Managers' Forecasts of Long-Term Growth in Earnings: New Information or Cheap Talk?

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Abstract

Estimation of long-term growth in earnings is fundamental in valuation, but prior research suggests that forecasts of longer-term earnings growth provided by analysts are of questionable value. We identify a previously undocumented source of longer-term earnings growth projections about which there is virtually no prior evidence – managers' forecasts of longer-term growth. These forecasts have the unique characteristic of being relatively difficult to verify, and so we begin by investigating whether they provide new information, or are simply cheap talk. We hand-collect a sample of managers' forecasts of longer-term earnings growth and find that these forecasts are significantly optimistically biased, ranging from two to five times the realized future growth rates. They also tend to convey good news relative to analysts' growth forecasts, which are themselves optimistic. Despite this overoptimism, managers' growth forecasts on average convey new information about the firm's future realized growth that is incremental to that contained in analysts' growth forecasts. However, this result is driven primarily by forecasts conveying bad news (which are less optimistically biased). In contrast, growth forecasts conveying good news are on average uninformative cheap talk, and evidence suggests that these managers overweight their firm's historical growth rates. Analysts, but not investors, appear to understand that managers' bad news growth forecasts are more informative than their good news forecasts. Even so, our evidence suggests that analysts underreact to bad news management growth forecasts and overreact to good news forecasts.

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1 INTRODUCTION

The voluntary disclosure literature has largely focused on managers' short-term forecasts of current period quarterly or annual earnings. However, expectations of long-term growth in earnings are even more critical in estimating the cost of capital and firm value (e.g., Ohlson 1995; Chan, Karceski, and Lakonishok 2003; Botosan and Plumlee 2005). For example, Copeland, Dolgoff, and Moel (2004) use analysts' growth forecasts to proxy for all of the terms in a valuation equation from the third to infinity, and analysts appear to use projected long-term growth rates in developing target stock prices and stock recommendations (Bradshaw 2002; 2004). Even small errors in long-term expectations of earnings growth can induce economically significant misvaluation (Da and Warachka 2011). However, prior research concludes that analysts' forecasts of longer-term growth in earnings are not only overly optimistic, but also are *negatively* related to future returns, leading many to question their usefulness (e.g., LaPorta 1996; Dechow and Sloan 1997; Chan et al. 2003; Bradshaw 2004; Barniv, Hope, Myring, and Thomas 2009; Jung, Shane, and Yang 2012).

We identify a previously undocumented voluntary financial disclosure that is also a new source of forecasts of longer-term earnings growth – forecasts of three-to-five-year-ahead earnings growth issued by firm managers. These forecasts have the unique feature of being difficult to verify. We have a limited understanding of: (1) the properties and consequences of difficult-to-verify disclosures in general, and (2) whether forecasts of longer-term growth rates are informative or simply cheap talk in particular (Jung et al. 2012). Longer-term projections are subject to more uncertainty while being less constrained by imminent announcements of actual earnings, so their credibility is of heightened importance. We investigate whether managers' growth forecasts provide new information, or are simply "cheap talk." We then investigate whether analysts and investors appear to understand the nature of managers' growth forecasts.

There are several reasons to expect that managers' growth forecasts convey new information. Managers have private information about the firm's future prospects. They also have incentives

to be truthful when communicating their private information, such as the desire to establish personal credibility and a long-term reputation, and the need to build a strong and dedicated investor base (e.g., Gibbins, Richardson, and Waterhouse 1990; Graham, Harvey, and Rajgopal 2005; Hutton and Stocken 2009). Accordingly, the expectations adjustment hypothesis suggests that managers issue forecasts to bring users' expectations in line with managers' own expectations (e.g., Ajinkya and Gift 1984; King, Pownall, and Waymire 1990). Trueman's (1996) model suggests that managers with high ability issue longer-horizon earnings growth forecasts to signal their superior ability to anticipate future changes and adjust operations in a timely manner. Lee, Matsunaga, and Park (2012) provide some empirical evidence consistent with Trueman's model by showing that managers of poorly performing firms who issue more accurate forecasts are less likely to depart the firm.

In contrast, to the extent that managers' growth forecasts are unverifiable, they may be viewed as cheap talk (e.g., Crawford and Sobel 1982). It is impossible to verify whether managers' growth forecasts are a truthful representation of their unobservable private information. Even viewing these forecasts more literally as predictions about the firm's future growth, verification still requires users to: (1) wait years for the future earnings to be realized, (2) remember the manager issued this growth forecast many years ago, gather the relevant earnings realizations, and calculate the *ex post* rate of growth in earnings for the past three to five year period, since firms do not provide this calculation, and (3) have a sufficiently long investment horizon to care about verification. Even then, the firm's economic circumstances may have changed, so it remains difficult to ascertain whether managers were misrepresenting their private information when they issued a growth forecast three to five years earlier. Even if managers want to issue informative forecasts, it is difficult to forecast long-term growth in earnings, as Chan et al. (2003) find little persistence or predictability in growth of earnings across a broad cross-section of firms. Consequently, managers' incentives and cognitive limitations can lead to biased projections (e.g., Hutton, Miller, and Skinner 2002; Armor and Taylor 2002).

To investigate whether managers' forecasts of longer-term growth convey new information or are cheap talk, we hand-collect a sample of managers' forecasts of longer-term growth issued from 2001 to 2009 and examine their characteristics and capital market consequences. Our main

findings are as follows. Managers' growth forecasts are on average exceedingly optimistic relative to *ex post* actual growth rates: the mean growth forecast of 15% is five times the mean realized future growth rate of 3%. Managers' growth forecasts tend to convey good news relative to prevailing analysts' growth forecasts, which are themselves overly optimistic. Part of the explanation for managers' optimism appears to be that they overweight historical growth rates (that are *negatively* associated with realized future growth), as if managers do not understand the natural over-time deceleration of growth in earnings. These "on average" results mask important differences between forecasts conveying good versus bad news about growth, however. Growth forecasts conveying good news are uninformative and do not convey new information incremental to prevailing analysts' growth forecasts. In contrast, bad news management growth forecasts do convey incremental new information about the firm's future growth, and they help analysts improve the accuracy of their own growth forecasts, even though these bad news growth forecasts are still optimistically biased.

Analysts – but not investors – at least partially appreciate the differential informativeness of bad versus good news management growth forecasts. Analysts incorporate the news in manager's growth forecasts into their own growth forecasts, revising more strongly in response to a unit of bad news than to a unit of good news of growth forecast surprise. Nonetheless, analysts do not *fully* appreciate the differential informativeness of managers' bad news growth forecasts: they still underreact to bad news and overreact to good news in managers' growth forecasts. In contrast, investors do not seem to understand the differential informativeness of bad news: they react to managers' growth forecasts that convey good news (even though these forecasts are on average uninformative about the firm's actual future growth), but we find no significant stock return reaction to bad news (even though these forecasts are on average informative). Analysis of post-management-growth-forecast returns over the following three years suggests investors underreact to bad news and overreact to good news at the growth forecast announcement date, and these misperceptions do not begin to be corrected until two years later when the forecasted growth fails to materialize.

Our study makes several contributions. We contribute to the voluntary disclosure literature by identifying management forecasts of longer-term earnings growth. This is a previously

undocumented type of voluntary disclosure about which there is virtually no prior evidence, even though these forecasts have become relatively more common over the last decade. Managers' growth forecasts are fundamentally different from the much-studied forecasts of current period earnings: growth forecasts have much longer horizons and are difficult if not impossible to verify. Thus, their informativeness and perceived credibility are real questions. Given the importance of long-term growth projections in valuation coupled with the inadequacy of a key source of such projections – analysts' growth forecasts are *negatively* associated with future returns – the characteristics and consequences of this alternative source of growth forecasts is of practical as well as academic interest. Our evidence that both good and bad news management growth forecasts are exceedingly optimistic suggests that users should interpret them cautiously. That said, while management growth forecasts conveying good news indeed appear to be uninformative cheap talk, managers' bad news growth forecasts convey incremental new information about the firm's future growth – despite their optimism and lack of verifiability. Evidence that neither analysts nor investors appear to fully extract the valuation implications of managers' growth forecasts is of practical as well as academic interest. Finally, our evidence that investors' initial over/underreaction begins to be corrected two years post-growth-forecast contributes to the stream of literature identifying predictable cross-sectional variation in post-disclosure returns.

The rest of our paper proceeds as follows. Section 2 describes the prior literature on difficult- or impossible-to-verify disclosures and Section 3 develops our hypotheses. Section 4 explains our sample selection process and provides descriptive evidence. Section 5 describes the research design and results for our analysis of the characteristics of management growth forecasts (bias, news, and predictive ability), while Section 6 explains the research design and results for our analysis of analysts' and investors' responses to managers' growth forecasts. Section 7 presents additional evidence, and Section 8 concludes.

2   PRIOR RESEARCH ON DIFFICULT- OR IMPOSSIBLE-TO-VERIFY DISCLOSURES

2.1 Management Growth Forecasts: New Information or Cheap Talk?

We previously outlined reasons why managers' growth forecasts may convey new information, even though they are difficult to verify (e.g., managers' desire to build a reputation and dedicated investor base, the expectations adjustment hypothesis, signaling superior ability). Here we provide theoretical reasons why managers' growth forecasts could instead simply be uninformative cheap talk.

In so-called cheap talk models (e.g., Crawford and Sobel 1982), an expert sender (in our case, the firm's manager) costlessly obtains unverifiable private information that would help the receiver (in our case, financial information users such as investors) make better resource allocation decisions that increase the expected payoff to both parties.[1] The manager decides how much (if any) of his private information to disclose, and users incorporate the manager's disclosure into their beliefs based on their perceptions of its credibility. The primary unambiguous prediction from this body of theory that is relevant to our context is that managers are unlikely to truthfully reveal all of their private information, except in the unlikely condition that the manager is unbiased such that the manager's and users' (e.g., investors' and analysts') preferences are perfectly aligned.

Given the wedge that agency issues drive between managers' and users' preferences, incentive alignment is imperfect. In this case, theory yields a continuum of possible equilibria ranging from nondisclosure to partially informative disclosure. Nondisclosure – or equivalently, a "babbling" equilibrium with random disclosure that is completely uninformative – arises when the manager is sufficiently biased, or when users view the manager's disclosure as a one-shot event and have no opportunity to punish him for a misleading disclosure. Partially informative disclosure can occur if: (1) the manager is not too biased, but even here disclosure still declines as the manager's bias increases, or (2) users view the disclosure as part of a multi-period game, and they can punish managers who mislead them (e.g., Crawford and Sobel 1982; Stocken 2000).

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[1] Pure cheap talk models such as Crawford and Sobel (1982) assume that disclosure of the manager's private information is costless, and in particular, does not create proprietary costs by revealing information that enables rivals to compete more effectively against the firm. This assumption is satisfied: (1) if management growth forecasts are uninformative, or (2) even if they are objectively informative, rival firm managers do not perceive them as credible. As there is no prior evidence on the informativeness or credibility of managers' growth forecasts, these are two of our primary research questions (H3 and H5).

In our management growth forecast context, we expect managers to be biased, and users' punishment option to be limited. Managers typically prefer higher long-term valuations, and more generally, agency issues drive a wedge between managers' and users' preferences. Punishment options are limited and cannot occur until many years into the future after the necessary earnings realizations become available.[2] Depending on his discount rate, the manager will care less (or not at all if he has a shorter horizon) about possible punishment in the distant future.[3] Punishment may not even occur if users are inattentive to growth forecast information that pertains to earnings in the distant future, as DellaVigna and Pollet (2007) suggest.

