

**Once Is Not Enough:  
The Determinants and Consequences of Management Updates of Annual Forecasts\***

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**ABSTRACT**

This study investigates a new disclosure phenomenon – managers updating their annual earnings forecasts, which is used by nearly 90% of annual forecasters in recent years. Consistent with the updating decisions largely being predetermined, we find the incidence and frequency of updates to be persistent at the firm level, especially when firms update in all quarters (regular updaters). Analysts’ reactions to managers’ initial forecasts are weaker for regular updaters, consistent with analysts anticipating subsequent updates. We also find updaters – especially regular updaters – to be more (less) timely than non-updaters in disclosing bad (good) news to the market, suggesting that frequent updates of annual forecasts serve as a major channel to quickly release bad news.

**Keywords:** *Management Forecasts, Forecast Updates, Analyst Revisions*

**Data Availability:** *Data are commercially available.*

## ***1. Introduction***

Managers issue earnings forecasts to establish or adjust market earnings expectations (Ajinkya and Gift [1984]), to mitigate expected litigation risks (Skinner [1994, 1997]), to signal superior managerial talents (Trueman [1986]), and to develop and maintain a reputation for transparent disclosures (Graham, Harvey, and Rajgopal [2005]). Since the passage of Regulation Fair Disclosure (Reg FD) in 2000, management forecasts have even more significant effects on market earnings expectations (Kross and Suk [2012]) and explain a substantial portion of stock price movement (Ball and Shivakumar [2008], Beyer, Cohen, Lys, and Walther [2010]), likely because other private communication channels have become more restricted (Wang [2007]).

However, after issuing earnings forecasts, both managers' and investors' information sets may have changed, rendering managers' outstanding forecasts outdated or unclear to investors as whether they still stand. Hence, managers need to decide whether or not to update their existing forecasts. This is more likely in forecasting annual earnings because their longer horizons subject managers' and investors' information sets to more changes before actual earnings are announced. Indeed, we find that about 90% of annual forecasters in recent years issue updates at least once (hereafter "updaters"), with only 10% not updating (hereafter "non-updaters"). Moreover, most updaters provide updates every quarter (hereafter "regular updaters"), and relatively few updaters provide updates in selected quarters (hereafter "sporadic updaters"). Despite the prevalence of forecast updates, this phenomenon has been neglected in the extant literature on management forecasts. Most prior studies either completely exclude forecast updates (e.g., Ajinkya, Bhojraj, and Sengupta [2005], Rogers and Stocken [2005], Gong, Li, and Wang [2011], Hutton, Lee, and Shu [2012]) or treat updates the same as new forecasts (e.g., Lennox and Park [2006], Rogers, Skinner, and Van Buskirk [2009], Bamber, Hui, and Yeung [2010]), probably because forecast

updates were rare during their sample periods. Nonetheless, this emerging new phenomenon suggests that the conclusions reached in these studies likely need to be reevaluated for the more recent sample periods. If updates differ significantly from initial forecasts, overlooking these differences would hinder our understanding of managers' forecasting decisions, at the least. Worse still, it could affect the inferences drawn from prior research. In this study, we conduct a systematic analysis of managers' updates of their annual earnings forecasts. To the best of our knowledge, this study is the first to provide large-sample evidence on the determinants as well as on the properties of management forecast updates and is the first to reveal substantial differences and interactions between forecast updates and initial forecasts. Our findings suggest that it is important to take forecast updates into consideration in management forecast research.

Our analysis contains three main parts: (1) the determinants of forecast updates, (2) the consequences of updates, and (3) the effect of updates on the timeliness of bad news versus good news release, an important setting examined in prior studies, yet the conclusion of which remains elusive (Kasznik and Lev [1995], Kothari, Shu, and Wysocki [2009]). We provide new insights through the setting of management forecast updates. Our results suggest that the timeliness of news disclosure depends not only on the nature of news but also on the use of forecast updates.

Our first set of analyses reveals that managers' decisions on forecast updates are highly persistent at the firm level, consistent with these decisions being primarily predetermined. Using a logit model, we find the likelihood of an annual forecaster updating its forecast to be strongly predicted by its forecast routine, proxied by its past forecasts and past updates. In contrast, we find no supporting evidence of managers making *ex post* decisions to update their forecasts when their initial forecasts turn out to be inaccurate or inadequate in adjusting or managing market expectations, as predicted in the classic "expectation alignment" hypothesis (Ajinkya and Gift

[1984]) or the “expectation management” hypothesis (Matsumoto [2002]). This is likely because managers have relatively less flexibility in withholding updates: once initial forecasts are issued, investors would view managers as informed and thus react negatively to the omission of updates (Graham et al. [2005], Einhorn and Ziv [2008]). Consistent with this view, we find that over half (about 53%) of all updates have the same range width as their preceding management forecasts, and about 50% of which do not change the midpoint either, suggesting that managers seek to maintain updates even when no material news arrives. The overall results from our first set of analyses support the notion that annual forecast updates (especially regular updates) are mainly predetermined, rather than driven by conditions specific to managing or aligning expectations.

Our additional analyses of management forecast errors reveal two unique patterns about regular updaters. First, contrary to the optimism in managers’ long-horizon forecasts of annual earnings documented in prior studies (Rogers and Stocken [2005], Ajinkya et al. [2005]), we find that the bias in regular updaters’ initial annual forecasts is much less optimistic on average with the median being significantly pessimistic. Second, prior studies find that managers tend to walk down analyst forecasts (e.g., Cotter et al. [2006]) and that analysts’ annual forecasts exhibit optimism earlier in the year but turn pessimistic over the year (e.g., Ke and Yu [2006]), which together would imply downward revisions in management forecast updates. Contrary to this prediction, we find that regular updaters are more likely to revise their forecasts upward than to revise them downward, especially in their last updates (49%). Both patterns above are unique to regular updates and contrast with stylized findings in prior studies that ignore updates.

Our second set of analyses examines how analysts respond to management forecast updates. We conduct two related tests by regressing analyst forecast revisions on management forecast news, controlling for bundled earnings news and other factors that are likely to affect

their revisions, following Gong et al. [2011]. The first test examines whether analysts' reactions to managers' initial forecasts vary with the frequency of updates in the previous year. Consistent with analysts recognizing the predetermined nature of forecast updates by regular updaters, they anticipate subsequent updates and hence respond less strongly to the initial forecasts issued by regular updaters than by non-updaters. The second test examines analysts' reactions to the update news relative to their reactions to the initial forecast news. Consistent with forecast updates being informative, we find analysts to react strongly to update news, but with smaller magnitude than their reactions to initial forecasts, suggesting diminishing marginal information content of sequential disclosures. Overall, our second set of analyses suggests that updates of management annual forecasts are informative and facilitate gradual information releases.

Our third set of analyses examines whether updaters, relative to non-updaters, facilitate the release of good news and bad news to the same extent. Following Donelson et al. [2012], we measure the timeliness of earnings news releases by tracking analyst earnings forecast revisions as percentages of their total earnings revisions during the year. We find significant differences across firms with different update practices. While non-updaters exhibit no differential timeliness in releasing good news versus bad news after Reg FD, updaters are more (less) timely than non-updaters in disclosing bad (good) news to the market, thus appearing to accelerate disclosures of bad news. Furthermore, we find that regular updaters provide significantly timelier releases of bad news if they belong to an industry with high litigation risks, when they are less financially distressed, or when their managers own a smaller percentage of the firms' shares, consistent with Kothari et al. [2009]; however, we find no such evidence for non-updaters or sporadic updaters. Together, the results from our third set of analyses suggest that the use of forecast updates have important implications for managers' timing of earnings news releases.

This study contributes to the management forecast literature in three ways. First, while prior studies either exclude forecast updates (e.g., Ajinkya et al. [2005], Rogers and Stocken [2005], Gong et al. [2011], Hutton et al. [2012]) or pool forecast updates with initial forecasts without distinguishing between the two (e.g., Lennox and Park [2006], Rogers et al. [2009], Bamber et al. [2010]), we provide evidence that both the determinants and the consequences of forecast updates are different from those of the initial forecasts. To the best of our knowledge, this study is the first to systematically examine this new practice of management forecast updates, especially regular updates (i.e., update every quarter), which were essentially non-existent prior to 2000 but are now used by the majority of annual forecasters. Not only is the increasing prevalence of this practice itself is noteworthy, but more importantly, we find that managers' update decisions are mainly explained by their established practice rather than by time-specific conditions to manage or adjust market expectations (e.g., Ajinkya and Gift [1984], Matsumoto [2002]). Recognizing this, analysts anticipate subsequent updates and hence reduce their reactions to managers' initial forecasts. Together, our findings highlight the importance of explicitly considering the different features of management forecast updates in future research.

Second, we extend the literature on expectation management with new insights gleaned from the novel setting of management forecast updates. After considering subsequent updates, we find that the previously documented optimism in management long-horizon forecasts (Rogers and Stocken [2005], Ajinkya et al. [2005]) attenuates or even disappears in the sample of regular updaters, who are also more likely to revise forecasts upward than downward, contrasting with the "walking-down" patterns in analyst forecasts documented in prior studies (e.g., Cotter et al. [2006], Ke and Yu [2006]). Furthermore, we find that regular updaters often update forecasts without changing the width or the midpoint, which provides additional evidence that managers'

forecast update decisions are mainly predetermined rather than for the purpose of adjusting or managing analysts' earnings expectations (e.g., Ajinkya and Gift [1984], Matsumoto [2002]).

Third, this study sheds new light on the debate in the accounting literature over whether managers on average withhold bad news (e.g., Kothari et al. [2009]) by documenting substantial differences in the timelines of good news versus bad news releases across firms with different forecast update practices. Overall, our results underscore the importance of examining the complete sequence of management forecasts, as we show that it leads to qualitatively different conclusions than fixating only on initial forecasts.

The remainder of the paper is organized as follows. In section 2, we review related prior literatures and document the new phenomenon of management updates of annual forecasts. In section 3, we examine the determinants of forecast updates. Section 4 investigates how analysts respond to management forecast updates. In section 5, we reevaluate whether managers withhold bad news by considering the presence and the frequency of management forecast updates. Section 6 offers concluding remarks of the paper.

## ***2. Related Prior Literature and the Practice of Management Forecasts Updates***

In this section, we review related prior research that studies management annual earnings forecasts, summarize how these prior studies typically deal with the phenomenon of updates for management annual forecasts, and assess the prevalence and the overall trend of this practice with a more recent sample.

### ***2.1. Prior Literature on Management Annual Earnings Forecasts***

We first survey recent studies published in the top five accounting journals between 2001 and 2012. The appendix presents a list of the studies and their treatment of management forecast

updates. We find that eight out of the 17 studies focus only on initial forecasts and hence exclude revisions for the same period (e.g., Ajinkya et al. [2005], Rogers and Stocken [2005], Gong et al. [2011], Hutton et al. [2012]). The other nine studies include updates in their samples but do not distinguish updates from initial forecasts, thus essentially treating updates as separate forecasts (e.g., Lennox and Park [2006], Rogers et al. [2009], Bamber et al. [2010]).

However, theory suggests that the issuance of a forecast update could differ from that of an initial forecast for at least two reasons. First, before the initial voluntary disclosure of earnings forecast, investors are unsure of whether managers are informed or not; however, upon providing the initial forecast, managers reveal to investors their possession of private information about future earnings (Dye [1985], Jung and Kwon [1988]). Second, a more recent theory developed by Einhorn and Ziv [2008] suggests that, in a multi-period setting, the anticipation of subsequent disclosures can also affect managers' decisions to initiate disclosure in the first place. Applied to our setting of management forecast updates, this theory implies that the anticipation of potential future updates can influence managers' decisions to provide initial forecasts. Both lines of theories suggest that the initial forecast decisions should differ from the forecast update decisions and there should be some interaction between these two decisions. We develop and test specific empirical predictions on such differences and interaction in Sections 3 ~ 5.

## ***2.2. The Practice of Management Forecast Updates***

After initial earnings forecasts, both managers' and investors' information sets may have changed, rendering managers' outstanding forecasts outdated or unclear to investors as whether they still stand. Hence, managers need to decide whether to provide any update for their existing forecasts, especially in annual earnings forecasts because the longer horizons subject managers' and investors' information sets to more changes before actual earnings are reported. Therefore,

in this study, we choose to focus on updates of annual forecasts rather than quarterly forecasts.<sup>1</sup> Moreover, management annual forecasts have steadily overtaken quarterly forecasts to be regarded as the “best practice” of guidance by practitioners. According to a survey in 2012 by the National Investor Relations Institute (NIRI), the majority (64%) of respondents agree that it is generally best to provide management annual forecasts, whereas only a minority (28%) agrees to this on quarterly forecasts. Such difference in attitudes can be partially attributed to the managerial short-termism that quarterly forecasts allegedly induce (Fuller and Jensen [2002]).

We construct our sample of management annual forecasts as follows. Starting with all quantitative management forecasts (either point or closed-end range forecasts) of annual earnings per share (EPS) for fiscal years ending in 1996 ~ 2011 that we can identify from the First Call Company Issued Guideline (CIG) database, we then exclude forecasts issued either before the previous year’s earnings announcement (“long term forecasts”) or after the end of the current fiscal year (“preannouncements”). After eliminating observations without valid identifiers and revisions within quarters, we arrive at a sample of 37,150 forecasts issued for 14,301 unique firm-years. Table 1 summarizes the sample selection procedure.

