

Understanding Analyst Behavior: Do Individual Analysts Actually Walk Down Their Forecasts?

Tyler K. Jensen
Iowa State University

Marlene A. Plumlee
University of Utah

Teri Lombardi Yohn
Emory University

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Abstract

This study examines individual analyst forecast revisions of annual earnings, with a focus on increasing our understanding of whether analysts “walkdown” their forecasts. Focusing on revisions of individual analyst forecasts instead of consensus forecast revisions allows us to isolate how frequently walkdowns actually occur. We find that only 23.6 percent of the 182,712 analyst-firm-year forecast revisions during the 2002 – 2017 period exhibit this walkdown behavior. Further, 39.6 percent of the time individual analyst forecasts start and remain below reported earnings, 24.5 percent of the time the forecasts start and stay above reported earnings, and 12.3 percent of the time forecasts start below the reported earnings and end above reported earnings. Walkdown behavior in individual analysts also does not appear strategic. In fact, if an analyst’s first forecast is optimistic, her final forecast is similarly likely to be just above reported earnings as it is to be just below reported earnings. Finally, managers do not appear to guide individual analysts to walkdown their forecasts. Analyst forecasts are not more likely to flip from being optimistic to pessimistic when there is management guidance during the year, but are rather more likely to *stay* pessimistic when there is management guidance. Our results shed light on individual analyst forecast revisions, suggesting that analyst walkdown behavior is not a pervasive phenomenon.

I. INTRODUCTION

A number of studies document that the consensus analyst earnings forecast issued prior to an earnings announcement is pessimistic, such that firms are able to report positive earnings surprises. Further, findings from the literature suggest that these pessimistic forecasts are often a result of a “walkdown”, where the forecasts issued at the beginning of a fiscal year are optimistic (greater than reported earnings) and decline to be pessimistic (less than reported earnings) as the earnings announcement date approaches (e.g., Matsumoto 2002; Bartow, Givoly, and Hayn 2002; Richardson, Teoh and Wysocki 2004, Cotter, Tuna, and Wysocki 2006). The initial higher consensus forecasts and subsequent walkdown to pre-announcement pessimism in consensus forecasts has been linked with management guidance (Matsumoto 2002; Hutton 2005; Cotter, Tuna, and Wysocki 2006), investment banking relationships (Chan, Karceski, and Lakonishok 2007), and fewer forecast revisions later in the quarter (Berger, Ham, and Kaplan 2018). Several studies explore the factors that lead to this systematic walkdown and propose that the walkdown to beatable forecasts is a result of managerial incentives to sell stock (either personally or on the firm’s behalf) (Richardson et al. 2004), additional capital market incentives (Tan, Wang, Welker, and Ran 2017), and forecasting difficulty (Bradshaw, Lee, and Peterson 2016).

While these findings are generally based on consensus earnings forecasts, the implications are used to support analyst-level behavior, including decisions to revise earnings forecasts downward across a fiscal year. We contend that consensus forecasts, by their very nature, are of limited usefulness in inferring analyst-level decisions. Further, whether the analyst forecast behavior of initially issuing optimistic forecasts and then flipping to pessimistic forecasts is pervasive or systematic has not been fully examined. Better understanding analyst-level behavior and assessing whether that behavior is systematic motivates our reexamination of this issue.

To assist in our analysis, we begin by sorting analyst forecast revisions into four mutually exclusive categories. Specifically, we sort analyst forecast revisions into four categories based on whether the revisions reflect optimistic forecasts moving to a pessimistic forecast (*FlipDn*, a walkdown from the prior literature), pessimistic forecasts moving to an optimistic forecast (*FlipUp*), optimistic forecasts remaining

optimistic (*StayUp*), pessimistic forecasts remaining pessimistic (*StayDn*). Measuring these four types of analyst forecast revisions provides three benefits. First, it focuses on analyst-level forecast behavior within a fiscal year, which can, and likely does, differ from average analyst behavior measured using consensus forecasts. Second, it parses forecast revisions into four distinct categories that capture the possible choices analysts faces when revising their initial forecasts rather than focusing on a single category. Third, it allows us to provide more direct evidence of the pervasiveness of the walkdown behavior relative to other possible outcomes of analyst forecast behavior.

Prior research (e.g., Butler and Lang 1991) finds that individual analysts issue consistently optimistic/pessimistic forecasts, relative to a consensus forecast. Our analysis complements those findings by documenting whether the tendency to walkdown forecasts is also an analyst-level phenomenon. After exploring analyst-level behavior separate from consensus-level walkdown behavior documented in the prior literature, we turn to examining whether analyst-level walkdown behavior is systematic and/or associated with management guidance.

We begin our analysis by documenting the initial level of optimism/pessimism in individual analysts' forecasts and the prevalence of the four categories defined above. Using *consensus* analyst forecasts, we find that just over half of the time (51.8 percent) consensus forecasts are initially optimistic; 48.2 percent of the time the initial consensus forecasts are pessimistic. When we partition the consensus forecast revisions into our four possible analyst behaviors (*StayUp*, *FlipDn*, *FlipUp* and *StayDn*), we find that the largest percentage (37.4 percent) of consensus forecast revisions are classified as *StayDn* and that 26.7 percent of consensus forecast revisions are classified as *StayUp*. This means that almost two-thirds (64.1 percent) of the time, the revised forecasts have the same optimistic/pessimistic sign as the initial forecast. Forecast revisions that have been classified as “walkdown” forecasts (*FlipDn*) is only the third most likely action (25.1 percent of forecast revisions). The least frequent type of forecast revision is the *FlipUp* forecast revision – this occurs 10.8 percent of the time in our sample. These initial statistics suggest that, even at a consensus level, *FlipDn* behavior does not appear to occur at an unusual frequency or to be pervasive. In addition, even amongst individual analysts, we find even less evidence of pervasive walkdown

behavior. Specifically, 51.9 percent of initial individual analyst forecasts are pessimistic and nearly 40 percent of the time analysts issue initial and final forecasts that are pessimistic (*StayDn* forecast revisions). *FlipDn* forecast revisions across individual analysts is the third most frequent outcome, occurring 23.6 percent of the time.

These initial results provide striking evidence that the walkdown pattern referenced in numerous prior studies is not a universal phenomenon. If individual analysts are consciously revising their forecasts downward in order to move from optimistic to pessimistic, it is a relatively small minority enacting this behavior. In fact, if we were to consider forecasting earnings as a random process where all outcomes are equally likely, we might expect that, by chance, 25% of analysts would fall into each one of our four categories (*StayUp*, *FlipDn*, *FlipUp* and *StayDn*). However, the prevalence of *FlipDn* behavior is not even as high as this “naïve” expectation. Perhaps equally surprising, the prevalence of *StayDn* behavior – the other path by which an analyst’s final forecast could be pessimistic – is over 67 percent larger, compared to this baseline expectation (39.6 percent *StayDn* vs 23.6 percent *FlipDn*).

This initial analysis suggests that, if analysts are actually “intentionally walking down” their forecasts, it is only a small group of analysts that are strategically doing so. Our subsequent analyses suggest that “strategic walkdowns” likely are infrequent. That is, when we separately partition optimistic and pessimistic individual analyst forecasts into quartiles based on how optimistic/pessimistic their initial forecasts are, we find that for most of the optimistic forecasts, the end of the period forecast is equally likely to fall just above reported earnings (the least optimistic quartile) as just below reported earnings (the least pessimistic quartile). The only place where there is a significant distinction is that initially optimistic forecasts in the quartile closest to zero are 11.4 percent more likely to end up in the least pessimistic bucket versus the least optimistic bucket. In other words, revisions of initially optimistic forecasts which are weakly optimistic are slightly more likely to “flip” to pessimistic than to remain optimistic.

For forecasts that begin pessimistic, however, across the board there is a strong bias toward the final forecast being weakly pessimistic (landing just below reported earnings) compared to being weakly optimistic (landing just above reported earnings). This discrepancy ranges from 9.3 to 37.5 percent more

likely for a beginning pessimistic forecast to end up just barely “staying down” as opposed to just barely “flipping up.” This analysis uncovers two important patterns: First, forecasts that begin the year as optimistic appear to land on either side of zero forecast error at similar rates. The only slight variance in this pattern is the group with the least beginning optimism, as discussed above. Second, forecasts that begin the year as pessimistic appear much more likely to land just below a zero forecast error than just above. These two pieces of evidence suggest that, if anything, individual analysts are intentionally “staying down” as opposed to intentionally “flipping down.”

These first two pieces of evidence suggest that walkdowns are not universal, nor do they appear to be due to strategic behavior, at least not on a broad scale. To explore whether this is an analyst-specific behavior, we examine the persistence of individual analyst walkdown behavior from year-to-year and across our sample. We find that very few analysts behave the same across all firm-years in the sample. For example, only 10 of our 4,459 analysts (0.25 percent) *FlipDn* across every period in the sample. Furthermore, only 27.8 percent of analyst-firm observations that *FlipDn* in the current year also display *FlipDn* behavior in the prior year for the same analyst-firm. Additionally, examining each calendar year reveals significant time-variation of individual analyst behavior across our sample. For instance, in untabulated results we note that only 15.25% of analysts displayed *FlipDn* behavior during calendar year 2010, while 32.34% of analysts displayed *FlipDn* behavior in 2017. These figures provide univariate evidence that *FlipDn* behavior is neither consistent, nor pervasive, suggesting that walkdowns are not a function of a repeated game whereby a large group of analysts strategically revise their forecast downward so that the firm can beat expectations.

Finally, we examine whether analyst walkdown behavior is more likely to occur during years in which the manager issues guidance than during years in which the manager does not issue guidance. We find that analysts’ forecasts are more likely to start out pessimistic in the years in which the manager issues guidance than in years in which the manager does not issue guidance. This is inconsistent with managers issuing guidance to guide optimistic forecasts downward. We also find that *FlipDn* behavior occurs 24.1 percent of the time when the manager issued no guidance during the year and 22.9 percent of the time when

the manager issued guidance. This evidence is inconsistent with analyst walkdown behavior occurring as a result of manager guidance.

Our study contributes to the literature in several ways. First, we examine individual analyst forecasts rather than consensus forecasts in order to directly study analyst behavior and how they revise their forecasts over a fiscal period. Studying individual behavior allows us to evaluate the source of empirically documented patterns in consensus forecasts and whether it varies across analysts, firms, and/or time. Second, we consider the full range of possible forecast revision types in our study. Prior research has focused on *FlipDn* and “Meet or Beat” behaviors when analyzing pessimistic final forecasts, which limits the analysis to a subset of outcomes. Importantly, analysts can issue “beatable” final forecasts without exhibiting walkdown behavior, making it particularly important to examine the process by which analysts revise their forecasts throughout the year. Third, we find that the well-cited “walkdown” pattern in analyst forecasts is not pervasive. Across our entire sample, fewer than 25 percent of analyst forecasts are actually “walked down” from beginning above reported earnings to ending below reported earnings. More importantly, this *FlipDn* behavior does not appear to be consistent within a certain group of analysts nor does it remain persistent from one year to the next. Conversely, *StayDn* behavior is observed more consistently among certain analysts and also from one year to the next. Thus, if researchers are searching for an explanation of how analysts produce “meet or beat” outcomes, our analysis suggests that they should focus on analysts who consistently remain pessimistic.