To summarize, managers' likely bias, coupled with the limited effectiveness of users' punishment option, limit the upper bound of informativeness of managers' growth forecasts, whereas the lower bound remains a babbling equilibrium of uninformative "cheap talk." While this theory suggests the informativeness of managers' growth forecasts is likely to be limited, the question is: How limited? Because these models generally yield equilibria ranging from completely uninformative disclosure to disclosure with varying degrees of partial informativeness, and other incentives (e.g., reputation-building) favor informative disclosure, empirical research can play a useful role in assessing the information content of difficult-to-verify communications such as management growth forecasts.

2.2 Limited Archival Evidence on Difficult-or Impossible-to-Verify Disclosures

The limited prior archival research on disclosures that are difficult or impossible to verify focuses on unique contexts. Two studies conclude that voluntary disclosures of unaudited earnings-related information in largely unregulated environments are perceived as at least somewhat credible. Sivakumar and Waymire (1994) document stock market reactions to NYSE industrial firms' voluntary earnings-related disclosures. Given the lack of regulation and auditing in the early 1900's, these disclosures would have been impossible to verify. Price (2000) finds that new franchisees are willing to pay higher fees to franchisors that provide disclosures

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[2] Also, in contrast to a multi-period game, over 70% of our sample firms have just one growth forecast over our nine year sample period.
[3] Graham et al.'s (2005) evidence that managers trade off long-term value to achieve short-term earnings benchmarks suggests that managers have high discount rates.

related to franchise unit-level earnings, even though the franchisees have no way of verifying these disclosures. It is not clear whether the disclosures examined in these studies are at least somewhat informative, or whether unsophisticated users are relying on uninformative cheap talk.[4] In a more recent study, Michels (2012) documents that individuals seeking a loan in a rudimentary peer-to-peer lending site are rewarded with lower interest rates and more lender bids for their loans if their listings include largely costless, voluntary, unverifiable (financial and nonfinancial) disclosures. Price's (2000) and Michel's (2012) contexts are fundamentally different from ours, as they focus on specialized and fairly rudimentary markets where the sender has no uncertainty about the accuracy of the message. In contrast, we examine the bias, informativeness, and perceived credibility (by analysts and investors) of a potentially important yet sporadic and difficult-to-verify financial disclosure about which the sender has great uncertainty – forecasts of longer-term growth in earnings issued by managers of firms traded in the well-developed US stock market.

The only prior study (of which we are aware) that investigates managers' multi-year-ahead forecasts is Armstrong, Davila, Foster, and Hand's (2007) examination of a proprietary database of multi-year financial forecasts that managers of private firms seeking venture capital funding voluntarily disclose to VentureOne, "a leading provider of data to venture capital funds" (page 184). Although these managers do not forecast earnings growth per se, they do forecast future earnings. The authors study forecasts up to a five-year horizon, but only 28% of their sample observations are three- to five-year-ahead forecasts. The authors conclude that these earnings forecasts are on average optimistic. Unfortunately, their database does not include the firms' *ex post* actual earnings, so the authors estimate bias by comparing managers' forecasts to estimates of "actual" earnings derived from historical projections that become increasingly noisy as the forecast horizon lengthens.[5]

Armstrong et al. (2007, 208) question whether their results generalize to public firms. There are several reasons why they may not. First, their institutional context is quite different. The

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[4] Michels (2012) reviews a broad-ranging set of literatures concluding that decision-makers are often influenced by objectively uninformative content.

[5] The historical projections are based on the firm's age, the state where the firm is headquartered, and when available, lagged earnings.

incentive alignment and punishment options between: (1) young private firms largely managed by their founder/owners, and their potential private venture capital providers, is very different from that between: (2) professional managers and investors in firms traded in public capital markets. Second, entrepreneurs are behaviorally "hard-wired" to be particularly optimistic (Armstrong et al. 2007), so we expect their group of entrepreneurial managers to be more optimistic than professional managers of large, publicly-traded companies, on average. Third, young, private firms seeking venture capital funding have powerful incentives to inflate forecasts of long-term earnings in order to help secure the next round of funding, "without which the firm may well go out of business, given the deliberately staged nature of venture capital funding" (p. 203). Finally, due to data limitations, their measures of bias are based on *estimates* of actual earnings. For these reasons, it is an empirical question whether optimism will also arise in a very different context with a sample of large, professionally managed, publicly-traded firms where *ex post* actual earnings are available. In addition to investigating this question, we examine two additional characteristics of management growth forecasts (news conveyed by the forecast, and the incremental informativeness of the forecast) as well as key consequences – the extent to which analysts and investors appear to rely on growth forecasts.

3 HYPOTHESES

As almost nothing is known about managers' forecasts of longer-term growth in earnings, we draw on a broad range of literature in accounting, finance, economics, and psychology to develop testable expectations concerning the characteristics and consequences of these forecasts.

3.1 Characteristics of Managers' Forecasts of Earnings Growth: Bias, News, and Predictive Ability

The first three hypotheses develop expectations about the average bias, news, and predictive ability of managers' forecasts of growth in earnings. The fourth posits cross-sectional differences in bias and predictive ability, depending on whether the forecast conveys good or bad news.

3.1.1 Expected Average Direction of Bias in Managers' Forecasts of Earnings Growth

In contrast to the on-average pessimistic forecasts of current period earnings intended to set beatable expectations (e.g., Cotter, Tuna, and Wysocki 2006; Kim and Park 2012), we expect managers' forecasts of three-to-five-year earnings growth to be optimistically biased. Hutton et al. (2003) point out that managers generally have more incentives to increase stock price (e.g., performance evaluation based on stock price, stock-based compensation, desire to use the firm's shares for acquisitions or to defend against takeovers) than to decrease stock price (e.g., reduce the strike price of new stock option grants). Consequently, managers typically prefer higher valuations. Favorable estimates of long-term earnings growth are central to maintaining favorable firm valuation.

In addition to managers' incentives, there are other reasons to expect managers' forecasts of longer-term earnings growth to be overly optimistic. First, unintentional cognitive biases likely contribute to overoptimistic forecasts of longer-term earnings growth. People are particularly optimistic about: (1) outcomes for which there is more *ex ante* uncertainty (Armor and Taylor 2002), (2) outcomes that are remote in time (e.g., Gilovich, Kerr, and Medved 1993; Armor and Taylor 2002), and (3) outcomes they are motivated to care about (Kunda 1990; Hales 2007). Managers are likely to be optimistically biased about the long-term future growth prospects of the firms in which they have direct financial stakes.

Second, Van den Steen (2004) poses a rational model of overoptimism that is based on an agent's rational, albeit imperfect, choice of actions (rather than on mental processes) as the source of bias. His model suggests that managers choose the actions they believe have the best chances of success, but these are also the actions for which managers are most likely to have overestimated the outcomes. The model further suggests that this optimistic bias increases in the number of alternative actions from which the manager can choose, and in the variance of beliefs about the outcomes, both of which increase with forecast horizon and so would be especially pronounced for forecasts of three- to five-year growth in earnings.

Third, in Stocken's (2000) model, managers have little reason to curb their bias absent fear of punishment. Similarly, psychology research finds that predictions are more optimistic when their accuracy is less likely to be challenged, and when the consequences of a challenge are less severe (Armor and Taylor 2002). We expect investors are unlikely to challenge the accuracy of

managers' growth forecasts issued three to five years earlier. First, the greater uncertainty about longer-term future earnings makes it more difficult to determine *ex post* whether the management growth forecast was a biased representation of the private information managers had years ago when they issued the growth forecast. Second, investors have limited attention, especially concerning information's implications for longer-term earnings (e.g., DellaVigna and Pollet 2007). Consequently, investors may not pay attention to managers' growth forecasts, or even if they do, they may forget to challenge them three to five years later. Furthermore, we do not expect managers to view any consequences of a successful challenge as severe: Punishment cannot occur until years in the future after it becomes clear the growth forecasts issued three to five years earlier were inaccurate, managers with high discount rates are unlikely to be concerned about punishment so far into the future, and they may no longer even be around to suffer any consequences.

While we expect the above managerial incentive and capital market forces to favor optimism, product market competition and litigation risk work against optimism (Evans and Sridhar 2002). Rosy forecasts of future prospects may: (1) increase competition by encouraging new entrants into the firm's product market, and (2) subject the firm to increased litigation risk if the rosy projections are not met. However, the difficulty of verifying these long-term growth forecasts likely limits their usefulness to competitors. We also expect any increase in litigation risk to be minor, as it is difficult to prove reliance on growth forecasts issued years ago. Consequently, we expect the forces fostering optimism to dominate, and our first hypothesis (in alternative form) is:

> H1: Managers' forecasts of longer-term earnings growth are optimistically biased relative to realized future growth rates, on average.

3.1.2 Expected Average Direction of News Conveyed by Managers' Forecasts of Earnings Growth

H1 posits that managers' growth forecasts are on average overly optimistic in the sense of exceeding *ex post* realized earnings. We now turn to the expected directions of news conveyed by managers' growth forecasts – whether they guide expectations upward or downward. Although related, bias and news are two distinct characteristics. A growth forecast can guide expectations downward (bad news) while still being optimistic in not guiding far enough down.

Likewise, a forecast can guide expectations upward (good news) while being pessimistic in not guiding far enough upward. [6]

Even though analysts' growth forecasts are optimistic relative to realized future growth (La Porta 1996; Chan et al. 2003), we still expect that managers' growth forecasts – *on average* – convey good news relative to the prevailing analysts' growth forecasts. Prior research concludes that forecasts of *current period* earnings are disciplined by imminent announcement of the related actual earnings, and are generally issued to guide expectations down to beatable levels (e.g., Cotter et al. 2006; Kim and Park 2012). In contrast, managers' forecasts of growth in three- to five-year-ahead earnings are not disciplined in this manner, and favorable estimates of long-term growth in earnings are central to maintaining the favorable firm valuation that managers generally prefer (Hutton et al. 2003). Consequently, managers generally have incentives to convey good news when forecasting three- to five-year growth in earnings.

Verrecchia's (1983) model implies that managers voluntarily disclose favorable information in order to distinguish their firms from the "worst" type when the capital market benefits of disclosure (e.g., higher valuations) exceed any proprietary costs of disclosure. If current information has proprietary costs that dissipate as the information becomes more dated, then at the longest horizons managers disclose only the most favorable information (i.e., the best news), gradually disclosing less positive information as time goes by (Verrecchia 1983, 192). [7] Similarly, CFOs interviewed by Graham et al. (2005, 65) admit delaying disclosure of bad news in hopes they can turn performance around before disclosure becomes required. These rational economics-based arguments suggest that managers issue longer-term growth forecasts when they have positive private information that exceeds the market's prevailing expectations.

Finally, the reasoning supporting H1's expectation that managers issue optimistically-biased growth forecasts applies more strongly to managers than to analysts. Managers have larger and more direct financial incentives (e.g., stock options, job security) to paint a rosy picture of the firm's medium-to-longer-term future than do analysts. With respect to cognitive biases, the

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[6] Untabulated analysis confirms that, empirically, bias and news are quite distinct: In our sample the correlation between them is only 26%.

