# Do Managers Issue Guidance to Correct Analysts' Predictable Errors?

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### Abstract

This study investigates managers' propensity to issue guidance in attempt to adjust analysts' earnings expectations. Building on the literature that associates management guidance with *ex post* analysts' forecast errors, I find that the issuance of management forecasts is increasing in both the forecast errors that can be predicted by and those that are unexpected by the market while the direction of management guidance is more strongly associated with unexpected analysts' errors. I predict and find that the market efficiently filters the predictable errors in analysts' forecasts when reacting to management forecasts. Results are robust to the method used to predict analysts' forecast errors, the time period measured, and controls for selection bias, and across both quarterly and annual guidance events.

Keywords: expectations management; management forecasts; analyst forecasts.

## 1. Introduction

The pervasive optimism in analysts' longer term earnings forecasts coupled with managers' desires to meet or beat analysts' forecasts at the earnings announcement date (Skinner and Sloan 2002; Bartov, Givoly, and Hayn 2002) has led to a repeated game. In this game, analysts set their forecasts too high and managers actively walk down analysts' forecasts through signals including management guidance so that ultimately the firm can meet or beat analysts' forecasts. This study investigates the association between management guidance and analysts' forecast errors, as well as whether the market's reaction to management guidance varies with the errors in analysts' forecasts. I depart from the extant literature by decomposing analysts' forecast errors into both those that can be predicted *ex ante* when the forecast is issued and residual, unpredicted forecast errors.

Analysts' forecasts commonly proxy for the market's earnings expectations (Schipper 1991; Brown 1993; Kothari 2001). Yet, analysts' longer-term forecasts are generally optimistic (O'Brien 1988). Researchers have associated analysts' forecast errors with firm characteristics, analysts' incentives, selection bias, and asymmetries in reported earnings. Larocque (2009) builds on Ali, Klein, and Rosenfeld (1992) to predict analysts' errors *ex ante* and shows that analysts' forecasts from which predictable errors have been removed form a better proxy for the market's earnings expectations. At the same time, analysts' earnings forecasts are subject to errors and oversights – both optimistic and pessimistic – that the market cannot foresee at the time the forecast is issued. These unexpected forecast errors may be firm-specific, economy-specific, or otherwise.

Firm managers, who have access to inside information, are uniquely positioned to assess analysts' earnings forecasts. Yet, it is unclear whether managers seek to correct both analysts' predictable and unexpected forecast errors. On one hand, given their information sets, managers might see through both analysts' predictable forecast errors as well as the forecast errors that are unexpected by the market. On the other hand, managers might undo analysts' predictable forecast errors but commit the same unexpected forecast errors that analysts do.[1] Thus it is an empirical question whether firms manage analysts' expectations (up or down) to correct both predictable and unexpected forecast errors.

Whether the market takes into account the predictable errors in analysts' forecasts in weighing the impact of management guidance is also an empirical question. If the market efficiently sees through analysts' *ex ante* forecast errors then guidance issued to correct for these predictable errors should not come as a surprise. In other words, investors should efficiently see through the predictable errors in expectations that managers try to adjust by issuing management guidance. At the same time, guidance that is issued to correct analysts' unexpected forecast errors should surprise the market. Thus, the market's reaction to management guidance should vary with the errors in analysts' forecasts, and in particular with the extent to which those errors are unexpected, but should not vary with the predictable component of analysts' forecast errors.

In the first part of this study, I examine whether a firm's propensity to issue guidance is associated with analysts' forecast errors. The extant literature investigates the association between management forecasts and analysts' forecast errors that are observable *ex post* following the release of the earnings being forecasted. (See Cotter, Tuna, and Wyocki 2006.) Using Larocque's (2009) model to predict analysts' forecast errors on an out-of-sample basis, I decompose analysts' errors into predictable and unexpected forecast errors in order to test their association with management guidance. These two possible associations are not mutually

[1] For example, analysts might not predict the effects of a change in pricing policy on profitability, resulting in analyst forecast errors that are unpredicted by the market but that managers can undo. An example of analysts' unpredicted forecast errors that managers would also commit is the result of commodity price shocks.

exclusive, as it possible that managers, who are interested in meeting analysts' earnings expectations, issue guidance to correct both predictable and unexpected analysts' forecast errors. Using both levels and differences-in-differences analyses, I find evidence that firms' propensity to issue guidance is increasing in both analysts' predictable and unexpected forecast errors.

In the second part of this study, I examine whether the direction of the management guidance issued is associated with analysts' forecast errors. In the sub-sample of firms that issue annual guidance, I predict and show that the direction of the management forecast issued is associated with both analysts' predictable and unexpected errors, such that managers are more likely to issue pessimistic (optimistic) signals through management forecasts when analysts' forecast errors are optimistic (pessimistic). I further find that analysts' unexpected forecast errors have a stronger effect on the direction of management's guidance. These results are consistent with managers guiding down analysts' forecasts, particularly when those forecasts contain optimistic forecast errors that are unexpected by the market.

In the study's third part, I examine whether the market's response to management guidance varies with the errors in analysts' forecasts. My results build on Waymire (1984), Jennings (1987), and Ajinkya and Gift (1984), who show that the market reacts to management guidance. In particular, I show that the market response to management guidance news (i.e., the management forecast less the consensus analyst forecast) is consistent with the market predicting and filtering the predictable errors in analysts' forecasts. Moreover, I find evidence of a stronger reaction to management guidance when analysts' forecast errors are unexpected. In other words, investors react more negatively (positively) to management guidance when analysts' unexpected forecast errors are optimistic (pessimistic). This finding complements Rogers and Stocken (2005). While Rogers and Stocken (2005) show that the market predicts and filters managers' forecasting bias from management guidance, I find that the market predicts and filters analysts' errors when responding to management guidance.

The paper proceeds as follows. Section 2 develops my hypotheses while Section 3 contains empirical analyses. Section 4 concludes. The appendix contains variable definitions.

## 2. Hypothesis development

### 2.1 Association between management guidance and analysts' forecast errors

Firms seem to manage expectations. Degeorge, Patel, and Zeckhauser (1999) present a higher-than-expected frequency of firms reporting earnings that meet or beat the consensus analyst forecast. Brown (2001) reports an increase in the tendency of firms to report earnings that beat analyst forecasts during his 1984 to 1999 sample period. Matsumoto (2002) provides evidence that firms with higher growth prospects, higher institutional ownership, and higher litigation risk are more likely to guide analysts' forecasts to a level that managers can achieve. Bergman and Roychowdhury (2008) show that, during periods of high investor sentiment, firms increase the frequency of short-horizon walk-down management forecasts. In general, these studies provide evidence of managers actively walking down analysts' forecasts through signals including management forecasts so that ultimately the firm can meet or beat analysts' forecasts.

Firms have incentives to manage analysts' expectations. Skinner (1994) argues that firms voluntarily disclose bad news early to preempt potentially costly shareholder lawsuits. Kasznik and Lev (1995) show that firms facing earnings disappointments are more likely to make discretionary disclosures, including management guidance. Skinner and Sloan (2002) find a greater stock price reaction when firms fail to meet forecasts than when they beat forecasts by a similar magnitude. According to Bartov, Givoly, and Hayn (2002), firms that meet or beat analysts' earnings forecasts enjoy higher returns relative to firms that fail to meet analysts' expectations. Brown and Caylor (2005) show that, since the mid-1990s, investors have increasingly relied upon analysts' forecasts as a threshold against which to measure firms' earnings. Overall, these studies show that earnings performance matters to managers – particularly as it compares with analysts' forecasts.

Expectations management can result in better alignment of investors' and managers' expectations (Ajinkya and Gift 1984; Hassell and Jennings 1986; King, Pownall, and Waymire 1990) and may lower reputation costs and reduce information asymmetry. Coller and Yohn (1997) and Marquardt and Wiedman (1998) both document that management guidance reduces information asymmetry. Diamond and Verrecchia (1991) and Easley and O'Hara (2004) theoretically model the association between information asymmetry and firm cost of capital while Larocque (2009) empirically estimates an inverse relation between regularly-issued management guidance and cost of equity capital. In their review of the financial reporting literature, Beyer et al. (2009) discuss how management forecasts comprise an important element of the accounting-based information provided by firms.

Analysts' forecasts commonly proxy for the market's earnings expectations (Schipper 1991; Brown 1993; Kothari 2001). Yet, analysts' longer-term forecasts are generally optimistic (O'Brien 1988).[2] Ali, Klein, and Rosenfeld (1992), Frankel and Lee (1998), Hughes, Liu, and Su (2008), and Larocque (2009) show that much of analysts' forecast errors can be predicted. Hughes et al. (2008) and Larocque (2009) find that analysts' forecasts from which predicted

[2] Analysts' errors have been associated with factors including lagged errors (DeBondt and Thaler 1990; Mendenhall 1991), prior stock returns (Abarbanell 1991; Ali, Klein, and Rosenfeld 1992), and book-to-market ratios (Doukas, Kim, and Pantzalis 2002). Alternatively, analysts' forecast optimism may be intentional (Brown 1993) and associated with the incentives facing analysts, such as brokerage trading revenues (Hayes 1998; Jackson 2005), analyst affiliation (Dugar and Nathan 1995), and access to management (Francis and Philbrick 1993). McNichols and O'Brien (1997) investigate self-selection in analysts' coverage decisions while Abarbanell and Lehavy (2003) discuss how asymmetries in the distribution of reported earnings may cause analysts' forecasts to appear optimistic.

forecast errors have been removed from a better proxy for the market's earnings expectations. Building on this literature, my analysis separates analysts' forecast errors into two components: *ex ante* predictable errors and residual, unexpected forecasting errors. Following Muth (1961) and Keane and Runkle (1990), I define ($E(eps_{jt})$) as analysts' earnings expectations for firm $j$ in period $t$, which equals actual earnings ($eps_{jt}$) plus some error ($\zeta_{jt}$) which is mean zero:

$$E(eps_{jt}) = eps_{jt} + \zeta_{jt} \tag{1}$$

Consistent with Larocque (2009) and with a large literature that investigates analysts' forecast errors, I assume that the consensus analyst forecast for firm $j$ in period $t$, $AF_{jt}$, equals analysts' earnings expectations for period $t$ plus some *ex ante* error ($Error\_EXANTE_{jt}$) which may be positive or negative. Thus, analysts' forecast for firm $j$ in period $t$ equals actual earnings plus *ex ante* error plus forecasting error:

$$AF_{jt} = eps_{jt} + Error\_EXANTE_{jt} + \zeta_{jt} \tag{2}$$

Following the release of the earnings being forecast, we can observe analysts' *ex post* forecast error (*Error*), i.e., the difference between analysts' forecasts and realized earnings, which is the sum of *ex ante* analysts' error and analysts' forecasting error. As discussed in Imhoff (1978), *ex post* forecast errors do not really measure error in a true sense. A true error measure would compare the actual forecast with the true or correct forecast *ex ante* at the time the forecast is made. Of course, true *ex ante* analysts' forecast errors cannot be observed. In this study, I separate analysts' predictable forecast errors from analysts' unexpected forecast errors following Larocque (2009).[3] Section 3.2 includes further details of the forecast error prediction model.

