Management Earnings Forecasts and Value of Analyst Forecast Revisions

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ABSTRACT

Prior studies evaluate the *relative* importance of the sources of value that financial analysts bring to the market based on the price impact of forecast revisions over the event time. We find that management earnings forecasts influence the timing and precision of analyst forecasts. More importantly, evidence suggests that prior studies' finding of weaker (stronger) stock-price responses to forecast revisions in the period immediately after (before) the prior-quarter earnings announcement is likely to be the artifact of a temporal pattern of management earnings forecasts over the event time. To the extent that management earnings forecasts are public disclosures, our results suggest that the *relative* importance of analysts' information discovery role documented in prior studies is likely to be overstated.

Key words: Analyst earnings forecast, Analyst forecast revision, Management earnings forecast, Public disclosure, Regulation Fair Disclosure

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1. Introduction

Prior studies suggest that the value of analysts' activities in the market stems from two sources: analysts' skill at interpreting public information and/or their ability to collect and process private information (Chen et al. 2010, Francis et al. 2002, Frankel et al. 2006, Ivković and Jegadeesh 2004, Livnat and Zhang 2012, Ramnath et al. 2008). Evidence on the relative importance of the sources of value brought by analysts, however, is mixed. Findings in Francis et al. (2002) and Frankel et al. (2006) are consistent with the role of interpreting public information as a dominant source of value in analysts' research. Francis et al. (2002), for example, find a positive association between the market reaction to earnings announcements and the market reaction to analysts' research reports, suggesting that analyst research and earnings announcements are complements of each other. In contrast, Ivković and Jegadeesh (2004) and Chen et al. (2010) conclude that the value of analyst forecasts stems primarily from analysts' ability to collect and process private information. They assume that analyst forecast revisions immediately following earnings announcements reflect analysts' interpretation of publicly available information, while revisions issued immediately prior to earnings announcements reflect analysts' ability to collect and process private information. Ivković and Jegadeesh (2004) find that stock-price reactions to revisions are weakest in the first few weeks after prior-quarter earnings announcements and stronger in the week before current-quarter earnings announcements.

Livnat and Zhang (2012) contend that prior studies are misspecified because these studies consider earnings announcements as the only significant corporate public-information release and implicitly assume that analysts' interpretation role applies only to the information contained in earnings announcements. Focusing on other significant disclosures, such as 10-K, 10-Q, and 8-K filings, Livnat and Zhang (2012) find that market reactions to forecast revisions issued promptly (within three trading days) after corporate disclosures are greater than reactions to non-prompt revisions. They conclude that investors value more highly analysts' ability to interpret public disclosures. Although we agree that ignoring other significant public corporate disclosures can result in erroneous conclusions, we note difficulties in disentangling the

information content of the forecast revision from that of the firm disclosure itself. Because prompt revisions in Livnat and Zhang (2012) are defined as revisions made very close to the time of disclosure, it is virtually impossible to fully disentangle market reactions to prompt forecast revisions from reactions to disclosures.[1] The stronger market reaction to prompt revisions may just reflect responses to the disclosures.

In this study, we take a different approach to address the issue of considering public disclosures in assessing the relative importance of the sources of value that analysts bring to the market. Within the framework of Ivković and Jegadeesh (2004), we examine the timing and information content of analyst forecast revisions, conditional on the incidence of management earnings forecasts. We focus on management earnings forecasts because prior studies show that analysts update their forecasts in response to management earnings forecasts (e.g., Jennings 1987, Waymire 1986). Firms often issue management earnings forecasts to align investor expectations with the information they possess or influence analysts and market expectation to achieve certain objectives (Baginski and Hassell 1990, Cotter et al. 2006, Patell 1976, Pownall et al. 1993). It could be the case that the temporal pattern of the market reaction to forecast revisions documented in Ivković and Jegadeesh (2004) is driven by management earnings forecasts.[2] If stronger market reactions to analyst forecast revisions before the current-quarter earnings announcements than to those immediately after the prior quarter earnings announcement are attributable to confounding effects of management earnings forecasts, which are public disclosures, it is difficult to conclude that Ivković and Jegadeesh's (2004) findings are consistent with the information discovery role being the dominant source of analysts' value.

To examine whether management earnings forecasts influence the timing, relative accuracy, and price impact of analyst forecast revisions, we partition the sample revisions into two subsamples: revisions for firms that issue management earnings forecasts and those for firms that do not issue

[1] Ivković and Jegadeesh (2004) and Chen et al. (2010) exclude analyst forecast revisions on days 0 and 1 relative to the earnings announcements specifically to avoid the confounding effects of market reactions to the earnings announcement itself.

[2] Ivković and Jegadeesh (2004) acknowledge that analysts rely on guidance from insiders for forecast revisions, but they consider only implicit guidance given to select groups of investors and analysts. They do not consider guidance through public disclosures in the form of management earnings forecasts, nor do they examine the effect of public disclosures.

management earnings forecasts during the quarter. We then compare the revision timing, relative forecast errors (calculated as the absolute value of the newly revised analyst forecast error minus the absolute value of the existing consensus forecast error), and stock-price responses to forecast revisions between the two subsamples. We also partition the sample period into pre- and post-Regulation Fair Disclosure (Reg FD) periods. Reg FD changes the way that firms communicate with financial analysts and hence changes the analysts' information environment. Prior studies (e.g., Agrawal et al. 2006, Irani and Karamanou 2003, Janakiraman et al. 2007) document a decrease in analyst following, forecast accuracy, and the first-forecast horizon, as well as an increase in analyst forecast dispersion following Reg. FD. Kross and Suk (2012) show that Reg FD also influences the interplay between management earnings forecasts and analyst forecast revisions. Because these changes potentially affect the value of analyst forecast revisions at different points in the event time, we also examine the timing and information content of analyst forecast revisions in pre- and post-Reg FD periods separately.

We first document that the timing of management earnings forecasts and that of analyst forecast revisions during the quarter have very similar temporal patterns, which is consistent with analysts updating forecasts in response to management earnings forecasts (e.g., Jennings 1987, Patell 1976). Management earnings forecasts are more concentrated in the earnings announcement period during the post-Reg FD period, while the majority of management earnings forecasts are issued later in the quarter during the pre-Reg FD period. This shift in the temporal pattern around Reg FD is also apparent in analyst forecast revisions. Interestingly, we find that for firms issuing management earnings forecasts, the temporal pattern of relative forecast errors and that of management earnings forecasts are remarkably similar. Specifically, relative forecast errors are more negative (i.e., forecasts are more accurate relative to the existing consensus forecast) in weeks during which firms issue management earnings forecasts more frequently. Relative forecast errors are also more negative for firms with management earnings forecasts than for firms without management earnings forecasts, suggesting that management earnings forecasts influence analysts' information environment.

More importantly, we find that Ivković and Jegadeesh's (2004) results are largely driven by management earnings forecasts. We show that the evidence of weaker (stronger) price reaction to forecast revisions issued immediately after (before) the earnings announcement holds only for the sample of firms that issue management earnings forecasts. For firms without management earnings forecasts, we find no statistical difference between stock-price reactions to revisions in the post-announcement period and those in the pre-announcement period. In addition, stock-price responses to forecast revisions are greater for firms with management earnings forecasts than for firms without management earnings forecasts in the pre-announcement period, while the opposite holds in the post-announcement period. The temporal pattern of management earnings forecasts seems to influence these differences in the temporal pattern of the information content between firms with and without management earnings forecasts.

We also directly control for news from management earnings forecasts issued immediately before or concurrently with analyst forecast revisions. We show that weaker (stronger) price reaction to forecast revisions issued immediately after (before) the earnings announcement disappears once we control for management earnings forecast news in the regression. Given that a management earnings forecast is *public* disclosure, this evidence casts doubt on Ivković and Jegadeesh (2004) conclusion that the value of analyst forecast revisions stems primarily from analysts' ability to collect and process *private* information. If greater information content of forecast revisions in the pre-announcement period is largely attributable to management earnings forecasts issued immediately before or concurrently with analyst forecast revisions, it should not be interpreted simply as investors appreciating analysts' private information gathering.

Our study makes several contributions to the literature. First, we provide new evidence that sheds light on the relative importance of the sources of value that analysts bring to the market. Although numerous studies find that analyst forecast revisions are price informative (e.g., Elton et al. 1981, Givoly and Lakonishok 1979, Givoly and Lakonishok 1980, Griffin 1976, Imhoff and Lobo 1984), there is contradicting empirical evidence on the relative importance of two different roles of analysts' research: information interpretation and information discovery (Francis et al. 2002; Ivković and Jegadeesh 2004; Frankel et al. 2006; Chen et al. 2010). By providing evidence that Ivković and Jegadeesh's (2004) results

are largely attributable to the temporal pattern of management earnings forecasts, our study demonstrates that it is important to consider public disclosures, such as management earnings forecasts, in evaluating the relative importance of the sources of value in analyst forecast revisions. Our study complements Livnat and Zhang (2012), which also examine the influence of firm disclosures in assessing the relative importance of the analysts' roles in interpreting public information and discovering private information. While Livnat and Zhang's (2012) results are not free from the confounding effects of market reactions to disclosure itself, both studies find that the relative importance of analysts' information discovery role documented in prior studies is likely to be overstated.

Our study also contributes to the literature on the economic consequences of management earnings forecasts. Earlier studies find that analysts update their forecasts in response to management earnings forecasts and that analyst forecasts become more accurate after management earnings forecasts (Cotter et al. 2006, Jennings 1987, Waymire 1986). In this study, we find broader influences of management earnings forecasts on the characteristics of analyst forecasts. We show that management earnings forecasts influence the temporal pattern of analyst forecast revisions across the event time during the quarter. We also find that the temporal pattern of relative forecast accuracy (i.e., improvement of analyst forecast accuracy through the revision) across the event time relative to earnings announcements is closely related to the temporal pattern of management earnings forecasts. Moreover, we find that management earnings forecasts affect the temporal pattern of the price impact of analyst forecast revisions, which helps us better understand the relative importance of the sources of analysts' informational advantage.

We caution that our study does not suggest that analysts' information discovery role is unimportant. There is ample evidence of the importance of acquiring information not readily available (e.g., Frazzini et al. 2010, Gintschel and Markov 2004). Rather our analysis highlights the difficulty of evaluating the relative importance of the sources of value that financial analysts bring to the market based on the temporal pattern of the market reaction to forecast revisions because it is contaminated by confounding factors.