[7] This argument assumes management growth forecasts incur proprietary information costs, and thus are not simply cheap talk. Even if they are uninformative cheap talk, however, we still expect managers' growth forecasts to be higher than prevailing expectations, given managers' typical preference for higher stock prices (Hutton et al. 2003).

motivated reasoning literature suggests that managers will be more optimistic because they have much more at stake with respect to the firm's long-term prospects than do analysts. Relatedly, Armor and Taylor (2002, 346) expect "the most extreme biases in competitive and self-defining situations in which pride or one-upsmanship may prompt people to generate optimistic forecasts in order to boost morale or instill enthusiasm." These characteristics certainly apply to managers' forecasts of longer-term earnings growth. Finally, in Van den Steen's (2004) model, the manager rationally chooses the actions for which he has most likely overestimated the outcomes, *relative to others' estimations*. This suggests that managers will be more optimistic about firm's future than others, including analysts. For these reasons, we expect managers' growth forecasts to convey good news, and hypothesize (in alternative form):

> H2: Managers' forecasts of longer-term growth in earnings convey good news relative to analysts' growth forecasts, on average.

3.1.3 Expected Average Predictive Ability of Managers' Forecasts of Earnings Growth

A key issue is the incremental informativeness of managers' growth forecasts. Despite any bias, do managers' forecasts of earnings growth convey incremental new information about the firm's future growth, beyond the information already available from prevailing analysts' forecasts of earnings growth?

Prior evidence that analysts' growth forecasts are overly optimistic (e.g., Chan et al. 2003), coupled with H2's prediction that managers' growth forecasts are even more optimistic than analysts' growth forecasts, suggests that managers' growth forecasts may not convey incremental new information if they simply push expectations further away from actual future growth rates. On the other hand, managers' growth forecasts can be informative even if they are more optimistic than analysts' growth forecasts. Because managers have private information to which analysts are not privy, the co-movement between managers' growth forecasts and future realized growth could be higher than the co-movement between analysts' growth forecasts and future growth.[8] (This could be the case, for example, if analysts' growth forecasts are sticky over time).

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[8] This prediction is also consistent with the psychology literature's conclusion that people are not indiscriminately optimistic, so even optimistically biased predictions are often informative. "Although peoples' predictions are often not accurate in an absolute sense, their predictions do tend to show a high degree of relative accuracy. In other

Whether managers' growth forecasts have incremental predictive ability beyond the information impounded in analysts' growth forecasts is ultimately an empirical question. Because we cannot *ex ante* justify a directional hypothesis, we stipulate the following nondirectional hypothesis:

> H3: Managers' forecasts of longer-term earnings growth have no incremental predictive ability for future realized earnings, after controlling for the information in analysts' growth forecasts.

3.1.4 Expected Differences in Bias and Predictive Ability Conditional on the News Conveyed by Managers' Forecasts of Earnings Growth

H2 posits that managers' growth forecasts convey good news *on average*. However, we do not expect all growth forecasts to convey good news. We expect growth forecasts' bias and predictive ability to vary depending on the direction of the news.

We expect the optimism in management growth forecasts conveying bad news will be smaller than the optimism in good news, on average. Analysts' growth forecasts on average exceed the *ex post* realized future growth rate (La Porta, 1996; Chan et al. 2003). Good news management growth forecasts (that are by definition even higher than analysts' growth forecasts) are likely to be more optimistic than bad news forecasts (that are by definition lower than analysts' growth forecasts). Our hypothesis on the expected differential bias in management growth forecasts follows (in alternative form):[9]

> H4A: Management growth forecasts that convey bad news are less optimistically biased than those that convey good news.

We expect managers' bad news growth forecasts to be more informative in terms of being more predictive of realized future growth rates (than are their good news growth forecasts). First, forecasts that convey bad news about future earnings growth are potentially particularly harmful to the firm's stock price and to managers' wealth and career prospects, because managers are

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words, even though peoples' predictions tend to be optimistically biased when their predictions are compared to the outcomes…. the correlation between predictions and outcomes are positive and often substantial." (Armor and Taylor 2002, 338).

[9] The results hypothesized in H4A are not a foregone conclusion. Although bias and news are related, they are conceptually and empirically distinct. Rogers and Stocken (2005) find that forecasts conveying bad news about current earnings are actually more biased and less accurate than those conveying good news. Also, while analysts' growth forecasts are upward biased *on average*, this does not necessarily mean that management growth forecasts that exceed analysts' forecasts are more upward-biased than those that are lower than analysts' forecasts. Good news management forecasts can be less biased and more accurate if they correct analysts' forecasts that are too low.

admitting that they cannot reverse the unexpectedly slower growth even over the next three to five years. Thus, we expect that bad news tends to be more informative as costlier disclosures are more informative (e.g., Evans and Sridhar 2002). Second, managers are unlikely to issue potentially costly bad news growth forecasts unless their unfavorable private information is high quality and as a result they are confident that the firm cannot avoid the slowdown in growth.[10] Finally, recall that analysts' growth forecasts tend to be optimistic (La Porta 1996; Chan et al. 2003). We expect that management growth forecasts conveying bad news provide more information incremental to analysts' growth forecasts in the sense of lowering expectations closer to *ex post* realized future growth rates. (Good news forecasts that exacerbate analysts' optimism, are less likely to provide incremental new information predictive of the firm's future realized growth rates.) Thus, H4B posits that bad news forecasts have more incremental predictive ability for future realized growth rates than good news forecasts (in alternative form):

> H4B: Bad news management growth forecasts convey more incremental new information about the firm's future realized growth rates (beyond the information already impounded in analysts' growth forecasts) than good news management growth forecasts.

There is tension in H4B. Even if management growth forecasts that convey bad news are less optimistically biased (H4A), they may not be more informative about the firm's future growth if they are noisier[11] or if their information is subsumed by the information in prevailing analysts' growth forecasts.

3.2 Consequences of Managers' Forecasts of Earnings Growth: Analysts' and Investors' Responses

We now consider two consequences of managers' forecasts of longer-term earnings growth. How do analysts and investors respond to these disclosures?

The expectations adjustment hypothesis posits that managers issue voluntary disclosures to align expectations of the firm's future performance with managers' own expectations (Ajinkya and Gift 1984). We focus on how successfully managers' forecasts of earnings growth align

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[10] In contrast, managers need not be as confident in the quality of their favorable private information, as favorable disclosures are in their financial self-interests.

[11] For example, managers could introduce noise to their bad news growth forecasts to discourage new entrants into the product market.

directly observable expectations about the same earnings growth construct in an influential group of users whose expectations are important to managers – financial analysts (Graham et al. 2005).

Because we cannot *ex ante* predict whether management growth forecasts have incremental predictive ability for realized future growth rates across the sample as a whole (i.e., H3 is nondirectional), we cannot predict analysts' responses to growth forecasts across the whole sample. However, we can predict a differential cross-sectional response. We expect bad news growth forecasts to spur stronger responses than good news forecasts. H4 posits that bad news forecasts are less biased and have more predictive ability than good news forecasts. The weight rational users place on a signal increases with its precision (e.g, Kim and Verrecchia 1991; Hughes and Pae 2004). Also, messages that are inconsistent with a sender's incentives are generally *perceived* as more credible (e.g., Mercer 2004). Consequently, our next hypothesis, stated in alternative form, predicts that analysts' revision per unit of news in managers' growth forecasts (i.e., analysts' growth forecast response coefficients) will be higher when managers' growth forecasts convey bad news than when they convey good news:

H5A: Analysts' revision per unit of news in managers' growth forecasts (i.e., analysts' growth forecast response coefficient) is higher when managers' growth forecasts convey bad news than when they convey good news.

If analysts appropriately incorporate the news in managers' growth forecasts into their own expectations, the accuracy of analysts' growth forecasts should improve. We expect that bad news management growth forecasts have more incremental predictive ability than good news forecasts (H4B), and that analysts' revision per unit of bad news is higher than their revision per unit of good news (H5A). Consequently, our next hypothesis (stated in the alternative form) predicts that the accuracy of analysts' growth forecasts increases more when managers issue (on average more informative) bad news growth forecasts.

H5B: The error in analysts' growth forecasts decreases more when management growth forecasts convey bad news than when they convey good news.

Turning to investors, share prices often reflect less sophisticated expectations than analysts' forecasts (e.g., Abarbanell and Bernard 1992; Walther 1997; Bloomfield 2002). Investors have limited attention, and in particular pay insufficient attention to information with implications for

the longer-term future (3.5 years or more) (DellaVigna and Pollet 2007; Da and Warachka 2011).[12] Consequently, investors' responses may be weaker than analysts' responses. It is difficult to predict specifically how investors' reactions may reflect less sophisticated information assimilation than analysts, so we offer a parallel hypothesis (in alternative form):

H5C: Stock price reaction per unit of news in managers' growth forecasts (i.e., investors' growth forecast response coefficient) is higher when managers' growth forecasts convey bad news than when they convey good news.

4 SAMPLE SELECTION AND DESCRIPTION

Hand collection of management growth forecast data requires detailed content analysis of individual press releases. Because Thomson Reuters First Call's Company Issued Guidance database does not separately identify managers' long-term growth forecasts, our sample selection requires a number of steps. Managers typically issue forecasts of long-term (i.e., three- to five-year-ahead) growth in conjunction with forecasts of upcoming annual earnings, so we start with these press releases. To more cleanly isolate any information in managers' growth forecasts, we retain forecasts not issued in conjunction with an earnings announcement. This ensures that our results are not confounded by the array of disclosures in earnings announcements (e.g., Francis, Schipper, and Vincent 2002).[13] Because we must control for the news in managers' forecasts of upcoming annual earnings, we retain those press releases where we can more precisely measure this news; i.e., where: (1) managers issue point or range forecasts of upcoming annual earnings, and (2) analysts issue forecasts of earnings within 60 days before the management forecast. We focus on the post-Regulation Fair Disclosure period 2001 to 2009 when First Call's coverage is more complete, and we exclude regulated industries (transportation, utilities, banking). To facilitate determination of the horizon of the growth forecast, we retain forecasts issued after the announcement of the prior year's earnings. We obtain analysts' forecasts from the I/B/E/S Detail File and security prices from the Center for Research in Security Prices (CRSP). We use

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[12] As mentioned previously, share prices are also affected by factors other than expected long-term growth in earnings, so prices provide less direct and noisier evidence (relative to analysts' forecasts of the same long-term earnings growth construct) of how managers' forecasts of growth affect expectations about long-term growth.

[13] Section 7.1 provides evidence suggesting these sample selection criteria do not impair the representativeness of our sample. The characteristics of our sample management growth forecasts are similar to what we find in random samples of earnings announcement press releases and stand-alone quarterly earnings announcements.

unadjusted analyst and management forecast data to avoid the rounding issues arising in split-adjusted data documented in Payne and Thomas (2003). Panel A of Table 1 summarizes our sample selection.

We identify press releases for 4,730 of the First Call management forecasts. Because the variation in language makes it infeasible to automate identification of managers' growth forecasts, we manually collect and read the press releases from Factiva to ascertain whether managers explicitly discuss the future growth of a financial performance metric.

