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K.C. Lin
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# "Do Financial Analysts Respond Efficiently to Managers' Earnings Guidance?"

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# Do Financial Analysts Respond Efficiently to Managers' Earnings Guidance?

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**Abstract**: When managers provide earnings guidance, analysts normally respond within a short time frame with their own earnings forecasts. Within this setting, I investigate whether financial analysts use publicly available information to adjust for predictable error in management guidance and, if so, the explanation for such inefficiency. I provide evidence that analysts do not fully adjust for predictable guidance error when revising forecasts. The analyst inefficiency is attributed to analysts' attempts to advance relationship with the managers, analysts' compensation not tie to forecast accuracy, and their forecasting ability. Finally, the stock market acts as if it does not fully realize that analysts respond inefficiently to the guidance, introducing mispricing. This mispricing is not fully corrected upon earnings announcement.

## 1. Introduction

This paper investigates how financial analysts incorporate management earnings guidance into their earnings forecasts. Prior research have alleged that analysts and firm managers are engaged in the earnings-guidance game, where managers guide analysts' forecasts in managers' desired directions. For example, Brown and Caylor (2005) show that since the mid-1990s, managers consider meeting-or-beating analysts' expectations the most important earnings target. Matsumoto (2002) and Cotter et al. (2006) find that the issuance of guidance increases the likelihood of meeting-or-beating analysts' expectations. Richardson et al. (2004) observe that analysts' forecasts shift from optimism at the start of the year to pessimism by the end of the year. The authors attribute this finding as that the managers walk down analysts' forecasts to facilitate subsequent equity offering and insider trading.

The evidence for the earnings-guidance game remains unclear for the following reasons. First, there is limited evidence on whether the error in guidance is *ex ante* predictable[1]. If the error is not predictable, then managers may have been producing guidance forthrightly, rather than aggressively gaming the system. Second, there is no direct investigation on whether analysts revise forecasts in response to the predictable guidance error. Thus, rather than the earnings-guidance game, the changes in macroeconomic or industrial trend after the guidance announcement may be the sole culprit for the findings of meeting-or-beating analysts' expectations in Matsumoto (2002) and Cotter et al. (2006) and equity offering and insider trading in Richardson et al. (2004). This paper attempts to address the above issues to shed more insights into the earnings-guidance game between analysts and managers.

Another objective of this paper is to investigate whether stock market reaction to management guidance is influenced by how analysts incorporate the guidance. The empirical investigation is motivated by the conventional wisdom that analysts are viewed as important financial intermediaries who interpret corporate disclosures and disseminate independent earnings forecasts. Graham et al. (2005) suggests that managers perceive analysts as one of the most important groups affecting the market's behavior. Thus, if guidance is predictably erroneous but analysts act as managers' pawns who only advertise, if not amplify, the guidance, would market impound the error into stock prices? If so, when would the correction for missing pricing occur?

Using a large sample of management earnings guidance announcements from First Call's Company Issued Guidance database ranging from 1996 to 2010, I document that the guidance error is *ex ante* predictable based on a set of variables related to prior earnings, prior stock returns, and information uncertainty during the guidance announcement. I find that the absolute error in the guidance adjusted for predictable error is significantly lower than the absolute error in analyst consensus forecast issued during

[1] One notable exception is Atiase et al. (2010). The authors focus on directionally incorrect guidance and find that the analysts' forecast revisions decrease in the predicted probability of this type of guidance. As directionally incorrect guidance is only a special case of guidance error, results in Atiase et al. may not be generalized to more general case of management guidance.

the guidance announcement. In other words, analysts act as if they do not fully understand the information identified in my analysis when reacting to the guidance.

Based on the estimate of predictable error, I define analyst inefficiency as the absolute difference between analyst consensus forecast revision and expected levels of revision. I document several explanations for the analyst inefficiency. First, analyst inefficiency is associated with analysts' attempts to advance their relationship with the managers. Consistent with prior research, analyst inefficiency increases when analysts bend their forecasts in favor of the guidance, curry favor with managers by issuing optimistic forecasts, and walk down their expectations so that the managers can avoid negative earnings surprise. Second, analyst inefficiency occurs when analysts' compensation incentives are not tied to forecast accuracy. These incentives include investment banking activities and trading commission. Finally, analyst inefficiency is mitigated by analysts' experience, research resources from their brokerage houses, and their prior forecasting performance.

In regard to stock market reaction, I find that the stock market in general discriminates the value-relevance between the predictable guidance error and the guidance news adjusted for such error. However, market reaction during the guidance announcement is still positively associated with the predictable guidance error. Furthermore, the association between market reaction and the predictable guidance error is mainly attributed to analyst inefficiency. This association reverses upon earnings announcements.

This paper adds to the research on the earnings-guidance game by directly investigating the predictable error in the guidance and documenting whether the error affects analysts' forecast revisions and, in turn, the market reaction to the guidance. Rogers and Stocken (2003) find that market reaction to the guidance decrease in predicted error. This paper differs from Rogers and Stocken in two aspects: First, Rogers and Stocken predict guidance error using hindsight information[2]; whereas this paper predicts error with the public information available upon earnings announcements. Second, Rogers and Stocken limit their investigation to the market reaction to the guidance. The emphasis of my paper is on the analysts' roles in the market reaction to the guidance. The results suggest that market reacts to the predictable guidance error increases when analysts incorporate the error into their forecasts. The mispricing due to analyst inefficiency is not fully corrected until earnings announcements.

The implication for the findings of the analysts' relationship management strategies is important. One might expect that Regulation Fair Disclosure (Reg. FD) mitigates analysts' need to manage relation with managers so that they have private access to managers' inside information. However, despite the passage of this regulation, analysts still spend a significant amount of time privately interacting with man-

[2] Rogers and Stocken (2003)find that insider trading is useful in predicting guidance error. However, they also indicate that insider trading data is only observable after the guidance announcement (Page 1250, footnote 2). In addition, Rogers and Stocken use cross-sectional regression analysis to estimate predicted error. This method is problematic because it incorporates guidance information from hindsight and tends to overestimate the predictability of guidance error.

agers. According to the 2011 Bank of New York Survey of investor relations officers, the average chief executive officer spends 20% of his or her total time with the investment community with analysts. These meetings occur in person, over the phone, and via e-mail. In addition, Mayew et al. (2009) analyzed post-Reg. FD conference call transcripts and find that the probability for managers to take analysts' questions during the call increases in the analysts' favorable view of the firm. This paper contributes to this research by identifying additional relationship management strategies that analysts can utilize to advance their relationships with the managers.

Prior research suggests that analysts' compensation incentives affect analysts' objectivity when revising their forecasts. Feng and McVay (2010) document that analyst inefficiency (or in their terminology, overweigh management guidance) occurs prior to equity offerings events. They argue and find that while analyst inefficiency sacrifice forecast accuracy, analysts appear to benefit by subsequently advancing investment banking relationships with the covered firms. In addition to investment banking relationship, this paper also documents that trading commission incentive explains analyst inefficiency. While analysts' conflicts of interest stemming from investment banking relationships has been the sole focus among regulators and academia, recent regulatory changes that prohibit linking analysts' compensation to investment banking activities may have magnified the importance of trading incentives for analysts.

The remainder of the paper is organized as follows: Section 2 provides a background review and hypotheses development; Section 3 describes sample selection and research designs; Section 4 reports empirical results; and Section 5 concludes.

## 2. Literature Review and Hypothesis Development

### 2.1 MANAGEMENT EARNINGS GUIDANCE AND GUIDANCE ERROR

The management earnings guidance is a form of voluntary public corporate disclosures predicting the earnings prior to the expected reporting date. The primary motivation for managers to issue guidance is to reduce the asymmetry in information between managers and analysts, and current or potential investors (e.g., Ajinkya and Gift (1984) and Verrecchia (2001)). Lower information asymmetry is viewed as desirable because it is associated with higher liquidity (e.g., Diamond and Verrecchia (1991)) and lower cost of capital (Leuz and Verrecchia (2000)).

Presumably the management earnings guidance is accurate given managers' superior insider information and their privy to the book. Prior research, however, provides evidence that managers do not efficiently incorporate publicly available information into the guidance, rendering the guidance error predictable. For instance, McNichols (1989) finds that the guidance contains predictable errors in relation to prior stock returns, suggesting that managers fail to fully incorporate the information embedded in the

past stock prices into their guidance. Atiase et al. (2010) document that the usefulness of current guidance is associated with prior guidance accuracy, suggesting that managers do not fully understand the information in prior earnings. Gong et al. (2009) and Xu (2010) document a positive association between optimistic error in the guidance and the accounting accruals. This association is stronger when uncertainty about future earnings is greater.

Guidance error is also attributed to management incentive-related factors that motivate managers not to disclosure guidance forthrightly. Richardson et al. (2004) conjecture that managers prefer initial optimistic forecasts followed by pessimistic forecasts immediately before the earnings announcement. Consistent with their conjecture, Soffer et al. (2000) document that managers are more likely to release pessimistic short-horizon guidance during earnings preannouncement to avoid negative earnings surprise. Bergman and Roychowdhury (2008) document that managers are more likely to release optimistic long-horizon guidance to maintain optimistic firm valuation.

Aboody and Kasznik (2000) report that managers issue pessimistic guidance around stock option award periods to temporarily depress stock prices and take advantage of a lower strike price on managers' option grants. Rogers and Stocken (2003) find that insider trading is related to pessimistic guidance. Both studies suggest that managers have incentives to time their pessimistic guidance to take advantage of a lower stock price.

## 2.3 ANALYST INEFFICIENCY OF INCORPORATING MANAGEMENT EARNINGS GUIDANCE

In this paper I analyze whether financial analysts inefficiently incorporate management earnings guidance and explore the explanations for such inefficiency. By analyst inefficiency, I mean that analysts do not completely filter out the predictable error in the guidance when revising their forecasts. Generally, analysts are concerned with the accuracy of their forecasts because errors in forecasts can adversely affect reputation, increase employment risk (Michaely and Womack (1999) and Hong and Kubik (2003)), affect rankings among analysts (Stickel (1992)), and call into question whether analysts have fulfilled their fiduciary responsibility to investors (Morgan and Stocken (2003)). However, there are several reasons to believe that analyst inefficiency may occur.

First, analyst inefficiency may arise due to analysts' incentives to maintain good relationships with managers. Francis and Philbrick (1993) find Value Line analysts issue more optimistic forecasts for stocks rated as SELL than those rated as BUY, and interpret this result as suggesting that forecast optimism is greater when analysts see a need to curry favor with managers. Ke and Yu (2006) find that analysts are more accurate and less likely to be fired when their forecasts are optimistic at the beginning of the period and pessimistic at the end of the period. They conclude that this evidence supports the management access incentives hypothesis, reasoning that the walk-down analysts' greater success results from

preferential access to managers. In their experiment study, Libby et al. (2008) document analysts' walk-down pattern is particularly stronger when analysts have a good relationship with managers than when their only incentive is to be accurate. Given these, I expect that analysts have incentive to tailor their forecasts in managers' desired direction, albeit increase forecast error, so that they can advance relationship with managers.