2. Research Issues

Ivković and Jegadeesh (2004) model market reaction to analyst forecast revisions as a function of the relative precision of analysts' revised forecasts and pre-revision market information. Stock-price responses to forecast revisions can be large if the market is relatively uninformed or if analysts have relatively precise information about one-quarter-ahead earnings. While both the analysts and the market have more precise information about a firm's earnings in a quarter as the quarter progresses (Bernhardt and Campello 2008, Kang et al. 1994, Lim 2001), stock-price responses to analyst forecast revisions are determined by the precision of analysts' information relative to the market's. By examining the pattern of stock-price responses across time during the quarter, Ivković and Jegadeesh (2004) investigate the relative precision of analysts' information over the event time.

Ivković and Jegadeesh (2004) assume that the role of analysts varies with analysts' forecast timing. While analyst forecast revisions after an earnings announcement are more likely to reflect analysts' interpretations of earnings news, revisions before the earnings announcements are more likely to capture analysts' production of new private information. Ivković and Jegadeesh (2004) argue that if the dominant source of analysts' value is their skill at interpreting the accounting earnings that firms report, their forecasts would be relatively more informative in the period immediately after an earnings announcement, and hence market reactions to analyst forecast revisions would be stronger during that period. If instead, the market values analysts' ability to independently collect and analyze information not readily available to the market more than it values analysts' interpretation of public announcements, such as earnings announcements, market reactions to earnings forecast revisions will be weaker in the period immediately after a prior-quarter earnings announcement than during other periods. Ivković and Jegadeesh (2004) also argue that analysts' early access to private information, which is most accurate in the period immediately before an earnings announcement, makes stock prices more sensitive to earnings forecasts in that period than in other periods.

Ivković and Jegadeesh (2004) suggest that one piece of privileged information that analysts commonly seek and use to form their forecasts is managers' guidance on future earnings. There are two

different forms of earnings guidance from management, however. One is implicit guidance given to select groups of analysts and investors; the other is explicit guidance issued in the form of management earnings forecasts. Ivković and Jegadeesh (2004) consider only the former and assume that implicit earnings guidance helps analysts' gain an informational edge over the market. Management earnings forecasts are voluntary *public* disclosures that provide information about expected earnings for a particular firm. If management earnings forecasts are what make analysts' information more precise, then the accuracy of analysts' information relative to that of the market cannot be entirely attributed to analysts' ability to collect and process *private* information.

While both management forecasts and analyst forecasts are motivated by a desire to align investor expectations with the information they possess, analysts heavily rely on management forecasts in forming their expectations. Prior studies show that management earnings forecasts influence analyst forecasts (e.g., Baginski and Hassell 1990, Cotter et al. 2006) and stock prices (Patell 1976, Penman 1980, Pownall et al. 1993). Earlier studies (e.g., Jennings 1987) find that analysts update their forecasts in response to management earnings forecasts. Evidence in Cotter et al. (2006) suggests that approximately 60 percent of analysts revise their forecasts within five days of management earnings forecasts. Therefore, the temporal pattern of management forecasts can affect the temporal pattern of analyst forecast revisions, as well as the value that investors attach to forecast revisions across the event time.

3. Research Design

3.1. Sample Selection

We obtain data on sell-side analyst forecasts of earnings per share (EPS) from the Institutional Brokers' Estimate System (I/B/E/S) detail tape and management earnings forecasts of quarterly earnings from the Company Issued Guidelines (CIG) of Thomson Financial's First Call Historical Database (FCHD) for the period between January 1996 and December 2009.[3] We begin our sample period in 1996, because

[3] We acknowledge that the CIG database is incomplete and management earnings forecasts of a group of firms might not be included (Chuck et al. 2009, Houston et al. 2010). Misclassifying firms with management earnings

the passage of the Private Securities Litigation Reform Act of 1995 expanded safe-harbor protection to firms issuing forward-looking information and thus changed firms' legal environment and incentives for issuing management earnings forecasts. Following Ivković and Jegadeesh (2004), we focus on quarterly EPS forecasts that were revised after the prior-quarter (*q-1*) earnings announcement date. Since we examine analysts' quarterly EPS forecasts, we focus on one-quarter-ahead management forecasts of quarterly earnings. We obtain earnings announcement dates and financial data from the COMPUSTAT quarterly files and stock-return data from the Center for Research in Security Prices (CRSP) database.

Panel A of Table 1 summarizes the sample-selection process. Following Ivković and Jegadeesh (2004), we use analyst forecast revisions that are issued within 32 trading days after prior quarter earnings announcements and within 30 trading days before current earnings announcements. Sixty-two trading days between two consecutive earnings announcements usually span the entire quarter. To avoid the influence of changes in fiscal quarters or unusual delays in earnings announcements, we exclude forecast revisions issued between two consecutive earnings announcement dates that are less than 30 trading days or more than 100 trading days apart. We also exclude revisions later than 32 trading days after the prior-quarter earnings announcement and earlier than 30 trading days before the current-quarter earnings announcement if there are more than 62 trading days between two consecutive earnings announcements.[4] After eliminating forecast revisions for which stock returns around revisions are not available, we have 882,987 revisions. Following Ivković and Jegadeesh (2004), we drop revisions of which the absolute value of the forecast revision (changes in forecasts deflated by the last forecast before the revision) is greater than 50%, leaving 755,388 revisions. To avoid the effect of extreme values, we eliminate revisions with extreme price responses to revisions (top and bottom 0.05% of the distribution of price reactions). Following Ivković and Jegadeesh (2004), we also eliminate revisions with extreme values of individual and consensus forecast error, defined as greater than 100% of actual earnings. After we eliminate revisions of which control variables are not available, our final sample includes 670,879 revisions, of which 211,928 are upward

forecasts as those without management earnings forecasts, however, will work *against* finding any difference between these two groups of firms.

revisions and 284,812 are downward revisions.[5] The number of observations for which relative forecast errors are calculated (496,740 revisions) is smaller, because relative forecast errors on the prior-quarter earnings announcement date cannot be determined. The number of observations used for the regression analyses (384,786 revisions) is smaller, because we exclude forecast revisions made on the prior-quarter earnings announcement date and on the day following the announcement. Panel B of Table 1 shows the distribution of the sample by year. Both the number of revisions and the average number of analysts following the firm increase over time. The distribution of the sample by Fama-French 49 industry classification (untabulated) show that the most represented industry in terms of the number of revisions is Petroleum and Natural Gas, followed by Retail and Banking. In terms of the number of firms in the sample, Banking is the most represented industry, followed by Computer Software and Retail.

3.2. Timing of Forecast Revisions

We measure the timing of analyst forecast revisions relative to quarter *q-1* and quarter *q* earnings announcement dates. For each individual analyst revision of the one-quarter-ahead earnings forecast, we determine the number of trading days between the revision date and the earnings announcement date. For revisions made at or prior to the mid-point of the quarter, we measure revision timing relative to the prior-quarter (*q-1*) earnings announcement (trading days 0 through 32), and for revisions made after the mid-point of the quarter, we measure revision timing relative to the current-quarter (*q*) earnings announcement (trading days -30 through -1). These trading days usually span the entire quarter. We then group the forecast revisions into the following five periods based on timing:

Period 1 = days (0, 1) (announcement period of quarter *q-1* earnings);

Period 2 = days (2, 6) (immediate post-announcement period of quarter *q-1* earnings);

Period 3 = days (7, 32) (non-immediate post-announcement period of quarter *q-1* earnings);

Period 4 = days (-30, -6) (non-immediate pre-announcement period of quarter *q* earnings); and

[4] Including these forecast revisions does not change the results in any material manner.
[5] We exclude the reiterating revisions of which the revised forecast is the same as the prior forecast.

Period 5 = days (-5, -1) (immediate pre-announcement period of quarter *q* earnings).

where quarter *q* is the quarter for which earnings are being forecasted. Our definitions of the timing and the periods closely follow those in Ivković and Jegadeesh (2004) and Kim et al. (2011). We measure the timing of management earnings forecasts based on the same five periods outlined above. We compare the temporal patterns of management earnings forecasts and analyst forecast revisions at various points in the event time based on five periods defined above.

3.3. Relative Forecast Error

We calculate the relative forecast error, *RFE*, as the difference between the forecast error of the newly released one-quarter-ahead earnings forecast and the forecast error of the consensus forecast one day before the forecast revision. The consensus forecast summarizes the information available to all analysts prior to the forecast revision, whereas the new forecast conveys the incremental information upon which the analyst revises her/his forecast. Specifically, for every new earnings forecast made by analyst *i* for stock *j* on day *t*, we define the relative current forecast error RFE_{ijt} as:

$$RFE_{ijt} = FE_{ijt} - CFE_{jt-1} \quad (1)$$

where

FE_{ijt} = 100 x Abs[($analyst\_forecast_{ijt} - quarterly\_earnings_j$) / $quarterly\_earnings_j$]; and

CFE_{ijt-1} = 100 x Abs[($consensus\_forecast_{ijt-1} - quarterly\_earnings_j$) / $quarterly\_earnings_j$].

A negative (positive) value of *RFE* indicates that the analyst's revised forecast is more (less) accurate than the consensus forecast. Following Ivković and Jegadeesh (2004), we truncate both FE_{ijt} and CFE_{jt-1} at 100%. We compute the consensus forecast one day before the forecast revision (CFE_{jt-1}) as the arithmetic average of each analyst's last forecast issued since the quarter *q-1* earnings announcement. To compute the consensus forecast, we require at least one analyst forecast issued prior to an analyst's

forecast revision. Under this definition, *RFE* is undefined on the earnings announcement date, because we cannot compute *CFE* for event day 0, where day 0 is the date of the quarter *q-1* earnings announcement.

We compare relative forecast errors between firms with management earnings forecasts and those without management earnings forecasts for each window of the five forecast periods defined above. We also employ the following regression model to examine the temporal pattern of relative forecast errors:

$$RFE = \beta 1 * DPeriod\ 2 + \beta_2 * DPeriod\ 3 + \beta_3 * DPeriod\ 4 + \beta_4 * DPeriod\ 5 + \beta_6 * SIZE + \beta_7 * BM + \beta_8 * COVERAGE + \beta_9 * SPECIAL + \beta_{10} * LOSS + \beta_{11} * DIFFICULTY + e \quad (2)$$

where *DPeriod 2* (*3, 4, or 5*) is an indicator variable that takes the value of one if the forecast revision is issued in *Period 2* (*3, 4, or 5*), and zero otherwise; *SIZE* is the natural logarithm of the firm's market value of equity at the end of quarter *q-1*; *BM* is book value of equity divided by the market value of equity at the end of quarter *q-1*; *COVERAGE* is the natural logarithm of the number of analysts who issue quarterly EPS forecast between quarter *q-1* and quarter *q* earnings announcement dates; *SPECIAL* is COMPUSTAT special items divided by sales for quarter *q-1*; *LOSS* is an indicator variable that takes the value of one if quarter *q-1* EPS is negative, and zero otherwise; and *DIFFICULTY* is the analysts' mean consensus forecast error for quarter *q-1* EPS.