[3] Ali et al. (1992) predict analysts' errors using lagged errors and recent returns. Larocque (2009) adds size and a control for *ex post* measurement error to Ali et al.'s (1992) error prediction model. When I instead predict analysts' forecast errors using the prediction variables outlined in Ali et al. (1992), Frankel and Lee (1999), or Hughes et al. (2008), inferences throughout this study are unchanged.

Using analysts' predicted forecast errors ($Error\_PRED_{jt}$) to proxy for $Error\_EXANTE_{jt}$, I estimate analysts' unexpected forecast errors ($Error\_RES_{jt}$) as a proxy for $\zeta_{jt}$, as follows:

$$Error_{jt} = Error\_PRED_{jt} + Error\_RES_{jt} \tag{3}$$

In the above Equations, $Error\_PRED_{jt}$ and $Error\_RES_{jt}$, like $Error_{jt}$,, are increasing in analysts' forecast optimism relative to actual earnings.

The extant literature associates management guidance with analysts' *ex post* forecast errors. For example, Baik and Jiang (2006) and Cotter, Tuna, and Wysocki (2006) find that managers are more likely to issue guidance when analysts' forecasts appear optimistic *ex post*. In this study I consider the extent to which management guidance is associated with both analysts' predictable and unexpected forecast errors. Managers, with their access to inside information, are well positioned to assess analysts' earnings forecasts and the errors in those forecasts. At the same time, managers might commit some of the same forecast errors that analysts do. Thus it is an empirical question as to whether management guidance is associated with each of analysts' predictable and unexpected forecast errors. My first hypotheses are:

***H1a: Management guidance is positively associated with analysts' predictable forecast errors.***

***H1b: Management guidance is positively associated with analysts' unexpected forecast errors.***

Before testing H1a and H1b, I first estimate the following probit model that builds on Cotter, Tuna, and Wysocki (2006) and Ajinkya, Bhoraj, and Sengupta (2005) to ensure that the findings on the determinants of management guidance hold in my sample:

$$\Pr(Guidance_{jt+1}=1)= \alpha_0+\alpha_1 Error_{jt}+\alpha_2\ln(MV_{jt})+\alpha_3\ln(BM_{jt})+\alpha_4\ln(ANF_{jt}) + \alpha_5 STD_{jt}+\alpha_6 Beta_{jt}+\alpha_7 Loss_{jt}+\alpha_8 Litigate_{jt}+\alpha_9 FD_{jt}+\varepsilon_{jt} \quad (4)$$

*Guidance* in an indicator variable that equals one if the firm issues a management forecast during the guidance measurement period, and zero otherwise. Figure 1 shows that the guidance measurement period extends from the day after the April I/B/E/S summary report is issued to the day preceding the earnings announcement date.[4] $Error_{jt}$ is the *ex post* error in the consensus analyst forecast issued at the beginning of the guidance measurement period (i.e., in April of year *t*). ln*(MV)* is the natural logarithm of market value, measured at the beginning of the guidance measurement period. ln*(BM)* is the natural logarithm of the book-to-market ratio. ln*(ANF)* is the natural logarithm of the number of analysts issuing earnings forecasts at the beginning of the guidance measurement period. *STD* is the standard deviation of analysts' forecasts divided by the median analyst forecast at the beginning of the guidance measurement period, and is included to capture the firm's earnings uncertainty following Ajinkya and Gift (1984) and Ajinkya et al. (2005). *Beta* is CAPM beta at the beginning of year *t*, estimated using daily returns over the prior year. *Loss* is an indicator variable that equals one if analysts forecast negative earnings per share in year *t* at the beginning of the guidance measurement period, and zero otherwise. Following Ajinkya et al. (2005), *Litigate* is an indicator variable that equals one for all firms in the biotechnology, computers, electronics, and retail industries, and zero otherwise. *FD* is an indicator variable that equals one for years 2001 and later, and zero otherwise. Regulation Fair Disclosure (Reg FD) was adopted in October 2000 to prevent selective disclosure of information

[4] This study uses a guidance measurement period that begins with the April I/B/E/S Summary report and ends before the announcement of fiscal year earnings, and estimates analyst forecast errors as of the beginning of that period. Inferences are unchanged when I instead use a guidance measurement period that begins after the July I/B/E/S Summary report is issued and ends before the earnings announcement date. In addition, inferences are unchanged when only earnings forecasts or quantitative forecasts are retained in the sample, and when I exclude earnings warnings i.e. forecasts released following the end of the fiscal period. Moreover, inferences throughout are unchanged when I use only quarterly guidance events or only annual guidance events.

by firms and is associated with an increased prevalence of management forecasts (Heflin, Subramanyam, and Zhang 2003; Bailey, Li, Mao, and Zhong 2003). The subscripts *j* and *t* denote the firm and year, respectively. Standard errors are clustered by firm level because the estimation of Equation 4 could suffer from time-series dependence.

Following Ajinkya et al. (2005), I expect positive coefficients on ln*(MV),* ln*(ANF)*, *Litigate,* and *FD* and negative coefficients on *BM*, *STD*, and *Beta.* Following Cotter, Tuna, and Wysocki (2006), I predict a positive coefficient on *Error*.

Second, to test H1a and H1b, I expand upon Equation 4 by decomposing *Error* into its predictable and residual components, *Error_PRED* and *Error_RES* respectively:

$$\begin{aligned}\Pr(Guidance_{jt+1}=1) = \; & \alpha_0 + \alpha_1 Error\_PRED_{jt} + \alpha_2 Error\_RES_{jt} + \alpha_3 \ln(MV_{jt}) \\ & + \alpha_4 \ln(BM_{jt}) + \alpha_5 \ln(ANF_{jt}) + \alpha_6 STD_{jt} + \alpha_7 Beta_{jt} \\ & + \alpha_8 Loss_{jt} + \alpha_9 Litigate_{jt} + \alpha_{10} FD_{jt} + \varepsilon_{jt}\end{aligned} \quad (5)$$

H1a predicts a positive coefficient on *Error_PRED* while H1b predicts a positive coefficient on *Error_RES*.

I next examine whether the direction of management's guidance is consistent with managers issuing forecasts to correct analysts' forecast errors. If managers issue forecasts to align analysts' expectations with their own (Ajinkya and Gift 1984; Hassell and Jennings 1986; King, Pownall, and Waymire 1990), I expect that managers issue guidance above (below) analysts' forecasts when analysts are more pessimistic (optimistic), ceteris paribus. A concurrent working paper by Bagnoli, Li, and Watts (2009) examines the relation between management forecast errors and individual analysts' history of responding to management forecasts. My analysis, which is done at the consensus analyst forecast level, considers whether the direction of management's forecasts relative to analysts' forecasts varies with analysts' forecast errors, both predictable and unexpected:

***H2a: The direction of management's forecasts is associated with analysts' predictable forecast errors.***

***H2b: The direction of management's forecasts is associated with analysts' unexpected forecast errors.***

To test H2a and H2b, I estimate the following specification in the sub-sample of firms that issue an annual management forecast during the guidance measurement period:

$$\begin{aligned} MFSignal_{jt} = \; & \alpha_0 + \alpha_1 Error\_PRED_{jt} + \alpha_2 Error\_RES_{jt} + \alpha_3 \ln(MV_{jt}) \\ & + \alpha_4 \ln(BM_{jt}) + \alpha_5 \ln(ANF_{jt}) + \alpha_6 STD_{jt} + \alpha_7 Beta_{jt} \\ & + \alpha_8 Litigate_{jt} + \alpha_9 InvMills_{jt} + \varepsilon_{jt} \end{aligned} \quad (6)$$

In Equation 6, $MFSignal_{jt}$ is the difference between the value of the first management forecast of annual earnings issued during the guidance measurement period ($MF_{jt}$) and the consensus analyst forecast issued at the beginning of the guidance measurement period ($AF_{jt}$) as in Ajinkya and Gift (1984) and is scaled by lagged price. Following Baginski et al. (2009), I control for size, book to market ratio, analyst following, and litigation risk. Following Ajinkya et al. (2005), I control for the standard deviation in analysts' forecasts and firm beta. I estimate the Inverse Mills ratio (*InvMills*) using Equation 4 and include it to capture selection bias in firms' decisions to issue management guidance. Standard errors are clustered by firm level because the estimation of Equation 6 is likely to suffer from time-series dependence.