Second, analyst inefficiency may also arise due to their compensation schemes that are not tied their forecast accuracy. One such compensation scheme is the investment banking activities. Lin and McNichols (1998), Michaely and Womack (1999), and Dechow et al. (2000)find that analysts issue more optimistic earnings growth forecasts for firms which have investment banking ties to the analysts' brokerage houses. Feng and McVay (2010) document that analysts overweigh the information in the guidance prior to equity offering events. They argue and find that while forecast accuracy is sacrificed, analysts appear to benefit by subsequently advancing investment banking relationships with the firms.

Another analysts' compensation scheme that is not tied to their forecast accuracy is the trading commission. The use of trading volume in analysts' incentive schemes is supported by Cowen et al. (2006)who report that "brokerage firms usually reward their research analysts using a single measure of performance: trading volume in the stocks they cover." Hayes (1998) and Beyer and Guttman (2011)use analytical models to show that analysts strategically bias their forecast upward/downward to encourage investors to buy/sell additional shares. To my best knowledge, no study has documented whether analysts' trading volume incentive leads to analysts' strategic inefficiency of incorporating guidance, but my best guess is that they do. Specifically, if the guidance news is (erroneously) unfavorable such that analysts expect marginal investors to sell shares, they overweigh the unfavorable guidance. Conversely, if the guidance news is (erroneously) favorable such that analysts expect marginal investors to buy additional shares, they amplify the favorable guidance. Taken together, I expect that analyst inefficiency is associated with the favorableness of guidance.

Finally, analyst inefficiency may be explained by their low forecasting ability to detect predictable error in the guidance. Mikhail et al. (1997) and Clement (1999) use an extensive set of measures (e.g., analysts' experience, research resources from their brokerage houses, and prior forecasting track record) to proxy for analysts' forecasting ability and find that forecasting ability is negatively associated with absolute forecasting error. Mikhail et al. (2003) find that analysts underreact to prior earnings information less as their experience increases. In line with this research, I expect that analysts' forecasting ability influences their inefficiency to filter out the predictable guidance error when reacting to the guidance.

The above discussion is formalized into the following hypotheses (in alternative form):

***H1a:*** *Analyst inefficiency of incorporating management guidance increases due to analysts' incentive to cultivate relationship with the managers*

***H1b:*** *Analyst inefficiency of incorporating management guidance increases due to analysts' compensation schemes that are not tie to forecast accuracy*

***H1c:*** *Analyst inefficiency of incorporating management guidance increases due to analysts' low forecasting ability*

## 2.2 STOCK MARKET REACTION TO MANAGEMENT GUIDANCE AND ANALYST INEFFICIENCY

In a survey of 401 financial executives, Graham et al. (2005)document that managers perceive analysts as one of the most important groups affecting the stock market's behavior. Thus, if analysts do not efficiently filter out the predictable error in the guidance, does analyst inefficiency affect the market's reaction the guidance?

Prior research provides some support that the market understands the factors that are associated with analyst inefficiency. Park and Stice (2000) find that the market reacts more strongly to forecast revisions issued by analysts with superior forecasting accuracy. Mikhail et al. (2003) find that analysts underreact to prior earnings information less as their experience increases. The market appears to recognize these performance differences, relying less on a naive seasonal random walk forecast when analysts are more experienced. More recently, Hugon and Lin (2010) focus on a particular type of guidance – guidance that is directionally incorrect – and find that market places a greater discount on such guidance than analysts do. Their results suggest either that the market possesses more information (e.g., macroeconomic or industrial trends) than analysts or that analysts strategically misrepresent information in their forecasts that are not price-informative.

Other research, however, questions the market's ability to see through analyst inefficiency. Clement and Tse (2003) and Bonner et al. (2003) provide evidence that the market acts as if analysts' forecast accuracy is not all that matters. For example, their results show that the market reacts more strongly to forecasts issued earlier in the year; however, earlier forecasts tend to be less accurate. Similarly, Gleason and Lee (2003) find that the market does not make a sufficient distinction between analysts who are unambiguously providing new information and those who are simply herding toward the consensus. In addition, they find that the market pays more attention to analysts who have acquired celebrity status, but is

more likely to under-appreciate revisions made by more obscure analysts with comparable forecasting abilities.

The above discussion is formalized into the following hypothesis (in alternative form):

***H2:*** *Stock market reaction to management earnings guidance is associated with analyst inefficiency of incorporating the guidance.*

## 3. Sample Selection, Variable Measurement and Research Design

### 3.1 DATA AND SAMPLE SELECTION

[Table 1 insert here]

The empirical analyses are based on data gathered from four sources: First Call Company Issued Guidance database, I/B/E/S Analyst Forecast database, CRSP Daily Stock database, and Compustat. I begin with quarterly management guidance reported in the First Call Company Issued Guidance database. I only retain guidance announcements with either point or closed-range numeric earnings estimates. Next, I merge the guidance sample with the I/B/E/S, CRSP, and Compustat databases. Observations without valid database identifier links are excluded. I apply several screens to this initial sample and outline their effects in Panel A of Table 1. First, I require that each guidance announcement has an I/B/E/S actual earnings announcement. Second, each guidance announcement has I/B/E/S analysts' forecasts prior to and immediately after the guidance provision date. Third, each guidance announcement corresponds to non-missing stock price, stock return, and financial data as reported in CRSP and Compustat. The final sample consists of 18,378 guidance announcements and 1,835 distinct firms.

Panel B of Table 1 compares key statistics for the final sample, all firm-year observations reported in Compustat, and the intersection of First Call-I/B/E/S-Compustat-CRSP. I make these comparisons to gain insight into the effects of sample attrition on the generalization of my results. As can be seen, the final sample are characterized by larger firms, firms that generate more sales and profit, assume more financial leverage, and have larger market-to-book ratios. Consequently, my results may not be applicable to a more general set of firms providing earnings guidance.

3.2 DEFINING ANALYST INEFFICIENCY

For each guidance announcement, the analyst inefficiency of incorporating the guidance is defined as the absolute difference between analyst consensus forecast and the guidance estimate adjusted for predictable error in the guidance, scaled by price. Formally (subscripts omitted for brevity),

$$\boldsymbol{Inefficiency} = \frac{\boldsymbol{Absolute}\left(\boldsymbol{Consensus}_{[\mathbf{0},\mathbf{5}]} - \{\boldsymbol{Guidance} - \textit{Predictable Error in Guidance}\}\right)}{\boldsymbol{Price}} \quad \textbf{[1a]}$$

, where analyst consensus forecasts ($\boldsymbol{Consensus}_{[\mathbf{0},\mathbf{5}]}$) is the average of I/B/E/S analysts' first earnings forecasts issued within the five days following the guidance announcement[3]. The guidance estimate ($\boldsymbol{Guidance}$) is either a point estimate or mid-point of a range earnings estimate of First Call management guidance. To ensure the analysts' forecasts and management guidance are on the same outstanding share basis, I match non-split-adjusted I/B/E/S analyst forecasts with the non-split-adjusted (i.e., original) First Call management guidance. I then adjust earnings numbers in the two databases using the shares split factors from CRSP database. Finally I scale analyst inefficiency ($\boldsymbol{Inefficiency}$) with stock price 60-days prior to the guidance announcement.

The predictable guidance error is estimated using the following ordinary least squares (OLS) regression (subscripts omitted for brevity):

$$\begin{aligned}\boldsymbol{FE}_{\boldsymbol{Mgt,Q}} = \boldsymbol{\beta_0} + \boldsymbol{\beta_1} \times \boldsymbol{FE}_{\boldsymbol{Mgt,Q-1}} + \boldsymbol{\beta_2} \times \boldsymbol{FE}_{\boldsymbol{Mgt,Q}}^{\boldsymbol{Time\ Series}} + \boldsymbol{\beta_3} \times \boldsymbol{INCON}_{\boldsymbol{UP}} + \boldsymbol{\beta_4} \times \boldsymbol{INCON}_{\boldsymbol{DN}} \\ + \boldsymbol{\beta_5} \times \boldsymbol{HRZN} + \boldsymbol{\beta_6} \times \boldsymbol{DEMPEN} + \boldsymbol{\beta_7} \times \boldsymbol{EARNVAR} + \boldsymbol{\beta_8} \times \boldsymbol{SIZE}\end{aligned} \quad \textbf{[1b]}$$

To avoid hindsight bias, the parameter estimates in the model are updated at the beginning of each month using the past five-year data available in the sample. The predictable error in each guidance estimate is calculated by applying the current guidance information to the most recent parameter estimates. The models' variables are defined and discussed as follows[4]:

[3] While First Call database also provide analysts' forecasts, the empirical analysis use only analysts' forecasts provided in I/B/E/S database. This design choice is that, unlike I/B/E/S, First Call does not provide unique identifier for individual analysts. The unique analyst identifier is crucial in later analysis in that it allows me to identify specific analysts' attributes. Similar research choice can also be found in Ng et al. (2010) and Houston et al. (2010).

[4] I do not include management incentives related to insider trading (e.g., Richardson et al. (2004) and Rogers and Stocken (2003)) or option grant (Aboody and Kasznik (2000)) because these incentives are can only observed after, but not before, guidance announcement. To the extent that these incentives are useful in predicting guidance error, excluding these incentives only bias against the empirical results.

**1) Guidance Error** ($\boldsymbol{FE_{Mgt,Q}}$): The guidance error is defined as the guidance estimate minus I/B/E/S actual EPS, scaled by price. Thus, a positive (negative) value of $\boldsymbol{FE_{Mgt,Q}}$ indicates that the guidance is erroneously optimistic (pessimistic).

**2) Prior Earnings Information** ($\boldsymbol{FE_{Mgt,Q-1}}$ and $\boldsymbol{FE_{Mgt,Q}^{Time\ Series}}$): The prior earnings information is measured with two variables. The first variable is prior guidance error ($\boldsymbol{FE_{Mgt,Q-1}}$), defined as the error in the guidance related to prior quarterly earnings, scaled by price. For a firm that has multiple guidance announcements in the prior quarter, I use the error in the last guidance.

The second variable is guidance error predicted by the time-series model ($\boldsymbol{FE_{Mgt,Q}^{Time\ Series}}$), defined as the guidance estimate minus earnings predicted by the time-series model, scaled by price. FollowingFrost (1997) and O'brien (1988), I use the following time-series model:

$$\boldsymbol{EARN_{i,t,Q} = \gamma_{i0} + \gamma_{i1} \times EARN_{i,t,Q-4} + \gamma_{i2} \times (EARN_{i,t,Q-1} - EARN_{i,t,Q-5})} \qquad \textbf{[1c]}$$

, where $\boldsymbol{EARN_{i,t,Q}}$ denotes quarterly I/B/E/S actual EPS for firm *i* in quarter *Q* of fiscal year *t*, and $\gamma_{i0}$, $\gamma_{i0}$, and $\gamma_{i0}$ are estimated parameters. The parameter estimates are updated each quarter, using the previous eight quarters' observations. Observations are adjusted for changes in the number of outstanding shares.