Figure 1 visually demonstrates the yearly changes in managers’ EPS forecasts. Over our sample period from 1996 to 2011, there is an apparent shift from quarterly forecasts (dark bars) to annual forecasts (light bars). The number of firms issuing quarterly forecasts peaked in 2001 but dwindled swiftly afterwards. Meanwhile, the number of firms issuing annual forecasts rose in 2001 and steadily exceeded the number of firms issuing quarterly forecasts.

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<sup>1</sup> Although managers also occasionally update their short-horizon forecasts of quarterly earnings after fiscal quarter ends, these “updates” are generally considered as “warnings” or “preannouncements” (e.g., Skinner [1994, 1997], Soffer et al. [2000]) and are excluded in prior research due to their fundamental difference from other management forecasts (e.g., Rogers and Stocken [2005], Ajinkya et al. [2005]).

More importantly and directly related to our focus, Figure 1 also reveals an important phenomenon about annual forecasts – an increasing percentage of annual forecasters provide at least one update (square markers) during the fiscal year, with many of them issuing updates every quarter (diamond markers). In particular, the percentage of annual forecasts followed by at least one update increases monotonically from just 10% in 1996 to nearly 90% after 2006; hence only about 10% of annual forecasts are not followed by any updates. Furthermore, as indicated by the diamond markers, a significant driver for the increase in forecast updates is the number of “regular updaters” – firms that update their forecasts every quarter. This phenomenon came to existence after 2001 but has been adopted by over half of all annual forecasters since 2006.

In summary, we document a new phenomenon of management annual forecast updates that prevails in recent years. Our review of the prior literature reveals a substantial void in our knowledge about the differences and interactions between managers’ decisions about their initial forecasts and about forecast updates, as theories on voluntary disclosure have suggested.

### ***3. Why Do Managers Update Their Annual Earnings Forecasts?***

In this section, we investigate why managers choose to update their annual earnings forecasts. Because the existing theories of voluntary disclosure provide limited direct guidance on managers’ decisions to update an existing disclosure, we therefore build upon the existing explanations for managers’ decisions to issue initial forecasts and we examine whether those explanations indeed apply to their forecast update decisions as well.

#### ***3.1. Hypothesis Development***

One prominent explanation for issuing management forecasts is related to the market expectation. For example, managers may issue forecasts to align the market expectation with

their own estimates (Ajinkya et al. [1984]). More recent studies find that, under the pressure to meet and beat analyst consensus forecasts, a proxy for the market expectation, managers tend to issue forecasts below their estimates to manage analyst forecasts to attainable levels (Matsumoto [2002], Cotter et al. [2006]). These studies suggest that managers' decisions to issue forecasts are largely determined by the gap between analysts' and managers' expectations of future earnings. Following this reason, we expect that managers are more likely to issue updates when their initial forecasts are less effective in adjusting or managing analyst forecasts. Another related reason to update forecasts could be because the outstanding forecast has become outdated and potentially misleading (Karamanou and Vafeas [2005]). Therefore, we expect that managers are more likely to issue updates when their initial forecasts are less accurate. These explanations all imply that managers' decisions to update forecasts are determined by time-specific conditions such as managers' and analysts' expectations. Hence, we refer to this line of explanation as the "condition-specific" explanation.

In contrast to the above "condition-specific" explanation, another explanation for forecast updates does not rely on time-specific conditions, but instead postulates that managers provide updates to maintain regular communications with the capital market and to maintain a reputation for transparent disclosures. The view that managers seek to maintain regular disclosure practice is supported by survey evidence from managers (e.g., NIRI [2012], Graham et al. [2005]) and by empirical evidence on the consistent patterns in management forecasts (Tang [2013]). Following this explanation, managers will still update their forecasts even absent new information relative to analysts' or their own original earnings expectations, because not updating is likely to be perceived by investors as a negative signal (Einhorn and Ziv [2008]). This explanation predicts that managers are likely to update forecasts regularly (e.g., providing updates in every quarter),

regardless of time-specific conditions. Moreover, this explanation also implies that managers may provide updates that differ very little from their previous forecasts, which cannot be easily explained by the “condition-specific” explanation.<sup>2</sup> For brevity, we refer to this as the “condition non-specific” explanation, which implies that some managers might be simply following established policies in issuing updates of earnings forecasts.

Note that the “condition-specific” and the “condition non-specific” explanations are *both* plausible and *not* mutually exclusive. It is probable that some managers issue updates for time-specific reasons whereas others do not (i.e., cross-sectional co-existence) or that some managers might issue updates for time-specific reasons in one period but switch to a more methodical and consistent approach in future periods, or vice versa (i.e., time series co-existence). Which of the two explanations is more, if not equally, descriptive of managers’ update decisions is ultimately an empirical question. Below we draw inferences from both the determinants of issuing forecast updates (Section 3.2) and the properties of forecast updates (Section 3.3).

### ***3.2. Determinants of Issuing Management Forecast Updates***

To investigate whether managers’ update decisions are more likely to be explained by time-specific conditions or by forecast routines, we estimate a logit model where the dependent variable is *UPDATE* (or *UPDATE\_ALL*), an indicator variable set to one if the firm issues an update in any quarter (all quarters) during the fiscal year, and zero otherwise. Three independent variables are included to capture a firm’s forecast routine: an indicator variable for having issued at least one management annual forecast (*LAG\_MF*) and the lagged variables for the update practice in the previous year (*LAG\_UPDATE* and *LAG\_UPDATE\_ALL*). The “condition non-specific” explanation predicts positive coefficients on these forecast routine variables.

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<sup>2</sup> Managers may still issue “confirming” forecasts occasionally under the “condition-specific” explanation when they perceive the benefits of reducing uncertainty (i.e., the second moment) about earnings to exceed the costs (Clement et al. [2003]), but the “condition-specific” explanation cannot explain *repeated* confirming updates that we observe.

To capture time-specific conditions, we include three sets of variables. The first set focuses on analysts' forecasts before managers' initial forecasts. The "condition specific" explanation suggests that updates are more needed if analysts' initial forecasts contain larger forecast errors ( $|AFE|$ ), if more analysts are forecasting earnings ( $AF$ ), and if there is greater dispersion among analysts' forecasts ( $DISP$ ). The second set contains a variable capturing how closely analysts' forecasts follow managers' initial forecasts ( $|AFMF\_DIFF|$ ). The "condition specific" explanation suggests that managers are more likely to update their forecasts if their initial forecasts are less effective in adjusting or aligning analysts' forecasts. The third set contains a variable capturing the extent to which managers' revised earnings expectation (assuming it is closer to reported actual earnings) deviates from their initial forecast, measured as the forecast error of their initial forecast ( $|MFE|$ ). The "condition specific" explanation suggests that managers are more likely to issue updates if the initial forecast contains larger forecast error. Following this explanation, we expect positive coefficients on both  $|AFMF\_DIFF|$  and  $|MFE|$ .

We include additional variables to control for the properties of the initial management forecast ( $MFWIDTH$  and  $MFHRZN$ ), the properties of the firm's earnings ( $|ACTUAL|$ ,  $LOSS$ ,  $EARNVOL$ ), other firm characteristics ( $LNTA$ ,  $LITIG$ ,  $REGUL$ ,  $BM$ ,  $LEV$ ) and an indicator for periods after the passage of Reg FD in 2000 ( $FD$ ). Notes to Table 2 provide more details on all variables. The logit model is specified as follows and we cluster the standard error by firm and by year (Peterson [2009]). Because managers have less time to update their forecasts if they issue initial forecasts later during the year, to allow a meaningful analysis, we estimate the logit model on a sample where we require the initial forecasts to be issued in the first fiscal quarter.<sup>3</sup>

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<sup>3</sup> Note that this requirement is necessary for the *UPDATE\_ALL* analysis, because managers cannot update in every quarter unless their initial forecast is issued in Q1. But for the *UPDATE* model, our results remain qualitatively the same if we do not impose this requirement.

$$\begin{aligned}
PROB(UPDATE \text{ or } UPDATE\_ALL = 1) &= \beta_0 \\
\text{Forecast routines: } &+ \beta_1 LAG\_MF + \beta_2 LAG\_UPDATE (+ \beta_3 LAG\_UPDATE\_ALL) \\
\text{Time-specific conditions: } &+ \beta_4 |AFE| + \beta_5 AF + \beta_6 DISP + \beta_7 |AFMF\_DIFF| + \beta_8 |MFE| \\
\text{Control variables: } &+ \beta_9 MFWIDTH + \beta_{10} MFHRZN + \beta_{11} |ACTUAL| + \beta_{12} LOSS \\
&+ \beta_{13} EARNVOL + \beta_{14} LNTA + \beta_{15} LITIG + \beta_{16} REGUL \\
&+ \beta_{17} BM + \beta_{18} LEV + \beta_{19} FD
\end{aligned} \tag{1}$$

Table 2 Panel A presents summary statistics for the sample used in estimating equation (1). As shown, 88.2% of the firms issue at least one update (*UPDATE*) and 59.5% update every quarter (*UPDATE\_ALL*), consistent with the evidence in Figure 1 that forecast updates are very common in our sample. Overall, 94.2% of our sample is in the post Reg FD period (*FD*).

Table 2 Panel B presents regression results from estimating equation (1). The dependent variable is *UPDATE* in Column (1) and is *UPDATE\_ALL* in Column (2). Consistent with the “condition non-specific” explanation, in both columns, we find that the forecast routine variables are significantly positive both statistically and economically. For example, if a firm has provided updates in the previous year (*LAG\_UPDATE*), it is more likely to provide updates in at least one quarter (in all quarters) in the current year by 13.5% (19.8%) (z-stat = 8.62 and 6.38 in Column (1) and (2)). Moreover, consistent with regular updaters following established routine to issue updates, firms that have updated in all quarters in the previous year (*LAG\_UPDATE\_ALL*) are more likely to do so in the current year by 30.6% (z-stat = 18.52).

In contrast, the “condition specific” explanation predicts positive coefficients on several “time-specific condition” variables, for which we find no supporting evidence. In particular, when analysts’ initial forecasts are less accurate (i.e., larger *|AFE|*), managers’ likelihood of updating their forecasts are significantly lower, rather than higher as predicted by the “condition specific” explanation (z-stat = -3.02 and -3.36 in Columns (1) and (2)). Other variables predicted by the “condition specific” explanation (*AF*, *DISP*, *|AFMF\_DIFF|*, and *|MFE|*) are insignificant

in equation (1).<sup>4</sup> Moreover, the marginal impacts of these “time-specific condition” variables are substantially smaller than those of the “forecast routine” variables.<sup>5</sup>

The results on the control variables provide some insights about the differences between firms who update their forecasts and those who do not. For example, we find that  $|ACTUAL|$ ,  $LNTA$ , and  $FD$  are significantly positive whereas  $LOSS$ ,  $BM$ , and  $LEV$  are significantly negative in equation (1). These results suggest that firms with higher earnings per share, with more assets, and in the post Reg FD period are more likely to update their annual earnings forecasts, whereas firms with losses, with fewer growth options, and highly leveraged firms are less likely to do so.

Because the above results suggest that managers mainly follow “forecast routines” to update their annual forecasts, we investigate what triggers managers to initiate forecast updates in the first place. We probe this question with a similar logit model as in equation (1) but with a sample pooling only the initiation year of each updater and a randomly selected year for each non-updater. The results from this analysis (untabulated) reveal that less leveraged firms with lower book-to-market ratios are more likely to initiate forecast updates. Moreover, larger firms with less volatile earnings are also more likely to initiate regular updates (i.e., updates every quarter).<sup>6</sup> These results suggest that more volatile firms are less likely to initiate updates because of the expectation of continued updates in the future, consistent with Einhorn and Ziv [2008].

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<sup>4</sup> In untabulated analysis, we find qualitatively similar results: (1) when we interact the unsigned variables  $|AFE|$ ,  $|AFMF\_DIFF|$ , and  $|MFE|$  with an indicator variable set to one if the underlying variable is positive, so as to allow asymmetric effect of these variables on  $UPDATE$  and  $UPDATE\_ALL$ , or (2) when we un-deflate all dollar-denominated variables, including  $|AFE|$ ,  $DISP$ ,  $|AFMF\_DIFF|$ ,  $|MFE|$ ,  $MFWIDTH$ ,  $|ACTUAL|$ , and  $EARNVOL$ .

<sup>5</sup> In untabulated analysis, we conducted a horse-race test comparing the explanatory power of the “forecast routine” variables against the “time-specific condition” variables using the Vuong (1989) test. The  $UPDATE$  ( $UPDATE\_ALL$ ) model with the “forecast routine” variables and all control variables included outperforms the model with the “time-specific” variables and all control variables, as z-stat is -7.92 (-13.06), significant at the 0.001 level.

<sup>6</sup> Prior studies suggest that managers sometimes provide forecasts before and after trading their own firms’ shares, either to reap private benefits (e.g., Cheng and Lo [2006]), or to comply with the SEC disclosure rule 10(b)5 (Li, Wasley, and Zimmerman [2014]). To check whether insider trading activities are driving management forecast updates, we calculate the number of quarters in which insider trading occurs, and we find it only modestly correlated with the number of quarters in which forecast updates occur (Pearson correlation = 0.06). Moreover, when included in Model (1) as a control variable, it is neither statistically significant ( $p > 0.10$ ) nor alters any of our inferences.

