ECONOMIC DOWNTURNS AND THE VALUE OF MANAGEMENT EARNINGS FORECASTS

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July 12, 2019

ABSTRACT

We examine how the state of the economy affects the extent to which investors value management earnings forecasts. We find that stock price reactions to news conveyed in management earnings forecasts are larger during economic downturns, as measured by quarters of negative U.S. GDP growth, NBER recession periods, and periods following negative market-wide stock returns. We also find that analysts make larger revisions to their forecasts in response to news in management earnings forecasts during downturns. Supporting the notion that the higher value investors and analysts place on management forecasts in downturns is justified, we show that management forecasts become even more accurate relative to analyst forecasts during these periods. Overall, these results are consistent with the hypothesis that because adverse economic conditions lower the precision of market participants' beliefs about a firm's value, investors and analysts value management-provided information more in downturns.

Keywords: Management forecasts, News, Analysts, Reactions, Downturns

JEL Classifications: G12, G14, M40, M41

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1. Introduction

Management earnings forecasts help shape a firm's information environment and account for the majority of accounting-based information reflected in stock prices (e.g., Beyer, Cohen, Lys, and Walther, 2010). Prior research examining what factors affect how investors react to management forecasts as a source of information largely focuses on the role of firm- and forecast-related characteristics that managers can in part influence (e.g., Baginski, Conrad, and Hassell, 1993; Hirst, Koonce, and Venkataraman, 2008). In this study, we extend this work by examining whether the state of the economy – a factor uniquely outside a manager's control – impacts the extent to which investors value management forecasts. Specifically, we compare how investors react to news in management forecasts in good and bad states of the economy, such as during recessions. While adverse economic conditions can be relatively rare, the longest and most severe economic downturn since the Great Depression ended in the United States (U.S.) in 2009. Since 2009, the U.S. has been in its longest economic expansion in history, and economists, investors, and managers predict another recession in the near future.[1] Thus, understanding whether (and if so, how) economic downturns affect the value of management-provided information is timely and could inform managers in the coming years.

We hypothesize that adverse economic conditions affect the value that investors place on management earnings forecasts by reducing the precision of their beliefs about a firm's value. It is well established that economic downturns are characterized by greater uncertainty and more extreme aggregate-, industry-, and firm-level outcomes (e.g., Bloom, 2009, 2014). In particular, downturns widen the distribution of potential firm outcomes in ways that are difficult to quantify, such as by making it harder for firms to identify and

[1] For example, the NABE Economic Policy Survey found that 76% of business economists expect a recession by the end of 2021 (as of February 2019), the BCG Consulting Group found that 73% of investors expect a recession in the next 24 months (as of October 2018), and the Duke University's survey of CFOs found that 84% of U.S. CFOs believe a recession will occur by the third quarter of 2021 (as of April 2019). See "Economic Policy Survey," *National Association of Business Economics,* February 2019; "Investors Brace for a Downturn and Look to the Long Term," Ghesquieres et al., *Boston Consulting Group*, January 22, 2019; "Duke CFO Global Business Outlook," *Duke University's Fuqua School of Business*, April 2019.

benefit from investment opportunities (e.g., Johnson, 1999). In this environment of heightened uncertainty, estimating future firm performance becomes especially difficult, and theory suggests that investors are more likely to judge their existing beliefs about the distribution of future outcomes (i.e., their priors) as less precise and place more value on new information that has a higher relative precision (e.g., Kacperczyk and Seru, 2007; Kacperczyk, Van Nieuwerburgh, and Veldkamp, 2016). In contrast to investors, managers possess intimate knowledge of a firm's strategies, sales and expenditures, operations, and financial health, and importantly, decide how the firm will respond to a changing environment. While adverse economic conditions also make it harder for managers to predict future performance, managers should be less affected than investors given their access to timely information and role as key decision makers inside a firm. Thus, we expect that managers' information advantage *relative* to that of investors' will improve during downturns, making management earnings forecasts an especially valuable source of information during these times.

Following prior research (e.g., Ajinkya and Gift, 1984; Waymire, 1984), we use 3-day cumulative abnormal returns (CARs) around the release of management earnings forecasts to capture the extent to which investors value new information provided by managers. We measure the amount of new information in management forecasts as the difference between the management earnings forecast and the consensus analyst earnings forecast at the time a management forecast is announced scaled by the absolute value of the consensus analyst forecast. Our empirical prediction is that if investors place relatively more weight on new information in managers' earnings estimates during economic downturns, then we should observe larger stock price reactions to management earnings forecasts announced during these periods.

We classify economic downturns using three common gauges of economic activity. We focus on aggregate market-wide measures because they allow us to exploit economically important settings that affect all market participants and that are more likely to be

exogenous to individual managers. Our first measure is based on U.S. Gross Domestic Product (GDP), which captures aggregate U.S. production and is one of the most comprehensive measures of macroeconomic activity. We define a downturn as any quarter in which the quarterly U.S. GDP growth rate is negative and classify all management forecasts announced during these quarters as issued during a downturn. Our second measure classifies any management forecast that is announced during a National Bureau of Economic Research (NBER) recession period as issued during a downturn. Our third measure is based on market-wide stock returns and classifies management forecasts that are announced immediately following a 3-month period in which the abnormal buy-and hold-return on the CRSP market portfolio is negative as issued in a downturn.

Isolating the extent to which investors value management forecasts can be empirically challenging. If economic conditions affect whether a manager issues a forecast or changes the characteristics of the forecasts she provides (e.g., Kim, Pandit, and Wasley, 2016), then these differences across economic states could confound our analyses. To address this concern, we first examine whether there are systematic differences in the likelihood that a manager provides an earnings forecast and the characteristics of management earnings forecasts during downturns in comparison to upturns. We find no evidence that managers are more or less likely to provide earnings forecasts during downturns. However, our results suggest that some forecast characteristics, such as forecast horizon (i.e., the length of time between when a forecast is issued and the forecast period fiscal end), whether the forecast is a point or range forecast, and whether the earnings forecast is lower than the consensus analyst estimate, vary across states of the economy. We are therefore careful to control for several forecast characteristics throughout our analyses. We also formally correct for residual selection bias concerns by controlling for the inverse Mill's ratio from a Heckman two-stage selection model in all of our regressions.

Using a sample that consists of 62,549 management earnings forecasts announced between 2002 and 2017, our main results show that stock price reactions to the release of

news in management earnings forecasts are even greater during economic downturns. These findings are from regressions that include a comprehensive set of controls, including controls for firm fundamentals, forecast characteristics, firm fixed effects, and announcement day fixed effects. Our results are not sensitive to the window length over which we calculate CARs, the model that we use to calculate expected returns, the method that we use to normalize news in management forecasts, and controlling for investor sentiment. In terms of economic magnitudes, our estimates imply that the sensitivity of stock price changes to a given amount of news in management forecasts are 17% to 29% greater during downturns. Further, we find that these stronger price reactions are linked to management earnings forecasts that are lower than the consensus analyst forecast (i.e., bad news forecasts).

While our primary focus is on how economic conditions affect the extent to which investors value management-provided earnings estimates, we next examine whether analysts – who are also key outside market participants – value management earnings forecasts more during downturns. If analysts value management forecasts more when economic conditions are poor, then we should find that analysts make larger revisions to their forecasts in response to news in management forecasts during these periods. Consistent with our stock price reaction results, we find that when a manager's earnings estimate is different than an individual analyst's forecast, the analyst makes larger revisions to her forecast during downturns. This result is especially pronounced when a management forecast is below the analyst's estimate. Overall, these results add further evidence supporting the conclusion that news in management earnings forecasts is more valuable to market participants in economic downturns.

Our hypothesis suggests that adverse economic conditions affect the value that capital market participants place on management forecasts because these participants perceive managers as having a larger information advantage during these periods. If this perception is justified and managers' information advantage relative to outside parties improves, then we would expect that the accuracy of management forecasts relative to the accuracy of

forecasts made by outsiders improves during downturns. Consistent with this prediction, we find that while managers make more accurate forecasts relative to analysts during good times, management forecasts are even more relatively accurate during downturns.[2] Further, we document that the improvement in the relative accuracy of management forecasts during downturns is concentrated in bad news forecasts. This result helps explain why we find that investors and analysts react more strongly to bad news in downturns and is consistent with prior work that suggests that bad news forecasts tend to be more credible (e.g., Jennings, 1987; Hutton, Miller and Skinner, 2003; Rogers and Stocken, 2005).[3,4]

Our study primarily contributes to the literature that examines how the state of the economy and market conditions affect how market participants value different sources of information. In particular, research documents that the reactions of market participants to information can vary based on factors external to a firm, including the economic environment, sentiment in the market, and macro-uncertainty. For example, these factors affect how investors react to realized earnings that deviate from market expectations (e.g., Conrad, Cornell, and Landsman, 2002; Mian and Sankaraguruswamy, 2012; Williams, 2015; Nagar, Schoenfeld, Wellman, 2019; Schmalz and Zhuk, 2019) and to revisions in analyst forecasts (Loh and Stulz, 2018). We offer empirical evidence on how adverse economic conditions affect the informativeness of earnings forecasts provided by managers. Our finding that investors

[2] These results are also consistent with anecdotal and empirical evidence that suggests that analysts are especially slow to revise their forecasts in response to negative macroeconomic news (e.g., Goedhart, Raj, and Saxena, 2010; Hugon, Kumar, and Lin, 2016).

[3] Hutton, Lee, and Shu (2012) find that analyst earnings forecasts tend to be relatively more accurate than management forecasts for firms that are more sensitive to macroeconomic conditions, suggesting that analysts have a forecasting advantage when a firm's operations are more exposed to factors outside a manager's control. While their analyses focus on how firm characteristics affect the relative accuracy of management and analyst forecasts, we are interested in examining how this relative accuracy varies across states of the economy. Consistent with their analyses, we also find in untabulated results that the relative accuracy of management forecasts is decreasing in the extent to which a firm's earnings are correlated with aggregate GDP. Moreover, while we find that the relative accuracy of management forecasts is greater during downturns, this greater relative accuracy is attenuated for more cyclical firms.

[4] An alternative explanation for why we observe larger stock price reactions to management forecasts in downturns could be that investors initially overreact to news – particularly bad news – during these times. If this overreaction hypothesis explains our results, then we should observe a reversal in a firm's stock returns in the days following the management forecast. In Section 5.1, we test this explanation and find no evidence of stock price reversals after the forecast.

and analysts value management earnings forecasts more in downturns highlights variation in the importance of a channel through which management communicates with capital market participants.

The rest of this paper is organized as follows. Section 2 develops the theoretical link between economic conditions and the value of management earnings forecasts. Section 3 describes our primary empirical method and data. Section 4 reports empirical results. Section 5 reports results of additional analyses and robustness checks. Section 6 concludes.

2. Link between Economic Conditions and Reactions to Management Forecasts

Grounded in theory that identifies the information content of financial disclosures by the extent to which such disclosures alter investors' beliefs about firm value, a large stream of empirical research documents that earnings forecasts provided by managers influence stock prices and thus are informative (e.g., Patell, 1976; Penman, 1980). Further, Beyer et al. (2010) show that, relative to other information sources (e.g., earnings announcements and analyst forecasts), management earnings forecasts provide a significant portion of the accounting-based information reflected in stock prices. Recognizing the discretion that managers have in providing this important disclosure, researchers have since focused on understanding whether and how firm-, manager-, and forecast-level characteristics drive variation in the informativeness of management forecasts. Broadly, this work finds that market participants' reactions to management forecasts vary based on a firm's and a manager's reputation for forecasting accurately (e.g., Williams, 1996; Yang, 2012), the characteristics of a forecast (e.g., Baginski et al., 1993), and the type of supporting information provided with a forecast (e.g., Hutton, Miller, and Skinner, 2003; Baginski, Hassell, and Kimbrough, 2004).

