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forecasts, both managers' and investors' information sets may have changed, rendering managers' outstanding forecasts outdated or unclear to investors as whether they still stand.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 annual earnings forecasts, whose 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 update in selected quarters (hereafter "sporadic updaters"). Despite the prevalence of forecast updates, the updating 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 relations 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]). Across all three sets of analyses, we find that some conventional views and accepted beliefs about management forecasts (typically initial forecasts) change when forecast updates are considered.

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, 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 their recognition of the persistence in forecast updates issued by regular updaters, analysts 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, regular updaters are more (less) timely than non-updaters in disclosing bad (good) news to the market, thus appearing to accelerate disclosures of bad news. Together, the results from our third set of analyses suggest that the use of forecast updates has 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 the determinants, the properties, as well as 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 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 the consequence of forecast updates in terms of analysts' responses. Section 5 demonstrates the importance of considering forecast updates by reevaluating whether managers withhold bad news. 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 2014. The appendix presents a list of the studies and their treatment of management forecast updates. We find that ten out of the 26 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 16 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 decision to update a forecast likely differs from the decision to issue a 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; but 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 theory 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 annual earnings forecasts, whose 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.[1]

[1] 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]).

Moreover, management annual forecasts have steadily overtaken quarterly forecasts to be regarded by practitioners as the "best practice" of guidance. 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 for quarterly forecasts. Such difference in attitudes can be partially attributed to the managerial short-termism that quarterly forecasts allegedly induce (Fuller and Jensen [2002], Plitch [2006]).

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").[2] After eliminating observations without valid identifiers and revisions within quarters, we arrive at a sample of 37,150 annual forecasts issued for 14,301 unique firm-years.[3] 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.

[2] We take this step to ensure that all initial forecasts in our sample have comparable horizons. However, about 24% sample firm-years' "true" initial forecasts are actually issued before the prior year's earnings announcement. If we exclude these 24% observations from our sample, our results remain qualitatively the same.
[3] Our inferences remain unchanged if we consider any quarterly forecasts for the fourth quarter as an update of the annual forecasts.

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.[4]

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. Determinants and Properties of Forecast Updates: Why Do Managers Issue Updates?

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.

[4] In untabulated analysis, we examine whether the observed increase in "regular updates" might be a substitute for the decline in quarterly forecasts, which would predict that "regular updaters" are less likely to issue quarterly forecasts compared with other firms. On the contrary, we find that 32% of regular updaters issue quarterly forecasts every quarter (vs. 8% among other firms) while 46% issue no quarterly forecasts at all (vs. 52% among other firms). Thus, annual forecast updates seem to be a complement rather than a substitute for quarterly forecasts.

3.1. Theoretical Background

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 reasoning, 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, such as 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.[5] 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 both from the determinants of issuing forecast updates (Section 3.2) and from 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

[5] 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.

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.

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*), the firm's ownership by different types of institutional investors (*DED*, *QIX*, *TRA*) and by the CEO (*CEOOWN*), 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.[6]

$$\begin{aligned} PROB\ (UPDATE \text{ or } UPDATE\_ALL = 1) = {} & \beta_0 \\ \text{Forecast routines: } & + \beta_1 LAG\_MF + \beta_2 LAG\_UPDATE\ (+ \beta_3 LAG\_UPDATE\_ALL) \\ \text{Time-specific conditions: } & + \beta_4 |AFE| + \beta_5 AF + \beta_6 DISP + \beta_7 |AFMF\_DIFF| + \beta_8 |MFE| \\ \text{Control variables: } & + \beta_9 MFWIDTH + \beta_{10} MFHRZN + \beta_{11} |ACTUAL| + \beta_{12} LOSS \\ & + \beta_{13} EARNVOL + \beta_{14} DED + \beta_{15} QIX + \beta_{16} TRA + \beta_{17} CEOOWN \\ & + \beta_{18} LNTA + \beta_{19} LITIG + \beta_{20} REGUL + \beta_{21} BM + \beta_{22} LEV + \beta_{23} FD \quad (1) \end{aligned}$$

Table 2 Panel A presents summary statistics for the sample used in estimating equation (1), both for the full sample and for three subsamples: namely, "non-updaters" (if *UPDATE=0*), "sporadic updaters" (if *UPDATE=1* but *UPDATE_ALL=0*), and "regular updaters" (if *UPDATE_ALL=1*). As shown, 88.2% of the firms in the full sample 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*). The univariate comparisons in Panel A also reveal that regular updaters tend to have smaller initial analysts' forecast errors (|*AFE*|), smaller initial management forecast errors (|*MFE*|), and more assets (*LNTA*), than non-updaters and sporadic updaters.

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 12.5% (18.0%) (z-stats = 6.81 and 5.22 in Column

[6] 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.

(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 28.9% (z-stat = 17.02). These results echo Roger and Van Buskirk's [2013] finding that disclosure practices tend to be sticky.[7]

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-stats = -3.12 and -3.78 in Columns (1) and (2)).[8] Other variables predicted by the "condition specific" explanation (*AF*, *DISP*, |*AFMF_DIFF*|, and |*MFE*|) are insignificant in equation (1).[9] Moreover, the marginal impacts of these "time-specific condition" variables are substantially smaller than those of the "forecast routine" variables.[10] Our findings of insignificant coefficients on the "condition specific" variables in the forecast *update* setting contrast with some significant prior results found in the forecast *issuance* setting. For example, Table 3 in Rogers and Van Buskirk [2013] shows significant coefficients on both *AF* and *DISP* in explaining managers' decisions to *issue* forecasts at earnings announcements. However, in our setting, neither variable is significant in explaining managers' decisions to update forecasts, even

[7] Rogers and Van Buskirk [2013] show that past *issuance* of forecasts significantly explains future forecast *issuance* but we find that, in explaining future *regular updates*, past forecast *issuance* becomes insignificant (z-stat=0.75, Table 2 Panel B Column (2)) while past *updating* practices remains highly significant (z-stats = 5.22 and 17.02).

[8] The puzzling result of |*AFE*| is partially driven by the fact that it is measured with the actual earnings, which cannot be observed when the forecast update decision is made (i.e., look-ahead bias). When we measure it with the previous year's actual earnings, its coefficient become insignificant (z-stats = 0.37 and -0.21 in Columns (1) and (2)), while the signs and the significance levels of other variables do not change.

[9] 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*.