**3) Stock Returns Information** ($\boldsymbol{INCON_{UP}}$ and $\boldsymbol{INCON_{DN}}$): As in Hugon and Lin (2010), I use stock returns prior to the guidance announcement to construct two indicator variables: upward inconsistent guidance ($\boldsymbol{INCON_{UP}}$) is defined as an indicator variable that equals 1 if the guidance estimate is greater than analyst consensus forecast prior to the guidance announcement and the firm experiences negative stock returns prior to the announcement; 0 otherwise. Downward inconsistent guidance ($\boldsymbol{INCON_{UP}}$) is defined as an indicator variable that equals 1 if the guidance estimate is lower than analyst consensus forecast prior to the guidance announcement and the firm experiences positive stock returns prior to the announcement; 0 otherwise. I measure analyst consensus forecast prior to the guidance announcement with the average of I/B/E/S analysts' last forecasts issued within the 60-days prior to the announcement. The prior stock returns are measured with 60-days CRSP size-adjusted buy-and-hold stock returns prior to the announcement.

**4) Timing of Management Guidance** (***HRZN*** and ***DAMPEN***): As suggested in Richardson et al. 2004, I include guidance horizon (***HRZN***), defined as the number of days between the guidance announcement and the earnings announcement to which guidance is related.

I also measure timing of guidance with ***DAMPEN***, defined as an indicator variable that equals 1 if the manager releases bad-news guidance in conjunction with positive quarterly earnings surprise announcement; 0 otherwise. Hutton et al. (2003) and Anilowski et al. (2007) document that management guidance is often bundled with earnings announcements. I expect that the information in the earnings announcement is likely to affect the guidance error. Specially, when the firms experience negative earnings surprise, the managers are more likely to release guidance with optimistic error in order to maintain optimism firm valuation. Conversely, when firms experience positive earnings surprise, managers are more likely to release guidance with pessimistic error to prevent analysts from ratcheting up expectations.

**5) Information Uncertainty** (***EARNVAR*** and ***SIZE***): I control for earnings volatility and firm size, because these variables have been shown to associate with the quality of information environment (e.g., Waymire (1985); Lang and Lundholm (1996); and Cotter et al. (2006)). Earnings volatility (***EARNVAR***) is defined as the natural log of the standard deviation of quarterly I/B/E/S actual EPS in the past four quarters prior to current guidance announcement. Firm size (***SIZE***) is defined as the natural log of the market value of equity at the end of the quarter immediately preceding the guidance announcement.

3.3 TESTING HYPOTHESIS 1

***H1a***, ***H1b***, and ***H1c*** state that analyst inefficiency is associated with analysts' incentives and their characteristics. I use the following OLS regression model to analyze these associations (subscripts omitted for brevity):

$$\begin{aligned} \boldsymbol{Inefficiency} = {} & \boldsymbol{\beta_0} + \boldsymbol{\beta_1} \times \boldsymbol{BEND} + \boldsymbol{\beta_2} \times \boldsymbol{CURRY} + \boldsymbol{\beta_3} \times \boldsymbol{WALK} + \boldsymbol{\beta_4} \times \boldsymbol{EQ} + \boldsymbol{\beta_5} \\ & \times \boldsymbol{BADNEWS} + \boldsymbol{\beta_6} \times \boldsymbol{GOODNEWS} + \boldsymbol{\beta_7} \times \boldsymbol{FEXP} + \boldsymbol{\beta_8} \times \boldsymbol{PACCUR} + \boldsymbol{\beta_9} \\ & \times \boldsymbol{TOPBROKER} + \boldsymbol{\beta_{10}} \times \boldsymbol{WORKLOAD} + \boldsymbol{\beta_{11}} \times \boldsymbol{FLLW} + \boldsymbol{\beta_{12}} \times \boldsymbol{DISP} \end{aligned} \qquad \textbf{[2]}$$

The models' variables are defined and discussed as follows:

**1) Relationship Management Strategy** (***BEND***, ***CURRY***, and ***WALK***): Following prior research, I use three variables to measure relationship management strategy: bending forecast in favor of the guidance (***BEND***) is defined as an indicator variable that equals 1 if the analyst consensus forecast during the guidance announcement is closer to the guidance estimate, in absolute term, than analyst consensus forecast

prior the guidance announcement; 0 otherwise. Curry favor with management (***CURRY***) is defined as an indicator variable that equals 1 if analyst consensus forecast during the guidance announcement is greater than the guidance estimate and the analyst consensus recommendation during the same period is a SELL; 0 otherwise. Analyst consensus recommendation is calculated as the average of I/B/E/S analysts' first recommendations issued within the five days following the guidance announcement. Walk-down strategy (***WALK***) is defined as an indicator variable that equals 1 if the analyst consensus forecast changes from optimistic to pessimistic during guidance announcement; 0 otherwise.

**2) Compensation Incentives** (***EQ***, ***BADNEWS***, and ***GOODNEWS***): As inFeng and McVay (2010), investment banking opportunity (***EQ***) is defined as an indicator variable that equals 1 if the firm announces equity offering between guidance announcement and quarterly earnings announcement to which the guidance is related; 0 otherwise. The equity offering announcement data is obtained from SDC Platinum database. Following the convention in equity offering studies, the equity offering announcement is excluded if the global proceeds are less than 5% of market value of the firm's common equity.

As discussed in Section 2.3, analysts' trading commission incentive is likely to be associated with the favorable/unfavorable news in the guidance. I measure the favorableness/un-favorableness in the guidance with two indicator variables: bad news guidance (***BADNEWS***) is defined as an indicator variable that equals 1 if the guidance estimate is lower than analyst consensus forecast prior to the guidance announcement; 0 otherwise. Good news guidance (***GOODNEWS***) is defined as an indicator variable that equals 1 if the guidance estimate is greater than analyst consensus forecast prior to the guidance announcement; 0 otherwise.

**3) Forecasting Abilities** (***FEXP***, ***PACCUR***, ***TOPBROKER***, and ***WORKLOAD***): I measure the forecasting abilities among the analysts who revise their forecasts in response to guidance announcement. The ability measures include: firm-specific experience (***FEXP***) is defined as the natural log of the average firm-specific experience. Firm-specific experience is calculated as the number of years an analyst issue forecast(s) for the firm's earnings. Analyst prior forecasting accuracy (***PACCUR*** ) is defined as the fraction of analysts who are more accurate in forecasting earnings during the year prior to the guidance announcement. Analysts are considered to be more accurate if their average of absolute forecast error is lower than 90% of other analysts as reported in I/B/E/S database. Top brokerage coverage (***TOPBROKER***) is defined as the fraction of analysts who are employed by top brokerage house. Top brokerage house is indentified if the number of analysts a brokerage house employs during the year is greater than 90% of other brokerage houses.

I also consider analyst workload ( $\boldsymbol{WORKLOAD}$), defined as the natural log of the average number of firms the analysts cover during the year. Unlike the abilities measures, the relation between analyst workload and analyst inefficiency is less obvious. Clement (1999) finds that the analyst forecast accuracy decreases in their workload, suggesting that the analysts' attention to the forecasted firm is constrained by workload. Consequently, one might expect that analyst inefficiency increases in analyst workload because analysts' effort to detect error in the guidance is limited by their workload. However, it can be also true that analysts assume more workload, because they possess superior forecasting ability. In this scenario, analyst inefficiency may decrease in analyst workload. Given these, I only expect that analyst inefficiency is associated with analyst workload.

**4) Forecasting Environment** ($\boldsymbol{FLLW}$ and $\boldsymbol{DISP}$): Analyst inefficiency is also attributed to the information uncertainty. I measure the information uncertainty with the following two variables: analyst following ($\boldsymbol{FLLW}$) is defined as the number of distinct analysts who issue forecasts for the earnings the guidance is related. Forecast dispersion ($\boldsymbol{DISP}$) is defined as the standard deviation of analyst consensus forecast to the earnings to which the guidance is related.

## 3.4 TESTING HYPOTHESIS 2

***H2*** is concerned with whether stock market reaction to management guidance is associated with analyst inefficiency. To test this hypothesis, I first sort the sample into three portfolios based on the analyst inefficiency. Within each portfolio, I then analyze the stock market reaction to the two information components in the guidance: the predictable error and adjusted guidance news – that is, management guidance news minus predictable error estimated from **Equation 1b**. The OLS regression model is as follows (subscripts omitted for brevity):

$$\boldsymbol{CAR_{Guidance}}, \boldsymbol{CAR_{EAD}} = \boldsymbol{\beta_0} + \boldsymbol{\beta_1} \times \widehat{\boldsymbol{FE_{MGT,Q}}} + \boldsymbol{\beta_2} \times \left(\boldsymbol{MREV} - \widehat{\boldsymbol{FE_{MGT,Q}}}\right) \qquad \textbf{[3]}$$

, where $\boldsymbol{CAR_{Guidance}}$ is the CRSP size-adjusted stock returns cumulated between 0 to 5 days around the guidance announcement. $\boldsymbol{CAR_{EAD}}$ is the CRSP size-adjusted stock returns cumulated between 0 to 5 days around the earnings announcement to which the guidance is related. $\widehat{\boldsymbol{FE_{MGT,Q}}}$ is the predictable guidance error as discussed in Section 3.2. $\boldsymbol{MREV}$ is the management guidance news, defined as the guidance estimate minus the average of I/B/E/S analysts' last forecasts issued within the 60-days prior to the guidance announcement, scaled by price.

**4. Results**

4.1 SUMMARY STATISTICS

[Table 2 insert here]

Table 2 reports summary statistics for the variables used to predict guidance error. The primary variable of interest is the error in management guidance for quarterly earnings ($\boldsymbol{FE_{Mgt,Q}}$). The mean and median of guidance error are -0.0007 and -0.0005, suggesting that management guidance is generally pessimistic.

For the guidance error predictors, the mean (median) of prior guidance error ($\boldsymbol{FE_{Mgt,Q-1}}$) and guidance error predicted by time-series model ($\boldsymbol{FE_{Mgt,Q}^{Time\ Series}}$) is -0.0007 and -0.0009 (-0.0005 and -0.00012), respectively. I find that the mean of upward and downward inconsistent management guidance ($\boldsymbol{INCON_{UP}}$ and $\boldsymbol{INCON_{DN}}$) are 0.1382 and 0.2875. The mean (median) of guidance horizon ($\boldsymbol{HRZN}$) is 74 (90) days, consistent with prior research that guidance is often released during or immediately after prior quarterly earnings announcement. In addition, the dampening management guidance ($\boldsymbol{DAMPEN}$) accounts for approximately 50% of the guidance in the sample.

4.2 GUIDANCE ERROR PREDICTION

[Table 4 insert here]

Table 4 reports the mean and median of parameter estimates for **Equation 1b**. As discussed in Section 3.2, the parameter estimates are updated at the beginning of each month using prior five-year guidance data available in the sample, resulting in 167-month sets of regression results. In general, the guidance error prediction model provides a modest explanatory power for guidance bias. The mean (median) of R-squares and adjusted R-squares are 32% and 32% (17% and 16%), respectively.

With regard to the association between prior earnings information and guidance error, I find that the mean and median of coefficients on $\boldsymbol{FE_{Mgt,Q-1}}$ and $\boldsymbol{FE_{Mgt,Q}^{Time\ Series}}$ are positive and significant, suggesting that prior earnings information is useful to verify guidance estimate. The mean and median of coefficient on $\boldsymbol{INCON_{UP}}$ ($\boldsymbol{INCON_{DN}}$) is positive (negative), suggesting that guidance contains optimistic (pessimistic) error when managers disclose good (bad) news through guidance but the stock returns sug-

gest otherwise. Overall, the above findings are consistent with prior research that managers misrepresent or exclude information in prior earnings and stock returns when determining the guidance estimates.

