Why Don't Analysts Always Value Earnings Conference Calls?

By: Sudipta Basu and Zhongnan Xiang

Abstract

We compare analyst forecasts before earnings releases, between earnings releases and conference calls, and after conference calls, and unexpectedly find that the forecasts do not become more accurate or less dispersed around conference calls. We propose and show that analysts ignore potential information in conference calls if they got prior access to private information. Analyst forecasts between earnings releases and conference calls are associated with less market movement during conference calls. Our results suggest that some analysts have superior information access before a few open conference calls. We show that public disclosure is sometimes preempted by private information channels and implicitly question the effectiveness of disclosure regulation.

Keywords: Private information, analyst forecast timing, disclosure regulation, conference calls

JEL codes: G17, G24, G28, K22, M41

1. Introduction

We examine cases when earnings conference calls are not informative to some analysts. The passage of Regulation Fair Disclosure (Reg FD) in 2000, along with improved telecommunications, has made open earnings conference calls with investors and analysts more frequent. Higher trading volume occurs during conference calls, and less post-earnings-announcement drift occurs after calls, suggesting that these calls are informative (Bushee, Matsumoto, and Miller 2004; Kimbrough 2005). Forward-looking statements and interaction between managers and analysts could make conference calls more informative than even earnings releases (Lansford, Lee, and Tucker 2009; Matsumoto, Pronk, and Roelofsen 2011). Thus, conference calls are a valuable information source on average for analysts when forecasting. We study the exceptions when analysts do not rely on conference calls.

Previous studies consider the initiation of regular conference calls as an exogenous shock and examine analyst forecast properties before and after the shock to estimate the impact of conference calls. These studies assume that the changes of forecast properties are attributable to the conference call disclosure. However, analysts issue or revise forecasts around earnings announcements (Zhang 2008), so more informative earnings releases could also explain these analyst forecast changes. Moreover, managers issue earnings guidance and hold private meetings more frequently, which could improve the information environment and also account for the changes. We seek to identify the sources of forecast improvements by examining the forecasts shortly before and after conference calls.

We divide analyst forecasts into three groups: those shortly before earnings releases, those between earnings announcements and conference calls, and those shortly after earnings calls. Hence, we separate the two public disclosure events and test whether each of them is informative

to analysts by comparing forecast properties around each event individually. If conference calls provide much incremental information over earnings releases, we expect that few analysts will issue timely forecasts before conference calls rather than wait to increase accuracy by analyzing the data in these calls. We find that 7% of analysts issue forecasts between earnings releases and conference calls.[1] We find little difference in the accuracy and dispersion of forecasts issued shortly before and after conference calls. Regressions at the analyst level consistently indicate that forecast accuracy before and after conference calls are quite similar.

Our initial exploration suggests that analysts do not always value conference calls. We consider two explanations for this phenomenon. First, analysts extract information from other sources besides earnings releases and conference calls to gain a competitive advantage. Conference calls would be less useful if these other sources are highly informative. Second, some firms have a rich information environment because of high media coverage and less uncertainty, so the demand for additional news from conference calls is low. We find that access to private channels like investor conferences reduces analysts' reliance on conference calls. Thus, while conference calls are informative on average, some analysts preempt these calls because they anticipate their content.

This paper contributes to the existing literature in several important aspects. It is the first paper, to the best of our knowledge, to directly document the informativeness of earnings conference calls to analysts. Prior studies compare analyst forecast properties before and after firms initiate regular conference calls and suggest that conference calls increase forecast quality and reduce analysts' underreaction to earnings news (Kimbrough 2005; Kross and Suk 2012). However, the analysts could be exploiting a richer information environment (i.e., more frequent

[1] This proportion increases to 28% (38%) in firm-quarters where the two events are more than four (eight) hours apart.

and informative regular disclosure) rather than learning from earnings calls per se. We directly compare analyst forecasts around the calls, and find that analysts occasionally issue forecasts before conference calls without sacrificing forecast accuracy.

Second, we extend the literature on the impact of Reg FD. Reg FD was intended to reduce firms' selective disclosure to favored large investors. After this Regulation, open conference calls became widespread. Several studies claim that Reg FD was effective, and that conference calls help reduce information asymmetry (e.g., Bailey, Li, Mao and Zhong, 2003; Gintschel and Markov, 2004; Kross and Suk, 2012). However, Mayew, Sharp, and Venkatachalam (2013) suggest that analysts do not participate equally during conference calls. Call, Sharp, and Shohfi (2018) find that information asymmetry increases when buy-side analysts attend and ask questions during conference calls. We add to the debate by showing that analysts effectively ignore conference calls when they get access to private information.

Finally, our results illustrate the tradeoffs analysts face between timeliness and accuracy. Analysts likely have diminishing marginal accuracy from additional data. Therefore, when they get enough data, analysts issue forecasts early as they could be almost as accurate as if they waited for the conference calls to gather more data. Consistent with timeliness being important, we find that analysts are less likely to wait for conference calls the longer the delay.

In the next section, we review prior studies and develop hypotheses. In section 3, we describe the sample selection process and define the key variables for our cross-sectional tests. Section 4 outlines our research designs and discusses the empirical results. Section 5 presents the capital market consequences of the forecasts prior to conference calls, along with some other additional tests. The final section concludes.

2. Prior Research and hypotheses development

Managers hold conference calls with market participants to disseminate additional qualitative and contextual information. Tasker (1998) finds that firms use conference calls to supplement mandated disclosure. Frankel, Johnson, and Skinner (1999) document that earnings calls convey material information, as evidenced by elevated stock return volatility and trading volume during the call. Early conference calls were closed (i.e., by invitation only) and attended mostly by analysts and institutional investors (National Investor Relations Institute [1996b]). Frankel et al. (1999) argue that conference calls place individual investors at an informational disadvantage. The SEC expressed concerns that conference calls encourage selective disclosure by revealing new information to participants privy to the call.[2] Regulation Fair Disclosure (Reg FD), passed in August 2000, was intended to reduce private communications between managers and outsiders such as large investors and analysts. From then on, individual investors have unlimited access to earnings conference calls.

Prior studies suggest that open conference calls contain incremental information over the accompanying press release. During a typical earnings conference call, key executives present quarterly performance data, and the following discussion is driven by questions from analysts and investors (National Investor Relations Institute [2014]). Bushee et al. (2004) document that managers communicate the same amount of information during open conference calls as in closed calls before. Lansford et al. (2009) find that firms disclose a non-trivial amount of management guidance exclusively in conference calls, identifying calls as a significant disclosure channel. Besides financial data, conference calls provide unscripted and soft information, including the

[2] SEC Chairman Arthur Levitt made this argument during the "SEC Speaks" Conference at Washington D.C. on Feb 27, 1998.

order and vocal cues of the speakers (Matsumoto et al., 2011; Mayew and Venkatachalam, 2012). A survey by the Association for Investment Management and Research (AIMR [2000]) highlights the importance of corporate executives themselves as human capital information. The communication patterns during conference calls also reveal the location of knowledge within the management team and explain managers' compensation (Li, Minnis, Nagar, and Rajan, 2014).

Given the informativeness of conference calls, many studies focus on their capital market implications. Bushee, Matsumoto, and Miller (2003) document that, compared with closed conference calls, open conference calls increase the number of small trades, indicating easier information access for individual investors. Initiation of open conference calls reduces post-earnings-announcement drift (Kimbrough, 2005), and regular use of conference calls lowers information asymmetry and cost of capital (Brown, Hillegeist, and Lo, 2004). Matsumoto et al. (2011) examine presentation sessions and Q&A sessions separately and find that both sessions can move the market, with higher absolute abnormal returns during Q&A sections. Brochet, Kolev, and Lerman (2018) find a co-movement of stock return over the conference call windows of announcing firms and their industry peers, suggesting information transfer during earnings calls. Heinrichs, Park, and Soltes (2018) report high demand for conference calls from institutional investors, sell-side analysts, and even investors who do not hold a position in the firm.

The way managers communicate during calls affects how investors understand the news. Some papers analyze conference call transcripts and examine the linguistic characteristics. Some managers do not respond to questions and withhold information during calls, and investors interpret the silence as negative news (Hollander, Pronk, and Roelofsen, 2010; Gow, Larcker, and Zakolyukina, 2019). Managers' linguistic tone during calls predicts abnormal returns, trading volume, and post-earnings announcement drift and explains management optimism (Price, Doran,

Peterson, and Bliss, 2012; Davis, Ge, Matsumoto, and Zhang, 2014). Chen, Demers, and Lev (2018) find that the tone of earnings calls becomes more negative as the day wears on due to mental and physical fatigue during the day, and that the time-of-day-induced negative tone leads to temporary stock mispricing. Larcker and Zakolyukina (2012) use a linguistic model to classify conference calls as "truthful" or "deceptive" and show that these labels predict accounting manipulation better than or as well as models based on financial variables. Mayew and Venkatachalam (2012) analyze conference call audio files and find that, besides linguistic features, managers' vocal cues contain information about firms' fundamentals.

Conference calls are specifically informative to sell-side analysts, as evidenced by their active participation during the calls (Call, Sharp, Shohfi, 2017; Jung, Wong, and Zhang, 2018). Kimbrough (2005) documents that the initiation of conference calls reduces serial correlation in analyst forecast errors, a measure of analyst underreaction. Lansford et al. (2009) show that the magnitude of forecast revision is greater for firms that provide more management guidance during calls. Bowen, Davis, and Matsumoto (2002) find that conference calls are associated with timelier and more accurate forecasts. This association is stronger for analysts who ask questions during calls relative to nonparticipating analysts (Mayew, Sharp, and Venkatachalam, 2013). Manager-analyst interactions during conference calls also impact how analysts define and forecast "street earnings" (Black, Christensen, Kiosse, and Steffen, 2018). To get better access to information during earnings calls, some analysts use favorable language when speaking to management (Milian, Smith, and Alfonso, 2017). These findings suggest that analysts utilize information during earnings conference calls when they issue forecasts. Therefore, we expect that analysts will issue more accurate forecasts after earnings calls, and we state our first hypothesis as follows:

H1: analyst forecasts issued after earnings conference calls are more accurate than those issued before conference calls.

Besides conference calls and accompanying earnings releases, analysts extract information from many other sources. Feng and McVay (2010) document that analysts heavily weight management guidance, especially when they revise short-term earnings forecasts. Barron, Byard, and Yu (2017) state that management guidance issued near earnings releases increases analysts' common information. Studies of industry specialists suggest that analysts gain an advantage by intra-industry information transfer (Jacob, Lys, and Neale, 1999; Kadan, Madureira, Wang, and Zach, 2012), and information transfer occurs widely at the earnings release and during conference calls (Koo, Wu, and Yeung, 2017; Brochet et al., 2018).

Some papers examine private interactions between analysts and managers. Commonly used private disclosure milieus include investor conferences (Bushee, Jung, and Miller, 2011; Green, Jame, Markov, and Subasi, 2014a and 2014b), analyst/investor days (Kirk and Markov, 2016), and non-deal roadshows (Bradley, Jame, and Williams, 2018). These papers suggest that firms increasingly devote time and effort to meeting privately with institutional investors and sell-side analysts. Because management guidance, earnings news from other firms, and private conferences are inputs to analyst forecasts besides conference calls, we expect that the association in H1 will be weaker when analysts get access to these information sources.

H2: the association in H1 is attenuated if analysts (a) receive firms' earnings guidance concurrently with earnings announcements, (b) can attend conference calls held by other firms in the same industry before conference calls, and (c) can attend firms' private conferences before conference calls.

For analysts, the demand for additional information is a decreasing function of the amount of information analysts already acquired (Das, Levine, Sivaramakrishnan, 1998). We expect that analysts' demand for conference calls will be lower if the firm has lower information asymmetry and/or uncertainty. Larger firms are believed to have a richer information environment (Collins, Kothari, and Rayburn, 1987; Easton and Zmijewski, 1989; Bhushan, 1989, 1994) and lower information asymmetry (Hasbrouck, 1991; Greenstein and Sami, 1994; Leuz and Verrecchia, 2000). Lang and Lundholm (1996) document that larger firms likely have more accurate analyst forecasts, driven by fewer losses (Hwang, Jan, and Basu, 1996). The Pecking Order theory of capital structure implies a negative association between debt financing and information asymmetry (Myers, 1984; Myers and Majluf, 1984). Petacchi (2015) finds a strong but non-linear positive association between information asymmetry and leverage. Finally, the volatility of past earnings is negatively associated with earnings predictability (Graham, Campbell, and Rajgopal, 2005). These findings suggest that when the firms are larger, have less debt financing, and have less volatile past earnings, analysts' demand for additional information is lower, and the association in H1 will be weaker. We formally state the hypotheses as follows:

H3: the association in H1 is attenuated for firms that are (a) larger, (b) less levered, and (c) have lower earnings volatility.