Fourth, we document significant time-variation in the population of analysts that exhibit each of the four possible behaviors (*StayUp*, *FlipDn*, *FlipUp* and *StayDn*). This evidence suggests that prevailing economic conditions are a significantly overlooked factor in determining individual analyst behavior. Therefore, our study suggests that researchers considering individual analyst behavior and especially changes in behavior over time need to account for innovations in the macroeconomy over the same period. Finally, our analysis suggests that the conclusion offered in prior research that walkdown behavior is driven by management guidance is not supported. We find little evidence of differential walkdown behavior when there is or there is not management guidance issued during the year. However, we do find that the initial

analyst forecasts are more likely to be pessimistic in the years in which managers issue guidance. These findings are inconsistent with managers guiding firms from optimistic to pessimistic forecasts during the year.

II. PRIOR LITERATURE AND HYPOTHESES DEVELOPMENT

Prior academic research suggests that analysts issue systematically optimistic forecasts in the beginning of a fiscal year and walk down their forecasts to be systematically pessimistic just prior to the earnings announcement (Richardson, Teoh, and Wysocki 2004; Matsumoto 2002). Research also suggests that analysts have the incentive to walkdown their forecasts throughout the fiscal year to maintain good relations with the manager given the capital market benefits to the firm for meeting or beating the analyst earnings benchmark (Bartov, Givoly, and Hayn 2002; Kasznik and McNichols 2002).

While these findings are generally based on consensus earnings forecasts, the implications are used to support analyst-level behavior, including decisions to revise earnings forecasts downward across a fiscal year. We contend that consensus forecasts provide little ability to infer analyst-level decisions. The need to examine analyst-level behavior and determine whether the behavior is systematic motivates our first research question.

RQ1: Is analyst forecast walkdown behavior systematic, pervasive, and persistent at the individual analyst level?

The prior literature also generally concludes that the analyst forecast walkdown behavior is strategic so that managers can beat analyst forecasts to reap the capital market benefits for the firm (Bartov, Givoly, and Hayn 2002; Kasznik and McNichols 2002) and professional and financial benefits for the manager (Richardson, Teoh, and Wysocki 2004). However, Bradshaw, Lee, and Peterson (2016) suggest that the walkdown behavior is perhaps not solely strategic but also related to the difficulty in forecasting earnings. This leads to our second research question.

RQ2: Is analyst forecast walkdown behavior strategic at the individual analyst level?

The initial higher consensus forecasts and subsequent walkdown to pessimism has been linked with management guidance (Matsumoto 2002; Hutton 2005; Cotter, Tuna, and Wysocki 2006) and investment

banking relationships (Chan, Karceski, and Lakonishok 2007), suggesting that the walkdown behavior is driven by managers' influence over analysts related to managerial incentives to sell stock (either personally or on the firm's behalf) (Richardson et al. 2004) and other capital market incentives (Tan, Wang, Welker, and Ran 2017). The research suggests that managers influence analysts to start with optimistic long-horizon forecasts and then guide the analysts to pessimistic forecasts as the earnings announcement date approaches. However, Hutton (2005) finds that management guidance before Regulation FD was associated with more pessimistic analyst forecasts but not with a more pronounced forecast walkdown. Cotter, Tuna, and Wysocki (2006) conclude that management guidance is more likely when analysts' initial forecasts are optimistic and that analysts are more likely to walkdown their forecasts when managers issue guidance. However, Cotter et al. (2006) do not distinguish between analyst forecast error and analyst forecast optimism in their analyses, so it may be inappropriate to conclude that the management guidance is solely driven by analyst optimism. This inconsistency in the prior literature leads to our third research question using a more recent time period.

RQ3: Is analyst forecast walkdown behavior more pervasive in years in which the manager issues guidance than in years in which the manager issues no guidance?

III. DATA AND RESEARCH DESIGN

We begin by gathering all annual analyst forecasts for the current year (FPI 1) from the I/B/E/S detail file for fiscal years that end in January 2001 – June 2017. This original sample contains 2,551,205 individual analyst forecasts. Then, for each analyst, for each firm-year that they cover, we select the first forecast of the period that occurs after the prior year's earnings are announced and the last forecast of the period that occurs at least three days before the current year's actual earnings are announced. These beginning and ending forecasts are then aggregated to the analyst-firm-year level to arrive at a sample of 644,447 unique analyst-firm-years with beginning and ending forecast data. We use these data to calculate analyst-level forecast revisions, defined as the analyst's last forecast less the analyst's initial forecast, scaled by the absolute value of the initial forecast. Additional data requirements for firm characteristics (market

value of equity, EPS, research and development expenses), analyst characteristics (busyness, resources, experience), and analyst-firm forecast characteristics in the prior year (meet-or-beat, standard deviation of forecast error) reduce the final sample to 182,712 analyst-firm-years.

We begin our analysis by documenting differences in the key walkdown measure – analyst forecast revisions – calculated using consensus analyst forecasts versus individual analyst forecasts. Historically, consensus forecasts have been used to construct measures of analyst walkdown behaviors (Richardson et al. 2004). We contend, however, that the best means to capture individual analyst behavior—including a walkdown—is through the use of *individual* rather than consensus forecasts, as consensus forecasts may mask individual behaviors. To provide support for this contention and our decision to focus on individual analyst forecasts instead of consensus forecasts in our walkdown analysis, we compare analyst forecast revisions calculated using consensus versus individual analyst forecasts.

We calculate *consensus* analyst forecast revisions ($\Delta AF_{CON_{jy}}$) as the end of the period median consensus forecast for firm (j) and year (y) ($AF_{CON_{jy_END}}$) less the beginning of the period median consensus forecast for firm (j) and year (y) ($AF_{CON_{jy_BEG}}$), scaled by the absolute value of $AF_{CON_{jy_BEG}}$. Similarly, *individual* analyst forecast revisions (ΔAF_{ijy}) are the end of the period individual analyst forecast for analyst (i), firm (j), and year (y) (AF_{ijy_END}) less the beginning of the period forecast for analyst (i), firm (j), and year (y) (AF_{ijy_BEG}), scaled by the absolute value of AF_{ijy_BEG} . We then calculate the mean and median values of the consensus analyst forecast revisions ($\Delta AF_{CON_{jy}}$) and the individual analyst forecast revisions (ΔAF_{ijy}) for our full sample and for two sets of subsamples, as described below.

Next, we group the forecast revisions into two types—those where the initial forecast is optimistic (*StartOpt*, where the realized earnings are less than the initial forecasted value) and those where the initial forecast is pessimistic (*StartPes*, where the realized earnings are greater than the initial forecasted value) and calculate the mean and median values of $\Delta AF_{CON_{jy}}$ and ΔAF_{ijy} for each type. Finally, we classify analyst forecast revisions into four discrete types by sorting the *optimistic* forecasts into those that “flip down” (*FlipDn*) or “stay up” (*StayUp*) and the *pessimistic* forecasts into those that “flip up” (*FlipUp*) or “stay down” (*StayDn*). *FlipDn* forecast revisions are initially optimistic forecasts where the end of the period

forecasts are below the realized earnings, while *StayUp* forecast revisions are initially optimistic forecasts where the end of the period forecasts are also above the realized earnings. Similarly, *FlipUp* forecast revisions are initially *pessimistic* forecasts where the end of the period forecasts are above the realized earnings, while *StayDn* forecast revisions are initially pessimistic forecasts where the end of the period forecasts are also below the realized earnings. In the walkdown literature, *FlipDn* forecast revisions would be classified as walkdowns. We explicitly classify all the forecast revisions into one of four mutually-exclusive analyst behaviors, which enhances our ability to examine how each of these types of behaviors differ from each other.

IV. EMPIRICAL RESULTS

Pervasiveness of Walkdown Behavior

Figure 1 replicates the walkdown phenomenon documented in the prior literature, using the mean of the beginning of the period individual analyst forecast errors and the end of the period individual analyst forecast errors. Specifically, the average forecast error at the beginning of the period reflects significant optimism (average positive forecast error of 0.103) and the end of the period forecast error reflects much less optimism (average positive forecast error of 0.012), consistent with analysts revising downward over time, as suggested by the prior literature using consensus forecasts.¹

In Figure 2, we sort the analyst forecasts into those that are initially optimistic/initially pessimistic and plot the revisions for each separately; this provides some interesting insights. Early optimism in the average forecast error is driven by the initially optimistic forecasts while the later pessimism is due to the initially pessimistic forecasts. In other words, averaging the values across all analysts makes it appear as though the average analyst is walking down their forecast while, in fact, both initially optimistic and

¹ Note that although the average forecast error is much smaller by the end of the year, it does not become negative in our sample. At least a portion of the reason for this is that we assess each individual analyst in terms of their first and last forecast of the year, regardless of when those occur. In contrast, prior literature which utilizes analyst consensus has an observation in every month of fiscal period. In untabulated results, we note that the average *FlipDn* analyst-firm-year observation has a final forecast that is roughly 20 days closer to the earnings announcement than any of our other three groups. Thus, part of the previously documented walkdown in consensus forecasts is likely due to “late moving” *FlipDn* analysts making up a larger percentage of the consensus forecast late in the fiscal year. By examining individual analysts in the current study, we hope to assess whether walkdown behavior is displayed by a large group of strategic analysts or perhaps only a few impactful “late movers.”

pessimistic analysts are moving toward zero forecast error, but with different slopes. This figure suggests that the walkdown phenomena using the average of analysts' forecasts is due to the fact that the magnitude of the beginning forecast error of the initially optimistic analysts (0.382) is over twice as large as the beginning forecast error of the initially pessimistic analysts (-0.154), while the ending forecast error of the initially optimistic analysts (0.068) is only slightly greater than then ending forecast error of the initially pessimistic analysts (-0.039). Furthermore, more analyst forecasts are initially pessimistic (94,860) than are initially optimistic (87,852). These findings are inconsistent with assertions in the prior literature that (1) analysts are generally initially optimistic (the necessary starting point for a walk down) and (2) *analysts* walk down their forecasts. It also supports the need to examine individual analyst behavior rather than consensus forecasts in this literature.

Table 1 provides additional details that support the need to examine individual analyst forecasts and call into question the walkdown behavior. Specifically, we present the mean/median values of forecast revisions when the revisions are calculated using *consensus* analyst forecasts (Panel A) and calculated using *individual* analyst forecasts (Panel B). In each panel we report the percentage of the forecast revisions with initially optimistic or pessimistic forecasts (columns 2 and 3) and those that are classified as *StayUp*, *FlipDn*, *FlipUp*, or *StayDn* (columns 4, 5, 6, and 7). We also report the mean/median value of the revisions within each column.