Importantly, prior research also shows that the broader environment surrounding a firm can influence how individuals react to accounting information (e.g., Mian and Sankaraguruswamy, 2012; Williams, 2015; Schmalz and Zhuk, 2019). In particular, the literature finds that uncertainty is higher when economic conditions are poor and that in this

environment, outcomes in an industry and firm are harder to predict (e.g., Bloom, 2014). Economic downturns, therefore, provide a unique setting in which to study investors' reactions to news conveyed in management forecasts. Specifically, theory suggests that reactions to new information will vary based on the weight investors place on their priors relative to the weight they place on the new information. This work highlights that the precision of investors' priors will affect the weight investors place on the new information (e.g., Holthausen and Verrecchia, 1988). As the precision of investors' priors relative to the precision of new information decreases, investors will increasingly value the new information when updating their beliefs about firm value.

Given the relative infrequency of economic downturns and the increased potential for more extreme firm performance, we hypothesize that investors will judge their priors – which were formed in part based on evaluating a firm's historical performance in mostly good economic times – as less useful in predicting how the firm's operations will be affected by an adverse economic environment. Consequently, new information about the firm's future performance with a relatively higher precision can be especially valuable to investors in downturns (Kacperczyk, Van Nieuwerburgh, and Veldkamp, 2016). This notion is consistent with Loh and Stulz (2018) who find that investors react more strongly to analyst recommendation changes announced during downturns. In contrast to analysts and other outside market participants, managers have intimate knowledge of a firm's operations, as they are responsible for making key business decisions and have continuous insight into the firm's daily activities. Although an environment of heightened uncertainty poses more challenges for managers when predicting their firm's future performance, we expect that managers, as firm insiders, benefit from increased insight relative to investors. Thus, to the extent that managers' information advantage increases *relative* to that of investors' in downturns, we hypothesize that investors will value management forecasts more during these periods. This expectation generates the prediction that stock price reactions to news conveyed in management forecasts will be greater in economic downturns.

3. Research Design and Sample Selection

3.1. Empirical Methods

To examine whether investors value management earnings forecasts more during economic downturns, we estimate the following pooled OLS fixed effects panel regression model:

$$CAR(-1,+1)_{i,t} = \alpha_1 News_{i,t} + \alpha_2 News_{i,t} \times Downturn_t + \gamma X + \psi News_{i,t} \times X + \upsilon_i + \omega_t + \varepsilon_{i,t}, \quad (1)$$

where $CAR(-1,+1)_{i,t}$ is a firm's 3-day cumulative abnormal return centered around the day when a management earnings forecast is announced.[5] We calculate abnormal returns from a market model using the CRSP value-weighted index in which we estimate parameters over the [-210,-11] trading day window before the announcement.[6]

News is the new information communicated in a management earnings forecast, which we calculate by taking the difference between a manager's point forecast (or the midpoint of a range forecast) of earnings per share (EPS) and the consensus analyst EPS forecast scaled by the absolute value of the consensus analyst EPS forecast [=(*MgmtFcast-AnalystFcast) / |AnalystFcast|*] (e.g., Kothari, Shu, and Wysocki, 2009). By regressing CARs on *News*, we examine stock price changes to a given amount of new information in a management forecast. Based on prior work (e.g., Ajinkya and Gift, 1984; Waymire, 1984), we expect that the coefficient estimate α_1 will be positive because investors generally respond in the same direction as the news in management forecasts (i.e., positive CARs when management forecasts are higher than consensus analyst forecasts and negative CARs when management forecasts are lower than consensus analyst forecasts). $Downturn_t$ is an indicator variable that is set to one if a management forecast is announced during an economic downturn and zero otherwise (we define how we measure downturns in Section 3.2). If the

[5] If a management forecast is announced after 4:00 p.m. Eastern Time when the stock market closes, we set the announcement day to the next day.

[6] Our main results are robust to using a 5-day window to calculate CARs and to using the Fama-French 3-factor plus momentum model to estimate abnormal returns.

news conveyed in management forecasts is more valuable to investors in downturns, then the coefficient estimate a_2 will also be positive.

In Eq. (1), *X* includes firm-level control variables that capture a firm's information environment, financial condition, and fundamental risk. These factors can affect the likelihood that managers provide an earnings forecast and the extent to which investors respond to news in management forecasts (e.g., Miller, 2002; Ajinkya, Bhojraj, and Sengupta, 2005). Therefore, to account for possible confounding effects of these factors, we control for a firm's market capitalization, analyst coverage, institutional ownership, financial leverage, profitability, market-to-book ratio, volatility of stock returns, and the magnitude of the most recent earnings surprise. We also control for the buy-and-hold abnormal stock return over the [-21,-2] trading days before the management forecast announcement date to account for any leakage in earnings information (e.g., Kothari, Shu, and Wysocki, 2009).

Further, *X* includes forecast-related characteristics to account for changes in stock price reactions that could be driven by managers making different choices when determining the content and form of forecasts in downturns relative to upturns (we explore this possibility in detail in Section 4.2). These forecast characteristics include variables for whether: 1) the forecast is bundled with an earnings announcement, 2) the forecast is a point or range forecast, 3) the difference between the low and high values of the forecast (zero for point forecasts), 4) the forecast is for annual or quarterly earnings, 5) the forecast is the first forecast issued for the related fiscal period, and 6) the forecast provides bad news (i.e., the management forecast is below the consensus analyst forecast). We also control for the length of time between when the forecast is announced and the forecast fiscal period end (i.e., the horizon of the forecast) to help address the concern that stock price reactions may be driven by managers differentially timing the release of news given the state of the economy. In some cases, managers provide more than one forecast on the same day. Hence, we control for the number of other EPS management forecasts announced with the forecast of interest. We further include the inverse Mill's ratio obtained from a Heckman selection model to account

for potential selection biases arising from managers being more or less likely to provide earnings forecasts during downturns (we describe the Heckman selection model in detail in Section 4.1). Finally, we allow stock price reactions to news in management forecasts to vary by firm and forecast characteristics by interacting *News* with each of our control variables (*News* × *X*). Our appendix provides more details on how we calculate all of these variables.

Our models also include firm fixed effects (v_j) and forecast announcement day fixed effects (ω_t). The firm fixed effects control for any time-invariant firm characteristics that could be correlated with the amount of news in management forecasts and stock returns around the announcement, such as if certain firms consistently issue more optimistic forecasts or have lower average announcement returns. Including firm fixed effects also implies that identification comes from comparing how investors react to news in a firm's forecast announced in a downturn relative to how investors react to news in forecasts announced in good times for the same firm. The announcement day fixed effects account for transitory nation-wide factors that could simultaneously affect the news conveyed in management forecasts and stock price reactions, such as market-wide stock market volatility or the Federal Reserve releasing economic news.[7] Inclusion of announcement day fixed effects also removes any time trends in market reactions and news, such as changes in market reactions and disclosure behavior following the Sarbanes-Oxley Act. We note that because we include announcement day fixed effects in the regressions, the level term for *Downturn* is absorbed because this variable is the same for all firms on a particular day. We therefore do not include a *Downturn* indicator separately in the regressions. Finally, to correct for heteroskedasticity and the correlation of standard errors within firms over time and across

[7] One argument against including announcement day fixed effects is that by using CARs instead of raw returns, our tests already account for contemporaneous factors. However, while using CARs accounts for contemporaneous market factors that could affect stock returns, they do not account for contemporaneous omitted variables that affect the amount of news in management forecasts. Accounting for unobserved heterogeneity in the dependent variable and not the independent variables could bias the results (Gormley and Matsa, 2014). Including announcement day fixed effects solves this problem. An alternative to our approach would be to use raw returns and announcement day fixed effects to avoid adjusting the dependent variable twice. Our results are similar if we use this approach. We report the results using CARs based on a market model to allow different firms to have different exposures to market returns (i.e., different estimates of beta), and to be consistent with prior literature.

firms in the same time period, we double cluster standard errors by firm and announcement day.

3.2. Measures of Economic Downturns

We use three common measures to capture economic downturns (e.g., Schmalz and Zhuk, 2019). Our first measure, *Neg. GDP Growth,* is based on U.S. GDP quarterly growth rates and is an indicator variable that is set to one if the percent change in seasonally adjusted real GDP during the quarter when a management forecast is announced is negative, and zero otherwise. Our second measure, *Recession,* is an indicator variable that is set to one if the date when a management forecast is announced is during an NBER-identified recession period, and zero otherwise.[8] Our third measure, *Neg. Stock Market,* is based on U.S. stock market returns. To create this measure, we calculate the 3-month cumulative stock market return ending two days before a management forecast is announced (which corresponds with the day before we calculate the CAR) and subtract the cumulative risk-free return over the same period. We use the return on the CRSP value-weighted index as the market return and the return on the one-month Treasury bill as the risk-free rate. *Neg. Stock Market* is then an indicator variable that is set to one if this measure of excess market returns is negative, and zero otherwise.

We hypothesize that the mechanism through which economic downturns affect how investors react to management forecasts is by increasing uncertainty. Therefore, before we perform our tests, we conduct some preliminary analysis to verify that our three measures of downturns are associated with heightened investor uncertainty. Similar to the analysis in Loh and Stulz (2018), we examine the relation between our three measures of downturns and the average daily estimates of the Chicago Board Options Exchange Volatility Index (VIX)

[8] The NBER defines a recession as "a significant decline in activity spread across the economy, lasting more than a few months, visible in industrial production, employment, real income, and wholesale-retail sales. A recession begins just after the economy reaches a peak of activity and ends as the economy reaches its trough. Between trough and peak, the economy is in an expansion. Expansion is the normal state of the economy; most recessions are brief and they have been rare in recent decades" (Hall et al., 2003).

over our sample period (2002 to 2017). The VIX, which is quoted as an annualized standard deviation, is derived from the price inputs of the S&P 500 index options and represents the market's expectation of 30-day forward looking volatility. We therefore use the VIX as a proxy for ex-ante uncertainty. If our measures of downturns are associated with higher uncertainty, then the VIX should be higher in downturns relative to upturns. We find that the value of the VIX is 31.5 during quarters of negative GDP growth and 17.5 during quarters of non-negative GDP growth (p-value of the difference is 0.03 and is based on 64 quarters). The value of the VIX is 34.1 during recession months and 17.7 during non-recession months (p-value of the difference is <0.001 and is based on 192 months). Finally, the value of the VIX is 23.3 during periods of negative excess stock market returns and 17.5 during periods of non-negative excess stock market returns (p-value of the difference is <0.001 and is based on 4,028 rolling 90-day cumulative returns).

While all three of our measures of downturns are associated with greater investor uncertainty as proxied for by the VIX, we note that the time-periods characterized as downturns by our three measures do not completely overlap. Figure 1 shows quarterly U.S. GDP percent changes (Panel A), NBER recession periods (the dates covered by the shaded area in Panels A and B), and rolling 3-month cumulative excess stock market returns (Panel B) from the first quarter of 2002 to the fourth quarter of 2017. Focusing on our indicator variables, the highest pairwise correlation is between the *Neg. GDP Growth* and *Recession* indicators, with a correlation coefficient of 0.69. The correlation between the *Neg. GDP Growth* and *Neg. Stock Market* indicators is 0.25, and the correlation between the *Recession* and *Neg. Stock Market* indicators is 0.27. Taken together, these statistics suggest that while each measure conceptually captures downturns, our measures speak to different aspects of downturns. For robustness purposes, we therefore use all three measures in our analyses.[9]

[9] Our results using our stock market-based downturn measure are not driven by management forecasts announced during the financial crisis. In untabulated tests, we exclude management forecasts announced between the third quarter of 2007 and the first quarter of 2009 and find that our results continue to hold.