Panel B of Table 1 tabulates managers' growth forecasts across years. The number of earnings forecasts remains fairly constant over time, except that we observe fewer forecasts in 2001. Managers' growth forecasts are relatively infrequent, but growing in popularity. While 15.8% of our press releases (748/4,730) contain forecasts of growth in a financial metric, the incidence of growth forecasts has increased from 37 (10.4% of 355) in 2001 to 165 (29% of 564) in 2009. The most common financial metric for which managers provide growth forecasts is earnings per share (EPS), which is not surprising as EPS serves as a summary statistic for the components of earnings. Panel B shows that the proportion of earnings growth forecasts has nearly doubled from 5.9% in 2001 to 11.2% in 2009. Our subsequent analyses focus on the characteristics and consequences of managers' forecasts of growth in earnings because there are not enough forecasts of growth in other financial metrics to support meaningful empirical tests.

Panel C of Table 1 shows the distribution of managers' growth forecasts and earnings growth forecasts across major SIC industry sectors. Growth forecasts are most common in the manufacturing sector, which issues about 70% of our sample forecasts. Growth forecasts are also relatively more frequent in agriculture and construction, and relatively less frequent in services, retailing, and mining. Finally, untabulated analyses reveal that, similar to managers' forecasts of current period EPS, their forecasts of earnings growth are more commonly issued in range form (58.4%) than in point form (41.6%), although point forecasts remain common.

5 Characteristics of Managers' Forecasts of Earnings Growth: Bias, News, and Predictive Ability

5.1 Characteristics of Managers' Forecasts of Earnings Growth: Research Design

We measure bias as the difference between the manager's growth forecast and the *ex post* realized (i.e., actual) future growth rate (MFG - RFG). We measure future growth over a four-year horizon, for the following reasons. First, for our management growth forecasts, the mean horizon is 3.97 years and the median horizon is four years. Second, a four-year horizon is the midpoint of the three-to-five year horizon underlying I/B/E/S analysts' forecasted earnings growth rates. Because four years is a reasonable horizon for both managers' and analysts' growth forecasts, our tabulated analyses define realized future (and historical) growth rates as the firms' average annualized growth in earnings for four years after the management forecasts, following Chan et al. (2003), as $RFG = [(E_{t+4} - E_t)/E_t)]/4$. [14, 15]

We measure the news in management growth forecasts as the difference between: (1) the manager's growth forecast, and (2) analysts' (pre-management forecast) growth forecast (MFG - AFG). We use the median I/B/E/S analyst growth forecast issued over the 60 days prior to the management growth forecast. These forecasts represent analysts' expected annual increase in earnings over the company's next full business cycle, generally between three to five years (Chan et al. 2003, 674; Thomson Reuters 2010, 125).

To estimate the predictive ability of managers' growth forecasts for future earnings growth (i.e., the informativeness of MFG), one would normally regress realized future growth on the management growth forecast. However, we are interested in the incremental predictive ability of management growth forecasts after controlling for prevailing analysts' estimates of growth. Consequently, we subtract analysts' growth forecasts from both realized future growth and the manager's growth forecast:

$RFG – AFG = a_1(MFG \text{ - } AFG) + a_2MFNews + Year\ Effects + e_1$

$= a_1MFGNews + a_2MFNews + Year\ Effects + e_1$ (1)

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[14] Our inferences remain robust using a 5-year horizon.

[15] A challenge in measuring growth rates arises if a base number for EPS growth is not positive. Following Chan et al. (2003, 653), we use imputed growth rates when the base number is not positive. Specifically, we scale the change in earnings by the stock price as of the base year, and rank all firms in a given year by the values of their changes in earnings relative to stock price. For a firm with nonpositive base-year earnings, we use this distribution to find the percentile rank of its earnings change relative to price. We then look up the corresponding percentile value of the distribution of earnings growth rates based on firms with positive values for that year and assign this growth rate to the firm with nonpositive base-year earnings. 8.4% of our realized future growth rates, and 6.7% of our historical growth rates are imputed. We repeated our main tests and found that the inferences are robust using Dechow and Sloan's (1997) annualized growth rates, a simple arithmetic average growth rate, or 5-year growth rates from the IBES actual summary file.

where:

MFGNews =   the news in managers' forecasts of earnings growth, measured as managers' earnings growth forecast minus the median I/B/E/S analyst long-term earnings growth forecast[16] over the 90 days before the management forecast (i.e., MFG-AFG).

MFNews = the news in managers' forecast of current annual EPS, measured as managers' EPS forecast minus the mean I/B/E/S analyst EPS forecast issued within 60 days before the management forecast, deflated by the closing price two days prior to the management forecast.

This specification captures the extent to which the news in the management growth forecast (*MFG - AFG*) has the potential to correct the error in the prevailing analysts' growth forecast (*RFG - AFG*). If managers' growth forecasts convey useful information beyond analysts' growth forecasts, we expect $a_1 > 0$. We control for the news in managers' forecasts of current period EPS (*MFNews*), in order to avoid attributing to growth forecasts explanatory power that could have been obtained from the news in managers' forecasts of current period earnings.[17]

We are also interested in whether predictive ability depends on the direction of news conveyed by the growth forecast. Consequently, we augment Equation (1) to separately estimate the predictive ability of good news versus bad news management growth forecasts:[18]

$$RFG\text{–}AFG = b_1(MFGNews \times GoodNews) + b_2(MFGNews \times BadNews) + b_3 MFNews + e_2 \qquad (2)$$

where *GoodNews* = 1 if the management growth forecast exceeds the prevailing analyst growth forecast; otherwise *BadNews* = 1.

5.2 Characteristics of Managers' Forecasts of Earnings Growth: Results

5.2.1 Descriptive Statistics on Earnings Growth

Table 2 reports descriptive statistics for managers' earnings growth forecasts (*MFG*), *ex post* realized future growth rates (*RFG*), analysts' long-term earnings growth forecasts (*AFG*), and historical earnings growth rates (*HG*).[19] The average *MFG* is about 15%, so managers expect

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[16] I/B/E/S recommends using the median analyst growth forecast to mitigate effects of outliers (Thomson Reuters 2010, 125). Also, using robust regression rather than OLS yields similar inferences.

[17] We control for time period effects by including fixed effects for each year (the models have no explicit intercepts because they are impounded in one of the year effects), and use standard errors corrected for heteroscedasticity. Clustering standard errors by year does not affect our inferences.

[18] Equation 2 and all subsequent models include year fixed effects, which are suppressed in the text for parsimony.

[19] Three observations with management forecasts of earnings growth do not have counterpart analyst forecasts of earnings growth, so analyses incorporating *AFG* are based on 341 rather than 344 observations.

earnings to grow by about 15% per year over an average four-year forecasting horizon. The descriptive statistics provide preliminary univariate evidence supporting H1 and H2. Managers' expected growth rates substantially exceed realized future growth rates, which average about 3% (median = 7%). Thus, managers' forecasts are two to five times the actual realized future growth rates, supporting H1's prediction that managers' growth forecasts tend to be overly optimistic. As in prior research (e.g., La Porta 1996; Chan et al. 2003), analysts' (pre-management forecast) expected growth rates of about 13-14% are also too optimistic. Nonetheless, management growth forecasts are on average even higher than analysts' growth forecasts (i.e., *MFGNews* is positive, on average), consistent with H2's prediction that management growth forecasts on average tend to convey good news relative to analysts' prevailing expectations.

In contrast to management growth forecasts that tend to convey good news, the mean and median news in managers' forecasts of *current period* earnings (*MFNews*) is negative, consistent with managers guiding expectations of upcoming annual earnings downward to beatable levels. The mean revision in analysts' growth rates is positive, although the median is zero. The mean cumulative abnormal returns around the growth forecast and in the 60-day post-forecast period are slightly positive.

5.2.2 Bias, News, and Predictive Ability of Managers' Forecasts of Earnings Growth

Panel A of Table 3 shows that, as predicted by H1, managers' growth forecasts significantly exceed *ex post* realized future growth rates (*MFG - RFG* > 0; *p*-value < 0.01). The median difference is 6.93% and the mean difference is 12.7%, both of which are material relative to the median (mean) realized future growth rate of 7.1% (2.9%) reported in Table 2.

While we expected managers' growth forecasts to be optimistic, the extreme level of optimism is striking. The similarity between managers' forecasts of earnings growth and historical earnings growth rates (means = 15.6% and 13.8%, respectively, per Table 2), with both wildly exceeding *ex post* realized growth rates (mean = 2.9%), raises the question whether managers naively project that historical earnings growth persists in the future. In other words, one possible explanation for managers' significant over-optimism is that they simply extrapolate historical growth rates, rather than understanding that growth tends to mean-revert (e.g., Brooks

and Buckmaster 1976; Dechow and Sloan 1997). To shed light on this conjecture, we regress managers' forecasts of growth (*MFG*), realized future growth (*RFG*), signed forecast error (*MFG-RFG*), and absolute forecast error (|*MFG-RFG*|) on historical earnings growth (*HG*):

MFG or *RFG* or *MFG–RFG* or |*MFG-RFG*| = $c_1 HG + e_3$ (3)

If managers rely on historical growth to forecast future growth, we expect $c_1 > 0$ in the *MFG* regression. However, because future growth rates are inversely related to historical growth rates, we expect $c_1 < 0$ when realized future growth (*RFG*) is the dependent variable. With respect to the signed and absolute errors in the management growth forecasts (*MFG–RFG* and |*MFG– RFG*|), we expect $c_1 > 0$ if managers place too much weight on historical earnings growth so that the errors in their growth forecasts are positively associated with the historical growth rate.

Consistent with these expectations, Panel B of Table 3 shows that managers' growth forecasts are *positively* associated with historical growth ($p < 0.05$), but that historical growth is *negatively* associated with realized future growth ($p < 0.01$). Managers appear to anchor *positively* on historical growth rates that are *negatively* associated with actual future growth. Confirming that managers appear to overweight historical growth, the historical growth rate is positively related to both the signed and absolute forecast errors ($p < 0.05$). The faster the historical growth, the more over-optimistic managers are about the future. Collectively, this evidence suggests that managers' growth forecasts reflect an element of naive extrapolation of historical growth rates into the future, without recognizing that growth rates typically decline over time.

Turning to news, Panel C of Table 3 provides evidence on the proportion of management forecasts of earnings growth that conveys good versus bad news relative to prevailing analysts' (pre-management growth forecast) expectations. Consistent with H2, more than twice as many management growth forecasts convey good news (68.6%) as bad news (31.4%); *p*-value of a binomial test of the difference < 0.01. There is no evidence that the absolute magnitude of the news conveyed by good versus bad news forecasts is different, however.

As explained previously, we estimate equation (1) to examine whether managers' growth forecasts convey new information about future firm performance (even though they are overly optimistic). Panel D of Table 3 shows that the coefficient on *MFGNews* is positive ($p < 0.01$),

indicating that managers' growth forecasts help explain the difference between realized future growth and the prevailing analysts' forecasts of growth. So managers' growth forecasts on average provide new information about future realized growth, beyond that available in analysts' growth forecasts. This evidence rejects the null prediction of H3.

5.2.3 Differential Bias and Predictive Ability Conditional on the Direction of News Conveyed by Managers' Forecasts of Earnings Growth

Panel A of Table 4 shows that the significant optimistic bias in management growth forecasts holds for forecasts conveying both good and bad news ($p < 0.01$). Consistent with H4A, management growth forecasts conveying good news are even more optimistic (*MFG – RFG)* and have higher absolute error (|*MFG-RFG*|) than those conveying bad news ($p < 0.10$).