[10] 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.

if we include additional control variables in Rogers and Van Buskirk's model (untabulated z-stats for *AF* and *DISP* are -1.23 and 0.05 in Column (1); -0.98 and -0.42 in Column (2)). Thus, compared with forecast issuance decisions, forecast update decisions appear to be even more "condition non-specific."

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, fewer growth options, and highly leveraged firms are less likely to do so. *DED* is negative (z-stat= -3.49) and *QIX* positive (z-stat= 2.60) in Column (2), but insignificant in Column (1) (z-stats = -4.61 and 0.99), suggesting that quasi-indexers prefer regular updates of annual performance while dedicated investors do not seem to demand such frequent disclosure, consistent with their respective investing styles.

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, while larger firms with less volatile earnings are also more likely to initiate regular updates.[11] Overall, these results

[11] 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

suggest that more volatile firms are less likely to initiate updates because they are likely more concerned about being unable to continue after initiating updates (Graham et al. [2005]).

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.[12] 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.

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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.

[12] 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.

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 sequence (*WIDTH1 ~ WIDTH4*, *MIDPT1 ~ 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 majority of updates do not change *WIDTH* from the previous forecasts, which is 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.[13] Note that regular updaters' last update (*WIDTH4*) has a mean (median) of \$0.07 (\$0.05), which is similar to the last updates in

[13] 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.

other scenarios (i.e. *NUMQTR* = 1~3), 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 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, as opposed to 19%, 27%, and 33% revised downward. A non-parametric binomial test reveals that upward revisions are significantly more common than downward revisions at the 0.01 level (z-Score = 18.51, 14.26, and 12.28). This finding is 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 to revise up the earnings expectations. While the percentages of downward revisions are low when *NUMQTR* < 4 (no more than 37%), regular updaters (i.e., *NUMQTR* = 4) are much more likely to revise up than to revise down forecasts, especially with their final updates.[14] This can be partially explained by our previous observation

[14] This revise-up tendency is also partially reflected in the medians for the group where *NUMQTR=4*, but the means still reflect a revise-down pattern, which is driven by a "tail asymmetry" caused by more extreme downward revisions than extreme upward revisions.

that regular updaters' initial forecasts (*MIDPT1*) are less optimistic than other firms' and 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. Consequences of Management Forecast Updates: How Do Analysts Respond?

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. To mitigate any confounding effect of forecast horizon, we conduct our analysis on a sample where we require the initial forecasts to be issued in the first fiscal quarter. 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.[15] Our variable of interest is *MFNEWS* × *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 could reasonably anticipate more accurate updates to follow and incorporate them then. In contrast, for a firm that did not previously issue updates, analysts are less likely to expect

[15] 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.

the initial forecast to be updated subsequently. Hence, not expecting more precise information later to help improve their accuracy, analysts perceive less benefit from delaying their response but more benefit from timely incorporation of managers' initial forecast. This reasoning suggests that the coefficient on *MFNEWS* × *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* × *LAG_UPDATE_ALL* to be negative. Alternatively, analysts may not be fully aware of the persistence of regular updates and hence do not anticipate updates from a regular updater, in which case they may react to its initial forecast equally or even more strongly because the accuracy of initial forecasts is on average higher for regular updaters as we show in Table 3.

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 indicator for losses, and the book-to-market ratio.[16] 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 well as separately for each update type. As shown, average management forecasts news

[16] For stand-alone management forecasts, we set concurrent earnings news to zero.

(*MFNEWS*) is negative at -0.003 and is similar across different update types, suggesting that, at the beginning of the year, managers on average provide downward earnings forecasts relative to prevailing analyst consensus forecasts. The average analysts' forecast revision (*AREV*) is also negative at -0.002 but more (less) negative for non-updaters (regular updaters) at -0.004 (-0.001), suggesting that while analysts on average revise forecasts downward after managers' long-horizon forecasts of annual earnings, analysts react more strongly (less strongly) to non-updaters (regular updaters), consistent with analysts recognizing the persistence of regular updates.

Table 4 Panel B presents regression results from estimating equation (2). We find that the coefficient on *MFNEWS* × *LAG_UPDATE* is insignificantly negative in Column (1) (t-stat = -0.78) whereas the coefficient on *MFNEWS* × *LAG_UPDATE_ALL* is significantly negative in Column (2) (t-stat = -2.06).[17] 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.[18] 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* × *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

[17] The inferences remain unchanged if we exclude control variables of earnings news (*ENEWS*) or if we additionally control for the accuracy of managers' initial forecasts.

[18] While we are unaware of any existing theory that can directly explain the empirical regularity we revealed in the new setting of management forecast updates, our finding is consistent with the idea in Kim and Verrecchia (1991) that the market reaction to a public signal (i.e., the initial forecast) should be positively correlated with the precision of that signal *but negatively correlated with* the precision of other signals in the information set (in our case, the expected future updates from a regular updater). We leave the formal development of this theory to future research.

(including the three updates) within each firm-year (*MIDPT1 ~ MIDPT4*, defined the same as in Table 3) and the median analyst consensus forecast error before each corresponding management forecast (*AFE1 ~ 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.[19]

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.

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

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* × *UPDATE* (1^{ST}, 2^{ND}, or 3^{RD}), where *UPDATE*

[19] 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.

(1^{ST}, 2^{ND}, or *3^{RD})* is an indicator variable set to one if the management forecast is the 1st, 2nd, or the 3rd update after 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 α_1 and α_2 (α_3 or α_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* × *UPDATE* (*1^{ST}*, *2^{ND}*, or *3^{RD})* to be significantly negative (i.e., α_2, α_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* × *UPDATE* (*1^{ST}*, *2^{ND}*, or *3^{RD})* to be significantly positive (i.e., α_2, α_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* × *UPDATE1*ST, *MFNEWS* × *UPDATE2*ND, and *MFNEWS* × *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.[20] Nonetheless, our F-tests suggest that analysts still react strongly to management forecast updates, as the F-tests on the coefficient sums are

[20] Untabulated F-tests suggest that each update is significantly less informative to analysts than its predecessor at the 0.01 level, except that the first two updates are equally informative in Column (1) ($p > 0.10$) and significant only at the 0.05 level in Column (2).