H2a predicts a negative coefficient on *Error_PRED* while H2b predicts a negative coefficient on *Error_RES*. In other words, I predict a more negative signal from management (in the form of a management forecast)when analysts' forecasts are optimistic. A comparison of the coefficients on each of *Error_PRED* and *Error_RES* will determine whether one of the two components of analysts' forecast errors more strongly impacts the direction of management's guidance.

## 2.2. Market reaction to management guidance events

I next consider the market's reaction to management guidance events. Early research by Patell (1976), Penman (1980), Waymire (1984), and Jennings (1987) finds that the market reacts to such events. More recently, studies show that the market's response to management guidance is associated with the news in (Ajinkya and Gift 1984; Waymire 1984), the precision of (Baginski, Conrad, and Hassell 1993), and the horizon of (Pownall, Wasley, and Waymire 1993) the guidance, as well as with management's reputation for providing optimistic guidance (Rogers and Stocken 2005). At an aggregate level, Anilowski, Feng, and Skinner (2007) find mixed evidence that management guidance is informative with respect to market returns.

My analysis considers how the market reaction to management guidance events varies with the errors in analysts' forecasts. Ajinkya and Gift (1984) show a more negative market reaction to management forecasts that are below consensus analyst earnings forecasts. I expect that management guidance could differ from analysts' forecasts in two ways: first, analysts' forecasts could be biased and second, analysts' forecasts could contain errors or oversights, possibly due to a difference in the information sets of managers and of analysts. If the market efficiently sees through *ex ante* analysts' forecast errors then guidance issued to correct for these predictable errors should not come as a surprise.[5] At the same time, if analysts' forecasts contain unexpected errors, then guidance issued to correct for such errors should surprise the market. Thus I expect to see a stronger market reaction to guidance that corrects unexpected forecast errors, but I do not expect the market reaction to guidance to vary with analysts' predictable forecast errors. My third hypothesis is as follows:

[5] That the market is efficient when analysts are biased is consistent with the theoretical models of Stein (1989), Fischer and Verrecchia (2000), and Beyer (2009), in which managers issue optimistic forecasts but the market anticipates and corrects for this optimism.

***H3: The market reaction to management guidance is not associated with analysts' predictable forecast errors.***

H3 is an error correction hypothesis, as it predicts that the market attributes little or no weight to the predictable component of the analyst forecast being guided by management. To some extent, tests for H3 complement Rogers and Stocken (2005) who predict and find that the market reacts less positively (more negatively) to management forecasts that contain higher predicted optimism and more positively (less negatively) to forecasts with higher predicted pessimism.

In evaluating the market's reaction to management guidance, I test whether the market's reaction varies with the errors in analysts' forecasts. As in the previous section, I decompose analysts' errors into errors that can be predicted when the forecast is issued using Larocque's (2009) methodology, and analysts' unexpected forecast errors or oversights. While I predict a stronger reaction to management guidance that is issued when analysts' forecasts contain errors, I expect this effect to be mitigated when analysts' forecast errors are predictable.

I test H3 using both portfolio-level analysis of market reactions to management guidance and earnings response coefficient (ERC) tests. In these tests, I evaluate abnormal returns surrounding management guidance events across various partitions of firms. In my tests, I evaluate whether the market reaction to management guidance events varies across portfolios of firms formed according to the level of *ex post* analyst error (*Error*), predicted error (*Error_PRED*) or unexpected error (*Error_RES*).

In the ERC tests, I conduct earnings response tests, as in Equation 7, on in the sub-sample of firms that issue an annual management forecast during the guidance measurement period:

$$CAR_{jt} = \begin{array}{l} \lambda_0 + \lambda_1 MFSignal_{jt} + \lambda_2 MFSignal_{jt} * ERRORQ + \lambda_3 ERRORQ_{jt} \\ + \lambda_4 InvMills_{jt} + \varepsilon_j \end{array} \quad (7)$$

*CAR* represents the three-day abnormal return surrounding the management guidance event. [6] As above, $MFSignal_{jt}$, is the difference between the value of the first management forecast of annual earnings issued during the guidance measurement period ($MF_{jt}$) and the consensus analyst forecast issued at the beginning of the guidance measurement period ($AF_{jt}$) as in Ajinkya and Gift (1984) and is scaled by price prior to release of the I/B/E/S consensus analyst forecast. To calculate *ERRORQ*, I partition firms into portfolios each year according to the level of error in the consensus analyst forecast issued preceding the guidance measurement period. *ErrorQ* represents quintiles of firms formed yearly according to the level of *Error*, with quintile 1 (5) containing the smallest (largest) level of *Error*. Similarly, *Error_PREDQ* categorizes firms into quintiles according to the level of $Error\_PRED_t$, and *Error_RESQ* categorizes firms according to the level of $Error\_RES_t$. Finally, *InvMills* is estimated using Equation 4 to model management's decision to issue guidance, and is included to control for selection bias.

To test H3, I substitute *Error_PREDQ* for *ERRORQ* in Equation 7 and test whether $\lambda_2$ is significantly different from zero.

## 3. Empirical methodology

### *3.1 Sample selection*

The sample consists of firms with data available to estimate and predict analysts' forecast errors. Following research by Payne and Thomas (2003) regarding the effect of stock splits on adjusted I/B/E/S data, I use the unadjusted I/B/E/S summary reports. I limit the sample to firms with December fiscal year-ends since analysts' forecast errors have been shown to vary with horizon, i.e. the time period between the forecast release date and the fiscal period end date

[6] For management forecasts issued at a time following the stock market's closing bell, I use a 3-day window centered on the trading day following the management forecast release date, following Rogers and Stocken (2005).

(Richardson, Teoh, and Wysocki 2004). I use data from the April I/B/E/S unadjusted summary reports to ensure that the prior year's earnings report has been released at the time of the consensus analyst forecast. I extract U.S. firms with median consensus analyst forecasts (*AF*) and reported EPS (*eps*) for the fiscal year, as well as for the preceding year. (Inferences are unchanged when mean I/B/E/S consensus forecasts are used.) Prices and returns are extracted from CRSP. For scaling purposes, I exclude firms with share prices below $5 or above $500. I delete firm-years with forecast errors in the top or bottom 1% of observations. These requirements yield 26,519 firm-year observations for 1994-2007. Using the firm-year observations from 1994 to 2006, I predict analysts' forecast errors on an out-of-sample basis for 20,589 firm-years from 1997 to 2007. In addition to the analyst forecast error variables, I require book value from Compustat. This leaves a full sample of 18,434 firm-years from 1997 to 2007, as detailed in Table 1 Panel A.

To measure *Guidance*, I use First Call's Company-Issued Guidelines (CIG) database. I examine all 103,654 management guidance events contained in the CIG database (including quantitative and qualitative forecasts of annual and quarterly earnings, sales, cash flows, and other items) for 1997 through 2008. These comprise 25,472 unique firm-years and 6,334 unique firms for which guidance is issued via press releases, interviews, and conference calls. After the guidance variables are merged in, the final sample includes 7,333 guidance firm-years (40% of the full sample), and 11,101 non-guidance firm-years (60% of the full sample) from 1997 to 2007, as outlined in Table 1 Panel B. The sample thus covers a variety of economic conditions, including the dot.com boom and bust, and periods pre- and post-Reg FD. Table 1 Panel B further shows that, relative to non-guidance firms, guidance firms are statistically larger and have greater analyst following, consistent with Ajinkya et al. (2005), have lower book-to-market ratios and higher litigation risk, and are less likely to produce a loss.

### *3.2 Predicting analysts' forecast errors*

To predict analysts' forecast errors, I follow Larocque (2009) who builds on Ali, Klein, and Rosenfeld (1992) (henceforth, AKR). AKR show that analysts' forecast errors can be predicted using lagged analysts' forecast errors and recent returns. Larocque (2009) extends AKR's model by adding two variables: firm size, and a control for *ex post* measurement error:

$$Error_{jt} = \alpha_0 + \alpha_1 Error_{jt-1} + \alpha_2 RET\_LAG_{jt} + \alpha_3 \ln(MV_{jt}) + \alpha_4 RET\_EZ_{jt} \quad (8)$$

$Error_{jt}$ ($Error_{jt-1}$) is measured as the median consensus analyst earnings forecast for year *t* (*t-1*) from the April year *t* (*t-1*) I/B/E/S unadjusted summary reports less reported EPS for year *t* (*t-1*), and is scaled by lagged price following AKR. *RET_LAG* is the abnormal return for the year preceding the date the consensus I/B/E/S analyst forecast was issued. ln(*MV)* is the natural logarithm of market capitalization; Easton and Sommers (2007) show that analysts' optimism is decreasing in firm size.

In the above specification, as in much of the analyst forecast literature, the dependent variable represents analysts' *ex post* forecast error. Ideally researchers would use *ex ante* errors, but these are unobservable. Unlike *ex ante* errors, *ex post* errors are affected by events that occur between the forecast date and the earnings announcement date. Using *ex post* errors instead should weaken the power of my tests. Following Easton and Zmijewski (1989), Larocque (2009) includes *RET_EZ*, the abnormal return between the date the consensus I/B/E/S analyst forecast was issued and the year *t* earnings announcement date, to control for some of the noise in the dependent variable. *RET_EZ* is correlated with measurement error if *ex post* errors are smaller (larger) for firms that enjoy positive (negative) news (i.e., larger [smaller] returns) between the forecast release date and the earnings announcement date. Thus, $\alpha_4$ should be negative.

Using Equation 8, I first regress analysts' forecast errors on the prediction variables on a yearly basis from 1994 to 2007. As shown in Table 2 Panel A, the adjusted $R^2$ of the model averages 10.2%, consistent with Larocque (2009). For all independent variables, the sign of the estimated coefficient is expected. In particular, the coefficient on lagged analysts' forecast error is positive and significantly different from zero in all 14 years, while the coefficients on size and on $RET\_EZ_t$ are negative and significantly different from zero in all 14 years.