3.3. Sample Selection

We create our main sample by first identifying all firms in the CRSP-Compustat Quarterly Merged database. We obtain analyst data from the IBES Unadjusted Detail History file. Using the IBES Guidance Detail file, we then identify a set of firms that issued quarterly and annual management EPS forecasts between 2002 and 2017.[10] We include bundled and unbundled earnings forecasts, where bundled management forecasts are those announced within ±2 trading days around an earnings announcement date (measured by the reporting date *rdq* from Compustat).[11]

In line with prior work (e.g., Rogers and Van Buskirk, 2013; Li and Zhang, 2015), most earnings forecasts in our sample (about 76%) are bundled with earnings announcements. Importantly, Rogers and Van Buskirk (2013) show that traditional measures of management forecast news for bundled forecasts can be biased due to comparing management EPS forecasts to consensus analyst forecasts that do not account for analysts updating their estimates of EPS based on the newly released quarters' earnings. We correct for this bias by following the method proposed by Rogers and Van Buskirk (2013) and calculating an adjusted consensus analyst forecast that explicitly conditions on the information in the contemporaneous earnings announcement. In essence, we estimate how much the consensus analyst estimate would change in light of the new information contained in the earnings announcement after first accounting for the decision to provide a bundled forecast. We then use the estimated analyst forecast revision to adjust the consensus analyst forecast for bundled forecasts. Further, because the consensus analyst forecast at the time a management forecast is announced serves as the benchmark to measure the amount of new information in the management forecast, it is important that the consensus analyst forecast is not based on stale estimates. Consequently, we define the consensus analyst forecast as the median

[10] Estimates in the Guidance Detail file are reported on a split-adjusted basis. We obtain analyst estimates from the IBES Unadjusted Detail History file and split-adjust the estimates to ensure that both analyst and management EPS forecasts are comparable.

[11] Our finding that stock price reactions to news contained in management earnings forecasts are larger during downturns (Table 5) holds for both bundled and unbundled forecasts.

analyst EPS estimate using only those analyst forecasts that are announced in the 30 calendar days preceding a management forecast.

To arrive at our main sample, we exclude all observations that are not point or range forecasts, observations for which we do not have a value for the analyst consensus forecast at the time a management forecast is announced, and observations for which we do not have values for all of our control variables. We also exclude pre-earnings announcement forecasts (i.e., management forecasts announced after the forecast period fiscal end), as these information releases serve more as preliminary earnings announcements. We further require that firms have at least two management forecasts to estimate the firm fixed effects and that each announcement day has at least two management forecasts to estimate the announcement day fixed effects. These filters result in a sample of 62,549 management forecast announcements that correspond to 2,354 unique firms and 3,649 unique announcement days.[12] On average, each firm provides 26.6 management earnings forecasts over our sample period and 4.1 forecasts for each fiscal period. Further, there are 17.1 management forecasts on average on any given announcement day.

Table 1 tabulates summary statistics for the full sample. We winsorize continuous variables at their 1st and 99th percentiles and express dollar values in 2009 dollars. Over our sample period, 56% of management forecasts provide earnings estimates that are lower than the consensus analyst forecast (i.e., bad news forecasts). The mean management forecast is 2.6% below the analyst consensus, and the median management forecast is 0.6% below the analyst consensus. Further, 14.0%, 11.0%, and 34.2% of the forecasts are made in downturns as measured by periods with negative GDP growth, recessions, and negative stock market returns, respectively. On average, management issues a forecast 165 days before the end of the forecast fiscal period (=365×0.452) and makes 0.5 forecasts for other fiscal periods

[12] Requiring that firms have at least two management forecasts and that each announcement day has at least two management forecasts places very little burden on our sample. Before imposing these two requirements, our sample consists of 63,228 management earnings forecasts. The sample shrinks by only 347 forecasts from requiring that firms have at least two management forecasts, and shrinks by another 332 forecasts by requiring that each announcement day has at least two management forecasts.

on the same day.[13] In our sample, 88.3% of forecasts are range forecasts, and the remaining 11.7% are point forecasts.

Table 2 compares the mean firm and forecast characteristics across states of the economy. Overall, many firm characteristics are different during downturns, further motivating us to control for these attributes in our regressions. In addition, while the results show significant differences in forecast characteristics across states of the economy, we examine whether these differences continue to hold in a multivariate setting in Section 4.2.

4. Empirical Results

4.1. Likelihood of Providing a Management Earnings Forecast in Downturns

Because investors' reactions to news in management forecasts are conditional on the manager providing a forecast, a manager's ability to choose whether to provide a forecast can create a selection bias. Therefore, in this section, we examine whether the likelihood that a manager provides an earnings forecast changes across states of the economy to provide insights into the extent of the potential selection bias.

Table 3 presents results from regressions examining the likelihood that management provides a forecast in quarter t as a function of our measures of downturns in quarter t and t-1. For this test, we create a sample comprised of all firm-quarter observations from the quarterly CRSP-Compustat merged database for the years 2002 to 2017. We then merge on the IBES management forecast data to determine the quarters in which a firm provides an earnings forecast. The dependent variable, *Management Forecast*$_t$, is an indicator variable that is set to one if a firm provides at least one earnings forecast in quarter t and zero otherwise. We include the same set of control variables described in our primary model specification in Section 3.1, measuring these variables as of quarter t-1. In columns 1-3, we

[13] When a firm announces multiple forecasts on the same day, we follow the approach in Baginski, Hassell, and Kimbrough (2004) and treat these forecasts as separate observations because many forecast characteristics are different across the forecasts (e.g., horizon, point versus range, forecast width, etc.). However, our results are robust to limiting the sample to only one management forecast per firm on a particular day by keeping the management forecast for the nearest fiscal period.

estimate linear probability models with firm and fiscal-quarter fixed effects. Given that our measures of economic downturns are economy-wide, we do not include time fixed effects in these regressions. Instead, we account for trends in the likelihood of providing a forecast over time by including a linear calendar quarter×year time trend. In these tests, we double cluster standard errors by firm and calendar quarter×year.

Overall, the results show a statistically insignificant relation between the likelihood of providing a management forecast and our measures of downturns. These results therefore imply that firms are just as likely to provide a management forecast in downturns and upturns, suggesting that any selection bias in our primary tests arising from the choice to first provide an earnings forecast is likely minimal.

Nevertheless, throughout our remaining analyses, we formally correct for the potential selection bias reflected in the choice to forecast by implementing a Heckman two-stage selection model and controlling for the inverse Mill's ratio obtained from this model. To estimate the inverse Mill's ratio, we need a variable that is correlated with the decision to forecast in quarter *t* but that is uncorrelated with the extent to which investors react to the news contained in management forecasts after controlling for the other explanatory variables in the model (i.e., the exclusion restriction). Because a firm's forecast choice is highly persistent (e.g., Gibbins, Richardson, and Waterhouse, 1990), one option is to create a set of variables that capture whether managers have provided earnings forecasts in the past. That is, if a firm has provided a forecast in the near past, the firm is likely to continue providing a forecast. Further, it is not obvious why the decision to provide a management forecast in the past would be correlated with the extent to which investors respond to news in the current management forecast.[14] As a result, we use *Management Forecast*$_{t-1}$ and *Management*

[14] The exclusion restriction for our Heckman selection models is that the decision to provide a management forecast in the prior quarter and one year ago does not affect how investors react to news in the current management forecast. Prior work finds that the characteristics of past forecasts can affect how investors react to current news (e.g., Hutton and Stocken, 2009; Hilary, Hsu, and Wang, 2014). For example, Hilary, Hsu, and Wang (2014) find that managers who consistently bias their forecasts in a specific direction elicit greater stock price reactions to news in their forecasts. However, because these findings are based on prior forecast characteristics and not on the presence of the forecast itself, we do not believe that their findings provide evidence invalidating our exclusion restriction. As additional evidence supporting our exclusion restriction, we find no empirical

Forecast$_{t-4}$, which are indicator variables that are set to one if a firm provided a management forecast in the prior quarter and the same quarter one year ago, respectively, as additional variables in the first-stage selection model shown in column 4.

Unlike the linear probability models that we estimate in columns 1-3 that include firm fixed effects, we calculate the inverse Mill's ratio from a probit regression in column 4 for two reasons. First, the original Heckman two-step procedure requires the first stage to be a probit model to obtain consistent estimates, and we are not aware of any research that shows that a linear probability model in the first stage would also derive consistent estimates. Despite this limitation, however, we note that the inverse Mill's ratios derived from our probit model and a linear probability model are highly correlated, with a correlation coefficient of 0.96. Second, while an advantage of a linear probability model is that it allows us to include firm fixed effects (our preferred method), because our instruments for the selection model are essentially lagged dependent variables, including firm fixed effects in this model could bias our estimates (e.g., Nickell, 1981; Angrist and Pischke, 2008).[15] We therefore report the results using the more appropriate probit model, and replace the firm fixed effects with 2-digit SIC industry fixed effects in this regression. Nevertheless, our second-stage results are not sensitive to the model that we use to calculate the inverse Mill's ratio and are also robust to not including the inverse Mill's ratio in any regression. In addition, instead of including a linear calendar quarter×year time trend and our measures of economic downturns, we include calendar quarter×year fixed effects in the regression in column 4, which control for other macro-economic variables in addition to our economic downturn measures.

The results in column 4 from this first-stage selection regression show a positive correlation between a firm's current forecast decision and its prior forecast decisions. Using the untabulated marginal effects from this regression, the estimates imply that managers

evidence that stock price reactions to management forecast news vary with whether the firm provided a forecast in the recent past.

[15] OLS estimates are inconsistent when a lagged dependent variable is included in a panel regression with firm fixed effects due to the Nickell Bias, whereby including a lagged dependent variable and firm fixed effects in the same regression creates a mechanical correlation between the error term and the lagged dependent variable.

are 27.2% more likely to provide a forecast in the current quarter if they provided a forecast in the prior quarter and 15.1% more likely to provide a forecast during the current quarter if they provided a forecast in the same quarter one year ago. These values are economically significant, as firms provide a forecast in 45.5% of quarters in our sample.

4.2. Do the Characteristics of Management Forecasts Change in Downturns?

To answer our primary research question, we want to isolate whether investors value the news in management forecasts more during downturns. If managers change the characteristics of their forecasts during downturns, then our tests examining stock price reactions to news in management forecasts could be capturing investors responding differently due to changes in the forecast form. Consistent with the notion that managers may change the characteristics of their forecasts in different market conditions, Kim, Pandit, and Wasley (2016) show that managers shift to shorter horizon and more precise forecasts when macro-uncertainty is higher. Therefore, in this section, we examine whether management forecast characteristics change across states of the economy to provide insights into the extent to which these changes could affect our primary analyses.

For this test, we use our main sample of 62,549 management forecasts. We focus on five forecast characteristics: 1) whether the management forecast is a point or range forecast, 2) the width of range forecasts, 3) the horizon of the forecast, 4) whether the forecast is bundled with an earnings announcement, and 5) whether the management forecast is lower than the consensus analyst forecast. Panels A, B, and C of Table 4 present results from regressions examining the relation between forecast characteristics and our three downturn measures. In these regressions, we include firm fixed effects, the same firm-level control variables from Table 3, and controls for the number of other earnings forecasts made on the same day, whether the forecast is for quarterly or annual earnings, whether a particular management forecast is the first forecast made for a particular fiscal period, and the inverse Mill's ratio obtained from the estimates in column 4 of Table 3. Similar to Table 3, we account for changes in forecast characteristics over time by including a linear month×year time trend

based on the month of the forecast instead of time fixed effect in order to estimate coefficients on our economy-wide measures of economic downturns.