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.[21] 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 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. Implications of Forecast Updates: Reevaluating Whether Managers Withhold Bad News

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? Given the clear trend shown in Figure 1 of firms' increasing use of management forecast updates and recent empirical evidence that management forecasts have more significant capital market impacts than other information sources such as analyst reports and earnings announcements (Ball and Shivakumar [2008], Beyer et al. [2010]), we expect that

[21] 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.

management forecast updates might have major implications for this issue. 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]). Overall, 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 reevaluate this question by comparing the timeliness of releasing bad earnings news with releasing good news 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 forecasts of annual earnings to proxy for market earnings expectations, 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 the last year's Q4 and ending immediately after the earnings announcement for the current year's Q4. 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 this 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 the course of the year (the horizontal axis). Timelier (less timely) releases of news should result in larger decreases in the plot earlier (later) during the year. Panel A shows that both sporadic and regular updaters appear to delay their good news release relative to non-updaters. For example, after the 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 the 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:[22]

$$TIMELINESS = \sum_{t=1}^{5} \frac{Earnings\ News\ Released\ up\ to\ Time\ Period\ t}{Total\ Earnings\ News}$$

$$= \sum_{t=1}^{5} \frac{\sum_{i=1}^{t} Earnings\ News\ Released\ during\ Time\ Period\ i}{Total\ Earnings\ News}$$

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, …, 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 (Kasznik and Lev [1995]).[23] 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 revisions, if larger revisions occur earlier in the year, they are assigned more weight, and therefore result in a higher *TIMELINESS* measure. As Table 6 Panel A shows, the mean (median) of *TIMELINESS* in the full sample is 3.236 (3.086) for bad news, significantly higher than 2.700 (2.968) for good news ($p<0.01$). This incremental timeliness of releasing bad news over good news is significant in the subsamples of sporadic updaters and regular updaters ($p<0.01$) but insignificant in non-

[22] 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.
[23] This relaxes the requirement of analyst forecasts immediately before the announcement of the current year's Q4 earnings, resulting in a slightly larger sample in Table 6 (N=9,090) than in Figure 3 (N=7,924).

updaters. Thus, 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 they do with good news. Furthermore, regular updaters seem to release bad news significantly timelier than non-updaters and sporadic updaters ($p<0.05$), while non-updaters release good news significantly timelier than sporadic updaters and regular updaters ($p<0.05$).

To statistically test whether firms of different update types differ significantly in the timeliness with which they release good news versus bad news, we estimate the following equation with the ordinary least squares (OLS) regression with standard errors clustered by firm. Notes to Table 6 provide more details on all variable definitions.

$$TIMELINESS = \beta_0 + \beta_1 BAD + \beta_2 SPORADIC + \beta_3 REGULAR + \beta_4 BAD \times SPORADIC + \beta_5 BAD \times REGULAR \quad (4)$$

Table 6 Panel B presents the regression results from estimating equation (4). The coefficients on *SPORADIC* and *REGULAR* are both significantly negative (t-stats = -3.23 and -3.78), suggesting that both sporadic updaters and regular updaters release good news in a less timely fashion than non-updaters. Moreover, the coefficients on the two interaction terms, *BAD× SPORADIC* and *BAD×REGULAR*, are both significantly positive (t-stats = 3.59 and 5.79), suggesting that both sporadic updaters and regular updaters release bad news more timely than they release good news. Given the finding in Kothari et al. [2009] that managers withhold bad news, we conduct F-tests to compare the timeliness of bad new releases between updaters and non-updaters. The F-stat is significant at the 0.01 level for the null that *BAD = BAD×REGULAR + REGULAR* (F-stat = 10.11), suggesting that regular guiders release bad news in a timelier fashion than non-updaters. However, the F-stat is marginally significant at the 0.1 level for the null that *BAD = BAD×REGULAR + REGULAR* (F-stat = 2.84), suggesting that there is little difference in the timeliness of bad news release between sporadic updaters and non-updaters.

Finally, among updaters, the last two F-tests in Table 6 suggest that sporadic updaters and regular updaters release good news with similar timeliness (F-stat = 0.02) but regular updaters are significantly timelier in releasing bad news (F-stat = 7.73).

In summary, we find significant differences across different update types in terms of the timeliness with which firms release earnings news: although non-updaters do not exhibit differential timeliness in releasing good news versus bad news, both sporadic updaters and regular updaters are significantly timelier in releasing bad news than in releasing good news. Although prior studies debate whether managers *on average* withhold good or bad news, our findings add to this debate by highlighting the heterogeneity in managers' tendency to withhold bad news and by linking this heterogeneity to firms' disclosure strategies, specifically their forecast update types.

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, have little power in explaining managers' forecast updates, especially for firms updating every quarter, which we refer to as "regular updaters." Our analysis also reveals a large percentage of forecast updates that maintain the same range width or midpoint as their preceding forecast, which is consistent with the updating decisions being driven by routines rather than by the short-term 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 regular updates in the previous year. Despite analysts' 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 relations 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 2014.

Author(s)	Year	Title	Journal	Sample Period	Annual or Quarterly	Data Source*	Exclude Revision?
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
Li	2010	The impacts of product market competition on the quantity and quality of voluntary disclosures	RAST	1998-2006	Annual	First Call	Yes
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
Ball, Jayaraman, Shivakumar	2012	Audited financial reporting and voluntary disclosure as complements: a test of the confirmation hypothesis	JAE	2000-2007	Both	First Call	No
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
Cheng, Luo, Yue	2013	Managerial Incentives and Management Forecast Precision	TAR	1999-2006	Both	First Call	No
Shroff, Sun, White, Zhang	2013	Voluntary Disclosure and Information Asymmetry: Evidence from 2005 Securities Offering Reform	JAR	2003-2008	Both	First Call	No
Dorantes, Li, Peters, Richardson	2013	The Effect of Enterprise Systems Implementation on the Firm Information Environment	CAR	1995-2008	Annual	First Call	No
Goodman, Neamtiu, Shroff, White	2014	Management forecast quality and capital investment decisions	TAR	1996-2008	Annual	First Call	No
Vashishtha	2014	The role of bank monitoring in borrowers' discretionary disclosure: Evidence from covenant violations	JAR	1996-2008	Both	First Call	No
Feng, Li	2014	Are auditors professionally skeptical? Evidence from auditors' going-concern opinions and management earnings forecasts	JAR	2000-2010	Annual	First Call	Yes
Ali, Klasa, Yeung	2014	Industry Concentration and Corporate Disclosure Policy	JAE	1995-2009	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

