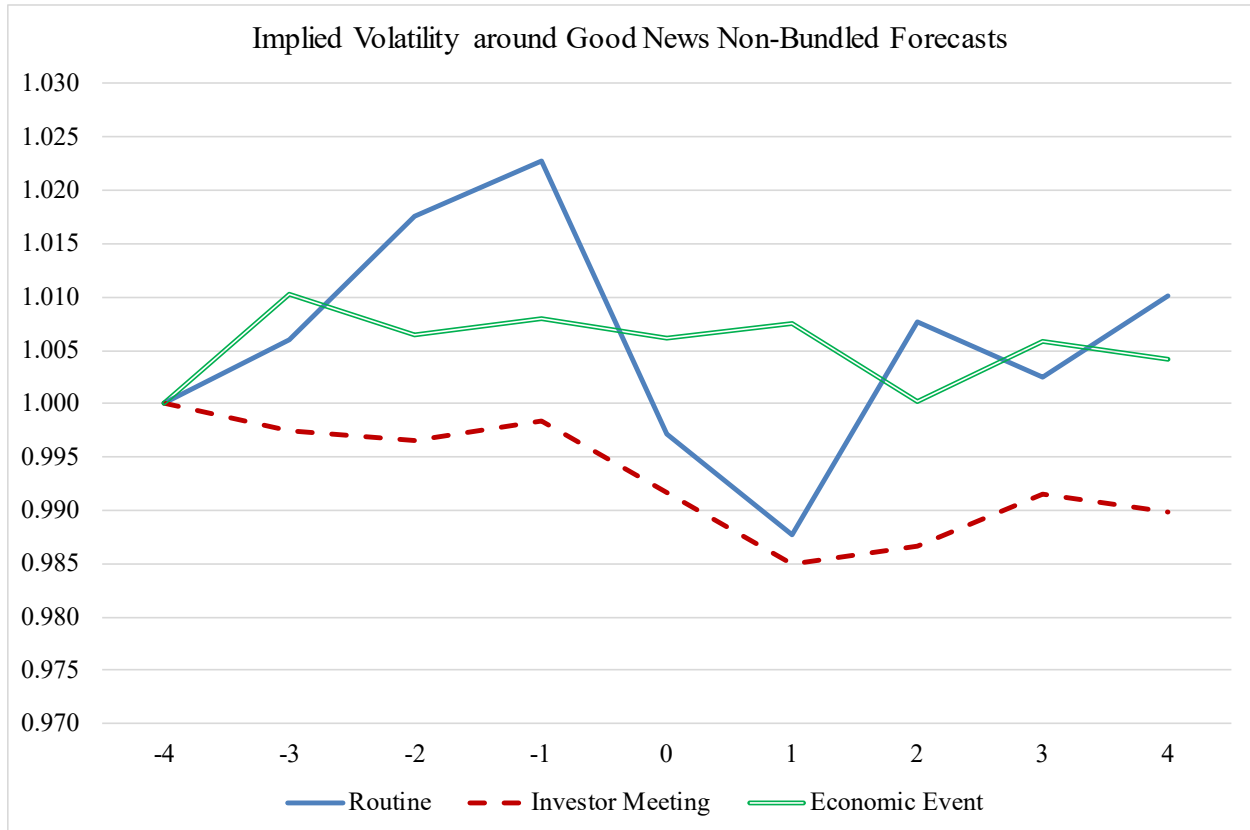
Figure 4 Implied Volatility around Non-Bundled Forecasts Conveying Negative News

This figure represents the median implied volatility around non-bundled forecasts conveying negative news from day -4 to day +4 when day 0 represents the forecast issuance date. Implied volatility is the average 30-day at-the-money call and put options from OptionMetrics. News is captured by the sign of three-day cumulative abnormal returns around the forecast event. The solid blue line represents *routine* non-bundled forecasts conveying bad news (N=1,367), the dotted red line represents *investor meeting* forecasts conveying bad news (N=2,753), and the double green line represents *economic event* forecasts conveying bad news (N=1,626).
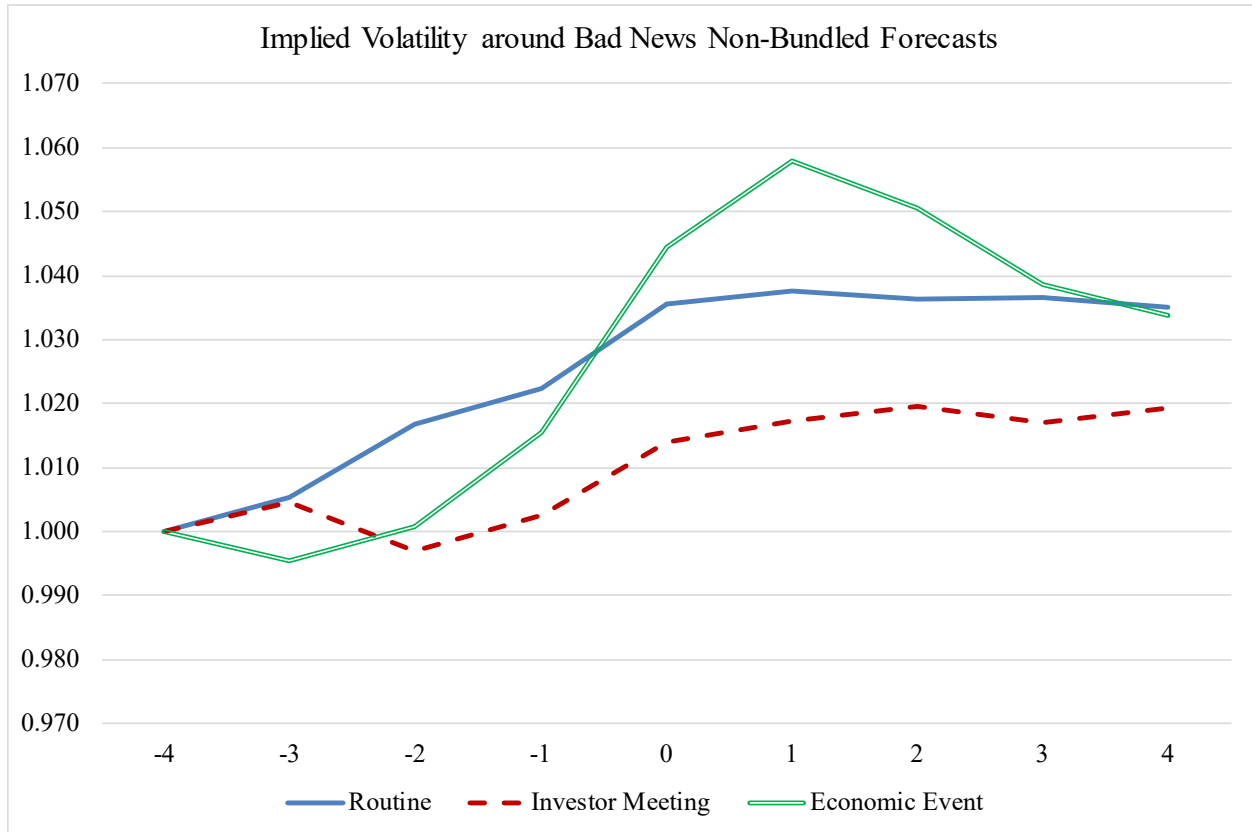
Figure 5 Implied Volatility around Next Earnings Announcements Conveying Positive News