3. Sample

We aim to compare analyst forecasts around conference calls. A conference call is usually held within two days after the earnings announcement, whose informativeness is examined by a large number of studies (e.g., Beaver 1968; Landsman and Maydew, 2002). To separate the impact of the earnings release and conference calls on analyst forecasts, we divide the forecasts into three groups: those issued before earnings releases, those issued between earnings releases and earnings

conference calls, and those issued after conference calls. In section 3.1, we discuss the scope of forecasts we study and present how we define the cutoffs for analyst forecasts throughout our empirical studies. Since we further make cross-sectional predictions for analysts with information from other sources, and for analysts who cover firms with lower information asymmetry and/or uncertainty, we discuss how we define and collect data for these tests in section 3.2.

3.1 The scope of analyst forecasts

We seek to acquire data of analyst forecasts around earnings announcements and conference calls. We first collect annual and quarterly earnings forecasts, which are the most frequently-issued and most important types of forecasts (Ertimur, Mayew, and Stubben, 2011). Since managers disclose detailed earnings information during conference calls (Sunder, 2002), we expect that analysts will better understand such earnings components as revenue; hence, we also examine annual and quarterly revenue forecasts. Barron et al. (2017) find that analysts sometimes ask balance-sheet-related questions during Q&A sessions, and Price et al. (2012) find that analysts infer cash-flow-related information from conference calls. Therefore, we further examine forecasts of book value and cash flow besides earnings and revenue forecasts. Since analysts rarely issue quarterly forecasts for book value and cash flow, we only collect annual data of these two items.

To partition analyst forecasts, we need to reliably identify the timings of both earnings releases and conference calls. We start with Bloomberg's time data for both events from 2008 to 2017. Our sample begins in 2008 since Bloomberg provides time data in a readable format from 2008.[3] We verify the timestamps by using newswires such as Nexis Uni (formerly LexisNexis) and Seeking Alpha. We follow Chen et al. (2018) and require that the conference call be held

[3] I/B/E/S is commonly used to identify earnings announcement timing. Since several studies find errors in I/B/E/S earnings announcement timestamps (e.g., Michaely, Rubin, and Vedrashko, 2016), we use Bloomberg time data as a starting point.

within (0,2) trading days around the accompanying earnings announcement. This screen results in 103,322 paired events by 4,159 firms.

Next, we collect analyst forecast data around the two events from I/B/E/S. To reduce the impact of other information sources, we collect forecasts issued within two trading days before the earnings announcements (hereafter, early forecasts), those issued between the two events (hereafter, middle forecasts), and those issued up to two trading days after the earnings announcements (hereafter, late forecasts).[4] Regarding annual forecasts, we include those issued around the earnings releases and conference calls within one year prior to the forecast period. Panel A of Figure 1 presents an example of the timeline for annual forecasts. When we collect annual forecasts for the year 2018, we focus on those issued around the earnings releases and conference calls for the year-end of 2017 and Q1, Q2, and Q3 of 2018.[5] Then we separate the forecasts into the early, middle, and late groups for each quarter. For quarterly forecasts, we focus on the reports issued around earnings announcements and conference calls in the fiscal quarter before the forecast period. We illustrate an example in Panel B of Figure 1.

Table 1 summarizes the data for each type of analyst forecast. We collect 541,436 annual earnings forecasts from 70,038 firm-quarters for 3,427 unique firms. We also have 555,126 annual revenue forecasts from 69,190 firm-quarters, 109,676 annual book value forecasts from 41,931 firm-quarters, and 116,035 annual cash-flow forecasts from 38,086 firm-quarters. We collect 376,344 and 311,428 quarterly earnings forecasts and revenue forecasts, respectively.

[4] Our results are robust if we expand the scope of our analysis to the forecasts issued within five days prior to the earnings announcements and five days after the conference calls.

[5] For annual forecasts, we do not examine those issued around earnings announcements and conference calls in the previous year because we assume analysts care more about accuracy for short-term forecasts. Research has found overly optimistic long-term forecasts (e.g., Dechow, Hutton, and Sloan, 2000).

Besides accuracy, analysts gain utility from timeliness (e.g., Crichfield, Dyckman, and Lakonishok, 1978; O'Brien, 1988; Cooper, Day, and Lewis, 2001). But given the importance and informativeness of conference calls documented by prior literature (e.g., Mayew et al., 2013), we expect that few analysts issue forecasts shortly before conference calls. We present the proportions of three groups of forecasts (early, middle, and late) in Figure 2. Among all the six types of forecasts, early forecasts account for over 14.5% of our sample, and middle forecasts account for around 7%. Over 70% of forecasts are issued after conference calls, which implicitly suggest the importance of the two disclosure events. The proportion of the middle group is over 9% for annual CPS forecasts. In an untabulated test, we restrict the sample to firms with over four (eight) hours between the earnings release and the conference call. The proportion of middle forecasts increases to over 28% (38%), suggesting that analysts prefer not to delay forecasts too long. We further examine the interval for the three groups and present the results in Figure 3. Middle forecasts are associated with the longest interval between the two events (about 12 hours), which is consistent with analysts not needing much time to digest information from the earnings release and to prepare their reports.

3.2 Variable definitions for cross-sectional tests

In the second set of hypotheses, we expect that analysts will value conference calls less if they get exposed to other sources of information, namely, earnings guidance concurrent issued with earnings release (*Guidance*), conference calls held by firms in the same industry (*OtherCC*), and private conferences (*Private*). Managers increasingly provide concurrent earnings forecasts with earnings releases (Hoskin, Hudges, and Ricks, 1986; Anilowski, Feng, and Skinner, 2007; Rogers and Van Buskirk, 2013). We define concurrent earnings guidance as those issued on the same day as the earnings announcement and collect guidance data from I/B/E/S. Conference calls

from other firms are informative to the market (Brochet et al., 2018); we expect that analysts collect spillover knowledge if they cover a firm in the same industry that holds a conference call within one week prior to the focal firm's call. Investor conferences facilitate private interaction managers and analysts (Bushee, Jung, and Miller, 2011; Green, Jame, Markov, and Subasi, 2014a and 2014b). If investor conferences are held after the quarter end, we expect that the information disclosed during the private conferences will, at least partially, preempt subsequent public disclosures. We collect investor conference data from Bloomberg. Note that *Guidance* and *Private* are defined at the firm level, whereas *OtherCC* is defined at the analyst level.

Besides earnings announcements and conference calls, analysts are most likely exposed to concurrent guidance. More than half the analysts issue reports with spillover knowledge from peer firms' conference calls. Only a small proportion of analysts have potential access to investor conferences in our sample. Figure 4 plots the proportion of analyst annual EPS forecasts subject to these three sources of information.[6] Only 7.32% forecasts are issued with no exposure to any of the three sources, whereas 74.23%, 62.34%, and 20.17% of forecasts are associated with concurrent earnings guidance, earnings calls held by firms in the same industry in the prior week, and private investor conferences, respectively. Some firm-quarters are associated with multiple information access – 11.05% of the observations in our sample are subject to all three sources.

In the third set of hypotheses, we expect that analysts value conference calls less when the firms have a larger size (*Large*), lower leverage ratio (*Lowlev*), and lower volatile past earnings (*Lowvol*), indicating less information asymmetry and lower uncertainty. We acquire the data for size, leverage, and quarterly earnings from Compustat. We define size as the natural log of market

[6] Analysts always issue all types of forecasts for a firm simultaneously. The Venn Diagrams looks similar among all types of forecasts.

value, and leverage as the ratio of total debt to total equity. Earnings volatility is defined by the standard deviation of the firm's earnings in the past 12 quarters. For each firm-quarter, we separate firms into large and small subgroups by the median of market value. Similarly, we divide firms into those with higher and lower debt-financing by the median of the leverage ratio and divide firms into those with higher and lower volatility by the median of earnings volatility in the past 12 quarters. Detailed definitions for all variables are presented in Appendix A.

4. Research design and empirical results

4.1 Forecast accuracy and dispersion at the firm-quarter level

Conference calls are informative on average to analysts (e.g., Kimbrough, 2005). Therefore, we expect that analysts will compromise accuracy if they forecast before conference calls. For each firm-quarter, we compute the mean of the forecasts available as consensus forecasts for the early, middle, and late groups. Not all firm-quarters include the three groups of forecasts. For instance, only 7,733 firm-quarters from 967 firms and 3,428 firm-quarters from 434 firms include early annual BPS forecasts and middle annual CPS forecasts, respectively. For each firm-quarter, we define forecast accuracy as the absolute error of the consensus forecast (i.e., mean of forecasts) within each group scaled by the closing stock price in the previous quarter, then multiplied by -100. Next, we compare the accuracy of late forecasts and the other two groups of forecasts and report the ratio of the cases where late forecasts are more accurate.

Panel A of Table 2 presents the results of comparing the early and late groups, using only firm-quarters with both early and late forecasts.[7] For annual EPS forecasts, we have 342,966

[7] We report the results of comparing the early and late groups, instead of early and middle groups, because only a small proportion of firm-quarters include middle forecasts. The power of the tests decreases by losing observations. But our results are consistent if we directly compare early and middle groups: the accuracy of middle forecasts is higher than that of early forecasts, indicating the informativeness of earnings releases on average.

observations from 32,038 firm quarters, which come from 2,190 firms. We find that late forecasts are more accurate on average (-0.055 versus -0.044), and more accurate for about 60% of firm-quarters. A *t*-test ($p < 0.01$) is statistically significant. We find consistent evidence that accuracy improves for late forecasts across other forecast types in the rest of Panel A. These results indicate that the combination of the earnings release and the conference call is informative to analysts.

We compare the accuracy of consensus forecasts between middle and late groups in Panel B of Table 2. We require that the sample firm-quarters have both middle and late annual EPS forecasts, leaving us with 78,491 observations from 10,454 firm-quarters for 989 unique firms. Unexpectedly, there is no difference between the mean accuracy of consensus forecasts of middle groups and that of late groups; late forecasts are more accurate for only 48.90% of firm-quarters. A *t*-test indicates that the two groups do not differ significantly in accuracy. For all the other five types of forecasts, accuracy improves around conference calls for, at most, 51% of firm-quarters. The comparisons, along with the *t*-test, suggest that conference calls do not inform analysts incremental to earnings releases at a firm-quarter level.

Though conference calls do not improve the aggregate forecast accuracy, they likely make the forecasts less dispersed. Kimbrough (2005) and Kross and Suk (2012) suggest that conference calls promote a "fair game" among analysts and reduce forecast dispersion. We compare the forecast dispersion between middle and late groups in Panel C of Table 2. Dispersion is defined as the standard deviation of all forecasts within each group (early/middle/late) for each firm-quarter. To compute dispersion, we require that the firm-quarters include at least two forecasts for both middle and late groups, which reduces the sample.

However, we show that late forecasts are not less dispersed than middle forecasts on average. Taking annual EPS forecasts as an example, among the 63,372 observations from 6,561

firm-quarters for 740 firms, we find that late forecasts are less dispersed about half the time. The forecast dispersion of the middle group is slightly higher than that of the late group (0.104 versus 0.103). However, a *t*-test for the difference is not statistically significant. The other five types of forecasts yield consistent results, indicating that conference calls do not help analysts build a tighter belief for firms' future performance. Taken together, the results from the accuracy and dispersion comparison between middle forecasts and late forecasts suggest that analysts do not always value conference calls.

4.2 Are late forecasts associated with higher accuracy?

To better understand the impact of conference calls on forecast accuracy, we run an analyst-level multiple regression. We regress forecast accuracy on early and middle group indicators, along with control variables as follows:

$$Accuracy = \beta_0 + \beta_1 Early + \beta_2 Middle + \Sigma\beta_k Controls_k + FE + \varepsilon \qquad (1)$$

Accuracy is defined as the absolute difference between the actual financial number (e.g., quarterly EPS, annual revenue, etc.) and the forecasted number scaled by the stock price at the quarter end, multiplied by -100. The variables of interest are *Early* and *Middle*. *Early* is a dummy that equals 1 if the analyst issued the forecast before the earnings release and 0 otherwise. *Middle* is a dummy that equals 1 if the analyst issues the forecast between earnings release and conference call and 0 otherwise.

We follow Clement (1999) and Tan, Wang, and Welker (2011) and control for five analyst characteristics: (1) analysts' firm-specific experience, defined as the number of years that the analyst follows the firm; (2) analysts' general experience, defined as the number of years that the analyst follows any firm; (3) brokerage size, defined as the number of analysts in the same brokerage house; (4) firm coverage, defined as the number of firms covered by the analysts; and

(5) forecast horizon, defined as the number of days between the forecast and actual financial report. Detailed definitions for all variables are presented in Appendix A. We use a firm-quarter fixed effect to remove the impact of omitted variables within firm and quarter. To control for unobservable omitted variables within brokerage houses and analysts, we further implement brokerage and firm-quarter two-way fixed effects, and analyst and firm-quarter two-way fixed effects.[8] We cluster standard errors by firms to account for potential heteroscedasticity.