In Panel A of Table 1, the mean/median value of the consensus analyst forecast revision (ΔAF_{CON}) for the full sample is -0.126/-0.009. When we sort the forecasts into those that are initially optimistic and initially pessimistic (*StartOpt* and *StartPes*), we find that the mean consensus forecast is optimistic in slightly over half of the firm-years (51.8 percent). The mean/median magnitude of the consensus analyst forecast revision (ΔAF_{CON}) when the initial forecast is optimistic (pessimistic) is -0.447/-0.154 (0.217/0.081), suggesting that the average magnitude of the forecast revision is almost twice as large when the consensus forecast is initially optimistic than when the consensus forecast is initially pessimistic. This differential generally supports the walkdown notion, as forecasts that are initially optimistic are revised downward to a greater extent when compared to the upward revision when forecasts are initially

pessimistic. However, in order to support the walkdown behavior that is linked to achieving “meet or beat” outcomes for managers, there needs to be a significant number of initially optimistic analysts who actually “flip” to issuing a pessimistic ending forecast.

We report the mean and median values of the four types of forecast revisions, based on the revision of initially optimistic/pessimistic forecasts (i.e., *StayUp*, *FlipDn*, *FlipUp*, or *StayDn*) in Columns 4 – 7. We find that 25.1 percent of consensus forecast revisions are classified as *FlipDn* (forecast revisions that would be classified as a traditional walkdown), while 26.7 percent of forecast revisions are classified as *StayUp*. The largest group, 37.4 percent, represents forecast revisions classified as *StayDn* and 10.8 percent of forecast revisions are *FlipUp*. While the largest average magnitude of the forecast revision (ΔAF_{CON}) across these four types of revisions is found for *StayUp* forecast revisions (-0.470), ΔAF_{CON} for *FlipDn* forecast revisions (-0.455) is statistically indistinguishable from -0.470 (untabulated). This suggests that when optimistic analysts revise their forecasts, the average magnitude of the revision is no different if they lead to a final pessimistic forecast or to a final optimistic forecast. This provides initial evidence that analyst forecast revisions classified as walkdowns in the prior literature do not differ from other revisions of optimistic forecasts. The average magnitude of the consensus forecast revisions classified as *FlipUp* is 0.303, which is statistically larger than the magnitude of *StayDn* forecast revisions (0.194, *t-stat* of 10.36).

In sum, although forecasts that begin optimistic generally are revised downward, there is no discernable difference in the magnitude of revisions where the final forecast remains optimistic (*StayUp*) and those that flip to pessimistic (*FlipDn*). There does, however, appear to be a disconnect both in terms of frequency and in the magnitudes of the revisions when comparing *FlipUp* and *StayDn* behaviors, which are the potential outcomes of initially pessimistic forecasts. These initial statistics cast doubt on the notion that analysts systematically walkdown their forecasts in order end up with a “beatable” forecast. A quarter of all consensus forecast revisions fall into the walkdown category; not even half of initially optimistic forecasts fall into that category. Further, the largest proportion of beatable forecasts are due to *StayDn* forecast revisions (59.9 percent = $10,038/(10,038+6,731)$). These classifications and the calculations are based on consensus forecasts, which is consistent with much of the literature that examines how analysts

revise their forecasts to create beatable forecasts (e.g., Cotter, Tuna, and Wysocki 2006; Matsumoto 2002; Richardson, Teoh, and Wysocki 2004).

Panel B presents analyses analogous to Panel A, except that the calculations and classifications are based on analyst-level forecasts rather than consensus forecasts. The mean/median value of the individual analyst forecast revisions (ΔAF_{ijy}) for the full sample is -0.076/0.000, which is much smaller in magnitude than when consensus forecasts are employed.² When we sort the forecasts into those that are initially optimistic (*StartOpt*) and initially pessimistic (*StartPes*), we find that a little *less* than half of our analyst-firm-years (48.1 percent) generate initially optimistic forecasts. Further, the mean/median ΔAF_{ijy} (i.e., individual analyst forecast revision) for optimistic (pessimistic) forecasts is -0.396/-0.135 (0.220/0.076). Consistent with Panel A, the average magnitude of ΔAF_{ijy} when forecasts are initially optimistic is almost twice that of when they are initially pessimistic. When we again classify the sample into four discrete types of analyst forecast revisions (columns 4 – 7), only 23.6 percent of revisions are classified as *FlipDn* (forecast revisions that would be classified as a walkdown). As we documented in Panel A, a larger proportion of initially optimistic forecasts are classified as *StayUp* (24.5 percent) – forecasts that begin and end optimistic – than *FlipDn*. Further, 39.6 percent of the individual analyst forecast revisions are classified as *StayDn* – forecasts that are initially pessimistic and stay pessimistic – and 12.3 percent of individual analyst forecast revision are classified as *FlipUp*—start pessimistic and flip to optimistic.

The largest average/median magnitude of ΔAF_{ijy} across these four types of revisions is found for *FlipDn* forecasts (-0.429/-0.164). In this case, the magnitude of the average revision for *FlipDn* forecasts is statistically larger than for *StayUp* forecasts (-0.364/-0.103). However, we continue to document an even more substantial disconnect between *FlipUp* and *StayDn* forecast revisions. Less than a quarter of initially

² This difference is due to the nature of aggregating forecasts and the individual analyst versus consensus level. In Panel A, each firm-year is weighted equally. However, in Panel B, since each analyst-firm-year is assessed, the larger firms, which have more analysts, carry more weight.

pessimistic forecasts are revised to be optimistic (*FlipUp*) and the average/median magnitude of *FlipUp* forecast revisions is almost twice the magnitude of *StayDn* forecast revisions.³

Figure 3 plots the beginning and ending forecast after sorting forecast revisions into the four types. The slope of the lines related to *StayUp* and *FlipDn* forecast revisions (the initially optimistic forecasts) are similar to each other. In contrast, the slope of the *FlipUp* forecast revisions is much steeper than the slope of the *StayDn* forecast revisions; the forecast revision behavior of analysts that issue pessimistic forecasts at the beginning and end of a period for a firm appears to differ from other analysts. In other words, the figure suggests that *StayDn* behavior deviates from the other three types of forecast revisions. It is also the most frequent (almost 40 percent of the time).

These findings highlight two important issues. First, whether using consensus or individual analyst forecasts to capture analyst forecast revisions over a fiscal year, the frequently-cited “walkdown” behavior of analysts that issue initially optimistic forecasts and revise those forecasts and issue pessimistic forecasts at the end of the year does not appear to be pervasive. We find that *FlipDn* forecast revisions are the third most likely option among the four possibilities. In addition, although the magnitude of the forecast revisions of initially optimistic forecasts are generally larger than the magnitude of the forecast revisions of initially pessimistic forecasts, the average/median magnitudes of the *StayUp* and *FlipDn* forecast revisions do not differ as much as the average/median magnitudes of the *StayDn* and *FlipUp* forecast revisions. Ultimately, our analysis of the four possible types of analyst forecast revisions suggests that when an analyst initially issues an optimistic forecast, the evidence is inconsistent with that analyst enacting strategic behavior to assure that the final forecast is pessimistic. If anything, our findings suggest that the sample of analysts that issue pessimistic initial and final forecasts is abnormally large and the magnitudes of their revisions are unusually small.

³ In untabulated results, we find that the difference in average revision for *StayUp* and *FlipDn* is statistically different at the 1% level (-0.364 vs -0.429, t-stat 11.55). We also find that the difference in average revision for *StayDn* and *FlipUp* is statistically different at the 1% level (0.183 vs. 0.339, t-stat 39.12).

Second, in determining whether there is walkdown behavior, it is critical to examine the four potential types of revisions rather than focusing on walkdowns without comparisons to other behaviors. This is supported by our findings in terms of (1) the frequency with which analysts issue optimistic/pessimistic forecasts, (2) the frequency with which analysts revise their forecasts to obtain *StayUp*, *FlipDn*, *FlipUp* and *StayDn* forecast revisions, and (3) the difference in the magnitudes of the forecast revisions across the four types. Our evidence suggests that *FlipDn* behavior is not unusual when compared to the other types of revisions.

Strategic Walkdown Behavior

Our next test, reported in Table 2, provides additional analysis of analyst forecast revisions that explores whether analysts strategically revise their forecasts to obtain *FlipDn* forecast revisions. Specifically, we investigate whether analysts appear to strategically revise their forecasts from optimistic to pessimistic to help managers produce positive earnings surprises. We begin by sorting the revisions into two groups based on whether the initial forecast is optimistic (Panel A) or pessimistic (Panel B). Within each panel, we rank the observations based on the magnitude of the initial forecast error and then group the ranked observations into quartiles. The largest forecast errors of initially optimistic (pessimistic) forecasts are in quartile *OptQ4* (*PesQ4*) and the smallest forecast errors of initially optimistic (pessimistic) forecasts are in quartile *OptQ1* (*PesQ1*).

Column 1 reports the number of observations in each group. The size of the groups within each panel is not identical due to ties. In Column 2 of both panels, we report the respective upper and lower bounds of the analyst forecast error (calculated as analysts' initial forecasts less realized earnings) for the observations included in each group. For example, in group *OptQ4* the forecast error based on the initial forecast ranges from a high of 1.31 to a low of 0.57. In contrast, in group *OptQ1*, the forecast error based on the initial forecast ranges from a high of 0.06 to a low of 0.0.⁴ The distribution of the initial forecasts is

⁴ This means that the highest initial forecast in *OptQ4* was 131 percent times the reported earnings and the lowest initial forecast in the group was 57 percent times the reported earnings, while the highest initial forecast in *OptQ1* was 6 percent times the reported earnings and the lowest initial forecast in the group was equal to reported earnings.

skewed, evidenced by the much wider range of upper and lower bounds for the optimistic groups compared to the pessimistic groups. In Column 3 of both panels, we report the percentage of each group where the forecast revision type is either *FlipDn* or *StayUp* (for initially optimistic forecasts in Panel A) or *FlipUp* or *StayDn* (for initially pessimistic forecasts in Panel B). In each row, these numbers must add to 100%, as they are the only two options for a revision, conditional on the initial forecast. Columns 4 and 5 report the percentage of the observations in that row where the actual earnings “*JustMiss*” the ending forecasts and the percentage of the observations in that row where the actual earnings “*JustBeat*” the ending forecasts, respectively. In Panel A, *JustMiss* observations are when the ending forecast error is between 0.0 and 0.06 – a *StayUp* forecast that is just above the reported earnings. In Panel B, *JustMiss* observations are when the ending forecast error is between 0.0 and 0.06 – a *FlipUp* forecast that is just above the reported earnings. In Panel A, *JustBeat* observations are when the ending forecast error is between 0.0 and -0.04 – a *FlipDn* forecast that is just below the reported earnings. In Panel B, *JustBeat* observations are when the ending forecast error is between 0.0 and -0.04 – a *StayDn* forecast that is just below the reported earnings. Finally, in Column 6 we report the difference between Columns 4 and 5, where larger negative values reflect more strategic behavior.

In Panel A, we find that the percentage of *FlipDn* forecasts increases monotonically from 38.3 percent to 58.6 percent as the level of initial optimism decreases from *OptQ4* to *OptQ1*. In other words, for optimistic forecasts, the closer the initial forecast is to reported earnings (*OptQ1*), the more likely the forecast revision will be a *FlipDn*, the traditional walkdown forecast. When the initial forecasts are weakly optimistic (*OptQ2*, *OptQ1*) analysts are more likely to *FlipDn* than *StayUp* (52.0 versus 48.0 percent and 58.6 versus 41.4 percent, respectively). This behavior pattern is not surprising, nor does it suggest strategic behavior.