Panel B of Table 3 showed that managers' growth forecasts are *positively* associated with historical growth, which is negatively associated with realized future growth, as if managers naively anchor on historical growth. Panel B of Table 4 shows that these "on average" results mask an important difference. The *MFG, MFG – RFG, and |MFG – RFG|* regressions show that the apparent naïve extrapolation is solely attributable to forecasts conveying good news ($p < 0.05$), and does not arise from forecasts conveying bad news. The *MFG* and |*MFG-RFG*| regressions show that when managers issue bad news growth forecasts, higher historical growth prompts them to forecast *lower* future growth ($p < 0.01$) that is more accurate ($p < 0.10$), as if these managers understand that high historical growth levels are likely to mean-revert.[20]

Consistent with H4B, Panel C shows that the incremental predicative power of managers' growth forecasts (for future realized growth rates) is entirely attributable to forecasts conveying bad news. Bad news growth forecasts convey incremental new information about realized future growth ($p < 0.01$) even after controlling for the news in managers' forecasts of current period earnings (as well as analysts' growth forecasts), but good news growth forecasts do not ($p >$

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[20] Evidence that good news growth forecasts appear to reflect a naïve extrapolation of historical growth rates but bad news forecasts do not is more consistent with managers using historical growth to justify optimistic projections of future growth than with a universal cognitive bias (e.g., anchoring and insufficient adjustment) that would be expected to affect good and bad news forecasts similarly.

0.21).[21] Interestingly, for growth forecasts conveying bad news, the estimated coefficient is nearly one (= 0.9). This implies that on average, the bad news in a management growth forecast has roughly a percent-to-percent implication for future earnings growth (i.e., a management growth forecast that is 1% less than the prevailing analyst growth forecast is associated with a 0.9% lower realized future growth rate). Overall, the evidence in Panel C indicates that managers' bad news growth forecasts – but not good news growth forecasts – convey new information beyond analysts' growth expectations.[22]

6 Consequences of Managers' Forecasts of Earnings Growth

6.1 Consequences of Managers' Forecasts of Earnings Growth: Research Design

To assess the extent to which analysts' revisions of their forecasts of earnings growth (i.e., analysts' growth forecast response coefficient) depend on the direction of news conveyed by managers' forecasts of earnings growth (H5A), we estimate analysts' response to good news versus bad news management growth forecasts as follows:

$$AFG\ Rev = d_1(MFGNews \times GoodNews) + d_2(MFGNews \times BadNews) + d_3MFNews + e_4 \qquad (4)$$

where:

AFG Rev is analysts' revision of their long-term earnings growth forecasts, defined as the change in analyst consensus long-term EPS growth forecasts from 90 days before to 20 days after the management forecast date.

If analysts believe that managers' bad news growth forecasts are more informative as H5A predicts, then we expect $d_2 > d_1$.

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[21] The insignificant predicative power of managers' good news growth forecasts is not attributable to low power, since the (negative) sign of the coefficient suggests that good news growth forecasts have an *inverse* association with future realized growth rates.

[22] Our evidence that managers' forecasts conveying bad news about longer-term *growth* in earnings are more informative than those conveying good news contrasts with recent evidence on managers' forecasts of *current period* earnings. Merkley, Bamber, and Christensen (2013) find that in the late 1990's users perceive bad news forecasts of current period earnings as more informative than good news forecasts, similar to Hutton et al.'s (2003) conclusions based on an earlier time period. However, Merkley et al. (2013) find just the opposite in the early 2000's (2001-2004 which partially overlaps our sample period): users perceive managers' forecasts of current period earnings as more informative when they convey good news than when they convey bad news. The authors provide some evidence supporting their conjecture that heightened corporate scrutiny in the post-FD period (Reg FD, the Sarbanes-Oxley Act, and Regulation G which limits non-GAAP performance disclosure) left managers reluctant to raise earnings expectations, unless the manager is confident that the firm could achieve the higher earnings target.

To test whether analysts' revisions improve the accuracy of their growth forecasts, we examine how the absolute error in analysts' growth forecasts changes around the issuance of management growth forecasts. Specifically, we test whether any improvement in accuracy is more pronounced when managers' growth forecasts convey bad news (H5B) by regressing this change in error on the direction of the news conveyed by the management growth forecast:

$$|RFG - Ex\ Post\ AFG| - |RFG - Ex\ Ante\ AFG| = e_1GoodNews + e_2BadNews + e_3MFNews + e_5 \quad (5)$$

If analysts' absolute error declines more in response to bad news management growth forecasts as H5B predicts, then $e_2 < e_1$.

Turning to investors' reactions, we estimate the following model:

$$CAR = f_1(MFGNews \times GoodNews) + f_2(MFGNews \times BadNews) + f_3MFNews + controls + e_6 \quad (6)$$

where:

> CAR = the size-adjusted buy-and-hold returns for either: (1) the three day period centered on the management growth forecast date (CAR [-1, +1]), or the 60-day immediate post-management-growth-forecast period (CAR [+2, +61]),

and the 60-day window return model also controls for:

> MB = the ratio of market value of equity to book value of equity at the end of the quarter before the management growth forecast;
>
> MOM = the buy-and-hold return for 60 days prior to the management growth forecast date; and
>
> $SIZE$ = the natural log of the market value of equity at the end of the quarter before the management growth forecast.

In addition to the short-window returns (*CAR* [-1, +1]), we also estimate equation 6 over the 60-day immediate post-announcement period (*CAR* [+2, +61]) in case the market needs time to assimilate the implications of managers' forecasts of long-term earnings growth. The long-window analysis also controls for market-to-book ratio, momentum, and size. If investors believe that bad news management growth forecasts are more informative than good news forecasts as H5C predicts, then we expect $f_2 > f_1$.

6.2 Consequences of Managers' Forecasts of Earnings Growth: Results

6.2.1 Analysts' Responses to Managers' Forecasts of Earnings Growth

Panel A of Table 5 provides evidence that analysts revise their own growth forecasts in the same direction as the news in managers' growth forecasts, on average.[23] Panel B of Table 5 presents the results of estimating Equation 4, which regresses analysts' revisions of their growth forecasts on the news in managers' growth forecasts. The first column shows results of a baseline regression without partitioning on the direction of news in the management growth forecast. The positive coefficient on *MFGNews* ($p < 0.01$) indicates that analysts revise their own growth forecasts to incorporate the news in managers' growth forecasts. The right column shows that the coefficients on both good and bad news management growth forecast news are positive ($p < 0.05$), so analysts respond to the news in both. As posited by H5A, however, analysts respond more strongly to a unit of bad news than to a unit of good news (*p*-value of the difference < 0.05). The coefficient values indicate that analysts impound about 11% of the news in managers' good news growth forecasts, and about 23% of the news in bad news forecasts. The adjusted R^2 in excess of 20% compares favorably to the explanatory power observed in earnings-returns models,[24] corroborating our view that revisions in analysts' forecasts provide a less noisy and better-specified measure of management growth forecasts' effects on expectations about future growth in earnings.

Table 4 showed managers' good news growth forecasts have no incremental explanatory power for future earnings growth. Finding that analysts revise their own growth forecasts in response to uninformative good news management growth forecasts suggests that analysts may overreact to these forecasts. To test this conjecture, we regress the error in analysts' growth forecasts (measured after the management growth forecast) on the news in management growth forecasts:

$$RFG - Ex\ Post\ AFG = g_1 MFGNews \times GoodNews + g_2 MFGNews \times BadNews + g_3 MFNews + e_7 \quad (7)$$

A positive coefficient on the *MFGNews* terms would indicate that analysts underreact to the news in the management growth forecast, and a negative coefficient would indicate overreaction.

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[23] Analysts are more likely to revise their own forecasts of longer-term earnings growth when managers issue a growth forecast ($p < 0.10$). This increase is attributable to management growth forecasts that convey bad news: good news management growth forecasts do not spur a significant increase in analysts' revisions, whereas bad news management growth forecasts do ($p < 0.10$).

[24] As shown later in Table 7, the analogous returns analyses have significantly lower adjusted R^2s (less than 5%).

The first column of Panel C of Table 5 shows that for the sample as a whole (i.e., without partitioning on news), analysts neither under- nor over-react to the news in managers' growth forecasts. However, the second column shows that combining the good and bad news forecasts masks a difference. The negative coefficient on *MFG News×GoodNews* ($p < 0.01$) indicates that analysts overreact to good news management growth forecasts. In contrast, the positive coefficient on *MFG News × BadNews* ($p < 0.01$) indicates that analysts underreact to bad news management growth forecasts.

Evidence that analysts overreact to managers' good news growth forecasts and underreact to bad news forecasts raises the question of whether management growth forecasts enable analysts to improve the accuracy of their own forecasts. Panel D of Table 5 shows that after controlling for the news in managers' forecasts of *current year* earnings, management growth forecasts that convey good news (and are on average uninformative) are associated with an *increase* in the error in analysts' growth forecasts ($p > 0.05$). In contrast, management growth forecasts that convey bad news (and are on average incrementally informative) are associated with a decrease in absolute error ($p < 0.05$). This evidence is consistent with H5B's prediction that management growth forecasts conveying bad news enable analysts to improve their own forecasts of earnings growth more effectively than forecasts conveying good news (p value of difference < 0.01).[25]

Collectively, the results presented in Table 5 suggest that analysts believe that bad news management growth forecasts are more informative than good news forecasts. However, they underestimate the magnitude of this difference and appear not to understand that good news management growth forecasts are uninformative.

6.2.2 Investors' Responses to Managers' Forecasts of Earnings Growth

Panels A and B report results of regressing the 3-day announcement window and 60-day immediate post-announcement window returns on the news in management growth forecasts.[26] The results are similar for both windows. As shown in the first column's baseline regression for the sample as a whole, returns are not related to the news in managers' growth forecasts.

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[25] Our inferences cannot be explained by an over-time trend in the error in analysts' growth forecasts that is solely attributable to the passage of time, because any over-time trend should be controlled by the year fixed effects.
[26] For presentation purposes, we multiply the coefficients on *MFGNews* by 100 in Panels B and C of Table 8.

However, the next two columns show that the positive coefficients on *MFGNews×GoodNews* are marginally significant ($p < 0.10$) for the 3-day window, and more significant for the 60 day post-announcement window ($p < 0.05$). In contrast, the coefficients on *MFGNews×BadNews* are not significant ($p > 0.15$) in either window. These results do not support H5C's prediction that investors react more strongly to management growth forecasts conveying bad news.

This evidence suggests that share prices react to managers' forecasts of earnings growth that convey good news, even though these forecasts on average are not incrementally informative (Table 4). In contrast, prices do not respond to managers' bad news growth forecasts that are on average informative. Thus, the pattern of investors' reactions differs from analysts' reactions: Analysts not only react to growth forecasts conveying bad news as well as good news, but also react more strongly to bad news forecasts. One explanation for this contrasting results is that analysts are more sophisticated or informed processors of management growth forecasts than are investors. An alternative explanation is that investors have already anticipated the information in managers' *bad news* forecasts and thus do not react when managers issue them (i.e., the market's expectation is more sophisticated or informed than analysts' expectations).

To distinguish between these two explanations, we examine the patterns of post-management-growth-forecast returns. If investors have already anticipated bad news about earnings growth before managers issue bad news growth forecasts, there will be no systematic post-management-growth-forecast trend in returns. In contrast, if investors underreact to (informative) bad news growth forecasts, then future returns will decline because investors insufficiently adjust their expectations downward thus overestimate the firms' future growth. Similarly, if investors overreact to managers' (uninformative) good news forecasts at the growth forecast issuance date, future returns will decline because investors overestimate the firm's growth.