H1 argues that conference calls help improve analyst forecast accuracy. *Ex ante*, we expected that both early and middle forecasts are less accurate than late forecasts. We report the regression results in Table 3. We document a relatively consistent negative β_1 throughout all the six types of forecasts we examine. The accuracy of early forecasts for annual BPS and CPS are sometimes not significantly lower, depending on the fixed effects we use. The results suggest that analysts compromise accuracy by issuing forecasts before earnings releases. However, we do not find any significantly negative β_2. For annual EPS forecasts, though not significant, the coefficients of middle forecasts are positive using all the fixed effects. Consistent with prior studies, we find that forecast accuracy is positively associated with analysts' firm experience and general experience, and negatively associated with analysts' forecast horizon.

The results suggest that some analysts effectively ignore conference calls by forecasting before they occur. Possible explanations include that analysts get access to private information from other sources and that better information environment reduces the informativeness of some conference calls. We will discuss these two explanations in the next two sections.

4.3 Cross-sectional tests (H2): other information sources

[8] Because we use a firm-quarter fixed effect for all regressions, we do not control for any firm characteristics. Our results are consistent if we relax to use firm and quarter fixed effects, and incorporate firm-level controls, such as firm size, book-to-market equity ratio, leverage, sales growth, and number of analysts following.

H2 argues that analysts do not value conference calls much when they receive information from management guidance, conference calls held by other firms in the same industry, and investor conferences. Therefore, we run a cross-sectional test by interacting early and middle indicators with the three information sources. We state our model as follows:[9]

$$Accuracy = \beta_0 + \beta_1 Early + \beta_2 Middle + \beta_3 Early * Guidance + \beta_4 Middle * Guidance + \beta_5 OtherCC + \beta_6 Early * OtherCC + \beta_7 Middle * OtherCC + \beta_8 Early * Private + \beta_9 Middle * Private + \Sigma\beta_k Controls_k + FE + \varepsilon \quad (2)$$

Guidance is an indicator that equals 1 if the forecast is issued for a firm that issues earnings guidance concurrently with earnings release, and 0 otherwise. *OtherCC* is an indicator that equals 1 if the analyst issues the forecast after a same-industry firm she follows holds a conference call within one week before the focal firm's call, and 0 otherwise. *Private* is an indicator that equals 1 if the forecast is issued for a firm that holds at least one private investor conference between the quarter-end and public earnings call, and 0 otherwise.[10] We use the same control variables as in section 4.1. For brevity, we only report the analysis using two fixed effects: (1) firm-quarter fixed effect; (2) analyst and firm-quarter two-way fixed effects. We report the regression results in Table 4. We present the cross-sectional tests for the three information sources separately in column (1) to column (9) and show the horserace results as in equation (2) from columns (10) to (12).

The interaction terms indicate the incremental impact of the three information sources on early and middle forecasts. Our variables of interest are these interaction terms, especially

[9] Since we implement a firm-quarter fixed effect throughout the analysis, we do not include indicators of *Guidance* and *Private*: for a given firm-quarter, the firm's choice to issue a concurrent earnings guidance or hold a private investor conference is fixed. We incorporate an indicator of *OtherCC* when we use firm-quarter fixed effect or brokerage and firm-quarter fixed effects because attending conference calls held by other firms in the same industry is an analyst-level choice. We take out this indicator when we use analyst and firm-quarter fixed effects.

[10] I/B/E/S database masks analyst id and we cannot link the names of analysts who attend investor conferences to their forecasts. Therefore, we assume all analysts are equally exposed to the private conferences.

interaction terms with middle forecasts (i.e., β_4, β_7, and β_9). We hypothesize that the three information sources could be reasons why analysts do not always value conference calls; hence, we expect that they all have a positive impact on middle forecasts.

First, we do not find a significant β_4. Earnings guidance, as public disclosure in earnings releases, will increase the forecast accuracy for both middle and late analysts. Hence, we need not find an incremental effect of public guidance on middle forecasts over late forecasts. β_7 is not significant, either. But we do find a positive β_6, suggesting that if the analysts get exposed to spillover information from other conference calls, the early forecasts are more accurate. The results also suggest the importance of earnings announcements implicitly: if analysts issue forecasts after earnings announcements, information spillover is only a minor effect and does not incrementally increase forecast accuracy.

We find a significantly positive impact of private conferences on middle forecasts (β_9), and the results are robust with all combinations of fixed effects. The findings suggest that private investor conferences help increase the accuracy of middle forecasts. Moreover, the negative β_2 shows that middle forecasts are less accurate than late forecasts when private information is considered, though not significant. However, private information does not improve the accuracy for early forecasts, indicated by an insignificant β_{10}. Our conjecture is that the issuance of early forecasts depends on the credibility of private information, and that skeptical analysts may wait to verify the private information with extra signals from earnings announcements.

Although our main results show that analysts' forecast accuracy is not improved by earnings conference calls and, to some extent, contradict prior findings by Bowen et al. (2002) and Kimbrough (2005), they do not suggest that conference calls are uninformative. We interpret our results as that analysts effectively ignore informative conference calls when they get exposed to

private information. If analysts use information from private conferences in their forecasts, the value of earnings calls depends on the quality of the private information. Cooper et al. (2001) argue that analysts face a utility tradeoff between accuracy and timeliness. Therefore, if an analyst perceives an upcoming conference call as uninformative, she will issue a middle forecast. Moreover, if the quality of information from private channels and earnings announcements is high enough, analysts will not compromise accuracy by ignoring calls. We present a simple model to describe this scenario in Appendix B.

4.4 Cross-sectional tests (H3): information asymmetry and uncertainty

We test the incremental impact of information asymmetry and uncertainty on middle forecasts and run cross-sectional tests in a similar way as in section 4.3. We state the equation as follows:

$$Accuracy = \beta_0 + \beta_1 Early + \beta_2 Middle + \beta_3 Early * Large + \beta_4 Middle * Large + \beta_5 Early * Lowlev + \beta_6 Middle * Lowlev + \beta_7 Early * Lowvol + \beta_8 Middle * Lowvol + \Sigma\beta_k Controls_k + FE + \varepsilon \quad (3)$$

Large is an indicator that equals 1 if the firms' market cap is above the median in the fiscal quarter, and 0 otherwise. *Lowlev* is an indicator that equals 1 if the firms' leverage ratio is below the median in the fiscal quarter, and 0 otherwise. *Lowvol* is an indicator that equals 1 if the firms' earnings volatility in the previous 12 quarters is below the median in the fiscal quarter, and 0 otherwise. Because we implement firm-quarter fixed effects for all regressions, we do not use stand-alone terms for the three variables – for each firm-quarter, firm size, leverage, and earnings volatility are fixed.

We present the regression results in Table 5. H3 predicts that analysts will value conference calls less when the firm they follow has lower information asymmetry and lower earnings

uncertainty. So, we expect that the coefficients for the interaction terms with middle forecast dummy (i.e., β_4, β_6, and β_8) are all positive. However, we do not find any support for this argument. None of the three predicted variables generates significant results. Larger firms do not have an incremental impact on early or middle forecasts. Ball and Shivakumar (2008) and Basu, Duong, Markov, and Tan (2013) both argue that information production is a convex function of size. Therefore, the relative informativeness of conference calls is limited for both large and small firms, and could explain the insignificant results of size. We further show that early forecasts are more accurate for firms with less debt financing and lower earnings volatility. The results altogether suggest that the information environment and earnings uncertainty do not explain the phenomenon that analysts sometimes effectively ignore conference calls, but to some extent, account for the fact that analysts sometimes issue forecasts prior to earnings announcements.

5. Additional Analysis

5.1 Impact of conference calls on analyst revision

Prior studies infer that analysts update their expectations and revise forecasts when firms release such financial numbers as earnings and management guidance (e.g., Brown and Rozeff, 1979; Baginski and Hassell, 1990). Though forecast accuracy does not improve around conference calls, likely late forecasts are associated with higher revision if analysts incorporate information from calls; hence, conference calls could be informative regarding such forecast properties as revisions. We substitute forecast accuracy in equation (1) using forecast revision, and regress revision on early and middle group indicators, along with control variables as follows:

$$Revision = \beta_0 + \beta_1 Early + \beta_2 Middle + \Sigma \beta_k Controls_k + FE + \varepsilon \qquad (4)$$

Revision is defined as the absolute difference between the current and previous forecasted numbers (e.g., quarterly EPS, annual revenue, etc.), scaled by the stock price at the quarter end,

multiplied by 100. We consider the six types of forecasts as in section 4.1 – annual forecasts for earnings per share, revenue, book value per share, and cash flow per share, and quarterly forecasts for earnings per share and revenue. We use the same controls for analysts' characteristics and report the results using analyst and firm-quarter fixed effects for simplicity. We cluster the standard errors by firm.

Table 6 presents the results. Among the six types of forecasts, we consistently show that early forecasts are revised less than late forecasts, except for annual CPS forecasts. The coefficients of *Middle* are mostly negative, though not significant (marginal significant for annual EPS when using analyst and firm-quarter fixed effects). Altogether, conference calls do not have a significant impact on forecast revisions on average, which is consistent with the implications of our previous empirical tests on forecast accuracy.

5.2 Capital market implications of middle forecasts

Previous studies find that conference calls move the market and significantly improve the price discovery process (e.g., Matsumoto et al., 2011). Analyst forecasts can also generate trades, especially trades made by institutional investors (Jackson, 2005; Ljungqvist et al., 2007; Gu, Li, and Yang, 2013). We expect that the price discovery power of conference calls will drop when analysts issue middle forecasts for two reasons. First, institutional investors can easily get access to analyst reports and likely trade based on analyst forecasts. Second, middle forecasts, as shown in the previous section, are associated with exposure to private information, which could also be acquired by institutional investors.

To test our predictions, we examine firms that release earnings after trading hours and hold their conference calls during regular trading hours. We also require that the interval between the

two events is at least 4 hours.[11] Then we separate the firm-quarters into two groups – those with and without middle forecasts. We are left with 9,286 observations, within which 6,538 firm-quarters include at least one middle forecasts. We follow Greene and Watts (1996) and define after-hour price contribution as the proportion of close-to-open return over close-to-close return. We believe that the difference in the after-hour price discovery between the two groups is due to middle forecasts, holding everything else constant. We find that (untabulated) after-hour price contribution is 47.87% on average for the firm-quarters with middle forecasts, whereas the proportion is only 3.74% for those without such forecasts. To build a more rigorous association, we run a firm-quarter regression as follows:

$$AHPC = \beta_0 + \beta_1 TreatMiddle + \beta_2 nAnalysts + \beta_3 Surprise + \beta_4 TradeVol + \beta_5 Size + \beta_6 nAnnounce + \beta_7 NYSE + FE + \varepsilon \quad (5)$$

AHPC is after-hour price contribution, defined by the proportion of half-day return during the after-hour over the one-day holding return. *TreatMiddle*, the variable of our interest, is an indicator that equals 1 if at least one forecast is issued between the earnings release and conference call, and 0 otherwise. We follow Jiang, Likitapiwat, and Mclnish (2012) and control for the number of analysts following the firm, the earnings surprise, the average of 1-month trading volume prior to the announcement date, the firm size, the number of earnings announcements made on the same day and the same after-hour session, and stocks traded on NYSE.

We expect that after-hour price contribution will be higher if middle forecasts exist, that is, $\beta_1 > 0$. Table 7 shows the empirical results for this test. We present the regression without fixed effects in column (1) and the regression with industry and year two-way fixed effects in column

[11] Four hours is the median length of the interval between the earnings announcement and the conference call. We assume that this is the minimal time analysts need to issue forecasts after analyzing information from earnings releases. Our results are robust if we use a 2-hour or 8-hour threshold.

(2). The coefficient of *TreatMiddle* is significantly positive, though marginal. The findings suggest that the ability of conference calls to move the market is limited when middle forecasts exist. Because most after-hour trading is made by informed traders such as institutional investors (Jiang et al., 2012), the results indicate that individual investors have less advantage when analysts issue middle forecasts. Our results also imply that the objective of Regulation FD and open conference calls to provide equal access to information is not fully achieved.

6. Conclusion

Prior studies find that analyst forecasts are more accurate and less dispersed after conference calls (Kimbrough, 2005; Kross and Suk, 2012). They compare the properties of analyst forecasts before and after firms' initiation or regular use of open conference calls. However, it is hard to infer a causal effect from their research design since they commingle the information from earnings releases and the conference calls in the pre and post period. We directly compare analyst forecasts before earnings announcements, between earnings announcements and conference calls, and after conference calls from 2008 to 2017. Contrary to prior findings, we do not find any improvement of analyst forecasts quality around conference calls alone at a firm-quarter level. Our analyst-level regression results suggest that some analysts ignore a few conference calls without compromising accuracy.