Overall, the results from the regression analysis in this section are more consistent with the “condition non-specific” explanation — managers’ decisions to update annual earnings forecasts are driven mainly by forecast routines rather than by the time-specific conditions that call for additional updates to adjust or manage analyst earnings expectations, as the conventional “expectation alignment” hypothesis would predict (e.g., Ajinkya and Gift [1984]).

### ***3.3. Properties of Management Forecast Updates***

As discussed in our hypothesis development section, the “condition non-specific” explanation implies that managers might provide updates even when the updates differ very little from previous forecasts. By contrast, the “condition specific” explanation suggests that updates are more likely to occur when managers’ expectations have deviated from the previous forecasts; hence most updates should convey new information compared with their predecessors. To further investigate which of these two explanations is more descriptive of managers’ update decisions, we examine two important properties of their forecast updates: the forecast width (*WIDTH*), calculated as the difference between the upper and lower bounds of management range forecast and zero for all point forecasts, and the forecast midpoint (*MIDPT*), measured as the midpoint of managers’ forecasts minus the actual earnings.<sup>7</sup> In this analysis, we continue to focus on observations where managers’ initial annual forecast is issued in the first fiscal quarter, to allow meaningful comparisons of the properties of the initial forecasts across update types.

Table 3 Panel A (Panel B) presents the results from the analysis on *WIDTH* (*MIDPT*). We first partition our sample based on the number of quarters where managers have issued or updated their annual earnings forecasts (*NUMQTR*), which ranges from one to four. For each subsample, we report the mean and median *WIDTH* or *MIDPT* for each forecast in the update

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<sup>7</sup> We standardize the midpoint of management forecast by subtracting the actual earnings, which can also be interpreted as management forecast bias. For ease of interpretation, we do not deflate *WIDTH* or *MIDPT*, but our inferences remain qualitatively the same with price deflated variables.

sequence ( $WIDTH1 \sim WIDTH4$ ,  $MIDPT1 \sim MIDPT4$ ). In addition, we also report the percentage of observations where  $WIDTH$  or  $MIDPT$  does not change from the previous forecast.

### **3.3.1. Forecast Widths of Management Forecast Updates**

To the extent that managers' private information becomes more precise as time passes (Hutton et al. [2012]), the "condition specific" explanation would predict management forecast widths to become narrower over time. However, Panel A shows that the vast majority of updates do not change  $WIDTH$  from the previous forecasts, which is more consistent with the "condition non-specific" explanation that managers routinely issue updates even without receiving material new information. For example, for managers' first update (moving from  $WIDTH1$  to  $WIDTH2$ ), 71% of the regular updaters ( $NUMQTR = 4$ ) maintain the same width whereas 51% do so with their only update ( $NUMQTR = 2$ ). We also observe the initial forecast width ( $WIDTH1$ ) increases as a firm updates its forecast more frequently. The mean (median) increases from \$0.07 (\$0.05) to \$0.12 (\$0.10) as  $NUMQTR$  increases from one to four, even though we require all the initial forecasts to be issued in the first fiscal quarter. One potential explanation for this finding is that, when issuing the initial forecast, regular updaters have planned to issue subsequent updates, and therefore do not rush to provide forecasts with narrow ranges.<sup>8</sup> Note that regular updaters' last update ( $WIDTH4$ ) has a mean (median) of \$0.07 (\$0.05), which is similar to the last updates in other scenarios (i.e.  $NUMQTR = 1\sim3$ ), suggesting the precision of managers' private information at the time of issuing the final forecast to be similar across different scenarios.

Another pattern revealed in Table 3 Panel A is that frequent updaters tend to change the forecast widths later in the year and maintain the same width when first updating their forecasts. For example, among regular updaters (i.e.,  $NUMQTR = 4$ ), 71% do not change  $WIDTH2$  whereas

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<sup>8</sup> An alternative explanation is that regular updaters somehow have less precise information, but this is inconsistent with the evidence of regular updaters' on average more accurate forecasts, which we will discuss next.

only 34% do not change *WIDTH4*. This finding is again consistent with these regular updaters anticipating subsequent updates and therefore waiting until later updates to narrow their range widths, which agrees with the “condition non-specific” explanation.

### ***3.3.2. The Midpoints of Management Forecast Updates***

Turning to Panel B of Table 3, we find the content of management forecasts, measured as the midpoint of management forecasts minus the actual earnings (*MIDPT*), also do not change in many cases, although less common than with forecast widths. The general patterns observed with *WIDTH* extend to *MIDPT*. For example, earlier updates by regular updaters (i.e., *NUMQTR* = 4) are more likely to contain the same midpoint (e.g., 43% for *MIDPT2*) than later updates (18% for *MIDPT4*) or than early updates issued by less frequent updaters (37% for *MIDPT2* for *NUMQTR* = 3; 27% for *NUMQTR* = 2). These findings are again consistent with the “condition non-specific” explanation that regular updaters anticipating subsequent updates and hence waiting until later updates to adjust their forecast midpoints.

Table 3 Panel B also reveals two unique patterns that seem to contrast with conventional wisdom from the prior literature. First, prior studies find that managers’ long horizon forecasts of annual earnings are on average optimistic (i.e.  $MIDPT > 0$ ) (e.g., Rogers and Stocken [2005], Ajinkya et al. [2005]). Although we find corroborating results with a significantly positive mean (median) *MIDPT1* of 0.43 (0.14), 0.34 (0.11), and 0.21 (0.03) for cases where *NUMQTR* = 1, 2, and 3 respectively, the mean (median) *MIDPT1* is 0.06 (-0.03) for regular updaters (*NUMQTR* = 4), suggesting that the stylized optimism observed in managers’ long-horizon annual forecasts does not apply to the median regular updater and is weaker in magnitude for the average regular updater. Moreover, for regular updaters, we find the optimism to diminish and turn to pessimism across subsequent updates, as the mean (median) of *MIDPT2*, *MIDPT3*, and *MIDPT4* are 0.04 (-

0.03), 0.01 (-0.03), and -0.02 (-0.02). These findings on regular updaters contrast with the prior documented optimism in managers' long-horizon annual forecasts, and highlight the uniqueness of regular updates and the importance of considering them in management forecast research.

Another important pattern emerging from Table 3 Panel B is regarding the percentages of regular updates that revise the earnings expectations upward rather than downward. Specifically, 38%, 44%, and 49% of *MIDPT2*, *MIDPT3*, and *MIDPT4*, are revised upward. These findings are surprising in light of two related streams of literature. The first stream suggests that managers often issue forecasts to guide down analyst forecasts (e.g., Cotter et al. [2006], Gong et al. [2011]); the second stream finds a downward revision pattern in analyst forecasts (e.g., Ke and Yu [2006]). Taken together, one would expect most forecast updates to revise down rather than revise up the earnings expectations. While the percentages of updates that revise up expectations are relatively low when *NUMQTR* < 4, regular updaters (i.e., *NUMQTR* = 4), however, are much more likely to revise up than to revise down forecasts, especially with their final updates (49%, compared with revising down of 33%, calculated as  $1 - 18\% - 49\%$ ). This can be partially explained by our previous observation that regular updaters' initial forecasts (*MIDPT1*) are less optimistic than other firms'; hence they face less pressure to walk down expectations.

In summary, our evidence from both the determinants and the properties of management forecast updates largely support the "condition non-specific" explanation, which suggests that managers are likely following their forecast routines in issuing forecast updates. Furthermore, we find that regular updaters have distinctive forecast patterns relative to other firms, highlighting the importance of taking forecast updates (especially regular forecast updates) into consideration in research on management forecasts.

#### **4. How Do Analysts Respond to Management Forecasts? Initial Forecasts vs. Updates**

Given the significant influence of management forecasts on market expectations, we next investigate whether financial analysts understand and therefore adjust their forecast revisions in response to managers' forecast update decisions. Building upon a large literature on analysts' reaction to the initial management forecasts of annual earnings, in this section, we examine two related questions about management forecast updates: (1) whether and how analysts' responses to managers' initial forecasts are influenced by managers' update decisions observed in the previous year; and (2) whether and how analysts' reaction to subsequent updates differ from their reaction to the initial management forecasts.

##### **4.1. How Do Analysts Respond to Initial Forecasts Issued by Updaters versus Non-Updaters?**

To examine analysts' understanding of management forecast update decisions, we follow Gong et al. [2011] and investigate analyst forecast revisions around managers' initial forecasts. Because analysts *ex ante* cannot tell whether managers will update their forecasts, we use the update choices observed in the previous year as a proxy for analysts' predictions of managers' update decisions in the current year. Our previous results supporting the "condition non-specific" explanation for managers' update decisions suggest that this is a reasonable assumption. We estimate the following equation using the ordinary least squares (OLS) regression with standard errors adjusted for heteroskedasticity and firm-level clustering, following Gong et al. [2011].

$$\begin{aligned} AREV = & \alpha_0 + \alpha_1 MFNEWS + \alpha_2 MFNEWS \times LAG\_UPDATE (\_ALL) \\ & + \alpha_3 MFNEWS \times LAG\_MFE + \alpha_4 MFNEWS \times REPUTATION \\ & + \alpha_5 MFNEWS \times |MFNEWS| + \alpha_6 MFNEWS \times MFLOSS + \alpha_7 MFNEWS \times BM \\ & + \alpha_8 MFNEWS \times MFHRZN + \alpha_9 MFNEWS \times MFWIDTH + \alpha_{10} ENEWS \\ & + \alpha_{11} ENEWS \times |ENEWS| + \alpha_{12} ENEWS \times ELOSS + \alpha_{13} ENEWS \times BM \\ & + YEAR\ FIXED\ EFFECTS + INDUSTRY\ FIXED\ EFFECTS \end{aligned} \quad (2)$$

The dependent variable (*AREV*) is analysts' forecast revision, measured as the median (consensus) of analysts' first forecasts after managers' initial forecast of annual earnings minus

the median of analysts' last forecasts before managers' initial forecast, scaled by the beginning-of-year stock price.<sup>9</sup> Our variable of interest is  $MFNEWS \times LAG\_UPDATE$  ( $\_ALL$ ), in which  $MFNEWS$  is management forecast news, measured as managers' initial forecasts of annual earnings minus the latest analyst consensus forecast, scaled by the beginning-of-year stock price. All variables are defined in the notes to Table 4.

Suppose analysts anticipate managers to repeat their update decisions from the previous year, as our earlier results reveal fairly persistent update choices at the firm level over time. If a firm previously issued updates, analysts are likely to respond less strongly to its initial forecast, because they anticipate subsequent updates to revise the initial forecast. This reasoning suggests that the coefficient on  $MFNEWS \times LAG\_UPDATE$  should be negative (i.e.,  $\alpha_2 < 0$ ). For the same reason, if analysts anticipate regular updaters (firms that updated for all quarters in the previous year) to update their forecasts regularly again in the current year, then we expect the coefficient on  $MFNEWS \times LAG\_UPDATE\_ALL$  to be negative.

Following Gong et al. [2011], we control for factors that are also likely to impact analyst reaction to management forecasts. More specifically, we allow analyst reaction to management forecast news to vary with management forecast errors in the previous year (Gong et al. [2011]), managers' forecast reputation (Hutton and Stocken [2009]), the magnitude of management forecast news (Freeman and Tse [1992]), whether a loss is forecasted (Hayn [1995]), the book-to-market ratio (Rogers and Stocken [2005]), management forecast horizon (Pownall, Wasley, and Waymire [1993]), and the precision of management forecast measured with the range width (Baginski, Conrad, and Hassell [1993]). To account for concurrent earnings news (Rogers and Van Buskirk [2013]), we control for earnings news and its interaction with its magnitude, an

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<sup>9</sup> To maximize our sample size, we capture analyst forecasts issued in the [-90, +30] days window of managers' initial forecasts of annual earnings. However, our results are qualitatively the same if we follow Gong et al. [2011] and use the [-30, +30] window instead.

indicator for losses, and the book-to-market ratio.<sup>10</sup> Following Gong et al. [2011], we mean-center all continuous variables in interaction terms to facilitate the interpretation of main effects.

Table 4 Panel A presents summary statistics for the sample used in estimating equation (2). As shown, the average analysts' forecast revision (*AREV*) is negative at -0.002, suggesting that analysts on average revise forecasts downward after managers' long-horizon forecasts of annual earnings. The average management forecasts news (*MFNEWS*) is also negative at -0.003, suggesting that, at the beginning of the year, managers on average provide downward earnings forecasts relative to prevailing analyst consensus forecasts.

Table 4 Panel B presents regression results from estimating equation (2). We find that the coefficient on  $MFNEWS \times LAG\_UPDATE$  is insignificantly negative in Column (1) (t-stat = -0.78) whereas the coefficient on  $MFNEWS \times LAG\_UPDATE\_ALL$  is significantly negative in Column (2) (t-stat = -2.06). These findings are consistent with the notion that analysts anticipate regular updaters (but not other types of updaters) to subsequently revise their initial forecasts, and therefore react less strongly to their initial forecasts.<sup>11</sup> Despite analysts' reduced reactions, our F-tests suggest that analysts' reactions to the initial forecasts by updaters and by regular updaters remain statistically significant (F-stat on the sum of the coefficients of *MFNEWS* and  $MFNEWS \times LAG\_UPDATE\_ALL$  is 453.50 and 232.08 in Columns (1) and (2)).