To test whether the news in managers' forecasts of future earnings growth is systematically associated with subsequent returns, we estimate the following regression:

CAR [3-year] = h_1(*MFGNews×GoodNews*) + h_2(*MFGNews×BadNews*) + h_3*EarnNews* + h_4*MB* +
$\qquad$ h_5*MOM* + h_6*SIZE* + e_8 $\hspace{5cm}$ (8)

where:

CAR [3-year] = size-adjusted buy-and-hold returns for a three year period, starting three months after the end of the current fiscal year. [27]

EarnNews = current fiscal year earnings news, defined as the difference between *ex post* actual earnings and the most recent consensus analyst forecast prior to the earnings announcement, scaled by stock prices.[28]

MOM = buy-and-hold returns over the 12 months of the current fiscal year.

We use a three-year period starting three months after the end of current fiscal year as the return window, to approximately match the average four-year forecast horizon that also includes the current year. We start the cumulation period three months after the end of the current fiscal year (by which time current period earnings are announced) to ensure that our post-management-growth-forecast period returns are not contaminated by any protracted reaction to news in the concurrent management forecast of current period earnings (McNichols 1989; Das, Kim, and Patro 2012).

Table 7 presents the results of regressing post-announcement *CAR* on the news in managers' growth forecasts. The first column reports the baseline results combining good and bad news growth forecasts. The insignificant coefficient on *MFGNews* ($p = 0.23$) does not support an under- or over-reaction to managers' growth forecasts. But again, this "on average" result masks the difference between investors' responses to good versus bad news growth forecasts. The negative coefficients on *MFGNews×GoodNews* ($p < 0.10$) indicate that firms whose managers forecast good news about future earnings growth on average suffer negative abnormal returns over the following three years. This result is consistent with investors overreacting to the good news at the management growth forecast date, and subsequently being disappointed when the expected growth does not materialize. The positive coefficients on *MFGNews × BadNews* ($p < 0.01$) likewise indicates that firms whose managers forecast bad news about future earnings growth on average suffer negative abnormal returns over the following three years. This result is

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[27] For firms delisted during the future return period, we obtain delisting returns following Shumway (1997) and Shumway and Warther (1999), and assume the proceeds are reinvested to earn the average return of the matching size decile portfolio. We calculate the remaining return by reinvesting the proceeds from CRSP's delisting return in the equally weighted reference portfolio. For firms delisted due to poor performance (delisting codes 500 and 520–584), we use a -35 percent delisting return for NYSE/AMEX firms and -55 percent for NASDAQ firms.

[28] Equation 8 does not control for news in managers' *forecast* of current year earnings, because the current year's earnings being forecasted are realized before the start of the return accumulation period. Instead, we control for the news in the actual earnings announcement.

consistent with investors initially underreacting to bad news growth forecasts, and subsequently being disappointed with the slower earnings growth. Collectively, the results support the explanation that investors initially overreact to uninformative good news management growth forecasts, and underreact to the more informative bad news growth forecasts. [29], [30]

7.0 Additional Analyses

7.1 Representativeness of Our Primary Sample

To keep the data collection manageable and to avoid contamination from the voluminous other information released on earnings announcement dates, our primary analysis focuses on managers' growth forecasts collected from press releases forecasting upcoming annual earnings that are not bundled along with earnings announcements. To assess the representativeness of our sample of management growth forecasts, we compare their incidence and characteristics to: (1) growth forecasts bundled with earnings announcement press releases, and (2) growth forecasts issued in stand-alone (i.e., unbundled) press releases forecasting *quarterly* earnings. We randomly select ten firms from each of the ten market capitalization deciles on CRSP, and collect their annual earnings announcements (1,198 announcements) and stand-alone forecasts of quarterly earnings (266 forecasts).

After reading and coding these press releases, we find our sampling process is more efficient in yielding a higher proportion of earnings growth forecasts: 7.2% of our primary sample's stand-alone forecasts of annual earnings contain a forecast of earnings growth, whereas 4.7% and 4.1% of the annual earnings announcements and forecasts of quarterly earnings do. In terms of growth forecast characteristics, we find no significant difference in the average values of the management growth forecasts, analyst growth forecasts, or historical or realized future growth rates across our primary and alternative samples. Finding no difference in news or bias across

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[29] This context does not lend itself to a hedge strategy analysis that is long in a portfolio of firms expected to enjoy positive returns in the future, and short in another portfolio of firms that is expected to suffer negative returns. In our context, future returns on average decline *both* for firms that issue bad news growth forecasts (correcting an underreaction), *and* for firms that issue good news growth forecasts (correcting an overreaction).

[30] To shed light on when investors' misperceptions are corrected, we estimated analogous regressions separately for years +1, +2, and +3 after the management growth forecast. Correction of the apparent overreaction to good news growth forecasts and underreaction to bad news growth forecasts does not begin to occur until year +2, consistent with investors' misperceptions about earnings growth correcting as those longer-term future events unfold.

the two samples (p > 0.30), supports the view that our sample is representative of managers' growth forecasts more broadly.

7.2 Other Diagnosis

Features of our research design and data make it unlikely that our inferences concerning analysts' and investors' responses to management growth forecasts are a spurious result of some unidentified correlated omitted variable. First, by regressing *revisions* (i.e, changes) in analysts' long-term growth forecasts on the *news* in the management growth forecasts (i.e., change in expectations), Equation 4 essentially differences out unidentified firm-specific characteristics.[31] Second, if an unidentified time-invariant firm characteristic drives the firm's growth forecast choice (and the extent of analysts' revisions in response to the growth forecast), then the firm's growth forecast choice would be similar over time. However, only 15% of our sample firms have more than one growth forecast included in our sample, and for those firms with more than one growth forecast, the correlation between the signs of the firm's previous and present growth forecast news is only 35%. Because the incidence and content of management growth forecasts is not sticky over time, it is unlikely that an unidentified time-invariant firm-specific characteristic is driving our results. Third, we re-estimated the analyst forecast revision analysis (Equation 4) on the subsample of firms that have at least one management forecast (of current period earnings) press release that includes a long-term growth forecast and at least one other that does not include a growth forecast. If our results were driven by time-invariant firm-level characteristics, our results would not hold in this subsample. However, we still find that analysts appear to overreact to good news and underreact to bad news management growth forecasts.

Likewise, results of additional analysis (reported in the Appendix) reveal that firms issuing good news growth forecasts are similar to those issuing bad news forecasts.[32] Specifically, we

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[31] The returns dependent variable in Equation 6 is likewise a change variable.

[32] Note that the documented differences in firm characteristics in Appendix are conditional on firms that issue a management annual earnings forecast. In other words, firms in our sample have the common characteristics of the firms that voluntarily forecast annual earnings demonstrated in prior studies (e.g., larger, more analyst following, and higher institutional ownership), and we are documenting finer variations within them. Examining the unconditional differences is beyond the scope of our study as it requires hand-collect all press releases issued by all publicly traded firms.

find no significant difference in firm size, the market-to-book ratio, R&D scaled by total assets, institutional ownership, news in the concurrent management forecast of upcoming earnings, recent CEO turnover, CEO age (a proxy for the CEO's career concerns), consumer sentiment, or analysts' or managers' forecasts of losses in upcoming earnings. The only variables for which we find a significant difference is recent revenue growth, as firms with higher recent revenue growth are more likely to issue earnings growth forecasts conveying bad news. Controlling for revenue growth in the analyst revision and stock return analyses does not affect our inferences. Consequently, the differences we observe between users' responses to good versus bad news growth forecasts are unlikely attributable to fundamental differences between types of firms that issue good versus bad news earnings growth forecasts.

8   CONCLUSIONS

We identify a previously undocumented type of voluntary financial disclosure that is also a new source of forecasts of longer-term earnings growth – forecasts of three-to-five-year-ahead earnings growth issued by firm managers. While the extant voluntary disclosure literature has largely focused on managers' short-term forecasts of current period earnings, forecasts of long-term growth in earnings are even more critical in empirical estimates of the cost of capital and firm value (e.g., Ohlson 1995; Chan et al. 2003). Even small errors in long-term expectations of earnings growth can induce economically significant mispricing. Prior research concludes that a key source of such expectations – analysts' forecasts of longer-term growth in earnings – are not only optimistic, but also are *negatively* related to future returns, and thus of questionable value (e.g., LaPorta 1996; Jung et al. 2012). Thus, the characteristics (bias, news, and predictive ability) and consequences (analysts' and investors' responses) of managers' forecasts of longer-term earnings growth are of interest to market participants as well as to researchers.

In contrast to managers' forecasts of current period earnings, we find that their forecasts of longer-term earnings growth are more likely to convey good news than bad news relative to analysts' prevailing expectations. Roughly two-thirds of managers' growth forecasts convey good news, and only one-third convey bad news. In developing their forecasts, managers on average overweight historical growth (that is *negatively* associated with realized future growth)

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and appear not to understand the natural over-time deceleration of growth. Consequently, growth forecasts turn out to be significantly upward-biased: The mean forecast of growth rate is 15%, five times the mean realized future growth of 3%. Both good news and bad news growth forecasts are upward-biased, but forecasts that convey good news are on average more upward-biased and less accurate than those conveying bad news. In fact, our evidence suggests that good news growth forecasts are uninformative about the firm's future realized growth, in that they convey no additional new information about the firm's future growth beyond the information embedded in analysts' forecasts of the firm's longer-term growth. In contrast, even though managers' bad news growth forecasts are also upward-biased, they are nonetheless informative as they convey incremental new information about the firm's future growth. In sum, our results suggest that managers' growth forecasts conveying good news are "cheap talk", whereas those conveying bad news are informative despite being overly optimistic.

In terms of consequences, we find that analysts and investors differ in their responses to management growth forecasts. Analysts place more weight on the (on average more-informative) bad news management growth forecasts than on good news forecasts, and this enables analysts to increase the accuracy of their own growth forecasts. Nonetheless, analysts still underreact to bad news forecasts and overreact to (on average uninformative) good news forecasts. In contrast, investors do not appear to understand the relative informativeness of good versus bad news management growth forecasts. We find a significant price reaction to the (on average uninformative) good news management growth forecasts, but no reaction to the (on average informative) bad news growth forecasts. These misperceptions are partially corrected as returns decline two to three years after the issuance of the growth forecast, when the projected earnings growth fails to materialize.