We exclude revisions in *Period 1* (days (0, 1)) from the multivariate regressions because (1) the consensus forecast is not defined on day 0 and the consensus forecast error on day 1 exists only when at least one analyst issues forecast on day 0, and (2) doing so is consistent with our approach in the stock price response analysis where we exclude such revisions to avoid the confounding effects of market reactions to the management earnings forecast itself. We control for the information environment that may affect analyst forecast error. Following the prior literature, we control for firm size (Clement and Tse 2005, Mikhail et al. 1997), book-to-market ratio, and number of analysts following the firm (Stickel 1989). Inclusion of the number of analysts following the firm also controls for competition among analysts (Abarbanell et al. 1995). Earnings characteristics may also affect analysts' forecast timing following earnings announcements

(Stickel 1989, Zhang 2008). To control for earnings characteristics, we include analyst forecast errors for prior quarter earnings (Zhang 2008), an indicator for negative earnings (Hayn 1995), and special items in earnings (Bradshaw and Sloan 2002).

We estimate equation (2) for the sample revisions for firms with and without management earnings forecasts and compare the coefficients on *DPeriod 2-DPeriod 5* between the two groups. We also estimate the regression for sample revisions in the pre- and post-Reg FD period separately.

3.4. Stock-Price Response to Forecast Revisions

To examine whether management earnings forecasts influence the return sensitivity to forecast revisions over the event time, we regress stock-price responses on forecast revisions interacted with event-time indicators for the subsample of revisions for firms with and without management earnings forecasts. We measure the stock-price response to earnings forecast revision, $R_{t,\ t+2}$, as the cumulative abnormal stock returns over the three-day window from day t through day $t+2$, consistent with the measure in Ivković and Jegadeesh (2004). Specifically,

$$R_{t,\ t+2} = \sum_{\tau=t}^{\tau=t+2} (r_\tau - r_\tau^{VWCRSP}) \tag{3}$$

where r_τ and r_τ^{VWCRSP} denote raw returns on the stock and the return on the value-weighted CRSP index.

Consistent with Ivković and Jegadeesh (2004), the forecast revision, *FR*, is defined as:

$$FR_t = 100 \text{ x } [(new\_forecast_t - old\_forecast) / \text{Abs}(old\_forecast)] \tag{4}$$

where $new\_forecast_t$ is the revised forecast on day t and *old_forecast* is the last forecast by the same analyst before the revision. Following Ivković and Jegadeesh (2004), we truncate FR_t at 50% and -50%.

To make it consistent with Ivković and Jegadeesh (2004), the regression model uses revision timing in three periods: *D1* (days (7, 32) and days (-30, -6)), *D2* (days (-5, -1)), and *D3* (days (2, 6)). *D1* corresponds to *Periods 3* and 4, *D2* corresponds to *Period 5*, and *D3* corresponds to *Period 2*.

$$R_{t,\,t+2} = \alpha_0 + \alpha_1 * FR * D1 + \alpha_2 * FR * D2 + \alpha_3 * FR * D3 + \alpha_4 * SIZE + \alpha_5 * BM + \alpha_6 * COVERAGE + \alpha_7 * SPECIAL + \alpha_8 * LOSS + \alpha_9 * DIFFICULTY + \eta \quad (5)$$

where *D1* is an indicator variable that takes the value of one if an analyst's forecast is issued between days (-30, -6) or (7, 32), and zero otherwise; *D2* is an indicator variable that takes the value of one if an analyst's forecast is issued between days (-5, -1), and zero otherwise; and *D3* is an indicator variable that takes the value of one if an analyst's forecast is issued between days (2, 6), and zero otherwise.

The three event-time indicator variables, *D2*, *D3*, and *D1*, split the event time into three periods as the pre-, post-, and non-announcement periods, respectively. Following Ivković and Jegadeesh (2004), we exclude the event days (0, 1) because price reactions on these days include price reactions to the information contained in prior-quarter earnings announcements. Although Ivković and Jegadeesh (2004) do not include the control variables in the regression, we include them to control for firms' information environment and earnings characteristics. Excluding these control variables does not affect our results in any material way.

Ivković and Jegadeesh (2004) find that stock-price responses to earnings forecast revisions in the period immediately after the prior-quarter earnings announcement are weaker than those in the period immediately prior to the current-quarter earnings announcement ($\alpha_2 > \alpha_3$). If Ivković and Jegadeesh's (2004) results are driven by the temporal pattern of management earnings forecasts, we may observe a weaker stock-price response to forecast revisions in the post-announcement period only in the sample of firms that issue management earnings forecasts, but not in the sample of firms without such forecasts.

3.5. Pre- and Post-Reg FD Periods

We also examine the timing and information content of analyst forecast revisions in pre- and post-Reg FD periods separately to better understand the relative importance of the sources of value that analysts bring to the market. Reg FD, which became effective on October 23, 2000, has changed the way that firms communicate with financial analysts and other market participants. Reg FD is intended to level

the playing field and prohibits selective disclosure of material information to a subset of market participants, such as analysts and institutional investors, without simultaneously disclosing the same information to the investing public. For example, an advance warning about earnings telephoned to a security analyst must also be immediately released to the public. Following implementation of Reg FD, analysts no longer have access to manager's private information before that information becomes public.

Prior studies show that Reg FD leads to changes in analysts' information environment. Irani and Karamanou (2003) find a decrease in analyst following after the passage of Reg FD. Agrawal et al. (2006) find that individual and consensus forecasts become less accurate post-Reg FD, particularly for early forecasts and for smaller companies. Irani and Karamanou (2003) and Agrawal et al. (2006) also find an increase in forecast dispersion following Reg FD. Janakiraman et al. (2007) suggest that the timing advantage of favored analysts decrease after Reg FD. Specifically, they show that the first forecast horizon of favored analysts decrease more after Reg FD than that of other analysts. Changes in analysts' information environment can potentially alter the relative precision of analysts' information across event time and the value that the market attaches to revisions.

More importantly, Kross and Suk (2012) show that Reg FD influences the interplay between management earnings forecasts and analyst forecast revisions. Specifically, they find that the speed and frequency of individual analysts' forecast revisions following public disclosures such as management earnings forecasts increase dramatically after Reg FD. We define the sample period between 1996 and 2000 as the pre-Reg FD period and that between 2001 and 2009 as the post-Reg FD period.[6]

4. Empirical Results

4.1. Timing of Management Earnings Forecasts and Analyst Forecast Revisions

Panel A of Table 2 reports the frequency of management earnings forecasts over the event time. More than 55% of management earnings forecasts are issued on the prior-quarter earnings announcement date. Overall, about 57% of management earnings forecasts are issued during the announcement period of quarter *q-1* earnings

[6] Reg FD becomes effective in October 2000. Our results are qualitatively the same even if we exclude year 2000 from the pre-FD period to avoid the transition effect.

(*Period 1*).[7] Outside *Period 1, Period 4* is the period in which most management earnings forecasts are issued (about 30%), followed by *Period 3* (about 10%).

The temporal pattern of the issuance of management earnings forecasts drastically changes around Reg FD. During the pre-Reg FD period, less than 12% (14%) of management earnings forecasts are issued at the time of the quarter *q-1* earnings announcement (during the announcement period, *Period 1*). The majority of management earnings forecasts (almost 62%) are issued in *Period 4*. In contrast, during the post-Reg FD period, about 63% (64%) of management earnings forecasts are issued at the time of the prior-quarter earnings announcement (during *Period 1*). Only about 25% are issued in *Period 4*. This dramatic shift might be attributable to changes in disclosure practices after Reg FD.

Panel B of Table 2 reports the frequency of analyst forecast revisions over the event time. Timing of analyst forecast revisions are more dispersed than that of management earnings forecasts but follow a similar temporal pattern. During the entire sample period of 1996-2009, about 40% of analyst forecasts are issued either on the day of the earnings announcement or on the following day (i.e., *Period 1*). Outside *Period 1*, *Period 4* is the period during which most analyst forecast revisions are issued (about 27%), followed by *Period 3* (about 16%).

The shift in the temporal pattern around Reg FD for forecast revisions is also similar to the shift for management earnings forecasts. During the pre-Reg FD period, only about 22% of revisions are issued in the earnings announcement period (*Period 1*), while about 34% and 22% of revisions are issued in *Period 4* and *Period 3*, respectively. In contrast, during the post-Reg FD period, about 45% of forecast revisions are concentrated in *Period 1*, and only about 26% and 14% of revisions are issued in *Period 4* and *Period 3*, respectively. This change in the temporal pattern of analyst forecast revisions around Reg FD seems to be more pronounced for firms that issue management earnings forecasts than for firms without management earnings forecasts. For firms that (do not) issue management earnings forecasts during the quarter, analysts

[7] Although these prompt forecast revisions may provide valuable insights with respect to the analysts' role in interpreting public information (Zhang 2008; Livnat ad Zhang 2012), they are less useful in our setting because it is virtually impossible to disentangle market reactions to forecast revisions from market reactions to prior-quarter earnings announcement itself.

revise about 18% (23%) of their forecasts in *Period 1* and 43% (32%) of their forecasts in *Period 4* in the pre-Reg FD period. In the post-Reg FD period, analysts revise 46% (44%) of their forecasts in *Period 1* and only 29% (24%) of their forecasts in *Period 4*, when firms (do not) issue earnings guidance during the quarter.

4.2. Timing of Forecast Revisions and Relative Forecast Errors

Table 3 reports relative forecast errors over five forecast periods. Forecast revisions in *Period 1* include only forecast revisions on day (1) because relative forecast errors for revisions on day (0) cannot be defined, as we determine the consensus forecast based on forecasts issued since the prior-quarter earnings announcement.