The results in Panel A show that in periods of declining GDP, managers are more likely to provide range forecasts, issue wider range forecasts, and provide forecasts with longer horizons. Panel B shows that in recession periods, managers issue wider range forecasts, provide forecasts with longer horizons, and are less likely to issue forecasts that are below the analyst consensus. In comparison, Panel C shows that following months of negative stock returns, managers issue shorter horizon forecasts, and are less likely to provide range and bad news forecasts.

Overall, these results provide some evidence that managers adjust the features of their earnings forecasts across states of the economy. As a result, we are careful to control for these characteristics as well as the interactions of these characteristics with the amount of news in the forecast in our subsequent regressions. However, one potentially important takeaway from Table 4 is that although management forecast characteristics vary between good and bad times, the direction of the change is similar for the GDP growth and recession measures of downturns but is often opposite for the stock return measure of downturns. These findings imply that any biases in investors' reactions to management forecasts during downturns that arise from changes in forecast characteristics are likely opposite across our different downturn measures. Considering that our three measures of downturns are correlated with greater uncertainty (higher values of the VIX), finding consistent results across the different measures is reassuring and helps alleviate the concern that our results are driven by differences in forecast characteristics across states of the economy.

4.3. Investor Reactions to News in Management Forecasts in Downturns

To examine whether investors value the news provided in management EPS forecasts more during downturns, we estimate various versions of Eq. (1) and present the results in Table 5. The dependent variable in all nine columns is the 3-day CAR around the announcement of a management forecast. Columns 1-3 present results from univariate

regressions in which we include only the interaction of *News* with our measures of downturns and the set of fixed effects. In columns 4-6, we add all of our firm- and forecast-specific controls.[16] Finally, columns 7-9 present results from our most robust model specifications in which we interact *News* with all of the control variables to allow the stock price reactions to news in management forecasts to vary by firm and forecast characteristics.[17] To conserve space, we tabulate only the coefficients of interest but report the full models in Table A1 in the Internet Appendix. Overall, we find a positive and statistically significant coefficient estimate on *News* in all models, implying that investors' reactions follow the direction of management forecast news in good times. The results also show a positive and statistically significant coefficient estimate on the interaction terms between *News* and our downturn indicator variables in all nine models, implying that investors react more strongly to news contained in management forecasts in downturns. Hence, we find evidence that is consistent with investors placing greater value on news in management forecasts during downturns than in upturns. We also note that the coefficient estimates are relatively stable across the models with different sets of controls, suggesting that any biases from omitting a variable would likely be minimal.

In terms of economic significance, we focus on the coefficient estimates in columns 7-9. When using our GDP growth measure to capture downturns, the estimated coefficient on

[16] We note that in these regressions, the inverse Mill's ratio is statistically insignificant. At face value, this finding suggests that there is no selection bias in these analyses and that the selection model is not needed. However, Lennox, Francis, and Wang (2012) demonstrate that an insignificant inverse Mill's ratio could be due to multicollinearity and that excluding the insignificant inverse Mill's ratio could lead to substantial changes in the estimated coefficients on variables of interest. In our analyses, excluding the inverse Mill's ratio has very little effect on our results. Nevertheless, we continue to control for the inverse Mill's ratio in all of our tests to alleviate residual concerns of a potential selection bias.

[17] We point out that in these models that include all of the control variables interacted with *News,* we also include the interaction of the inverse Mills ratio with *News*. Intuitively, the level term of the inverse Mills ratio corrects for biases in the magnitude of returns around a forecast in downturns versus upturns arising from managers selecting to provide an earnings forecast in different states of the economy. We, however, are interested in the magnitude of returns around a forecast in downturns and upturns conditional on the amount of news in the forecast. Interacting *News* with the inverse Mills ratio is our attempt to correct for the selection bias in the interaction term of *News* and our downturn measure. Nevertheless, this procedure is admittedly *ad hoc* and not ground in any econometric theory that we are aware of. Our results change very little if we exclude the interaction term between *News* and the inverse Mill's ratio, but we report the results with the interaction term for consistency purposes.

News implies that in good times, management forecasts that deviate by 25.3% from the analyst consensus (about one standard deviation) are associated with stock price changes of 1.59% (=6.314×0.253). In contrast, the estimated coefficient on *News* × *Neg. GDP Growth* implies that in downturns, the same management forecast deviation of 25.3% is associated with an additional 0.46% change in stock prices (=1.827×0.253). Thus, relative to investors' reactions to news in management forecasts in good times, reactions to the same amount of news are 28.9% greater in downturns (=1.827/6.314). The economic magnitudes in columns 8 and 9 are similar. Specifically, relative to investors' reactions to news in management forecasts in good times, reactions are 27.1% (=1.729/6.383) greater in recessions and 17.1% (=1.080/6.308) greater following periods of negative stock returns.

In Table 6, we examine whether the larger stock price reactions to news in management forecasts in downturns is driven by larger negative reactions to bad news or larger positive reactions to good news. To do so, we decompose the variable *News* into two separate variables that reflect good and bad news and then interact these variables with our indicator variables for downturns. Specifically, *Good News* equals *News* when *News* is greater than or equal to zero and equals zero if *News* is less than zero. Similarly, *Bad News* equals *News* when *News* is negative and equals zero when *News* is greater than or equal to zero.

Consistent with prior work (e.g., Skinner, 1994), we find that the average stock price reaction to bad news is greater than that for good news across all three models. Focusing on only the interaction terms, column 1 shows a positive and statistically significant coefficient estimate on *Good News* × *Neg. GDP Growth* and *Bad News* × *Neg. GDP Growth*, implying that larger stock price reactions to news in management forecasts during periods of negative GDP growth are due to larger reactions to good and bad news. In contrast, columns 2 and 3 show a positive and statistically significant coefficient estimate on only *Bad News* × *Recession* and *Bad News* × *Neg. Stock Market*. Hence, the results indicate that the larger stock price reactions to news in management forecasts during downturns are driven by investors reacting more to bad news. Overall, the collective results suggest that investors react more

strongly to news in management forecasts in downturns than in upturns when management provides an earnings forecast that is below the prevailing analyst consensus.

4.4. Analyst Reactions to News in Management Forecasts in Downturns

While the primary focus of our paper is examining how adverse economic conditions affect the extent to which investors value management-provided earnings estimates, we next investigate a secondary question: do analysts also value the news in management earnings forecasts more during downturns? Similar to our stock price reaction tests, if analysts value management forecasts more during downturns, we expect that analysts will revise their forecasts more in response to management forecast news during these times.

To test this question, we use IBES data on individual analyst forecasts and estimate analyst-management forecast level regressions in which we regress individual analyst forecast revisions following a management forecast on a measure of news, news interacted with our measures of downturns, and our control variables. We calculate the dependent variable, *Analyst Forecast Revision,* by taking each analyst's first EPS forecast in the 30 days after a management forecast minus the same analyst's last EPS forecast in the 30 days before the management forecast all scaled by the absolute value of the analyst's last forecast in the 30 days before the management forecast. If an analyst does not update her forecast in the 30 days after the management forecast, we set the analyst forecast revision to zero. For the 43.2% of analysts that revise their forecasts following the management forecast, they do so within 4.9 days on average. In this test, our news measure, *News Analyst,* equals the management EPS forecast minus the individual analyst's last EPS forecast in the 30 days before the management forecast all scaled by the absolute value of the analyst's last forecast in the 30 days before the management forecast. We include the same set of control variables as in Table 5 and also interact *News Analyst* with all the control variables to allow analyst reactions to news in management forecasts to vary by firm and forecast characteristics. In addition to firm and announcement day fixed effects, we also include individual analyst fixed effects to control for time-invariant analyst-specific characteristics.

Table 7 presents the results of this analysis. Consistent with prior work (e.g., Hassell, Jennings, and Lasser, 1988), columns 1-3 show a positive and statistically significant coefficient estimate on *News Analyst,* implying that analysts react in the direction of the news in management forecasts in good times. The results also show a positive and statistically significant coefficient estimate on the interaction term between *News Analyst* and two of our downturn indicator variables, implying that analysts react even more strongly to news contained in management forecasts during downturns. The coefficient estimate on *News Analyst* × *Recession* is positive but statistically insignificant at the 10% level (p-value = 0.108). In terms of economic significance, the estimated coefficient on *News Analyst* × *Neg. GDP Growth* in column 1 implies that analyst forecast revisions are 8.1% greater in periods of declining GDP (=0.026/0.320). Similarly, the estimated coefficient on *News Analyst* × *Neg. Stock Market* in column 3 implies that analyst forecast revisions are 7.0% (=0.022/0.314) greater following periods of negative stock market returns. Overall, these results suggest that analysts also find new information conveyed in management forecasts more valuable during downturns in comparison to upturns.

In Table 8, we examine whether the larger analyst reactions to news in management forecasts in downturns is also driven by larger negative reactions to bad news. Similar to the results in Table 6 for investor reactions, columns 1-3 show positive and statistically significant coefficient estimates on all three bad news interaction terms and statistically insignificant coefficient estimates on the good news interactions terms. Thus, the greater sensitivity of analyst forecast revisions to news in management forecasts also appears concentrated in instances when the management forecast is below the analyst's forecast.

4.5. Comparing Management and Analyst Forecast Accuracy

While the results in Tables 5-8 are consistent with the notion that investors and analysts perceive managers as having a relatively larger information advantage in downturns, an open question is whether this perception is justified. If this perception is justified and managers' information advantage relative to outside parties improves, then we

would expect that the accuracy of management forecasts relative to the accuracy of forecasts made by outsiders should improve during downturns. Because we do not have data on individuals' expectations, we focus on the accuracy of forecasts made by analysts who, like investors, are outsiders to the firm.

To test this prediction, we began by calculating the forecast error for both managers and analysts for our sample of management forecasts. For managers, the forecast error is the absolute value of the difference between a manager's earnings forecast and the actual earnings reported in IBES (split-adjusted) at the end of the forecast period. For analysts, the forecast error is the absolute value of the difference between the consensus analyst forecast at the time of the management forecast and the actual earnings reported at the end of the forecast period. For these tests, we continue to adjust analyst forecasts in the cases when management forecasts are bundled with earnings announcements. To facilitate comparisons, we scale both forecast errors by the absolute value of the average of the management forecast and the consensus analyst forecast. Thus, by construction, larger values of the forecast error variable indicate less accurate forecasts. Further, we report results using all the forecasts made for a forecast period but note that our results are robust to using only the first or the last forecast made for a particular forecast period end (except for the stock market-based definition of downturns which has a p-value of 0.139).

To compare the accuracy of management forecasts to that of analyst forecasts, we stack the management and analyst forecast data and regress the forecast error on an indicator variable, *Mng. Forecast*, that is set to one if the forecast error is based on a management forecast and to zero if the forecast error is based on an analyst forecast. We then interact this indicator variable with our measures of downturns and include the full set of control variables from our main model specification in Table 5.

Panel A of Table 9 shows negative and statistically significant coefficient estimates on *Mng. Forecast* and the interaction terms in all three models, implying that management forecasts are more accurate relative to analyst forecasts in good times and even more

relatively accurate during downturns.[18] In terms of economic significance, the coefficient estimate of -0.034 on *Mng. Forecast* in column 1 implies that management forecast errors are 14.2% lower than the mean analyst forecast error of 0.240 (=0.034/0.240) in good times. Further, the coefficient estimate of -0.020 on the interaction term implies that management forecast errors are an additional 8.3% lower than analyst forecast errors (=0.020/0.240) in periods of negative GDP growth. Similarly, the coefficient estimates on the interaction terms in columns 2 and 3 imply that, relative to good times, management forecast errors are 10.0% (=0.024/0.240) and 2.9% (=0.007/0.240) lower than the average analyst forecast error in recessions and following periods of negative stock market returns, respectively.