This figure represents the median implied volatility around positive news earnings announcements preceded by only one non-bundled forecast. Implied volatility is the average 30-day at-the-money call and put options from OptionMetrics. News is captured by the sign of three-day cumulative abnormal returns around the earnings announcement. The solid blue line represents earnings announcements preceded by a *routine* non-bundled forecast (N=647), the dotted red line represents earnings announcements preceded by an *investor meeting* non-bundled forecast (N=828), and the double green line represents earnings announcements preceded by an *economic event* non-bundled forecast (N=1,013).

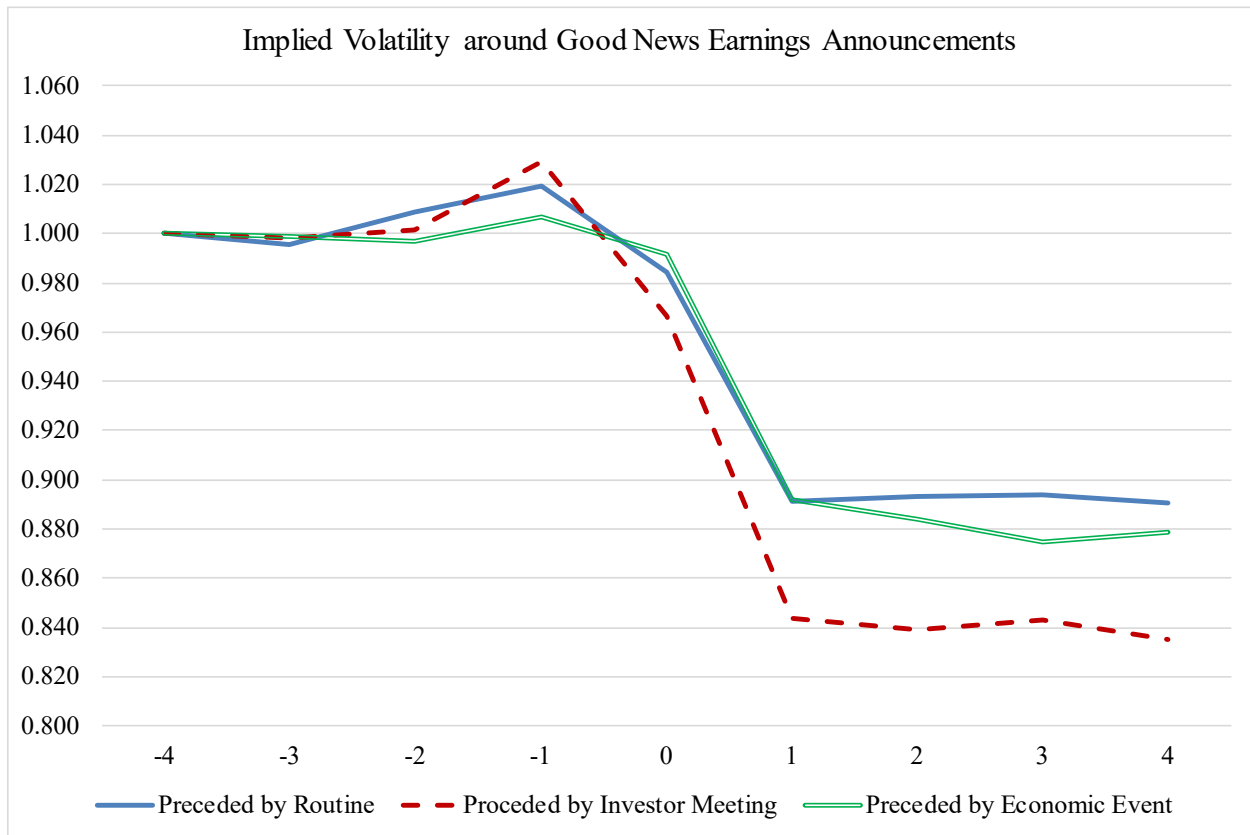Implied Volatility around Good News Earnings Announcements