Ivković and Jegadeesh (2004) find that relative forecast errors are more negative in the pre-announcement period and less negative during the post-announcement period, suggesting that improvement in analyst forecast accuracy through forecast revisions are greatest in the pre-announcement period. For the full sample of forecast revisions, consistent with Ivković and Jegadeesh (2004), we find that relative forecast errors in the pre-announcement period (*Periods 4* and *5*) are more negative than those in the post-announcement period (*Periods 2,* and *3*). Also consistent with Ivković and Jegadeesh (2004), relative forecast errors in *Period 5* are less negative than those in *Period 4*. We observe a similar temporal pattern of relative forecast errors in the pre- and post-Reg FD periods. The improvement in analyst forecast accuracy over time is more significant in the pre-Reg FD period than in the post-Reg FD period, however, suggesting that the disappearance of implicit guidance after Reg FD might have decreased analysts' information advantage later in the quarter (Janakiraman et al. 2007).[8]

We also compare relative forecast errors between sample revisions for firms with management earnings forecasts and those for firms without management earnings forecasts. We find that relative forecast errors are more negative for firms with management earnings forecasts than those for firms without such forecasts. Greater improvement in forecast accuracy through the forecast revision for firms with management earnings forecasts relative to those for firms without such forecasts are observed both

[8] Less negative relative forecast errors in the post-Reg FD period are consistent with a decrease in analysts' forecast quality after Reg FD (Agrawal et al. 2006).

in the pre- and post-Reg FD periods. This evidence suggests that management earnings forecasts influence the analysts' information environment.

Table 4 reports results from the regression analysis. Because the residuals may be correlated across analysts and/or over time, we report test statistics and significance levels for all regressions based on standard errors adjusted by a two-dimensional cluster at the analyst and quarter levels (Gow et al. 2010, Petersen 2008). We exclude revisions made in *Period 1* for reasons explained earlier. The results including revisions in *Period 1* (actually revisions on day (1)) are qualitatively the same as those tabulated in Table 4.[9]

As shown in Table 4, consistent with results in Table 3, relative forecast errors in *Period 4* are the most negative, followed by those in *Period 5*, and then *Period 3*. We also compare relative forecast errors in different periods between firms with and without management earnings forecasts. Again, consistent with results in Table 3, we find that improvement in analyst forecast accuracy through the forecast revision is greater (i.e., more negative coefficients on *DPeriod2, DPeriod3, DPeriod4,* and *DPeriod5*) for firms with management earnings forecasts than for firms without management earnings forecasts. Differences in coefficients are statistically significant at the one-percent level.

Similar patterns are observed in both the pre- and post-Reg FD periods (untabulated). Improvement in analyst forecast accuracy through revisions is greater in the pre-announcement period than in the post-announcement period, and improvement in forecast accuracy is more pronounced for firms that issue management earnings forecasts. In sum, although our evidence for relative forecast errors is similar to that in Ivković and Jegadeesh (2004), analysts' ability to improve forecasts through revisions is significantly associated with the incidence of management earnings forecasts of firms whose earnings are forecasted.

[9] We estimate forecast-error regressions and price-reaction regressions for firms with and without management earnings forecasts separately, because we need to compare coefficients not only between two subsamples but also across different periods for each subsample. The results from the pooled regressions with an indicator variable for the revisions with management earnings forecasts, along with interactions of the indicator variable and other variables, are qualitatively similar to those reported in Tables 4 and 5.

To further gauge the influence of management earnings forecasts on the temporal pattern of relative forecast errors, we graph the frequency of management earnings forecasts and the mean relative forecast accuracy for firms with and without management earnings forecasts over the event time. In Figure 1, event time is expressed as the number of weeks from the prior-quarter earnings announcement (for revisions made at or before the midpoint of the quarter) or the current-quarter earnings announcement (for revisions made after the midpoint of the quarter). We present relative forecast accuracy rather than relative forecast error for ease of presentation. We multiply relative forecast errors by negative one to calculate relative forecast accuracy and exclude day (0) because relative forecast error is undefined for revisions on the prior-quarter earnings announcement date.

As shown in Figure 1, the temporal pattern of relative forecast accuracy for firms that issue management earnings forecasts is remarkably similar to the temporal pattern of the frequency of management earnings forecasts. Specifically, relative forecast accuracy is higher in the period during which management earnings forecasts are more frequently issued. For firms that do not issue management earnings forecasts, the temporal pattern of relative forecast accuracy is not as apparent as for firms with management earnings forecasts. The similarity in the temporal pattern of relative forecast accuracy and the frequency of management earnings forecasts over the event time is even more pronounced in the post-Reg FD period, potentially because revisions in the pre-Reg FD period are influenced not only by management earnings forecasts but also by implicit and selective management guidance of quarterly earnings. This evidence is consistent with Kross and Suk (2012) who find increases in analysts' use of public information such as management earnings forecasts after Reg FD.

4.3 Price Reaction to Forecast Revisions

So far, we show that (1) the temporal pattern of analyst earnings forecast revisions mimics the temporal pattern of management earnings forecasts, (2) the shift in the temporal patterns of management earnings forecasts and analyst forecast revisions around Reg FD are similar, (3) relative forecast errors are

more negative for firms with management earnings forecasts, and (4) the temporal pattern of relative forecast errors is remarkably similar to the temporal pattern of management earnings forecasts.

In this section, we examine whether the information content of analyst forecast revisions at various points in the event time differs depending on whether or not firms issue management earnings forecasts. Ivković and Jegadeesh (2004) find that stock-price responses to earnings forecast revisions are the weakest in the period immediately after the prior-quarter earnings announcement. If Ivković and Jegadeesh's (2004) results are driven by the temporal pattern of management earnings forecasts, we may observe a weaker stock-price response to forecast revisions in the post-announcement period only in the sample of firms that issue management earnings forecasts, but not in the sample of firms without such forecasts.

We estimate regression equation (5) and report the results for the entire sample period (1996-2009) in Panel A of Table 5. Again, we report test statistics and significance levels for all regressions based on standard errors adjusted by a two-dimensional cluster at the analyst and quarter levels. In Panel A, for the full sample of forecast revisions, the coefficient on *FR*D3* is smaller than the coefficients on *FR*D1* and *FR*D2*, consistent with Ivković and Jegadeesh (2004). When we partition the sample into forecast revisions for firms with and without management earnings forecasts, however, Ivković and Jegadeesh's (2004) result holds only for the sample of firms that issue management earnings forecasts. For firms that do not issue management earnings forecasts, the coefficient on *FR*D2* and the coefficient on *FR*D3* are not statistically different (t-value = 0.58), suggesting that the price impact of analyst forecast revisions in the post-announcement period is comparable to that of revisions in the pre-announcement period.

Management earnings forecasts are public disclosures, and as such, price reactions to analyst forecast revisions following management earnings forecasts reflect investors' appreciation of analysts' skill at interpreting *public* information. In Table 2 and Figure 1, we show that management earnings forecasts are most frequent in *Periods 3* and *4*, which corresponds to *D1* in Table 5. Note that we show that the stock-price reaction to revisions is the strongest in *D1* (in Panel A of Table 5). Thus, the strongest

market reaction to revisions in this period might actually be the reaction to management earnings forecasts, not analyst forecast revisions.

We also find that stock-price responses to forecast revisions are greater for firms with management earnings forecasts than for firms without management earnings forecasts during the non-announcement period (*D1*) and in the period immediately before the current-quarter earnings announcement (*D2*), while the opposite holds in the period immediately following the prior-quarter earnings announcement (*D3*). Because management earnings forecasts are most frequent in *Period 4*, as shown in Table 2, and because analysts tend to revised forecasts over several days subsequent to management earnings forecasts (Cotter et al. 2006), it appears that the temporal pattern of management earnings forecasts influences the different temporal patterns of the information content of revisions between firms with and without management earnings forecasts.

We report the regression results for the pre- and post- Reg FD period in Panel B. Again, for both pre- and post-Reg FD subperiods, Ivković and Jegadeesh's (2004) finding of weaker stock-price responses to forecast revisions in the post-announcement period holds only in the sample of revisions for firms that issue management earnings forecasts. In the sample of revisions for firms that do not issue management earnings forecasts, the difference in the coefficient on *FR*D2* and that on *FR*D3* is statistically insignificant. Thus, it appears that Ivković and Jegadeesh's (2004) results are driven by the temporal pattern of management earnings forecasts.

We also estimate regressions for upward and downward revisions separately and summarize the results in Table 6. Ivković and Jegadeesh (2004) find that the coefficient on *FR*D2* is greatest, followed by the coefficient on *FR*D1*. They find that the coefficient on *FR*D3* is negative. We find that Ivković and Jegadeesh's (2004) result holds only for the pre-Reg FD period. For the post-Reg FD period, the difference between the coefficient on *FR*D1* and that on *FR*D2* is statistically insignificant. For the sample of downward revisions, we find that the coefficient on *FR*D1* is the greatest, consistent with Ivković and Jegadeesh (2004).

More importantly though, Ivković and Jegadeesh's (2004) finding that the coefficient on *FR*D3* is smaller than that on *FR*D2* holds (i.e., weaker return responses to forecast revisions in the period

immediately following the earnings announcement than those in the period immediately prior to the earnings announcement) only for upward and downward revisions for firms that issue management earnings forecasts. For firms that do not issue management earnings forecasts, stock-price responses to forecast revisions in the week following the prior-quarter earnings announcement are statistically indifferent from those in the week immediately before the current-quarter earnings announcement, except for upward revisions in the pre-Reg FD period.[10]

Return response to management earnings forecasts may confound return response to forecast revisions issued concurrently with management earnings forecasts. To examine whether return response to management earnings forecasts drives the results for firms with management earnings forecasts, we re-estimate equation (5) excluding forecast revisions issued within two trading days from management earnings forecasts. Note that the results for forecast revisions for firms without management earnings forecasts are not affected by this elimination. Untabulated results show that, for firms with management earnings forecasts, the coefficients on the interaction terms *FR*D1* and *FR*D2* are substantially smaller than those reported in Table 5, Panel A, making them comparable to those for firms without management earnings forecasts. The coefficient on *FR*D3*, however, is similar to that in Table 5, Panel A. We continue to find that the coefficient on *FR*D2* is greater than the coefficient on *FR*D3* only for firms with management earnings forecasts. For firms without management earnings forecasts, market reactions to forecast revisions in the period immediately following the earnings announcement (i.e. *D3*) are statistically indifferent from those in the period immediately prior to the earnings announcement (i.e., *D2*).