We propose two reasons that some conference calls are not informative: (1) some analysts have access to other information sources; (2) some firms have less information asymmetry. We provide strong evidence for the first argument when analysts get access to private information but do not find any results consistent with the second one. Hence, even though we argue that analysts do not always value conference calls, the findings do not suggest uninformative conference calls

on average. The results instead imply unequal access to material information among large investors, knowledgeable professionals, and individual investors. Public disclosure is, at least partially, preempted by private channels. Our additional analysis shows consistent results in that the ability of conference calls to move the market is compromised when analysts issue forecasts shortly before the calls.

Collectively, our results document that some analysts do not benefit from conference calls and ignore the "informative" event when private information channels exist. We help understand how conference calls add value to the market, and more importantly, when they don't and why they don't. Our findings have direct implications for regulations such as Reg FD, which was intended to reduce selective and nonpublic material disclosure. Since financial regulators have always been interested in creating a level information playing field for market participants, a deeper understanding of how private conferences preempt public disclosure is of clear relevance to policy makers.

Reference

Anilowski, Carol, Mei Feng, and Douglas J. Skinner. "Does earnings guidance affect market returns? The nature and information content of aggregate earnings guidance." *Journal of Accounting and Economics* 44, nos. 1-2 (2007): 36-63.

Baginski, Stephen P., and John M. Hassell. "The market interpretation of management earnings forecasts as a predictor of subsequent financial analyst forecast revision." *The Accounting Review* 65, no. 1 (1990): 175-190.

Bailey, Warren, Haitao Li, Connie X. Mao, and Rui Zhong. "Regulation fair disclosure and earnings information: market, analyst, and corporate responses." *The Journal of Finance* 58, no. 6 (2003): 2487-2514.

Ball, Ray, and Lakshmanan Shivakumar. "Earnings quality at initial public offerings." *Journal of Accounting and Economics* 45, nos. 2-3 (2008): 324-349.

Barron, Orie E., Donal Byard, and Yong Yu. "Earnings announcement disclosures and changes in analysts' information." *Contemporary Accounting Research* 34, no. 1 (2017): 343-373.

Basu, Sudipta, Truong Xuan Duong, Stanimir Markov, and Eng-Joo Tan. "How important are earnings announcements as an information source?." *European Accounting Review* 22, no. 2 (2013): 221-256.

Beaver, William H. "The information content of annual earnings announcements." *Journal of Accounting Research* 6, Supplement (1968): 67-92.

Bhushan, Ravi. "Firm characteristics and analyst following." *Journal of Accounting and Economics* 11, nos. 2-3 (1989): 255-274.

Bhushan, Ravi. "An informational efficiency perspective on the post-earnings announcement drift." *Journal of Accounting and Economics* 18, no. 1 (1994): 45-65.

Black, Ervin L., Theodore E. Christensen, Paraskevi Vicky Kiosse, and Thomas D. Steffen. "The influence of manager-analyst interactions on street earnings: evidence from conference calls and excluded analysts." *Available at SSRN 2992618* (2019).

Bowen, Robert M., Angela K. Davis, and Dawn A. Matsumoto. "Do conference calls affect analysts' forecasts?" *The Accounting Review* 77, no. 2 (2002): 285-316.

Bradley, Daniel, Russell Jame, and Jared Williams. "Non-deal roadshows, investor welfare, and analyst conflicts of interest." *Available at SSRN 3302687* (2018).

Brochet, Francois, Kalin Kolev, and Alina Lerman. "Information transfer and conference calls." *Review of Accounting Studies* 23, no. 3 (2018): 907-957.

Brown, Lawrence D., and Michael S. Rozeff. "Adaptive expectations, time-series models, and analyst forecast revision." *Journal of Accounting Research* 17, no.2 (1979): 341-351.

Brown, Stephen, Stephen A. Hillegeist, and Kin Lo. "Conference calls and information asymmetry." *Journal of Accounting and Economics* 37, no. 3 (2004): 343-366.

Bushee, Brian J., Dawn A. Matsumoto, and Gregory S. Miller. "Managerial and investor responses to disclosure regulation: The case of Reg FD and conference calls." *The Accounting Review* 79, no. 3 (2004): 617-643.

Bushee, Brian J., Dawn A. Matsumoto, and Gregory S. Miller. "Open versus closed conference calls: The determinants and effects of broadening access to disclosure." *Journal of Accounting and Economics* 34, nos.1-3 (2003): 149-180.

Bushee, Brian J., Michael J. Jung, and Gregory S. Miller. "Conference presentations and the disclosure milieu." *Journal of Accounting Research* 49, no. 5 (2011): 1163-1192.

Call, Andrew C., Nathan Y. Sharp, and Thomas Shohfi. "Which buy-side institutions participate in public earnings conference calls? Implications for capital markets and sell-side coverage." *Available at SSRN 2731930* (2018).

Chen, Jing, Elizabeth Demers, and Baruch Lev. "Oh what a beautiful morning! Diurnal influences on executives and analysts: Evidence from conference calls." *Management Science* 64, no.12 (2018): 5899-5924.

Clement, Michael B. "Analyst forecast accuracy: Do ability, resources, and portfolio complexity matter?." *Journal of Accounting and Economics* 27, no. 3 (1999): 285-303.

Collins, Daniel W., Stephen P. Kothari, and Judy Dawson Rayburn. "Firm size and the information content of prices with respect to earnings." *Journal of Accounting and Economics* 9, no. 2 (1987): 111-138.

Cooper, Rick A., Theodore E. Day, and Craig M. Lewis. "Following the leader: a study of individual analysts' earnings forecasts." *Journal of Financial Economics* 61, no. 3 (2001): 383-416.

Crichfield, Timothy, Thomas Dyckman, and Josef Lakonishok. "An evaluation of security analysts' forecasts." *The Accounting Review* 53, no. 3 (1978): 651-668.

Das, Somnath, Carolyn B. Levine, and Konduru Sivaramakrishnan. "Earnings predictability and bias in analysts' earnings forecasts." *The Accounting Review* 73, no. 2 (1998): 277-294.

Davis, Angela K., Weili Ge, Dawn A. Matsumoto, and Jenny L. Zhang. "The effect of manager-specific optimism on the tone of earnings conference calls." *Review of Accounting Studies* 20, no. 2 (2015): 639-673.

Dechow, Patricia M., Amy P. Hutton, and Richard G. Sloan. "The relation between analysts' forecasts of long-term earnings growth and stock price performance following equity offerings." *Contemporary Accounting Research* 17, no. 1 (2000): 1-32.

Easton, Peter D., and Mark E. Zmijewski. "Cross-sectional variation in the stock market response to accounting earnings announcements." *Journal of Accounting and Economics* 11, nos. 2-3 (1989): 117-141.

Ertimur, Yonca, William J. Mayew, and Stephen R. Stubben. "Analyst reputation and the issuance of disaggregated earnings forecasts to I/B/E/S." *Review of Accounting Studies* 16, no. 1 (2011): 29-58.

Feng, Mei, and Sarah McVay. "Analysts' incentives to overweight management guidance when revising their short-term earnings forecasts." *The Accounting Review* 85, no. 5 (2010): 1617-1646.

Frankel, Richard, Marilyn Johnson, and Douglas J. Skinner. "An empirical examination of conference calls as a voluntary disclosure medium." *Journal of Accounting Research* 37, no.1 (1999): 133-150.

Gintschel, Andreas, and Stanimir Markov. "The effectiveness of Regulation FD." *Journal of Accounting and Economics* 37, no. 3 (2004): 293-314.

Gow, Ian D., David F. Larcker, and Anastasia A. Zakolyukina. "Non-answers during conference calls." *Chicago Booth Research Paper* 19-01 (2019).

Graham, John R., Campbell R. Harvey, and Shiva Rajgopal. "The economic implications of corporate financial reporting." *Journal of Accounting and Economics* 40, nos. 1-3 (2005): 3-73.

Green, T. Clifton, Russell Jame, Stanimir Markov, and Musa Subasi. "Access to management and the informativeness of analyst research." *Journal of Financial Economics* 114, no. 2 (2014): 239-255.

Green, T. Clifton, Russell Jame, Stanimir Markov, and Musa Subasi. "Broker-hosted investor conferences." *Journal of Accounting and Economics* 58, no. 1 (2014): 142-166.

Greene, Jason T., and Susan G. Watts. "Price discovery on the NYSE and the NASDAQ: The case of overnight and daytime news releases." *Financial Management* 25, no. 1 (1996): 19-42.

Greenstein, Marilyn Magee, and Heibatollah Sami. "The impact of the SEC's segment disclosure requirement on bid-ask spreads." *The Accounting Review* 69, no. 1 (1994): 179-199.

Gu, Zhaoyang, Zengquan Li, and Yong George Yang. "Monitors or predators: The influence of institutional investors on sell-side analysts." *The Accounting Review* 88, no. 1 (2013): 137-169.

Hasbrouck, Joel. "Measuring the information content of stock trades." *The Journal of Finance* 46, no. 1 (1991): 179-207.

Heinrichs, Anne, Jihwon Park, and Eugene F. Soltes. "Who consumes firm disclosures? Evidence from earnings conference calls." *The Accounting Review* 94, no. 3 (2019): 205-231.

Hollander, Stephan, Maarten Pronk, and Erik Roelofsen. "Does silence speak? An empirical analysis of disclosure choices during conference calls." *Journal of Accounting Research* 48, no.3 (2010): 531-563.

Hoskin, Robert E., John S. Hughes, and William E. Ricks. "Evidence on the incremental information content of additional firm disclosures made concurrently with earnings." *Journal of Accounting Research* 24, Supplement (1986): 1-32.

Hwang, Lee-Seok, Ching-Lih Jan, and Sudipta Basu. "Loss firms and analysts' earnings forecast errors." *The Journal of Financial Statement Analysis* 1, no. 2 (1996).

Jackson, Andrew R. "Trade generation, reputation, and sell-side analysts." *The Journal of Finance* 60, no. 2 (2005): 673-717.

Jacob, John, Thomas Z. Lys, and Margaret A. Neale. "Expertise in forecasting performance of security analysts." *Journal of Accounting and Economics* 28, no. 1 (1999): 51-82.

Jiang, Christine X., Tanakorn Likitapiwat, and Thomas H. McInish. "Information content of earnings announcements: Evidence from after-hours trading." *Journal of Financial and Quantitative Analysis* 47, no. 6 (2012): 1303-1330.

Jung, Michael J., M.H. Franco Wong, and X. Frank Zhang. "Buy-side analysts and earnings conference calls." *Journal of Accounting Research* 56. no. 3 (2018): 913-952.

Kadan, Ohad, Leonardo Madureira, Rong Wang, and Tzachi Zach. "Analysts' industry expertise." *Journal of Accounting and Economics* 54, nos. 2-3 (2012): 95-120.

Kimbrough, Michael D. "The effect of conference calls on analyst and market underreaction to earnings announcements." *The Accounting Review* 80, no.1 (2005): 189-219.

Kirk, Marcus P., and Stanimir Markov. "Come on over: Analyst/investor days as a disclosure medium." *The Accounting Review* 91, no. 6 (2016): 1725-1750.

Koo, David S., J. Julie Wu, and P. Eric Yeung. "Earnings attribution and information transfers." *Contemporary Accounting Research* 34, no. 3 (2017): 1547-1579.

Kross, William J., and Inho Suk. "Does Regulation FD work? Evidence from analysts' reliance on public disclosure." *Journal of Accounting and Economics* 53, nos. 1-2 (2012): 225-248.

Lang, Mark H., and Russell J. Lundholm. "Corporate disclosure policy and analyst behavior." *The Accounting Review* 71, no. 4 (1996): 467-492.

Lansford, Benjamin, Jimmy Lee, and Jennifer W. Tucker. "Disclosure of management guidance in conference calls: Materiality, determinants and consequences." *Available at SSRN 1270974* (2009).

Landsman, Wayne R., and Edward L. Maydew. "Has the information content of quarterly earnings announcements declined in the past three decades?" *Journal of Accounting Research* 40, no. 3 (2002): 797-808.

Larcker, David F., and Anastasia A. Zakolyukina. "Detecting deceptive discussions in conference calls." *Journal of Accounting Research* 50, no. 2 (2012): 495-540.

Leuz, Christian, and Robert E. Verrecchia. "The economic consequences of increased disclosure." *Journal of Accounting Research* 38, Supplement (2000): 91-124.

Li, Feng, Michael Minnis, Venky Nagar, and Madhav Rajan. "Knowledge, compensation, and firm value: An empirical analysis of firm communication." *Journal of Accounting and Economics* 58, no. 1 (2014): 96-116.