Figure 6 Implied Volatility around Next Earnings Announcements Conveying Negative News

This figure represents the median implied volatility around negative news earnings announcements preceded by only one non-bundled forecast. Implied volatility is the average 30-day at-the-money call and put options from OptionMetrics. News is captured by the sign of three-day cumulative abnormal returns around the earnings announcement. The solid blue line represents earnings announcements preceded by a *routine* non-bundled forecast (N=652), the dotted red line represents earnings announcements preceded by an *investor meeting* non-bundled forecast (N=787), and the double green line represents earnings announcements preceded by an *economic event* non-bundled forecast (N=943).
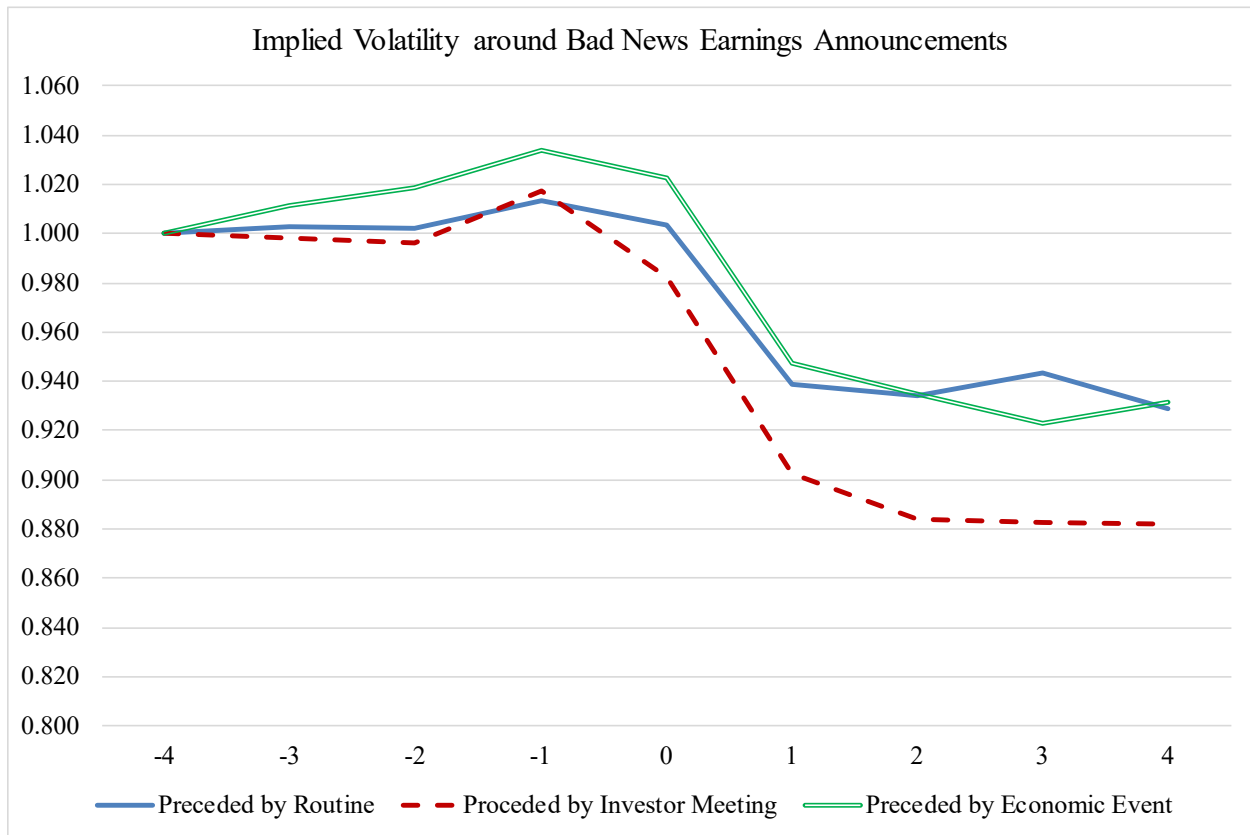
Table 1 Descriptive Statistics

Panel A Sample Construction

	Number of firm years	Number of non-bundled forecast events
Firms issuing quarterly bundled plus non-bundled forecasts from 2001-2014	8,312	18,874
Less:		
Unable to identify the disclosed content		608
Unable to identify the reason		486
Concurrent with dividend announcements		351
Concurrent with earnings announcements		140
Concurrent with earnings scheduling announcements		376
Concurrent with earnings pre-announcements		609
Concurrent with Form 10-K fillings		12
Final event sample (2,301 unique firms)	**7,185**	**16,292**
Routine non-bundled forecast		
Mentioned "mid-quarter"		232
Mentioned "end-of-year outlook"		537
Mentioned "scheduled forecast"		444
Mentioned "sales report"		1,059
Mentioned "no change in forecasts"		1,586
Routine forecast sample (573 unique firms)	**1,641**	**3,858**
Investor meeting forecast		
Third-party hosted investor conferences or meetings		7,025
Self-organized investor events		754
Investor meeting forecast sample (609 unique firms)	**2,904**	**7,779**
Economic event forecast		
Operational related events		1,061
Demand related events		986
Mergers and acquisitions		802
Financing events		240
Investments or divestments		198
Changes of management team		163
Litigation events		140
Weather events		120
Restructuring		105
Other material contracts		85
Response to media		82
Strategic partners		76
Labor issue		60
Regulation events		60
Miscellaneous		477
Economic event forecast sample (1,119 unique firms)	**2,640**	**4,655**

Table 1 Descriptive Statistics (Cont.)

Panel B Forecast Persistency

This table presents the likelihood of a firm continuing issuing routine, investor meeting, or economic event non-bundled forecasts in the following quarters or years.