Second, the consensus analyst forecast is adjusted using rolling, out-of-sample estimates. Simple means of the coefficient estimates from Equation 8 are computed (denoted as $\hat{\alpha}_i$) for three consecutive years (years *t-3*, *t-2*, and *t-1*), following AKR. These mean coefficients are next used to predict the error for firm *j* in year *t* forecasts ($Error\_PRED_{jt}$), using variables that are observable at the time the forecast is issued (e.g., forecasts for 2007 are adjusted using 2004-2006 data):

$$Error\_PRED_{jt} = \hat{\alpha}_0 + \hat{\alpha}_1 Error_{jt-1} + \hat{\alpha}_2 RET\_LAG_{jt} + \hat{\alpha}_3 \ln(MV_{jt}) \qquad (9)$$

Following Larocque (2009), I exclude *RET_EZ*, which is not observable at the time the forecast is issued. At the same time, the inclusion of *RET_EZ* in the error prediction model (Equation 8) helps ensure that the coefficients in Equation 9 are not biased by *ex post* measurement error.

Untabulated diagnostic tests show that adjusted analyst forecasts (i.e., analyst forecasts from which predicted analyst forecast error is removed) better proxy for the market's earnings expectations. Adjusted analysts' forecasts contain significantly less error than unadjusted analyst forecasts. The forecast error for unadjusted year *t* analysts' forecasts averages 0.013 ($p < 0.001$) while the forecast error for adjusted forecasts averages -0.001 ($p = 0.538$) and is not significantly different from zero, similar to Larocque (2009). Moreover, in long-horizon ERC tests, adjusted analyst forecasts better proxy for the market's *ex ante* earnings expectations. The earnings response coefficient when analyst forecasts (adjusted analyst forecasts) are used to proxy for expected earnings is 1.22 (1.46) and the models' explanatory power (adjusted $R^2$) is 3.9% (4.3%). For the ERC tests, Vuong's Z-statistic ($p < 0.001$) rejects unadjusted analyst forecasts in favor of adjusted analyst forecasts, as in Larocque (2009). These results are consistent with an efficient market in which investors see through expected analysts' errors to set price, which determines returns. I thus consider *Error_PRED* to be a good proxy for *ex ante* analysts' errors.

Finally, I estimate unexpected analysts' forecast error (*Error_RES*) as the difference between the observed *ex post* analysts' forecast error and predicted analysts' forecast error, as in Equation 3. Table 2 Panel B presents the distribution of the error variables (*Error*, *Error_PRED*, and *Error_RES*) throughout the sample period. From 1997 to 2007, I find respective means of 0.018, 0.023 and -0.005 for *Error*, *Error_PRED*, and *Error_RES*. The positive mean value for *Error* is consistent with the extant literature that finds analysts' forecasts to be optimistically biased, on average.

### *3.3 Tests of the association between guidance and analysts' forecast errors*

To examine whether the issuance of management guidance is associated with analysts' forecast errors, I estimate Equations 4 and 5. To ease comparisons across coefficients, when estimating Equations 4 and 5 I standardize all continuous variables to mean zero and unit variance. Thus the estimated coefficients represent elasticities that can be interpreted as the change in probability of a firm issuing management guidance for a one-standard-deviation change in the explanatory variable. Standard errors are clustered at the firm level.

Table 3 Column 1 presents the results of estimating Equation 4. The positive significant coefficient (0.035, p = 0.001) on $Error_{jt}$ confirms the findings of Cotter et al. (2005), and suggests that firms are more likely to issue management forecasts in the presence of optimistic analyst forecasts. Consistent with Ajinkya et al. (2005), I find evidence that the issuance of management guidance is positively associated with size, analyst following, and litigation risk, and following the implementation of Reg FD, and negatively associated with *BM*. In terms of economic significance, a one-standard-deviation increase in *Error* results in a 3.5% increase in the probability of management guidance being issued. That is, the unconditional probability increases from 50% to 53-54%. As benchmarks, this effect is smaller than the 6.3% probability increase of management guidance being issued that is associated with a one-standard-deviation increase in size.

Table 3 Column 2 presents the results of estimating Equation 7. The coefficients on both *Error_PRED* and *Error_RES* are positive and statistically different from zero. Similar to *Error*, these results suggest that as either *Error_PRED* or *Error_RES* increases, the odds of a firm issuing management guidance increases. I further note that a one-standard-deviation increase in *Error_PRED* (*Error_RES*) results in a 3.6% (3.2%) increase in the probability of management guidance being issued, so predictable analysts' errors appear to have more effect on managers' propensity to issue forecasts. Overall, the results in Table 3 support the notion that managers, who have different information sets than do analysts and the market, issue guidance both to correct analysts' predictable forecast errors and in response to analysts' unexpected forecast errors or misjudgments.[7] This is consistent with both H1a and H1b.

[7] It is possible that management issues guidance when analysts are optimistic without actually correcting analysts' forecast errors. To address this concern, in untabulated results I re-run the tests in both Tables 3 and 4 after excluding firm-years where the management forecast is less accurate than the consensus analyst forecast. In both

To address concerns related to correlated omitted variables in levels analysis, I conduct differences-in-differences analysis in Table 4. This analysis compares a subset of 1,248 firm-years that do not issue guidance in year *t* and do issue guidance in year *t+1* ("start" firms) with a subset of 6,204 firm-years that do not issue guidance in year *t* or year *t+1* ("non-start" firms). In both year *t* and year *t+1*, analysts' forecasts are significantly more optimistic for the start firms. For example, mean *Error* for start firms in year *t* is 0.022 ($p < 0.0001$), compared with 0.012 ($p < 0.0001$) for non-start firms. However, as indicated in the bottom section of Table 4, the difference between year *t* and year *t+1* is significantly greater for start firms than for non-start firms. While the analysts' forecasts of non-start firms do not exhibit a significant change in error (*ex post*, predictable, or residual), those of start firms become more optimistic. Specifically, *Error* increases by 0.013 ($p = 0.026$) and *Error_PRED* increases by 0.008 ($p = 0.002$). Taken together, this provides evidence of an increase in the relative optimism of analysts' forecasts for start firms vs. non-start firms. This result is consistent with H1a, which predicts a positive association between the propensity to issue management guidance and analysts' predictable forecast errors, but does not provide support for H1b. As in the levels analysis above, it appears that analysts' predictable forecast errors have more effect on managers' propensity to issue guidance.

### *3.4 Tests of the direction of management guidance*

Table 5 presents the results of estimating Equation 6 which tests whether the management signal, i.e. the signed difference between the management forecast issued during the guidance measurement period and analysts' forecast at the beginning of the guidance

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cases, inferences are unchanged. In addition, inferences in Tables 3 and 4 are unchanged when I exclude from the analysis firm-years with pessimistic *ex post* analysts' forecast errors.

measurement period, is associated with analysts' forecast error. In Column 1, the negative estimated coefficient on *Error* (-0.125; $p < 0.001$) confirms that managers are more (less) likely to issue annual guidance above (below) the consensus analyst forecast when analysts' forecast errors are less optimistic (pessimistic). In Column 2, which decomposes analysts' forecast errors into their predictable and unexpected components, negative estimated coefficients on both *Error_PRED* (-0.110; $p = 0.002$) and *Error_RES* (-0.127; $p < 0.001$) indicate that managers' propensity to issue guidance below (above) the consensus analyst forecast both is increasing (decreasing) in both predictable analysts' forecast errors and analysts' errors that are unexpected by the market.[8] These results support the expectations adjustment hypothesis put forward by Ajinkya and Gift (1984). Moreover, the difference between the coefficients on *Error_PRED* and on *Error_RES* is statistically significant at the 5% level, indicating that managers issue stronger signals through management forecasts when analysts' errors are unexpected by the market.

### *3.5 Tests of the market's reaction to management guidance*

To examine whether the market's reaction to management guidance is associated with the errors in analysts' forecasts, I next test for the market's reaction to management guidance across various partitions of analysts' errors. The first analysis in Table 6 considers all management guidance firms, and includes both quantitative and non-quantitative (i.e., qualitative) management forecasts. A strength of this research design is the inclusion of *all* management forecasts in the analysis whereas the extant literature often overlooks qualitative and open-ended management forecasts which comprise a large portion of the CIG database. (See Rogers and Stocken 2005.)

[8] In untabulated analysis, I estimate the probability that management issues an annual earnings forecast below the consensus analyst forecast issued at the beginning of the guidance measurement period using a probit specification. I obtain similar results, including a stronger coefficient on *Error_RES* relative to the coefficient on *Error_PRED*.

Throughout Table 6, the central tendency of *CAR* is negative, as in Anilowski, Feng, and Skinner (2007). As above, I partition firms into portfolios each year according to the level of error in the consensus analyst forecast issued preceding the guidance measurement period. *ErrorQ* represents quintiles of firms formed yearly according to the level of *Error*, with quintile 1 (5) containing the smallest (largest) level of *Error*. Similarly, *Error_PREDQ* categorizes firms into quintiles according to the level of $Error\_PRED_t$, and *Error_RESQ* categorizes firms according to the level of $Error\_RES_t$.

For *Error*, I find a mean *CAR* of 0.022 in the lowest *ErrorQ* (i.e., for the firms with the most pessimistic analyst forecasts) and a mean *CAR* of -0.046 in the highest *ErrorQ* (i.e., for the firms with the most optimistic analyst forecasts). The difference across these quintiles equals -0.068 and is statistically significant at the 1% level. This finding suggests that the market reacts more negatively (positively) to management guidance in the presence of optimistic (pessimistic) analyst forecasts, and is consistent with the findings of Ajinkya and Gift (1984).