Ljungqvist, Alexander, Felicia Marston, Laura T. Starks, Kelsey D. Wei, and Hong Yan. "Conflicts of interest in sell-side research and the moderating role of institutional investors." *Journal of Financial Economics* 85, no. 2 (2007): 420-456.

Matsumoto, Dawn, Maarten Pronk, and Erik Roelofsen. "What makes conference calls useful? The information content of managers' presentations and analysts' discussion sessions." *The Accounting Review* 86, no. 4 (2011): 1383-1414.

Mayew, William J., and Mohan Venkatachalam. "The power of voice: Managerial affective states and future firm performance." *The Journal of Finance* 67, no. 1 (2012): 1-43.

Mayew, William J., Nathan Y. Sharp, and Mohan Venkatachalam. "Using earnings conference calls to identify analysts with superior private information." *Review of Accounting Studies* 18, no. 2 (2013): 386-413.

Michaely, Roni, Amir Rubin, and Alexander Vedrashko. "Further evidence on the strategic timing of earnings news: Joint analysis of weekdays and times of day." *Journal of Accounting and Economics* 62, no.1 (2016): 24-45.

Milian, Jonathan A., Antoinette L. Smith, and Elio Alfonso. "Does an analyst's access to information vary with the favorableness of their language when speaking to management?." *Accounting Horizons* 31, no. 4 (2017): 13-31.

Myers, Stewart C. "The capital structure puzzle." *The Journal of Finance* 39, no. 3 (1984): 574-592.

Myers, Stewart C., and Nicholas S. Majluf. "Corporate financing and investment decisions when firms have information that investors do not have." *Journal of Financial Economics* 13, no. 2 (1984): 187-221.

O'brien, Patricia C. "Analysts' forecasts as earnings expectations." *Journal of Accounting and Economics* 10, no. 1 (1988): 53-83.

Petacchi, Reining. "Information asymmetry and capital structure: Evidence from regulation FD." *Journal of Accounting and Economics* 59, nos. 2-3 (2015): 143-162.

Price, S. McKay, James S. Doran, David R. Peterson, and Barbara A. Bliss. "Earnings conference calls and stock returns: The incremental informativeness of textual tone." *Journal of Banking & Finance* 36, no. 4 (2012): 992-1011.

Rogers, Jonathan L., and Andrew Van Buskirk. "Bundled forecasts in empirical accounting research." *Journal of Accounting and Economics* 55, no. 1 (2013): 43-65.

Sunder, Shyam V. "Investor access to conference call disclosures: Impact of Regulation Fair Disclosure on information asymmetry." *Available at SSRN 298653* (2003).

Tan, Hongping, Shiheng Wang, and Michael Welker. "Analyst following and forecast accuracy after mandated IFRS adoptions." *Journal of Accounting Research* 49, no. 5 (2011): 1307-1357.

Tasker, Sarah C. "Bridging the information gap: Quarterly conference calls as a medium for voluntary disclosure." *Review of Accounting Studies* 3, nos.1-2 (1998): 137-167.

Yu, Fang Frank. "Analyst coverage and earnings management." *Journal of Financial Economics* 88, no. 2 (2008): 245-271.

Zhang, Yuan. "Analyst responsiveness and the post-earnings-announcement drift." *Journal of Accounting and Economics* 46, no. 1 (2008): 201-215.

Appendix A

Variable definitions

Main dependent variable	
Accuracy	The absolute difference between actual financial numbers (i.e., annual EPS, quarterly EPS, annual revenue, quarterly revenue, annual BPS, annual CPS) and the current forecasted financial numbers, multiplied by -100, and scaled by the closing stock price in the previous quarter.
Main variables of interest	
Early	An indicator that equals one if the forecast is issued within two trading days before the earnings announcement, and zero otherwise.
Middle	An indicator that equals one if the forecast is issued between the earnings announcement and the conference call, and zero otherwise.
Late	An indicator that equals one if the forecast is issued within five trading days after the earnings conference calls, and zero otherwise.
Cross-sectional variables	
Guidance	An indicator that equals one if the forecast is issued after the firm's concurrent earnings guidance, and zero otherwise.
OtherCC	An indicator that equals one if the forecast is issued within one week after a same-industry firm, followed by the same analyst, holding a conference call, and zero otherwise.
Private	An indicator that equals one if the forecast is issued after the firm's private investor conference, holding in the post-quarter-end period, and zero otherwise.
Large	An indicator that equals one if the firm's market value is above median in the fiscal quarter, and zero otherwise.
Lowlev	An indicator that equals one if the firm's leverage ratio (defined as total debt over total equity) is below median in the fiscal quarter, and zero otherwise.
Lowvol	An indicator that equals one if the firm's earnings volatility (defined as the standard deviation of earnings in the past 12 quarters) is below median in the fiscal quarter, and zero otherwise.
Analyst-level controls in the main tests	
Firm experience	Analyst's firm-specific experience, defined as number of years between analyst j's first forecast for firm i in IBES database and her current forecast for firm i.
General experience	Analyst's general experience, defined as the number of years between analyst j's first forecast in IBES and her current forecast.
Brokerage size	The number of analysts working for the IBES brokerage that analyst j is associated with.
Firm coverage	The number of firms analyst j covers in the IBES database.

Forecast horizon	The number of days between the current forecast and actual earnings report.
Dependent variable in the additional analysis	
Revision	The absolute difference between current and previous forecasted numbers (i.e., annual EPS, quarterly EPS, annual revenue, quarterly revenue, annual BPS, annual CPS), multiplied by 100, and scaled by the closing stock price in the previous quarter.
AHPC	After-hour price contribution, defined by the proportion of close-to-open half-day (after-hour) return over close-to-close return.
Variable of interest in the additional analysis	
TreatMiddle	An indicator that equals one if at least one forecast is issued between the earnings release and the conference call, and zero otherwise.
Firm-level controls in the additional analysis	
nAnalysts	The number of analysts following the firm.
Surprise	Earnings surprise, defined by the difference between actual earnings and consensus analyst forecast, scaled by the closing stock price in the previous quarter.
TradeVol	The average of 1-month trading volume prior to the earnings announcement date.
Size	The natural log of the firm's market capitalization.
nAnnounce	The number of earnings announcements made on the same day and the same after-hour session.
NYSE	An indicator that equals one if the stock is from NYSE exchange, and zero otherwise.

Appendix B

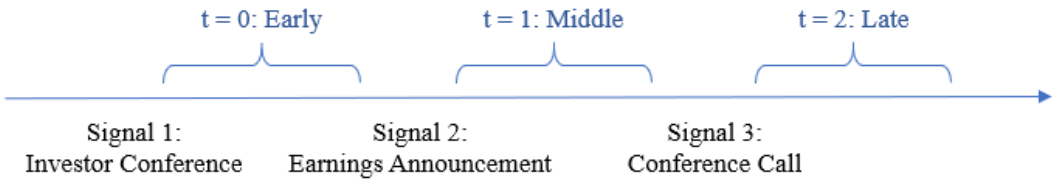
A simple model

This section presents a model of how analysts' earnings forecasts are related to their information environment[12]. We consider a firm for which N financial analysts forecast earnings. We assume that they are homogeneous and have the following additive utility function:

$$U = f(t) - \alpha\sigma^2(t)$$

where $f(t)$ is a positive-valued function decreasing in t, α is a tolerance parameter of uncertainty, and $\sigma^2(t)$ is the conditional variance of forecast at time t.

Each analyst's available information about earnings consists of public (common) and private (idiosyncratic) signals. In our setting, the earnings announcement and the conference call are the two public disclosure venues, and the firm holds a private investor conference prior to the two events. Therefore, the analyst is potentially exposed to the private and public information based on when she issues earnings forecast, as shown in the figure below. Before the exposure to any of the three signals, we assume the analyst's prior on earnings follows standard normal distribution.



The private information of the analyst is represented by a signal from investor conference $S_{IC} = x + \varepsilon_{IC}$, where x denotes the earnings. This information is private in the sense that S_{IC} is observed by only the analysts who attend the investor conference and ε_{IC} is distributed independently among the analysts based on their private interaction with managers. We assume that for each analyst, ε_{IC} is normally distributed with mean zero and variance δ_{IC}^2.

The public information of analysts is described by the signal from the earnings announcement $S_{EA} = x + \varepsilon_{EA}$, and the signal from conference calls $S_{CC} = x + \varepsilon_{CC}$. We assume that ε_{EA} follows $N(0, \delta_{EA}^2)$ and ε_{CC} follows $N(0, \delta_{CC}^2)$.

If the analyst issue forecast before earnings announcement, the posterior density of earnings is

$$p(x|S_{IC}) = \frac{p(S_{IC}|x)p(x)}{p(S_{IC})} \propto p(S_{IC}|x)p(x) \propto exp\left[-\frac{(S_{IC} - x)^2}{2\,\delta_{IC}^2}\right] exp\left(-\frac{x^2}{2}\right)$$

[12] We use earnings forecasts as an example and the model could be generalized to other types of financial forecasts in our paper.

This implies the conditional expectation is $E(x|S_{IC}) = \frac{1/\delta_{IC}^2}{1/\delta_{IC}^2+1} S_{IC}$, and conditional variance is $\sigma^2(0) = Var(x|S_{IC}) = \frac{1}{1/\delta_{IC}^2+1}$. In this scenario, after observing the signal from investor conference, the analyst updates her earnings forecast to $\frac{1/\delta_{IC}^2}{1/\delta_{IC}^2+1} S_{IC}$ and reduce the variance to $\frac{1}{1/\delta_{IC}^2+1}$.

If the analyst issue middle forecast and late forecast, the conditional expectation is a weighted average of her information available at the time of issuance, with the precision of each as the weight. In the same fashion, we compute the conditional expectation and conditional variance after the analyst observing the S_{IC} and S_{CC} as follows,

$$E(x|S_{IC}, S_{EA}) = \frac{\delta_{IC}^{-2} S_{IC} + \delta_{EA}^{-2} S_{EA}}{1 + \delta_{IC}^{-2} + \delta_{EA}^{-2}}$$

$$\sigma^2(1) = Var(x|S_{IC}, S_{EA}) = \frac{1}{1 + \delta_{IC}^{-2} + \delta_{EA}^{-2}}$$

$$E(x|S_{IC}, S_{EA}, S_{CC}) = \frac{\delta_{IC}^{-2} S_{IC} + \delta_{EA}^{-2} S_{EA} + \delta_{CC}^{-2} S_{CC}}{1 + \delta_{IC}^{-2} + \delta_{EA}^{-2} + \delta_{CC}^{-2}}$$

$$\sigma^2(2) = Var(x|S_{IC}, S_{EA}, S_{CC}) = \frac{1}{1 + \delta_{IC}^{-2} + \delta_{EA}^{-2} + \delta_{CC}^{-2}}$$

Since δ_{IC}^{-2}, δ_{EA}^{-2}, δ_{CC}^{-2} are all positive, we can show every time analyst perceives a signal, she is more certain with her forecast, i.e.,

$$1 > \sigma^2(0) > \sigma^2(1) > \sigma^2(2)$$

To simplify the analyst's utility, we further assume that $f(0) = 3$, $f(1) = 2$, and $f(2) = 1$. In this setting, we can show that the analyst has incentive to report forecast at t = 1 when $U(1) > max\{U(0), U(2)\}$. This amounts to solve the following system of inequalities,

$$2 - \frac{\alpha}{1 + \delta_{IC}^{-2} + \delta_{EA}^{-2}} > 3 - \frac{\alpha}{1 + \delta_{IC}^{-2}}$$

$$2 - \frac{\alpha}{1 + \delta_{IC}^{-2} + \delta_{EA}^{-2}} > 1 - \frac{\alpha}{1 + \delta_{IC}^{-2} + \delta_{EA}^{-2} + \delta_{CC}^{-2}}$$

Rearranging these inequalities, we obtain

$$\frac{\alpha \delta_{CC}^{-2}}{(1 + \delta_{IC}^{-2} + \delta_{EA}^{-2})(1 + \delta_{IC}^{-2} + \delta_{EA}^{-2} + \delta_{CC}^{-2})} < 1 < \frac{\alpha \delta_{EA}^{-2}}{(1 + \delta_{IC}^{-2})(1 + \delta_{IC}^{-2} + \delta_{EA}^{-2})}$$

Notice that, for $\forall \delta_{IC}^2, \delta_{EA}^2, \delta_{CC}^2$,

$$(1 + \delta_{IC}^{-2} + \delta_{EA}^{-2})(1 + \delta_{IC}^{-2} + \delta_{EA}^{-2} + \delta_{CC}^{-2}) > (1 + \delta_{IC}^{-2})(1 + \delta_{IC}^{-2} + \delta_{EA}^{-2})$$