Finally, we directly control for the confounding effect of management earnings forecasts by including management earnings forecast news to the regression equation (5). We identify management forecasts issued between one day prior to and two days after individual analysts' forecast revision and compute management earnings forecast news, *MF*, as management earnings forecast minus mean

[10] Selective disclosure to a group of analysts may contribute to a greater price impact of upward revisions in the pre-announcement period during the pre-Reg FD period.

consensus analyst forecast on the day before the issuance of management forecast, deflated by the absolute value of mean consensus analyst forecast. We assign zero value to *MF* if there is no management forecast issued prior to analyst forecast revision. We interact *MF* with the three event-time indicator variables, *D2*, *D3*, and *D1*, that split the event time into three periods as the pre-, post-, and non-announcement periods, respectively. If management earnings forecast is a confounding factor that explains the temporal pattern of the market reaction to forecast revisions documented in Ivković and Jegadeesh (2004), the difference between the coefficient on *FR*D2* and the coefficient on *FR*D3* will become insignificant once we control for the effect of management earnings forecast news.

Table 7 reports the results. The results with the full sample of analyst forecast revisions show significantly positive pricing impact of management forecasts issued in pre-announcement (*D2*) and non-announcement periods (*D1*). More importantly, the difference between the coefficient on *FR*D2* and the coefficient on *FR*D3* is insignificant after controlling for the effect of management earnings forecast news. We find the similar results for both the pre-FD and post-FD period. Thus the evidence in Table 7 suggests that weaker (stronger) price reaction to forecast revisions issued immediately after (before) the earnings announcement is largely attributable for the confounding effect of management earnings forecasts.

In sum, we find that Ivković and Jegadeesh's (2004) results on the information content of analyst forecast revisions at various points in the event time hold only for firms that issue management earnings forecasts. We show that for firms without management earnings forecasts, the information content of forecast revisions in the period immediately following the prior-quarter earnings announcement is similar to that in the period immediately prior to the current-quarter earnings announcement. We also show that the temporal pattern of the market reaction to forecast revisions documented in Ivković and Jegadeesh (2004) disappears when we control for the confounding effect of management earnings forecasts.

5. Conclusions

Ivković and Jegadeesh (2004) find that the relative precision and information content of analyst forecast revisions are lower immediately after the prior-quarter earnings announcement and greater before

the current-quarter earnings announcement. They conclude that the value of analysts' informational advantage stems primarily from analysts' ability to collect and analyze private information rather than from analysts' skill at interpreting public information. We show that Ivković and Jegadeesh's (2004) results are largely driven by the confounding effect of management earnings forecasts.

We find that the temporal pattern of analyst forecast revisions across the event time relative to earnings announcements mimics the temporal pattern of management earnings forecasts. Furthermore, the temporal pattern of relative forecast errors and that of management earnings forecasts are remarkably similar. We also find that improvement in analysts' forecast accuracy through revisions is greater for firms that issue management earnings forecasts. More importantly, our results show that Ivković and Jegadeesh's (2004) finding of weaker stock-price responses to forecast revisions in the period immediately after the prior-quarter earnings announcement holds only for the sample of firms that issue management earnings forecasts. For firms that do not issue management earnings forecasts, stock-price responses to forecast revisions in the week following the prior-quarter earnings announcement is as strong as that in the week immediately before the current-quarter earnings announcement. This evidence is more pronounced in the post-Reg FD period. We further show that weaker (stronger) price reaction to forecast revisions issued immediately after (before) the earnings announcement, the evidence documented in Ivković and Jegadeesh (2004), disappears when we control for the effect of management earnings forecasts news. Thus the results suggest that management earnings forecasts affect the price impact of forecast revisions over the event time.

Overall, evidence in our study suggests that management earnings forecasts influence the timing as well as the relative accuracy and information content of analyst forecast revisions across the event time. To the extent that management earnings forecasts are public disclosures, our results cast doubt on Ivković and Jegadeesh's (2004) conclusion that analysts' ability to collect and process private information is the dominant source of value that analysts bring to the market. We caution that our results cannot be interpreted as evidence that the value of analyst forecasts does not come from analysts' ability to collect and process private information. Given the extent research that document the importance of acquiring

information not readily available by exploiting a change in analyst regulations, whose effect is to raise the cost of obtaining such information (Gintshel and Markov 2004), or an existence of educational ties to managers, whose effect is to lower the cost of obtaining it (Cohen et al. 2010), it seems clear that the analysts' information discovery role is important. However, evaluating the *relative* importance of two sources of the value of analyst research, analysts' skill at interpreting public information and/or their ability to collect and process private information, based on the temporal pattern of the price impact of analyst forecast revision, is problematic because of the confounding effect of management earnings forecasts.

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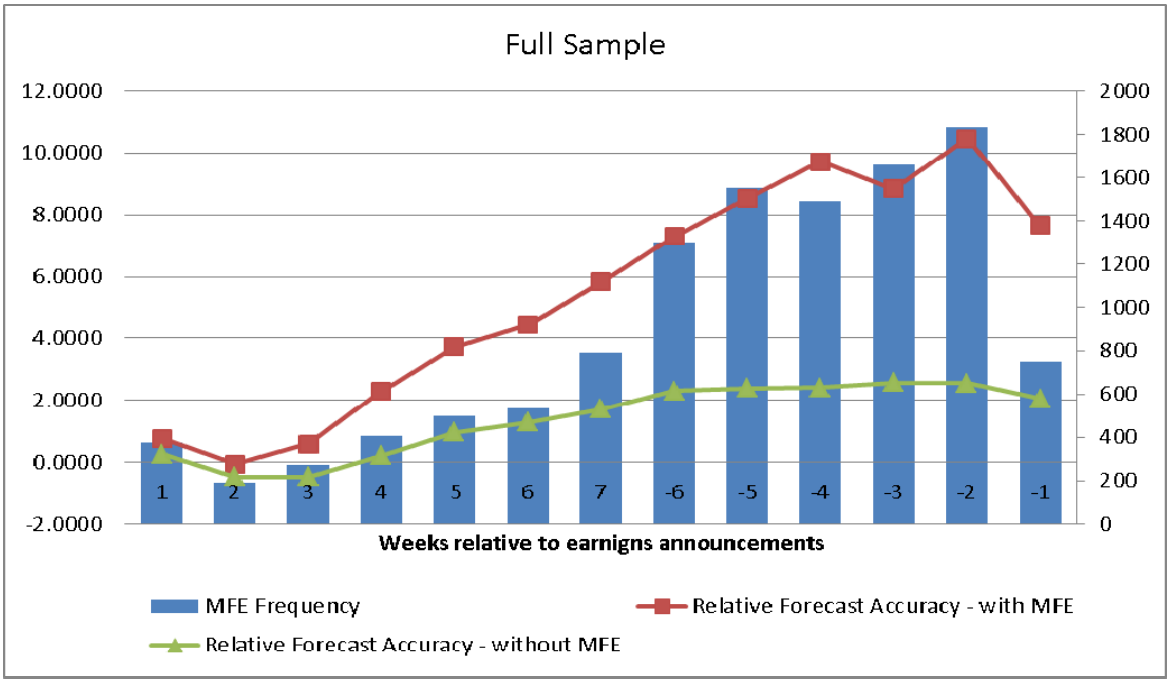
Figure 1
Frequency of management earnings forecast and relative forecast accuracy for firms with and without management earnings forecasts

Panel A: Full sample of analyst forecast revisions



Panel B: Analyst forecast revisions in the pre-Reg FD period

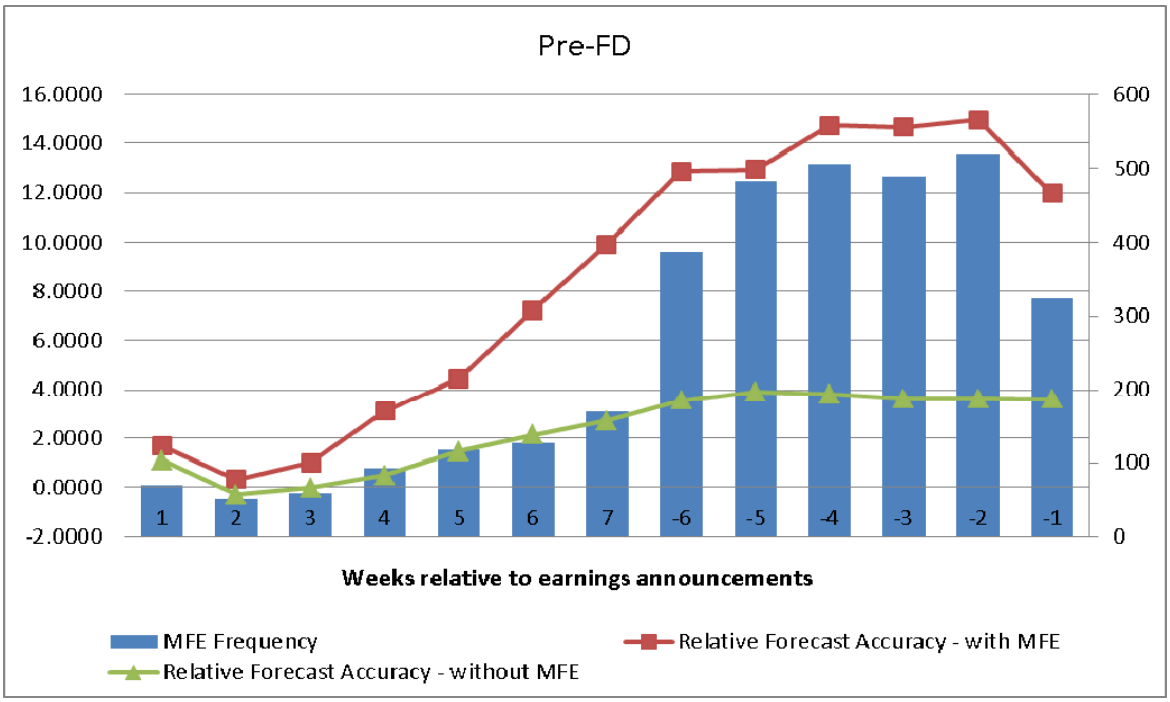
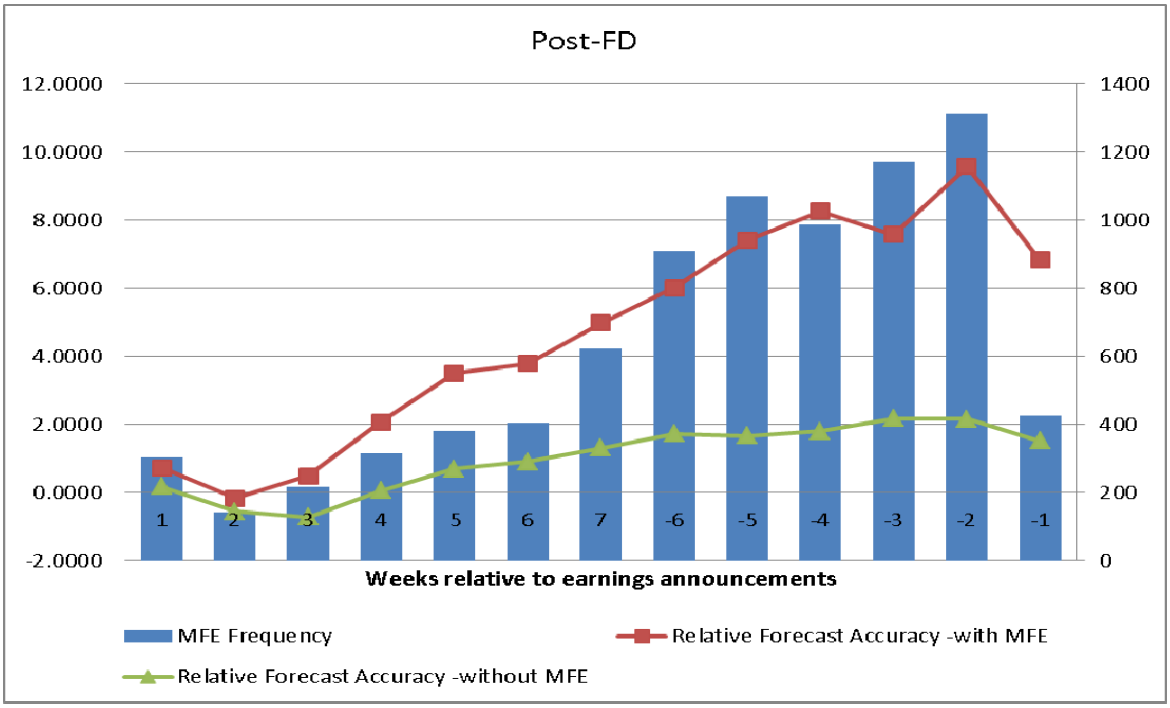