For $Error\_PRED_t$, I find a mean *CAR* of -0.013 in the lowest *Error_PREDQ* (i.e., for the firms with the lowest predictable forecast error) and a mean *CAR* of -0.019 in the highest *Error_PREDQ* (i.e., for the firms with the highest predictable forecast error). The difference across these quintiles is not statistically significant from zero. This finding, which suggests that the market's reaction to management's guidance does not vary with the predictable error in analysts' forecasts, provides support for H3.

For $Error\_RES_t$, I find a mean *CAR* of 0.022 in the lowest *Error_RESQ* (i.e., for the firms with the most pessimistic unexpected forecast errors) and a mean *CAR* of -0.044 in the highest *Error_RESQ* (i.e., for the firms with the most optimistic unexpected forecast errors). The difference across these quintiles equals -0.066 and is statistically significant at the 1% level. This finding suggests that the market reacts more negatively (positively) to management guidance in the presence of analysts' optimistic (pessimistic) unexpected forecast errors.

In the second set of market reaction tests, I employ ERC tests to further investigate the returns of management guidance firms during the period surrounding the release of the management forecast. This analysis in Table 7 considers only firms that issue quantitative management guidance for an annual period, so that the management forecast signal can be estimated. I use the first management forecast issued by the firm during the guidance measurement period, as in Rogers and Stocken (2005). (Inferences are unchanged when I use the last forecast issued by the firm during the guidance measurement period.) For point estimates (e.g. "we expect EPS of $1.00"), I use the point value of the forecast (i.e., $1.00). When the management forecast contains a range (e.g., "we expect EPS of $0.90 to $1.00"), I use the mid-point of the range (i.e., $0.95) following research by Baginski, Conrad, and Hassell (1993) and Hirst, Koonce, and Miller (1999) that suggests that investors use the mid-point of a range forecast when forming their earnings expectations. Thus open-ended management forecasts (e.g. "we expect EPS of above $1.10") and qualitative management forecasts are excluded from this analysis. (See also Hirst, Koonce, and Venkataraman 2008.)

Column 1 contains the baseline result in which the unexpected return is regressed on the management signal. Consistent with Ajinkya and Gift (1984) and Waymire (1984), the coefficient on the management signal is positive and significantly different from zero. Columns 2 and 3 investigate whether the market response to unexpected earnings varies with the level of error in the consensus analyst forecast prior to the guidance measurement period. In Column 2, the coefficient on *MFSignal * ErrorQ* is positive and significantly different from zero (0.124, one-sided p = 0.085). In Column 2, the coefficient on *MFSignal *Error_PREDQ* is not significantly different from zero (-0.068, p = 0.545), as predicted. This provides evidence that the market reaction to management guidance does not vary with the predictable error in analysts' forecasts, in support of H3. In Column 3, the coefficient on *MFSignal *Error_RESQ* is positive and significantly different from zero (0.146, one-sided p = 0.096), as predicted. This suggests that the market reaction to management guidance is stronger when analysts' unexpected forecast errors are optimistic.

To summarize the results in this section, both the portfolio-level tests and earnings response coefficient tests provide support for H3. It appears that the market reacts more to management guidance when analysts' forecasts contain optimistic errors – particularly when the errors are not predictable *ex ante*. This provides evidence that the market efficiently disregards guidance that is issued to correct the predictabe errors in analysts' forecasts.

## 4. Conclusion

This study contributes to the management forecast literature as well as to the literature that examines market earnings expectations. I investigate the relation between management guidance and analysts' forecast errors, as well as whether the market's response to management guidance varies with analysts' forecast errors. Within the Hirst, Koonce, and Venkataraman (2008) framework (see also Wiedman 2000), I consider the antecedents, characteristics, and consequences of management guidance.

While the extant literature finds management guidance is more prevalent in the presence of optimistic *ex post* analysts' errors, I use both levels and differences-in-differences analyses to show that the propensity to issue management guidance is associated with both analysts' predictable and unexpected forecast errors. My research design uses Larocque's (2009) model to predict analysts' errors on an out-of-sample basis. Diagnostic tests show that my predicted error measure forms a good proxy for *ex ante* analysts' errors.

I further show that the direction of management's guidance is associated with analysts' forecast errors. While the extant literature provides some analysis of the interaction between managers' forecast errors and analysts' optimism (see Baginski et al. 2009), I find evidence of a stronger association between the direction of management's guidance and analysts' forecast errors that are unexpected by the market.

Researchers have also investigated the market's reaction to market guidance. I predict and find that the efficiency of the market's response to management guidance varies with the errors in analysts' forecasts: the market reacts more to management guidance when analysts' forecasts contain optimistic errors, and the market's response to management guidance is consistent with it efficiently filtering the predictable errors from analysts' forecasts. This finding complements Rogers and Stocken (2005). While Rogers and Stocken (2005) show that the market predicts and filters managers' forecasting bias from management guidance, I find that the market predicts and filters analysts' errors when responding to management guidance.

Overall, the study's results are consistent with managers, who have different information sets than do analysts and the market, issuing guidance to manage both the analysts' forecast errors that can be predicted by the market and those that are unexpected, and with the market efficiently filtering the predictable errors in analysts' forecasts. Finally, results throughout this paper are robust to the method used to predict analysts' forecast errors, the time period measured, and across both quarterly and annual guidance events.

**APPENDIX: Variable Definitions**

| Variable | Definition |
|---|---|
| $AF_t$ | = Median consensus EPS forecast for year *t* according to the I/B/E/S unadjusted summary report released during April of year *t* |
| $ANF_t$ | = Number of I/B/E/S analysts that issue forecasts for the firm for year *t* according to the I/B/E/S summary report released during April of year *t* |
| $Beta_t$ | = CAPM beta as of the beginning of year *t* estimated using daily data during year *t-1* |
| $BM_t$ | = Ratio of common equity as of the beginning of year *t* to market value of equity for the firm as of March of year *t* |
| *CAR* | = 3-day abnormal return surrounding management guidance events |
| $E(eps_t)$ | = Expected earnings per share in year *t* |
| $eps_t$ | = Actual earnings per share in year *t*, according to I/B/E/S unadjusted reports or, if I/B/E/S actual unavailable, according to Compustat |
| $Error_{jt-1}$ | = $\frac{AF_{t-1} - eps_{t-1}}{price_{t-2}}$ |
| $Error_{jt}$ | = $\frac{AF_t - eps_t}{price_{t-1}}$ |
| *ErrorQ* | = The annual quintile rank of error, using $Error_{jt}$. |
| $Error\_PRED_t$ | = Predicted error in the consensus analyst forecast issued in April of year *t*, for year *t* earnings (scaled by $price_{t-1}$) |
| *Error_PREDQ* | = The annual quintile rank of analysts' predicted errors, using $Error\_PRED_{jt}$ |
| $Error\_RES_{jt}$ | = $\frac{AdjAF_t - eps_t}{price_{t-1}}$ |
| *Error_RESQ* | = The annual quintile rank of analysts' unexpected errors, using $Error\_RES_{jt}$ |
| $FD_t$ | = Indicator variable that equals 1 in the years 2000 and higher, and 0 otherwise |
| $Guidance_{t+1}$ | = Indicator variable that equals 1 if a firm issued guidance between the date of the I/B/E/S summary report and the announcement of year *t* earnings, and 0 otherwise |
| *InvMills* | = Inverse Mills ratio from the first stage of a model that predicts whether firms issue management guidance |
| $Loss_t$ | = Indicator variable that equals 1 when the analyst forecast for year *t* issued in April of year *t* is negative, and 0 otherwise |

**APPENDIX: Variable Definitions (continued)**

| Variable | | Definition |
|---|---|---|
| $Litigate_t$ | = | Indicator variable that equals 1 for high-litigation industries, and 0 otherwise (as in Ajinkya, Bhoraj, and Sengupta 2005) |
| $MF_t$ | = | The value of the first management forecast of annual EPS issued between the date of the I/B/E/S summary report and the announcement of year *t* earnings |
| $MFSignal_t$ | = | $\frac{MF_t - AF_t}{price_{t-1}}$ |
| $MV_t$ | = | Market value of the firm as of March of year *t* |
| $price_{t-1}$ | = | Price at the end of year *t-1*, from CRSP |
| $price_t$ | = | Price preceding the release of the I/B/E/S analyst forecast, from CRSP |
| $RET\_LAG_t$ | = | Abnormal stock return for the 12 months ending on the day prior to the release of the I/B/E/S analyst forecast |
| $RET\_EZ_t$ | = | Total raw return to shareholders adjusted for the value-weighted return on a market portfolio from CRSP, from the day following the release of the analyst forecast through to one day before the earnings release |

## References


Abarbanell, J. 1991. Do analysts' earnings forecasts incorporate information in prior stock price changes? Journal of Accounting and Economics 14 (2): 147-65.

Abarbanell, J. and R. Lehavy. 2003. Biased forecasts or biased earnings? The role of reported earnings in explaining apparent bias and over/underreaction in analysts' earnings forecasts. Journal of Accounting and Economics 36 (1–3): 105-146.

Ajinkya, B., and M. J. Gift. 1984. Corporate managers' earnings forecasts and symmetrical adjustments of market expectations. Journal of Accounting Research 22 (2): 425-44.

Ajinkya, B., S. Bhoraj, and P. Sengupta. 2005. The association between outside directors, institutional investors and the properties of management earnings forecasts. Journal of Accounting Research 43 (3): 343-376.

Ali, A., A. Klein, and J. Rosenfeld. 1992. Analysts' use of information about permanent and transitory earnings components in forecasting annual EPS. The Accounting Review 67 (1): 183-98.

Anilowski, C., M. Feng, and D. Skinner. 2007. Does earnings guidance affect market returns? The nature and information content of aggregate earnings guidance. Journal of Accounting and Economics 44 (1-2): 36-63.

Baginski, S., E. Conrad, and J. Hassell. 1993. The effects of management forecast precision on equity pricing and on the assessment of earnings uncertainty. The Accounting Review 68 (4): 913-927.