	No. of Forecasts	No. of Firm-years
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 and the initial forecast in Q1 (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 all valid data on analyst reaction to managers' initial forecasts and control variables, and the initial forecast in Q1 (Table 4)		5,870
Management forecasts with all valid data on analyst reaction and control variables (Table 5)	24,845	
Firm-years with valid data on timeliness of news (Table 6)		9,090

TABLE 2
Logit Determinants of Issuing Management Forecast Updates

Logit Model: PROB (UPDATE or UPDATE_ALL = 1) = β_0
Forecast Routines: + β_1 *LAG_MF* + β_2 *LAG_UPDATE* (+ β_3 *LAG_UPDATE_ALL*)
Time-specific conditions: + β_4 *|AFE|* + β_5 *AF* + β_6 *DISP* + β_7 *|AFMF_DIFF|* + β_8 *|MFE|*
Control variables: + β_9 *MFWIDTH* + β_{10} *MFHRZN* + β_{11} *|ACTUAL|* + β_{12} *LOSS*
+ β_{13} *EARNVOL* + β_{14} *DED* + β_{15} *QIX* + β_{16} *TRA* + β_{17} *CEOOWN* + β_{18} *LNTA* + β_{19} *LITIG*
+ β_{20} *REGUL* + β_{21} *BM* + β_{22} *LEV* + β_{23} *FD*

Panel A: Summary Statistics

	Full Sample (N=5,830)		*Non-Updaters (N=688)*		*Sporadic Updaters (N=1,676)*		*Regular Updaters (N=3,466)*	
Variable	*Mean*	*Median*	*Mean*	*Median*	*Mean*	*Median*	*Mean*	*Median*
UPDATE	0.882	1	0[a]	0[a]	1	1	1[c]	1[c]
UPDAET_ALL	0.595	1	0	0	0[b]	0[b]	1[c]	1[c]
LAG_MF	0.840	1	0.481[a]	0[a]	0.787[b]	1[b]	0.938[c]	1[c]
LAG_UPDATE	0.735	1	0.281[a]	0[a]	0.613[b]	1[b]	0.883[c]	1[c]
LAG_UPDATE_ALL	0.458	0	0.090[a]	0[a]	0.242[b]	0[b]	0.635[c]	1[c]
|AFE|	0.019	0.008	0.034[a]	0.014[a]	0.024[b]	0.010[b]	0.014[c]	0.007[c]
AF	6.390	5	6.160	5	6.239	5	6.508	5
DISP	0.004	0.002	0.005	0.002	0.004[b]	0.002	0.004[c]	0.002
|AFMF_DIFF|	0.018	0.008	0.004	0.001[a]	0.003[b]	0.001[b]	0.003[c]	0.001[c]
|MFE|	0.003	0.001	0.030[a]	0.013[a]	0.021[b]	0.009[b]	0.013[c]	0.006[c]
MFWIDTH	0.004	0.003	0.004	0.002[a]	0.004	0.003[b]	0.004	0.003[c]
MFHRZN	323.710	327	318.035[a]	325[a]	322.279[b]	326[b]	325.529[c]	328[c]
|ACTUAL|	0.063	0.059	0.059	0.049[a]	0.061[b]	0.055[b]	0.065[c]	0.062[c]
LOSS	0.052	0	0.157[a]	0[a]	0.072[b]	0[b]	0.022[c]	0[c]
EARNVOL	0.022	0.010	0.029	0.012	0.025[b]	0.011[b]	0.020[c]	0.009[c]
DED	0.046	0.008	0.066	0.034[a]	0.058[b]	0.025[b]	0.036[c]	0.001[c]
QIX	0.460	0.458	0.352[a]	0.306[a]	0.411[b]	0.373[b]	0.505[c]	0.522[c]
TRA	0.186	0.159	0.188	0.155	0.195[b]	0.166[b]	0.181	0.154
CEOOWN	0.006	0.000	0.005	0.000[a]	0.006	0.000[b]	0.006	0.000[c]
LNTA	7.774	7.687	7.523	7.332	7.617[b]	7.528[b]	7.900[c]	7.851[c]
LITIG	0.313	0	0.288	0	0.320	0	0.314	0
REGUL	0.134	0	0.174	0	0.132	0	0.126[c]	0[c]
BM	0.450	0.389	0.490	0.407	0.463[b]	0.404	0.436[c]	0.381[c]
LEV	3.231	2.256	3.963[a]	2.163	3.316[b]	2.176	3.045[c]	2.292
FD	0.942	1	0.724[a]	1[a]	0.922[b]	1[b]	0.994[c]	1[c]

Panel B: Regression Results

		Dependent Variable = *UPDATE*			Dependent Variable = *UPDATE_ALL*		
		(1)			(2)		
Variable	Pred. Sign	Coeff	z-stat	Marginal Impact	Coeff	z-stat	Marginal Impact
LAG_MF	+	0.502***	2.82	0.038	0.116	0.75	0.028
LAG_UPDATE	+	1.418***	6.81	0.125	0.740***	5.22	0.180
LAG_UPDATE_ALL	+				1.259***	17.02	0.289
|AFE|	+	-6.773***	-3.12	-0.015	-8.272***	-3.78	-0.066
AF	+	-0.020	-1.42	-0.006	-0.013	-1.51	-0.014
DISP	+	-4.783	-0.62	-0.002	-5.642	-0.98	-0.009
|AFMF_DIFF|	+	-2.179	-0.40	-0.001	-0.224	-0.05	0.000
|MFE|	+	0.300	0.14	0.001	-2.864	-0.97	-0.020
MFWIDTH		21.976	1.44	0.007	24.473***	2.82	0.029
MFHRZN		0.002	1.00	0.003	0.004	1.57	0.015
|ACTUAL|		5.774***	3.38	0.013	5.839***	5.28	0.050
LOSS		-0.853***	-6.08	-0.076	-0.658***	-2.98	-0.162
EARNVOL		-1.556	-1.08	-0.004	-0.299	-0.23	-0.003
DED		-1.216	-1.64	-0.005	-2.726***	-3.49	-0.043
QIX		0.431	0.99	0.006	0.585***	2.60	0.032
TRA		-0.102	-0.19	-0.001	0.170	0.28	0.005
CEOOWN		0.853	0.41	0.001	2.139	1.42	0.010
LNTA		0.119***	2.77	0.013	0.093***	2.76	0.038
LITIG		0.089	0.83	0.006	0.000	0.003	0.000
REGUL		-0.457*	-1.67	-0.034	-0.160	-1.11	-0.039
BM		-0.652***	-2.78	-0.012	-0.567***	-3.94	-0.040
LEV		-0.062***	-3.31	-0.014	-0.044***	-2.79	-0.036
FD		1.698***	8.95	0.205	2.154***	7.85	0.467
Constant		-1.804**	-2.33		-4.603***	-5.47	
Pseudo R-squared		0.2594			0.2374		
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. Following Bushee [1998], *DED* is the percentage of shares owned by dedicated institutional investors at the beginning of the year; *QIX* is the percentage of shares owned by quasi-indexer at the beginning of the year; *TRA* is the percentage of shares owned by transient institutional investors at the beginning of the year. *CEOOWN* is the percentage of shares owned by the CEO at the beginning of the year. All continuous variables are winsorized at the extreme 1%. In Panel A, we also report summary statistics for subsamples of observations classified as (1) "non-updaters" if *UPDATE=0*, (2) "sporadic updaters" if *UPDATE=1* but *UPDATE_ALL=0*, or (3) "regular updaters" if *UPDATE_ALL=1*. a, b, and c represent significant difference at the 1% level (two-tailed) between "non-updaters" and "sporadic updaters", between "sporadic updaters" and "regular updaters", and between "regular updaters" and "non-updaters" using t-tests for the means and Wilcoxon rank tests for the medians. In Panel B, ∗, ∗∗, 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