Figure 1 continued

Panel C: Analyst forecast revisions in the post-Reg FD period



The bar graph presents frequency of management earnings forecasts (MEFs) over the event time. The line graphs present the mean relative forecast accuracy for firms with and without management earnings forecasts over the event time. Following (Ivković and Jegadeesh 2004), event time is expressed as the number of weeks from the prior-quarter earnings announcement (for revisions made at or before the midpoint of the quarter) or the current quarter earnings announcement (for revisions made after the midpoint of the quarter) except Week 1. Week 1 includes only day (1), the first trading day after the prior-quarter earnings announcement. We exclude day (0) because relative forecast error is undefined for revisions on the prior-quarter earnings announcement date. Relative forecast accuracy is calculated as relative forecast error multiplied by (-1) and the greater magnitude of relative forecast accuracy represents more accurate analyst forecast relative to the existing consensus forecast. Left-side Y-axis represents relative forecast accuracy and right-side Y-axis represents the frequency of MEFs.

Table 1
Sample selection and distribution

Panel A: Sample selection

One quarter ahead analyst forecast revisions from IBES detail file	1,028,348
Less: Revisions issued between two consecutive earnings announcement dates that are less than 30 trading days apart or more than 100 trading days apart	(68,878)
Less: Revisions issued later than 32 trading days after the previous earnings announcement and earlier than 30 trading days before the current earnings announcement	(39,006)
Less: Revisions of which stock returns are not available	(37,477)
Less: Revisions of which the absolute value of the revision is greater than 50%	(127,599)
Less: Revisions with extreme values of stock returns (top and bottom 0.05% of the distribution)	(691)
Less: Revisions with extreme values of individual and consensus forecast error (greater than 100%)	(52,177)
Less: Revisions of which control variables are not available	(31,641)
Number of observations for revision timing distributions in Table 2	670,879
Less: Revisions of which relative forecast error cannot be determined	(174,139)
Number of revisions with relative forecast error in Table 3	496,740
Less: Revisions issued on the day after the earnings announcement	(111,954)
Number of revisions used for regressions in Tables 4 and 5	384,786

Panel B: Sample distribution by year

Year	Number of Revisions	# of firms	Average Number of Analyst Following the Firm
1996	19,953	2,366	2.85
1997	20,321	2,531	2.82
1998	24,682	2,671	3.14
1999	24,636	2,539	3.33
2000	19,355	2,224	3.36
2001	28,967	2,295	4.00
2002	29,376	2,333	3.91
2003	35,116	2,374	4.18
2004	44,509	2,642	4.56
2005	46,912	2,870	4.57
2006	49,068	3,011	4.52
2007	49,883	3,094	4.50
2008	55,960	3,045	4.77
2009	48,002	2,750	5.03
Total	496,740	2,625	4.06

Panel A summarizes the sample selection procedure. Panel B presents the sample distribution by year. We obtain analysts' one-quarter-ahead earnings per share forecast from I/B/E/S detail files for the period from January 1996 to December 2009. Earnings announcement dates are obtained from COMPUSTAT.

Table 2
Timing of management earnings forecasts and analyst forecast revisions

Panel A: Timing of management earnings forecasts

	1996-2009		Pre-Reg FD		Post-Reg FD	
Period	N	%	N	%	N	%
(Day 0)	14,356	55.19	457	11.88	13,899	62.71
(Day 1)	374	1.44	69	1.79	305	1.38
2	193	0.74	51	1.33	142	0.64
3	2,503	9.62	564	14.66	1,939	8.75
4	7,833	30.12	2,381	61.91	5,452	24.60
5	751	2.89	324	8.42	427	1.93
Total	26,010	100	3,846	100	22,164	100

Panel B: Timing of analyst forecast revisions

1996-2009	Full Sample		with MEF		without MEF	
Period	N	%	N	%	N	%
(Day 0)	78,776	11.74	22,600	11.50	56,176	11.84
(Day 1)	189,940	28.31	60,169	30.62	129,771	27.36
2	82,830	12.35	17,669	8.99	65,161	13.74
3	104,761	15.62	26,499	13.49	78,262	16.50
4	184,413	27.49	60,369	30.72	124,044	26.15
5	30,159	4.50	9,190	4.68	20,969	4.42
Total	670,879	100	196,496	100	474,383	100

Pre-Reg FD	Full Sample		with MEF		without MEF	
Period	N	%	N	%	N	%
(Day 0)	5,492	3.88	652	2.44	4,840	4.21
(Day 1)	25,719	18.15	4,262	15.96	21,457	18.66
2	24,227	17.10	3,588	13.44	20,639	17.95
3	31,393	22.15	5,183	19.41	26,210	22.79
4	48,002	33.88	11,527	43.17	36,475	31.72
5	6,866	4.85	1,492	5.59	5,374	4.67
Total	141,699	100	26,704	100	114,995	100

Post-Reg FD	Full Sample		with MEF		without MEF	
Period	N	%	N	%	N	%
(Day 0)	73,284	13.85	21,948	12.93	51,336	14.28
(Day 1)	164,221	31.03	55,907	32.93	108,314	30.14
2	58,603	11.07	14,081	8.29	44,522	12.39
3	73,368	13.86	21,316	12.55	52,052	14.48
4	136,411	25.78	48,842	28.77	87,569	24.37
5	23,293	4.40	7,698	4.53	15,595	4.34
Total	529,180	100	169,792	100	359,388	100

Table 2 continued

Panel A reports the frequency of management earnings forecasts (MEFs) over the event time based on five forecast periods between consecutive two quarterly earnings announcement dates (EADs). We define years between 1996 and 2000 as pre-Reg FD and between 2001 and 2009 as post-Reg FD. We obtain managements earnings forecasts of quarterly earnings from the Company Issued Guidelines (CIG) of Thomson Financial's First Call Historical Database. Panel B presents analyst forecast revision frequency over five forecast periods. We further divide sample revisions into revisions by firms that issue management earnings forecasts (with MEF) and those by firms that do not issue management earnings forecasts (without MEF) during the quarter. Data on analyst forecast are obtained from the I/B/E/S detail tape and earnings announcement dates are from COMPUSTAT.

Forecast revisions are grouped into the following five periods based on timing:

Period 1: days (0, 1) (announcement period of quarter *q-1* earnings);
Period 2: days (2, 6) (immediate post-announcement period of quarter *q-1* earnings);
Period 3: days (7, 32) (non-immediate post-announcement period of quarter *q-1* earnings);
Period 4: days (-30, -6) (non-immediate pre-announcement period of quarter *q* earnings); and
Period 5: days (-5, -1) (immediate pre-announcement period of quarter *q* earnings);

where quarter *q* is the quarter for which earnings are being forecasted. Trading days 0 through 32 are measured as the number of trading days relative to EAD_{q-1}, and trading days -30 through -1 are measured as the number of trading days relative to EAD_q. *Period 1* is further divided into Day 0 and 1 relative to EAD_{q-1}.