In Tables 6 and 8, we show that the stronger stock price reactions and analyst forecast revisions to news in management forecasts during downturns is concentrated in bad news forecasts. In Panel B of Table 9, we test whether these larger reactions to bad news forecasts can be explained by an even greater increase in the accuracy of bad news management forecasts relative to analyst forecasts. For this analysis, we create the dummy variables *Good News Dummy* and *Bad News Dummy* indicating the direction of the management forecast news and interact these variables with the interaction terms between *Mng. Forecast* and our downturn measures.

The results show negative and statistically significant coefficient estimates on *Mng. Forecast* × *Good News Dummy* and *Mng. Forecast* × *Bad News Dummy,* implying that good and bad news management forecasts are relatively more accurate than analyst forecasts in good times. Moreover, the results show statistically insignificant coefficient estimates on *Mng. Forecast* × *Good News Dummy* × *Downturn* in two out of three models, but negative and statistically significant coefficient estimates on *Mng. Forecast* × *Bad News Dummy* ×

[18] An alternative way to test whether management forecast accuracy is greater than analyst forecast accuracy during downturns is to regress the difference between management and analyst forecast accuracy on our measures of downturns. Table A2 in the Internet Appendix reports the results of this type of analysis, and we continue to find that managers provide even more accurate forecasts relative to analysts during downturns compared to upturns. We prefer to use the empirical approach reported in Table 9 because it allows us to more fully control for time effects with announcement day fixed effects instead of only a linear time trend.

Downturn in all three models. These results are consistent with the notion that bad news forecasts may be especially valuable during downturns due to greater relative accuracy. Overall, our finding that analyst forecast accuracy becomes relatively worse is in line with our hypothesis that, because uncertainty increases during downturns, it is more difficult for those outside the firm (in this case, professional analysts) to estimate a firm's future performance, making management forecasts more valuable to them during these times.

5. Additional Analyses and Robustness Tests

5.1. Are Investors Overreacting to Management Forecast News in Downturns?

One alternative explanation for our findings could be that investors initially overreact to news in management earnings forecasts – particularly bad news – during downturns. If this overreaction explanation is correct, we should observe a reversal in a firm's stock returns in the days following the announcement of a management forecast. To test this prediction, we calculate a firm's abnormal buy-and-hold return over the one week and four weeks following the management forecast. Specifically, we calculate a firm's one-week (four-week) buy-and-hold return beginning from the second trading day to 6 (21) trading days after a management forecast is announced less the buy-and-hold return of the CRSP value-weighted index over the same time period. We then regress these abnormal buy-and-hold returns on our measure of management forecast news interacted with our three measures of economic downturns. Positive coefficient estimates on *News* and the interaction terms would indicate that investors initially underreact to news in management forecasts in the 3-day window around when the forecast is made. In contrast, negative coefficient estimates on *News* and the interaction terms would indicate a reversal in stock prices following the management forecast, which would be consistent with investors initially overreacting to news in management forecasts in the 3-day window around when the forecast is made.

Panel A of Table 10 presents the results of this analysis. The results show positive and statistically significant coefficient estimates on *News* in the one-week buy-and-hold return regressions, implying that investors initially underreact to news in good times.

However, in the four-week buy-and-hold return regressions, there are statistically insignificant coefficient estimates on *News,* suggesting that there is neither under nor overreaction following management forecast news in good times over this horizon. Further, in five out of the six specifications, we do not find statistically significant coefficient estimates on the interaction terms between *News* and our downturn measures, implying that investors do not overreact to news in downturns. However, column 5 shows a positive and statistically significant coefficient estimate on *News* × *Neg. Stock Market,* implying that in this specification, investors appear to underreact to news in management forecasts in downturns.

In Panel B, we decompose *News* into good and bad news and re-examine whether there is under or overreaction based on the direction of news in management forecasts. Across all the models, we find statistically insignificant coefficient estimates on the bad news and downturn interaction terms, implying that investors do not overreact or underreact to bad news during downturns. Columns 5 and 6 show positive and statistically significant coefficient estimates on the interaction terms *Good News* × *Neg. Stock Market*, implying that investors tend to underreact even more to good news in downturns than in upturns.

Overall, the results in Table 10 do not support the alternative explanation that our finding of larger stock price reactions to management forecast news in downturns is the result of investors initially overreacting to news during these periods.

5.2. Controlling for Sentiment

Existing work finds that prevailing market-wide optimism or pessimism about future stock market value can influence how investors respond to accounting information (e.g., Mian and Sankaraguruswamy, 2012). To the extent that economic downturns (upturns) overlap with periods of low (high) sentiment, sentiment could explain why investors react more strongly to news in management forecasts in bad times. To ensure that our results are not simply capturing sentiment, we control for investor sentiment using two common measures: the sentiment index developed by Baker and Wurgler (2006, 2007) and the Michigan Consumer Confidence Index. We measure these indices in the month of the forecast

announcement and control for the interaction terms between these variables and *News*. Columns 1-3 (4-6) in Table 11 report the results from our main tests after controlling for investor sentiment. Across all three measures of downturns, we continue to find that stock price reactions to news in management forecasts are greater during downturns.

5.3. Small Denominator Effects and Alternative Measures of News

We scale our measure of news in management forecasts by the absolute value of the consensus analyst forecast. As such, analyst forecasts that are close to zero could lead to overly large values of *News*. To ensure that our results are not driven by a small denominator effect, we show that our main results are robust to excluding all forecasts in which the absolute value of the consensus analyst forecast is less than \$0.05 in columns 1-3 and less than \$0.185 (the smallest 10^{th} percentile) in columns 4-6 in Panel A of Table 12. To further alleviate concerns about a denominator effect, we also show that our results are robust to not scaling the difference between a management forecast and the consensus analyst forecast in columns 1-3 in Panel B of Table 12.

Another possible method of reducing the concern that small EPS values in the denominator drive our results would be to scale the amount of news in management forecasts by the firm's stock price. As noted by Schmalz and Zhuk (2019), however, it is problematic to normalize by stock prices in our empirical setting because there is a mechanical correlation between bad states of the economy and lower prices, which could mechanically overinflate the value of management forecast news in downturns. We reduce this concern by scaling by the absolute value of the analyst consensus forecast because, while EPS estimates are likely to be smaller during downturns, bad times can cause the absolute value of the forecasts to be larger due to more negative EPS estimates. However, normalizing by the absolute value of the consensus EPS estimate may not completely alleviate this concern in our sample. In our sample, while prices are 12.0% to 26.3% lower in downturns, the absolute value of the consensus EPS forecast is also 2.2% to 10.7% lower in downturns.

To further account for a possible bias in stock price reactions to news in management forecasts arising from a mechanical correlation between the absolute value of analysts' consensus forecast and the state of the economy, we follow Schmalz and Zhuk (2019) and scale the amount of news in management forecasts by the standard deviation of the analysts' forecasts. The dispersion in analyst forecasts is less likely to be affected by the state of the economy, and if anything, the dispersion should be greater during downturns as disagreement is typically higher during bad times (e.g., Bloom, 2014), which would bias our results in the opposite direction. Supporting this notion, we find that the standard deviation of analyst forecasts is statistically greater during bad times when we measure downturns with GDP growth rates (0.071 in downturns and 0.056 in good times) and with recessions (0.069 in downturns and 0.057 in good times). There is not a statistically significant difference between analyst forecast dispersion across states of the economy when we measure downturns using stock market returns (0.058 in both downturns and good times). Overall, columns 4-6 in Panel B of Table 12 continue to show larger stock price reactions to management forecast news during downturns using this alternative definition of news.

6. Conclusion

In this paper, we study how the state of the economy affects the extent to which investors value news in management earnings forecasts. We find that stock price reactions to news in management forecasts are larger during periods of negative U.S. GDP growth rates, in recessions, and following periods of negative market-wide stock returns. These results are robust to controlling for possible selection bias that arises from a manager's choice to issue a forecast as well as to controlling for possible changes in the characteristics of management forecasts across states of the economy. We also find that analysts appear to value news in management forecasts more in downturns, as we find larger analyst forecast revisions in response to management forecast news during downturns than in upturns. Consistent with the notion that the increased value that investors and analysts place on management forecasts in downturns is justified, we find that while managers make more

accurate forecasts relative to analysts during good times, management forecasts are even more relatively accurate during downturns. Overall, we conclude that because adverse economic conditions make it more difficult for investors and analysts to forecast a firm's performance, these outside market participants place greater value on management-provided information during downturns.

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Appendix. Variable Definitions

Dependent Variable	*Definition*
Analyst Forecast Revision	An analyst's first EPS forecast in the 30 days after a management forecast minus the analyst's last EPS forecast in the 30 days before the management forecast all scaled by the absolute value of the analyst's last EPS forecast in the 30 days before the management forecast. If an analyst does not update her forecast in the 30 days after the management forecast, *Analyst Forecast Revision* is set to zero.
BHAR 1-Week	A firm's buy-and-hold return over the five trading days [+2,+6] after a management forecast is announced less the buy-and-hold return of the CRSP value-weighted index over the same time period.
BHAR 4-Week	A firm's buy-and-hold return over the 20 trading days [+2,+21] after a management forecast is announced less the buy-and-hold return of the CRSP value-weighted index over the same time period.
CAR(-1, +1)	Cumulative abnormal return over the ±1 trading days around the date when a management forecast is announced. Abnormal returns are calculated from a market model using the CRSP value-weighted index in which parameters are estimated over the [-210, -11] trading days before the announcement date.
Forecast Error	*Forecast Error* is the absolute value of the management or analyst forecast error. For management forecasts, *Forecast Error* is the absolute value of the difference between the management EPS forecast and the actual EPS reported in IBES (split-adjusted) at the end of the forecast period all scaled by the absolute value of the average of the management forecast and the consensus (median) analyst forecast. For analyst forecasts, *Forecast Error* is the absolute value of the difference between the analyst consensus EPS forecast at the time of the management forecast and the actual EPS at the end of the forecast period all scaled by the absolute value of the average of the management forecast and the consensus analyst forecast.

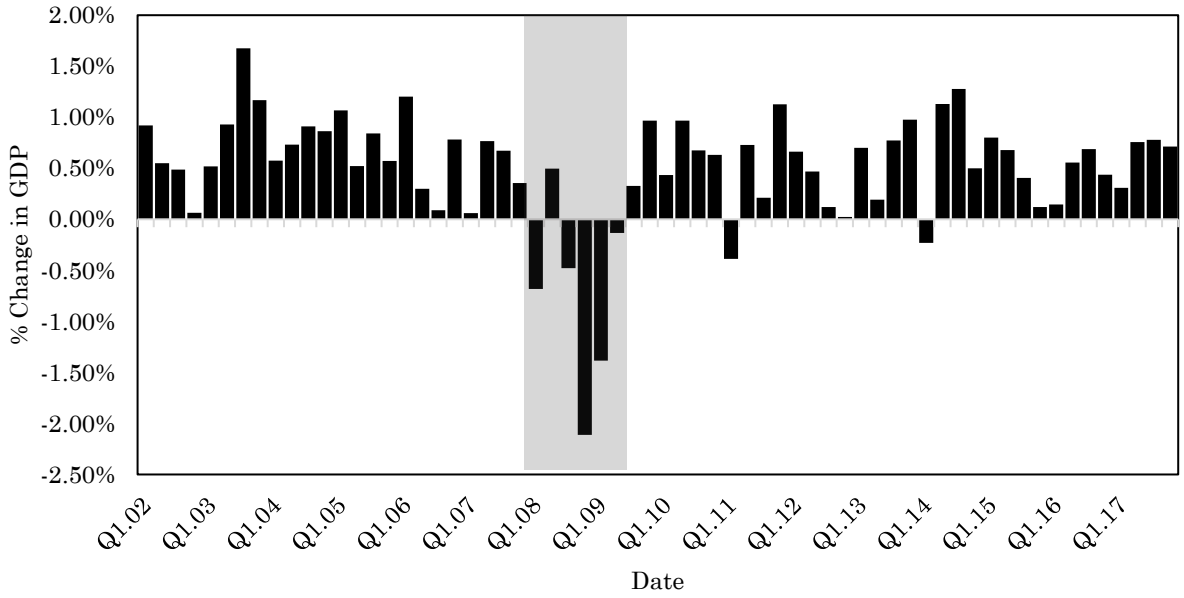
Independent Variable	*Definition*
# Analysts	The number of analysts making an EPS forecast in the 30 days before a management forecast is announced.
Bad News	Equals *News* if *News* is negative and zero otherwise.
Bad News Dummy	An indicator variable that is set to one if *News* is less than zero and equals zero if *News* is greater than or equal to zero.
Book Leverage	Book value of debt in current liabilities plus long-term debt scaled by book value of assets ((*dlcq*+*dlttq*)/*atq*). Measured as of the most recent fiscal period end before the management forecast announcement date.
Bundled	An indicator variable that is set to one if a management forecast is announced in the ±2-day window around when the firm first reports its earnings for the quarter (*rdq* in Compustat) and zero otherwise.
Earnings Surprise	Realized EPS minus median analyst EPS scaled by the absolute value of the median analyst consensus EPS forecast. Measured as of the most recent fiscal period end before the management forecast announcement date.
First Forecast	An indicator variable that is set to one if a management forecast is the first forecast for a fiscal period end and zero otherwise.
Forecast Width	The absolute value of the difference between the high and low values of a management forecast scaled by the consensus analyst forecast at the time of the forecast. This variable is set to zero for point forecasts.
Good News	Equals *News* if *News* is positive and equals zero if *News* is less than zero.
Good News Dummy	An indicator variable that is set to one if *News* is greater than zero and equals zero if *News* is less than zero.