The results in Panel B tell a different story. First, we find that when analysts issue initially pessimistic forecasts, they are much less likely to issue an optimistic forecast at the end of the period: *FlipUp* behavior is relatively rare across all the groups, ranging from 20.7 to 28.4 percent. This is in contrast with the proportion of initially optimistic analysts that issue pessimistic forecasts at the end of the period

(ranging from 38.3 to 58.6 percent). Furthermore, the likelihood that an initially pessimistic analyst will issue an optimistic forecast at the end of the period (exhibit *FlipUp* behavior) appears largely unrelated to the level of initial pessimism. Even when analysts are initially only slightly pessimistic (*PesQ1*), only 28.4 percent of the final forecasts are optimistic. Contrasting this with the least optimistic group (*OptQ1*), where the initial levels of optimism and pessimism are about equal, initially optimistic forecasts flip down to being pessimistic 58.6 percent of the time, while only 28.4 percent of initially pessimistic forecasts flip up to being optimistic.

Columns 4 – 6 in Table 2 analyze the incidence of reported earnings that just beat or just miss the final analyst forecast. If analysts are intentionally trying to provide a beatable final forecast, we would expect a higher proportion of forecast revisions that lead to *JustBeat* outcomes (Column 5) as opposed to *JustMiss* outcomes (Column 4). In Panel A, these values are very similar within each row, represented by small amounts of “Strategic Forecasts” in Column 6. Thus, across three out of the four optimistic quartiles, analysts appear similarly likely to land just above zero forecast error (*JustMiss*) as opposed to just below (*JustBeat*). Conversely, the results suggest that strategic revision behavior – where revisions lead to *JustBeat* forecasts more frequently than *JustMiss* forecasts – as captured by larger negative values in Column 6, is much more evident for initially pessimistic analysts in Panel B (ranging from -9.3 to -37.5 in Column 6). In total, these statistics in Table 2 provide little evidence of initially optimistic analysts choosing to strategically display “walkdown” behavior. In fact, the evidence suggests a much higher likelihood of initially pessimistic analysts strategically making unusually small positive forecast revisions in order to avoid “walkup” behavior.

Persistence of Walkdown Behavior

In Table 3 we examine the persistence in analysts’ forecast revision behavior. In Panel A, we examine the persistence of analyst revision behavior across all the years examined. The panel reports the number and percentage of analysts who *always* engage in the specified type of forecast behavior across all firms and all years examined. We find that always *FlipDn* behavior is the third most persistent behavior;

more analysts always revise their forecasts to always *StayDn* (2.00 percent) and to always *StayUp* (1.08 percent). Specifically, only 0.25 percent of the analysts always engage in *FlipDn* behavior across all firms and periods.

In Panels B and C, we examine the persistence of the optimism/pessimism in analysts' initial and ending forecast. In each panel, each row indicates the analyst-firm optimism/pessimism in the current year and each column indicates the analyst-firm optimism/pessimism in the prior year. The cells present the percentage of analyst-firm forecasts that fall into each category. The total of each row adds to 100 percent given that the table classifies analyst forecasts in the current year. Thus, the shaded diagonal cells represent the percentage of analyst-firm forecasts that are the same from one year to the next.

In Panel B we document persistence in whether an analyst issues an initially optimistic/pessimistic forecast, although analysts are more persistently pessimistic than persistently optimistic (60.2 percent versus 56.4 percent of the time). In Panel C, we find the analysts are persistently pessimistic when issuing their final forecast. For analysts that issue a pessimistic final forecast in the current year, 68.4 percent of them also issued a pessimistic ending forecast for a given firm in the prior year. In contrast, of the analysts who issued an optimistic forecast for a given firm year only 43.33% of the time did they also issue an optimistic for the same firm last year. These two pieces of evidence corroborate our earlier findings by documenting that both initial *and* final pessimism are more persistent than optimism.

In panel D, we examine the persistence of our four types of analyst revision behavior from one year to the next. Each row indicates the analyst-firm revision behavior in the current year. Each column indicates the analyst-firm revision behavior in the prior year. The cells present the percentage of analyst-firm forecast revisions that fall into each category. The total of each row adds to 100 percent given that the table classifies analyst forecast revision behavior in the current year. Thus, the shaded diagonal cells represent the percentage of analyst-firm forecast revisions that are the same from one year to the next. These values suggest that there is some persistent revision behavior from year to year. The *most* persistent behavior, however, is to revise forecasts to either *StayUp* or *StayDn*. In the *StayDn* row, we observe that if an analyst issued a *StayDn* forecast revision for a given firm in the current year, half the time, she also issued a *StayDn*

forecast revision for the firm in the prior year. Similarly, in the *StayUp* row, we observe that if an analyst issued a *StayUp* forecast revision in the current year for a given firm, 34.0 percent of the time, she also issued a *StayUp* forecast revision for the firm in the prior year

In the *FlipDn* row, we observe that if an analyst issued a *FlipDn* revision for a firm this year, she was more likely to have issued a *StayDn* revision for the same firm in the prior year (33.6 percent of the time) than a *FlipDn* revision. Only 27.8 percent of time if an analyst issued a *FlipDn* revision for a firm this year she also revision *FlipDn* revision in the prior year. In the *FlipUp* row, we note that the most frequent behavior in the prior year was *StayDn*. Both *StayUp* behavior and *StayDn* behavior are significantly more persistent than *FlipDn* or *FlipUp* behavior. These findings are consistent with the findings in the previous tables that the most frequent forecast revision behavior is for the analyst to stay optimistic or stay pessimistic. This adds further evidence that walkdown behavior is neither pervasive nor persistent.

Management Guidance and Walkdown Behavior

Prior research also suggests that walkdown behavior is linked to management guidance. In Figure 4, we plot the revisions for the initially optimistic and initially pessimistic forecasts for firm-years with no observable management guidance. In Figure 5, we plot the revisions for the initially optimistic and initially pessimistic forecasts for analyst-firm-years with management guidance that is issued between the first and last analyst forecast.⁵ The figures reveal that the mean initial forecasts and ending forecasts are more accurate for firm-years with management guidance than for firm-years without management guidance. The magnitude of the beginning forecast error for the both the initially optimistic analysts and the initially pessimistic analysts is much greater when there is no management guidance (0.4660 and -0.2041,

⁵ We primarily care about assessing observations where the management guidance can potentially influence the analyst to revise their initial optimistic forecast downward to achieve a final pessimistic forecast. This requires that the guidance take place between the dates of the first and last analyst forecast. There are also some instances where management guidance occurs before the first analyst forecast (2,875 observations). This is not a sufficiently large group to drive any “walkdown” pattern in the data, and we also observe similar patterns across our four types of analyst behavior amongst these 2,875 observations. In particular, *StayDn* forecasts are the most likely, followed by *StayUp* and *FlipDn*. There are 389 observations with management guidance after the last analyst forecast of the year, but this guidance has no possible impact on the individual analyst revisions we observe in these 389 cases.

respectively) than when there is management guidance (0.2421 and -0.1004, respectively). Similarly, the magnitude of the ending forecast error for the both the initially optimistic analysts and the initially pessimistic analysts is much greater when there is no management guidance (0.0901 and -0.0484, respectively) than when there is management guidance (0.0288 and -0.0282, respectively). Furthermore, there are more initially optimistic analysts forecasts (53,867) than initially pessimistic analysts (48,697) for firm-years with no management guidance but more initially pessimistic analysts (44,672) than initially optimistic analysts (32,712) for firm-years with management guidance. These findings are inconsistent with the assertions in Cotter et al. (2006) that management guidance occurs when analyst forecasts are optimistic.

Furthermore, in Figures 6 and 7 we repeat the same comparison of observations with and without management guidance but when individual analyst revisions are split amongst our four types (*StayUp*, *FlipDn*, *FlipUp*, or *StayDn*). Similar to our earlier analysis of these four analyst revision behaviors, “strategic” behavior to achieve meet-or-beat outcomes could be represented by *FlipDn* analysts displaying particularly large downward revisions or *StayDn* analysts displaying particularly small upward revisions. If anything, it appears that the *FlipDn* analysts display a steeper decline in Figure 6 when there is no management guidance, while the *StayDn* analysts display particularly “flat” upward revisions in Figure 7 when there is management guidance. In addition, in both cases the *StayDn* group represents the largest proportion and this is especially true for observations with management guidance in Figure 7.

The visual evidence in Figures 4-7 suggests management guidance is not a compelling driver of walkdown behavior in individual analysts. This evidence is further supported by statistics in Table 4. Table 4 provides the mean/median values of forecast revisions for firm-years with no management guidance during the fiscal year (Panel A) and for analyst-firm-years with management guidance in between the first and last analyst forecast (Panel B). In each panel, we report the percentage of the forecast revisions with initially optimistic or pessimistic forecasts (columns 2 and 3) and that are classified as *StayUp*, *FlipDn*, *FlipUp*, or *StayDn* (columns 4, 5, 6, and 7). We also report the mean/median value of the revisions within each column.

In Panel A of Table 4, the mean/median value of the analyst forecast revision (ΔAF) for the firm-years with no guidance is -0.115/-0.021. When we sort the forecasts into those that are initially optimistic and initially pessimistic (*StartOpt* and *StartPes*), we find that the mean forecast is optimistic in slightly over half of the firm-years (52.29 percent). The mean/median magnitude of the analyst forecast revision (ΔAF) when the initial forecast is optimistic (pessimistic) is -0.513/-0.190 (0.322/0.131). In stark contrast, panel B reveals that the mean/median value of the analyst forecast revision (ΔAF) for the firm-years with management guidance is -0.022/0.006. The mean/median magnitude of the analyst forecast revision (ΔAF) when the initial forecast is optimistic (pessimistic) is -0.203/-0.079 (0.111/0.048). When we sort the forecasts into those that are initially optimistic and initially pessimistic (*StartOpt* and *StartPes*), we find that the initial forecast is optimistic in only 42.27 percent of the analyst-firm-years that contain management guidance between the first and last analyst forecast.

In Columns 4 – 7, we report the mean and median values of the four types of forecast revisions, based on whether the initially optimistic/pessimistic forecasts flip down/flip up (i.e., *StayUp*, *FlipDn*, *FlipUp*, or *StayDn*). We find that a larger percentage of individual analysts *FlipDn* when there is no guidance (24.1%) compared to observations with guidance occurring between the first and last analyst forecast (22.9%). The most glaring difference among these two panels is that although a plurality of analysts exhibit *StayDn* behavior in Panel A when there is no guidance (33.8%), a much larger percentage of analysts display this same *StayDn* behavior among observations with guidance in Panel B (46.3%).