The likelihood of continuing the same practice in…	Routine Forecast	Investor Meeting Forecast	Economic Event Forecast
quarter q+1	30%	36%	15%
quarter q+2	27%	31%	13%
quarter q+3	25%	27%	12%
quarter q+4	28%	30%	11%
quarter q+5	21%	22%	9%
year t+1	34%	44%	25%
year t+2	27%	34%	19%
year t+3	21%	26%	15%
year t+4	16%	21%	12%
year t+5	12%	16%	8%

Panel C Forecast Frequency, Horizon and Range Width

This table presents the number of firms by the annual frequency of routine (and its subcategories), investor meeting, or economic event non-bundled forecasts, conditional on issuing at least one of a certain type of non-bundled forecast in a given year. Forecast horizon is the number of days between the forecast date and the end of period being forecasted. Forecast width is the width of a range forecast or is set to zero for point forecasts.

	Number of Firms by Annual Frequency					Median Horizon	Median Width
	One	Two	Three	Four	>Four		
Routine Forecast	1,568	333	130	95	123	49	2.0%
Mentioned "mid-quarter"	147	17	12	3	0	51	2.0%
Mentioned "end-of-year outlook"	473	25	12	3	0	62	3.3%
Mentioned "scheduled forecast"	101	20	16	29	16	40	2.0%
Mentioned "sales report"	159	48	30	36	80	40	2.0%
Mentioned "no change in forecasts"	996	196	59	20	11	63	3.0%
Investor Meeting Driven	1,842	821	394	243	334	166	5.0%
Economic Event Driven	2,602	653	129	45	30	51	2.5%

Table 1 Descriptive Statistics (Cont.)

Panel D Type of News

This table presents the number of non-bundled forecast events that convey positive or negative news. The first news measure is based on the sign of three-day cumulative abnormal returns around the forecast date. The second news measure is based on the difference between management forecasts and the most recent analyst forecast consensus, so the sample is conditional on having analyst coverage. The third news measure is based on the difference between management forecasts and the previously issued forecasts, so the sample is conditional on having a previous management forecast.

News captured by…	Routine Forecast	Investor Meeting Forecast	Economic Event Forecast
Three-day cumulative abnormal returns			
Good news	1,334	3,308	1,497
Bad news	1,367	2,753	1,626
Bad news percentage	51%	45%	52%
Mgt. forecast minus analyst consensus			
Good news	1,088	1,283	822
Bad news	1,058	1,599	1,107
Bad news percentage	49%	55%	57%
Mgt. forecast minus previous forecast			
Good news	442	241	562
Bad news	326	181	648
No news	1,197	2,535	559
Bad news percentage	17%	6%	37%
No news percentage	61%	86%	32%

Panel E Short-run Abnormal Realized Return Volatility

Abnormal realized return volatility is $R_s = \varepsilon_s^2 / \bar{\varepsilon}^2$ for each forecast event (Beaver 1968). ε_s^2 is the squared residual return on day s of the event. Residual return is a firm's daily return minus the weighted average market return. $\bar{\varepsilon}^2 = \frac{1}{N}\sum_{t=1}^{N} \varepsilon_t^2$ is the squared average residual return during the non-disclosure period by removing three days around earnings guidance, dividend announcements, and earnings announcements, in the year prior to the forecast. This table presents the average R_s for s= -1, 0, 1, or 2 around routine, investor meeting, economic event non-bundled forecasts, and the sample firms' earnings announcements.

Event day s	Routine Forecast	Investor Meeting Driven	Economic Event Driven	Earnings Announcements
-1	0.37	0.34	0.33	0.32
0	0.94	0.42	0.95	0.66
1	0.62	0.38	0.88	0.89
2	0.40	0.32	0.39	0.42
N	3,841	7,765	4,616	229,432

Table 2 Determinant Model

Panel A Variable Distributions

The table reports distributions of daily Δimplied volatility and firm characteristics in the determinant model. The sample includes 8,692 firms that issue quarterly bundled forecasts with or without non-bundled forecasts in a year and have available data in CRSP and OptionMetrics. Daily Δimplied volatility is the daily change in implied volatility during non-disclosure periods (by removing nine days surrounding earnings announcements, earnings guidance, and dividend announcements). All firm characteristics are winsorized by +/-1%. Please refer to Appendix B for their definitions. We also report regular and sporadic forecasters based on Rogers et al. (2009) definition and report the <u>median</u> daily Δimplied volatility and the <u>mean</u> of firm characteristics as a comparison.

	Our sample					Rogers et al. (2009)	
	Mean	**25th**	**50th**	**75th**	**Std. dev.**	**Regular**	**Sporadic**
Daily Δimplied volatility	0.07%	-0.91%	-0.001%	0.98%	5.74%	-0.01%	-0.04%
Size (million)	6,470	567	1,437	4,644	15,657	6,698	2,926
Age	19.56	7.00	13.00	27.00	18.69	20.99	14.23
NYSE	0.50	0.00	1.00	1.00	0.50	0.56	0.41
Momentum	0.21	-0.11	0.14	0.41	0.55	0.18	0.05
Volatility	0.03	0.02	0.02	0.03	0.01	0.03	0.04
Spread (×1000)	2.21	0.67	1.20	2.25	3.00	3.81	10.25
Turnover (×1000)	10.88	5.77	8.80	13.51	7.56	10.48	9.14
Market-to-book	3.18	1.44	2.39	3.84	3.80	3.03	2.61
Return-on-assets	0.05	0.02	0.05	0.10	0.12	0.05	-0.03
ΔEarnings	-0.12	-0.49	0.05	0.37	2.87	-0.09	-0.15
Loss	0.18	0.00	0.00	0.00	0.39	0.14	0.32
R&D	0.05	0.00	0.01	0.07	0.08	0.04	0.06
Intangible	0.24	0.04	0.17	0.37	0.25	0.23	0.16
Leverage	0.19	0.00	0.14	0.30	0.22	0.20	0.18
Litigation	0.41	0.00	0.00	1.00	0.49	0.39	0.35
Segments	24.48	3.00	8.00	18.00	35.85	26.88	19.01
Analysts following	11.03	5.00	9.00	15.00	7.19	11.02	7.55
Analyst dispersion	0.12	0.03	0.06	0.13	0.16	0.10	0.17
Meet or beat	2.85	2.00	3.00	4.00	1.19	2.92	2.49
ΔManagement	0.13	0.00	0.00	0.00	0.33	0.12	0.07
Herfindahl index (/1000)	1.97	0.57	1.30	2.41	2.08	2.06	1.85
Media articles	87	25	55	102	112	88	52
Press releases	33	17	26	41	30	32	15
Public offerings	1.37	1.00	1.00	2.00	0.71	1.34	1.31
M&A deals	0.72	0.00	0.00	1.00	1.21	0.75	0.58
Institutional investor	0.75	0.63	0.78	0.89	0.21	0.73	0.56