#### ***4.2. How Do Analysts Respond to Management Forecast Updates?***

Next we examine how analysts respond to managers' forecast updates. Figure 2 presents a graphical illustration of how analysts respond to forecast updates issued by regular updaters ( $NUMQTR = 4$ ). The figure plots the median management forecast errors of the four forecasts (including the three updates) within each firm-year ( $MIDPT1 \sim MIDPT4$ , defined the same as in

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<sup>10</sup> For stand-alone management forecasts, we set concurrent earnings news to zero.

<sup>11</sup> In untabulated results, we find that the result is mainly driven by bad news (t-stat = -2.54) not by good news (t-stat = 1.08). We defer the comparison between good news and bad news to Section 5.

Table 3) and the median analyst consensus forecast error before each corresponding management forecast ( $AFE1 \sim AFE4$ , defined as analyst consensus forecast minus the actual earnings) for five groups formed by quintile rankings of the initial management forecast error ( $MIDPT1$ ). As Figure 2 shows, forecast updates on average tend to reduce the magnitude of  $MIDPT$  towards zero (solid lines) across all quintiles, consistent with the precision of managers' information set improving during the year. Moreover, analyst consensus forecasts (dashed lines) closely follow management updates (solid lines) and converge to zero, implying that analysts respond strongly to management forecast updates.<sup>12</sup>

Next, we formally evaluate analysts' reactions to managers' forecast updates, compared with their reactions to managers' initial forecasts, by estimating the following equation, which is similar to the previous equation (2) but is specified at the firm-quarter level rather than the firm-year level. Again, we use the ordinary least squares (OLS) regression with standard errors adjusted for heteroskedasticity and firm-level clustering.

$$\begin{aligned}
AREV = & \alpha_0 + \alpha_1 MFNEWS + \alpha_2 MFNEWS \times UPDATE1^{ST} \\
& + \alpha_3 MFNEWS \times UPDATE2^{ND} + \alpha_4 MFNEWS \times UPDATE3^{RD} \\
& + \alpha_5 MFNEWS \times LAG\_MFE + \alpha_6 MFNEWS \times REPUTATION \\
& + \alpha_7 MFNEWS \times |MFNEWS| + \alpha_8 MFNEWS \times MFLOSS + \alpha_9 MFNEWS \times BM \\
& + \alpha_{10} MFNEWS \times MFHRZN + \alpha_{11} MFNEWS \times MFWIDTH + \alpha_{12} ENEWS \\
& + \alpha_{13} ENEWS \times |ENEWS| + \alpha_{14} ENEWS \times ELOSS + \alpha_{15} ENEWS \times BM \\
& + YEAR\ FIXED\ EFFECTS + INDUSTRY\ FIXED\ EFFECTS
\end{aligned} \tag{3}$$

All variables are defined similarly as before, except that instead of focusing on managers' initial forecasts,  $AREV$ ,  $MFNEWS$ , and  $ENEWS$  are measured for each forecast (including each update). Our primary interest is on  $MFNEWS \times UPDATE$  ( $1^{ST}$ ,  $2^{ND}$ , or  $3^{RD}$ ), where  $UPDATE$  ( $1^{ST}$ ,  $2^{ND}$ , or  $3^{RD}$ ) is an indicator variable set to one if the management forecast is the 1<sup>st</sup>, 2<sup>nd</sup>, or

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<sup>12</sup> In untabulated analyses, we find that analyst forecast dispersion decreases significantly around management forecast updates, regardless of whether the updates change the range width or the midpoint from the previous forecasts, consistent with a confirmative role of forecast updates even when they do not differ from prior forecasts.

the 3<sup>rd</sup> update for the initial forecast, and zero otherwise. Notes to Table 5 include the definitions of all variables.

Suppose analysts perceive management forecast updates as informative. Then the sum of  $\alpha_1$  and  $\alpha_2$  ( $\alpha_3$  or  $\alpha_4$ ) should be significantly positive. Moreover, if forecast updates incrementally contain less information than the initial management forecasts, we would expect the coefficient on  $MFNEWS \times UPDATE$  ( $1^{ST}$ ,  $2^{ND}$ , or  $3^{RD}$ ) to be significantly negative (i.e.,  $\alpha_2$ ,  $\alpha_3$  and  $\alpha_4 < 0$ ). Alternatively, if analysts view updates to contain incrementally more information than managers' initial forecasts, we would expect the coefficient on  $MFNEWS \times UPDATE$  ( $1^{ST}$ ,  $2^{ND}$ , or  $3^{RD}$ ) to be significantly positive (i.e.,  $\alpha_2$ ,  $\alpha_3$  and  $\alpha_4 > 0$ ).

Table 5 Panel A presents summary statistics for the sample used in estimating equation (3). The sample size is bigger than our previous sample of only initial forecasts because forecast updates are now included. Similar to our findings in the previous sample, the average analyst forecast revision ( $AREV$ ) and the average management forecast news ( $MFNEWS$ ) are both negative at -0.001 and at -0.002.

Table 5 Panel B presents regression results from estimating equation (3). In Column (1), we use the sample of all forecast updates and we find significantly negative coefficients on  $MFNEWS \times UPDATE1^{ST}$ ,  $MFNEWS \times UPDATE2^{ND}$ , and  $MFNEWS \times UPDATE3^{RD}$  (t-stat = -3.58, -3.19, and -3.77, respectively) and the magnitudes are progressively larger (coefficient = -0.103, -0.133, and -0.258), consistent with analysts perceiving the incremental informativeness of forecast updates to diminish within the year. Nonetheless, our F-tests suggest that analysts still react strongly to management forecast updates, as the F-tests on the coefficient sums are positive and significant (F-stat = 395.85, 264.99, and 75.30). In Column (2), we use a sample of regular updaters only ( $NUMQTR = 4$ ) because they are the most common type of updaters. Focusing on

this sample also facilitates the comparison across forecast updates issued in a sequence, as each firm-year contains exactly four forecasts issued in each of the four fiscal quarters. The results from this sample are qualitatively the same as those from the full sample. Specifically, we continue to find that analysts' reactions to updates are weaker than to initial forecasts and diminish in magnitude over the year.<sup>13</sup> The results from the F-tests suggest that analysts react significantly to managers' first and second updates. However, their reactions to managers' last updates are insignificant (F-stat = 2.19).

In summary, our findings on analysts' reactions to managers' forecast updates suggest that analysts understand the "condition non-specific" nature of regular updates (i.e., issuing updates in every quarter) and rationally delay part of their forecast revisions from the initial forecasts to subsequent updates. Despite reduced magnitudes of analysts' reactions to updates, our evidence suggests that manager's forecast updates have information content on average.

### ***5. Do Managers Withhold Bad News? New Evidence from Management Forecast Updates***

In this section, we use the setting of management forecast updates, an unexamined new dimension of management forecasts, to investigate an important question examined in the prior literature – do managers withhold bad news? Several studies document that managers preempt negative earnings surprises by issuing timely warnings of bad earnings news to mitigate expected litigation costs (Kasznik and Lev [1995], Skinner [1994, 1997], Baginski et al. [2002]). Others document that managers accelerate the release of bad news and withhold good news before scheduled option grants to lower their option prices (Yermack [1999]; Aboody and Kasznik [2000]). Despite these specific incentives managers have to hasten the disclosure of bad news

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<sup>13</sup> This finding of "diminishing incremental informativeness" remains significant after we exclude updates that do not change in range widths or forecast midpoint as they are expected to have weaker effects on analyst forecasts. Hence, our finding in Table 5 is not driven by the large number of "no change" updates as documented in Table 3.

relative to good news, Kothari et al. [2009] document that managers *on average* withhold bad news relative to good news, most notably in the pre- Reg FD period. We examine this question by comparing the timeliness of releasing bad earnings news with releasing good news and across firms with different frequency of management forecast updates.

Although the above prior studies focus on quarterly settings to examine the timeliness of releasing good news versus bad news, we consider annual earnings to be a more powerful setting for three main reasons. First, unlike quarterly earnings, which is furnished with a 10-Q filing, annual earnings is revealed in a piecemeal fashion through three 10-Q filings and one 10-K filing, hence providing a richer context to examine the timeliness of news. Second, one of the rationales for managers to temporarily withhold bad news is to hope for future good news to offset (at least partially) negative earnings news (Kothari et al. [2009]), which is more likely in longer windows (the annual setting) than in shorter windows (the quarterly setting). Third, the longer window for annual earnings also allows managers more flexibility regarding their voluntary disclosure, such as the forecasts of annual earnings, which matches the focus of this study.

Following Donelson et al. [2012], we use analyst consensus forecast of annual earnings to proxy for market earnings expectation, assuming that revisions in analyst consensus forecasts reflect earnings news released to the market. To examine how managers' forecast updates affect the timeliness of analyst revisions, we track analyst consensus around earnings announcements, as most management forecasts are bundled with these announcements (Rogers and Van Buskirk [2013]). We measure news starting just before the earnings announcement for Q4 of the last year and ending immediately after the earnings announcement for Q4 of the current year. To measure remaining earnings news to be released through the rest of the year, we subtract actual earnings from analyst consensus forecast at a given time during the year. We deflate the difference by the

total earnings news during the year (i.e., the difference between actual earnings and the initial analyst consensus forecast) to facilitate the comparison across different update types and news types. Based on the number of quarters where managers have issued an annual earnings forecast (*NUMQTR*), we classify firms as non-updaters (*NUMQTR* = 1), sporadic updaters (*NUMQTR* = 2 or 3), or regular updaters (*NUMQTR* = 4). We classify each firm-year as conveying good (bad) news if the actual earnings exceeds (falls short of) the initial analyst consensus forecast at the beginning of the year.

Figure 3 Panel A (Panel B) presents a graphic comparison of the timeliness of revealing good (bad) news across the three update types. By construction, remaining news as a percentage of total earnings news (the vertical axis) decreases from one to zero over time (the horizontal axis). Timelier (less timely) news release should result in larger decreases in the plot earlier (later) during the year. Panel A shows that, both sporadic updaters and regular updaters delay their good news release relative to non-updaters. For example, after Q2 announcement (*PostQ2*), an average non-updater has about 25% of total good news to disclose, whereas an average sporadic updater (regular updater) has about 43% (40%). In contrast, Panel B shows that the release of bad news is timelier for regular updaters than for sporadic updaters and non-updaters. For example, after Q1 earnings announcement (*PostQ1*), an average regular updater has about 53% news to disclose, whereas an average sporadic updater (non-updater) has about 65% (70%). Overall, the graphical evidence in Figure 3 shows notable differences in the timeliness of earnings news release across the three update types.

Next, to formally test the relative timeliness of releasing earnings news across update types and news types, we develop a firm-year measure of timeliness (*TIMELINESS*), measured

similar to that used by Donelson et al. [2012] and computed as the average proportion of total news released up to a given period during the year, expressed as follows:<sup>14</sup>

$$\begin{aligned} \text{TIMELINESS} &= \sum_{t=1}^5 \frac{\text{Earnings News Released up to Time Period } t}{\text{Total Earnings News}} \\ &= \sum_{t=1}^5 \frac{\sum_{i=1}^t \text{Earnings News Released during Time Period } i}{\text{Total Earnings News}} \end{aligned}$$

where “*Earnings News Released during Time Period  $t$* ” is measured as revisions of analyst consensus forecast during time period  $t$  (explained below), “*Total Earnings News*” is measured as the actual earnings minus the analyst consensus forecast at the beginning of the year, and time subscript  $t$  ( $t=1, 2, \dots, 5$ ) indicates each time interval in Figure 3, except that we combine the last two intervals to mitigate the confounding effect of earnings warnings issued shortly before the annual earnings announcement (Kaszniak and Lev [1995]). By construction, analyst forecast revisions earlier (later) during the year are counted more (fewer) times in our timeliness measure (Donelson et al. [2012]). Therefore, holding constant the total magnitude of forecast revision, if larger revisions occur earlier in the year, they are assigned more weight, and therefore result in a higher *Timeliness* measure. In untabulated tests, we find that *Timeliness* is significantly higher for bad news than for good news in the full sample (t-stat = 6.21), driven solely by updaters (t-stat = 2.30 and 6.21 for sporadic and regular updaters), but not by non-updaters (t-stat = 0.72). Therefore, while non-updaters appear to be equally timely with releasing good news and bad news, updaters tend to release bad news in a timelier fashion than to release good news.<sup>15</sup>

To examine whether firms of different update types respond differently to cross-sectional determinants shown to affect managers’ behavior in withholding bad news (Kothari et al. [2009]),

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<sup>14</sup> Donelson et al.’s (2012) measure is based on daily percentages summed over a quarter, and our measure is mainly based on quarterly percentages summed over a year, thus less affected by the infrequency of analyst forecasts.