As for the timing of management guidance, I find that coefficient on ***HRZN*** is positive and significant, suggesting that managers disclosure strategy shift from overly optimistic to overly pessimistic as the earnings announcement gradually becomes eminent. In addition, the coefficient on ***DAMPEN***, is negative and significant, suggesting that the walk-down pattern in prior research may well-ahead occur during prior quarterly earnings announcement.

[Table 5 insert here]

Table 5 compares the difference in absolute error in guidance estimate, analyst consensus forecast during guidance announcement, and adjusted management guidance – that is, guidance estimate minus predictable error from **Equation 1b**. Column (1), Column (2), and Column (3) report the average of these three absolute errors across all sample years. In Column (4) I compare the absolute error between guidance estimate and analyst consensus forecast. As can be seen, for 10 out of 16 sample years the absolute error in analyst consensus forecast is significantly lower than the absolute error in the guidance. Consequently, the evidence suggests that analysts attempt to predict guidance error when incorporate guidance news into their forecasts.

However, the evidence also indicates that analysts do not fully adjust for the predictable guidance error. Column (6) of Table 5 shows that on average the absolute error in adjusted management guidance is significantly lower than the absolute error in analyst consensus forecast. The difference in absolute error between adjusted management guidance and analyst consensus forecast is more pronounced in the later sample period. This is result may be attributed to increased sample size after early 2000 such that prediction power for **Equation 1b** gradually improves.

## 4.3 EXPLAINING ANALYST INEFFICIENCY

[Table 6 insert here]

Table 6 reports the summary statistics for the variables used for later regression analyses. As discussed in Section 3, analyst inefficiency is hypothesized to be associated with analysts' relationship management, compensation incentives, and their abilities. For analysts' relationship management variables, the mean of

***BEND*** is approximately 50%. The high value of ***BEND*** may indicate either that the guidance contains useful information for analysts or that bending forecast in favor of guidance is a common ritual within the analyst community. The mean of ***CURRY*** is 21%. In un-tabulated table, I find that approximately 38% of guidance announcements in the sample are issued by managers of the firms rated as SELL. Combining these two findings, the result suggests that analysts exhibit a high tendency of optimism than the managers when the firms are poorly rated. In addition, the mean of ***WALK*** is only 2%. The low percentage of ***WALK*** is puzzling, given that a majority of guidance announcement in the sample is pessimistic and that prior research allege that managers have been successful to walk down analysts' expectations.

For analysts' compensation incentives, the mean of ***EQ*** is only 0.6%. The percentage of firms announces equity offering in my sample is significantly lower than the findings in prior research, because I only account for firms that announce equity offering between the guidance announcement and the earnings announcement to which the guidance is related[5]. The mean of ***BADNEWS*** and ***GOODNEWS*** is 0.54 and 0.32. This asymmetry is consistent with prior research that managers prefer to disclose bad news promptly, but delay release of good news.

With regard to analysts' ability measures, the mean of ***TOPBROKER*** is 95%, suggesting that analysts from prestigious brokerage house are more responsive to the guidance announcement. The mean of ***FEXP*** and ***WORLOAD*** are 1.4709 and 2.7116, respectively. Compared to analysts who do not revise their forecasts during guidance announcement, the revising analysts tend to be more experienced and cover more firms. The mean of ***DISP*** and ***FLLW*** is 0.0292 and 1.4897, respectively. In un-tabulated test, I find that ***DISP*** and ***FLLW*** in my sample are both greater than the same statistics for firms without guidance announcement. These difference are consistent with prior research that the decision to release management guidance is attributed to higher information uncertainty (Lang and Lundholm (1996)) and greater analysts' demand for earnings information (Healy and Palepu (2001) and Ajinkya et al. (2005)).

[Table 7 insert here]

Table 7 reports the regression results for **Equation 2**[6]. Consistent with ***H1a***, all the coefficients on relationship management variables (i.e., ***BEND***, ***CURRY***, and ***WALK***) are all positive and significant. That is, analyst inefficiency increases when analysts bend their forecasts in favor of guidance news, when

[5] In un-tabulated table, I use two different alternative definitions for ***EQ***. The first alternative define ***EQ*** as an indicator variable that equals 1 if the firm announces equity offering within 6 months after guidance announcement; 0 otherwise. The second alternative defines as an indicator variable that equals 1 if the firm announces equity offering within 6 months after earnings announcement to which the guidance is related; 0 otherwise. Regardless of the variables specification, the subsequent regression result remains unchanged.

[6] Since the relation between ***Inefficiency*** and the explanatory variables is unlikely to be linear, I transform ***Inefficiency*** within each industry into percentile ranks. The empirical results remain similar without the transformation.

they curry favor with managers by issuing more optimistic forecasts for the firm receiving SELL recommendation, and when they walk-down their forecasts to help managers achieve earnings expectations.

Consistent with ***H1b***, I find that the coefficient on ***EQ*** is positively, albeit insignificant, associated with analyst inefficiency, suggesting that analyst do not fully filter out guidance error when they foresee investment opportunities with the firms. The coefficients on ***BADNEWS*** and ***GOODNEWS*** is also positive and significant, indicating that analysts attempt to increase trading commission by strategically increasing their inefficiency of incorporating the guidance news in response to the favorableness/unfavorableness of news. In addition, I find that the coefficient on ***BADNEWS*** is significantly lower than the coefficient on ***GOODNEWS***. This difference may be attributed to the short-selling constrains (e.g., Diamond and Verrecchia (1987) and Hayes (1998)) or investors' disposition to hold losers' stock too long (e.g., Shefrin and Statman (1985)) such that unfavorable signals may not trigger additional sell and, therefore, lower the potential benefit for analysts to increase their inefficiency[7].

***H1c*** is concerned whether analyst inefficiency is attributed to analysts' ability. As expected, I find that the coefficients on ***FEXP***, ***PACCUR***, and ***TOPBROKER*** are negative and significant. Additionally, I find that the coefficients on ***DISP*** is significantly positive and the coefficients on ***FLLW*** is significantly positive, suggesting that analyst inefficiency increases when the information environment is more uncertain and when fewer analysts conducting research on the firms' earnings.

## 4.4 MARKET REACTION AND ANALYST INEFFICIENCY

[Table 8 insert here]

Panel A in Table 8 reports the market reaction to management guidance conditional on analyst inefficiency. Column (1) reports the regression results for **Equation 3** based on full sample. Column (2) to (4) report the results based on sample with low, median, and high analyst inefficiency. In Column (1) I find that the coefficients on $\widehat{FE_{MGT,Q}}$ and $\left(MREV - \widehat{FE_{MGT,Q}}\right)$ are positive and significant. The difference between these two coefficients is significant, suggesting that market differentiate the informativeness between these two signals in the guidance. Moving from low, median, to high analyst

[7] Alternatively, the difference in coefficient on GOODNEWS and BADNEWS may be attributed to: **1)** greater absolute error in good-news Guidance than bad-news Guidance; and/or **2)** analysts' ability to detect guidance error is lower when the guidance convey good-news. However, in un-tabulated result, I find that the absolute error in good-news Guidance does not significantly different from bad-news Guidance (Satterthwaite t-statistics: 1.24). In addition, Hutton et al. (2003) document that managers are more likely to provide verifiable forward-looking statements with good-news guidance than with bad-news guidance. Assuming that verifiable forward-looking statements help analysts to evaluate the plausibility of management guidance, the findings in Hutton et al. suggest that analysts' ability to detect guidance error is greater when the guidance convey good-news.

inefficiency subsample, I find that the market reaction to $\widehat{FE_{MGT,Q}}$ is mainly driven by analyst inefficiency.

Panel B in Table 8 reports the market reaction during earnings announcement conditional on analyst inefficiency. Similar to Panel A, Column (1) reports the regression results for **Equation 3** based on full sample. Column (2) to (4) report the results based on sample with low, median, and high analyst inefficiency. In contrast to Panel A, In Column (1) I find that the coefficient on $\widehat{FE_{MGT,Q}}$ is negative and significant. Moving from low, median, to high analyst inefficiency subsample, I find that the negative association between market reaction and $\widehat{FE_{MGT,Q}}$ is attributed to analyst inefficiency.

Taken together, the results in Panel A and B are interpreted as follows. The market reaction to management guidance is influenced by analyst inefficiency. In other words, market act as if it does not fully see through analyst inefficiency. The influence from analyst inefficiency is not fully corrected upon earnings announcement to which the guidance is related.

## 5. Conclusion

This paper investigates how financial analysts incorporate management earnings guidance into their earnings forecasts. The paper asks three questions. First, does the guidance error ex ante predictable? Second, do financial analysts fully filter out the predictable error when reacting to the guidance and, if not, what are the explanations for such inefficiency? Third, is market reaction to management guidance influenced by analyst inefficiency and, if so, when would the mispricing due to analyst inefficiency be fully corrected?

The empirical results in this paper suggest that guidance error is predictable using a set of publicly available information related to prior earnings, stock returns, and information uncertainty measures. The analysts do not fully filter out the predictable error estimated in this paper. The inefficiency can be explained by analysts' relationship management strategies, their incentives not tie to forecast accuracy, and their ability to detect guidance error.

Finally, the results indicate that market reaction to management guidance is associated with predictable error. This association is attributed to analyst inefficiency. In other words, market act as if it does not fully see through analyst inefficiency and, therefore, impound the error into stock prices. This mispricing does not fully corrected upon earnings announcement to which the guidance is related.