Table 2 Determinant Model (Cont.)
Panel B Multinomial Logistic Regression

The table reports coefficients from a multinomial logistic regression with three non-bundled forecasting choices (routine, investor meeting, or economic event). The sample includes 8,692 firms that issue four bundled forecasts with or without non-bundled forecasts in a year (represented by the double green line and the dotted red line in Figure 1) and have available data to construct determinant variables. The benchmark group includes firms issuing four bundled forecasts but no non-bundled forecasts (the double green line in Figure 1). All determinants are from the year prior to the choice and are winsorized by +/- 1%. Please refer to Appendix B for variable definitions. Industry fixed effects based on the SIC two-digit codes and year fixed effects are included, standard errors are clustered by firm. * Two-tailed $p<0.10$; ** $p<0.05$; *** $p<0.01$.

	Routine Forecast	Investor Meeting Forecast	Economic Event Forecast
Size	0.197***	0.287***	-0.065
Age	-0.002	-0.045	-0.048
NYSE	0.253**	0.437***	0.108
Momentum	0.259***	0.136*	0.055
Volatility	0.297	-5.883	-2.354
Spread	-0.057***	-0.062**	-0.063***
Turnover	0.004	0.030***	0.005
Market-to-book	0.005	-0.003	0.002
Return-on-assets	0.017	-0.145	1.091**
ΔEarnings	-0.019	-0.030***	-0.007
Loss	-0.102	0.155	0.063
R&D	0.760	0.608	0.576
Intangible	-0.012	0.031	-0.279
Leverage	0.215	0.366**	0.643***
Litigation	0.008	0.174	0.276**
Segments	-0.010	-0.006	0.019
Analysts following	0.150	0.326***	0.147
Analyst dispersion	0.131	-0.402	0.099
Meet or beat	0.052	0.065**	-0.009
ΔManagement	0.108	0.094	0.103
Herfindahl index	-0.037	-0.040*	-0.013
Media articles	-0.023	-0.169***	0.031
Press releases	0.144**	0.285***	0.087
Public offerings	0.143	-0.022	0.071
M&A deals	0.001	-0.070	-0.009
Institutional investor	0.070	0.252	0.251
History - Routine	1.975***	0.406***	0.720***
History - Investor meeting	1.148***	1.664***	0.139
History - Economic event	0.412***	0.296***	0.735***
Peer - Routine	-0.737	-0.355	-0.061
Peer - Investor meeting	-0.795**	-0.484*	-0.498
Peer - Economic event	0.411	0.225	0.329
Time trend	-0.261***	0.072	-0.221***
N		8,692	
Pseudo R^2		0.212	

Table 3 Implied Volatility around Non-Bundled Forecasts Conveying Positive News

This table reports the median of change in implied volatility around non-bundled forecasts conveying positive or no news from day -4 to day +4 when day 0 represents the forecast issuance date. Implied volatility is the average 30-day at-the-money call and put options from OptionMetrics. News is captured by the sign of three-day cumulative abnormal returns around the forecast event (corresponding to Figure 3). We match routine or economic event forecast events with investor meeting forecast events (with replacement) by the annual propensity score based on control variables in Table 7 within an industry (SIC two-digit). Two-tailed p-values are reported for the test whether the median change in implied volatility is zero or for the difference between investor meeting and routine/economic event forecasts.

	Investor Meeting			Routine			Economic Event			p-value for Meeting minus Routine during [-1, +1]	p-value for Meeting minus Economic during [-1, +1]
	[-4, -1]	[-1, +1]	[-4, +1]	[-4, -1]	[-1, +1]	[-4, +1]	[-4, -1]	[-1, +1]	[-4, +1]		
Median Δ implied volatility	0.13%	-0.36%	-0.24%	0.38%	-0.65%	-0.21%	0.07%	-0.36%	-0.33%	<0.01	0.98
Number of observation		3,308			1,334			1,497			
p-value	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.35	<0.01	<0.01		
Matched sample					2,777			2,784		<0.01	<0.01

Table 4 Implied Volatility around Non-Bundled Forecasts Conveying Negative News

This table reports the median of change in implied volatility around non-bundled forecasts conveying negative news from day -4 to day +4 when day 0 represents the forecast issuance date. Implied volatility is the average 30-day at-the-money call and put options from OptionMetrics. News is captured by the sign of three-day cumulative abnormal returns around the forecast event (corresponding to Figure 4). We match routine or economic event forecast events with investor meeting forecast events (with replacement) by the annual propensity score based on control variables in Table 7 within an industry (SIC two-digit). Two-tailed p-values are reported for the test whether the median change in implied volatility is zero or for the difference between investor meeting and routine/economic event forecasts.