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TABLE 1
Sample Description

Panel A: Sample Selection

	Number of Management Forecasts	Number of Forecasting Firms
Unbundled annual point or range management EPS forecasts issued between 2001 and 2009 by firms on Compustat and CRSP	10,267	1,996
Forecasts preceded by recent I/B/E/S analysts' annual EPS forecasts	6,309	1,517
Forecasts after excluding firms in transportation (SIC 4000–4799), utility (SIC 4900–4999), and financial industries (SIC 6000–6999)	4,952	1,196
Press releases with management forecasts found in Factiva database	4,730	1,118

Panel B: Number of Forecasts Issued In Each Fiscal Year

Year	Number of Management (Annual) EPS Forecasts	% of Sample Forecasts	Number of Growth Forecasts	% of MEF with Growth Forecasts	Number of EPS Growth Forecasts	% of MEF with EPS Growth Forecasts
2001	355	7.51%	37	10.42%	21	5.92%
2002	543	11.5%	41	7.55%	21	3.87%
2003	504	10.7%	48	9.52%	20	3.97%
2004	596	12.6%	56	9.40%	27	4.53%
2005	541	11.4%	45	8.32%	26	4.81%
2006	487	10.3%	63	12.94%	31	6.37%
2007	496	10.5%	117	23.59%	63	12.70%
2008	644	13.6%	176	27.33%	72	11.18%
2009	564	11.9%	165	29.25%	63	11.17%
Total	4,730	100.0%	748	15.81%	344	7.27%

Panel C: Industry Composition

Two-Digit SIC Industry Sector	Number of EPS Forecasts	% of Sample Forecasts	Number of Growth Forecasts	% of Sample Forecasts	Number of EPS Growth Forecasts	% of Sample Forecasts
Agriculture (01-09)	52	1.1%	23	3.1%	12	3.5%
Mining (10-14)	70	1.5%	6	0.8%	0	0.0%
Construction (15-17)	79	1.7%	20	2.7%	13	3.8%
Manufacturing (20-39)	2,561	54.1%	527	70.5%	238	69.2%
Telecommunication (48)	42	0.9%	5	0.7%	0	0.0%
Wholesale (50-51)	195	4.1%	26	3.5%	14	4.1%
Retailing (52-59)	868	18.4%	69	9.2%	36	10.5%
Services (70-88)	829	17.5%	70	9.4%	30	8.7%
Other	34	0.7%	2	0.3%	1	0.2%
Total	4,730	100.0%	748	100.0%	344	100.0%

This table shows our sample selection and the composition of management earnings and growth forecasts in our sample. **Panel A** details the sample selection procedures. **Panel B** shows the distribution of management forecasts of current period earnings, management growth forecasts, and management EPS growth forecasts across years. **Panel C** shows the distribution of management forecasts of current period earnings, management growth forecasts, and management EPS growth forecasts across two-digit SIC industry sectors.

TABLE 2
Descriptive Statistics

Variables	N	Mean	Std dev	P5	P25	Median	P75	P95
MFG	344	15.61	6.40	8.00	11.50	15.00	19.00	25.00
RFG	344	2.91	24.36	-50.31	-4.38	7.07	14.77	32.64
AFG	341	14.35	7.36	5.00	10.00	13.00	17.50	25.00
HG	344	13.84	33.12	-41.58	3.01	12.54	23.08	72.97
MFGNews	341	1.33	8.34	-6.87	-1.00	0.70	3.85	9.30
MFNews	341	-0.07	0.49	-0.70	-0.09	-0.01	0.05	0.32
AFG Rev	341	0.38	10.76	-5.00	-1.35	0.00	0.80	5.00
CAR [-1, +1]	341	0.08	4.57	-6.33	-1.80	0.32	2.57	7.32
CAR [+2, +61]	341	0.23	13.70	-21.87	-7.85	-0.72	7.95	24.46

This table presents the distribution of variables used in this study: management forecasts of earnings growth (*MFG*); sample firms' realized future growth (*RFG*) over the future four-year-period; analyst consensus forecasts of earnings growth (*AFG*); sample firms' historical growth (*HG*) over the prior four-year period; news in *MFG* (*MFGNews*); news in management forecasts of *current year* earnings (*MFNews*); analysts' revisions of their long-term growth forecasts after the management growth forecast date (*AFG Rev*); and 3 (60)-day size-adjusted cumulative abnormal returns (*CAR*) around (subsequent to) the management growth forecast date. As is typical in the management forecast literature, we use the midpoint when managers issue a range forecast. We calculate *RFG* (*HG*) following Chan et al. (2003) as the firms' annualized earnings growth for the four years subsequent (prior) to the management forecasts. *AFG* is the median I/B/E/S analyst long-term earnings growth forecast over the 90 days before the management forecast date. Management growth forecast news (*MFGNews*) is the difference between the management long-term EPS growth forecast (*MFG*) and the corresponding analyst consensus long-term growth forecast in I/B/E/S prior to the management forecasts (*AFG*). *MFNews* is the management forecast of upcoming annual earnings minus the most recent consensus analysts' annual EPS forecast prior to the management forecast, deflated by the closing price two days prior to the management forecast date. *AFG Rev* is analysts' revisions of their long-term earnings growth forecasts, defined as the change in analyst consensus long-term EPS growth forecasts from 90 days before to 20 days after the management forecast date. Size-adjusted *CAR* is the difference in buy-and-hold returns between the sample firm's stock and corresponding size portfolio for the specified period. To mitigate the effects of extreme values, we winsorize at 1 and 99%.

TABLE 3
Bias, News, and Predictive Ability of Management Forecasts of Earnings Growth

Panel A: H1: Average Bias in Management Earnings Growth Forecast

	MFG-RFG (%)	|MFG-RFG|
Mean	12.70***	18.94***
Median	6.93***	11.31***

Panel B: The Effects of Historical Growth

	Dependent Variables (%):							
	MFG		RFG		MFG – RFG		|MFG – RFG|	
Indep. Variable:	Coeff.	(t-stat)	Coeff.	(t-stat)	Coeff.	(t-stat)	Coeff.	(t-stat)
HG	0.021**	(2.53)	-0.091***	(-4.14)	0.113***	(4.11)	0.034**	(2.50)
Year Effects	YES		YES		YES		YES	
Obs.	344		344		344		344	
adj. R^2 (%)	3.34		6.05		6.29		5.20	

Panel C: H2: Direction and Magnitude of News in Management Forecasts of Earnings Growth

	Direction of News (N = 341)				Absolute Magnitude of News (N = 341)		
	Good News	Bad News	Difference in proportions		Good News	Bad News	Difference in magnitudes
Number	234	107		Mean	4.05%***	4.60%***	0.55%
%	68.62%***	31.38%***	37.24%***	Median	2.50%***	2.50%***	0.00%

Panel D: H3: Informativeness of Managers' Forecasts of Earnings Growth

	Dependent Variable: RFG – AFG	
	Coefficient	(t-stat)
MFGNews	0.508***	(3.59)
MFNews	3.573*	(1.91)
Year Effects	YES	
Obs.	341	
adj. R^2 (%)	6.62	

This table presents results on the bias, news, and predictive ability of sample firms' management forecasts of earnings growth. **Panel A** presents the average bias in management earnings growth forecasts (*MGF*). As is typical in the management forecast literature, we use the midpoint if the manager issues a range forecast. We calculate realized future growth (*RFG*) following Chan et al.(2003) as the firms' annualized earnings growth for the four years subsequent to the management forecasts. **Panel B** presents the results from OLS regressions of *MFG*, *RFG*, bias in *MFG*, and error in *MFG* on firms' historical earnings growth (*HG*). We calculate historical growth (*HG*) following Chan, et al. (2003) as the firms' annualized earnings growth for the four years prior to the management forecasts. **Panel C** shows the direction (sign) and magnitude of news in sample firms' management forecasts of earnings growth. *Good News* is an indicator variable, coded as one if the management growth forecast is equal to or greater than the corresponding analyst forecasts of earnings growth (*AGF*); otherwise coded as zero. Likewise, *Bad News* is coded as one if the management growth forecast is lower than the corresponding *AFG*. **Panel D** presents the results from OLS regressions showing the informativeness of future EPS growth in management growth forecasts, measured by the difference between ex post realized EPS growth (*RFG*) and analyst long-term growth forecast consensus (*AFG*). To mitigate the effects of extreme values, we winsorize continuous variables at 1 and 99%. *t*-statistics are calculated using industry-level clustered standard errors, while controlling for year effects. ***, **, and * represent significance at the two-tailed one, five, and ten percent levels, respectively.

TABLE 4
Differential Bias and Predictive Ability Conditional on the Direction of News in the Management Forecast of Earnings Growth

Panel A: H4A Differential Bias in Management Forecasts of Earnings Growth (%)

	MFG with *GoodNews* (N = 234)		*MFG* with *BadNews* (N = 107)		Difference: *GoodNews - BadNews*	
	MFG-RFG	|*MFG-RFG*|	*MFG-RFG*	|*MFG-RFG*|	*MFG-RFG*	|*MFG-RFG*|
Mean	13.83***	20.04***	10.22***	16.54***	3.61*	3.50*
Median	7.06***	11.90***	6.61***	9.95***	0.45	1.95*

Panel B: Differential Effects of Historical Growth

	Dependent Variable (%)							
	MFG		*RFG*		*MFG – RFG*		|*MFG – RFG*|	
Indep. Variables:	Coeff.	(*t-stat*)	Coeff.	(*t-stat*)	Coeff.	(*t-stat*)	Coeff.	(*t-stat*)
HG×GoodNews	0.040***	(2.92)	-0.102***	(-4.04)	0.146***	(5.63)	0.058**	(2.14)
HG×BadNews	-0.015***	(-2.94)	-0.067*	(-1.85)	0.042	(1.00)	-0.018*	(-1.73)
Year Effects	YES		YES		YES		YES	
Obs.	341		341		341		341	
adj. R^2 (%)	4.29		6.12		6.45		5.55	
F-test:	Δ in coeff.	*p-value*	Δ in coeff.	*p-value*	Δ in coeff.	*p-value*	Δ in coeff.	*p-value*
HG×GoodNews - HG×BadNews	0.055	(0.01)	-0.035	(0.29)	0.104	(0.03)	0.076	(0.04)

Panel C: H4B: Differential Informativeness of Managers' Forecasts of Earnings Growth

	Dependent Variable (%): *RFG - AFG*	
	Coeff.	(*t-stat*)
MFGNews × GoodNews	-0.360	(-1.23)
MFGNews × BadNews	0.917***	(3.38)
MFNews	4.652	(0.67)
Year Effects	YES	
Obs.	341	
adj. R^2 (%)	8.88	
F-test:	Δ in coeff.	*p-value*
MFGNews×GoodNews - MFGNews×BadNews	-1.277	(0.00)

This table presents evidence on the differential bias and informativeness conditional on the direction of news conveyed by management forecasts of earnings growth. **Panel A** reports the differential bias in management forecasts of earnings growth as measured by the difference between management growth forecasts (*MFG*) and realized future growth (*RFG*) (i.e., *MFG–RFG*) and the differential absolute error (|*MFG–RFG*|). **Panel B** presents the results from OLS regressions showing the differential effects of firms' historical growth (*HG*) on *MFG*, *RFG*, bias in *MFG*, and absolute error in *MFG* conditional on the direction of the news in *MFG*. **Panel C** presents the results from OLS regressions showing the differential informativeness of future EPS growth in management growth forecasts. The footnote in Table 3 defines these variables. To mitigate the effects of extreme values, we winsorize continuous variables at 1 and 99%. *t*-statistics are calculated using industry-level clustered standard errors, while controlling for year effects. ***, **, and * represent significance at the two-tailed one, five, and ten percent levels, respectively.