Horizon	The number of years (number of days / 365) between the date when a management forecast is announced and the forecast fiscal period end.
Institutional Ownership	The fraction of a firm's shares outstanding owned by institutional investors in the calendar quarter before the management forecast announcement date.
Inverse Mills	The inverse Mill's ratio calculated from the probit model estimates from column 4 of Table 3.
Market Value of Equity	Market value of equity in 2009 dollars (in millions) (*prccq*×*cshoq*). Measured as of the most recent fiscal period end before the management forecast announcement date.
Market-to-Book	Market value of equity scaled by book value of common shareholder equity ((*prccq*×*cshoq*)/*ceqq*). Measured as of the most recent fiscal period end before the management forecast announcement date.
Mng. Forecast	An indicator variable that is set to one if *Forecast Error* is based on management forecasts and equals zero if *Forecast Error* is based on analyst consensus forecasts.
Neg. GDP Growth	An indicator variable that is set to one if the seasonally adjusted real quarterly U.S. GDP growth rate in the quarter a management forecast is announced is negative and zero otherwise. Data are from the Bureau of Economic Analysis.
Neg. Stock Market	An indicator variable that is set to one if the difference between the 3-month cumulative market return ending two days before a management forecast is announced and the cumulative risk-free return over the same period is negative, and zero otherwise. We use the return on the CRSP value-weighted index as the market return, and the return on the one-month Treasury bill as the risk-free rate.
News	Management EPS forecast minus the consensus (median) analyst EPS forecast at the time a management forecast is announced scaled by the absolute value of the consensus analyst EPS forecast.
News Analyst	The management EPS forecast minus the analyst's last EPS forecast in the 30 days before the management forecast is announced scaled by the absolute value of the analyst's last EPS forecast in the 30 days before the management forecast.
Profitability	Operating income before depreciation scaled by book value of assets (*oibdpq*/*atq*). Measured as of the most recent fiscal period end before the management forecast announcement date.
Quarterly Forecast	An indicator variable that is set to one if a management forecast is for a fiscal quarter and zero if a management forecast is for a fiscal year.
Range Forecast	An indicator variable that is set to one if a management forecast is a range forecast and zero otherwise.
Recession	An indicator variable that is set to one if the date when a management forecast is made is during an NBER recession period and zero otherwise.
Return Volatility	Annualized standard deviation of monthly stock returns over the year ending in the most recent fiscal period end before the management forecast announcement date.
Same Day Forecasts	The number of other management earnings forecasts made on the day when a management forecast is announced.
Stock Return	The firm's buy-and-hold return over the [-21,-2] trading days before the management forecast announcement date less the buy-and-hold return of the CRSP value-weighted index over the same time period.

Figure 1
GDP Percent Changes, Recession Periods, and Stock Market Returns

This figure shows quarterly U.S. GDP percent changes (Panel A), NBER recession periods (the dates covered by the shaded area in Panels A and B), and rolling 3-month cumulative excess stock market returns (Panel B), which equal the difference between cumulative CRSP value-weighted index returns and one-month Treasury bill returns. The sample period is from the first quarter of 2002 to the fourth quarter of 2017.

Panel A: Percent Change in Quarterly GDP



Panel B: Rolling 3-Month Cumulative Excess Stock Market Returns

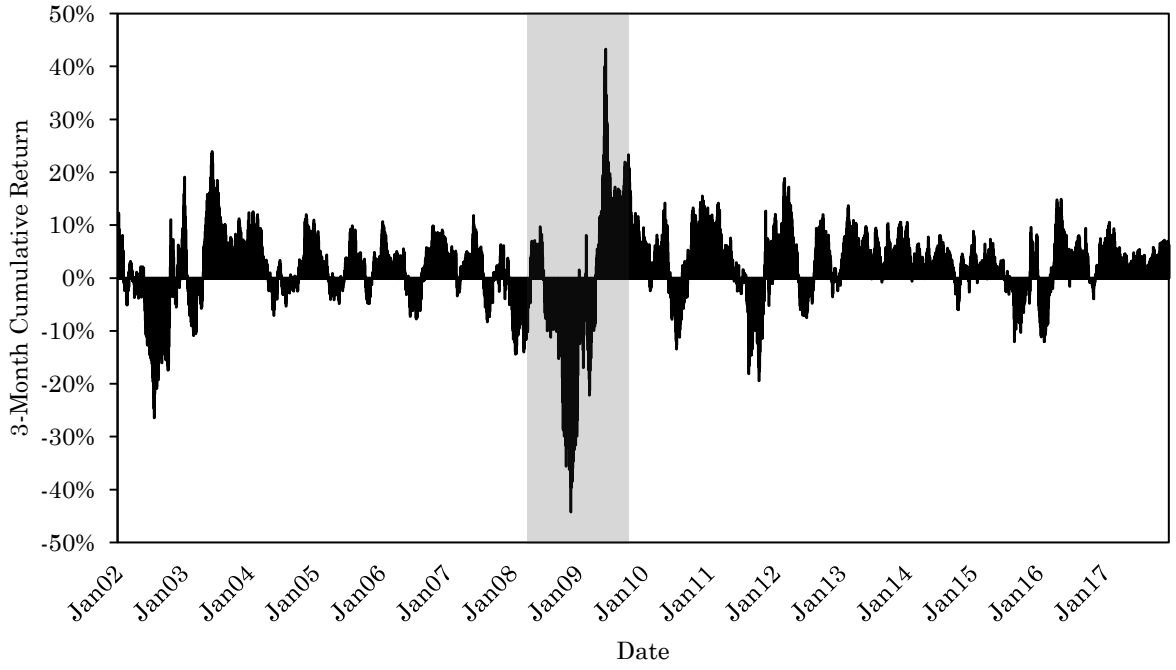


Table 1
Summary Statistics

This table reports summary statistics for the main variables in our regression models over the years 2002 to 2017 and includes 62,549 management earnings forecasts. *CAR*(*-1, +1*) is the cumulative abnormal return over the ±1 trading days around the date when a management forecast is announced. *News* is the management EPS forecast minus the consensus analyst EPS forecast at the time a management forecast is announced all scaled by the absolute value of the consensus EPS forecast. *Neg. GDP Growth* is an indicator variable that is set to one if the quarterly U.S. GDP growth rate in the quarter a management forecast is made is negative and zero otherwise. *Recession* is an indicator variable that is set to one if the date when a management forecast is made is during an NBER recession period and zero otherwise. *Neg. Stock Market* is an indicator variable that is set to one if the market-wide stock return in excess of the risk-free rate over the three months before a management forecast is announced is negative and zero otherwise. The appendix provides further definitions of variables.

	Mean	Std. Dev.	P25	P50	P75
CAR(-1, +1) × 100	0.062	7.319	-3.256	0.141	3.659
News	-0.026	0.253	-0.045	-0.006	0.025
Bad News Dummy	0.564	0.496	0.000	1.000	1.000
Neg. GDP Growth	0.140	0.347	0.000	0.000	0.000
Recession	0.110	0.313	0.000	0.000	0.000
Neg. Stock Market	0.342	0.474	0.000	0.000	1.000
Market Value of Equity	10,910	22,212	1,121	3,142	10,002
Book Leverage	0.227	0.177	0.074	0.216	0.342
Profitability	0.038	0.024	0.024	0.035	0.049
Market-to-Book	3.577	4.395	1.754	2.681	4.187
Earnings Surprise	0.091	0.413	0.000	0.042	0.137
# Analysts	3.788	3.863	1.000	2.000	5.000
Institutional Ownership	0.778	0.205	0.688	0.825	0.925
Stock Return × 100	-0.004	8.464	-4.452	0.007	4.407
Return Volatility	0.327	0.171	0.205	0.286	0.405
Bundled	0.758	0.428	1.000	1.000	1.000
Horizon	0.452	0.339	0.173	0.397	0.690
Same Day Forecasts	0.524	0.682	0.000	0.000	1.000
Range Forecast	0.883	0.321	1.000	1.000	1.000
Forecast Width	0.103	0.215	0.023	0.048	0.094
Quarterly Forecast	0.334	0.472	0.000	0.000	1.000
First Forecast	0.450	0.498	0.000	0.000	1.000

Table 2
Comparison of Means Across States of the Economy

This table reports univariate results comparing the mean values of variables in good and bad times over the years 2002 to 2017. *CAR(-1, +1)* is the cumulative abnormal return over the ±1 trading days around the date when a management forecast is announced. *News* is the management EPS forecast minus the consensus analyst EPS forecast at the time a management forecast is announced all scaled by the absolute value of the consensus EPS forecast. In the first two columns, negative U.S. GDP growth rates indicate bad times and positive U.S. GDP growth rates indicate good times. In the middle two columns, NBER recession periods indicate bad times and NBER non-recession periods indicate good times. In the last two columns, negative excess market-wide stock returns indicate bad times and positive excess market-wide stock returns indicate good times. *, **, and *** in the columns labeled "Negative" or "Yes" indicate significance at the 10%, 5%, and 1% levels, respectively, for a *t*-test of whether the two samples have equal means. Standard errors used for the *t*-test are calculated from heteroscedasticity-robust standard errors clustered by firm and announcement date. The appendix provides further definitions of variables.