	Investor Meeting			Routine			Economic Event			p-value for Meeting minus Routine during [-1, +1]	p-value for Meeting minus Economic during [-1, +1]
	[-4, -1]	[-1, +1]	[-4, +1]	[-4, -1]	[-1, +1]	[-4, +1]	[-4, -1]	[-1, +1]	[-4, +1]		
Median Δ implied volatility	0.19%	0.09%	0.33%	0.55%	0.21%	0.89%	0.29%	0.85%	1.34%	0.02	<0.01
Number of observation		2,753			1,367			1,626			
p-value	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
Matched sample					2,348			2,366		<0.01	<0.01

Table 5 Implied Volatility around Next Earnings Announcements Conveying Positive News

This table reports the median of change in implied volatility around positive or no news earnings announcements preceded by only one non-bundled forecast during the 90-day window. Implied volatility is the average 30-day at-the-money call and put options from OptionMetrics. News is captured by the sign of three-day cumulative abnormal returns around the forecast event (corresponding to Figure 5). We match routine or economic event forecast events with investor meeting forecast events (with replacement) by the annual propensity score based on control variables in Table 8 within an industry (SIC two-digit). Two-tailed p-values are reported for the test whether the median change in implied volatility is zero or for the difference between investor meeting and routine/economic event forecasts.

	Preceded by Investor Meeting Forecasts			Preceded by Routine Forecasts			Preceded by Economic Event Forecasts			p-value for Meeting minus Routine during [-1, +1]	p-value for Meeting minus Economic during [-1, +1]
	[-4, -1]	[-1, +1]	[-4, +1]	[-4, -1]	[-1, +1]	[-4, +1]	[-4, -1]	[-1, +1]	[-4, +1]		
Median Δ implied volatility	0.54%	-6.07%	-5.47%	0.64%	-4.31%	-3.45%	0.51%	-4.48%	-3.99%	<0.01	<0.01
Number of observation		828			647			1,013			
p-value	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
Matched sample					464			494		<0.01	<0.01

Table 6 Implied Volatility around Next Earnings Announcements Conveying Negative News

This table reports the median of change in implied volatility around negative news earnings announcements preceded by only one non-bundled forecast during the 90-day window. Implied volatility is the average 30-day at-the-money call and put options from OptionMetrics. News is captured by the sign of three-day cumulative abnormal returns around the forecast event (corresponding to Figure 6). We match routine or economic event forecast events with investor meeting forecast events (with replacement) by the annual propensity score based on control variables in Table 8 within an industry (SIC two-digit). Two-tailed p-values are reported for the test whether the median change in implied volatility is zero or for the difference between investor meeting and routine/economic event forecasts.

	Preceded by Investor Meeting Forecasts			Preceded by Routine Forecasts			Preceded by Economic Event Forecasts			p-value for Meeting minus Routine	p-value for Meeting minus Economic
	[-4, -1]	[-1, +1]	[-4, +1]	[-4, -1]	[-1, +1]	[-4, +1]	[-4, -1]	[-1, +1]	[-4, +1]	during [-1, +1]	during [-1, +1]
Median Δ implied volatility	0.51%	-3.71%	-3.28%	0.71%	-2.80%	-1.90%	0.73%	-2.54%	-1.79%	<0.01	<0.01
Number of observation		787			652			943			
p-value	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
Matched sample					414			426		0.03	0.07

Table 7 Multivariate Analysis around Non-Bundled Forecasts

This table presents results from the OLS regression on the change in implied volatility around non-bundled forecasts, measured as the natural logarithm of the ratio of the post-forecast three-day implied volatility to the pre-forecast three-day implied volatility. Implied volatility is the average at-the-money call and put options from OptionMetrics. Option duration is 30 days in Model (1), 60 days in Model (2), matched with the next earnings announcement date in Model (3), matched with the expected earnings announcement date based on the prior year's time lag in Model (4), or matched with the expected earnings announcement date based on the prior year's certain weekday in Model (5). Time lag is the difference between the earnings announcement date and the fiscal quarter end date. Certain weekday is a particular day of the Nth month relative to the fiscal quarter end date, e.g., the first Monday of May. Our variable of interest is *Investor Meeting* that equals one for earnings announcements preceded by an investor meeting forecast and zero for earnings announcements preceded by a routine or economic event forecast. News is captured by the sign of three-day cumulative abnormal returns around the forecast event. ΔVIX index is the ratio of the Chicago Board Options Exchange Volatility Index level on the post-forecast date to the level of that index on the pre-forecast date. Horizon is the number of days between the forecast date and the end of the fiscal quarter being forecasted. Please refer to Appendix B for the definition of the rest of control variables. All these variables are transformed by the log function and are prior to the forecast date. Coefficients and t-statistics (based on standard errors clustered at the firm level) are reported. Year and industry (SIC two-digit) fixed effects are included. * Two-tailed $p<0.10$; ** $p<0.05$; *** $p<0.01$.