TABLE 5
Analysts' Reactions to Managers' Earnings Growth Forecasts

Panel A: H5A: Analysts' Forecast Revisions of EPS Growth Using OLS Regression

	Dependent Variable (%): *AFG Rev*			
	Coefficient	(*t-stat*)	Coefficient	(*t-stat*)
MFGNews	0.203***	(*5.96*)		
MFGNews × GoodNews			0.111**	(*2.12*)
MFGNews × BadNews			0.225***	(*8.18*)
MFNews	0.059	(*0.26*)	0.210	(*1.04*)
Year Effects	YES		YES	
Obs.	341		341	
adj. R2 (%)	17.49		20.90	
F-test:			Δ in coefficients	(*p-value*)
MFGNews×GoodNews – MFGNews×BadNews			-0.114	(*0.05*)

Panel B: Analysts' Over-/Unver-reactions to Management Forecasts of Growth

	Dependent Variable (%): *RFG – (Ex Post) AFG*			
	Coefficient	(*t-stat*)	Coefficient	(*t-stat*)
MFGNews	-0.209	(*-0.70*)		
MFGNews × GoodNews			-1.502***	(*-11.84*)
MFGNews × BadNews			1.143***	(*4.16*)
MFNews	3.132*	(*1.66*)	4.483***	(*3.06*)
Year Effects	YES		YES	
Obs.	341		341	
adj. R2 (%)	21.22		26.34	
F-test:			Δ in coeff.	(*p-value*)
MFGNews×GoodNews – MFGNews×BadNews			-2.645	(*0.00*)

Panel C: H5B: Effects of Management Forecasts of Growth on Analysts' Absolute Forecast Error

	Dep. Variable (%): |RFG – (Ex Post) AFG| – |RFG – (Ex Ante) AFG|			
	Coefficient	(*t-stat*)	Coefficient	(*t-stat*)
GoodNews	1.124*	(*1.87*)	1.270**	(*2.08*)
BadNews	-1.226**	(*-2.22*)	-1.122**	(*-2.00*)
MFNews			0.871**	(*2.03*)
Year Effects	YES		YES	
Obs.	341		341	
adj. R2 (%)	6.86		7.01	
F-test:	Δ in coefficients	(*p-value*)	Δ in coefficients	(*p-value*)
GoodNews – BadNews	2.350	(*0.00*)	2.422	(*0.00*)

This table presents the results of tests of analysts' reactions to managers' earnings growth forecasts. **Panel A** shows the results of regressions explaining analysts' long-term growth forecast revisions (*AFG Rev*). **Panel B** shows the results of regressions explaining analysts' over-/ under-reactions to management growth forecasts with good or bad news. **Panel C** shows the results of regressing changes in the absolute error in analysts' growth forecasts on the direction of news conveyed by *MFG*. Table 3 defines the variables. To mitigate the effects of extreme values, we winsorize continuous variables at 1 and 99%. *t*-statistics are calculated using industry-level clustered standard errors, while controlling for year-effects. ***, **, and * represent significance at the two-tailed one, five, and ten percent levels, respectively.

TABLE 6
Short-Run Market Reactions to Managers' Earnings Growth Forecasts

Panel A: H5C: Short [-1, +1] Window Analysis

	Dependent Variable: CAR [-1, +1]			
	Coefficient	(*t-stat*)	Coefficient	(*t-stat*)
MFGNews	0.045	(*1.17*)		
MFGNews × GoodNews			0.065*	(*1.81*)
MFGNews × BadNews			0.035	(*0.75*)
MFNews	0.279*	(*1.88*)	0.282*	(*1.90*)
Year Effects	YES		YES	
Obs.	341		341	
adj. R^2 (%)	3.34		3.38	
F-test:			Δ in coefficients	(*p-value*)
MFGNews×GoodNews – MFGNews×BadNews			0.030	(*0.52*)

Panel B: H5C: Immediate Post-Forecast [+2, +61] Window Analysis

	Dependent Variable: CAR [+2, +61]			
	Coefficient	(*t-stat*)	Coefficient	(*t-stat*)
MFGNews	-0.128	(*-0.80*)		
MFGNews × GoodNews			0.109**	(*2.23*)
MFGNews × BadNews			-0.272	(*-1.43*)
MFNews	0.693	(*1.47*)	0.851*	(*1.76*)
MB			0.001	(*0.26*)
MOM			-0.068***	(*-4.04*)
SIZE			0.000	(*0.23*)
Year Effects	YES		YES	
Obs.	341		341	
adj. R^2 (%)	5.87		6.59	
F-test:			Δ in coefficients	(*p-value*)
MFGNews×GoodNews – MFGNews×BadNews			0.381	(*0.05*)

This table presents market reactions to managers' earnings growth forecasts. **Panel A** shows results from regressions explaining three-day size-adjusted *CAR* (Cumulative Abnormal Returns) centered on the management growth forecast day (i.e., [-1, +1]). **Panel B** shows results from regressions explaining sixty-day size-adjusted *CAR* (Cumulative Abnormal Returns) immediately after the management growth forecast (i.e., [+2, +61]). Market-to-book (*MB*) is the ratio of market value of equity to book value of equity prior to the release of the management forecast. Momentum (*MOM*) is the (daily compounded) buy-and-hold return for 60 trading days prior to the release of the management forecast. *SIZE* is the natural log of the market value of equity. We compute *CAR* using buy-and-hold returns for the specified window. Definitions of other variables appear in the footnote in Table 3 To mitigate the effects of extreme values, we winsorize continuous variables at 1 and 99%. *t*-statistics are calculated using industry-level clustered standard errors, while controlling for year-effects. ***, **, and * represent significance at the two-tailed one, five, and ten percent levels, respectively.

TABLE 7
Three-Year Stock Post-Management-Growth-Forecast Returns

Regression Analysis of Three-Year CAR

	Dependent Variables (%): *CAR*					
	Coeff.	(*t-stat*)	Coeff.	(*t-stat*)	Coeff.	(*t-stat*)
MFGNews	0.139	(*0.68*)				
MFGNews × GoodNews			-0.477**	(*-2.05*)	-0.440*	(*-1.85*)
MFGNews × BadNews			1.236***	(*4.15*)	1.056***	(*3.68*)
Earn News			2.108	(*0.79*)	2.068	(*0.74*)
MB					-0.636	(*-0.89*)
MOM					2.369	(*0.17*)
SIZE					3.911**	(*2.16*)
Year Effect	YES		YES		YES	
Obs.	336		336		336	
adj. R^2 (%)	2.54		3.57		4.97	
F-test:			Δ in coeff.	(*p-value*)	Δ in coeff.	(*p-value*)
MFGNews×GoodNews – MFGNews×BadNews			-1.713	< *0.01*	-1.496	< *0.01*

This table presents tests of longer-run post-management-growth-forecast returns, which shows the results of regressions explaining three-year size-adjusted *CAR* (Cumulative Abnormal Returns) after the current fiscal year. Market-to-book (*MB*) is the ratio of the market value of equity to the book value of equity at the end of the current fiscal year. Momentum (*MOM*) is (monthly compounded) buy-and-hold return for twelve months ending at the end of the fiscal year. *SIZE* is natural log of market value of equity. We compute *CAR* using buy-and-hold returns for the specified window. To mitigate the effects of extreme values, we winsorize continuous variables at 1 and 99%. *t*-statistics are calculated using industry-level clustered standard errors, while controlling for year-effects. ***, **, and * represent significance at the two-tailed one, five, and ten percent levels, respectively.

Characteristics of Firms Providing Management Forecasts of EPS Growth

Panel A: Descriptive Statistics

	Firms with *MF News* (N = 4,730)			Firms with *MFG News* (N = 341)		
	MFG = 0 (*N* = 4,386)	MFG = 1 (*N* = 344)		Bad News (*N* = 107)	Good News (*N* = 234)	
	Mean	Mean	*diff*	Mean	Mean	*diff*
Size	7.77	8.65	***	8.54	8.74	
MB	2.18	2.34	**	2.41	2.32	
LT_InstOwn	37.65%	42.74%	***	43.03%	42.91%	
New_CEO	8.27%	9.59%		11.21%	8.97%	
RD	3.47%	4.04%	*	3.38%	4.38%	
REVGrowth	15.53%	13.63%	**	16.69%	12.28%	**
AFLoss	2.03%	0.29%	***	0.00%	0.43%	
NegMF	59.76%	53.78%	**	57.94%	52.14%	
Age	8.55	8.81	**	8.55	8.80	
Distress	-1.29	-1.39		-1.48	-1.34	
Accruals	-3.33%	-2.99%		-2.80%	-3.24%	
Sentiment	83.06	78.94	***	79.50	78.64	

Panel B: Probit Regression

	Firms with *MF News* Pr [EPS Growth = 1]		Firms with *MFG News* Pr [Good News = 1]	
	Coefficients	(*p-value*)	Coefficients	(*p-value*)
Intercept	-1.397***	(*0.00*)	1.620**	(*0.05*)
Size	0.132**	(*0.00*)	0.071*	(*0.10*)
MB	0.032*	(*0.10*)	-0.043	(*0.25*)
LT_InstOwn	0.353**	(*0.02*)	0.127	(*0.39*)
NewCEO	-0.021	(*0.42*)	-0.267	(*0.14*)
RD	-0.356	(*0.22*)	1.251	(*0.12*)
REVGrowth	-0.206	(*0.13*)	-1.218***	(*0.01*)
AFLoss	-0.665*	(*0.06*)	4.319	(*0.49*)
NegMF	-0.141***	(*0.01*)	-0.145	(*0.17*)
Age	-0.027	(*0.22*)	-0.139*	(*0.06*)
Distress	-0.017*	(*0.06*)	0.012	(*0.38*)
Accruals	0.461	(*0.19*)	-1.437	(*0.20*)
Sentiment	-0.012***	(*0.00*)	-0.004	(*0.28*)
Obs.	4,730		341	
Pseudo R^2	5.25%		3.32%	

This appendix table describes firms providing management forecasts of EPS growth (*MFG*) or issuing good vs. bad news MFG. **Panel A** provides the descriptive statistics comparing between firms providing MFG or not as well as between firms issuing MFG with good news versus bad news. *Size* is log value of market value of equity, measured at the beginning of the quarter in which management forecast is issued. *MB* is market-to-book ratio of equity, measured at the beginning of the quarter. *LT_InstOwn* is long-term institutional ownership, defined as dedicated and quasi-index institutional ownership minus transient institutional ownership as of the beginning of the quarter. We follow Bushee's classification scheme of institutional investors, and the classification data is available on his website (acct3.wharton.upenn.edu/faculty/bushee/). *New_CEO* is an indicator variable equal to one if a new CEO was appointed within one-year period prior to the date of management forecasts and zero otherwise. We

obtain CEO appointment date from Execucomp. *RD* is research and development expenditures, defined as the log of research and development expenditures of prior year scaled by total assets at the end of prior year. *REVGrowth* is average sales growth for four years prior to the current fiscal year. *AFLoss* is an indicator variable equal to one if analyst forecast consensus of the current year's earnings is equal to or lower than zero, and zero otherwise. *NegMF* is an indicator variable equal to one if the accompanying management forecast of the current year's earnings is lower than analyst forecast consensus. *Age* is natural log of the years since the firm was first listed in CRSP. *Distress* is the firm's Z-score according to Zmijewski (1984) as of the end of the prior fiscal year. *Accruals* is computed as [(change in current assets − change in cash) − (change in current liabilities − change in short-term debt − change in taxes payable) − depreciation expense] ÷ average total assets), as of the end of the prior fiscal year. *Sentiment* is the consumer sentiment index compiled by Thomson Reuters and University of Michigan. ***, **, and * represent significance for variables at the one-tailed one, five, and ten percent levels, respectively. **Panel B** provides Probit model results predicting the sample firms' issuance of long-term EPS growth forecasts (*MFG*) or MFG with good news. Continuous variables are winsorized at 1% and 99% level. *P*-values are computed at one tail.