One sufficient condition for the above inequalities to be held is that (1) $\delta_{CC}^{-2} < \delta_{EA}^{-2}$ and (2) a proper value for α. The first condition implies that the analyst perceives a more informative signal from the earnings announcement than from the conference call. In practice, the two

conditions are not hard to fulfill. For instance, suppose $\delta_{IC}^{-2} = 1$, $\delta_{EA}^{-2} = 3, \delta_{CC}^{-2} = 2$ and $\alpha = 5$, then we have

$$\frac{2}{7} < 1 < \frac{3}{2}$$

This is the scenario where the analyst is not better off by issuing a forecast after getting more information (i.e., from the conference call). Next, we will show that the difference between the forecast at t=1 (i.e., the middle forecast) and the forecast at t = 2 (i.e., the late forecast) could be small when the signal from conference call is not accurate. When δ_{CC}^{2} is large enough – the signal from conference calls is very noisy, we have,

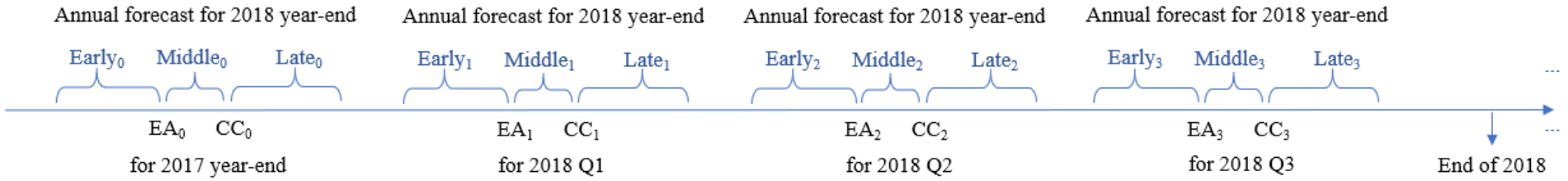
$$E(x|S_{IC}, S_{EA}, S_{CC}) = \frac{\delta_{IC}^{-2} S_{IC} + \delta_{EA}^{-2} S_{EA} + \delta_{CC}^{-2} S_{CC}}{1 + \delta_{IC}^{-2} + \delta_{EA}^{-2} + \delta_{CC}^{-2}} \approx \frac{\delta_{IC}^{-2} S_{IC} + \delta_{EA}^{-2} S_{EA}}{1 + \delta_{IC}^{-2} + \delta_{EA}^{-2}} = E(x|S_{IC}, S_{EA})$$

Therefore, we show that in theory, analysts would issue forecasts between earnings releases and conference calls when the signal from the former event is more accurate and when the analyst's tolerance on forecast uncertainty is not too low. Specifically, the noisier the signal is from the earnings conference call, the less weight the analyst will put on the call, and the less difference we will see between middle and late forecasts.

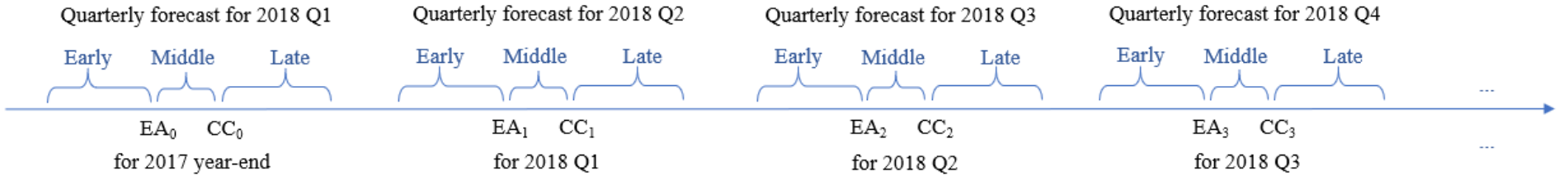
Figure 1

Scope of analyst forecasts

Panel A. Scope of annual analyst forecasts for 2018



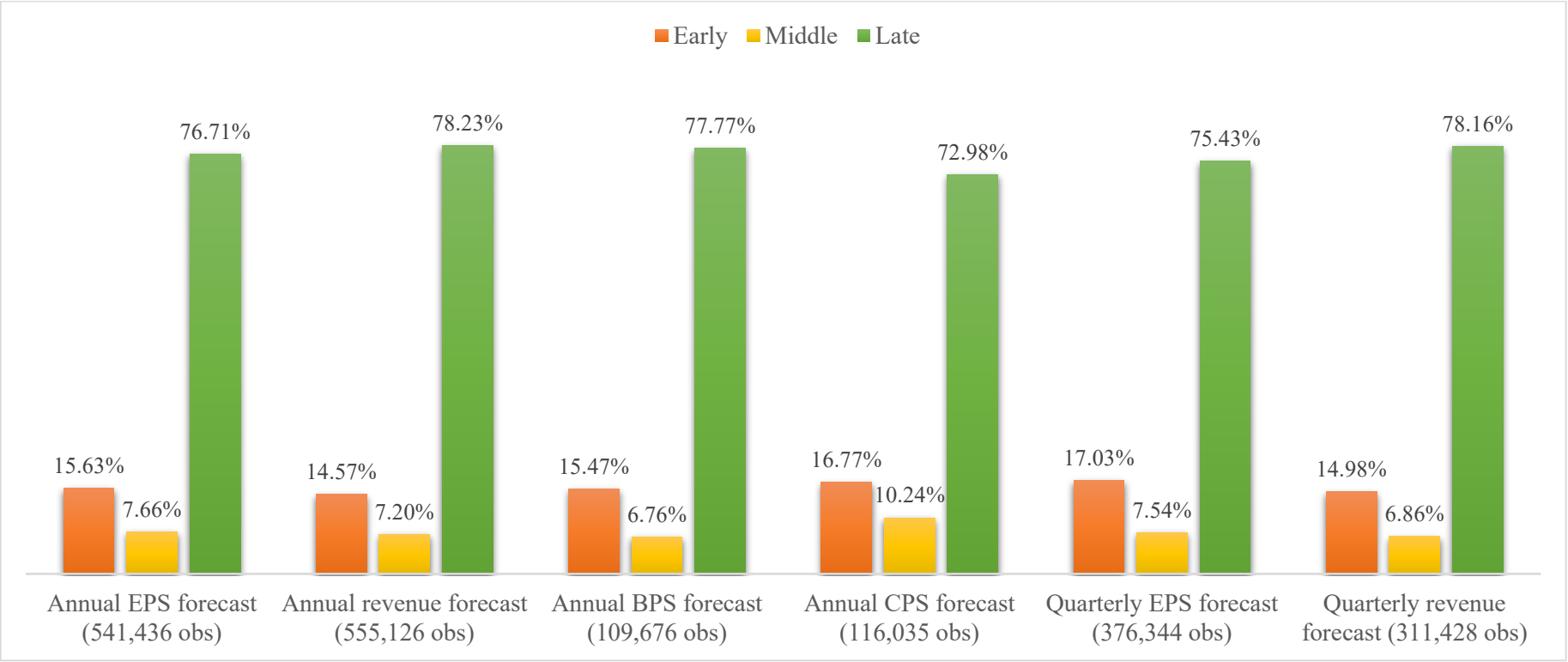
Panel B. Scope of quarterly analyst forecasts for 2018



This figure presents an example of our sample selection procedure for analyst forecasts. When we collect annual forecasts for the year 2018, as shown in Panel A, we focus on those issued around earnings announcements and conference calls for the year-end of 2017 and Q1, Q2, and Q3 of 2018. Then we separate the forecasts into early, middle, and late groups for each quarter. Hence, for annual forecasts, we have four groups of early, middle, and late forecasts corresponding to the four preceding quarters. For quarterly forecasts, as shown in Panel B, we focus on the reports issued around earnings announcements and conference calls in the fiscal quarter before the forecast period. Hence, for quarterly forecasts, we have one group of early, middle, and late forecasts corresponding to the immediately preceding quarter.

Figure 2

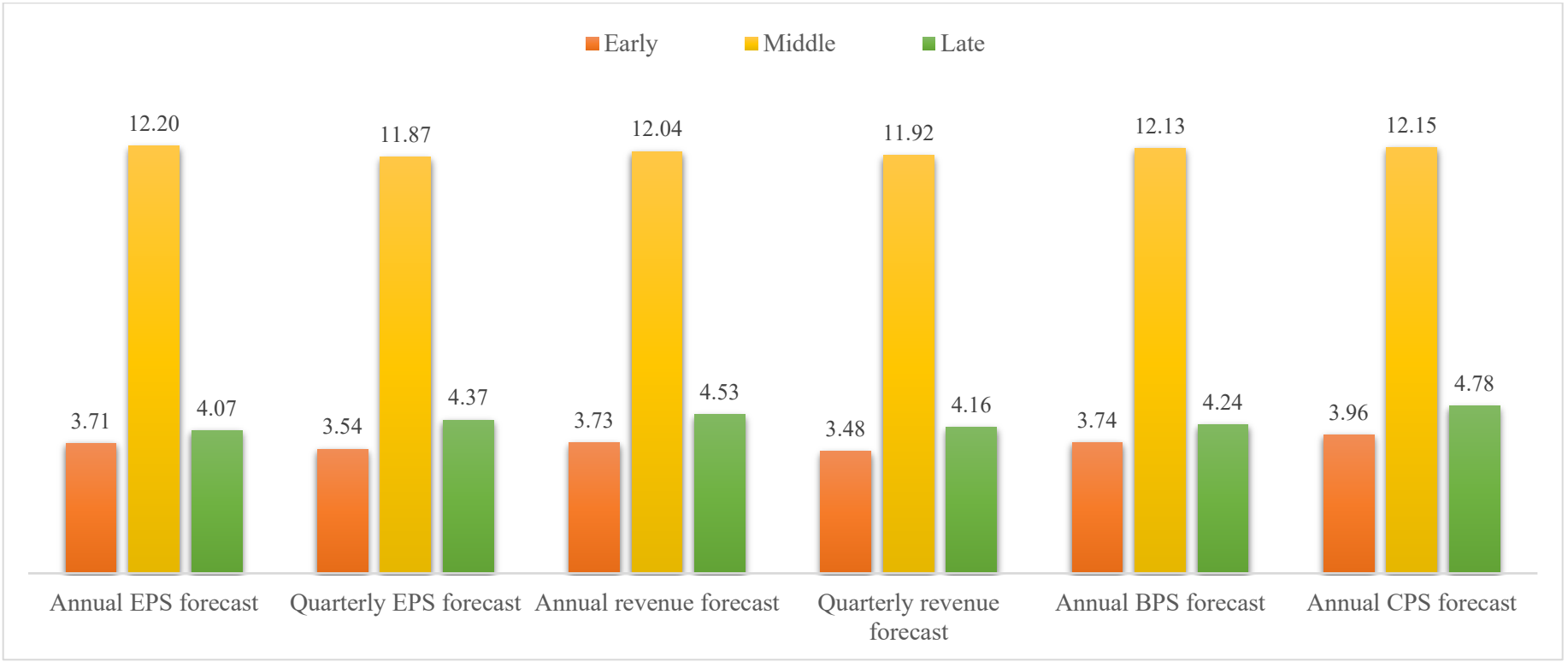
Composition of the early, middle, and late forecasts



This figure depicts the proportion of three groups of forecasts (early, middle, and late). We cover six types of forecasts– annual forecasts for earnings per share, revenue, book value per share, and cash flow per share, and quarterly forecasts for earnings per share and revenue.