Panel A: Management Forecast Width (*WIDTH*)

		WIDTH1	WIDTH2	WIDTH3	WIDTH4
NUMQTR = 4	Mean	0.12	0.12	0.10	0.07
[N = 4,915]	Median	*0.10*	*0.10*	*0.08*	*0.05*
	No Change from the Previous		71%	55%	34%
NUMQTR = 3	Mean	0.11	0.11	0.08	
[N = 2,138]	Median	*0.09*	*0.08*	*0.05*	
	No Change from the Previous		64%	47%	
NUMQTR = 2	Mean	0.09	0.08		
[N = 1,183]	Median	*0.05*	*0.05*		
	No Change from the Previous		51%		
NUMQTR = 1	Mean	0.07			
[N = 1,319]	Median	*0.05*			

Panel B: Management Forecast Midpoint (*MIDPT*)

		MIDPT1	MIDPT2	MIDPT3	MIDPT4
NUMQTR = 4	Mean	0.06***	0.04***	0.01	-0.02***
[N = 4,837]	Median	*-0.03*††	*-0.03*†††	*-0.03*†††	*-0.02*†††
	No Change from the Previous		43%	29%	18%
	Revise up from the Previous		38%	44%	49%
	Revise down from the Previous		19%	27%	33%
	z-Score (% Up – % Down)		18.51$^{\#\#\#}$	14.26$^{\#\#\#}$	12.28$^{\#\#\#}$
NUMQTR = 3	Mean	0.21***	0.17***	0.11***	
[N = 1,639]	Median	*0.03*†††	*0.01*†††	*-0.01*†††	
	No Change from the Previous		37%	23%	
	Revise up from the Previous		36%	37%	
	Revise down from the Previous		27%	40%	
	z- Score (% Up – % Down)		4.13$^{\#\#\#}$	-1.15	
NUMQTR = 2	Mean	0.34***	0.24***		
[N = 1,058]	Median	*0.11*†††	*0.04*†††		
	No Change from the Previous		27%		
	Revise up from the Previous		30%		
	Revise down from the Previous		43%		
	z- Score (% Up – % Down)		-5.21$^{\#\#\#}$		
NUMQTR = 1	Mean	0.43***			
[N = 1,201]	Median	*0.14*†††			

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 in which the forecasts are issued 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. ### represents significance at 1% based on two-tailed binomial tests that upward revision and downward revision are equally likely.

TABLE 4
Analyst Reactions to Initial Management Forecasts

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

Panel A: Summary Statistics

	Full Sample (N=5,870)		*Non-Updaters (N=406)*		*Sporadic Updaters (N=1,899)*		*Regular Updaters (N=3,565)*	
Variable	*Mean*	*Median*	*Mean*	*Median*	*Mean*	*Median*	*Mean*	*Median*
AREV	-0.002	0.000	-0.004[a]	-0.001[a]	-0.002[b]	0.000	-0.001[c]	0.000[c]
MFNEWS	-0.003	0.000	-0.003	-0.001	-0.003	0.000	-0.003	0.000
LAG_UPDATE	0.875	1	0.608[a]	1[a]	0.818[b]	1[b]	0.935[c]	1[c]
LAG_UPDATE_ALL	0.557	1	0.236[a]	0[a]	0.423[b]	0[b]	0.665[c]	1[c]
LAG_MFE	0.004	-0.001	0.010	0.001[a]	0.005[b]	0.000[b]	0.003[c]	-0.001[c]
REPUTATION	0.345	0	0.342	0	0.334	0	0.350	0
|MFNEWS|	0.006	0.002	0.007	0.002[a]	0.006[b]	0.002	0.005[c]	0.002[c]
MFLOSS	0.016	0	0.030	0	0.017	0.000	0.014	0.000
BM	0.458	0.403	0.512	0.437	0.484[b]	0.429[b]	0.439[c]	0.386[c]
MFHRZN	324.674	327	321.360	325	323.706[b]	326	325.567[c]	328[c]
WFWIDTH	0.005	0.003	0.005	0.003	0.005	0.003[b]	0.005	0.003[c]
ENEWS	0.000	0.000	0.000	0.000[a]	0.000	0.000	0.000	0.000[c]
|ENEWS|	0.003	0.001	0.003	0.001	0.003	0.001[b]	0.003	0.001
ELOSS	0.229	0	0.276	0	0.224	0[b]	0.227	0

Panel B: Regression Results

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

MFNEWS×BM	0.061	1.59	0.049	1.38
MFNEWS×MFHRZN	-0.001	-1.22	-0.001	-0.95
MFNEWS×WFWIDTH	7.132***	3.68	8.294***	4.20
ENEWS	0.011	0.28	0.007	0.18
ENEWS×|ENEWS|	-7.494***	-3.45	-6.863***	-3.06
ENEWS×ELOSS	0.260***	3.67	0.251***	3.50
ENEWS×BM	0.074	1.14	0.065	1.02
Constant	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	
F Test	*MFNEWS + MFNEWS× LAG_UPDATE* = 0 453.50***		*MFNEWS + MFNEWS× LAG_UPDATE_ALL* = 0 232.08***	