<sup>15</sup> In untabulated tests, we examine whether *Timeliness* differs between updaters and non-updaters, conditional on news being good or bad. For good news, regular updaters are timelier than non-updaters (t-stat = 1.75). For bad news, regular updaters are less timely than non-updaters (t-stat = -2.15). The difference between sporadic updaters and non-updaters, however, is insignificant for both good news and bad news (t-stats = 0.87 and -0.43).

we modify Kothari et al.'s model by replacing their dependent variable (short-window returns around disclosures) with our measure of timeliness and we estimate the following equation with the ordinary least squares (OLS) regression separately for each update type with standard errors clustered by firm. Notes to Table 6 provide more details on all variable definitions.

$$\begin{aligned}
 TIMELINESS = & \beta_0 + \beta_1 BAD + \beta_2 FD + \beta_3 BAD \times FD + \beta_4 HILIT + \beta_5 BAD \times HILIT \\
 & + \beta_6 HIASYM + \beta_7 BAD \times HIASYM + \beta_8 HIDISTRESS \\
 & + \beta_9 BAD \times HIDISTRESS + \beta_{10} HIOWN + \beta_{11} BAD \times HIOWN
 \end{aligned} \tag{4}$$

Table 6 Panel A presents summary statistics for the sample used in estimating equation (4). As shown, the mean and median *TIMELINESS* are around 3 and the first and third quartiles are about 2 and 4, suggesting a roughly even distribution of earnings news disclosed over time. Slightly over half of the sample firm-years (55.1%) contain bad news (*BAD*) and most (93.0%) are in the post Reg FD period (*FD*).

Table 6 Panel B presents the regression results from estimating equation (4). Consistent with Kothari et al. [2009], we find that non-updaters and regular updaters tend to withhold bad news prior to Reg FD, as the coefficient on *BAD* is significantly negative (t-stat = -2.02 and -3.15). However, much of that is reversed following Reg FD as the interaction term *BAD\*FD* is significantly positive (t-stat = 2.39 and 4.02). Untabulated F-tests of the sum of coefficients of *BAD* and *BAD\*FD* suggest that, in the post Reg FD period, non-updaters are equally timely with disclosing bad news and good news ( $p > 0.10$ ) while regular updaters are significantly timelier in disclosing bad news than good news ( $p = 0.03$ ).<sup>16</sup> Moreover, regular updaters seem to accelerate bad news disclosure when facing high litigation risks (t-stat = 2.14), but reduce the timeliness of bad news disclosure when facing higher financial distress or when managers have more wealth tied to the firm (t-stat = -1.70 and -1.88), consistent with Kothari et al.; however, we do not find

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<sup>16</sup> Other results remain qualitatively the same if we restrict our sample to the post Reg FD period and add year firm effects to our model.

such evidence for non-updaters or sporadic updaters.<sup>17</sup> Therefore, our results suggest that not all firms have the same incentives and that the use of forecast updates has important implications for the timeliness of managers' release of earnings news.

In summary, we find significant differences across different update types: in the post Reg FD period, although non-updaters do not exhibit differential timeliness in releasing good news versus bad news, regular updaters are on average significantly timelier in releasing bad news than in releasing good news.

## **6. Conclusion**

To our knowledge, we are the first to systematically investigate managers' updates of annual earnings forecasts, a phenomenon that has grown rapidly in recent years and overtaken the conventional practice of issuing annual forecasts without updates. Our analyses suggest that managers are largely following their forecast routines in making their forecast update decisions. Moreover, previously documented time-specific determinants of management forecasts, such as the "expectation alignment" variables, collectively cannot explain managers' forecast updates, especially for firms updating every quarter, which we refer to as "regular updaters." Our analyses also reveal that a large percentage of the forecast updates maintain the same range width or midpoint as the previous forecast, which is consistent with managers' update decisions being driven by routines rather than by the need to adjust or manage market expectations.

Our analysis of analysts' forecast revisions suggests that analysts seem to understand managers' routines of providing regular updates, as evidenced by analysts' reduced reactions to initial forecasts from managers who provided updates in the previous year. Despite analysts'

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<sup>17</sup> The results remain qualitatively the same if we also control for the frequency of management quarterly earnings forecasts, or control for the timeliness of news released from quarterly earnings announcements, measured in a similar fashion as *Timeliness* in our main analysis.

weaker reactions to subsequent updates than to initial forecasts, we find that their reactions to updates are still significant. Confirming the importance of management forecast updates, we find that the timeliness of releasing good news relative to bad news is affected by the presence and frequency of updates. Our results are consistent with regular updaters using forecast updates to release bad news on a timely basis.

Our findings have several implications for academic researchers and for practitioners such as managers and investors. Conventionally, researchers have either focused exclusively on the initial management forecasts or treated initial forecasts as equivalent to updates. Our results highlight the differences and the interactions between these two types of management forecasts, suggesting a potentially promising avenue for future research to examine the *entire* sequence of management forecasts, including forecast updates. Our results can also be helpful to managers who face the decisions to issue forecast updates by informing them of the potential impacts on analysts' earnings expectations, and to investors who use managers' and analysts' forecasts to make investment decisions.

## Appendix: A list of publications using annual guidance sample and sample selections

In this appendix, we present a list of publications that use annual guidance sample and report their sample selection choices that we can infer whether forecast revisions are excluded. We survey all the empirical published papers in the top five accounting journals (*Journal of Accounting and Economics [JAE]*, *Journal of Accounting Research [JAR]*, *The Accounting Review [TAR]*, *Contemporary Accounting Research*, and *Review of Accounting Studies [RAST]*) from 2001 to 2012.

<u>Author(s)</u>	<u>Year</u>	<u>Title</u>	<u>Journal</u>	<u>Sample Period</u>	<u>Annual or Quarterly</u>	<u>Data Source*</u>	<u>Exclude Revision?</u>
Hutton, Miller, Skinner	2003	The role of supplementary statements with management earnings forecasts	JAR	1993-1997	Annual	DJNRS	No
Clement, Frankel, Miller	2003	Confirming management earnings forecasts, earnings uncertainty, and stock returns	JAR	1993-1997	Both	First Call	No
Baginski, Hassell, Kimbrough	2004	Why do managers explain their earnings forecasts?	JAR	1993-1996	Both	DJNRS	No
Ajinkya, Bhojraj, Sengupta	2005	The association between outside directors, institutional investors and the properties of management earnings forecasts	JAR	1997-2002	Annual	First Call	Yes
Karamanou, Vafeas	2005	The association between corporate boards, audit committees, and management earnings forecasts: an empirical analysis	JAR	1995-2000	Annual	First Call	Yes
Rogers, Stocken	2005	Credibility of management forecasts	TAR	1995-2000	Annual	First Call	Yes
Lennox, Park	2006	The informativeness of earnings and management's issuance of earnings forecasts	JAE	1998-2002	Both	First Call	No
Anilowski, Feng, Skinner	2007	Does earnings guidance affect market returns? The nature and information content of aggregate earnings guidance	JAE	1994-2003	Both	First Call	No
Gong, Li, Xie	2009	The association between management earnings forecast errors and accruals	TAR	1996-2006	Annual	First Call	Yes
Hui, Matsunaga, Morse	2009	The impact of conservatism on management earnings forecasts	JAE	1997-2002	Annual	First Call	Yes
Rogers, Skinner, van Buskirk	2009	Earnings guidance and market uncertainty	JAE	1996-2006	Both	First Call	No
Bamber, Hui, Yeung	2010	Managers' EPS forecasts: nickeling and diming the market?	TAR	1996-2004	Annual	First Call	No
Choi, Myers, Zang, Ziebart	2011	Do management EPS forecasts allow returns to reflect future earnings? Implications for the continuation of management's quarterly earnings guidance	RAST	1998-2003	Both	First Call	No
Christensen, Merkley, Tucker, Venkataraman	2011	Do managers use earnings guidance to influence street earnings exclusions?	RAST	2003-2007	Annual	First Call	Yes
Gong, Li, Wang	2011	Serial correlation in management earnings forecast errors	JAR	1996-2006	Annual	First Call	Yes
Hutton, Lee, Shu	2012	Do managers always know better? The relative accuracy of management and analyst forecasts	JAR	2001-2007	Annual	First Call	Yes
Zhang	2012	The effect of ex ante management forecast accuracy on the post-earnings announcement drift	TAR	1995-2007	Both	First Call	No

\* DJNRS refers to Dow Jones News Retrieval Service; First Call refers to First Call Historical Database.

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**TABLE 1**  
*Sample Selection Procedures*

	<b>No. of Forecasts</b>	<b>No. of Firm- years</b>
First Call CIG data set of annual earnings per share forecasts, 1996 through 2011	63,005	
Less:		
Management forecasts that are neither point nor range forecasts.	(4,645)	
Management forecasts announced before the previous year's earnings announcement	(7,278)	
Management forecasts announced after the end of the current fiscal year	(2,060)	
Management forecasts without a valid identifier	(2,586)	
Duplicate or revised forecasts within the sample fiscal quarter	(9,286)	
Final Full Sample for Figure 1	37,150	14,301
Firm-years with all available determinants of updates (Table 2)		5,830
Firm-years with all valid management forecast widths and the initial forecast in Q1 (Table 3 Panel A)		9,555
Firm-years with all valid management forecast errors and the initial forecast in Q1 (Table 3 Panel B)		8,735
Firm-years with valid data on analyst reaction to managers' initial forecasts and control variables (Table 4)		5,870
Management forecasts with valid data on analyst reaction and control variables (Table 5)	24,845	
Firm-years with valid data on timeliness of news and control variables (Table 6)		4,905

**TABLE 2**  
**Logit Determinants of Issuing Management Forecast Updates**

*Logit Model: PROB (UPDATE or UPDATE\_ALL = 1) =  $\beta_0$*

*Forecast Routines: +  $\beta_1$  LAG\_MF +  $\beta_2$  LAG\_UPDATE (+  $\beta_3$  LAG\_UPDATE\_ALL)*

*Time-specific conditions: +  $\beta_4$  |AFE| +  $\beta_5$  AF +  $\beta_6$  DISP +  $\beta_7$  |AFMF\_DIFF| +  $\beta_8$  |MFE|*

*Control variables: +  $\beta_9$  MFWIDTH +  $\beta_{10}$  MFHRZN +  $\beta_{11}$  |ACTUAL| +  $\beta_{12}$  LOSS*

*+  $\beta_{13}$  EARNVOL +  $\beta_{14}$  LNTA +  $\beta_{15}$  LITIG +  $\beta_{16}$  REGUL +  $\beta_{17}$  BM +  $\beta_{18}$  LEV +  $\beta_{19}$  FD*

<b>Panel A: Summary Statistics</b>						
Variable	Mean	Std. Dev.	25%	Median	75%	N
UPDATE	0.882	0.323	1	1	1	5,830
UPDAET_ALL	0.595	0.491	0	1	1	5,830
LAG_MF	0.840	0.366	1	1	1	5,830
LAG_UPDATE	0.735	0.442	0	1	1	5,830
LAG_UPDATE_ALL	0.458	0.498	0	0	1	5,830
AFE	0.019	0.033	0.003	0.008	0.021	5,830
AF	6.390	4.524	3	5	9	5,830
DISP	0.004	0.006	0.001	0.002	0.004	5,830
AFMF_DIFF	0.018	0.029	0.003	0.008	0.019	5,830
MFE	0.003	0.008	0.000	0.001	0.002	5,830
MFWIDTH	0.004	0.005	0.001	0.003	0.006	5,830
MFHRZN	323.710	17.607	315	327	337	5,830
ACTUAL	0.063	0.036	0.040	0.059	0.078	5,830
LOSS	0.052	0.223	0	0	0	5,830
EARNVOL	0.022	0.035	0.005	0.010	0.022	5,830
LNTA	7.774	1.697	6.505	7.687	8.960	5,830
LITIG	0.313	0.464	0	0	1	5,830
REGUL	0.134	0.340	0	0	0	5,830
BM	0.450	0.296	0.248	0.389	0.585	5,830
LEV	3.231	3.380	1.657	2.256	3.345	5,830
FD	0.942	0.235	1	1	1	5,830

**Panel B: Regression Results**

Variable	Pred. Sign	Dependent Variable = <i>UPDATE</i>			Dependent Variable = <i>UPDATE_ALL</i>		
		(1)			(2)		
		Coeff	z-stat	Marginal Impact	Coeff	z-stat	Marginal Impact
<i>LAG_MF</i>	+	0.510***	2.81	0.038	0.116	0.70	0.028
<i>LAG_UPDATE</i>	+	1.497***	8.62	0.135	0.815***	6.38	0.198
<i>LAG_UPDATE_ALL</i>	+				1.338***	18.52	0.306
<i> AFE </i>	+	-6.726***	-3.02	-0.015	-7.497***	-3.36	-0.060
<i>AF</i>	+	-0.019	-1.35	-0.006	-0.008	-0.99	-0.009
<i>DISP</i>	+	-4.654	-0.60	-0.002	-5.757	-0.94	-0.009
<i> AFMF_DIFF </i>	+	-3.220	-0.60	-0.002	-1.817	-0.38	-0.004
<i> MFE </i>	+	0.292	0.13	0.001	-3.646	-1.25	-0.025
<i>MFWIDTH</i>		24.150	1.58	0.008	27.814***	3.39	0.033
<i>MFHRZN</i>		0.002	1.04	0.003	0.003	1.29	0.012
<i> ACTUAL </i>		5.807***	3.513	0.014	5.772***	4.51	0.050
<i>LOSS</i>		-0.859***	-5.84	-0.078	-0.690***	-3.12	-0.170
<i>EARNVOL</i>		-1.813	-1.21	-0.004	-0.588	-0.49	-0.005
<i>LNTA</i>		0.120**	2.51	0.013	0.076*	1.95	0.031
<i>LITIG</i>		0.091	0.83	0.006	0.003	0.04	0.001
<i>REGUL</i>		-0.462*	-1.83	-0.035	-0.181	-1.40	-0.044
<i>BM</i>		-0.669***	-2.83	-0.013	-0.555***	-3.50	-0.039
<i>LEV</i>		-0.063***	-3.17	-0.014	-0.045***	-2.77	-0.036
<i>FD</i>		1.744***	9.63	0.215	2.247***	8.52	0.480
<i>Constant</i>		-1.819**	-2.53		-4.254***	-5.33	
Pseudo R-squared		0.2573			0.2299		
Number of Observations		5,830			5,830		