Figure 3

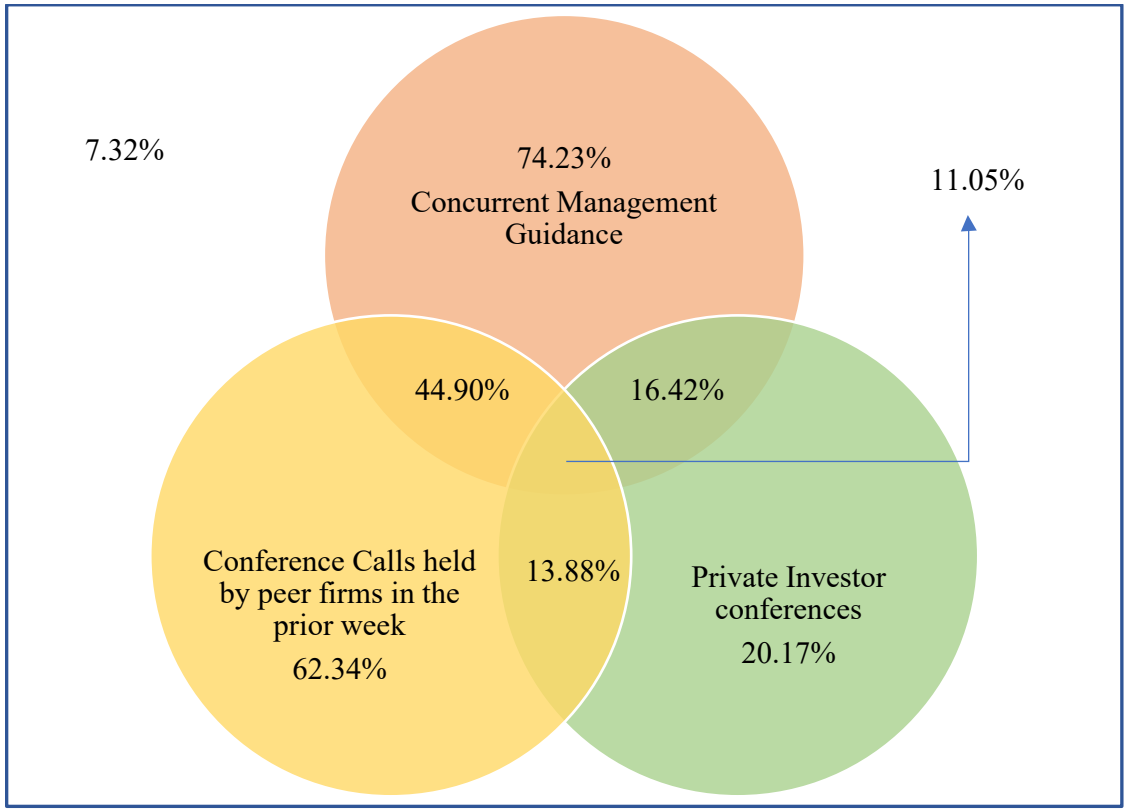
Time interval (in hours) between earnings announcements and conference calls for early, middle, and late forecasts



This figure depicts the time interval between earnings announcements and conference calls for early, middle, and late forecasts. We cover six types of forecasts– annual forecasts for earnings per share, revenue, book value per share, and cash flow per share, and quarterly forecasts for earnings per share and revenue.

Figure 4

Venn diagram – annual EPS forecasts subject to other sources of information



For annual EPS forecasts, we report the proportion of analyst reports that are subject to the three information sources besides earnings announcements and conference calls, namely, concurrent management guidance, conference calls held by firms in the same industry in the prior week, and private conferences. The figure looks similar for the other types of forecasts we examine – annual forecasts for revenue, book value per share, and cash flow per share, and quarterly forecasts for earnings per share and revenue.

Table 1

Sample selection

	# obs	# firm-quarters	# firm
Annual eps	603,228	70,442	3,446
Annual revenue	591,467	69,556	3,379
Annual bps	115,459	42,531	2,533
Annual cps	124,876	38,708	2,331
Quarterly eps	621,224	71,568	3,507
Quarterly revenue	544,170	69,977	3,467

This table presents the number of observations, the number of firm-quarters, and the number of firms for the forecasts. We cover six types of forecasts we examine – annual forecasts for earnings per share, revenue, book value per share, and cash flow per share, and quarterly forecasts for earnings per share and revenue.

Table 2

Comparison of forecast accuracy and dispersion at firm-quarter level

Panel A: accuracy comparison between early forecasts and late forecasts

	# obs	# firm-quarters	# firms	mean of forecast accuracy of early forecasts	mean of forecast accuracy of late forecasts	the ratio of firm-quarters that late group provides more accurate forecasts	p-value of *t*-test (H0: late forecasts are more accurate)
Annual EPS	342,966	32,038	2,190	-0.055	-0.044	62.00%	0.00
Annual Revenue	318,150	31,023	2,035	-0.040	-0.038	53.61%	0.00
Annual BPS	51,062	7,733	967	-0.068	-0.061	60.96%	0.00
Annual CPS	56,244	8,218	1,103	-0.044	-0.036	60.84%	0.00
Quarterly EPS	180,415	15,933	1,904	-0.017	-0.011	59.32%	0.00
Quarterly Revenue	129,249	10,054	1,799	-0.012	-0.009	63.50%	0.00

Panel B: accuracy comparison between middle forecasts and late forecasts

	# obs	# firm-quarters	# firms	mean of forecast accuracy of middle forecasts	mean of forecast accuracy of late forecasts	the ratio of firm-quarters that late group provides more accurate forecasts	p-value of *t*-test (H0: late forecasts are more accurate)
Annual EPS	78,491	10,454	989	-0.050	-0.050	48.90%	0.91
Annual Revenue	75,132	10,032	949	-0.037	-0.037	50.97%	0.22
Annual BPS	8,987	2,588	420	-0.094	-0.093	47.41%	0.30
Annual CPS	20,293	3,428	434	-0.064	-0.064	50.79%	0.40
Quarterly EPS	50,342	7,956	887	-0.014	-0.014	46.91%	0.55
Quarterly Revenue	36,543	6,127	814	-0.011	-0.011	50.66%	0.79

Panel C: dispersion comparison between middle forecasts and late forecasts

	# obs	# firm-quarters	# firms	mean of forecast dispersion of middle forecasts	mean of forecast dispersion of late forecasts	the ratio of firm-quarters that late group provides less dispersed forecasts	p-value of *t*-test (H0: late forecasts are less dispersed)
Annual EPS	63,372	6,561	740	0.104	0.103	50.38%	0.29
Annual Revenue	37,123	6,293	710	0.063	0.064	49.80%	0.20
Annual BPS	60,786	576	142	0.123	0.131	52.60%	0.86
Annual CPS	25,937	1,615	216	0.130	0.131	52.57%	0.45
Quarterly EPS	3,288	4,235	633	0.027	0.027	52.87%	0.69
Quarterly Revenue	14,551	3,095	532	0.018	0.017	49.56%	0.17

We compare forecast accuracy between early and late forecasts in Panel A. For each firm-quarter, we aggregate forecasts in early and late group as consensus forecasts and keep only the firm-quarters with both early and late forecast data. The first three columns show the number of forecasts, the number of firm-quarters, and the number of firms that we use to compare and run tests. We compute the mean of early and late consensus forecasts in the fourth and fifth columns. We compare the accuracy of consensus forecasts in early and late group for each firm-quarter and report the ratio that late forecasts are more accurate in the next column. We next run a t-test to compare early and late forecast accuracy and report the p-value of t-tests in the last column. We compare forecast accuracy between middle and late forecasts in Panel B, and present the number of observations, the number of firm-quarters, the number of firms, the mean of forecast accuracy for middle and late groups, the ratio of cases that late forecasts are more accurate than middle forecasts, and p-value of t-test, accordingly.

We compare forecast dispersion between middle and late forecasts in Panel C. For each firm-quarter, we keep only the firm-quarters with at least two middle forecasts and two late forecasts, and calculate standard deviation for the forecasts in middle and late group. The first three columns show the number of forecasts, the number of firm-quarters, and the number of firms that we use to compare and run tests. We compute the mean of the dispersion of middle and late forecasts in the fourth and fifth columns. We compare the dispersion of forecasts in middle and late group for each firm-quarter and report the ratio that late forecasts are less dispersed in the next column. We next run a t-test to compare middle and late forecast dispersion and report the p-value of t-tests in the last column.

For all the comparisons of forecast accuracy and dispersion, we cover six types of forecasts we examine – annual forecasts for earnings per share, revenue, book value per share, and cash flow per share, and quarterly forecasts for earnings per share and revenue.

Table 3

Multivariate regression – are late forecasts more accurate?

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	Annual EPS forecasts			Annual revenue forecasts			Annual BPS forecasts		
Early	-0.065***	-0.083***	-0.074***	-0.184***	-0.212***	-0.243***	-0.077	-0.176	-0.238**
	(-2.97)	(-3.73)	(-3.53)	(-8.94)	(-10.02)	(-12.43)	(-0.77)	(-1.63)	(-2.56)
Middle	0.030	0.032	0.041	-0.063	-0.071	-0.078	-0.034	-0.123	-0.189
	(0.82)	(0.81)	(0.99)	(-1.26)	(-1.36)	(-1.61)	(-0.13)	(-0.48)	(-0.81)
Firm experience	0.004	0.001	0.001	-0.004	-0.005	-0.009*	0.003	-0.005	-0.015
	(1.06)	(0.20)	(0.25)	(-0.81)	(-1.12)	(-1.91)	(0.12)	(-0.17)	(-0.43)
General experience	0.006	0.004	1.758	0.007	0.005	0.320	-0.028	-0.035	1.184
	(1.22)	(0.80)	(1.54)	(1.22)	(0.82)	(0.52)	(-0.78)	(-0.86)	(0.88)
Brokerage size	-0.001***	-0.001	-0.000	-0.001**	0.001	0.000	0.003*	0.017***	0.006
	(-2.82)	(-0.86)	(-0.31)	(-1.98)	(1.43)	(0.25)	(1.90)	(2.78)	(1.09)
Firm coverage	-0.000	-0.001	0.001	-0.002	-0.005***	-0.003	0.001	-0.003	-0.035**
	(-0.16)	(-0.50)	(0.19)	(-1.28)	(-2.85)	(-1.36)	(0.08)	(-0.30)	(-2.01)
Forecast horizon	-0.005***	-0.005***	-0.001	-0.018***	-0.018***	-0.017***	-0.010***	-0.010***	-0.007*
	(-4.92)	(-4.93)	(-0.33)	(-8.16)	(-8.19)	(-7.75)	(-3.81)	(-4.12)	(-1.87)
Observations	535,297	535,254	534,884	548,985	548,942	548,553	93,588	93,566	93,272
Adjusted R2	0.982	0.982	0.982	0.842	0.842	0.850	0.771	0.781	0.805
Fixed Effects	Firm X Year	Brokerage & (Firm X Year)	Analyst & (Firm X Year)	Firm X YQTR	Brokerage & (Firm X YQTR)	Analyst & (Firm X YQTR)	Firm X YQTR	Brokerage & (Firm X YQTR)	Analyst & (Firm X YQTR)

	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
VARIABLES	Annual CPS forecast			Quarterly EPS forecast			Quarterly revenue forecast		
Early	-0.203**	-0.144*	-0.040	-0.014**	-0.018**	-0.016**	-0.050***	-0.058***	-0.054***
	(-2.04)	(-1.84)	(-0.49)	(-1.98)	(-2.44)	(-2.14)	(-6.51)	(-7.28)	(-6.48)
Middle	0.014	0.074	0.122	0.007	0.006	0.011	0.019	0.026	0.015
	(0.05)	(0.27)	(0.49)	(0.46)	(0.36)	(0.76)	(1.12)	(1.58)	(0.88)
Firm experience	-0.060*	-0.058	0.003	0.001	0.001	0.000	-0.001	-0.001	-0.001
	(-1.71)	(-1.59)	(0.13)	(0.84)	(0.43)	(0.24)	(-0.37)	(-0.51)	(-0.61)
General experience	-0.010	-0.020	1.094	-0.001	-0.001	0.135	-0.001	-0.001	0.210
	(-0.39)	(-0.70)	(0.80)	(-0.63)	(-0.71)	(0.85)	(-0.45)	(-0.37)	(1.35)
Brokerage size	0.002**	-0.014***	-0.003	-0.000	-0.000	0.000	-0.000	0.001***	0.000*
	(2.39)	(-2.62)	(-1.13)	(-1.44)	(-0.05)	(1.51)	(-0.85)	(3.95)	(1.96)
Firm coverage	-0.001	0.003	0.016	0.000	-0.000	-0.000	-0.000	-0.002**	0.001
	(-0.15)	(0.48)	(0.77)	(0.17)	(-0.70)	(-0.45)	(-0.80)	(-2.40)	(1.58)
Forecast horizon	-0.006	-0.006	-0.003	-0.007***	-0.007**	-0.009***	-0.007***	-0.007***	-0.010***
	(-1.44)	(-1.45)	(-1.42)	(-2.58)	(-2.57)	(-2.77)	(-3.00)	(-3.00)	(-3.09)
Observations	102,368	102,332	102,082	365,096	365,079	364,644	298,810	298,780	298,391
Adjusted R2	0.872	0.874	0.886	0.976	0.976	0.977	0.793	0.794	0.802
Fixed Effects	Firm X YQTR	Brokerage & (Firm X YQTR)	Analyst & (Firm X YQTR)	Firm X YQTR	Brokerage & (Firm X YQTR)	Analyst & (Firm X YQTR)	Firm X YQTR	Brokerage & (Firm X YQTR)	Analyst & (Firm X YQTR)

This table presents the multinomial regression results of the following model:

$$Accuracy = \beta_0 + \beta_1 Early + \beta_2 Middle + \Sigma\beta_k Controls_k + FE + \varepsilon \quad (1)$$

Columns (1) – (3), (4) – (6), (7) – (9), (10) – (12), (13) – (15), (16) – (18) present the regression results for annual EPS forecast, annual revenue forecast, annual BPS forecast, annual CPS forecasts, quarterly EPS forecasts, and quarterly revenue forecasts, respectively. For each type of forecast, we use firm-quarter fixed effects, brokerage and firm-quarter fixed effects, and analyst to firm-quarter fixed effects. The difference in sample size among regressions is due to different fixed effects. The standard errors are clustered by firms. The variables are defined as in Appendix A.