Bagnoli, M., Y. Li, and S. Watts. 2009. History matters: Individual analysts' responses to quarterly guidance. Purdue University working paper.

Baik, B., and G. Jiang. 2006. The use of management forecasts to dampen analysts' expectations. Journal of Accounting and Public Policy 25 (5): 531-53.

Bailey, W., H. Li, C. Mao, and R. Zhong. 2003. Regulation Fair Disclosure and earnings information: Market, analyst, and corporate responses. Journal of Finance 58 (6): 2487-2514.

Bartov, E., D. Givoly, and C. Hayn. 2002. The rewards to meeting or beating earnings expectations. Journal of Accounting and Economics 33 (2): 173-204.

Bergman, N., and S. Roychowdhury. 2008. Investor sentiment and corporate disclosure. Journal of Accounting Research 46 (5): 1057-1083.

Beyer, A. 2009. Capital market prices, management forecasts, and earnings management. The Accounting Review (forthcoming).

Beyer, A., D. Cohen, T. Lys, and B. Walther. 2009. The financial reporting environment: Review of the recent literature. Stanford University, New York University, and Northwestern University working paper.

Brown, L. 1993. Earnings forecasting research: its implications for capital markets research. International Journal of Forecasting 9 (3): 295-320.

Brown, L. 2001. A temporal analysis of earnings surprises: profits versus losses. Journal of Accounting Research 39 (2): 221-241.

Brown, L., and M. Caylor. 2005. A temporal analysis or quarterly earnings thresholds: Propensities and valuation consequences. The Accounting Review 80 (2): 423-440.

Coller, M., and T. L. Yohn. 1997. Management forecasts and information asymmetry: an examination of bid-ask spreads. Journal of Accounting Research 35 (2): 181-91.

Cotter, J., I. Tuna, and P. Wysocki. 2006. Expectations management and beatable targets: How do analysts react to explicit earnings guidance? Contemporary Accounting Research 23 (3): 593-624.

DeBondt, W. and R. Thaler. 1990. Do security analysts overreact? The American Economic Review 80 (2): 52-57.

Degeorge, F., J. Patel and R. Zeckhauser. 1999 Earnings management to exceed thresholds. Journal of Business 72 (1): 1-33.

Diamond, D., and R. Verrecchia. 1991. Disclosure, liquidity, and the cost of capital. The Journal of Finance 46 (4): 1325-59.

Doukas, J., C. Kim, and C. Pantzalis. 2002. A test of the errors-in-expectations explanation of the value/glamour stock returns performance: Evidence from analysts' forecasts. The Journal of Finance 57 (5): 2143-2165.

Dugar, A., and S. Nathan. 1995. The effect of investment banking relationships on financial analysts' earnings forecasts and investment recommendations. Contemporary Accounting Research 12 (1): 131-160.

Easley, D., and M. O'Hara. 2004. Information and the cost of capital. The Journal of Finance 59 (4): 1553-83.

Easton, P., and G. Sommers. 2007. Effect of analysts' optimism on estimates of the expected rate of return implied by earnings forecasts. Journal of Accounting Research 45 (5): 983-1015.

Easton, P., and M. Zmijewski. 1989. Cross-sectional variation in the stock market response to accounting earnings announcements. Journal of Accounting and Economics 11 (2-3): 117-41.

Fama, E., and J. MacBeth. 1973. Risk, return, and equilibrium: Empirical tests. Journal of Political Economy 81 (3): 607-36.

Fischer, P., and R. Verrecchia. 2000. Reporting bias. The Accounting Review 75 (2): 229-245.

Francis, J., and D. Philbrick. 1993. Analysts' decisions as products of a multi-task environment. Journal of Accounting Research 31 (2): 216-230.

Frankel, R., and C. Lee. 1998. Accounting valuation, market expectation, and cross-sectional stock returns. Journal of Accounting and Economics 25 (3): 283-319.

Hassell, J., and R. Jennings. 1986. Relative forecast accuracy and the timing of earnings forecast announcements. The Accounting Review 61 (1): 58-75.

Hayes, R. 1998. The impact of trading commission incentives on analysts' stock coverage decisions and earnings forecasts. Journal of Accounting Research 36 (2): 299-320.

Heckman, J. 1979. Sample selection bias as a specification error. Econometrica 47 (1): 153-62.

Heflin, F., K.R. Subramanyam, and Y. Zhang. 2003. Regulation FD and the financial information environment: Early evidence. The Accounting Review 78 (1): 1-37.

Hirst, E., L. Koonce, and J. Miller. 1999. The joint effect of management's prior forecast accuracy and the form of its financial forecasts on investor judgment. Journal of Accounting Research 37 (Supplement): 101-124.

Hirst, E., L. Koonce, and S. Venkataraman. 2008. Management earnings forecasts: A review and framework. Accounting Horizons 22 (3): 315-338.

Hughes, J., J. Liu, and W. Su. 2008. On the relation between predictable market returns and predictable analyst forecast errors. Review of Accounting Studies 13 (2-3): 266-291.

Imhoff, E. 1978. The representativeness of management earnings forecasts. The Accounting Review 53 (4): 836-850.

Jackson, A. 2005. Trade generation, reputation, and sell-side analysts. The Journal of Finance 60 (2): 673-717.

Jennings, R. 1987. Unsystematic security price movements, management earnings forecasts, and revisions in consensus analyst earnings forecasts. Journal of Accounting Research 25 (1): 90-110.

Kasznik, R., and B. Lev. 1995. To warn or not to warn: Management disclosures in the face of an earnings surprise. The Accounting Review 70 (1): 113-134.

Keane, M., and D. Runkle. 1990. Testing the rationality of price forecasts: New evidence from panel data. The American Economic Review 80 (4): 714-35.

King, R., G. Pownall, and G. Waymire. 1990. Expectations adjustments via timely management forecasts: Review, synthesis, and suggestions for future research. Journal of Accounting Literature 9: 113-44.

Kothari, S.P. 2001. Capital markets research in accounting. Journal of Accounting and Economics 31 (1-3): 105-231.

Larocque, S. 2009. Disclosure, analyst forecast bias, and the cost of equity capital. University of Notre Dame working paper.

Marquardt, C., and C. Wiedman. 1998. Voluntary disclosure, information asymmetry, and insider selling through secondary equity offerings. Contemporary Accounting Research 15 (4): 505-37.

Matsumoto, D. 2002. Management's incentives to avoid negative earnings surprises. The Accounting Review 77 (3): 483-514.

McNichols, M., and P. O'Brien. 1997. Self-selection and analyst coverage. Journal of Accounting Research 35 (3): 167-199.

Mendenhall, R. 1991. Evidence on the possible underweighting of earnings-related information. Journal of Accounting Research 29 (1): 170-9.

Muth, J. 1961 Rational expectations and the theory of price movements. Econometrica 29 (3): 315-35.

O'Brien, P. 1988. Analysts' forecasts as earnings expectations. Journal of Accounting and Economics 10 (1): 53-83.

Patell, J. 1976. Corporate forecasts of earnings per share and stock price behavior: Empirical tests. Journal of Accounting Research 14 (1): 246-276.

Payne, J., and W. Thomas. 2003. The implications of using stock-split adjusted I/B/E/S data in empirical research. The Accounting Review 78 (4): 1049-67.

Penman, S. 1980. An empirical investigation of the voluntary disclosure of corporate earnings forecasts. Journal of Accounting Research 18 (1): 132-160.

Pownall, G., C. Wasley, and G. Waymire. 1993. The stock price effects of alternative types of management earnings forecasts. The Accounting Review 68 (4): 896-912.

Richardson, S., S. Teoh, and P. Wysocki. 2004. The walkdown to beatable analyst forecasts: The role of equity issuance and insider trading incentives. Contemporary Accounting Research 21 (4): 885-924.

Rogers, J., and P. Stocken. 2005. Credibility of management forecasts. The Accounting Review 80 (4): 1233-1260.

Schipper, K. 1991. Commentary on analysts' forecasts. Accounting Horizons 5 (4): 105-21.

Skinner, D. 1994. Why firms voluntarily disclose bad news. Journal of Accounting Research 32 (1): 38-60.

Skinner, D., and R. Sloan. 2002. Earnings surprises, growth expectations, and stock returns or Don't let an earnings torpedo sink your portfolio. Review of Accounting Studies 2002 7 (2-3): 289-312.

Stein, J. 1989. Efficient capital markets, inefficient firms: A model of myopic corporate behavior. Quarterly Journal of Economics 104 (4): 655-669.

Waymire, G. 1984. Additional evidence on the information content of management earnings forecasts. Journal of Accounting Research 22 (2): 703-718.

Wiedman, C. 2000. Discussion of 'Voluntary disclosure and equity offerings: Reducing information asymmetry or hyping the stock'. Contemporary Accounting Research 17 (4): 663-669.

**Figure 1**

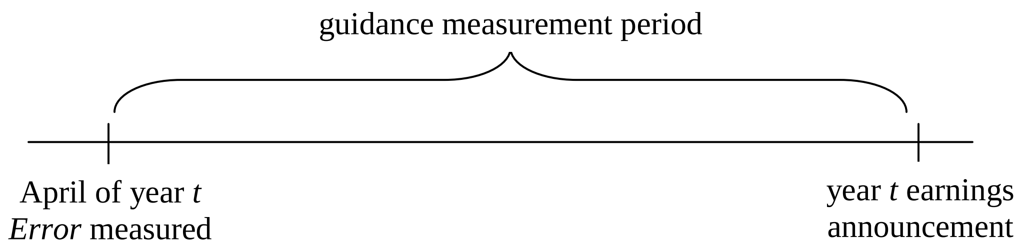
guidance measurement period
April of year t
Error measured
year t earnings
announcement

**TABLE 1**
**Sample selection and descriptive statistics**

This table summarizes the procedure used to select the sample used in this study (Panel A) and provides mean descriptive statistics for the sample of firm-years (Panel B). Variable definitions are in the Appendix.