In Tables 5 and 6, we conduct a similar analysis on the persistence of analyst forecast revisions as we displayed in Table 3, but with subsets of observations, conditional of management guidance. We find that initial and final pessimism is more persistent for both observations with no management guidance in Table 5 and also for observations with management guidance in Table 6. In addition, *FlipDn* behavior is similarly persistent for no guidance observations in Table 5 (27.88%) and observations with guidance in Table 6 (27.81%). The most significant difference between these two tables is that *StayDn* behavior is considerably more persistent in observations with management guidance in Table 6 (57.16%) as compared with observations without guidance in Table 5 (42.60%). Thus, in cases with management guidance,

analysts who display *StayDn* behavior are more likely to have also displayed *StayDn* behavior in the prior year than all other types of behavior combined. In combination, these results in Figures 4-7 and Tables 4-6 suggest that management forecasts do not appear to cause initially optimistic analysts to become pessimistic by the end of the period. However, guidance may influence a larger percentage of analysts to remain pessimistic (and retain that same behavior in subsequent years) thereby helping the manager achieve consistent meet-or-beat outcomes.

V. CONCLUSIONS

In this paper, we explore individual analyst behavior over a fiscal year. By examining individual analyst forecasts over the course of a given period we can better understand how and perhaps why they revise their forecasts in a particular manner. This methodology is especially important in uncovering the source of empirical patterns ascribed to analyst behavior, such as the well-cited “walkdown” phenomenon. By examining the first and last forecast of each fiscal year for all available analyst-firm combinations, we document that the supposed “walkdown” phenomenon is not pervasive. Only approximately 23.6% of individual analysts actually begin the year as optimistic and end the year as pessimistic.

In addition, these “walkdown” behaviors do not appear to be intentional, nor do they display persistence from one year to the next or across our entire sample. Furthermore, when examining all the analysts who begin the year as optimistic, most of them are equally-likely to end the year as “barely optimistic” compared to “barely pessimistic.” In other words, these analysts are roughly equally distributed right around zero forecast error at the end of the year. Conversely, for those forecasts that begin the year as pessimistic, all of them are significantly more likely to end up “barely pessimistic” as opposed to “barely optimistic.” Stated differently, it appears that analysts who begin the year as pessimistic intentionally revise upward a smaller amount in order to stay below actual earnings.

Our remaining analysis supports these contentions as well. We find little evidence that *FlipDn* behavior is pervasive and intended to help managers achieve “meet or beat” earnings outcomes. Conversely,

we also find some evidence that *StayDn* behavior is persistent and appears to allow certain analysts to repeatedly help managers achieve positive earnings surprises.

Overall, our analyses suggest that when researchers seek to draw inferences about analyst behavior, they should study individual analysts rather than analyst consensus. Additionally, our results suggest that the previously documented walkdown pattern is not a pervasive phenomenon, but rather is localized among a relatively small group of analysts who do not appear to have malicious or strategic intent.

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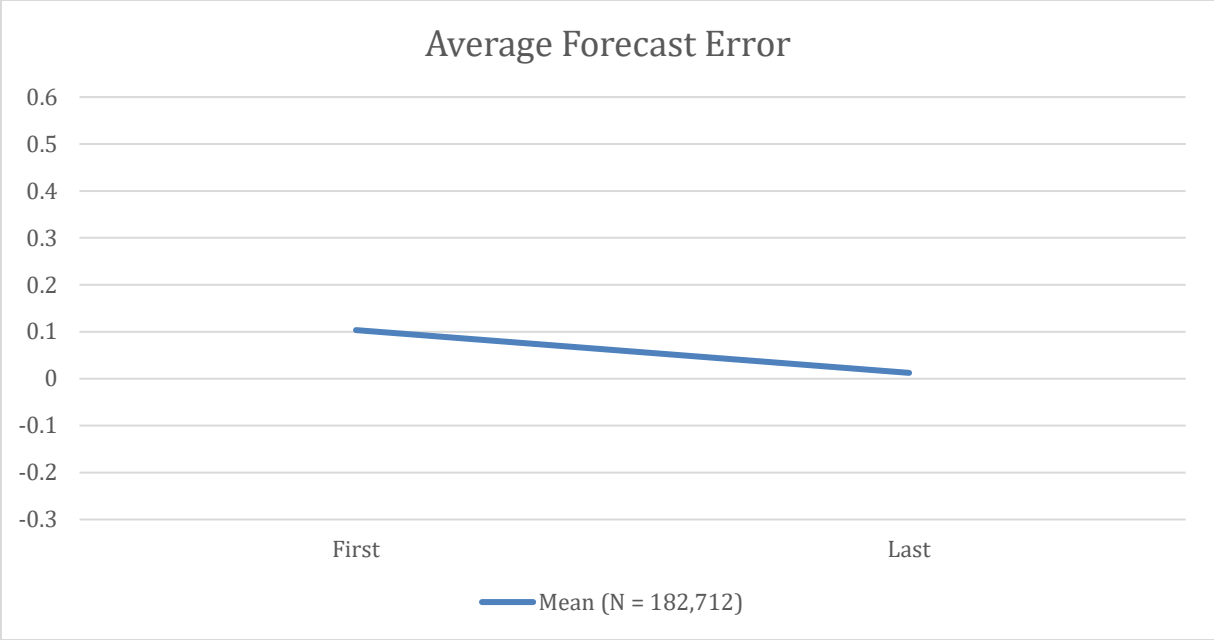


Figure 1 – Average Individual Analyst Forecast Error First and Last Forecast of Year
 This figure presents the average forecast error for all initial analyst forecasts (First) and all final analyst forecasts (Last) of a given fiscal year for all individual analyst-firm years in our 2002-2017 sample.

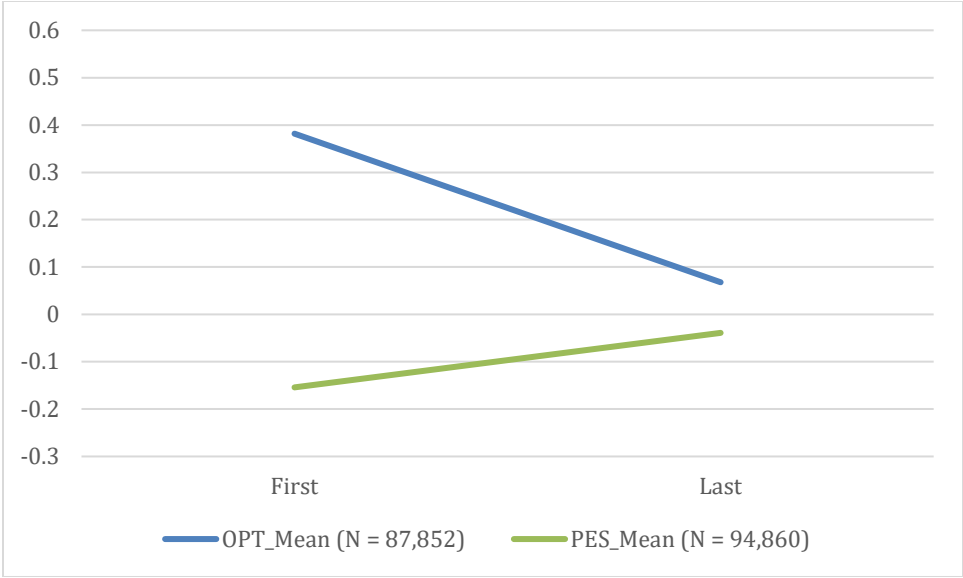


Figure 2 – Average Individual Analyst Forecast Errors: Split by Initial Optimism/Pessimism
 This figure presents the average forecast error for all initial analyst forecasts (First) and all final analyst forecasts (Last) of a given fiscal year for all individual analyst-firm years in our 2002-2017 sample, split by forecasts that are initially optimistic (initial forecast value above actual earnings) and those that are initially pessimistic (initial forecast value below actual earnings). In addition, we plot both the mean and median values of these two groups.

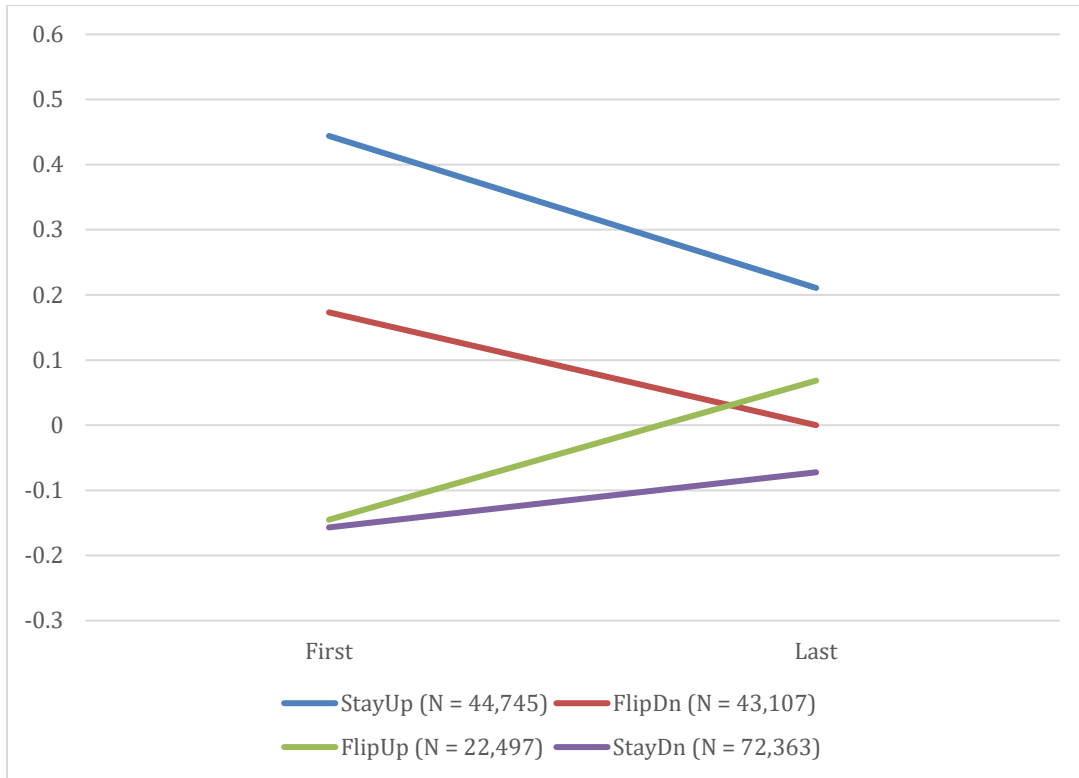


Figure 3 – Individual Analysts Split By “4 Groups”

This figure presents the average forecast error for all initial analyst forecasts (First) and all final analyst forecasts (Last) of a given fiscal year for all individual analyst-firm years in our 2002-2017 sample, split by forecasts that are initially optimistic and end optimistic (*StayUp*), initially optimistic and end pessimistic (*FlipDn*), initially pessimistic and end optimistic (*FlipUp*) and initially pessimistic and end pessimistic (*StayDn*).