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**Appendix 1**
**Variable Definitions**

| Variable | Definition |
|---|---|
| $\boldsymbol{BADNEWS}$ | Bad News Guidance, defined as an indicator variable that equals 1 if the guidance estimate is lower than analyst consensus forecast prior to the guidance announcement; 0 otherwise. |
| $\boldsymbol{BEND}$ | Bending Forecast in Favor of Management Guidance, defined as an indicator variable that equals 1 if the consensus analyst forecast during management guidance announcement is closer to guidance estimate, in absolute term, than consensus analyst forecast prior management guidance announcement. |
| $\boldsymbol{CAR_{EAD}}$ | Abnormal Stock Return during Earnings Announcement, defined as CRSP size-adjusted stock returns cumulated between 0 to 5 days around the earnings announcement to which the guidance is related. |
| $\boldsymbol{CAR_{Guidance}}$ | Abnormal Stock Return during Guidance Announcement, defined as CRSP size-adjusted stock returns cumulated between 0 to 5 days around the guidance announcement. |
| $\boldsymbol{Consensus_{[0,5]}}$ | Analyst Consensus Forecast during Management Guidance Announcement, defined as the average of I/B/E/S analysts' first forecasts issued within the 5-days following the guidance announcement. |
| $\boldsymbol{Consensus_{[-60,-1]}}$ | Analyst Consensus Forecast prior to Management Guidance Announcement, defined as the average of I/B/E/S analysts' last forecasts issued within the 60-days prior the guidance announcement. |
| $\boldsymbol{CURRY}$ | Curry Favor with Management, defined as an indicator variable that equals 1 if analyst consensus forecast during the guidance announcement is greater than the guidance estimate and the analyst consensus recommendation during the same period is a SELL; 0 otherwise. Analyst consensus recommendation is calculated as the average of I/B/E/S analysts' first recommendations issued within the five days following the guidance announcement. |
| $\boldsymbol{DISP}$ | Forecast Dispersion, defined as the standard deviation of analyst consensus forecast to the earnings to which the guidance is related. Forecast dispersion is assigned with a value of zero if there is only one analyst forecasting the earnings. |
| $\boldsymbol{DAMPEN}$ | Dampening Guidance, defined as an indicator variable that equals 1 if the manager releases bad-news guidance in conjunction with positive quarterly earnings surprise announcement; 0 otherwise. Earnings surprise is calculated as I/B/E/S actual EPS minus the average of I/B/E/S analysts' last forecasts issued within the 60-days prior to the quarterly earnings announcement. |
| $\boldsymbol{EARNVAR}$ | Earnings Volatility, defined as the natural log of the standard deviation of quarterly I/B/E/S actual EPS in the past four quarters prior to current guidance announcement. |
| $\boldsymbol{EQ}$ | Investment Banking Opportunity, defined as an indicator variable that equals 1 if the firm announces equity offering between guidance announcement and |

| | |
|---|---|
| | quarterly earnings announcement to which the guidance is related; 0 otherwise. The equity offering announcement data is obtained from SDC Platinum database. The equity offering announcement is excluded if the global proceeds are less than 5% of market value of the firm's common equity. |
| $\boldsymbol{FE_{Analyst,Q}}$ | Analyst Forecast Error after Guidance Announcement, defined as the average of I/B/E/S analysts' first forecasts issued within the 5-days following the guidance announcement minus I/B/E/S actual EPS, scaled by price. |
| $\boldsymbol{FE_{Mgt,Q}}$ | Guidance Error, defined as guidance estimate minus I/B/E/S actual EPS, scaled by price. For the closed-range guidance (First Call data item CIGCODEQ equals ("B", "G", "H")), I use the mid-point between the upper and lower bound estimates as the management guidance estimate. |
| $\boldsymbol{\widehat{FE_{Mgt,Q}}}$ | Predicted Guidance Error, defined as the predicted value of the guidance error prediction model (**Equation 1b**). |
| $\boldsymbol{FE_{Mgt,Q-1}}$ | Prior Guidance Error, defined as the error in the guidance related to prior quarterly earnings, scaled by price. For a firm that has multiple guidance announcements in the prior quarter, I use the error in the last guidance. |
| $\boldsymbol{FE^{Time\ Series}_{Mgt,Q}}$ | Estimated Guidance Error, defined as the guidance estimate minus earnings predicted by the time-series model, scaled by price. The time-series model is constructed as follows:<br>$$\boldsymbol{EARN_{i,t,Q} = \gamma_{i0} + \gamma_{i1} \times EARN_{i,t,Q-4} + \gamma_{i2} \times (EARN_{i,t,Q-1} - EARN_{i,t,Q-5})}$$<br>, where $\boldsymbol{EARN_{i,t,Q}}$ denotes quarterly I/B/E/S actual EPS for firm *i* in quarter *Q* of fiscal year *t*. |
| $\boldsymbol{FEXP}$ | Analyst Firm Specific Experience, defined as the natural log of the average firm-specific experience. Firm-specific experience is calculated as the number of years an analyst issue forecast(s) for the firm's earnings. |
| $\boldsymbol{FLLW}$ | Analyst Following, defined as the number of distinct analysts who issue forecasts for the earnings the guidance is related. |
| $\boldsymbol{GOODNEWS}$ | Good News Guidance, defined as an indicator variable that equals 1 if the guidance estimate is greater than analyst consensus forecast prior to the guidance announcement; 0 otherwise. |
| $\boldsymbol{Guidance}$ | Guidance Estimate, defined as either a point estimate or mid-point of a range earnings estimate of First Call management guidance. For the closed-range guidance (First Call data item CIGCODEQ equals ("B", "G", "H")), I use the mid-point between the upper and lower bound estimates as the management guidance estimate. |
| $\boldsymbol{HRZN}$ | Guidance Horizon, defined as the number of days between guidance announcement and actual earnings announcement to which guidance is related. |
| $\boldsymbol{INCON_{UP}}$ | Upward Inconsistent Guidance, defined as an indicator variable that equals 1 if the guidance estimate is greater than analyst consensus forecast prior to the guidance announcement and the firm experiences negative stock returns prior to the announcement; 0 otherwise. |
| $\boldsymbol{INCON_{DN}}$ | Downward Inconsistent Guidance, defined as an indicator variable that equals |

| | |
|---|---|
| | 1 if the guidance estimate is lower than analyst consensus forecast prior to the guidance announcement and the firm experiences positive stock returns prior to the announcement; 0 otherwise. |
| ***Inefficiency*** | Analyst Inefficiency of Incorporating Guidance News, defined as defined as the absolute difference between analyst consensus forecast and the guidance estimate adjusted for predictable error in the guidance, scaled by price. |
| ***LEV*** | Financial Leverage, defined as long-term liability (Compustat data item LLTQ) scaled by total equity (Compustat data item CEQQ) at the end of the quarter immediately preceding the guidance announcement. |
| ***MREV*** | Management Guidance News, defined as the guidance estimate minus the average of I/B/E/S analysts' last forecasts issued within the 60-days prior to the guidance announcement, scaled by price. |
| ***MTB*** | Market-to-Book Ratio, defined as defined as the market value of equity (Compustat data item PRCCQ × CSHOQ) scaled by book value of equity (Compustat data item CEQQ) at the end of the quarter immediately preceding the guidance announcement. |
| ***PACCUR*** | Analyst Prior Forecasting Accuracy, defined as the fraction of analysts who are more accurate in forecasting earnings during the year prior to the guidance announcement. Analysts are considered to be more accurate if their average of absolute forecast error is lower than 90% of other analysts as reported in I/B/E/S database. |
| ***ROA*** | Return on Assets, defined as income before extraordinary item (Compustat data item IBQ) scaled by total assets (Compustat data item ATQ) for the quarter immediately preceding the guidance announcement. |
| ***SALE*** | Net Sales, defined as the natural log of the net sales (Compustat data item SALEQ) for the quarter immediately preceding the guidance announcement. |
| ***SIZE*** | Firm Size, defined as the natural log of the market value of equity (Compustat data item PRCCQ × CSHOQ) at the end of the quarter immediately preceding the guidance announcement. |
| ***TOPBROKER*** | Top Brokerage Coverage, defined as the fraction of analysts who are employed by top brokerage house. Top brokerage house is indentified if the number of analysts a brokerage house employs during the year is greater than 90% of other brokerage houses. |
| ***WALK*** | Walk-down Strategy, defined as an indicator variable that equals 1 if the analyst consensus forecast changes from optimistic to pessimistic during guidance announcement; 0 otherwise. |
| ***WORKLOAD*** | Analyst Workload, defined as the natural log of the average number of firms the analysts cover during the year. |

**Table 1**
**Sample Selection and Sample Comparison**

**Panel A. Sample Selection**

| Sample Selection Criteria | Management Guidance | Distinct Firms |
|---|---|---|
| All management guidance for quarterly earnings (from the First Call database) announced between 1993 and 2010. | 50,691 | 5,797 |
| **Retain:** guidance with point and closed range numerical estimates of EPS. | 47,769 | 4,952 |
| **Retain:** guidance with valid CUSIP-PERMNO-IBES TICKER links. | 46,564 | 4,606 |
| **Retain:** guidance with I/B/E/S actual EPS for which the guidance is related. | 45,227 | 4,513 |
| **Retain:** guidance with I/B/E/S analyst earnings forecast issued within 60-days prior to guidance announcement. | 38,554 | 4,070 |
| **Retain:** guidance with I/B/E/S analyst earnings forecast issued within the 5-days following the guidance announcement. | 33,775 | 3,542 |
| **Retain:** guidance with prior quarterly guidance error | 20,885 | 2,058 |
| **Retain:** guidance with sufficient data to calculate time-series earnings prediction | 19,366 | 1,910 |
| **Retain:** guidance with non-missing CRSP 5-day abnormal returns around the guidance announcement and actual earnings announcement. | 18,553 | 1,835 |
| **Retain:** guidance with sufficient data to calculate prior guidance characteristics and other financial variables. | 18,409 | 1,835 |
| **Final Sample** | 18,409 | 1,835 |

**Panel B. Sample Comparison**

| | (1) Compustat-CRSP firm-quarters | (2) Intersection of Mgt Guidance and Compustat-CRSP firm-quarters | (3) Final Sample after Sample Selection | | | |
|---|---|---|---|---|---|---|
| | n = 664,108 | n = 84781 | n = 18,409 | Satterthwaite t-Statistics (*Wilcoxon Z*) | | |
| **Variable** | **Mean (*Median*)** | **Mean (*Median*)** | **Mean (*Median*)** | **(1) vs. (2)** | **(3) vs. (1)** | **(3) vs. (2)** |
| ***LEV*** | 0.5958 | 0.7015 | 0.6083 | -17.56 | -1.26 | 8.47 |
| | *(0.2325)* | *(0.3937)* | *(0.3293)* | *(64.91)* | *(24.06)* | *(-9.40)* |
| ***MTB*** | 2.8604 | 3.3088 | 3.2446 | -25.86 | -12.93 | 1.97 |
| | *(1.8310)* | *(2.5033)* | *(2.5090)* | *(99.85)* | *(50.74)* | *(0.95)* |
| ***ROA*** | -0.0296 | 0.0116 | 0.0120 | -182.74 | -111.12 | -0.99 |
| | *(0.0061)* | *(0.0145)* | *(0.0149)* | *(128.19)* | *(64.07)* | *(2.77)* |
| ***SALE*** | 3.0135 | 5.4736 | 5.7212 | -351.71 | -215.05 | -18.26 |
| | *(3.0938)* | *(5.4510)* | *(5.6510)* | *(264.93)* | *(141.08)* | *(16.10)* |
| ***SIZE*** | 4.5804 | 7.0411 | 7.3445 | -367.88 | -229.62 | -23.24 |
| | *(4.4848)* | *(6.9610)* | *(7.2222)* | *(280.80)* | *(151.23)* | *(21.10)* |

***Notes to Table 1:***
Panel A of Table 1 reports the sample selection criteria. Panel B compares key statistics between firm-years observation reported in Compustat universe, the intersection of First Call, I/B/E/S, Compustat, and CRSP, and the final sample. Variables are defined as follows. ***LEV*** = Financial Leverage, defined as long-term liability (Compustat data item LLTQ) scaled by total equity (Compustat data item CEQQ) at the end of the quarter immediately preceding the guidance announcement. ***MTB*** = Market-to-Book Ratio, defined as defined as the market value of equity (Compustat data item PRCCQ × CSHOQ) scaled by book value of equity (Compustat data item CEQQ) at the end of the quarter immediately preceding the guidance announcement. ***ROA*** = Return on Assets, defined as income before extraordinary item (Compustat data item IBQ) scaled by total assets (Compustat data item ATQ) for the quarter immediately preceding the guidance announcement. ***SALE*** = Net Sales, defined as the natural log of the net sales (Compustat data item SALEQ) for the quarter immediately preceding the guidance announcement. ***SIZE*** = Firm Size, defined as the natural log of the market value of equity (Compustat data item PRCCQ × CSHOQ) at the end of the quarter immediately preceding the guidance announcement.