**Panel A: Sample selection procedure**

| Criteria | Firm-years | Remaining firm-years |
|---|---|---|
| U.S. firms with December fiscal year-ends and April EPS forecasts for year *t* available from I/B/E/S unadjusted Summary reports, from 1994 to 2007 | | 47,404 |
| Less: | | |
| Observations with missing I/B/E/S or Compustat actual EPS figure for year *t* | (8,736) | 38,668 |
| Observations with missing I/B/E/S EPS forecast or actual EPS for year *t-1* | (7,763) | 30,905 |
| Observations which cannot be matched with CRSP to obtain returns or prices, or with prices < \$5 or > \$500 | (3,857) | 27,048 |
| Observations with *Error* in top or bottom 1% | (529) | 26,519 |
| Sample used to predict analysts' forecast errors | | 26,519 |
| Sample with predicted and unexpected analysts' forecast errors, from 1997 to 2007 | | 20,589 |
| Less: | | |
| Observations which cannot be matched with Compustat to obtain book value | (2,155) | 18,434 |
| Guidance firm-years | | 7,333 |
| Non guidance firm-years | | 11,101 |
| **Sample of guidance and non-guidance firm-years** | | **18,434** |

**Panel B: Mean descriptive statistics for guidance vs. non-guidance firm-years**

| | Guidance firm-years ($GUIDANCE_{t+1}$ = 1) (1) | Non-guidance firm-years ($GUIDANCE_{t+1}$ = 0) (2) | Difference (1) – (2) |
|---|---|---|---|
| $price_t$ | 30.857 | 26.755 | 4.102*** |
| $MV_t$ | 6,476 | 3,147 | 3,329*** |
| $Beta_t$ | 0.988 | 0.861 | 0.127*** |
| $BM_t$ | 0.478 | 3.479 | -3.001*** |
| $ANF_t$ | 7.165 | 4.549 | 2.616*** |
| $Loss_t$ | 0.047 | 0.123 | -0.076*** |
| $Litigate_t$ | 0.253 | 0.198 | 0.056*** |
| $FD_t$ | 0.745 | 0.598 | 0.147*** |
| $Error_t$ | 0.015 | 0.019 | -0.004** |
| N | 7,333 | 11,101 | |

## TABLE 2
## Prediction of analysts' forecast errors

This table reports the results of estimating the error prediction model used in Larocque (2009) as well as the distribution of analysts' forecast errors by year. Panel A presents the results of estimating the following equation:

$$Error_{jt} = \alpha_0 + \alpha_1 Error_{jt-1} + \alpha_2 RET\_LAG_{jt} + \alpha_3 \ln(MV_{jt}) + \alpha_4 RET\_EZ_{jt} + \varepsilon_{jt}$$

Mean coefficients and t-statistics (shown in parentheses) are calculated following Fama and MacBeth (1973).

Panel B presents the mean values of $Error_{jt}$, $Error\_PRED_{jt}$, and $Error\_RES_{jt}$ throughout the sample period. Significance levels are based on one-tailed tests where there is a prediction for the sign of the coefficient and based on two-tailed tests otherwise. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are in the Appendix.

**Panel A: Prediction of analyst forecast errors**

| | Intercept (?) | $Error_{t-1}$ (+) | $RET\_LAG_t$ (-) | $\ln(MV_t)$ (-) | $RET\_EZ_t$ (-) | N | Adjusted $R^2$ |
|---|---|---|---|---|---|---|---|
| 1994 | 0.036 | 0.112 | 0.004 | -0.004 | -0.029 | 1,467 | 0.118 |
| | (10.27) | (5.70) | (1.62) | (-7.55) | (-9.31) | | |
| 1995 | 0.029 | 0.110 | 0.005 | -0.003 | -0.019 | 1,570 | 0.095 |
| | (10.69) | (5.87) | (2.27) | (-6.27) | (-9.24) | | |
| 1996 | 0.022 | 0.226 | -0.004 | -0.001 | -0.037 | 1,730 | 0.140 |
| | (5.99) | (9.61) | (-2.02) | (-2.11) | (-11.48) | | |
| 1997 | 0.022 | 0.149 | -0.013 | -0.001 | -0.016 | 1,798 | 0.091 |
| | (7.81) | (9.43) | (-3.39) | (-3.08) | (-7.96) | | |
| 1998 | 0.032 | 0.165 | -0.011 | -0.003 | -0.016 | 1,975 | 0.093 |
| | (9.86) | (8.42) | (-3.01) | (-5.44) | (-7.64) | | |
| 1999 | 0.036 | 0.159 | 0.001 | -0.004 | -0.003 | 1,992 | 0.061 |
| | (10.14) | (6.87) | (0.80) | (-7.58) | (-4.18) | | |
| 2000 | 0.048 | 0.303 | -0.004 | -0.005 | -0.031 | 1,871 | 0.184 |
| | (11.26) | (10.78) | (-3.48) | (-7.19) | (-13.95) | | |
| 2001 | 0.062 | 0.062 | 0.004 | -0.006 | -0.019 | 1,756 | 0.067 |
| | (14.57) | (2.69) | (1.96) | (-8.60) | (-8.51) | | |
| 2002 | 0.024 | 0.138 | -0.0004 | -0.003 | -0.018 | 1,737 | 0.112 |
| | (8.18) | (8.57) | (-0.16) | (-6.03) | (-9.55) | | |
| 2003 | 0.026 | 0.200 | -0.002 | -0.003 | -0.008 | 1,732 | 0.102 |
| | (9.01) | (11.05) | (-0.62) | (-6.59) | (-6.25) | | |
| 2004 | 0.018 | 0.033 | -0.004 | -0.001 | -0.030 | 1,811 | 0.055 |
| | (4.50) | (2.46) | (-2.76) | (-2.59) | (-9.75) | | |
| 2005 | 0.020 | 0.045 | 0.006 | -0.002 | -0.018 | 1,875 | 0.053 |
| | (6.22) | (3.58) | (2.95) | (-3.51) | (-9.21) | | |
| 2006 | 0.014 | 0.064 | -0.004 | -0.001 | -0.035 | 1,994 | 0.102 |
| | (4.92) | (4.75) | (-2.89) | (-3.12) | (-13.68) | | |
| 2007 | 0.011 | 0.211 | 0.0001 | -0.001 | -0.032 | 2,048 | 0.153 |
| | (3.28) | (10.85) | (0.04) | (-1.95) | (-14.98) | | |
| Sign (+/-) | (14/0) | (14/0) | (6/8) | (0/14) | (0/14) | | |
| Mean | 0.029*** | 0.141*** | -0.002 | -0.003*** | -0.022*** | 25,356 | 0.102 |
| | (7.77) | (6.84) | (-1.08) | (-6.63) | (-8.10) | | |

## TABLE 2 (continued)

**Panel B: Mean ex post, predicted, and residual analysts' forecast errors**

| | $Error_{jt}$ | $Error\_PRED_{jt}$ | $Error\_RES_{jt}$ | N |
|---|---|---|---|---|
| 1997 | 0.019*** | 0.019*** | 0.001 | 1,448 |
| | (13.14) | (30.56) | (0.48) | |
| 1998 | 0.021*** | 0.017*** | 0.004*** | 1,632 |
| | (15.93) | (34.15) | (3.17) | |
| 1999 | 0.027*** | 0.036*** | -0.010** | 1,649 |
| | (6.01) | (28.54) | (-2.38) | |
| 2000 | 0.304*** | 0.023*** | 0.007** | 1,608 |
| | (9.73) | (27.39) | (2.56) | |
| 2001 | 0.039*** | 0.052*** | -0.014*** | 1,574 |
| | (10.63) | (12.76) | (-2.82) | |
| 2002 | 0.015*** | 0.031*** | -0.017*** | 1,585 |
| | (9.22) | (21.23) | (-9.59) | |
| 2003 | 0.013*** | 0.032*** | -0.019*** | 1,591 |
| | (8.91) | (33.93) | (-12.70) | |
| 2004 | 0.005*** | 0.011*** | -0.005*** | 1,690 |
| | (8.15) | (40.60) | (-7.44) | |
| 2005 | 0.009*** | 0.011*** | -0.002** | 1,775 |
| | (8.98) | (25.99) | (-2.05) | |
| 2006 | 0.007*** | 0.009*** | -0.002*** | 1,902 |
| | (9.26) | (49.28) | (-2.81) | |
| 2007 | 0.010*** | 0.008*** | 0.001 | 1,980 |
| | (10.07) | (46.23) | (1.23) | |
| Mean | 0.018*** | 0.023*** | -0.005* | 18,434 |
| | (5.49) | (5.37) | (-1.93) | |

## TABLE 3
## Tests of association between management guidance and analysts' forecast errors

This table presents the results of estimating a probit model to predict whether firms issue management guidance. Columns 1 and 2 estimate the following specification, with *ERROR* equal to either ex post analysts' forecast error (*Error*), or predicted analysts' error (*Error_PRED*) and unexpected analysts' error (*Error_RES*):

$$\Pr(Guidance_{jt+1}=1) = \alpha_0 + \alpha_1 ERROR_{jt} + \alpha_2 \ln(MV_{jt}) + \alpha_3 \ln(BM_{jt}) + \alpha_4 \ln(ANF_{jt}) + \alpha_5 Beta_{jt} + \alpha_6 STD_{jt} + \alpha_7 Loss_{jt} + \alpha_8 Litigate_{jt} + \alpha_{10} FD_{jt} + \varepsilon_{jt}$$

The reported coefficient is the elasticity, which represents the change in the probability of management issuing guidance for a one-standard-deviation change in the independent variable. Coefficient standard errors are in parentheses and are clustered at the firm level. Significance levels are based on one-tailed tests where there is a prediction for the sign of the coefficient and based on two-tailed tests otherwise. ***, **, and * denotes significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are in the Appendix.