Model:	(1)	(2)	(3)	(4)	(5)
Option duration:	30 days	60 days	Matched with actual EA date	Matched with expected EA date (Time lag)	Matched with expected EA date (Certain weekday)
Investor Meeting	**0.002**	**0.005****	**0.005**	**0.005**	**0.005**
t-stat	*(0.53)*	*(2.01)*	*(1.52)*	*(1.63)*	*(1.61)*
Negative news indicator	0.008**	0.009***	0.007**	0.008***	0.008***
t-stat	*(2.50)*	*(3.34)*	*(2.19)*	*(2.77)*	*(2.71)*
|Negative news|	0.575***	0.515***	0.522***	0.518***	0.520***
t-stat	*(14.34)*	*(17.12)*	*(14.20)*	*(14.04)*	*(14.04)*
|Positive news|	0.010	-0.067**	-0.056*	-0.039	-0.037
t-stat	*(0.30)*	*(-2.50)*	*(-1.80)*	*(-1.25)*	*(-1.17)*
Log(ΔVIX index)	0.296***	0.244***	0.236***	0.242***	0.244***
t-stat	*(18.23)*	*(18.37)*	*(15.13)*	*(15.63)*	*(15.72)*
Horizon	-0.000	0.000	0.000	0.000	0.000
t-stat	*(-0.12)*	*(1.35)*	*(0.46)*	*(0.63)*	*(0.66)*
Size	0.005***	0.004***	0.003**	0.003**	0.003**
t-stat	*(4.29)*	*(3.44)*	*(2.35)*	*(2.41)*	*(2.50)*
Analyst following	-0.011***	-0.008***	-0.012***	-0.012***	-0.012***
t-stat	*(-3.38)*	*(-3.25)*	*(-3.86)*	*(-3.78)*	*(-3.90)*
Analyst dispersion	-0.040	-0.019	-0.035	-0.025	-0.026
t-stat	*(-1.47)*	*(-0.98)*	*(-1.03)*	*(-0.73)*	*(-0.75)*
Book-to-market	0.004	0.002	-0.004	-0.004	-0.004
t-stat	*(0.95)*	*(0.55)*	*(-0.85)*	*(-0.84)*	*(-0.98)*
Leverage	-0.002	-0.001	-0.001	0.000	0.000
t-stat	*(-0.28)*	*(-0.17)*	*(-0.19)*	*(0.02)*	*(0.03)*
Constant	-0.048	-0.038	-0.036	-0.042	-0.042
t-stat	*(-1.57)*	*(-1.42)*	*(-0.97)*	*(-1.15)*	*(-1.16)*
N	4122	4120	3350	3345	3347
Adj. R^2	0.235	0.277	0.268	0.267	0.268

Table 8 Multivariate Analysis around Next Earnings Announcements

This table presents results from the OLS regression on the change in implied volatility around earnings announcements preceded by only one non-bundled forecast during the 90-day window. Change in implied volatility is measured as the natural logarithm of the ratio of the post-EA three-day implied volatility to the pre-EA three-day implied volatility. Implied volatility is the average at-the-money call and put options from OptionMetrics. Option duration is 30 days in Model (1), 60 days in Model (2), 91 days in Model (3), and 152 days in Model (4). Our variable of interest is *Investor Meeting* that equals one for earnings announcements preceded by an investor meeting forecast and zero for earnings announcements preceded by a routine or economic event forecast. News is captured by the sign of three-day cumulative abnormal returns around the forecast event. ΔVIX index is the ratio of the Chicago Board Options Exchange Volatility Index level on the post-EA date to the level of that index on the pre-EA date. Earnings surprise is the difference between the mean analyst estimate, prior to the EA date, and the actual value of earnings. Please refer to Appendix B for the definition of the rest of control variables. All these variables are transformed by the log function and are prior to the EA date. Coefficients and t-statistics (based on standard errors clustered at the firm level) are reported. Year and industry (SIC two-digit) fixed effects are included. * Two-tailed $p<0.10$; ** $p<0.05$; *** $p<0.01$.

Model:	(1)	(2)	(3)	(4)
Option duration:	30 days	60 days	91 days	152 days
Investor Meeting	**-0.016***	**-0.010***	**-0.005***	**-0.003**
t-stat	*(-3.49)*	*(-2.88)*	*(-1.79)*	*(-1.37)*
Negative news indicator	0.007	0.010***	0.007**	0.007***
t-stat	*(1.37)*	*(2.66)*	*(2.41)*	*(2.82)*
|Negative news|	0.375***	0.355***	0.347***	0.321***
t-stat	*(6.80)*	*(8.25)*	*(10.78)*	*(12.06)*
|Positive news|	-0.262***	-0.205***	-0.169***	-0.137***
t-stat	*(-5.11)*	*(-5.09)*	*(-5.47)*	*(-5.25)*
Log(ΔVIX index)	0.294***	0.260***	0.221***	0.183***
t-stat	*(14.02)*	*(16.54)*	*(18.21)*	*(19.00)*
Earnings surprise	0.004***	0.003***	0.003***	0.002***
t-stat	*(11.78)*	*(14.78)*	*(22.56)*	*(8.22)*
Size	-0.008***	-0.001	0.001	0.002*
t-stat	*(-3.85)*	*(-0.35)*	*(0.76)*	*(1.84)*
Analyst following	-0.023***	-0.018***	-0.013***	-0.010***
t-stat	*(-4.80)*	*(-5.26)*	*(-5.24)*	*(-5.18)*
Analyst dispersion	-0.026	-0.036	0.006	-0.011
t-stat	*(-0.85)*	*(-1.64)*	*(0.37)*	*(-0.89)*
Book-to-market	0.032***	0.020***	0.007*	0.006*
t-stat	*(4.63)*	*(3.64)*	*(1.79)*	*(1.91)*
Leverage	0.022*	0.003	0.003	0.007
t-stat	*(1.90)*	*(0.32)*	*(0.55)*	*(1.47)*
Constant	0.153***	0.066***	0.028	0.006
t-stat	*(4.68)*	*(2.66)*	*(1.30)*	*(0.33)*
N	4122	4116	4110	3909
Adj. R^2	0.286	0.266	0.255	0.271