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%. In Panel A, we also report summary statistics for subsamples of observations classified as (1) "non-

updaters" if *LAG_UPDATE=0*, (2) "sporadic updaters" if *LAG_UPDATE=1* but *LAG_UPDATE_ALL=0*, or (3) "regular updaters" if *LAG_UPDATE_ALL=1*. a, b, and c represent significant difference at the 1% level (two-tailed) between "non-updaters" and "sporadic updaters", between "sporadic updaters" and "regular updaters", and between "regular updaters" and "non-updaters" using t-tests for the means and Wilcoxon rank tests for the medians. In Panel B, $*$, $**$, 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*

Panel A: Summary Statistics

	Full Sample (N=24,845)		*Non-Updaters (N=1,041)*		*Sporadic Updaters (N=7,906)*		*Regular Updaters (N=15,898)*	
Variable	*Mean*	*Median*	*Mean*	*Median*	*Mean*	*Median*	*Mean*	*Median*
AREV	-0.001	0.000	-0.003[a]	0[a]	-0.001[b]	0[b]	0[c]	0[c]
MFNEWS	-0.002	0	-0.003	0[a]	-0.002	0[b]	-0.002	0[c]
LAG_MFE	0.004	-0.001	0.008[a]	0[a]	0.005[b]	-0.001[b]	0.003[c]	-0.001[c]
REPUTATION	0.343	0	0.313	0	0.335	0	0.349	0
|MFNEWS|	0.005	0.001	0.006[a]	0.002[a]	0.005[b]	0.002[b]	0.005[c]	0.001[c]
MFLOSS	0.019	0	0.033	0[a]	0.019	0	0.017[c]	0[c]
BM	0.465	0.406	0.483	0.407	0.487[b]	0.429[b]	0.453[c]	0.396
MFHRZN	197.681	175	206.288	235	204.334[b]	234[b]	193.808[c]	167[c]
WFWIDTH	0.004	0.003	0.004[a]	0.002[a]	0.004[b]	0.003	0.004	0.003[c]
ENEWS	0.001	0.000	0[a]	0[a]	0.001	0[b]	0.001[c]	0.001[c]
|ENEWS|	0.002	0.001	0.002	0.001[a]	0.002	0.001[b]	0.002	0.001[c]
ELOSS	0.213	0	0.208	0	0.223	0[b]	0.208	0

Panel B: Regression Results

		Dependent Variable =*AREV*			
		(1) *Full Sample*		(2) *Regular Updaters Only*	
Variable	Pred. Sign	Coeff	t-stat	Coeff	t-stat
MFNEWS		0.805***	22.84	1.088***	7.17
MFNEWS×UPDATE1ST	+/-	-0.103***	-3.58	-0.245**	-2.45
MFNEWS×UPDATE2ND	+/-	-0.133***	-3.19	-0.513**	-2.39
MFNEWS×UPDATE3RD	+/-	-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
MFNEWS×*MFLOSS*	0.099**	2.39	0.096*	1.77
MFNEWS×*BM*	0.106***	3.67	0.046	1.22
MFNEWS×*MFHRZN*	-0.001***	-2.73	-0.003**	-2.32
MFNEWS×*WFWIDTH*	7.523***	4.63	6.156***	2.76
ENEWS	0.494***	11.63	0.455***	8.66
ENEWS×|*ENEWS*|	-20.485***	-5.60	-11.915**	-2.48
ENEWS×*ELOSS*	0.396***	6.72	0.351***	5.00
ENEWS×*BM*	-0.160***	-3.20	-0.162**	-2.39
Constant	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	
F Test	*MFNEWS* + *MFNEWS*× *UPDATE1*ST = 0 395.85***		*MFNEWS* + *MFNEWS*× *UPDATE1*ST = 0 157.50***	
	MFNEWS + *MFNEWS*× *UPDATE2*ND = 0 264.99***		*MFNEWS* + *MFNEWS*× *UPDATE2*ND = 0 48.86***	
	MFNEWS + *MFNEWS*× *UPDATE3*RD = 0 75.30***		*MFNEWS* + *MFNEWS*× *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 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*ST is an indicator variable set to 1 if the management forecast is the first update in year t, and 0 otherwise. *UPDATE2*ND is an indicator variable set to 1 if the management forecast is the second update in year t, and 0 otherwise. *UPDATE3*RD 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. *WFWIDTH* 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%. In Panel A, we also report summary statistics for the three subsamples: (1) "non-updaters" (if the manager provided no update for annual earnings forecast), (2) "sporadic updaters" (if the manager provided updates for annual earnings forecast in some but not all quarters), and (3) "regular updaters" (if the manager provided updates for annual earnings forecast in all quarters). a, b, and c represent significant difference at the 5% level (two-tailed) between "non-updaters" and "sporadic updaters", between "sporadic updaters" and "regular updaters", and between "regular updaters" and "non-updaters" using t-tests for the means and Wilcoxon rank tests for the medians. In Panel B, $*$, $**$, 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

OLS Regression model: TIMELINESS= β_0 + β_1 BAD + β_2 SPORADIC + β_3 REGULAR + β_4 BAD×SPORADIC + β_5 BAD×REGULAR

Panel A: Summary Statistics

	Full Sample (N=9,090)		*Non-Updaters (N=2,163)*		*Sporadic Updaters (N=3,050)*		*Regular Updaters (N=3,877)*	
Variable	*Mean*	*Median*	*Mean*	*Median*	*Mean*	*Median*	*Mean*	*Median*
TIMELINESS	3.003	3.020	3.035	3.044	2.936	3.000	3.039	3.032
Good News Only	2.700	2.968	3.152[a]	3.046[a]	2.608	2.957	2.587[c]	2.935[c]
Bad News Only	3.236[†]	3.086[†]	2.973	3.042	3.163[b†]	3.025[b†]	3.499[c†]	3.230[c†]
BAD	0.566	1	0.655[a]	1[a]	0.591[b]	1[b]	0.496[c]	0[c]

Panel B: Regression Results

	Dependent Variable =*TIMELINESS*	
Variable	Coeff	t-stat
BAD	-0.178	-1.20
SPORADIC	-0.544***	-3.23
REGULAR	-0.565***	-3.78
BAD×SPORADIC	0.733***	3.59
BAD×REGULAR	1.091***	5.79
Constant	3.152***	25.33
Adj. R-squared	0.009	
Number of Observations	9,090	
F Test	F-stat	p-value
BAD= BAD×SPORADIC+SPORADIC	2.84	0.0920
BAD= BAD×REGULAR+REGULAR	10.11	0.0015
SPORADIC=REGULAR	0.02	0.8783
BAD×SPORADIC+SPORADIC = BAD×REGULAR+REGULAR	7.73	0.0055