	U.S. GDP Growth		Recession		Stock Market	
	Negative	Positive	Yes	No	Negative	Positive
	Obs. = 8,743	Obs. = 53,806	Obs. = 6,887	Obs. = 55,662	Obs. = 21,369	Obs. = 41,180
CAR(-1, +1) × 100	0.114	0.054	0.249	0.039	-0.075**	0.134
News	-0.037***	-0.024	-0.028	-0.025	-0.026	-0.025
Bad News Dummy	0.556	0.565	0.517***	0.570	0.544***	0.574
Ln(Market Value of Equity)	7.952***	8.162	7.811***	8.172	8.047***	8.177
Book Leverage	0.217***	0.229	0.218**	0.228	0.224	0.228
Profitability	0.038	0.038	0.037*	0.038	0.038**	0.038
Market-to-Book	3.062***	3.661	2.765***	3.677	3.431***	3.653
Earnings Surprise	0.109***	0.087	0.085	0.091	0.081***	0.096
Ln(# Analysts)	1.012***	0.928	0.987**	0.934	0.932	0.944
Institutional Ownership	0.802***	0.774	0.816***	0.773	0.775	0.780
Stock Return × 100	-0.214	-0.015	-0.331	-0.007	-0.795***	0.348
Return Volatility	0.356***	0.323	0.375***	0.321	0.335***	0.323
Bundled	0.758	0.758	0.739	0.761	0.754	0.761
Horizon	0.492***	0.446	0.478***	0.449	0.427***	0.466
Same Day Forecasts	0.509	0.526	0.520	0.524	0.546***	0.512
Range Forecast	0.898***	0.881	0.893*	0.882	0.876***	0.887
Forecast Width	0.129***	0.099	0.138***	0.099	0.103	0.103
Quarterly Forecast	0.321**	0.336	0.322	0.335	0.347**	0.326
First Forecast	0.475**	0.447	0.429*	0.453	0.441	0.455

Table 3
Determinants of Providing a Management Forecast

This table reports the results from regressions predicting the likelihood that a firm provides a management forecast over the years 2002 to 2017. The dependent variable *Management Forecast*$_t$ is an indicator variable that is set to one if a firm provides a management forecast during quarter *t* and zero otherwise. Columns 1-3 are estimated with a linear probability model, and column 4 is estimated with a probit model. *Neg. GDP Growth*$_t$ (*Neg. GDP Growth*$_{t-1}$) is an indicator variable that is set to one if the quarterly U.S. GDP growth rate during the firm's fiscal quarter *t* (*t-1*) is negative and zero otherwise. *Recession*$_t$ (*Recession*$_{t-1}$) is an indicator variable that is set to one if a firm's fiscal quarter *t* (*t-1*) is during an NBER recession period and zero otherwise. *Neg. Stock Market*$_t$ (*Neg. Stock Market*$_{t-1}$) is an indicator variable that is set to one if the market-wide stock return in excess of the risk-free rate over the firm's fiscal quarter *t* (*t-1*) is negative and zero otherwise. *Management Forecast*$_{t-1}$ and *Management Forecast*$_{t-4}$ are indicator variables that are set to one if a firm provides a management forecast in the prior quarter and the same quarter a year ago, respectively. All control variables are measured as of quarter *t-1*. The appendix provides further definitions of variables. *t*-statistics in parentheses are calculated from heteroscedasticity-robust standard errors clustered by firm and quarter×year. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable = Management Forecast$_t$			
	(1)	(2)	(3)	(4)
Neg. GDP Growth$_t$	0.002			
	(0.08)			
Neg. GDP Growth$_{t-1}$	0.016			
	(0.73)			
Recession$_t$		-0.039		
		(-0.85)		
Recession$_{t-1}$		0.049		
		(1.12)		
Neg. Stock Market$_t$			0.011	
			(1.01)	
Neg. Stock Market$_{t-1}$			0.007	
			(0.62)	
Ln(Market Value of Equity)$_{t-1}$	0.026***	0.025***	0.025***	0.006
	(4.07)	(4.04)	(4.27)	(0.93)
Book Leverage$_{t-1}$	0.045**	0.043**	0.045**	0.096***
	(2.46)	(2.40)	(2.47)	(3.51)
Profitability$_{t-1}$	0.498***	0.503***	0.496***	2.124***
	(7.75)	(7.86)	(7.93)	(16.78)
Market-to-Book$_{t-1}$	-0.001**	-0.001**	-0.001**	-0.000
	(-2.46)	(-2.53)	(-2.48)	(-0.29)
Earnings Surpise$_{t-1}$	0.001***	0.001***	0.001***	0.004***
	(3.49)	(3.56)	(3.68)	(3.96)
Ln(# Analysts)$_{t-1}$	0.090***	0.090***	0.090***	0.259***
	(10.56)	(10.62)	(10.60)	(17.62)
Institutional Ownership$_{t-1}$	0.075***	0.074***	0.076***	0.214***
	(3.88)	(3.76)	(4.11)	(8.36)
Stock Return$_{t-1}$	0.017***	0.016***	0.018***	0.139***
	(3.06)	(2.88)	(2.83)	(12.01)
Return Volatility$_{t-1}$	-0.327***	-0.301***	-0.320***	-0.464***
	(-4.50)	(-4.59)	(-4.13)	(-5.12)
Management Forecast$_{t-1}$				1.594***
				(40.66)
Management Forecast$_{t-4}$				0.884***
				(38.45)
Calendar Quarter × Year Trend	Yes	Yes	Yes	No
Fiscal Quarter FEs	Yes	Yes	Yes	Yes
Firm FEs	Yes	Yes	Yes	No
Calendar Quarter × Year FEs	No	No	No	Yes
Industry FEs	No	No	No	Yes
Observations	221,890	221,890	221,890	222,173
Adjusted (Pseudo) R^2	0.559	0.559	0.559	(0.546)

Table 4
Determinants of Management Forecast Characteristics

This table reports the results from OLS regressions examining the determinants of management EPS forecast characteristics over the years 2002 to 2017. *Range Forecast* is an indicator variable that is set to one if a management forecast is a range forecast and zero otherwise. *Forecast Width* is the absolute value of the difference between the high and low values of a management forecast scaled by the consensus analyst forecast at the time of the forecast (point forecasts are excluded for this test). *Horizon* is the number of years between the date when a management forecast is made and the forecast fiscal period end. *Bundled* is an indicator variable that is set to one if a management forecast is made in the ±2-day window around when the firm first reports its earnings for the quarter and zero otherwise. *Bad News Dummy* is an indicator variable that is set to one if a management forecast is less than the consensus analyst forecast and zero otherwise. *Neg. GDP Growth* is an indicator variable that is set to one if the quarterly U.S. GDP growth rate in the quarter a management forecast is made is negative and zero otherwise. *Recession* is an indicator variable that is set to one if the date when a management forecast is made is during an NBER recession period and zero otherwise. *Neg. Stock Market* is an indicator variable that is set to one if the market-wide stock return in excess of the risk-free rate over the three months before a management forecast is announced is negative and zero otherwise. Control variables in Panels B and C are the same as those in Panel A. *t*-statistics in parentheses are calculated from heteroscedasticity-robust standard errors clustered by firm and announcement date. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Downturns Measured with GDP Growth Rates

	Range Forecast	Forecast Width	Horizon	Bundled	Bad News Dummy
	(1)	(2)	(3)	(4)	(5)
Neg. GDP Growth	0.010**	0.018***	0.039***	-0.011	-0.000
	(2.00)	(5.20)	(6.20)	(-0.84)	(-0.06)
Ln(Market Value of Equity)	-0.026***	-0.074***	0.018***	-0.002	0.056***
	(-3.76)	(-14.50)	(5.50)	(-0.35)	(8.21)
Book Leverage	-0.042	-0.030	-0.003	0.077***	-0.042
	(-1.16)	(-1.52)	(-0.16)	(2.69)	(-1.40)
Profitability	-0.269**	-1.215***	-0.411***	-0.079	-0.168
	(-1.97)	(-10.11)	(-3.77)	(-0.57)	(-1.06)
Market-to-Book	-0.001	0.000	-0.000	-0.001	-0.000
	(-1.51)	(1.10)	(-0.02)	(-1.16)	(-0.59)
Earnings Surprise	-0.000	-0.014***	-0.011***	0.003	0.002
	(-0.06)	(-3.10)	(-4.06)	(0.56)	(0.44)
Ln(# Analysts)	0.001	0.003**	0.008***	-0.095***	0.001
	(0.39)	(2.53)	(4.24)	(-18.49)	(0.34)
Institutional Ownership	-0.012	-0.022	0.001	0.069***	0.010
	(-0.69)	(-1.48)	(0.17)	(3.45)	(0.44)
Stock Return	-0.047***	-0.035**	0.088***	-0.094***	0.095***
	(-2.79)	(-2.57)	(7.16)	(-3.35)	(3.35)
Return Volatility	-0.048***	0.088***	-0.014	0.014	-0.047**
	(-2.61)	(5.86)	(-1.17)	(0.57)	(-2.04)
Same Day Forecasts	-0.017***	0.000	0.060***	0.042***	-0.013***
	(-3.65)	(0.11)	(20.37)	(5.70)	(-2.70)
Quarterly Forecast	-0.014**	0.072***	-0.537***	-0.043***	0.061***
	(-2.54)	(18.49)	(-92.30)	(-6.05)	(9.40)
First Forecast	0.003	0.010***	0.268***	0.131***	0.035***
	(0.89)	(5.33)	(60.77)	(16.11)	(6.56)
Inverse Mills	-0.038***	-0.001	-0.029***	-0.072***	-0.013
	(-4.45)	(-0.16)	(-5.94)	(-6.72)	(-1.30)
Month × Year Trend	Yes	Yes	Yes	Yes	Yes
Firm FEs	Yes	Yes	Yes	Yes	Yes
Observations	62,549	55,163	62,549	62,549	62,549
Adjusted R^2	0.319	0.466	0.502	0.187	0.049

Table 4 – (*Continued*)

Panel B: Downturns Measured with NBER Recession Periods

	Range Forecast (1)	Forecast Width (2)	Horizon (3)	Bundled (4)	Bad News Dummy (5)
Recession	0.008	0.020***	0.035***	-0.015	-0.034***
	(1.32)	(4.65)	(5.03)	(-0.97)	(-3.65)
Inverse Mills	-0.038***	-0.001	-0.030***	-0.072***	-0.016
	(-4.47)	(-0.16)	(-6.08)	(-6.75)	(-1.53)
Control Variables	Yes	Yes	Yes	Yes	Yes
Month × Year Trend	Yes	Yes	Yes	Yes	Yes
Firm FEs	Yes	Yes	Yes	Yes	Yes
Observations	62,549	55,163	62,549	62,549	62,549
Adjusted R^2	0.319	0.466	0.502	0.187	0.049

Panel C: Downturns Measured with Stock Returns

	Range Forecast (1)	Forecast Width (2)	Horizon (3)	Bundled (4)	Bad News Dummy (5)
Neg. Stock Market	-0.006**	-0.002	-0.028***	0.012	-0.018***
	(-2.11)	(-1.10)	(-6.44)	(1.23)	(-3.39)
Inverse Mills	-0.038***	-0.002	-0.031***	-0.071***	-0.012
	(-4.51)	(-0.43)	(-6.37)	(-6.69)	(-1.22)
Control Variables	Yes	Yes	Yes	Yes	Yes
Month × Year Trend	Yes	Yes	Yes	Yes	Yes
Firm FEs	Yes	Yes	Yes	Yes	Yes
Observations	62,549	55,163	62,549	62,549	62,549
Adjusted R^2	0.319	0.465	0.502	0.187	0.049