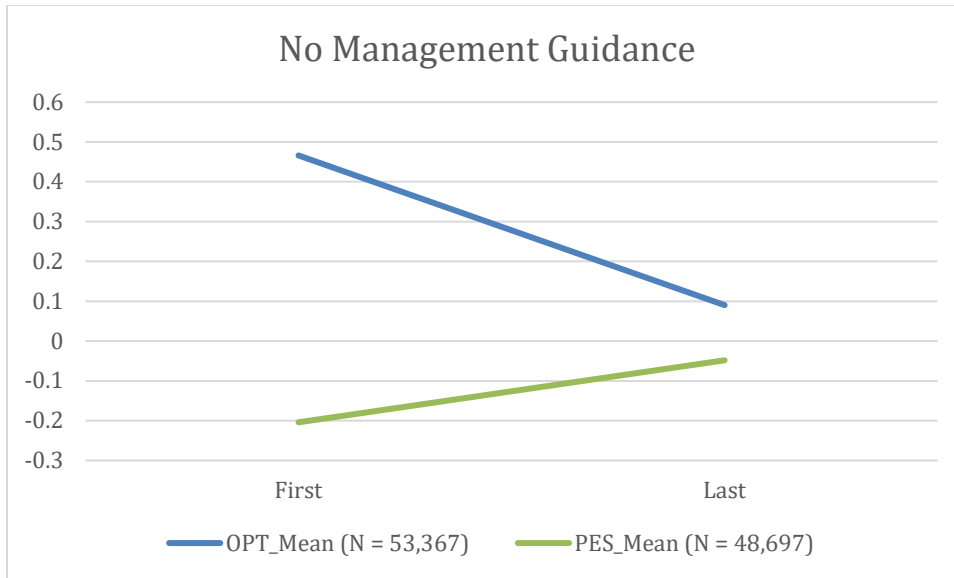


Figure 4 – Forecast Errors with No Management Guidance

This figure presents average forecast errors for all initial analyst forecasts (First) and all final analyst forecasts (Last) of a given fiscal year for all individual analyst-firm years in our 2002-2017 sample, split by forecasts that are initially optimistic (initial forecast value above actual earnings) and those that are initially pessimistic (initial forecast value below actual earnings). This figure contains only observations with no observed management guidance forecast.

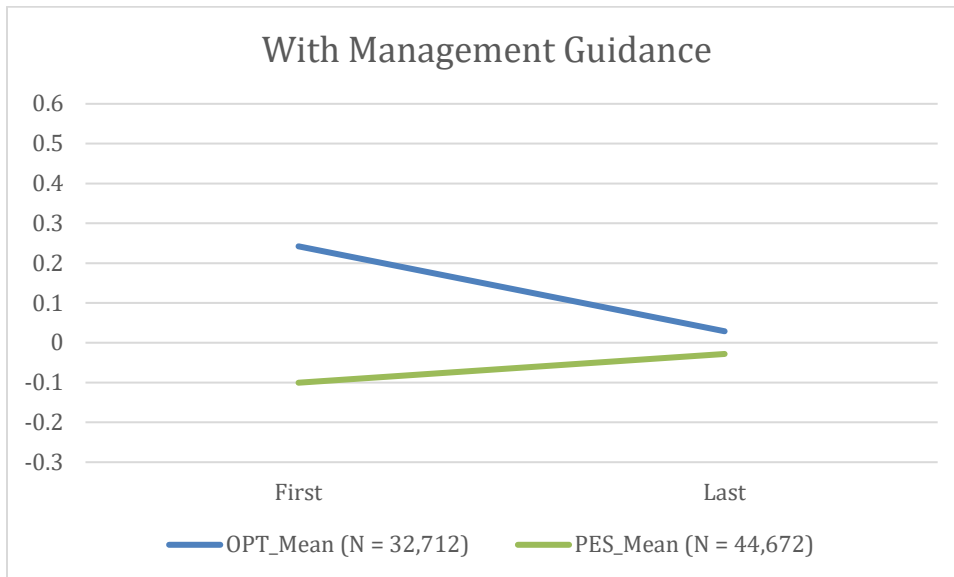


Figure 5 – Forecast Errors with Management Guidance

This figure presents average forecast errors for all initial analyst forecasts (First) and all final analyst forecasts (Last) of a given fiscal year for all individual analyst-firm years in our 2002-2017 sample, split by forecasts that are initially optimistic (initial forecast value above actual earnings) and those that are initially pessimistic (initial forecast value below actual earnings). This figure contains only observations with management guidance forecasts that occur between the first and last analyst forecast.

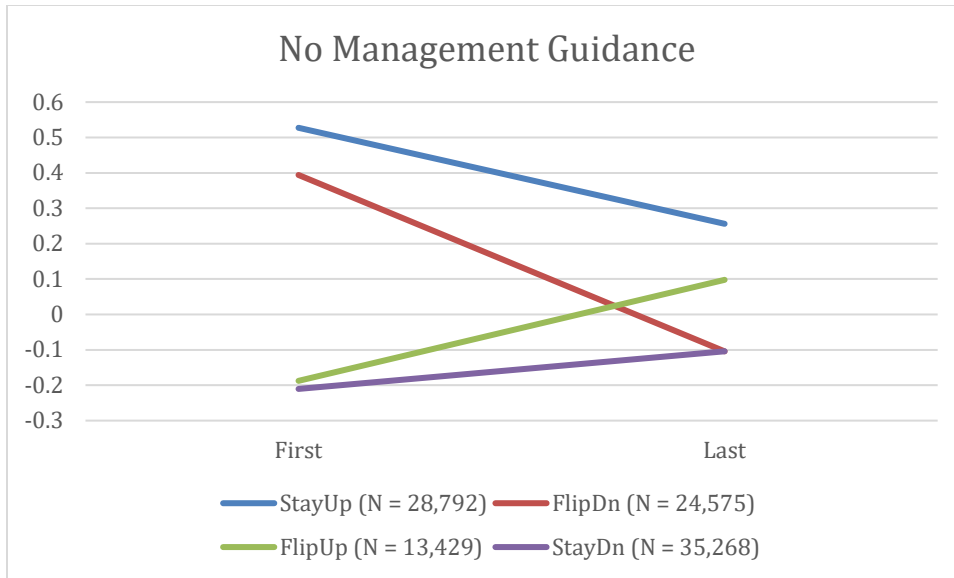


Figure 6 – Forecast Errors with No Management Guidance: “4 Types”

This figure presents the average forecast error for all initial analyst forecasts (First) and all final analyst forecasts (Last) of a given fiscal year for all individual analyst-firm years in our 2002-2017 sample, split by forecasts that are initially optimistic and end optimistic (*StayUp*), initially optimistic and end pessimistic (*FlipDn*), initially pessimistic and end optimistic (*FlipUp*) and initially pessimistic and end pessimistic (*StayDn*). This figure contains only observations with no observed management guidance forecast.

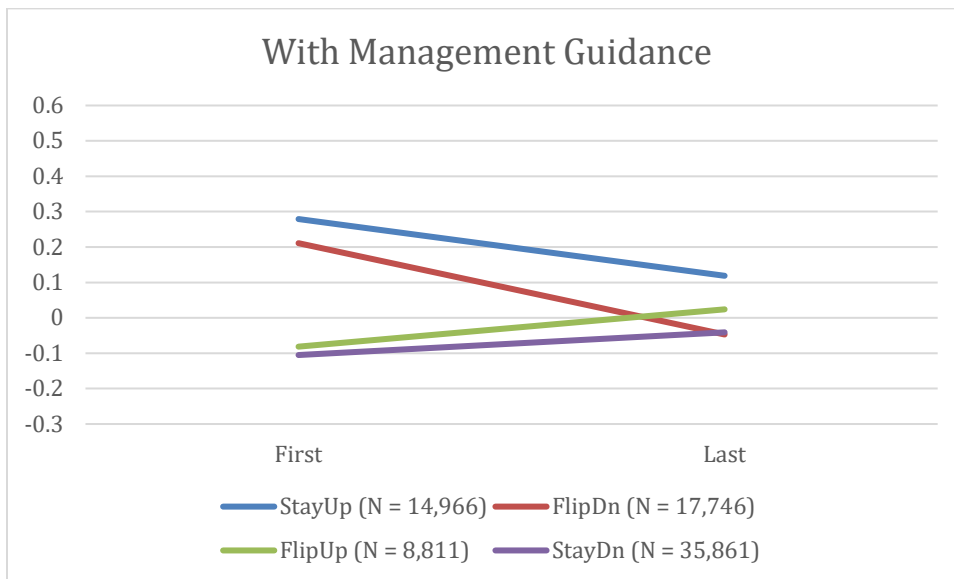


Figure 7 – Forecast Errors with Management Guidance: “4 Types”

This figure presents the average forecast error for all initial analyst forecasts (First) and all final analyst forecasts (Last) of a given fiscal year for all individual analyst-firm years in our 2002-2017 sample, split by forecasts that are initially optimistic and end optimistic (*StayUp*), initially optimistic and end pessimistic (*FlipDn*), initially pessimistic and end optimistic (*FlipUp*) and initially pessimistic and end pessimistic (*StayDn*). This figure contains only observations with management guidance forecasts that occur between the first and last analyst forecast.

Appendix A	
Analyst forecast measures	
AF_{CON}	Median consensus analyst forecast (firm _j -year _y), scaled by the reported earnings. BEG (END) indicates the forecast was made at the beginning (end) of the year.
AF_{ijy}	Analyst _i -firm _j -year _y forecast, scaled by the absolute value of the reported earnings. BEG (END) indicates the forecast was made at the beginning (end) of the year.
ΔAF_{CON}	The revision in the median consensus analyst forecast, calculated as the final median consensus forecast less the initial median consensus forecast for a given firm, scaled by the absolute value of the initial median consensus forecast. $(AF_{CON-END} - AF_{CON-BEG}) / AF_{CON-BEG} $
ΔAF_{ijy}	The revision in the analyst _i -firm _j -year _y forecast, calculated as the individual analyst's final forecast less her initial forecast for a given firm, scaled by the absolute value of the initial forecast. $(AF_{ijy-END} - AF_{ijy-BEG}) / AF_{ijy-BEG} $
OPT_{iy}	An indicator variable that equals one if the analyst forecast is greater than or equal to reported earnings.
PES_{iy}	An indicator variable that equals one if the analyst forecast is less than reported earnings.
$\%OPT_{jy}$	The proportion of analyst forecasts that are greater than or equal to reported earnings for a given firm-year. This is reported for the first forecast of the year (BEG) and the last forecast of the year (END).
$\%PES_{jy}$	The proportion of analyst forecasts that are less than reported earnings for a given firm-year. This is reported for the first forecast of the year (BEG) and the last forecast of the year (END).
DN_{iy}	An indicator variable that equals one if the analyst forecast decreases from the first forecast of the year to the last forecast of the year.
UP_{iy}	An indicator variable that equals one if the analyst forecast increases from the first forecast of the year to the last forecast of the year.
$\%DN_{jy}$	The proportion of analyst forecasts each firm that decrease across the period.
$\%UP_{jy}$	The proportion of analyst forecasts each firm that increase across the period.
$FlipDn_{t-1}$	An indicator variable that equals one if the analyst was a <i>FlipDn</i> analyst in the prior year.
$MeetBeat_{t-1}$	An indicator variable that equals one if the last analyst forecast of the prior year was less than or equal to reported earnings.
$MeetBeat_t$	An indicator variable that equals one if the last analyst forecast of the current year is less than or equal to reported earnings.
$\%MeetBeat_{t-1}$	The percentage of all forecasts for a given analyst that were less than or equal to reported earnings for the last forecast of the year for all the firms covered by the analyst in the prior year.
$sdFE_{t-1}$	The standard deviation of forecast errors for the last forecast of the year for all firms covered by the analyst in the prior year.
$sdFE_t$	The standard deviation of forecast errors for the last forecast of the year for all firms covered by the analyst in the current year.
$MeetBeatCON_{t-1}$	An indicator variable that takes a value of one if the consensus forecast was less than or equal to reported earnings in the prior year.
$MeetBeatCON_t$	An indicator variable that takes a value of one if the consensus forecast is less than or equal to reported earnings in the current year.
Firm and analyst-firm types	
$FlipDn$	If firm _j 's reported earnings are < the beginning consensus forecast for firm _j and > the ending consensus forecast for firm _j , then firm _j is a <i>FlipDn</i> firm; if firm _j 's