This table presents the regression results on timeliness of good and bad news across different update types. Panel A presents the summary statistics of all variables, and Panel B reports the regression results. The sample consists of 9,090 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 $\sum_{t=1}^{5} \frac{Earnings\ News\ Released\ up\ to\ Time\ t}{Total\ Earnings\ News} = \sum_{t=1}^{5} \frac{\sum_{i=1}^{t} Earnings\ News\ Released\ during\ Time\ Period\ i}{Total\ Earnings\ News}$, 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, …, 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]). *BAD* is an indicator variable set to 1 if the total earnings news is negative, and 0 otherwise. *SPORADIC* is an indicator variable set to 1 if the manager provided updates for annual earnings forecast in some but not all quarters, and 0 otherwise. *REGULAR* is an indicator variable set to 1 if the manager provided updates for annual earnings forecast in all quarters, and 0 otherwise. All continuous variables are winsorized at the extreme 1%. In Panel A, we also report summary statistics for the three subsamples: (1) "non-updaters" (if *SPORADIC=REGUAR=0*), (2) "sporadic updaters" (if *SPORADIC=1*), and (3) "regular updaters" (if *REGULAR=1*). a, b, and c represent significant difference at the 5% level (two-tailed) between "non-updaters" and "sporadic updaters", between "sporadic updaters" and "regular updaters", and between "regular updaters" and "non-updaters" using t-tests for the means and Wilcoxon rank tests for the medians. † in the row of "bad news only" indicates that *TIMELINESS* is significantly higher for bad news than for good news in that column at the 1% level (one-tailed) using t-tests for the means and Wilcoxon rank tests for the medians. In Panel B, $***$ represent significance at 1% (two-tailed). Standard errors are clustered by firm.

Figure 1 – Trend in Management Annual Forecasts with Updates

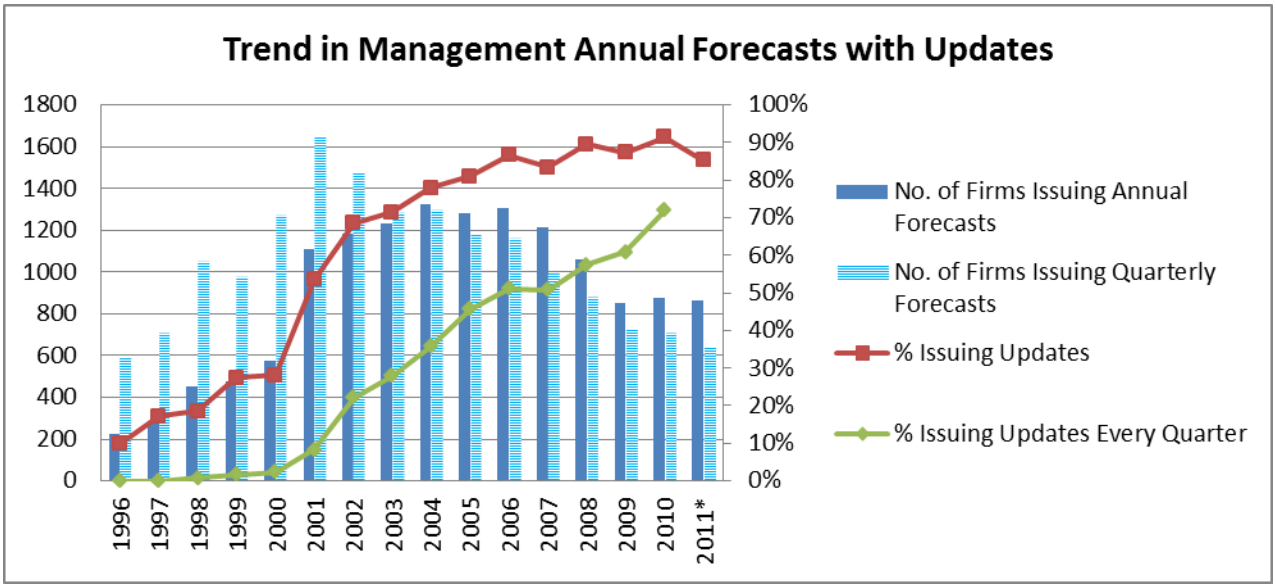


FIG1. This figure presents the trend in management annual forecasts with updates. The solid dark (shaded light) blue bars, which correspond to the scale on the left, show the number the firms each year that issue at least one annual (quarterly) earnings forecasts. The red line with square markers and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