**Table 2**
**Descriptive**

| Variables | Mean | 25th Pctl | Median | 75th Pctl | Std. Dev. |
|---|---|---|---|---|---|
| **Main Variable:** | | | | | |
| $FE_{Mgt,Q}$ | -0.0007 | -0.0018 | -0.0005 | 0.0000 | 0.0128 |
| **1) Prior Earnings Information:** | | | | | |
| $FE_{Mgt,Q-1}$ | -0.0007 | -0.0016 | -0.0005 | 0.0000 | 0.0184 |
| $FE_{Mgt,Q}^{Time\ Series}$ | -0.0009 | -0.0045 | -0.0012 | 0.0006 | 0.0356 |
| **2) Stock Returns Information:** | | | | | |
| $INCON_{UP}$ | 0.1382 | 0.0000 | 0.0000 | 0.0000 | 0.3451 |
| $INCON_{DN}$ | 0.2875 | 0.0000 | 0.0000 | 1.0000 | 0.4526 |
| **3) Timing of Management Guidance:** | | | | | |
| $HRZN$ | 74.836 | 54.000 | 90.000 | 92.000 | 30.442 |
| $DEMPEN$ | 0.4920 | 0.0000 | 0.0000 | 1.0000 | 0.4999 |
| **4) Information Uncertainty:** | | | | | |
| $EARNVAR$ | 0.1577 | 0.0013 | 0.0053 | 0.0230 | 3.4126 |
| $SIZE$ | 7.3812 | 6.2896 | 7.2378 | 8.3813 | 1.5605 |

***Notes to Table 2:***

Table 2 reports descriptive statistics for variables used in the later analysis. Variables are defined as follows. $FE_{Mgt,Q}$ = Guidance Error, defined as guidance estimate minus I/B/E/S actual EPS, scaled by price. For the closed-range guidance (First Call data item CIGCODEQ equals ("B", "G", "H")), I use the mid-point between the upper and lower bound estimates as the management guidance estimate. $FE_{Mgt,Q-1}$ = Prior Guidance Error, defined as the error in the guidance related to prior quarterly earnings, scaled by price. For a firm that has multiple guidance announcements in the prior quarter, I use the error in the last guidance. $FE_{Mgt,Q}^{Time\ Series}$ = Estimated Guidance Error, defined as the guidance estimate minus earnings predicted by the time-series model, scaled by price. The time-series model is constructed as follows: $EARN_{i,t,Q} = \gamma_{i0} + \gamma_{i1} \times EARN_{i,t,Q-4} + \gamma_{i2} \times (EARN_{i,t,Q-1} - EARN_{i,t,Q-5})$, where $EARN_{i,t,Q}$ denotes quarterly I/B/E/S actual EPS for firm *i* in quarter *Q* of fiscal year *t*. $INCON_{UP}$ = Upward Inconsistent Guidance, defined as an indicator variable that equals 1 if the guidance estimate is greater than analyst consensus forecast prior to the guidance announcement and the firm experiences negative stock returns prior to the announcement; 0 otherwise. $INCON_{DN}$ = Downward Inconsistent Guidance, defined as an indicator variable that equals 1 if the guidance estimate is lower than analyst consensus forecast prior to the guidance announcement and the firm experiences positive stock returns prior to the announcement; 0 otherwise. $HRZN$ = Guidance Horizon, defined as the number of days between guidance announcement and actual earnings announcement to which guidance is related. $DAMPEN$ = Dampening Guidance, defined as an indicator variable that equals 1 if the manager releases bad-news guidance in conjunction with positive quarterly earnings surprise announcement; 0 otherwise. Earnings surprise is calculated as I/B/E/S actual EPS minus the average of I/B/E/S analysts' last forecasts issued within the 60-days prior to the quarterly earnings announcement. $EARNVAR$ = Earnings Volatility, defined as the natural log of the standard deviation of quarterly I/B/E/S actual EPS in the past four quarters prior to current guidance announcement. $SIZE$ = Firm Size, defined as the natural log of the market value of equity (Compustat data item PRCCQ × CSHOQ) at the end of the quarter immediately preceding the guidance announcement.

**Table 3**
**Correlation Analysis**

| | $FE_{Mgt,Q}$ | $FE_{Mgt,Q-1}$ | $FE^{Time\ Series}_{Mgt,Q}$ |
|---|---|---|---|
| $FE_{Mgt,Q}$ | 1.00 | 0.35*** | 0.23*** |
| $FE_{Mgt,Q-1}$ | 0.28*** | 1.00 | 0.07*** |
| $FE^{Time\ Series}_{Mgt,Q}$ | 0.23*** | 0.07*** | 1.00 |

*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$

| | $FE_{Mgt,Q}$ | $DEMPEN$ | $EARNVAR$ | $HRZN$ | $INCON_{UP}$ | $INCON_{DN}$ | $SIZE$ |
|---|---|---|---|---|---|---|---|
| $FE_{Mgt,Q}$ | 1.00 | -0.17*** | -0.08*** | -0.07*** | 0.05*** | -0.06*** | 0.02*** |
| $DEMPEN$ | -0.01** | 1.00 | -0.02*** | -0.55*** | 0.03*** | 0.02*** | 0.13*** |
| $EARNVAR$ | 0.01 | -0.01** | 1.00 | -0.06*** | 0.00 | 0.00 | 0.08*** |
| $HRZN$ | -0.00 | 0.51*** | -0.00 | 1.00 | 0.00 | 0.05*** | 0.09*** |
| $INCON_{UP}$ | 0.01* | 0.03*** | -0.00 | -0.01*** | 1.00 | -0.25*** | 0.00 |
| $INCON_{DN}$ | -0.01* | 0.02*** | -0.00 | 0.07*** | -0.25*** | 1.00 | 0.05*** |
| $SIZE$ | -0.01 | 0.12*** | -0.01 | 0.11*** | 0.01 | 0.05*** | 1.00 |

*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$

***Notes to Table 3:***
Table 3 reports the correlation coefficients between the variables used in the later analysis. The lower-left diagonal is the Pearson univariate correlation coefficients; the upper-right diagonal is the Spearman rank univariate correlation coefficients. Variables are defined as follows. $FE_{Mgt,Q}$ = Guidance Error, defined as guidance estimate minus I/B/E/S actual EPS, scaled by price. For the closed-range guidance (First Call data item CIGCODEQ equals ("B", "G", "H")), I use the mid-point between the upper and lower bound estimates as the management guidance estimate. $FE_{Mgt,Q-1}$ = Prior Guidance Error, defined as the error in the guidance related to prior quarterly earnings, scaled by price. For a firm that has multiple guidance announcements in the prior quarter, I use the error in the last guidance. $FE^{Time\ Series}_{Mgt,Q}$ = Estimated Guidance Error, defined as the guidance estimate minus earnings predicted by the time-series model, scaled by price. The time-series model is constructed as follows: $EARN_{i,t,Q} = \gamma_{i0} + \gamma_{i1} \times EARN_{i,t,Q-4} + \gamma_{i2} \times (EARN_{i,t,Q-1} - EARN_{i,t,Q-5})$, where $EARN_{i,t,Q}$ denotes quarterly I/B/E/S actual EPS for firm *i* in quarter *Q* of fiscal year *t*. $INCON_{UP}$ = Upward Inconsistent Guidance, defined as an indicator variable that equals 1 if the guidance estimate is greater than analyst consensus forecast prior to the guidance announcement and the firm experiences negative stock returns prior to the announcement; 0 otherwise. $INCON_{DN}$ = Downward Inconsistent Guidance, defined as an indicator variable that equals 1 if the guidance estimate is lower than analyst consensus forecast prior to the guidance announcement and the firm experiences positive stock returns prior to the announcement; 0 otherwise. $HRZN$ = Guidance Horizon, defined as

the number of days between guidance announcement and actual earnings announcement to which guidance is related. ***DAMPEN*** = Dampening Guidance, defined as an indicator variable that equals 1 if the manager releases bad-news guidance in conjunction with positive quarterly earnings surprise announcement; 0 otherwise. Earnings surprise is calculated as I/B/E/S actual EPS minus the average of I/B/E/S analysts' last forecasts issued within the 60-days prior to the quarterly earnings announcement. ***EARNVAR*** = Earnings Volatility, defined as the natural log of the standard deviation of quarterly I/B/E/S actual EPS in the past four quarters prior to current guidance announcement. ***SIZE*** = Firm Size, defined as the natural log of the market value of equity (Compustat data item PRCCQ × CSHOQ) at the end of the quarter immediately preceding the guidance announcement.

**Table 4**
**Regression Results for Guidance Error Prediction Model**

| Variable | Coef. | Pred. Sign. | Dependent Variable = $FE_{Mgt,Q}$ Mean | Median |
|---|---|---|---|---|
| Intercept | $\beta_0$ | | -0.0001 ** | -0.0002+++ |
| **1) Prior Earnings Information:** | | | | |
| $FE_{Mgt,Q-1}$ | $\beta_1$ | + | 0.5716*** | 0.3985+++ |
| $FE_{Mgt,Q}^{Time\ Series}$ | $\beta_2$ | + | 0.1206*** | 0.1192+++ |
| **2) Stock Returns Information:** | | | | |
| $INCON_{UP}$ | $\beta_3$ | + | 0.0004*** | 0.0003+++ |
| $INCON_{DN}$ | $\beta_4$ | - | -0.0002*** | -0.0002+++ |
| **3) Timing of Management Guidance:** | | | | |
| $HRZN$ | $\beta_5$ | + | 0.0003*** | 0.0001+++ |
| $DEMPEN$ | $\beta_6$ | - | 0.0001 | -0.0003+++ |
| **4) Information Uncertainty:** | | | | |
| $EARNVAR$ | $\beta_7$ | - | -0.0047*** | -0.0023+++ |
| $SIZE$ | $\beta_8$ | +/- | -0.0001*** | +0.0000+++ |
| Total Observations | | | 167 | 167 |
| Average Observations in a regression analysis | | | 7,871 | 6,275 |
| $R^2$ | | | 32% | 17% |
| adj. $R^2$ | | | 32% | 16% |

* *p < 0.10,* ** *p < 0.05,* *** *p < 0.01*
\+ *sign-rank test p < 0.10,* +++ *sign-rank test p < 0.05,* +++ *sign-rank test p < 0.01*

***Notes to Table 4:***
Table 4 reports the mean and median of the coefficient estimates for the guidance error prediction model:

$$FE_{Mgt,Q} = \beta_0 + \beta_1 \times FE_{Mgt,Q-1} + \beta_2 \times FE_{Mgt,Q}^{Time\ Series} + \beta_3 \times INCON_{UP} + \beta_4 \times INCON_{DN} + \beta_5 \times HRZN + \beta_6 \times DEMPEN + \beta_7 \times EARNVAR + \beta_8 \times SIZE \quad \textbf{[1b]}$$