	reported earnings are < the beginning analyst-firm _{ij} 's forecast and > the ending analyst-firm _{ij} 's forecast, then analyst-firm _i is a <i>FlipDn</i> analyst-firm.
StayDn	If firm _j 's beginning and ending consensus forecasts are < reported earnings, then firm _j is a <i>StayDn</i> firm; if analyst-firm _{ij} 's beginning and ending forecasts are < reported earnings, then analyst-firm _{ij} is a <i>StayDn</i> analyst-firm.
FlipUp	If firm _j 's reported earnings are < the beginning consensus forecast for firm _j and < the ending consensus forecast for firm _j , then firm _j is a <i>FlipDn</i> firm; if firm _j 's reported earnings are > the beginning analyst-firm _{ij} 's forecast and < the ending analyst-firm _{ij} 's forecast, then analyst-firm _i is a <i>FlipDn</i> analyst-firm;
StayUp	If firm _j 's beginning and ending consensus forecasts are > reported earnings, then firm _j is a <i>StayUp</i> firm; if analyst-firm _{ij} 's beginning and ending forecasts are > reported earnings, then analyst-firm _{ij} is a <i>StayUp</i> analyst-firm.
Other variables	
<i>FirstIF_FirstCF</i>	The difference between the individual <i>analyst's</i> initial forecast for a given firm-year and the initial median <i>consensus</i> forecast for the same firm-year, scaled by the absolute value of the initial median consensus forecast. $(AF_{IJY-BEG} - AF_{CON_JY_BEG})/ AF_{CON_JY_BEG} $
<i>LastIF_LastCF</i>	The difference between the <i>analyst's</i> final forecast for a given firm-year and the final median <i>consensus</i> forecast for the firm-year, scaled by the absolute value of the final median consensus forecast. $(AF_{IJY-END} - AF_{CON_JY_END})/ AF_{CON_JY_END} $
<i>LastIF_FirstCF</i>	The difference between the <i>analyst's</i> final forecast for a given firm-year and the initial median <i>consensus</i> forecast for the firm-year, scaled by the absolute value of the initial median consensus forecast. $(AF_{IJY-END} - AF_{CON_JY_BEG})/ AF_{CON_JY_BEG} $
<i>LastIF_REarn</i>	Forecast error calculated as the analyst's final forecast for a given firm-year less reported earnings for that firm-year, scaled by the absolute value of the reported earnings $(AF_{ijy-END} - \text{reported earnings})/ \text{reported earnings} $
Firm characteristics	
MVE _F	Market value of equity at the beginning of the fiscal year.
Profit _F	Earnings per share for the previous year.
R&D _F	Research and development expenditures scaled by total assets for the previous year.
LOSS _F	An indicator variable equal to one if reported earnings are negative in the current year
Firm information characteristics	
MD-1.01 _{8K}	Indicator variable that equals one, if a firm reports item 1.01 (Entry into a Material Definitive Agreement) in an 8K filing during the current year, zero otherwise.
MD-5.02 _{8K}	Indicator variable that equals one, if a firm reports item 5.02 (Departure of Directors or Certain Officers; Election of Directors; Appointment of Certain Officers; Compensatory Arrangements of Certain Officers) in an 8K filing during the current year, zero otherwise.
VD-2.02 _{8K}	Indicator variable that equals one, if a firm reports item 2.02 (Results of Operations and Financial Condition) in an 8K filing during the current year, zero otherwise.
VD-7.01 _{8K}	Indicator variable that equals one, if a firm reports item 7.01 (Regulation FD disclosure) in an 8K filing during the current year, zero otherwise.
VD-8.01 _{8K}	Indicator variable that equals one, if a firm reports item 8.01 (Other Events) in an 8K filing during the current year, zero otherwise.
CC _{8K}	Indicator variable that equals one, if a firm discloses a conference call in an 8K filing during the current year, zero otherwise.
MF _{8K}	Indicator variable that equals one, if a firm discloses a management forecast in an 8K filing during the current year, zero otherwise.

NG _{8K}	Indicator variable that equals one, if a firm discloses a non-GAAP earnings number in an 8K filing during the current year, zero otherwise.
ID _{8K}	Indicator variable that equals one, if a firm discloses an investor day event in an 8K filing during the current year, zero otherwise.
Controls	
Annyear	The calendar year of the first analyst forecast of the fiscal year
absQ1EarnSurp	The absolute value of the first quarter's earnings surprise, measured as (reported earnings – prior month analyst consensus) / prior month analyst consensus
absQ2EarnSurp	The absolute value of the second quarter's earnings surprise, measured as (reported earnings – prior month analyst consensus) / prior month analyst consensus
absQ3EarnSurp	The absolute value of the third quarter's earnings surprise, measured as (reported earnings – prior month analyst consensus) / prior month analyst consensus

TABLE 1 – Descriptive statistics – Revisions in Consensus and Individual Analyst Forecasts

<i>Panel A – Consensus-level optimism/pessimism and forecast revision type</i>							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Firm Type	<i>All Firms</i>	<i>StartOpt</i>	<i>StartPes</i>	<i>StayUp</i>	<i>FlipDn</i>	<i>FlipUp</i>	<i>StayDn</i>
# Firm-years	26,810	13,884	12,926	7,153	6,731	2,888	10,038
% of All	100.0%	51.8%	48.2%	26.7%	25.1%	10.8%	37.4%
	Mean/med	Mean/med	Mean/med	Mean/med	Mean/med	Mean/med	Mean/med
ΔAF_{CON}	-0.126/-0.009	-0.447/-0.154	0.217/0.081	-0.470/-0.153	-0.455/-0.167	0.303/0.121	0.194/0.073
<i>Panel B – Analyst-level optimism/pessimism and forecast revision type</i>							
Analyst Type	<i>All Firms</i>	<i>StartOpt</i>	<i>StartPes</i>	<i>StayUp</i>	<i>FlipDn</i>	<i>FlipUp</i>	<i>StayDn</i>
# Analysts	182,712	87,852	94,860	44,745	43,107	22,497	72,363
% of All	100%	48.1%	51.9%	24.5%	23.6%	12.3%	39.6%
	Mean/med	Mean/med	Mean/med	Mean/ med	Mean/ med	Mean/ med	Mean/ med
ΔAF_{ij}	-0.076/0.000	-0.396/-0.135	0.220/0.076	-0.364/-0.103	-0.429/-0.164	0.339/0.128	0.183/0.063

This table presents mean/median values of the revisions in analyst forecasts for the sample at both a firm level (Panel A) and at an analyst level (Panel B). Panel A includes revisions using *consensus* analyst forecasts, a firm-level variable measured as the end of the year consensus forecast less the beginning of the year consensus forecast ($\Delta AF_{CON,J} = AF_{CON_END,J} - AF_{CON_BEG,J}$). Panel B includes revisions using individual *analyst-level* forecasts, measured as the end of the year analyst-firm forecast less the beginning of the year analyst-firm forecast ($\Delta AF_{ij} = AF_{END,ij} - AF_{BEG,ij}$).

We present values for the full sample (All Firms) and after parsing the data based on two increasingly fine classifications: *StartOpt/StartPes*, and *FlipDn/StayUp/FlipUp/StayDn*. Forecast revisions (ΔAF) are classified as *StartOpt (StartPes)* if the initial forecast of the year is above (below) reported earnings. Forecast revisions are classified as: (1) *FlipDn* if the initial forecast of the year is above the reported earnings and the end of the year forecast is below reported earnings, (2) *StayUp* if both the initial forecast of the year and the final forecast of the year are above the reported earnings, (3) *FlipUp* if the initial forecast of the year is below the reported earnings and the end of the year forecasts is above reported earnings, and (4) *StayDn* if both the initial forecast of the year and the final forecast of the year are below the reported earnings.

Table 2: Quartiles of Analyst Forecast Error, Optimistic versus Pessimistic							
Panel A: Initially Optimistic $AF_{ijy(BEG)}$							
	(1)	(2)	(3)		(4)	(5)	(6)
$FE_AF_{ijy(BEG)}$	N	FE_ $AF_{ijy(BEG)}$ Upper/Lower Bounds	Forecast Revision Type		% FE_ $AF_{ijy(END)}$		Strategic Forecasts (4) – (5)
			% <i>FlipDn</i>	% <i>StayUp</i>	<i>JustMiss</i>	<i>JustBeat</i>	
<i>OptQ4</i>	21,550	1.31 to 0.57	38.3	61.7	7.1	6.4	1.1
<i>OptQ3</i>	21,588	0.57 to 0.18	46.8	53.2	20.1	21.0	-0.9
<i>OptQ2</i>	21,534	0.18 to 0.06	52.0	48.0	28.9	31.4	-2.5
<i>OptQ1</i>	21,635	0.06 to 0.0	58.6	41.4	30.8	42.2	-11.4
Panel B: Initially Pessimistic $AF_{ijy(BEG)}$							
	(1)	(2)	(3)		(4)	(5)	(6)
	N	FE_ $AF_{ijy(BEG)}$ Upper/Lower Bounds	Forecast Revision Type		% FE_ $AF_{ijy(END)}$		(4) – (5)
			% <i>FlipUp</i>	% <i>StayDn</i>	<i>JustMiss</i>	<i>JustBeat</i>	
<i>PesQ1</i>	23,343	0.0 to -0.04	28.4	71.6	21.1	55.1	-34.0
<i>PesQ2</i>	23,344	-0.04 to -0.10	22.6	77.4	16.2	53.7	-37.5
<i>PesQ3</i>	23,337	-0.10 to -0.23	20.7	79.3	13.4	40.8	-27.4
<i>PesQ4</i>	23,350	-0.23 to -0.45	22.7	77.3	9.8	19.1	-9.3

This table divides individual analyst forecasts revisions into initially optimistic/pessimistic forecasts (Panel A and Panel B, respectively). Within each panel, we rank the observations based on the magnitude of the initial forecast error and group them into forecast into quartiles. The observations with beginning forecasts that generate the largest positive (negative) forecast errors are included in *OptQ4* (*PesQ4*) and the observations with beginning forecasts that generate the smallest positive (negative) forecast errors are included in *OptQ1* (*PesQ1*). Column 1 details the number of observations in each quartile at the beginning of the year. Column 2 reports the respective upper and lower bounds of the analyst forecast error (calculated as realized earnings less the analysts' initial forecasts) for the observations included in each group. Column 3 includes the percentage of analyst forecast revisions in each quartile that would be classified as *FlipDn* or *StayUp* (for initially optimistic forecasts) in Panel A or as *FlipUp* or *StayDn* (for initially pessimistic forecasts) in Panel B. Columns 4 and 5 report the percentage of the observations in that row where the actual earnings “*Just Miss*” the ending forecasts and the percentage of the observations in that row where the actual earnings “*Just Beat*” the ending forecasts, respectively. In both panels, observations where the ending forecast error is between 0.0 and 0.06 are classified as *Just Miss* and observations are when the ending forecast error is between 0.0 and -0.04 are classified as *Just Beat*. Column 6 reports the difference between Columns 4 and 5, where larger negative values reflect more strategic behavior.