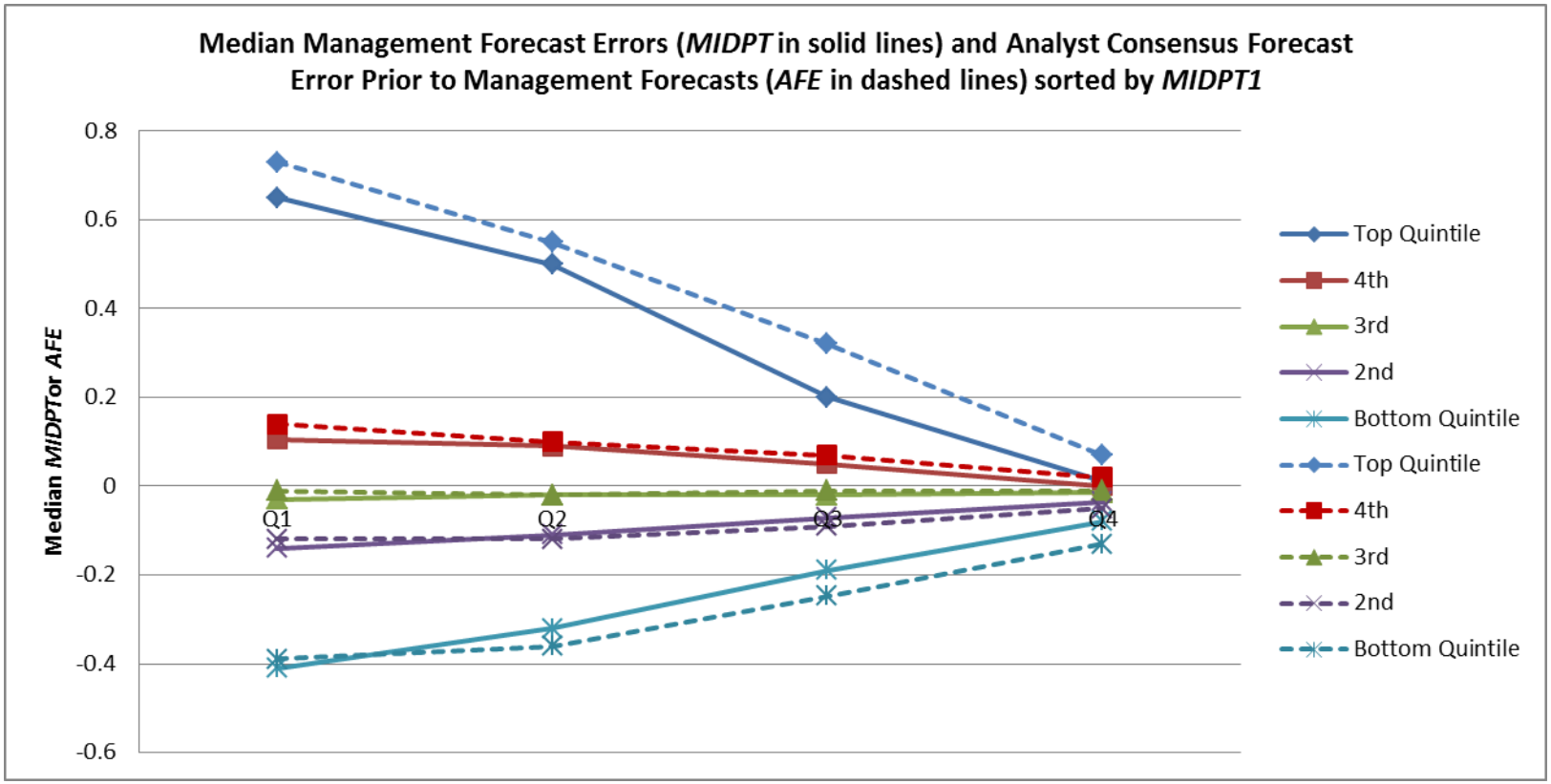
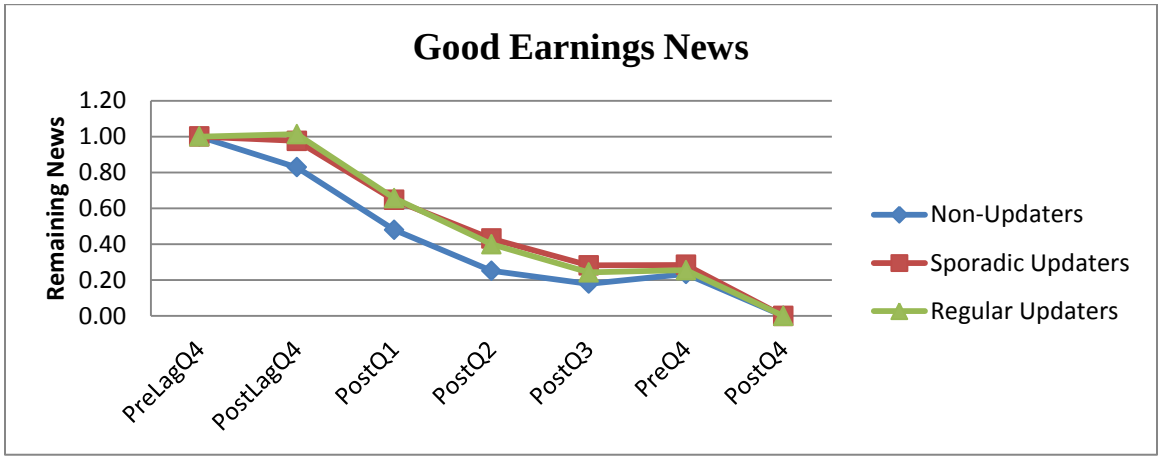


FIG2. This figure presents the patterns in management forecast errors (*MIDPT*) and prevailing analyst consensus forecasts (*AFE*) for firm-years where managers issue annual EPS forecast for all four quarters (*NUMQTR*=4). We first sort the initial MFE into quintiles. Then we track each quintile and 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

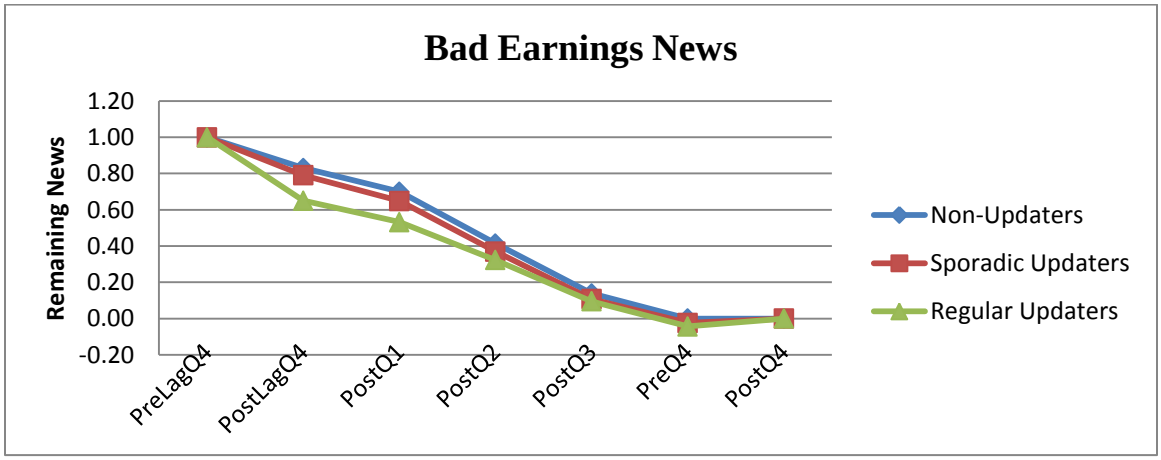


FIG3. –Earnings surprise resolution by management forecast update types. Sample consists of 7,924 firm-years where managers issued at least one annual earnings forecasts. The x-axis orders the seven dates – immediately before the last year's Q4 earnings announcement (*PreLagQ4*), immediately after the 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.