Table 9 R&D Intensive Firms

This table presents results from the OLS regression on the change in implied volatility around non-bundled forecasts in Models (1)-(3) and around earnings announcements preceded by only one non-bundled forecast during the 90-day window in Models (4)-(6). Change in implied volatility is measured as the natural logarithm of the ratio of the post-disclosure three-day implied volatility to the pre-disclosure three-day implied volatility. Implied volatility is the average at-the-money call and put options from OptionMetrics. Option duration is matched with the next earnings announcement date in Model (1), matched with the expected earnings announcement date based on the prior year's time lag in Model (2) or the prior year's certain weekday in Model (3). Option duration is 30 days in Model (4), 60 days in Model (5), and 91 days in Model (6). Our variable of interest is the interaction term between *Investor Meeting* that equals one for earnings announcements preceded by an investor meeting forecast and zero for earnings announcements preceded by a routine or economic event forecast and *R&D* that equals one for firms whose R&D intensity ratio is above the sample median in a year. R&D intensity ratio is the capitalized R&D based on the industry estimates in Lev and Sougiannis (1996), divided by lagged total assets. All corresponding control variables from Tables 7-8 are included in the regression but omitted from the table for brevity. Coefficients and t-statistics (based on standard errors clustered at the firm level) are reported. Year and industry (SIC two-digit) fixed effects are included. * Two-tailed $p<0.10$; ** $p<0.05$; *** $p<0.01$.

Model:	(1)	(2)	(3)	(4)	(5)	(6)
Event window:	Non-bundled Forecasts			Next Earnings Announcements		
Option duration:	Matched with actual EA date	Matched with expected EA date (Time lag)	Matched with expected EA date (Certain weekday)	30 days	60 days	91 days
Meeting × R&D	**0.011****	**0.009***	**0.009***	**-0.021****	**-0.017*****	**-0.010****
t-stat	*(2.07)*	*(1.79)*	*(1.72)*	*(-2.48)*	*(-2.71)*	*(-2.21)*
Meeting	-0.002	-0.000	-0.000	-0.005	-0.001	0.001
t-stat	(-0.38)	(-0.09)	(-0.06)	(-0.79)	(-0.19)	(0.24)
R&D	0.001	0.001	0.002	0.011	0.007	0.005
t-stat	(0.17)	(0.18)	(0.29)	(1.53)	(1.16)	(1.13)
Control variables	Y	Y	Y	Y	Y	Y
N	3350	3345	3347	4122	4116	4110
Adj. R^2	0.269	0.268	0.269	0.287	0.267	0.256

Table 10 Textual Analysis on Investor Conference Transcripts

This table presents results from the OLS regression on the change in implied volatility around non-bundled forecasts, measured as the natural logarithm of the ratio of the post-forecast three-day implied volatility to the pre-forecast three-day implied volatility. Implied volatility is the average at-the-money call and put options from OptionMetrics. Option duration is 30 days in Model (1), 60 days in Model (2), matched with the next earnings announcement date in Model (3), matched with the expected earnings announcement date based on the prior year's time lag in Model (4), or matched with the expected earnings announcement date based on the prior year's certain weekday in Model (5). The sample includes only investor meeting non-bundled forecasts that have identified investor conference transcripts. Our variable of interest is *Specificity* or *Forward-looking* in separate regressions. *Specificity* is the number of words used in specific terms (location, organization, person name, money, percentage, time, and date) based on Stanford Name Entity Recognizer, divided by total words in an investor conference transcript. *Forward-looking* is the number of sentences containing at least one forward-looking terms based on the list from Bozanic, Roulstone, and Buskirk (2018), divided by total sentences in an investor conference transcript. Length is the number of words, Complexity is based on the Fog index, and tone is positive words minus negative words, deflated by total number of words. All control variables from Table 7 are included in the regression but omitted from the table for brevity. Coefficients and t-statistics (based on standard errors clustered at the firm level) are reported. Year and industry (SIC two-digit) fixed effects are included. * Two-tailed $p<0.10$; ** $p<0.05$; *** $p<0.01$.

Model:	(1)	(2)	(3)	(4)	(5)	(6)
Option duration:	30 days	60 days	91 days	Matched with actual EA date	Matched with expected EA date (Time lag)	Matched with expected EA date (Certain weekday)
Specificity	**-0.609***	**-0.671****	**-0.470****	**-0.120***	**-0.129****	**-0.136****
t-stat	*(-1.89)*	*(-2.51)*	*(-2.19)*	*(-1.88)*	*(-2.08)*	*(-2.18)*
Length	*-0.000*	*0.000*	*0.000*	*-0.000*	*-0.000*	*-0.000*
t-stat	*(-0.44)*	*(0.27)*	*(0.27)*	*(-0.84)*	*(-1.22)*	*(-1.01)*
Complexity	*0.002*	*0.001*	*0.001*	*0.000*	*-0.000*	*-0.000*
t-stat	*(1.53)*	*(1.03)*	*(0.88)*	*(0.21)*	*(-0.14)*	*(-0.10)*
Tone	*-0.161*	*-0.313*	*-0.416****	*-0.516***	*-0.538***	*-0.565***
t-stat	*(-0.67)*	*(-1.61)*	*(-2.88)*	*(-2.01)*	*(-2.04)*	*(-2.14)*
Control variables	Y	Y	Y	Y	Y	Y
N	1084	1084	1084	665	660	661
Adj. R^2	0.227	0.267	0.325	0.245	0.227	0.231
Forward-looking	**0.124****	**0.108****	**0.101****	**0.140****	**0.141****	**0.133****
t-stat	*(2.09)*	*(2.33)*	*(3.00)*	*(2.47)*	*(2.45)*	*(2.32)*
Length, complexity, tone	Y	Y	Y	Y	Y	Y
Control variables	Y	Y	Y	Y	Y	Y
N	1084	1084	1084	665	660	661
Adj. R^2	0.229	0.267	0.328	0.248	0.229	0.231