TABLE 3				
Persistence of analyst forecast revision type				
<i>Panel A: Persistence Across Full Sample</i>				
<i>Total Individual Analysts</i>	<i>Always Start Optimistic</i>	<i>Always Start Pessimistic</i>	<i>Always End Optimistic</i>	<i>Always End Pessimistic</i>
<i>N = 4,459</i>	<i>135 (3.03%)</i>	<i>178 (3.99%)</i>	<i>82 (1.84%)</i>	<i>200 (4.49%)</i>
	<i>Always StayUp</i>	<i>Always FlipDn</i>	<i>Always FlipUp</i>	<i>Always StayDn</i>
	<i>48 (1.08%)</i>	<i>11 (0.25%)</i>	<i>5 (0.11%)</i>	<i>89 (2.00%)</i>
<i>Panel B: Year-to-Year Persistence</i>				
<i>This Year's Behavior</i>	<i>Last Year's Behavior for Same Analyst-Firm</i>			
	<i>Start Optimistic</i>		<i>Start Pessimistic</i>	
<i>Start Optimistic</i>	56.38%		43.62%	
<i>Start Pessimistic</i>	39.79%		60.21%	
<i>Panel C: Year-to-Year Persistence</i>				
<i>This Year's Behavior</i>	<i>Last Year's Behavior for Same Analyst-Firm</i>			
	<i>End Optimistic</i>		<i>End Pessimistic</i>	
<i>End Optimistic</i>	43.33%		56.67%	
<i>End Pessimistic</i>	31.62%		68.38%	
<i>Panel D: Year-to-Year Persistence</i>				
<i>This Year's Behavior</i>	<i>Last Year's Behavior for Same Analyst-Firm</i>			
	<i>StayUp</i>	<i>FlipDn</i>	<i>FlipUp</i>	<i>StayDn</i>
<i>StayUp</i>	35.73%	22.70%	13.21%	28.35%
<i>FlipDn</i>	27.87%	26.08%	12.66%	33.39%
<i>FlipUp</i>	21.64%	21.03%	14.94%	42.39%
<i>StayDn</i>	16.97%	21.86%	11.18%	49.99%

This table depicts the persistence of an individual analyst's forecast type over time. Panel A notes the number (and percentage) of individual analysts who always make a certain type of forecast across all firms they cover and for all years of the sample, 2002-2017. These forecast types include those that universally have: beginning forecasts above actual earnings (*Always Start Optimistic*), beginning forecasts below actual earnings (*Always Start Pessimistic*), ending forecasts above actual earnings (*Always End Optimistic*) or ending forecasts below actual earnings (*Always End Pessimistic*). We also present the number (and percentage) of analysts who take one of the four actions consistently across all forecasts in the sample (*Always StayUp*, *Always FlipDn*, *Always FlipUp*, *Always StayDn*). Panels B, C, and D present persistence of an individual analyst forecasting for a specific firm compared to the prior year. In Panel B (C), each row represents whether the current year beginning (ending) forecast is optimistic or pessimistic. Each column depicts the percentage of analyst-firm beginning (ending) forecast from the **prior** year that were optimistic or pessimistic. In Panel D, each row represents the current-year analyst forecast type (*StayUp*, *FlipDn*, *FlipUp*, *StayDn*) and the columns depict the percentage of analyst-firm observations from the **prior** year which fall into each of the four categories. The shaded cells highlight consistent behavior from one year to the next, while unshaded cells represent changes from year-to-year.

TABLE 4 – Descriptive statistics – Revisions in Consensus and Individual Analyst Forecasts – SPLIT BY MNGT GUIDANCE

Panel A – Observations with NO Guidance in the Fiscal Year							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Analyst Type	<i>All Firms</i>	<i>StartOpt</i>	<i>StartPes</i>	<i>StayUp</i>	<i>FlipDn</i>	<i>FlipUp</i>	<i>StayDn</i>
# Analysts	102,064	53,367	48,697	28,792	24,575	13,429	34,538
% of All	100.0%	52.29%	47.71%	28.2%	24.1%	13.2%	33.8%
ΔAF_{ijy}	-0.115	-0.513	0.322	-0.454	-0.582	0.467	0.267
Panel B – Observations with Guidance Between First and Last Analyst Forecast							
Analyst Type	<i>All Firms</i>	<i>StartOpt</i>	<i>StartPes</i>	<i>StayUp</i>	<i>FlipDn</i>	<i>FlipUp</i>	<i>StayDn</i>
# Analysts	77,384	32,712	44,672	14,966	17,746	8,811	35,861
% of All	100%	42.27%	57.73%	19.3%	22.9%	11.4%	46.3%
ΔAF_{ijy}	-0.022/0.006	-0.203	0.111	-0.183	-0.220	0.145	0.102

This table presents mean values of the revisions in analyst forecasts after splitting the sample into observations with no observable management guidance during the fiscal year (Panel A), compared with observations containing management guidance that occurs between the first and last analyst forecast of the year. In both cases, we assess revisions using individual analyst-level forecasts, measured as the end of the year analyst-firm forecast less the beginning of the year analyst-firm forecast ($\Delta AF_{ij} = AF_{END_ij} - AF_{BEG_ij}$).

We present values for the full sample (All Firms) and after parsing the data based on two increasingly fine classifications: *StartOpt/StartPes*, and *FlipDn/StayUp/FlipUp/StayDn*. Forecast revisions (ΔAF) are classified as *StartOpt* (*StartPes*) if the initial forecast of the year is above (below) reported earnings. Forecast revisions are classified as: (1) *FlipDn* if the initial forecast of the year is above the reported earnings and the end of the year forecast is below reported earnings, (2) *StayUp* if both the initial forecast of the year and the final forecast of the year are above the reported earnings, (3) *FlipUp* if the initial forecast of the year is below the reported earnings and the end of the year forecasts is above reported earnings, and (4) *StayDn* if both the initial forecast of the year and the final forecast of the year are below the reported earnings. Panel A contains observations where there is no management guidance within the fiscal year. Panel B is the subset of observations with guidance, where at least one guidance forecast occurs between the analyst's first forecast of the year and last forecast of the year.

TABLE 5				
Persistence of analyst forecast revision type – NO Management Guidance in Current Year				
<i>Panel A: Year-to-Year Persistence</i>				
<i>This Year's Behavior</i>	<u><i>Last Year's Behavior for Same Analyst-Firm</i></u>			
	<i>Start Optimistic</i>		<i>Start Pessimistic</i>	
<i>Start Optimistic</i>	59.41%		40.59%	
<i>Start Pessimistic</i>	46.04%		53.96%	
<i>Panel B: Year-to-Year Persistence</i>				
<i>This Year's Behavior</i>	<u><i>Last Year's Behavior for Same Analyst-Firm</i></u>			
	<i>End Optimistic</i>		<i>End Pessimistic</i>	
<i>End Optimistic</i>	47.15%		52.85%	
<i>End Pessimistic</i>	36.41%		63.59%	
<i>Panel C: Year-to-Year Persistence</i>				
<i>This Year's Behavior</i>	<u><i>Last Year's Behavior for Same Analyst-Firm</i></u>			
	<i>StayUp</i>	<i>FlipDn</i>	<i>FlipUp</i>	<i>StayDn</i>
<i>StayUp</i>	37.54%	23.99%	13.21%	25.26%
<i>FlipDn</i>	29.05%	27.88%	12.81%	30.26%
<i>FlipUp</i>	24.64%	23.44%	14.79%	37.12%
<i>StayDn</i>	20.47%	24.79%	12.14%	42.60%

This table depicts the persistence of an individual analyst's forecast type over time for observations with no observed management guidance during the fiscal year. Panels A, B, and C present persistence of an individual analyst forecasting for a specific firm compared to the prior year. In Panel A (B), each row represents whether the current year beginning (ending) forecast is optimistic or pessimistic. Each column depicts the percentage of analyst-firm beginning (ending) forecast from the **prior** year that were optimistic or pessimistic. In Panel C, each row represents the current-year analyst forecast type (StayUp, FlipDn, FlipUp, StayDn) and the columns depict the percentage of analyst-firm observations from the **prior** year which fall into each of the four categories. The shaded cells highlight consistent behavior from one year to the next, while unshaded cells represent changes from year-to-year.

TABLE 6				
Persistence of analyst forecast revision type – With Management Guidance in Current Year				
<i>Panel A: Year-to-Year Persistence</i>				
<i>This Year's Behavior</i>	<u><i>Last Year's Behavior for Same Analyst-Firm</i></u>			
	<i>Start Optimistic</i>		<i>Start Pessimistic</i>	
<i>Start Optimistic</i>	51.46%		48.54%	
<i>Start Pessimistic</i>	32.97%		67.03%	
<i>Panel B: Year-to-Year Persistence</i>				
<i>This Year's Behavior</i>	<u><i>Last Year's Behavior for Same Analyst-Firm</i></u>			
	<i>End Optimistic</i>		<i>End Pessimistic</i>	
<i>End Optimistic</i>	36.63%		63.36%	
<i>End Pessimistic</i>	26.21%		73.79%	
<i>Panel C: Year-to-Year Persistence</i>				
<i>This Year's Behavior</i>	<u><i>Last Year's Behavior for Same Analyst-Firm</i></u>			
	<i>StayUp</i>	<i>FlipDn</i>	<i>FlipUp</i>	<i>StayDn</i>
<i>StayUp</i>	27.46%	25.40%	12.76%	34.38%
<i>FlipDn</i>	22.48%	27.81%	11.39%	38.32%
<i>FlipUp</i>	14.92%	19.90%	15.63%	49.55%
<i>StayDn</i>	12.09%	20.42%	10.33%	57.16%

This table depicts the persistence of an individual analyst's forecast type over time for observations with management guidance forecasts occurring between the first and last analyst forecasts during the fiscal year. Panels A, B, and C present persistence of an individual analyst forecasting for a specific firm compared to the prior year. In Panel A (B), each row represents whether the current year beginning (ending) forecast is optimistic or pessimistic. Each column depicts the percentage of analyst-firm beginning (ending) forecast from the **prior** year that were optimistic or pessimistic. In Panel C, each row represents the current-year analyst forecast type (StayUp, FlipDn, FlipUp, StayDn) and the columns depict the percentage of analyst-firm observations from the **prior** year which fall into each of the four categories. The shaded cells highlight consistent behavior from one year to the next, while unshaded cells represent changes from year-to-year.