This table presents the regression results on the probability a firm updates (or updates all of) its initial management forecast. Panel A presents the summary statistics of all variables, and Panel B reports the regression results. The sample consists of 5,830 firm-year observations where firms issued the initial forecast in the first fiscal quarter. The dependent variable in column 1 is *UPDATE*, an indicator variable set to 1 if the firm updates its annual earnings forecast in a different quarter during year  $t$ ; the dependent variable in column 2 is *UPDATE\_ALL*, an indicator variable set to 1 if a firm updates its initial forecast in every quarter of year  $t$ . *LAG\_MF* is an indicator variable set to 1 if a firm issued at least one annual management earnings forecast in year  $t-1$ , and 0 otherwise. *LAG\_UPDATE* is an indicator variable set to 1 if the firm updates its annual earnings forecast in a different quarter during year  $t-1$ . *LAG\_UPDATE\_ALL* is an indicator variable set to 1 if the firm updates its annual earnings forecast in every quarter during year  $t-1$ . *|AFE|* is the absolute value of analyst forecast error measured as the difference between the actual earnings for year  $t$  and the analyst consensus forecast for year  $t$  prior to the initial management forecast for year  $t$ , scaled by the beginning-of-year stock price. *AF* is the number of

analysts issuing annual earnings forecasts for year  $t$  prior to the initial management forecast for year  $t$ .  $DISP$  is the standard deviation of analyst forecasts for year  $t$ 's annual earnings, measured prior to the initial management forecast for year  $t$ , scaled by the beginning-of-year stock price.  $|AFMF\_DIFF|$  is the absolute value of the difference between the initial management forecast for year  $t$  and analyst consensus forecast for year  $t$  measured after the initial management forecast for year  $t$ , scaled by the beginning-of-year stock price.  $|MFE|$  is the absolute value of management forecast error measured as the difference between the initial management earnings forecast for year  $t$  and the actual earnings for year  $t$ , scaled by the beginning-of-year stock price.  $MFWIDTH$  is the range width of the initial management earnings forecast for year  $t$ , and zero for point forecasts, scaled by the beginning-of-year stock price.  $MFHRZN$  is the horizon of the initial management earnings forecast for year  $t$ , measured as the number of days between the forecast date and the fiscal year end date.  $|ACTUAL|$  is the absolute value of the actual earnings per share for year  $t$ , scaled by the beginning-of-year stock price.  $LOSS$  is an indicator variable equal to 1 if the actual earnings per share for year  $t$  is less than zero, and 0 otherwise.  $EARNVOL$  is the standard deviation of seasonal changes in return of assets over the previous 16 quarters ending at year  $t - 1$ .  $LNTA$  is the natural logarithm of total assets, measured at the end of year  $t-1$ .  $LITIG$  is an indicator variable set to 1 for high litigious industries including Biotechnology (SIC 2833-2836), Computer (SIC 3570-3577), Electronics (SIC 3600-3674), Programming (SIC 7371-7379), R&D Services (SIC 8731-8734), and Retailing (SIC 5200-5961), and 0 otherwise.  $REGUL$  is an indicator variable set to 1 for regulated industry including Utilities (SIC 4900-4999), Banking (SIC 6000-6099, 6100-6199), Financial Institutions (SIC 6200-6299, 6700-6799), 0 otherwise.  $BM$  is the book-to-Market ratio, measured as the book value of equity divided by the market value of equity at the end of year  $t-1$ .  $LEV$  is leverage, measured as total assets divided by book value of equity measured at the end of year  $t-1$ .  $FD$  is an indicator variable equal to 1 for periods after the passage of Reg FD, i.e. from 2001 and afterwards. All continuous variables are winsorized at the extreme 1%. \*, \*\*, and \*\*\* represent significance at 10%, 5%, and 1% (two-tailed). Standard errors are clustered by firm and year. Marginal impact is the expected change in the probability resulting from an increase in each independent of one standard deviation above the mean when it is a continuous variable, and of 1 if it is an indicator variable.

**TABLE 3**  
*Forecast Width and Forecast Midpoint*

<b>Panel A: Management Forecast Width (<i>WIDTH</i>)</b>						
		<b>WIDTH1</b>	<b>WIDTH2</b>	<b>WIDTH3</b>	<b>WIDTH4</b>	
<b>NUMQTR = 4</b> [N = 4,915]	Mean	0.12	0.12	0.10	0.07	
	Median	0.10	0.10	0.08	0.05	
	No Change from the Previous		71%	55%	34%	
<b>NUMQTR = 3</b> [N = 2,138]	Mean	0.11	0.11	0.08		
	Median	0.09	0.08	0.05		
	No Change from the Previous		64%	47%		
<b>NUMQTR = 2</b> [N = 1,183]	Mean	0.09	0.08			
	Median	0.05	0.05			
	No Change from the Previous		51%			
<b>NUMQTR = 1</b> [N = 1,319]	Mean	0.07				
	Median	0.05				

<b>Panel B: Management Forecast Midpoint (<i>MIDPT</i>)</b>						
		<b>MIDPT1</b>	<b>MIDPT2</b>	<b>MIDPT3</b>	<b>MIDPT4</b>	
<b>NUMQTR = 4</b> [N = 4,837]	Mean	0.06 <sup>***</sup>	0.04 <sup>***</sup>	0.01	-0.02 <sup>***</sup>	
	Median	-0.03 <sup>††</sup>	-0.03 <sup>†††</sup>	-0.03 <sup>†††</sup>	-0.02 <sup>†††</sup>	
	No Change from the Previous		43%	29%	18%	
	Revise up from the Previous		38%	44%	49%	
<b>NUMQTR = 3</b> [N = 1,639]	Mean	0.21 <sup>***</sup>	0.17 <sup>***</sup>	0.11 <sup>***</sup>		
	Median	0.03 <sup>†††</sup>	0.01 <sup>†††</sup>	-0.01 <sup>†††</sup>		
	No Change from the Previous		37%	23%		
	Revise up from the Previous		36%	37%		
<b>NUMQTR = 2</b> [N = 1,058]	Mean	0.34 <sup>***</sup>	0.24 <sup>***</sup>			
	Median	0.11 <sup>†††</sup>	0.04 <sup>†††</sup>			
	No Change from the Previous		27%			
	Revise up from the Previous		30%			
<b>NUMQTR = 1</b> [N = 1,201]	Mean	0.43 <sup>***</sup>				
	Median	0.14 <sup>†††</sup>				

This table reports the mean and median of management forecast widths (*WIDTH*) and forecast midpoints (*MIDPT*) in the initial management forecast and subsequent updates. *NUMQTR* is the number of quarters a firm issues management forecasts of annual earnings in a fiscal year. *WIDTH* is the range width of the management earnings forecast (zero for point forecasts). *MIDPT* is the midpoint of management range forecast minus the actual earnings. The numerical postfix indicates the order of the forecasts in a fiscal year. All variables are winsorized at the extreme 1%. In Panel B, \*, \*\*, and \*\*\* represent significance at 10%, 5%, and 1% based on two-tailed t-tests on the mean; †, ††, and ††† represent significance at 10%, 5%, and 1% based on two-tailed Wilcoxon-tests on the median.

**TABLE 4**  
**Analyst Reactions to Initial Management Forecasts**

*OLS Regression model:  $AREV = \alpha_0 + \alpha_1 MFNEWS + \alpha_2 MFNEWS \times LAG\_UPDATE(\_ALL)$   
 $+ \alpha_3 MFNEWS \times LAG\_MFE + \alpha_4 MFNEWS \times REPUTATION$   
 $+ \alpha_5 MFNEWS \times |MFNEWS| + \alpha_6 MFNEWS \times MFLOSS + \alpha_7 MFNEWS \times BM$   
 $+ \alpha_8 MFNEWS \times MFHRZN + \alpha_9 MFNEWS \times MFWIDTH + \alpha_{10} ENEWS$   
 $+ \alpha_{11} ENEWS \times |ENEWS| + \alpha_{12} ENEWS \times ELOSS + \alpha_{13} ENEWS \times BM$   
 $+ YEAR\ FIXED\ EFFECTS + INDUSTRY\ FIXED\ EFFECTS$*

<b>Panel A: Summary Statistics</b>						
Variable	Mean	Std. Dev.	25%	Median	75%	N
<i>AREV</i>	-0.002	0.008	-0.003	0.000	0.001	5,870
<i>MFNEWS</i>	-0.003	0.012	-0.003	0.000	0.001	5,870
<i>LAG_UPDATE</i>	0.875	0.331	1	1	1	5,870
<i>LAG_UPDATE_ALL</i>	0.557	0.497	0	1	1	5,870
<i>LAG_MFE</i>	0.004	0.026	-0.005	-0.001	0.006	5,870
<i>REPUTATION</i>	0.345	0.475	0	0	1	5,870
<i> MFNEWS </i>	0.006	0.011	0.001	0.002	0.005	5,870
<i>MFLOSS</i>	0.016	0.126	0	0	0	5,870
<i>BM</i>	0.458	0.297	0.256	0.403	0.595	5,870
<i>MFHRZN</i>	324.674	15.567	316	327	336	5,870
<i>MFWIDTH</i>	0.005	0.005	0.002	0.003	0.006	5,870
<i>ENEWS</i>	0.000	0.007	0.000	0.000	0.002	5,870
<i> ENEWS </i>	0.003	0.006	0.000	0.001	0.002	5,870
<i>ELOSS</i>	0.229	0.420	0	0	0	5,870

**Panel B: Regression Results**

Variable	Pred. Sign	Dependent Variable = <i>AREV</i>			
		(1)		(2)	
		Coeff	t-stat	Coeff	t-stat
<i>MFNEWS</i>		0.794***	14.71	0.812***	22.26
<i>MFNEWS</i> × <i>LAG_UPDATE</i>	-	-0.035	-0.78		
<i>MFNEWS</i> × <i>LAG_UPDATE_ALL</i>	-			-0.097**	-2.06
<i>MFNEWS</i> × <i>LAG_MFE</i>		1.055***	3.08	1.051***	3.06
<i>MFNEWS</i> × <i>REPUTATION</i>		-0.046	-1.28	-0.048	-1.35
<i>MFNEWS</i> × <i> MFNEWS </i>		-7.687***	-10.35	-7.772***	-11.52
<i>MFNEWS</i> × <i>MFLOSS</i>		0.211***	3.92	0.201***	3.69
<i>MFNEWS</i> × <i>BM</i>		0.061	1.59	0.049	1.38

<i>MFNEWS</i> × <i>MFHRZN</i>	-0.001	-1.22	-0.001	-0.95
<i>MFNEWS</i> × <i>WFWIDTH</i>	7.132***	3.68	8.294***	4.20
<i>ENEWS</i>	0.011	0.28	0.007	0.18
<i>ENEWS</i> × <i> ENEWS </i>	-7.494***	-3.45	-6.863***	-3.06
<i>ENEWS</i> × <i>ELOSS</i>	0.260***	3.67	0.251***	3.50
<i>ENEWS</i> × <i>BM</i>	0.074	1.14	0.065	1.02
<i>Constant</i>	0.003**	2.02	0.002**	1.97
Industry fixed effects	Included		Included	
Year Fixed Effects	Included		Included	
Adj. R-squared	0.634		0.634	
Number of Observations	5,870		5,870	
<i>F Test</i>	<i>MFNEWS</i> + <i>MFNEWS</i> × <i>LAG_UPDATE</i> = 0		<i>MFNEWS</i> + <i>MFNEWS</i> × <i>LAG_UPDATE_ALL</i> = 0	
	453.50***		232.08***	

This table presents the regression results on the analysts' reactions to initial management forecasts. Panel A presents the summary statistics, and Panel B reports the regression results. The sample consists of 5,870 firm-year observations of initial forecasts that have non-missing values for all variables used in the regression analysis. *AREV* is analysts' earnings forecast revision for year  $t$  around management forecasts, measured as analysts' consensus forecast after management forecasts (median of individual analysts' first forecast issued within 30 days after management forecasts) minus analysts' consensus forecast before management forecasts (median of individual analysts' last forecast issued within 90 days before management forecasts), scaled by the beginning-of-year stock price. *MFNEWS* is management earnings forecast minus analysts' consensus forecast (median of individual analysts' last forecast issued within 90 days before management forecasts), scaled by the beginning-of-year stock price. *LAG\_UPDATE* is an indicator variable set to 1 if the firm updates its annual earnings forecast in a different quarter during year  $t-1$ . *LAG\_UPDATE\_ALL* is an indicator variable set to 1 if the firm updates its annual earnings forecast in every quarter during year  $t-1$ . *LAG\_MFE* is management forecast error for year  $t-1$ , measured as the difference between the initial management earnings forecast for year  $t-1$  and the actual earnings for year  $t-1$ , scaled by the beginning-of-year stock price. *REPUTATION* is an indicator variable set to 1 if the firm's initial management forecast is strictly more accurate than analysts' median consensus forecast before the management forecast in year  $t-1$ , and 0 otherwise.  $|MFNEWS|$  is the absolute value of *MFNEWS*. *MFLOSS* is an indicator variable set to 1 if the management earnings forecast is negative, and 0 otherwise. *BM* is the book-to-Market ratio, measured as the book value divided by the market value of equity at the end of year  $t-1$ . *MFHRZN* is the horizon of management earnings forecast for year  $t$ , measured as the number of days between the forecast date and the fiscal year end date. *WFWIDTH* is the range of management earnings forecast, scaled by the beginning-of-year stock price. *ENEWS* is earnings news, measured as actual quarterly earnings minus analysts' consensus of quarterly earnings forecasts (median of individual analysts' last forecast issued within 90 days before the earnings announcement), scaled by the beginning-of-year stock price, when actual earnings is announced within five days of the management earnings forecast, and zero if there is no actual earnings announced within five days of the management earnings forecast.  $|ENEWS|$  is the absolute value of *ENEWS*. *ELOSS* is an indicator variable set to 1 if reported earnings are negative, and 0 otherwise. All continuous variables are winsorized at the extreme 1%. \*, \*\*, and \*\*\* represent significance at 10%, 5%, and 1% (two-tailed). Continuous variables in the interaction terms are mean-centered. Standard errors are clustered by firm.