The parameter estimates in the model are updated at the beginning of each month using the past five-year data available in the sample. The predictable error in each guidance estimate is calculated by applying the current guidance information to the most recent parameter estimates. Variables are defined as follows. $FE_{Mgt,Q}$ = Guidance Error, defined as guidance estimate minus I/B/E/S actual EPS, scaled by price. For the closed-range guidance (First Call data item CIGCODEQ equals ("B", "G", "H")), I use the mid-point between the upper and lower bound estimates as the management guidance estimate. $FE_{Mgt,Q-1}$ = Prior Guidance Error, defined as the error in the guidance related to prior quarterly earnings, scaled by price. For a firm that has multiple guidance announcements in the prior quarter, I use the error in the last guidance. $FE_{Mgt,Q}^{Time\ Series}$ = Estimated Guidance Error, defined as the guidance estimate minus earnings predicted by the time-series model, scaled by price. The time-series model is con-

structed as follows:$\boldsymbol{EARN_{i,t,Q} = \gamma_{i0} + \gamma_{i1} \times EARN_{i,t,Q-4} + \gamma_{i2} \times (EARN_{i,t,Q-1} - EARN_{i,t,Q-5})}$, where $\boldsymbol{EARN_{i,t,Q}}$ denotes quarterly I/B/E/S actual EPS for firm *i* in quarter *Q* of fiscal year *t*. $\boldsymbol{INCON_{UP}}$ = Upward Inconsistent Guidance, defined as an indicator variable that equals 1 if the guidance estimate is greater than analyst consensus forecast prior to the guidance announcement and the firm experiences negative stock returns prior to the announcement; 0 otherwise. $\boldsymbol{INCON_{DN}}$ = Downward Inconsistent Guidance, defined as an indicator variable that equals 1 if the guidance estimate is lower than analyst consensus forecast prior to the guidance announcement and the firm experiences positive stock returns prior to the announcement; 0 otherwise. $\boldsymbol{HRZN}$ = Guidance Horizon, defined as the number of days between guidance announcement and actual earnings announcement to which guidance is related. $\boldsymbol{DAMPEN}$ = Dampening Guidance, defined as an indicator variable that equals 1 if the manager releases bad-news guidance in conjunction with positive quarterly earnings surprise announcement; 0 otherwise. Earnings surprise is calculated as I/B/E/S actual EPS minus the average of I/B/E/S analysts' last forecasts issued within the 60-days prior to the quarterly earnings announcement. $\boldsymbol{EARNVAR}$ = Earnings Volatility, defined as the natural log of the standard deviation of quarterly I/B/E/S actual EPS in the past four quarters prior to current guidance announcement. $\boldsymbol{SIZE}$ = Firm Size, defined as the natural log of the market value of equity (Compustat data item PRCCQ × CSHOQ) at the end of the quarter immediately preceding the guidance announcement.

**Table 5**
**Absolute Forecast Error in Management Guidance, Analyst Forecasts, and Adjusted Management Guidance**

| | | (1) | (2) | (3) | Difference in Absolute Value of Forecast Error | | |
|---|---|---|---|---|---|---|---|
| Year | N | Absolute Value of $FE_{Mgt,Q}$ | Absolute Value of $FE_{Analyst,Q}$ | Absolute Value of $(FE_{Mgt,Q} - \widehat{FE_{Mgt,Q}})$ | (4) = (2) – (1) | (5) = (3) – (1) | (6) = (3) – (2) |
| 1996 | 8 | 0.0033 | 0.0007 | 0.0023 | -0.0026 | -0.0010 | 0.0016 |
| 1997 | 61 | 0.0017 | 0.0013 | 0.0021 | -0.0004 | 0.0005 | 0.0009 |
| 1998 | 174 | 0.0023 | 0.0015 | 0.0018 | -0.0008 ** | -0.0005 | 0.0003*** |
| 1999 | 189 | 0.0023 | 0.0021 | 0.0023 | -0.0002 | 0.0000 | 0.0002 |
| 2000 | 325 | 0.0022 | 0.0023 | 0.0024 | 0.0001 | 0.0002 | 0.0001 |
| 2001 | 1304 | 0.0026 | 0.0025 | 0.0025 | -0.0001 | -0.0001 | 0.0000 |
| 2002 | 1717 | 0.0025 | 0.0023 | 0.0021 | -0.0002*** | -0.0003*** | -0.0002 ** |
| 2003 | 1951 | 0.0024 | 0.0022 | 0.0020 | -0.0002*** | -0.0004*** | -0.0002*** |
| 2004 | 2202 | 0.0021 | 0.0018 | 0.0017 | -0.0003*** | -0.0004*** | -0.0001 ** |
| 2005 | 2189 | 0.0021 | 0.0018 | 0.0017 | -0.0003*** | -0.0004*** | -0.0001*** |
| 2006 | 2133 | 0.0023 | 0.0020 | 0.0018 | -0.0003*** | -0.0005*** | -0.0002*** |
| 2007 | 1845 | 0.0024 | 0.0023 | 0.0019 | -0.0002*** | -0.0005*** | -0.0003*** |
| 2008 | 1789 | 0.0035 | 0.0033 | 0.0027 | -0.0002*** | -0.0009*** | -0.0007*** |
| 2009 | 1546 | 0.0044 | 0.0040 | 0.0030 | -0.0004*** | -0.0015*** | -0.0010*** |
| 2010 | 945 | 0.0032 | 0.0028 | 0.0020 | -0.0003*** | -0.0012*** | -0.0008*** |
| **ALL Years** | **18,409** | **0.0027** | **0.0024** | **0.0021** | **-0.0002*** ** | **-0.0006*** ** | **-0.0003*** ** |

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

***Notes to Table 5:***

Table 5 reports the average of absolute forecast error in management guidance, analyst forecasts, and adjusted management guidance across all the sample years. Column (4) and (5) compare management guidance to analyst forecasts and adjusted management guidance. Negative value indicates a smaller absolute forecast error in analyst forecasts and adjusted management guidance. Similarly, Column (6) compares analyst forecasts and adjusted management guidance. Negative value indicates a smaller absolute forecast error in adjusted management guidance. Variables are defined as follows. $FE_{Mgt,Q}$ = Guidance Error, defined as guidance estimate minus I/B/E/S actual EPS, scaled by price. For the closed-range guidance (First Call data item CIGCODEQ equals ("B", "G", "H")), I use the mid-point between the upper and lower bound estimates as the management guidance estimate. $FE_{Analyst,Q}$ = Analyst Forecast Error after Guidance Announcement, defined as the average of I/B/E/S analysts' first forecasts issued within the 5-days following the

guidance announcement minus I/B/E/S actual EPS, scaled by price. $\widehat{FE_{Mgt,Q}}$= Predicted Guidance Error, defined as the predicted value of the guidance error prediction model (**Equation 1b**).

**Table 6**
**Descriptive**

| Variables | Mean | 25th Pctl | Median | 75th Pctl | Std. Dev. |
|---|---|---|---|---|---|
| **1) Analysts' Relation Management Strategies:** | | | | | |
| $BEND$ | 0.4983 | 0.0000 | 0.0000 | 1.0000 | 0.5000 |
| $CURRY$ | 0.2094 | 0.0000 | 0.0000 | 0.0000 | 0.4069 |
| $WALK$ | 0.0240 | 0.0000 | 0.0000 | 0.0000 | 0.1531 |
| **2) Analysts' Compensation Incentives:** | | | | | |
| $EQ$ | 0.0062 | 0.0000 | 0.0000 | 0.0000 | 0.0787 |
| $BADNEWS$ | 0.5425 | 0.0000 | 1.0000 | 1.0000 | 0.4982 |
| $GOODNEWS$ | 0.3231 | 0.0000 | 0.0000 | 1.0000 | 0.4677 |
| **3) Analysts' Forecasting Abilities:** | | | | | |
| $FEXP$ | 1.4709 | 1.0986 | 1.3863 | 1.7047 | 0.3691 |
| $PACCUR$ | 0.0416 | 0.0000 | 0.0000 | 0.0000 | 0.1870 |
| $TOPBROKER$ | 0.9581 | 1.0000 | 1.0000 | 1.0000 | 0.1784 |
| $WORKLOAD$ | 2.7116 | 2.6027 | 2.7081 | 2.8332 | 0.2308 |
| **4) Forecasting Environment:** | | | | | |
| $DISP$ | 0.0292 | 0.0058 | 0.0141 | 0.0287 | 0.1153 |
| $FLLW$ | 1.4897 | 0.6931 | 1.6094 | 2.1972 | 0.8953 |
| **5) Market Reaction Variables:** | | | | | |
| $CAR_{Guidance}$ | -0.0020 | -0.0528 | -0.0003 | 0.0528 | 0.1021 |
| $CAR_{EAD}$ | 0.0035 | -0.0385 | 0.0026 | 0.0469 | 0.0851 |

***Notes to Table 6:***
Table 6 reports descriptive statistics for variables used in the later analysis. Variables are defined as follows. $BEND$ = Bending Forecast in Favor of Management Guidance, defined as an indicator variable that equals 1 if the consensus analyst forecast during management guidance announcement is closer to guidance estimate, in absolute term, than consensus analyst forecast prior management guidance announcement. $CURRY$ = Curry Favor with Management, defined as an indicator variable that equals 1 if analyst consensus forecast during the guidance announcement is greater than the guidance estimate and the analyst consensus recommendation during the same period is a SELL; 0 otherwise. Analyst consensus recommendation is calculated as the average of I/B/E/S analysts' first recommendations issued within the five days following the guidance announcement. $WALK$ =

Walk-down Strategy, defined as an indicator variable that equals 1 if the analyst consensus forecast changes from optimistic to pessimistic during guidance announcement; 0 otherwise. $\boldsymbol{EQ}$ = Investment Banking Opportunity, defined as an indicator variable that equals 1 if the firm announces equity offering between guidance announcement and quarterly earnings announcement to which the guidance is related; 0 otherwise. The equity offering announcement data is obtained from SDC Platinum database. The equity offering announcement is excluded if the global proceeds are less than 5% of market value of the firm's common equity. $\boldsymbol{BADNEWS}$ = Bad News Guidance, defined as an indicator variable that equals 1 if the guidance estimate is lower than analyst consensus forecast prior to the guidance announcement; 0 otherwise. $\boldsymbol{GOODNEWS}$ = Good News Guidance, defined as an indicator variable that equals 1 if the guidance estimate is greater than analyst consensus forecast prior to the guidance announcement; 0 otherwise. $\boldsymbol{FEXP}$ = Analyst Firm Specific Experience, defined as the natural log of the average firm-specific experience. Firm-specific experience is calculated as the number of years an analyst issue forecast(s) for the firm's earnings. $\boldsymbol{PACCUR}$ = Analyst Prior Forecasting Accuracy, defined as the fraction of analysts who are more accurate in forecasting earnings during the year prior to the guidance announcement. Analysts are considered to be more accurate if their average of absolute forecast error is lower than 90% of other analysts as reported in I/B/E/S base. $\boldsymbol{TOPBROKER}$ = Top Brokerage Coverage, defined as the fraction of analysts who are employed by top brokerage house. Top brokerage house is indentified if the number of analysts a brokerage house employs during the year is greater than 90% of other brokerage houses. $\boldsymbol{WORKLOAD}$ = Analyst Workload, defined as the natural log of the average number of firms the analysts cover during the year. $\boldsymbol{DISP}$ = Forecast Dispersion, defined as the standard deviation of analyst consensus forecast to the earnings to which the guidance is related. Forecast dispersion is assigned with a value of zero if there is only one analyst forecasting the earnings. $\boldsymbol{FLLW}$ = Analyst Following, defined as the number of distinct analysts who issue forecasts for the earnings the guidance is related. $\boldsymbol{CAR_{Guidance}}$ = Abnormal Stock Return during Guidance Announcement, defined as CRSP size-adjusted stock returns cumulated between 0 to 5 days around the guidance announcement. $\boldsymbol{CAR_{EAD}}$ = Abnormal Stock Return during Earnings Announcement, defined as CRSP size-adjusted stock returns cumulated between 0 to 5 days around the earnings announcement to which the guidance is related.