| | Predicted sign | (1) | (2) |
|---|---|---|---|
| Intercept | ? | -0.299*** | -0.299*** |
| | | (0.10) | (0.010) |
| $Error_t$ | + | 0.035*** | |
| | | (0.011) | |
| $Error\_PRED_t$ | + | | 0.036*** |
| | | | (0.012) |
| $Error\_RES_t$ | + | | 0.032*** |
| | | | (0.011) |
| $\ln(MV_t)$ | + | 0.063*** | 0.067*** |
| | | (0.015) | (0.016) |
| $\ln(BM_t)$ | - | -0.245*** | -0.244*** |
| | | (0.012) | (0.012) |
| $\ln(ANF_t)$ | + | 0.211*** | 0.210*** |
| | | (0.015) | (0.015) |
| $STD_t$ | - | -0.061*** | -0.061*** |
| | | (0.014) | (0.014) |
| $Beta_t$ | - | -0.012 | -0.013 |
| | | (0.011) | (0.011) |
| $Loss_t$ | ? | -0.227*** | -0.230*** |
| | | (0.012) | (0.012) |
| $Litigate_t$ | + | 0.099*** | 0.099*** |
| | | (0.011) | (0.011) |
| $FD_t$ | + | 0.214*** | 0.214*** |
| | | (0.011) | (0.011) |
| N | | 18,434 | 18,434 |
| Pseudo $R^2$ | | 0.172 | 0.172 |
| % Concordant | | 70.9 | 71.0 |

## TABLE 4
## Differences-in-differences analysis of management guidance firms

This table presents descriptive statistics for two samples of firms: "non-start" firms that do not issue management guidance in year *t* or *t+1*, and "start" firms that do not issue management guidance in year *t* and start issuing management guidance in year *t+1*. ***, **, and * denotes significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are in the Appendix.

| | **"Non-start" firms** $Guidance_t = 0$; $Guidance_{t+1} = 0$ (1) | **"Start" firms** $Guidance_t = 0$; $Guidance_{t+1} = 1$ (2) | (2) – (1) |
|---|---|---|---|
| **Year *t*** | | | |
| $Error_t$ | 0.012 | 0.022 | 0.010*** |
| $Error\_PRED_t$ | 0.019 | 0.023 | 0.004*** |
| $Error\_RES_t$ | -0.007 | -0.002 | 0.005*** |
| **Year *t+1*** | | | |
| $Error_t$ | 0.013 | 0.035 | 0.022*** |
| $Error\_PRED_t$ | 0.019 | 0.032 | 0.013*** |
| $Error\_RES_t$ | -0.006 | 0.003 | 0.009*** |
| **Change from year *t* to *t+1*** | | | |
| $Error_t$ | 0.001 | 0.013** | 0.012*** |
| $Error\_PRED_t$ | 0.000 | 0.008*** | 0.009** |
| $Error\_RES_t$ | 0.001 | 0.005 | 0.004 |
| N | 6,204 | 1,248 | |

**TABLE 5**
**Tests of the direction of managements' guidance**

This table presents the results of tests of the association between the management forecast signal (i.e. the difference between the management forecast issued during the guidance measurement period and the analyst forecast issued at the beginning of the guidance measurement period) and analysts' forecast errors, using the following specification:.

$$MFSignal_{jt} = \alpha_0 + \alpha_1 ERROR_{jt} + \alpha_2 \ln(MV_{jt}) + \alpha_3 \ln(BM_{jt}) + \alpha_4 \ln(ANF_{jt}) + \alpha_5 Beta_{jt} + \alpha_6 STD_{jt} + \alpha_7 Litigate_{jt} + \alpha_8 InvMills_{jt} + \varepsilon_{jt}$$

Figures in parentheses are coefficient standard errors which are clustered at the firm level. Significance levels are based on one-tailed tests where there is a prediction for the sign of the coefficient and based on two-tailed tests otherwise. ***, **, and * denotes significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are in the Appendix.

| | Predicted sign | (1) | (2) |
|---|---|---|---|
| Intercept | ? | -0.005 | -0.005 |
| | | (0.004) | (0.004) |
| $Error_t$ | - | -0.125*** | |
| | | (0.035) | |
| $Error\_PRED_t$ | - | | -0.110*** |
| | | | (0.036) |
| $Error\_RES_t$ | - | | -0.127*** |
| | | | (0.035) |
| $\ln(MV_t)$ | | 0.001*** | 0.002*** |
| | | (0.0003) | (0.0004) |
| $\ln(BM_t)$ | | 0.0002 | 0.0003 |
| | | (0.0004) | (0.0004) |
| $\ln(ANF_t)$ | | -0.004*** | -0.004*** |
| | | (0.001) | (0.001) |
| $Beta_t$ | | 0.002*** | 0.002*** |
| | | (0.001) | (0.0001) |
| $STD_t$ | | 0.000 | 0.000 |
| | | (0.000) | (0.000) |
| $Litigate_t$ | | -0.0001 | -0.0002 |
| | | (0.0004) | (0.0005) |
| $InvMills_t$ | | 0.002 | 0.001 |
| | | (0.002) | (0.002) |
| N | | 4,729 | 4,729 |
| $R^2$ | | 0.117 | 0.117 |
| Test: $Error\_PRED_t = Error\_RES_t$ | | F-value = 3.78; p = 0.05 | |

## TABLE 6
## CARs surrounding management guidance events

This table presents the 3-day abnormal returns (*CAR*) surrounding management guidance events. Portfolios of firms are formed according to the level of *ex post* analyst errors ($Error_t$), predicted analyst errors ($Error\_PRED_t$), and unexpected analyst forecast error ($Error\_RES_t$), with portfolio 1 (5) containing the lowest (highest) level of a given variable. The last Column compares portfolios 5 and 1. Significance levels are based on two-tailed tests. ***, **, and * denotes significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are in the Appendix.

| Portfolio formed according to: | | (1) | (2) | (3) | (4) | (5) | **(5) – (1)** |
|---|---|---|---|---|---|---|---|
| $Error_t$ | $Error_t$ | -0.017 | -0.001 | 0.005 | 0.015 | 0.057 | **0.074*** ** |
| | $Error\_PRED_t$ | 0.012 | 0.010 | 0.011 | 0.013 | 0.015 | **0.003*** ** |
| | $Error\_RES_t$ | -0.029 | -0.012 | -0.007 | 0.002 | 0.042 | **0.071*** ** |
| | *CAR* | 0.022 | 0.001 | -0.030 | -0.039 | -0.046 | **-0.068*** ** |
| $Error\_PRED_t$ | $Error_t$ | 0.006 | 0.006 | 0.010 | 0.013 | 0.024 | **0.018*** ** |
| | $Error\_PRED_t$ | 0.003 | 0.009 | 0.012 | 0.015 | 0.023 | **0.020*** ** |
| | $Error\_RES_t$ | 0.004 | -0.002 | -0.003 | -0.002 | 0.001 | **-0.003** |
| | *CAR* | -0.013 | -0.017 | -0.021 | -0.022 | -0.019 | **-0.006** |
| $Error\_RES_t$ | $Error_t$ | -0.015 | -0.0002 | 0.005 | 0.014 | 0.056 | **0.071*** ** |
| | $Error\_PRED_t$ | 0.016 | 0.013 | 0.010 | 0.010 | 0.012 | **-0.004*** ** |
| | $Error\_RES_t$ | -0.031 | -0.013 | -0.006 | 0.004 | 0.043 | **0.077*** ** |
| | *CAR* | 0.022 | -0.007 | -0.021 | -0.041 | -0.044 | **-0.066*** ** |

## TABLE 7
## Earnings response coefficient tests

This table presents the results of earnings response coefficient tests. The tests use variations of the following specification:

$$CAR_{jt} = \lambda_0 + \lambda_1 MFSignal_{jt} + \lambda_2 MFSignal_{jt} * ERRORQ_{jt} + \lambda_3 ERRORQ_{jt} + \lambda_4 * InvMills + \varepsilon$$

In the above specification, *ERRORQ* is the quintile rank of analysts' forecast error measured at the beginning of the guidance measurement period. In Column 2, the quintile rank of *ex post* analysts' forecast error (*ErrorQ*) is used. In Column 3, analysts' forecast error is broken down into two components, such that the specification includes the quintile ranks of both predicted analysts' forecast error (*Error_PREDQ*) and unexpected analysts' forecast error (*Error_RESQ*).

Figures in brackets are mean t-statistics calculated following Fama and MacBeth (1973). Significance levels are based on one-tailed tests where there is a prediction for the sign of the coefficient and based on two-tailed tests otherwise. ***, ** and * denotes significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are in the Appendix.

| | Predicted sign | (1) | (2) | (3) |
|---|---|---|---|---|
| Intercept | | -0.009<br>(-1.61) | 0.031***<br>(5.84) | 0.043***<br>(5.86) |
| *MFSignal* | + | 1.204***<br>(5.05) | 0.549**<br>(1.90) | 0.917*<br>(1.50) |
| *MFSignal * ErrorQ* | + | | 0.124*<br>(1.48) | |
| *MFSignal * Error_PREDQ* | 0 | | | -0.068<br>(-0.63) |
| *MFSignal * Error_RESQ* | + | | | 0.123*<br>(1.39) |
| *ErrorQ* | ? | | -0.112***<br>(-8.79) | |
| *Error_PREDQ* | ? | | | 0.001<br>(0.51) |
| *Error_RESQ* | ? | | | -0.011***<br>(-9.75) |
| *InvMills* | ? | | -0.003<br>(-0.76) | -0.021**<br>(-2.52) |
| N | | 4,729 | 4,729 | 4,729 |
| Adj. $R^2$ | | 0.047 | 0.076 | 0.080 |