**TABLE 5**

***Analyst Reactions to Initial Forecasts and Subsequent Updates***

*OLS Regression model: AREV =  $\alpha_0 + \alpha_1 MFNEWS + \alpha_2 MFNEWS \times UPDATE1^{ST} + \alpha_3 MFNEWS \times UPDATE2^{ND} + \alpha_4 MFNEWS \times UPDATE3^{RD} + \alpha_5 MFNEWS \times LAG\_MFE + \alpha_6 MFNEWS \times REPUTATION + \alpha_7 MFNEWS \times |MFNEWS| + \alpha_8 MFNEWS \times MFLOSS + \alpha_9 MFNEWS \times BM + \alpha_{10} MFNEWS \times MFHRZN + \alpha_{11} MFNEWS \times MFWIDTH + \alpha_{12} ENEWS + \alpha_{13} ENEWS \times |ENEWS| + \alpha_{14} ENEWS \times ELOSS + \alpha_{15} ENEWS \times BM + YEAR\ FIXED\ EFFECTS + INDUSTRY\ FIXED\ EFFECTS$*

<b>Panel A: Summary Statistics</b>						
Variable	Mean	Std. Dev.	25%	Median	75%	N
AREV	-0.001	0.008	-0.001	0.000	0.002	24,845
MFNEWS	-0.002	0.012	-0.002	0	0.001	24,845
LAG_MFE	0.004	0.025	-0.005	-0.001	0.006	24,845
REPUTATION	0.343	0.475	0	0	1	24,845
MFNEWS	0.005	0.011	0.001	0.001	0.004	24,845
MFLOSS	0.019	0.135	0	0	0	24,845
BM	0.465	0.301	0.259	0.406	0.606	24,845
MFHRZN	197.681	95.779	144	175	258	24,845
MFWIDTH	0.004	0.005	0.001	0.003	0.005	24,845
ENEWS	0.001	0.004	0	0.000	0.002	24,845
ENEWS	0.002	0.003	0.000	0.001	0.002	24,845
ELOSS	0.213	0.409	0	0	0	24,845

**Panel B: Regression Results**

Variable	Pred. Sign	Dependent Variable = AREV			
		(1)		(2)	
		<i>All Observations</i>		<i>NUMQTR = 4</i>	
		Coeff	t-stat	Coeff	t-stat
MFNEWS		0.805***	22.84	1.088***	7.17
MFNEWS × UPDATE1 <sup>ST</sup>	+/-	-0.103***	-3.58	-0.245**	-2.45
MFNEWS × UPDATE2 <sup>ND</sup>	+/-	-0.133***	-3.19	-0.513**	-2.39
MFNEWS × UPDATE3 <sup>RD</sup>	+/-	-0.258***	-3.77	-0.815**	-2.52
MFNEWS × LAG_MFE		0.997***	3.62	1.656***	4.12
MFNEWS × REPUTATION		-0.112***	-4.36	-0.142***	-4.05
MFNEWS ×  MFNEWS		-7.257***	-12.82	-7.234***	-10.02

<i>MFNEWS</i> × <i>MFLOSS</i>	0.099**	2.39	0.096*	1.77
<i>MFNEWS</i> × <i>BM</i>	0.106***	3.67	0.046	1.22
<i>MFNEWS</i> × <i>MFHRZN</i>	-0.001***	-2.73	-0.003**	-2.32
<i>MFNEWS</i> × <i>WFWIDTH</i>	7.523***	4.63	6.156***	2.76
<i>ENEWS</i>	0.494***	11.63	0.455***	8.66
<i>ENEWS</i> × <i> ENEWS </i>	-20.485***	-5.60	-11.915**	-2.48
<i>ENEWS</i> × <i>ELOSS</i>	0.396***	6.72	0.351***	5.00
<i>ENEWS</i> × <i>BM</i>	-0.160***	-3.20	-0.162**	-2.39
<i>Constant</i>	0.001	0.48	0.002	1.11
Industry fixed effects	Included		Included	
Year Fixed Effects	Included		Included	
Adj. R-squared	0.596		0.587	
Number of Observations	24,845		15,898	
<i>F Test</i>	$MFNEWS + MFNEWS \times UPDATE1^{ST} = 0$ 395.85***		$MFNEWS + MFNEWS \times UPDATE1^{ST} = 0$ 157.50***	
	$MFNEWS + MFNEWS \times UPDATE2^{ND} = 0$ 264.99***		$MFNEWS + MFNEWS \times UPDATE2^{ND} = 0$ 48.86***	
	$MFNEWS + MFNEWS \times UPDATE3^{RD} = 0$ 75.30***		$MFNEWS + MFNEWS \times UPDATE3^{RD} = 0$ 2.19	

This table presents the regression results on the analysts' reactions to initial management forecasts and subsequent updates. Panel A presents the summary statistics, and Panel B reports the regression results. The sample consists of 24,845 firm-quarter observations where firms issued the initial forecast in the first fiscal quarter and all variables used in the regression analysis have non-missing values. *AREV* is analysts' earnings forecast revision for year *t* around management forecasts, measured as analysts' consensus forecast after management forecasts (median of individual analysts' first forecast issued within 30 days after management forecasts) minus analysts' consensus forecast before management forecasts (median of individual analysts' last forecast issued within 90 days before management forecasts), scaled by the beginning-of-quarter stock price. *MFNEWS* is management earnings forecast minus analysts' consensus forecast (median of individual analysts' last forecast issued within 90 days before management forecasts), scaled by the beginning-of-quarter stock price. *UPDATE1<sup>ST</sup>* is an indicator variable set to 1 if the management forecast is the first update in year *t*, and 0 otherwise. *UPDATE2<sup>ND</sup>* is an indicator variable set to 1 if the management forecast is the second update in year *t*, and 0 otherwise. *UPDATE3<sup>RD</sup>* is an indicator variable set to 1 if the management forecast is the third update in year *t*, and 0 otherwise. *LAG\_MFE* is management forecast error for year *t-1*, measured as the difference between the initial management earnings forecast for year *t-1* and the actual earnings for year *t-1*, scaled by the beginning-of-year stock price. *REPUTATION* is an indicator variable set to 1 if the firm's initial management forecast is strictly more accurate than analysts' median consensus forecast before the management forecast in year *t-1*, and 0 otherwise. *|MFNEWS|* is the absolute value of *MFNEWS*. *MFLOSS* is an

indicator variable set to 1 if the management earnings forecast is negative, and 0 otherwise. *BM* is the book-to-Market ratio, measured as the book value divided by the market value of equity at the end of quarter  $q-1$ . *MFHRZN* is the horizon of management earnings forecast for year  $t$ , measured as the number of days between the forecast date and the fiscal year end date. *FWWIDTH* is the range of management earnings forecast, scaled by the beginning-of-quarter stock price. *ENEWS* is earnings news, measured as actual quarterly earnings minus analysts' consensus of quarterly earnings forecasts (median of individual analysts' last forecast issued within 90 days before the earnings announcement), scaled by the beginning-of-quarter stock price, when actual earnings is announced within five days of the management earnings forecast, and zero if there is no actual earnings announced within five days of the management earnings forecast.  $|ENEWS|$  is the absolute value of *ENEWS*. *ELOSS* is an indicator variable set to 1 if reported earnings are negative, and 0 otherwise. All continuous variables are winsorized at the extreme 1%. \*, \*\*, and \*\*\* represent significance at 10%, 5%, and 1% (two-tailed). Standard errors are clustered by firm and year.

**TABLE 6:**  
***Timeliness of Good News and Bad News***

$$\begin{aligned} \text{OLS Regression model: } \text{TIMELINESS} = & \beta_0 + \beta_1 \text{BAD} + \beta_2 \text{FD} + \beta_3 \text{BAD} \times \text{FD} \\ & + \beta_4 \text{HILIT} + \beta_5 \text{BAD} \times \text{HILIT} + \beta_6 \text{HIASYM} + \beta_7 \text{BAD} \times \text{HIASYM} \\ & + \beta_8 \text{HIDISTRESS} + \beta_9 \text{BAD} \times \text{HIDISTRESS} + \beta_{10} \text{HIOWN} + \beta_{11} \text{BAD} \times \text{HIOWN} \end{aligned}$$

<b>Panel A: Summary Statistics</b>						
Variable	Mean	Std. Dev.	25%	Median	75%	N
<i>TIMELINESS</i>	3.061	3.633	2.043	3.050	4.036	4,905
<i>BAD</i>	0.551	0.497	0	1	1	4,905
<i>FD</i>	0.930	0.255	1	1	1	4,905
<i>LIT</i>	0.009	0.009	0.004	0.006	0.011	4,905
<i>ASYM</i>	-0.020	0.606	-0.380	-0.063	0.330	4,905
<i>DISTRESS</i>	4.855	4.058	2.513	3.770	5.806	4,905
<i>OWN</i>	0.011	0.035	0.000	0.001	0.005	4,905

<b>Panel B: Regression Results</b>		Dependent Variable = <i>TIMELINESS</i>					
		(1)		(2)		(3)	
		<i>NUMQTR</i> = 1		<i>NUMQTR</i> = 2 or 3		<i>NUMQTR</i> = 4	
Variable	Pred. Sign	Coeff	t-stat	Coeff	t-stat	Coeff	t-stat
<i>BAD</i>		-1.153**	-2.02	0.538	0.57	-2.856***	-3.15
<i>FD</i>		-0.039	-0.09	0.398	0.47	-1.395*	-1.89
<i>BAD</i> × <i>FD</i>		1.148**	2.39	-0.153	-0.17	3.498***	4.02
<i>HILIT</i>		0.023	0.06	-0.198	-0.60	-0.128	-0.65
<i>BAD</i> × <i>HILIT</i>		0.245	0.51	0.193	0.48	0.621**	2.14
<i>HIASYM</i>		-0.025	-0.06	0.228	0.64	0.143	0.70
<i>BAD</i> × <i>HIASYM</i>		0.309	0.58	-0.374	-0.86	0.469	1.44
<i>HIDISTRESS</i>		-0.003	-0.01	-0.366	-0.62	-0.532*	-1.70
<i>BAD</i> × <i>HIDISTRESS</i>		-0.180	-0.33	0.222	0.32	0.119	0.19
<i>HIOWN</i>		-0.518	-1.29	-0.216	-0.61	0.090	0.45
<i>BAD</i> × <i>HIOWN</i>		0.514	1.08	0.320	0.75	-0.563*	-1.88
<i>Constant</i>		3.267***	6.67	2.505***	2.88	4.011***	5.36
Adj. R-squared		0.01		-0.002		0.02	
Number of Observations		844		1,536		2,525	

This table presents the regression results on timeliness of good and bad news, separately reported by firm types. Panel A presents the summary statistics of all variables, and Panel B reports the regression results. The sample consists of 4,905 firm-year observations where firms issued at least one management forecast during a fiscal year and all variables used in the regression analysis have non-missing values. The dependent variable is *Timeliness*, which is calculated as  $\sum_{t=1}^5 \frac{\text{Earnings News Released up to Time } t}{\text{Total Earnings News}} =$

$$\sum_{t=1}^5 \frac{\sum_{i=1}^t \text{Earnings News Released during Time Period } i}{\text{Total Earnings News}}$$
,
 where “*Earnings News Released during Time  $t$* ” is measured as revisions of analyst consensus forecast during time period  $t$ , “*Total Earnings News*” is measured as the actual earnings minus the analyst consensus forecast at the beginning of the year, and time subscript  $t$  ( $t=1, 2, \dots, 5$ ) indicates one of the five time intervals in Figure 3, with the last two intervals combined to mitigate the effect of earnings warnings issued shortly before the annual earnings announcement (Kasznik and Lev [1995]). A firm is considered as a non-updater if the manager provided no update for annual earnings forecast (column 1). A firm is considered as a sporadic updater if the manager provided updates for annual earnings forecast in some but not all quarters (column 2). A firm is considered as a regular updater if the manager provided updates for annual earnings forecast in all quarters (column 3). *Bad* is an indicator variable set to 1 if the total earnings news is negative, and 0 otherwise. *FD* is an indicator variable set to 1 if the initial forecasts were made after the passage of Reg. FD, and 0 otherwise. *LIT* the probability of litigation estimated following Rogers and Stocken [2005]; *HILIT* is an indicator variable set to 1 if a firm’s probability of litigation is above-median, and 0 otherwise. *ASYM* is an information-asymmetry factor derived from a factor analysis based on the information asymmetry proxies: market-to-book ratio, stock volatility, high-tech firms, financial leverage, and regulatory status, following Kothari et al. [2009]; *HIASYM* is an indicator set to 1 if a firm is above the median value of a single information-asymmetry factor, and 0 otherwise. *DISTRESS* is the Altman Z-score (Altman [1968]); *HIDISTRESSs* is an indicator variable set to 1 if a firm’s Altman Z-score (Altman [1968]) financial distress rank is in the top decile of all firms in a given year, and 0 otherwise. *OWN* is CEO ownership calculated using data from the Spectrum database; *HIOWN* is an indicator variable set to 1 if a firm has above-median CEO ownership in a given year, and 0 otherwise. All continuous variables are winsorized at the extreme 1%. \*, \*\*, and \*\*\* represent significance at 10%, 5%, and 1% (two-tailed). Standard errors are clustered by firm.