**Table 7**
**Explaining Analyst Inefficiency of Incorporating Management Guidance News**

| Variables | Coef. | Pred. Sign. | Dependent Variable = $Inefficiency$ (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|---|---|
| Intercept | $\beta_0$ | | 0.9252*** | 0.9893*** | 1.1940*** | 1.1062*** | 1.1215*** |
| **1) Analysts' Relation Management Strategies:** | | | | | | | |
| $BEND$ | $\beta_4$ | + | 0.0947*** | | | | 0.0920*** |
| $CURRY$ | $\beta_5$ | + | 0.0237*** | | | | 0.0193*** |
| $WALK$ | $\beta_6$ | + | 0.0543*** | | | | 0.0625*** |
| **2) Analysts' Compensation Incentives:** | | | | | | | |
| $EQ$ | $\beta_3$ | + | | 0.0097 | | | 0.0162 |
| $BADNEWS$ | $\beta_1$ | + | | 0.0367*** | | | 0.0261*** |
| $GOODNEWS$ | $\beta_2$ | + | | 0.0689*** | | | 0.0558*** |
| **3) Analysts' Forecasting Abilities:** | | | | | | | |
| $FEXP$ | $\beta_7$ | - | | | -0.0734*** | | -0.0508*** |
| $PACCUR$ | $\beta_8$ | - | | | -0.0226** | | -0.0183* |
| $TOPBROKER$ | $\beta_9$ | - | | | -0.0137 | | -0.0209 |
| $WORKLOAD$ | $\beta_{10}$ | +/- | | | -0.0873*** | | -0.0840*** |
| **4) Forecasting Environment:** | | | | | | | |
| $DISP$ | $\beta_{11}$ | + | | | | 0.2195*** | 0.2877*** |
| $FLLW$ | $\beta_{12}$ | - | | | | -0.0353*** | -0.0331*** |
| *Industry Fixed Effect* | | | *Included* | *Included* | *Included* | *Included* | *Included* |
| *Year Fixed Effect* | | | *Included* | *Included* | *Included* | *Included* | *Included* |
| *N* | | | 18409 | 18409 | 18409 | 18409 | 18409 |
| $R^2$ | | | 0.068 | 0.049 | 0.052 | 0.064 | 0.102 |
| adj. $R^2$ | | | 0.065 | 0.046 | 0.048 | 0.060 | 0.098 |

* p<0.10, ** p<0.05, *** p<0.01

***Notes to Table 7:***
Table 7 reports the regression results for the determinants for analyst inefficiency:

$$Inefficiency = \beta_0 + \beta_1 \times BEND + \beta_2 \times CURRY + \beta_3 \times WALK + \beta_4 \times EQ + \beta_5 \times BADNEWS + \beta_6 \times GOODNEWS + \beta_7 \times FEXP + \beta_8 \times PACCUR + \beta_9 \times TOPBROKER + \beta_{10} \times WORKLOAD + \beta_{11} \times FLLW + \beta_{12} \times DISP \quad [2]$$

The coefficient estimate and test statistics are adjusted for firm-level clustering effects. Variables are defined as follows. $Inefficiency$ = Analyst Inefficiency of Incorporating Guidance News, defined as defined as the absolute difference between analyst consensus forecast and the guidance estimate adjusted for predictable error in the guidance, scaled by price. $BEND$ = Bending Forecast in Favor of Management Guidance, defined as an indicator variable that equals 1 if the consensus analyst forecast during management guidance announcement is closer to guidance estimate, in absolute term, than consensus analyst forecast prior management guidance announcement. $CURRY$ = Curry Favor with Management, defined as an indicator variable that equals 1 if analyst consensus forecast during the guidance announcement is greater than the guidance estimate and the analyst consensus recommendation during the same period is a SELL; 0 otherwise. Analyst consensus recommendation is calculated as the average of I/B/E/S analysts' first recommendations issued within the five days following the guidance announcement. $WALK$ = Walk-down Strategy, defined as an indicator variable that equals 1 if the analyst consensus forecast changes from optimistic to pessimistic during guidance announcement; 0 otherwise. $EQ$ = Investment Banking Opportunity, defined as an indicator variable that equals 1 if the firm announces equity offering between guidance announcement and quarterly earnings announcement to which the guidance is related; 0 otherwise. The equity offering announcement data is obtained from SDC Platinum database. The equity offering announcement is excluded if the global proceeds are less than 5% of market value of the firm's common equity. $BADNEWS$ = Bad News Guidance, defined as an indicator variable that equals 1 if the guidance estimate is lower than analyst consensus forecast prior to the guidance announcement; 0 otherwise. $GOODNEWS$ = Good News Guidance, defined as an indicator variable that equals 1 if the guidance estimate is greater than analyst consensus forecast prior to the guidance announcement; 0 otherwise. $FEXP$ = Analyst Firm Specific Experience, defined as the natural log of the average firm-specific experience. Firm-specific experience is calculated as the number of years an analyst issue forecast(s) for the firm's earnings. $PACCUR$ = Analyst Prior Forecasting Accuracy, defined as the fraction of analysts who are more accurate in forecasting earnings during the year prior to the guidance announcement. Analysts are considered to be more accurate if their average of absolute forecast error is lower than 90% of other analysts as reported in I/B/E/S database. $TOPBROKER$ = Top Brokerage Coverage, defined as the fraction of analysts who are employed by top brokerage house. Top brokerage house is indentified if the number of analysts a brokerage house employs during the year is greater than 90% of other brokerage houses. $WORKLOAD$ = Analyst Workload, defined as the natural log of the average number of firms the analysts cover during the year. $DISP$ = Forecast Dispersion, defined as the standard deviation of analyst consensus forecast to the earnings to which the guidance is related. Forecast dispersion is assigned with a value of zero if there is only one analyst forecasting the earnings. $FLLW$ = Analyst Following, defined as the number of distinct analysts who issue forecasts for the earnings the guidance is related.

**Table 8**
**Market Reaction to Management Guidance News and Analyst Inefficiency**

**Panel A. Market Reaction during Guidance Announcement**

| | | | Dependent Variable = $CAR_{Guidance}$ | | | |
|---|---|---|---|---|---|---|
| | | | **(1)** | **(2)** | **(3)** | **(4)** |
| **Variables** | **Coef.** | **Pred. Sign.** | *All Sample* | *Low* $\boldsymbol{Inefficiency}$ | *Medium* $\boldsymbol{Inefficiency}$ | *High* $\boldsymbol{Inefficiency}$ |
| Intercept | $\beta_0$ | +/- | -0.0627*** | -0.0784 | 0.0660*** | 0.0290 |
| $\widehat{FE_{MGT,Q}}$ | $\beta_2$ | +/- | 2.4473*** | -3.7196 | -2.9161 | 2.7873*** |
| $(MREV - \widehat{FE_{MGT,Q}})$ | $\beta_1$ | + | 8.4845*** | 13.2416*** | 11.8666*** | 7.0219*** |
| *Industry Fixed Effect* | | | *Included* | *Included* | *Included* | *Included* |
| *Year Fixed Effect* | | | *Included* | *Included* | *Included* | *Included* |
| *N* | | | 18409 | 6136 | 6136 | 6136 |
| $R^2$ | | | 0.143 | 0.158 | 0.174 | 0.160 |
| adj. $R^2$ | | | 0.140 | 0.150 | 0.165 | 0.151 |

* p<0.10, ** p<0.05, *** p<0.01

**Panel B. Market Reaction during Actual Earnings Announcement**

| | | | Dependent Variable = $CAR_{EAD}$ | | | |
|---|---|---|---|---|---|---|
| | | | **(1)** | **(2)** | **(3)** | **(4)** |
| **Variables** | **Coef.** | **Pred. Sign.** | *All Sample* | *Low* $Inefficiency$ | *Medium* $Inefficiency$ | *High* $Inefficiency$ |
| Intercept | $\beta_0$ | +/- | -0.0461 | -0.0833*** | 0.0285** | -0.0944*** |
| $\widehat{FE_{MGT,Q}}$ | $\beta_2$ | +/- | -1.2797** | -1.6287 | -0.8995 | -3.6019* |
| $(MREV - \widehat{FE_{MGT,Q}})$ | $\beta_1$ | + | 0.8855*** | 1.2542*** | 0.7863*** | 0.8850 |
| *Industry Fixed Effect* | | | *Included* | *Included* | *Included* | *Included* |
| *Year Fixed Effect* | | | *Included* | *Included* | *Included* | *Included* |
| *N* | | | 18409 | 6126 | 6126 | 6125 |
| $R^2$ | | | 0.008 | 0.010 | 0.017 | 0.012 |
| adj. $R^2$ | | | 0.004 | 0.001 | 0.007 | 0.003 |

* p<0.10, ** p<0.05, *** p<0.01

***Notes to Table 8:***
Table 8 reports the regression results on the effect of analyst inefficiency on the market reaction to management guidance news:

$$CAR_{Guidance}, CAR_{EAD} = \beta_0 + \beta_1 \times \widehat{FE_{MGT,Q}} + \beta_2 \times (MREV - \widehat{FE_{MGT,Q}}) \quad \textbf{[3]}$$

The coefficient estimate and test statistics are adjusted for firm-level clustering effects. Variables are defined as follows. $CAR_{Guidance}$ = Abnormal Stock Return during Guidance Announcement, defined as CRSP size-adjusted stock returns cumulated between 0 to 5 days around the guidance announcement. $CAR_{EAD}$ = Abnormal Stock Return during Earnings Announcement, defined as CRSP size-adjusted stock returns cumulated between 0 to 5 days around the earnings announcement to which the guidance is related. $\widehat{FE_{Mgt,Q}}$ = Predicted Guidance Error, defined as the predicted value of the guidance error prediction model (**Equation 1b**). $MREV$ = Management Guidance News, defined as the guidance estimate minus the average of I/B/E/S analysts' last forecasts issued within the 60-days prior to the guidance announcement, scaled by price. $Inefficiency$ = Analyst Inefficiency of Incorporating Guidance News, defined as defined as the absolute difference between analyst consensus forecast and the guidance estimate adjusted for predictable error in the guidance, scaled by price.