Table 3
Forecast timing and relative forecast errors

	Full Sample			with MEF			without MEF			Difference			
1996-2009													
Period	N	Mean	Median	N	Mean	Median	N	Mean	Median	Mean	p-value	Median	p-value
1	111,954	-0.4291	0.0000	38,343	-0.7664	0.0000	73,611	-0.2534	0.0000	-0.5131	<.0001	0.0000	<.0001
2	70,643	0.3788	0.0000	16,122	0.0678	0.0000	54,521	0.4708	0.0000	-0.4029	<.0001	0.0000	<.0001
3	100,971	-1.5237	-0.6466	26,191	-3.6709	-1.5789	74,780	-0.7717	-0.2751	-2.8992	<.0001	-1.3038	<.0001
4	183,147	-4.6221	-2.0833	60,166	-9.0509	-4.8780	122,981	-2.4553	-1.0761	-6.5955	<.0001	-3.8020	<.0001
5	30,025	-3.7672	-1.5406	9,170	-7.6629	-3.6705	20,855	-2.0542	-0.8519	-5.6086	<.0001	-2.8187	<.0001
Total	496,740			149,992			346,748						
Pre-Reg FD													
Period	N	Mean	Median	N	Mean	Median	N	Mean	Median	Mean	p-value	Median	p-value
1	6,546	-1.2049	0.0000	1,265	-1.6579	0.0000	5,281	-1.0963	0.0000	-0.5616	0.0977	0.0000	0.0231
2	19,178	0.1908	0.0000	3,104	-0.3204	0.0000	16,074	0.2896	0.0000	-0.6100	0.0021	0.0000	0.0261
3	29,128	-2.0618	-0.6610	5,010	-5.5633	-2.4787	24,118	-1.3344	-0.3769	-4.2289	<.0001	-2.1019	<.0001
4	47,298	-6.2159	-2.5510	11,439	-14.0567	-8.5106	35,859	-3.7147	-1.5152	-10.3419	<.0001	-6.9955	<.0001
5	6,797	-5.4225	-2.1951	1,480	-11.9631	-7.1226	5,317	-3.6019	-1.4286	-8.3613	<.0001	-5.6940	<.0001
Total	108,947			22,298			86,649						
Post-Reg FD													
Period	N	Mean	Median	N	Mean	Median	N	Mean	Median	Mean	p-value	Median	p-value
1	105,408	-0.3809	0.0000	37,078	-0.7360	0.0000	68,330	-0.1882	0.0000	-0.5478	<.0001	0.0000	<.0001
2	51,465	0.4489	0.0000	13,018	0.1604	0.0000	38,447	0.5466	0.0000	-0.3861	0.0013	0.0000	<.0001
3	71,843	-1.3056	-0.6398	21,181	-3.2233	-1.4151	50,662	-0.5038	-0.2232	-2.7195	<.0001	-1.1919	<.0001
4	135,849	-4.0671	-1.9048	48,727	-7.8757	-4.2177	87,122	-1.9370	-0.8706	-5.9388	<.0001	-3.3471	<.0001
5	23,228	-3.2828	-1.3889	7,690	-6.8353	-3.2051	15,538	-1.5246	-0.6624	-5.3106	<.0001	-2.5427	<.0001
Total	387,793			127,694			260,099						

Table 3 continued

This table reports summary statistics of relative analyst forecast errors over five forecast period. *RFE* (relative forecast error) is the absolute value of an individual analyst's newly revised forecast error minus the absolute value of the mean consensus forecast error measured one day before the analyst forecast revision, deflated by absolute value of actual earnings. We truncate the individual and consensus forecast error at 100%. *RFE* on day (0) is not defined because we compute the consensus forecast by the average of forecasts issued after EAD_{q-1} (quarter *q-1* earnings announcement date).

We test the difference in *RFE* between revisions by firms that issue management earnings forecasts (with MEF) and those by firms that do not issue management earnings forecasts (without MEF) during the quarter. Test of difference in means is based on t-test and test of difference in median is based on Wilcoxon rank sum test. Two-tailed p-values are reported. We define years between 1996 and 2000 and pre-Reg FD and between 2001 and 2009 as post-Reg FD.

Forecast revisions are grouped into the following five periods based on timing:

Period 1: days (0, 1) (announcement period of quarter *q-1* earnings);
Period 2: days (2, 6) (immediate post-announcement period of quarter *q-1* earnings);
Period 3: days (7, 32) (non-immediate post-announcement period of quarter *q-1* earnings);
Period 4: days (-30, -6) (non-immediate pre-announcement period of quarter *q* earnings); and
Period 5: days (-5, -1) (immediate pre-announcement period of quarter *q* earnings);

where quarter *q* is the quarter for which earnings are being forecasted. Trading days 0 through 32 are measured as the number of trading days relative to EAD_{q-1}, and trading days -30 through -1 are measured as the number of trading days relative to EAD_q. *Period 1* is further divided into Day 0 and 1 relative to EAD_{q-1}.

Table 4
Forecast timing and relative forecast error - Regression Analysis

	Full Sample			with MEF			without MEF			Difference between revisions with and without MEF		
	coeff.	t-value		coeff.	t-value		coeff.	t-value		difference	t-value	
DPeriod 2	-3.9263	-8.81	***	-7.4617	-7.39	***	-1.8791	-4.51	***	-5.5825	-5.41	***
DPeriod 3	-5.9415	-13.02	***	-11.4480	-11.20	***	-3.2073	-7.73	***	-8.2407	-7.96	***
DPeriod 4	-9.0868	-17.93	***	-16.7656	-16.10	***	-4.9440	-10.73	***	-11.8217	-11.09	***
DPeriod 5	-8.3436	-14.17	***	-15.6167	-12.57	***	-4.5960	-10.16	***	-11.0206	-8.88	***
SIZE	0.7644	8.83	***	1.1688	7.57	***	0.2893	4.34	***	0.8795	5.59	***
BM	0.0993	0.49		-0.6380	-1.08		-0.2566	-1.57		-0.3814	-0.68	
COVERAGE	-0.8336	-4.10	***	-0.6675	-2.22	**	0.0898	0.65		-0.7573	-2.41	**
SPECIAL	2.5977	1.55		1.4506	0.42		2.4669	1.65	*	-1.0163	-0.28	
LOSS	1.0298	4.28	***	0.0765	0.12		0.9015	4.20	***	-0.8251	-1.26	
DIFFICULTY	0.1194	0.55		0.7147	1.29		-0.5678	-2.63	***	1.2825	2.16	**
N	384,786			111,649			273,137					
Adj. R-sq.	0.0617			0.1960			0.0203					
DPeriod 2=DPeriod 3		13.29	***		11.27	***		10.33	***			
DPeriod 2=DPeriod 4		23.88	***		24.82	***		19.67	***			
DPeriod 2=DPeriod 5		14.26	***		14.39	***		14.10	***			
DPeriod 3=DPeriod 4		19.44	***		16.39	***		13.97	***			
DPeriod 3=DPeriod 5		8.81	***		7.31	***		8.31	***			
DPeriod 4=DPeriod 5		3.42	***		2.37	**		2.34	**			

This table reports the results of the following regression: $RFE = \beta 1*DPeriod\ 2 + \beta_2*DPeriod\ 3 + \beta_3*DPeriod\ 4 + \beta_4*DPeriod\ 5 + \beta_6*SIZE + \beta_7*BM + \beta_8*COVERAGE + \beta_9*SPECIAL + \beta_{10}*LOSS + \beta_{11}*DIFFICULTY + e,$ where *RFE* is the absolute value of an individual analyst's newly revised forecast error minus the absolute value of the mean consensus forecast error measured one day before the analyst's forecast revision, deflated by absolute value of actual earnings; *DPeriod 2* (*3, 4, or 5*) is an indicator variable that takes the one if the forecast revision is issued in *DPeriod 2* (*3, 4, or 5*), and zero otherwise; *SIZE* is the natural logarithm of the firm's market value of equity at the end of quarter *q-1*; *BM* is book value of equity divided by the market value of equity at the end of quarter *q-1*; *COVERAGE* is the natural logarithm of the number of analysts who issue quarterly EPS forecast between quarter *q-1* and quarter *q* earnings announcement dates; *SPECIAL* is COMPUSTAT special items divided by sales for quarter *q-1*; *LOSS* is an indictor variable that takes the value of one if quarter *q-1* EPS is negative, and zero otherwise; and *DIFFICULTY* is the analysts' mean consensus forecast error for quarter *q-1* EPS. We divide sample revisions into revisions by firms that issue management earnings forecasts (with MEF) and those by firms that do not issue management earnings forecasts (without MEF) during the quarter. All test statistics and significance levels are calculated based on standard errors adjusted by a two-dimensional cluster at the analyst and quarter levels. ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively (two-tailed).

Table 5
Forecast timing, and return sensitivity to forecast revisions

Panel A: Full sample period: 1996-2009

	Full Sample			with MEF			without MEF			Difference between revisions with and without MEF		
	coeff.	t-value		coeff.	t-value		coeff.	t-value		difference	t-value	
Intercept	0.0568	0.36		-0.4751	-1.49		0.2375	1.68	*	-0.7127	-2.32	**
*FR*D1*	0.0689	20.03	***	0.1172	18.10	***	0.0416	15.82	***	0.0755	12.08	***
*FR*D2*	0.0451	7.62	***	0.0913	8.45	***	0.0199	5.00	***	0.0714	7.02	***
*FR*D3*	0.0148	5.88	***	0.0076	1.62		0.0172	6.66	***	-0.0096	-2.04	**
SIZE	0.0075	0.31		0.0237	0.46		-0.0142	-0.73		0.0379	0.76	
BM	0.1870	3.05	***	0.5188	3.20	***	0.0916	1.39		0.4272	2.39	**
COVERAGE	-0.0919	-1.75	*	-0.0091	-0.07		-0.0485	-1.03		0.0394	0.30	
SPECIAL	-0.0539	-0.14		-0.6101	-0.67		-0.1340	-0.32		-0.4760	-0.47	
LOSS	-0.1023	-1.06		-0.0420	-0.19		-0.1679	-1.55		0.1259	0.50	
DIFFICULTY	0.2214	4.26	***	0.2189	1.32		0.1415	2.99	***	0.0774	0.45	
N	384,786			111,649			273,137					
Adj. R-sq.	0.0289			0.0751			0.0115					
*FR*D1=FR*D2*		4.43	***		2.43	**		4.99	***			
*FR*D2=FR*D3*		5.00	***		7.43	***		0.58				
*FR*D3=FR*D1*		14.09	***		15.98	***		7.18	***			

Panel B: All forecast revisions: Pre- and Post-Reg FD periods

	Full Sample			with MEF			without MEF			Difference between revisions with and without MEF		
	coeff.	t-value		coeff.	t-value		coeff.	t-value		difference	t-value	
Pre-Reg FD												
Intercept	-0.0823	-0.27		-0.9384	-1.43		0.1103	0.38		-1.0487	-1.63	
*FR*D1*	0.0490	10.08	***	0.0911	8.01	***	0.0292	10.62	***	0.0619	5.87	***
*FR*D2*	0.0292	3.53	***	0.0553	2.44	**	0.0168	2.51	**	0.0385	1.64	
*FR*D3*	0.0094	1.77	*	0.0099	0.96		0.0091	1.58		0.0008	0.08	
Control variables		Included			Included			Included				

N	102,401			21,033			81,368					
Adj. R-sq.	0.014			0.0402			0.0054					
*FR*D1=FR*D2*		2.34	**		1.62			1.71	*			
*FR*D2=FR*D3*		2.28	**		1.75	*		0.98				
*FR*D3=FR*D1*		5.59	***		6.85	***		3.24	***			
Post-Reg FD												
Intercept	0.0717	0.38		-0.3739	-1.03		0.2549	1.55		-0.6288	-1.83	*
*FR*D1*	0.0769	18.47	***	0.1247	16.10	***	0.0474	14.10	***	0.0773	10.06	***
*FR*D2*	0.0510	6.89	***	0.1017	8.52	***	0.0212	4.25	***	0.0805	7.33	***
*FR*D3*	0.0166	5.98	***	0.0072	1.38		0.0203	7.65	***	-0.0131	-2.63	***
Control variables		Included			Included			Included				
N	282,385			90,616			191,769					
Adj. R-sq.	0.0365			0.0875			0.0151					
*FR*D1=FR*D2*		3.97	***		1.98	**		4.88	***			
*FR*D2=FR*D3*		4.56	***		7.79	***		0.14				
*FR*D3=FR*D1*		13.72	***		14.46	***		6.89	***			