***, **, * indicate statistical significance at the 1 percent, 5 percent, and 10 percent levels (two-tailed), respectively.

Table 4

Cross-sectional regression – forecasts subject to other information sources

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Accuracy of annual EPS forecast							
Early	-0.041*	-0.066***	-0.043***	-0.063***	-0.028***	-0.045***	-0.048**	-0.074***
	(-1.72)	(-2.78)	(-3.93)	(-5.63)	(-3.74)	(-5.62)	(-2.02)	(-3.12)
Middle	-0.025	-0.037	-0.005	-0.020	-0.004	-0.016	-0.061	-0.072
	(-0.56)	(-0.82)	(-0.36)	(-1.28)	(-0.28)	(-1.03)	(-1.42)	(-1.63)
*Early * Guidance*	0.011	0.019					0.011	0.019
	(0.45)	(0.80)					(0.46)	(0.80)
*Middle * Guidance*	0.048	0.046					0.050	0.048
	(1.03)	(0.96)					(1.09)	(1.01)
OtherCC			0.019*				0.019*	
			(1.67)				(1.68)	
*Early * OtherCC*			0.018	0.022**			0.018	0.022**
			(1.24)	(2.05)			(1.27)	(2.08)
*Middle * OtherCC*			0.030	0.031			0.027	0.029
			(1.40)	(1.63)			(1.30)	(1.54)
*Early * Private*					-0.022	-0.024	-0.022	-0.024
					(-1.00)	(-1.07)	(-1.00)	(-1.05)
*Middle * Private*					0.097**	0.087**	0.097**	0.087**
					(2.39)	(2.12)	(2.39)	(2.12)
Firm experience	0.004**	0.003*	0.004**	0.003*	0.004**	0.003*	0.004**	0.003*
	(2.42)	(1.73)	(2.30)	(1.72)	(2.42)	(1.73)	(2.29)	(1.70)
General experience	0.003	-0.016	0.002	-0.016	0.003	-0.015	0.002	-0.014
	(1.27)	(-0.13)	(1.21)	(-0.13)	(1.27)	(-0.12)	(1.21)	(-0.12)

Brokerage size	-0.000***	-0.000	-0.000***	-0.000	-0.000***	-0.000	-0.000***	-0.000
	(-4.42)	(-0.61)	(-4.49)	(-0.61)	(-4.41)	(-0.61)	(-4.49)	(-0.62)
Firm coverage	0.001*	-0.000	0.001	-0.000	0.001*	-0.000	0.001	-0.000
	(1.88)	(-0.10)	(1.39)	(-0.15)	(1.86)	(-0.10)	(1.40)	(-0.15)
Forecast horizon	-0.006***	-0.006***	-0.006***	-0.006***	-0.006***	-0.006***	-0.006***	-0.006***
	(-5.40)	(-5.47)	(-5.40)	(-5.47)	(-5.40)	(-5.47)	(-5.41)	(-5.48)
Observations	535,297	534,884	535,297	534,884	535,297	534,884	535,297	534,884
Adjusted R2	0.967	0.967	0.967	0.967	0.967	0.967	0.967	0.967
Fixed Effects	Firm X YQTR	Analyst & (Firm X YQTR)	Firm X YQTR	Analyst & (Firm X YQTR)	Firm X YQTR	Analyst & (Firm X YQTR)	Firm X YQTR	Analyst & (Firm X YQTR)

This table presents the cross-sectional results when the forecasts are subject to concurrent management guidance, spillover information from other firms' (in the same industry) conference calls, and private conferences. The model is formally stated as follows:

$$Accuracy = \beta_0 + \beta_1 Early + \beta_2 Middle + \beta_3 Early * Guidance + \beta_4 Middle * Guidance + \beta_5 OtherCC + \beta_6 Early * OtherCC + \beta_7 Middle * OtherCC + \beta_8 Early * Private + \beta_9 Middle * Private + \Sigma\beta_k Controls_k + FE + \varepsilon \quad (2)$$

Columns (1) – (2), (3) – (4), (5) – (6) present the regression results considering each of the information sources and columns (7) – (8) show the horserace results as in equation (2). For each cross-sectional test, we report the results using firm-quarter fixed effects, and analyst and firm-quarter fixed effects. The difference in sample size among regressions is due to different fixed effects. The standard errors are clustered by firms. The variables are defined as in Appendix A.

***, **, * indicate statistical significance at the 1 percent, 5 percent, and 10 percent levels (two-tailed), respectively.

Table 5

Cross-sectional regression – forecasts for firms with lower information asymmetry and lower uncertainty

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Accuracy of annual EPS forecasts							
Early	-0.047	-0.055	-0.150***	-0.157***	-0.082**	-0.101***	-0.120*	-0.143*
	(-0.99)	(-1.10)	(-3.12)	(-3.36)	(-2.28)	(-2.94)	(-1.69)	(-1.95)
Middle	0.072	0.084	0.075	0.114	0.015	0.031	0.090	0.138
	(0.69)	(0.81)	(0.93)	(1.33)	(0.28)	(0.56)	(0.60)	(0.95)
*Early * Large*	-0.028	-0.029					-0.072	-0.063
	(-0.51)	(-0.53)					(-1.22)	(-1.06)
*Middle * Large*	-0.057	-0.060					-0.040	-0.042
	(-0.49)	(-0.50)					(-0.33)	(-0.33)
*Early * Lowlev*			0.139***	0.137***			0.159***	0.155***
			(2.88)	(2.67)			(3.01)	(2.83)
*Middle * Lowlev*			-0.083	-0.137			-0.076	-0.131
			(-0.97)	(-1.53)			(-0.90)	(-1.46)
*Early * Lowvol*					0.031*	0.053*	0.024*	0.047*
					(1.91)	(1.79)	(1.87)	(1.75)
*Middle * Lowvol*					0.037	0.018	0.026	0.005
					(0.48)	(0.21)	(0.30)	(0.06)
Firm experience	0.005	0.001	0.005	0.001	0.005	0.001	0.005	0.001
	(1.17)	(0.30)	(1.18)	(0.32)	(1.17)	(0.30)	(1.18)	(0.31)
General experience	0.005	1.717	0.005	1.719	0.005	1.717	0.005	1.717
	(1.11)	(1.45)	(1.10)	(1.45)	(1.11)	(1.45)	(1.09)	(1.45)
Brokerage size	-0.001***	-0.000	-0.001***	-0.000	-0.001***	-0.000	-0.001***	-0.000
	(-2.78)	(-0.36)	(-2.78)	(-0.38)	(-2.78)	(-0.36)	(-2.78)	(-0.37)

Firm coverage	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000
	(-0.29)	(0.03)	(-0.29)	(0.02)	(-0.30)	(0.03)	(-0.30)	(0.03)
Forecast horizon	-0.005***	-0.001	-0.005***	-0.001	-0.005***	-0.001	-0.005***	-0.001
	(-4.79)	(-0.31)	(-4.79)	(-0.31)	(-4.78)	(-0.31)	(-4.79)	(-0.31)
Firm experience	-0.047	-0.055	-0.150***	-0.157***	-0.082**	-0.101***	-0.120*	-0.143*
	(-0.99)	(-1.10)	(-3.12)	(-3.36)	(-2.28)	(-2.94)	(-1.69)	(-1.95)
Observations	460,971	460,935	460,516	460,935	460,516	460,935	460,516	460,935
Adjusted R2	0.886	0.887	0.889	0.887	0.889	0.887	0.889	0.887
Fixed Effects	Firm X YQTR	Analyst & (Firm X YQTR)	Firm X YQTR	Analyst & (Firm X YQTR)	Firm X YQTR	Analyst & (Firm X YQTR)	Firm X YQTR	Analyst & (Firm X YQTR)

This table presents the cross-sectional results when the forecasts issued for firms with lower information asymmetry and lower earnings uncertainty. The model is formally stated as follows:

$$Accuracy = \beta_0 + \beta_1 Early + \beta_2 Middle + \beta_3 Early * Large + \beta_4 Middle * Large + \beta_5 Early * Lowlev + \beta_6 Middle * Lowlev + \beta_7 Early * Lowvol + \beta_8 Middle * Lowvol + \Sigma \beta_k Controls_k + FE + \varepsilon \quad (3)$$

Columns (1) – (2), (3) – (4), (5) – (6) present the regression results considering each of the three factors and columns (7) – (8) show the horserace results as in equation (3). For each cross-sectional test, we use firm-quarter fixed effects, and analyst and firm-quarter fixed effects. The difference in sample size among regressions is due to different fixed effects. The standard errors are clustered by firms. The variables are defined as in Appendix A.

***, **, * indicate statistical significance at the 1 percent, 5 percent, and 10 percent levels (two-tailed), respectively.

Table 6

Additional analysis – the impact of conference calls on forecast revisions

VARIABLES	(1) Annual EPS forecasts	(2) Annual revenue forecasts	(3) Annual BPS forecasts	(4) Annual CPS forecasts	(5) Quarterly EPS forecasts	(6) Quarterly revenue forecasts
Early	-0.085***	-0.153***	-0.328**	-0.187	-0.023***	-0.036***
	(-6.87)	(-9.20)	(-2.45)	(-0.98)	(-5.42)	(-4.43)
Middle	-0.042*	-0.058	0.581	0.204	-0.010	-0.021
	(-1.88)	(-1.48)	(1.41)	(0.52)	(-1.14)	(-1.20)
Firm experience	0.004*	0.004	0.086**	0.010	-0.000	0.001
	(1.68)	(1.40)	(2.48)	(0.18)	(-0.53)	(0.34)
General experience	0.183	-0.867***	-2.206	-1.184	0.056	0.207*
	(0.67)	(-3.12)	(-1.52)	(-0.22)	(1.15)	(1.91)
Brokerage size	0.000	-0.001	-0.014	-0.014*	0.000	-0.000
	(1.45)	(-1.56)	(-1.39)	(-1.78)	(0.03)	(-0.70)
Firm coverage	-0.001	0.003	0.016	0.032	0.001*	0.002**
	(-0.79)	(1.55)	(0.81)	(1.18)	(1.74)	(2.07)
Forecast horizon	0.001*	0.005***	0.006	-0.002	-0.002	-0.004*
	(1.82)	(4.22)	(1.20)	(-0.18)	(-1.29)	(-1.70)
Observations	535,297	535,254	534,884	548,985	548,942	548,553
Adjusted R2	0.982	0.982	0.982	0.842	0.842	0.850
Fixed Effects	Analyst & (Firm X Year)					

This table presents the multinomial regression results of the following model:

$$Revision = \beta_0 + \beta_1 Early + \beta_2 Middle + \Sigma\beta_k Controls_k + FE + \varepsilon \quad (4)$$

Columns (1) – (6) present the regression results for annual EPS forecast, annual revenue forecast, annual BPS forecast, annual CPS forecasts, quarterly EPS forecasts, and quarterly revenue forecasts, respectively. For each type of forecast, we use analyst and firm-quarter two-way fixed effects. The difference in sample size among regressions is due to different fixed effects. The standard errors are clustered by firms. The variables are defined as in Appendix A.

***, **, * indicate statistical significance at the 1 percent, 5 percent, and 10 percent levels (two-tailed), respectively.

Table 7

Capital market implication – price contribution of conference calls

	(1)	(2)
VARIABLES	AHPC	
TreatMiddle	0.283*	0.271*
	(1.73)	(1.91)
nAnalysts	-0.040	-0.041
	(-1.17)	(-0.90)
Surprise	0.002**	0.002**
	(2.21)	(2.23)
TradeVol	0.196*	0.084*
	(1.60)	(1.74)
Size	0.217	0.315
	(1.58)	(1.41)
nAnnounce	0.007	0.009
	(0.94)	(0.87)
NYSE	-0.213	-0.534*
	(-1.39)	(-1.71)
Observations	9,286	9,244
Adjusted R2	0.0063	0.0127
Fixed Effects	NO	Ind & YQTR

This table presents the regression results of the following model:

$$AHPC = \beta_0 + \beta_1 TreatMiddle + \beta_2 nAnalysts + \beta_3 Surprise + \beta_4 TradeVol + \beta_5 Size + \beta_6 nAnnounce \beta_7 NYSE + FE + \varepsilon \quad (5)$$

Column (1) reports the results without fixed effects. Column (2) reports the results with industry and quarter fixed effects. The difference in sample size among regressions is due to different fixed effects. The standard errors are clustered by firms. The variables are defined as in Appendix A.

***, **, * indicate statistical significance at the 1 percent, 5 percent, and 10 percent levels (two-tailed), respectively.