**Figure 1 – Trend in Management Annual Forecasts with Updates**

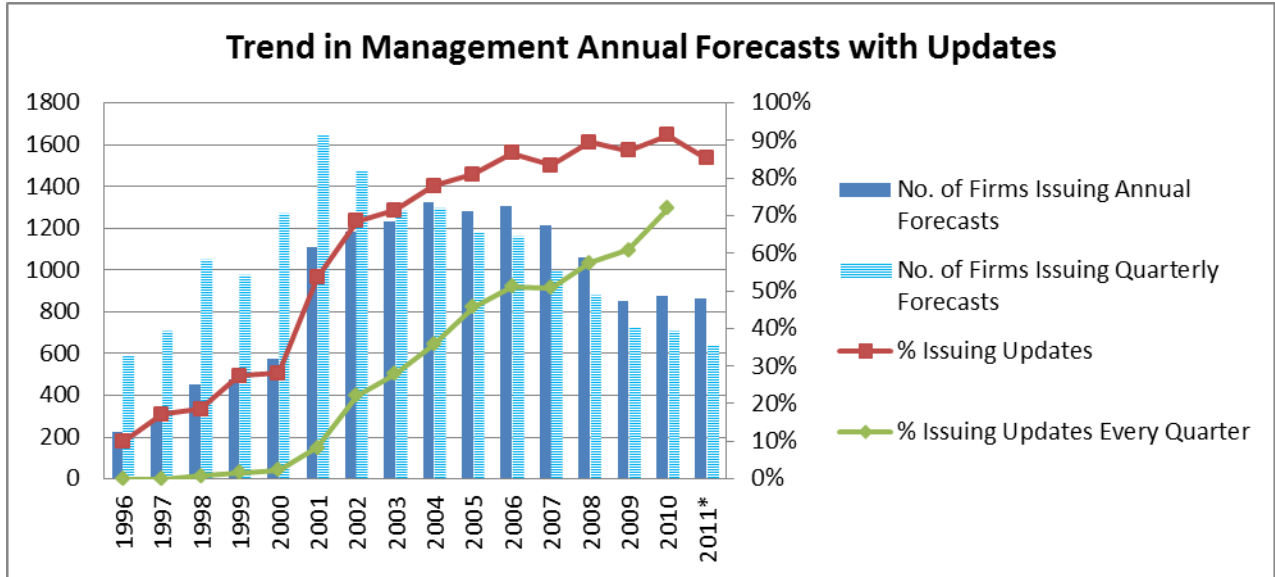


FIG1. This figure presents the trend in management annual forecasts with updates. The solid dark (shaded light) blue bars, which correspond to the scale on the left, show the number the firms each year that issue at least one annual (quarterly) earnings forecasts. The red line with square markers and the green line with diamond markers, which correspond to the scale on the right, show the percentage of those firms who issued at least one updates and those who issued annual forecasts and updates in all four quarters.

\* Data available only until 2011Q3.

**Figure 2 – Changes in Midpoint of Management Updates of Annual Forecasts and Prevailing Analyst Consensus**

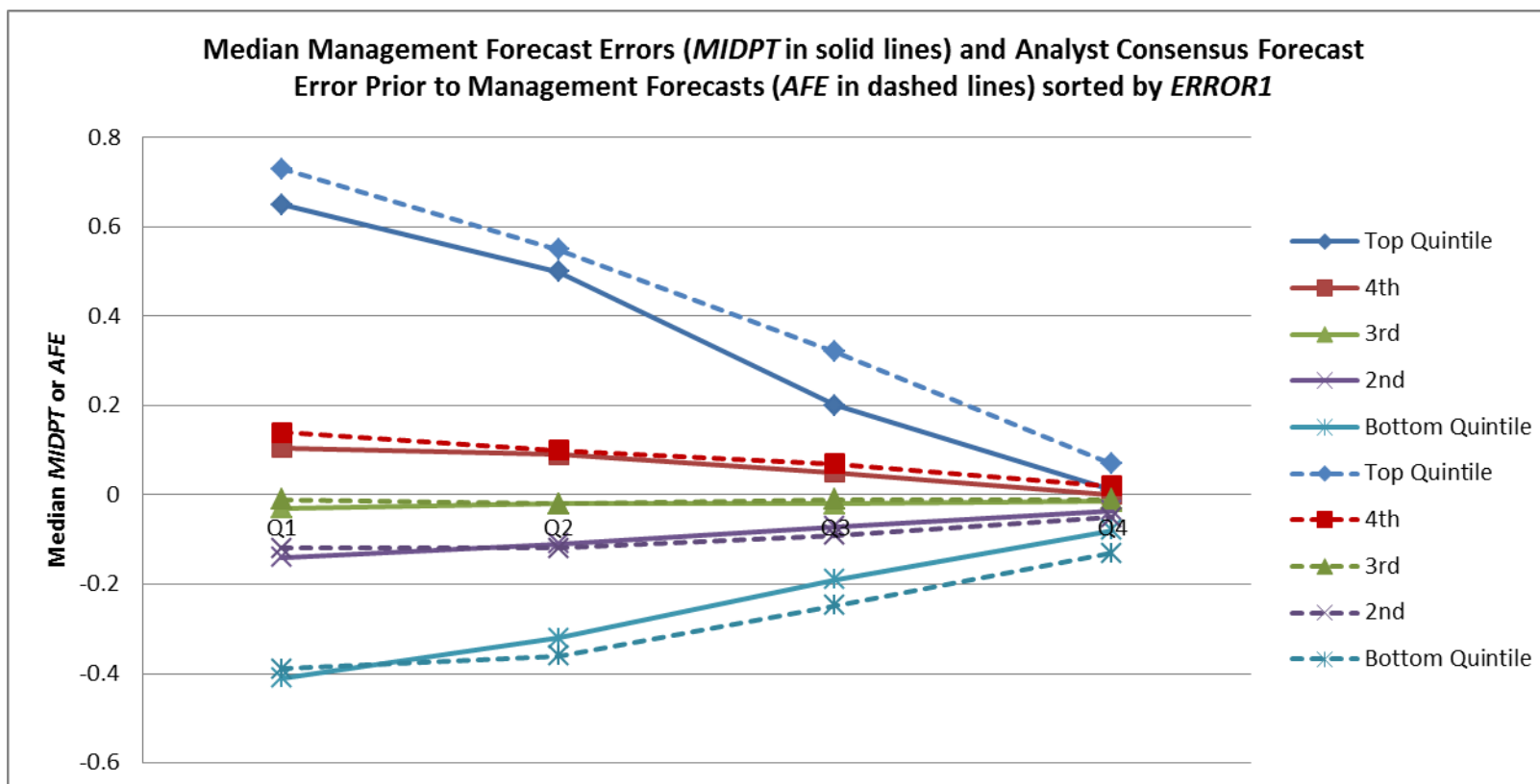
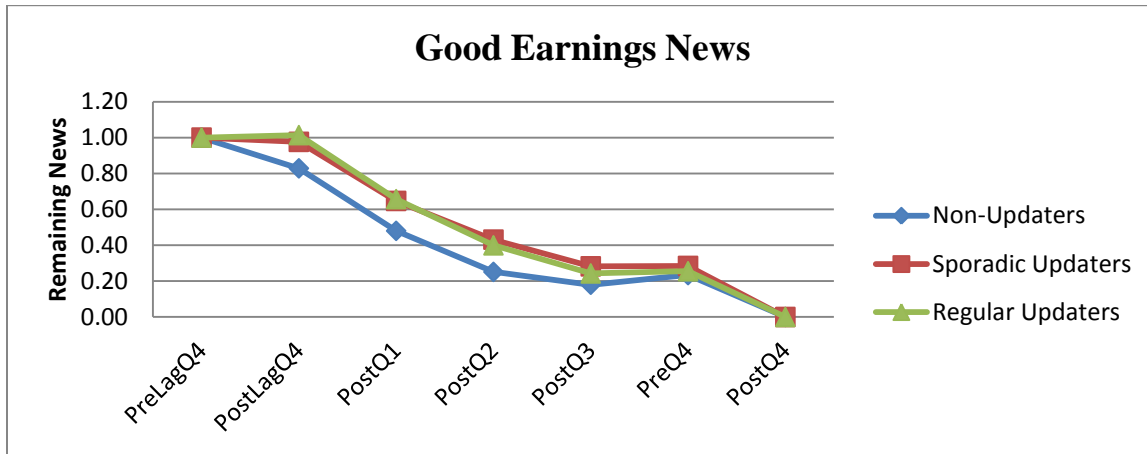


FIG2. This figure presents the patterns in management forecast errors (*MIDPT*) and prevailing analyst consensus forecasts (*AFE*) for firm-years where managers issue annual EPS forecast for all four quarters ( $NUMQTR=4$ ). We first sort the initial MFE into quintiles. Then we track each quintile and report their median MFEs over the four quarters with five solid lines. Dashed lines plot the median *AFE* for each quintile of *MIDPT1*.

**Figure 3 – Timeliness of Earnings Surprise Resolution by Forecast Update Types**

**Panel A: Good Earnings News**



**Panel B: Bad Earnings News**

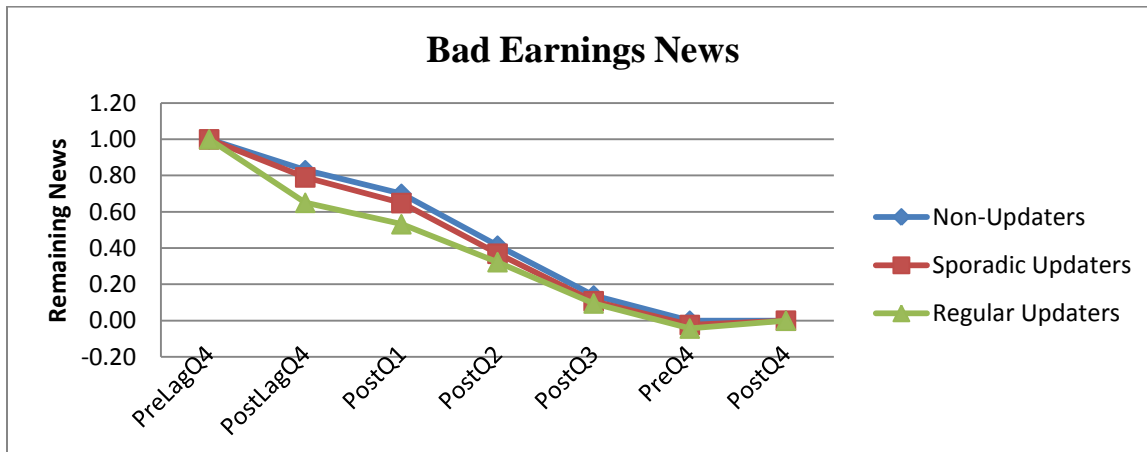


FIG3. –Earnings surprise resolution by management forecast update types. Sample consists of 7,924 firm-years where managers issued at least one annual earnings forecasts. The x-axis orders the seven dates – immediately before the last year’s Q4 earnings announcement (*PreLagQ4*), immediately after the last year’s Q4 earnings announcement (*PostLagQ4*), immediately after this year’s Q1 earnings announcement (*PostQ1*), immediately after this year’s Q2 earnings announcement (*PostQ2*), immediately after this year’s Q3 earnings announcement (*PostQ3*), immediately before this year’s Q4 earnings announcement (*PreQ4*), and immediately after this year’s Q4 earnings announcement (*PostQ4*). The y-axis measures the remaining earnings surprise (calculated as the analyst consensus forecast *at the time of the x-axis* minus the actual earnings of the year) as a percentage of the total earnings surprise over the fiscal year (calculated as the analyst consensus forecast *immediately before the last year’s Q4 earnings announcement* minus the actual earnings of the year). Firm-years are classified as either good news (actual earnings higher than the initial analyst forecast before the last year’s Q4 earnings announcement) or bad news (actual earnings lower than the initial analyst forecast before the last year’s Q4 earnings announcement). Each observation is classified one of three update types – non-updaters (issuing only one annual earnings forecast), sporadic updaters (issuing updates for annual forecast in some but not all quarters), and regular updaters (issuing updates for annual forecast in all quarters). Plotted values are distribution means of each category.