This table reports the results of the following regression of stock return on analyst forecast revisions at different points in event time relative to the earnings announcement date: $R_{t,t+2} = \alpha_0 + \alpha_1*FR*D1 + \alpha_2*FR*D2 + \alpha_3*FR*D3 + \alpha_4*SIZE + \alpha_5*BM + \alpha_6*COVERAGE + \alpha_7*SPECIAL + \alpha_8*LOSS + \alpha_9*DIFFICULTY + \eta$, where $R_{t,t+2}$ is the cumulative abnormal stock returns over three-day window from day t through day t+2 where day t is the date of forecast revision; *FR* is individual analyst forecast revision deflated by the absolute value of prior forecast; *D1 is* an indicator of non-announcement period which takes the value of one if an analyst's forecast is issued between days (-30, -6) or (7, 32), and zero otherwise; *D2* is an indicator of pre-announcement period which takes the value of one if an analyst's forecast is issued between days (-5, -1), and zero otherwise; *D3* is an indicator of post-announcement period which takes the value of one if an analyst's forecast is issued between days (2, 6), and zero otherwise. Other variables are defined in Table 4. We truncate *FR* at ±50%. We divide sample revisions into revisions by firms that issue management earnings forecasts (with MEF) and those by firms that do not issue management earnings forecasts (without MEF) during the quarter. Panel A presents regression results for revisions over the entire sample period (1996-2009), and Panel B presents results for revisions during the pre- and post-Reg FD periods. We define years between 1996 and 2000 and pre-Reg FD period and between 2001 and 2009 as post-Reg FD period. All test statistics and significance levels are calculated based on standard errors adjusted by a two-dimensional cluster at the analyst and quarter levels. ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively (two-tailed).

Table 6
Upward and downward revisions: forecast timing, and return sensitivity to forecast revisions

Panel A: Upward revisions

	Full Sample			with MEF			without MEF			Difference between revisions with and without MEF		
	coeff.	t-value		coeff.	t-value		coeff.	t-value		difference	t-value	
Pre-Reg FD												
Intercept	1.3039	3.81	***	0.9475	1.30		1.4225	4.40	***	-0.4750	-0.69	
*FR*D1*	0.0143	2.22	**	0.0651	4.01	***	0.0006	0.15		0.0645	4.35	***
*FR*D2*	0.0490	3.04	***	0.0805	2.54	**	0.0374	2.43	**	0.0431	1.33	
*FR*D3*	-0.0135	-0.95		-0.0015	-0.08		-0.0160	-1.08		0.0146	0.98	
Control variables		Included			Included			Included				
N	41,267			6,974			34,293					
Adj. R-sq.	0.0034			0.0156			0.002					
*FR*D1=FR*D2*		2.79	***		0.64			2.63	***			
*FR*D2=FR*D3*		2.57	**		2.08	**		2.15	**			
*FR*D3=FR*D1*		1.74	*		2.76	***		1.10				
Post-Reg FD												
Intercept	2.9546	12.71	***	4.0479	8.86	***	2.3118	10.60	***	1.7361	3.49	***
*FR*D1*	0.0358	10.97	***	0.0648	8.97	***	0.0184	5.37	***	0.0464	5.49	***
*FR*D2*	0.0349	4.29	***	0.0620	4.70	***	0.0130	1.61		0.0490	3.31	***
*FR*D3*	-0.0105	-2.39	**	-0.0357	-4.06	***	-0.0017	-0.30		-0.0340	-2.98	***
Control variables		Included			Included			Included				
N	120,121			38,809			81,312					
Adj. R-sq.	0.0128			0.0309			0.006					
*FR*D1=FR*D2*		0.10			0.20			0.63				
*FR*D2=FR*D3*		4.44	***		6.46	***		1.38				
*FR*D3=FR*D1*		8.85	***		8.97	***		3.68	***			

Panel B: Downward revisions

	Full Sample			with MEF			without MEF			Difference between revisions with and without MEF		
	coeff.	t-value		coeff.	t-value		coeff.	t-value		difference	t-value	
Pre-Reg FD												
Intercept	-0.9537	-2.19	**	-2.7411	-2.31	**	-0.8355	-2.51	**	-1.9055	-1.63	
*FR*D1*	0.0386	5.75	***	0.0515	3.45	***	0.0164	3.89	***	0.0351	2.29	**
*FR*D2*	-0.0039	-0.44		-0.0013	-0.06		-0.0189	-1.76	*	0.0176	0.72	
*FR*D3*	-0.0082	-1.31		-0.0506	-2.83	***	-0.0060	-0.83		-0.0445	-2.2	**
Control variables		Included			Included			Included				
N	61,134			14,059			47,075					
Adj. R-sq.	0.0063			0.0113			0.002					
*FR*D1=FR*D2*		4.07	***		2.32	**		3.49	***			
*FR*D2=FR*D3*		0.41			1.87	*		1.14				
*FR*D3=FR*D1*		5.06	***		8.38	***		2.62	***			
Post-Reg FD												
Intercept	-1.8715	-8.73	***	-3.5395	-6.82	***	-1.2119	-7.14	***	-2.3276	-4.51	***
*FR*D1*	0.0649	10.14	***	0.1006	8.09	***	0.0336	6.50	***	0.0670	5.35	***
*FR*D2*	0.0227	2.30	**	0.0649	3.43	***	-0.0062	-0.88		0.0711	3.75	***
*FR*D3*	-0.0075	-1.62		-0.0300	-3.75	***	-0.0024	-0.58		-0.0276	-3.7	***
Control variables		Included			Included			Included				
N	162,264			51,807			110,457					
Adj. R-sq.	0.0182			0.0394			0.0059					
*FR*D1=FR*D2*		4.73	***		1.91	*		5.83	***			
*FR*D2=FR*D3*		2.98	***		5.23	***		0.46				
*FR*D3=FR*D1*		10.63	***		11.87	***		5.45	***			

This table reports the results of the following regression of stock return on analyst forecast revisions at different points in event time relative to the earnings announcement date: $R_{t,t+2} = \alpha_0 + \alpha_1 *FR*D1 + \alpha_2 *FR*D2 + \alpha_3 *FR*D3 + \alpha_4 *SIZE + \alpha_5 *BM + \alpha_6 *COVERAGE + \alpha_7 *SPECIAL + \alpha_8 *LOSS + \alpha_9 *DIFFICULTY + \eta$. Variables are defined in Tables 4 and 5. We truncate *FR* at ±50%. We divide sample revisions into revisions by firms that issue management earnings forecasts (with MEF) and those by firms that do not issue management earnings forecasts (without MEF) during the quarter. Panel A (B) presents results for upward (downward) revisions during the pre- and post-Reg FD periods. We define years between 1996 and 2000 and pre-Reg FD and between 2001 and 2009 as post-Reg FD. All test statistics and significance levels are calculated based on standard errors adjusted by a two-dimensional cluster at the analyst and quarter levels. ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively (two-tailed).

Table 7
Forecast timing, and return sensitivity to forecast revisions after controlling for management earnings forecasts

	Full Sample			Pre-FD			Post-FD		
	coeff.	t-value		coeff.	t-value		coeff.	t-value	
Intercept	0.1553	1.02		-0.0233	-0.08		0.2008	1.08	
*FR*D1*	0.0436	17.32	***	0.0301	10.94	***	0.0493	15.48	***
*FR*D2*	0.0177	4.23	***	0.0047	0.53		0.0226	4.89	***
*FR*D3*	0.0161	6.68	***	0.0094	1.81	*	0.0184	7.09	***
*MF*D1*	0.1494	15.64	***	0.1395	6.48	***	0.1511	14.24	***
*MF*D2*	0.3064	9.65	***	0.4190	8.93	***	0.2831	8.12	***
*MF*D3*	-0.0094	-0.99		-0.0122	-0.28		-0.0109	-1.12	
SIZE	-0.0130	-0.57		-0.0164	-0.41		-0.0128	-0.47	
BM	0.1313	2.26	**	0.0791	0.64		0.1528	2.44	**
COVERAGE	-0.0260	-0.52		0.0853	1.03		-0.0548	-0.88	
SPECIAL	-0.4123	-1.06		-2.1178	-2.56	**	0.0651	0.16	
LOSS	-0.1104	-1.23		0.0058	0.03		-0.1554	-1.59	
DIFFICULTY	0.1347	2.65	***	0.1505	1.16		0.1414	2.51	**
N	380,854			100,942			279,912		
Adj. R-sq.	0.0501			0.0317			0.0587		
*FR*D1=FR*D2*		39.12	***		7.83	***		33.18	***
*FR*D2=FR*D3*		0.13			0.27			0.67	
*FR*D3=FR*D1*		74.74	***		13.84	***		68.07	***

This table reports the results of the following regression of stock return on analyst forecast revisions at different points in event time relative to the earnings announcement date: $R_{t,t+2} = \gamma_0 + \gamma_1 *FR*D1 + \gamma_2 *FR*D2 + \gamma_3 *FR*D3 + \gamma_5 *MF*D1 + \gamma_6 *MF*D2 + \gamma_7 *MF*D3 + \gamma_8 *SIZE + \gamma_9 *BM + \gamma_{10} *COVERAGE + \gamma_{11} *SPECIAL + \gamma_{12} *LOSS + \gamma_{13} *DIFFICULTY + \mu$, where *MF* is news from management earnings forecasts issued between one day prior to and two days after an individual analyst's forecast revision. *MF* is measured as management's earnings forecasts minus mean consensus analyst forecast computed on the day before the issuance of management forecasts, deflated by the absolute value of mean consensus analyst forecast. We assign zero value to *MF* if there is no management forecast issued prior to the analyst's forecast revision. Other variables are defined in Tables 4 and 5. We truncate *FR* at ±50%. We define years between 1996 and 2000 and pre-Reg FD period and between 2001 and 2009 as post-Reg FD period. All test statistics and significance levels are calculated based on standard errors adjusted by a two-dimensional cluster at the analyst and quarter levels. ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively (two-tailed).