Table 5
Stock Market Reactions to News in Management Forecasts

This table reports the results from OLS regressions relating stock market reactions to news in management EPS forecasts over the years 2002 to 2017. The dependent variable *CAR(-1, +1)* in columns 1-9 is the cumulative abnormal return over the ±1 trading days around the date when a forecast is announced. *News* is the management EPS forecast minus the consensus analyst EPS forecast at the time a management forecast is announced scaled by the absolute value of the consensus analyst EPS forecast. *Neg. GDP Growth* is an indicator variable that is set to one if the quarterly U.S. GDP growth rate in the quarter a management forecast is made is negative and zero otherwise. *Recession* is an indicator variable that is set to one if the date when a management forecast is made is during an NBER recession period and zero otherwise. *Neg. Stock Market* is an indicator variable that is set to one if the market-wide stock return in excess of the risk-free rate over the three months before a management forecast is announced is negative and zero otherwise. Control variables include *Ln(Market Value of Equity), Book Leverage, Profitability, Market-to-Book, Earnings Surprise, Ln(# Analysts), Institutional Ownership, Stock Return, Return Volatility, Bundled, Horizon, Same Day Forecasts, Range Forecast, Forecast Width, Quarterly Forecast, First Forecast,* and *Bad News Dummy*. In columns 7-9, all control variables (except *Bad News Dummy*) are interacted with *News*. The appendix provides further definitions of variables. *t*-statistics in parentheses are calculated from heteroscedasticity-robust standard errors clustered by firm and announcement date. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable = CAR(-1, +1) × 100								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
News	5.954***	5.997***	5.747***	4.280***	4.361***	4.173***	6.314***	6.383***	6.308***
	(23.84)	(24.46)	(21.43)	(17.60)	(18.12)	(15.86)	(3.98)	(4.01)	(3.95)
News × Neg. GDP Growth	1.281***			1.642***			1.827***		
	(2.63)			(3.40)			(3.81)		
News × Recession		1.241**			1.453***			1.729***	
		(2.19)			(2.70)			(3.42)	
News × Neg. Stock Market			1.274***			1.221***			1.080***
			(3.27)			(3.20)			(2.90)
Inverse Mills				-0.103	-0.102	-0.101	-0.130	-0.130	-0.136
				(-0.54)	(-0.54)	(-0.53)	(-0.68)	(-0.69)	(-0.72)
News × Inverse Mills							-1.262***	-1.313***	-1.539***
							(-2.63)	(-2.73)	(-3.25)
Control Variables	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
News × Control Variables	No	No	No	No	No	No	Yes	Yes	Yes
Announcement Day FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	62,549	62,549	62,549	62,549	62,549	62,549	62,549	62,549	62,549
Adjusted R^2	0.131	0.131	0.131	0.166	0.166	0.166	0.179	0.179	0.178

Table 6
Stock Market Reactions to Good and Bad News in Management Forecasts

This table reports the results from OLS regressions relating stock market reactions to news in management EPS forecasts over the years 2002 to 2017. The dependent variable *CAR(-1, +1)* is the cumulative abnormal return over the ±1 trading days around the date when a forecast is announced. *News* is the management EPS forecast minus the consensus analyst EPS forecast at the time a management forecast is announced scaled by the absolute value of the consensus analyst EPS forecast. *Good News* equals *News* if *News* is greater than or equal to zero, and zero otherwise. *Bad News* equals *News* if *News* is negative and zero otherwise. *Neg. GDP Growth* is an indicator variable that is set to one if the quarterly U.S. GDP growth rate in the quarter a management forecast is made is negative and zero otherwise. *Recession* is an indicator variable that is set to one if the date when a management forecast is made is during an NBER recession period and zero otherwise. *Neg. Stock Market* is an indicator variable that is set to one if the market-wide stock return in excess of the risk-free rate over the three months before a management forecast is announced is negative and zero otherwise. Control variables include *Ln(Market Value of Equity), Book Leverage, Profitability, Market-to-Book, Earnings Surprise, Ln(# Analysts), Institutional Ownership, Stock Return, Return Volatility, Bundled, Horizon, Same Day Forecasts, Range Forecast, Forecast Width, Quarterly Forecast, First Forecast*, and *Bad News Dummy*. All control variables (except *Bad News Dummy*) are interacted with *News*. The appendix provides further definitions of variables. *t*-statistics in parentheses are calculated from heteroscedasticity-robust standard errors clustered by firm and announcement date. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable = CAR(-1, +1) × 100		
	(1)	(2)	(3)
Good News	3.150**	3.239**	3.556**
	(1.99)	(2.04)	(2.22)
Good News × Neg. GDP Growth	1.794*		
	(1.74)		
Good News × Recession		1.308	
		(1.25)	
Good News × Neg. Stock Market			-0.065
			(-0.09)
Bad News	7.694***	7.750***	7.546***
	(4.85)	(4.88)	(4.73)
Bad News × Neg. GDP Growth	1.626***		
	(2.66)		
Bad News × Recession		1.885***	
		(2.87)	
Bad News × Neg. Stock Market			1.600***
			(3.13)
Inverse Mills	-0.118	-0.118	-0.122
	(-0.62)	(-0.62)	(-0.64)
News × Inverse Mills	-1.174**	-1.207**	-1.410***
	(-2.45)	(-2.51)	(-2.97)
Control Variables	Yes	Yes	Yes
News × Control Variables	Yes	Yes	Yes
Announcement Day FEs	Yes	Yes	Yes
Firm FEs	Yes	Yes	Yes
Observations	62,549	62,549	62,549
Adjusted R^2	0.181	0.181	0.181

Table 7
Analyst Reactions to News in Management Forecasts

This table reports the results from OLS regressions relating analyst forecast revisions to news in management EPS forecasts over the years 2002 to 2017. The dependent variable *Analyst Forecast Revision* is an analyst's first EPS forecast in the 30 days after a management forecast minus the analyst's last EPS forecast in the 30 days before the management forecast all scaled by the absolute value of the analyst's last EPS forecast in the 30 days before the management forecast. If an analyst does not update her forecast in the 30 days after the management forecast, *Analyst Forecast Revision* is set to zero. *News Analyst* is the management EPS forecast minus the analyst's last EPS forecast in the 30 days before the management forecast scaled by the absolute value of the analyst's last EPS forecast in the 30 days before the management forecast. *Neg. GDP Growth* is an indicator variable that is set to one if the quarterly U.S. GDP growth rate in the quarter a management forecast is made is negative and zero otherwise. *Recession* is an indicator variable that is set to one if the date when a management forecast is made is during an NBER recession period and zero otherwise. *Neg. Stock Market* is an indicator variable that is set to one if the market-wide stock return in excess of the risk-free rate over the three months before a management forecast is announced is negative and zero otherwise. Control variables include *Ln(Market Value of Equity), Book Leverage, Profitability, Market-to-Book, Earnings Surprise, Ln(# Analysts), Institutional Ownership, Stock Return, Return Volatility, Bundled, Horizon, Same Day Forecasts, Range Forecast, Forecast Width, Quarterly Forecast, First Forecast,* and *Bad News Dummy*. All control variables (except *Bad News Dummy*) are interacted with *News Analyst*. The appendix provides further definitions of variables. *t*-statistics in parentheses are calculated from heteroscedasticity-robust standard errors clustered by firm and announcement date. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable = Analyst Forecast Revision		
	(1)	(2)	(3)
News Analyst	0.320***	0.321***	0.314***
	(6.40)	(6.40)	(6.30)
News Analyst × Neg. GDP Growth	0.026**		
	(2.42)		
News Analyst × Recession		0.019	
		(1.61)	
News Analyst × Neg. Stock Market			0.022**
			(2.39)
Inverse Mills	-0.003*	-0.003*	-0.004**
	(-1.88)	(-1.90)	(-1.98)
News Analyst × Inverse Mills	-0.025*	-0.026**	-0.029**
	(-1.90)	(-2.00)	(-2.21)
Control Variables	Yes	Yes	Yes
News Analyst × Control Variables	Yes	Yes	Yes
Announcement Day FEs	Yes	Yes	Yes
Firm FEs	Yes	Yes	Yes
Analyst FEs	Yes	Yes	Yes
Observations	237,863	237,863	237,863
Adjusted R^2	0.530	0.530	0.530

Table 8
Analyst Reactions to Good and Bad News in Management Forecasts

This table reports the results from OLS regressions relating analyst forecast revisions to news in management EPS forecasts over the years 2002 to 2017. The dependent variable *Analyst Forecast Revision* is an analyst's first EPS forecast in the 30 days after a management forecast minus the analyst's last EPS forecast in the 30 days before the management forecast scaled by the absolute value of the analyst's last EPS forecast in the 30 days before the management forecast. If an analyst does not update her forecast in the 30 days after the management forecast, *Analyst Forecast Revision* is set to zero. *News Analyst* is the management EPS forecast minus the analyst's last EPS forecast in the 30 days before the management forecast scaled by the absolute value of the analyst's last EPS forecast in the 30 days before the management forecast. *Good News Analyst* equals *News Analyst* if *News Analyst* is greater than or equal to zero, and zero otherwise. *Bad News Analyst* equals *News Analyst* if *News Analyst* is negative and zero otherwise. *Neg. GDP Growth* is an indicator variable that is set to one if the quarterly U.S. GDP growth rate in the quarter a management forecast is made is negative and zero otherwise. *Recession* is an indicator variable that is set to one if the date when a management forecast is made is during an NBER recession period and zero otherwise. *Neg. Stock Market* is an indicator variable that is set to one if the market-wide stock return in excess of the risk-free rate over the three months before a management forecast is announced is negative and zero otherwise. Control variables include *Ln(Market Value of Equity), Book Leverage, Profitability, Market-to-Book, Earnings Surprise, Ln(# Analysts), Institutional Ownership, Stock Return, Return Volatility, Bundled, Horizon, Same Day Forecasts, Range Forecast, Forecast Width, Quarterly Forecast, First Forecast,* and *Bad News Dummy*. All control variables (except *Bad News Dummy*) are interacted with *News Analyst.* The appendix provides further definitions of variables. *t*-statistics in parentheses are calculated from heteroscedasticity-robust standard errors clustered by firm and announcement date. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable = Analyst Forecast Revision		
	(1)	(2)	(3)
Good News Analyst	0.167***	0.171***	0.166***
	(3.53)	(3.64)	(3.58)
Good News Analyst × Neg. GDP Growth	-0.007		
	(-0.42)		
Good News Analyst × Recession		-0.027	
		(-1.39)	
Good News Analyst × Neg. Stock Market			-0.006
			(-0.41)
Bad News Analyst	0.399***	0.401***	0.391***
	(8.33)	(8.36)	(8.21)
Bad News Analyst × Neg. GDP Growth	0.031**		
	(2.23)		
Bad News Analyst × Recession		0.040***	
		(2.64)	
Bad News Analyst × Neg. Stock Market			0.035***
			(3.00)
Inverse Mills	-0.002	-0.002	-0.002
	(-1.42)	(-1.44)	(-1.44)
News Analyst × Inverse Mills	-0.020	-0.021	-0.023*
	(-1.54)	(-1.60)	(-1.73)
Control Variables	Yes	Yes	Yes
News Analyst × Control Variables	Yes	Yes	Yes
Announcement Day FEs	Yes	Yes	Yes
Firm FEs	Yes	Yes	Yes
Analyst FEs	Yes	Yes	Yes
Observations	237,863	237,863	237,863
Adjusted R^2	0.542	0.542	0.543

Table 9
Management vs. Analyst Forecast Accuracy

This table reports the results from OLS regressions comparing the EPS forecast accuracy of managers to analysts over the years 2002 to 2017. The dependent variable *Forecast Error* in Panels A and B is the absolute value of the manager or analyst forecast error. For management forecasts, *Forecast Error* is the absolute value of the difference between the management EPS forecast and the actual EPS at the end of the forecast period all scaled by the absolute value of the average of the management forecast and the consensus analyst forecast at the time of the management forecast. For analyst forecasts, *Forecast Error* is the absolute value of the difference between the analyst consensus EPS forecast at the time of the management forecast and the actual EPS at the end of the forecast period all scaled by the absolute value of the average of the management forecast and the consensus analyst forecast. *Mng. Forecast* is an indicator variable that is set to one if the forecast error is based on management forecasts and equals zero if the forecast error is based on analyst consensus forecasts. *Neg. GDP Growth* is an indicator variable that is set to one if the quarterly U.S. GDP growth rate in the quarter a management forecast is made is negative and zero otherwise. *Recession* is an indicator variable that is set to one if the date when a management forecast is made is during an NBER recession period and zero otherwise. *Neg. Stock Market* is an indicator variable that is set to one if the market-wide stock return in excess of the risk-free rate over the three months before a management forecast is announced is negative and zero otherwise. *Downturn* in Panel B is an indicator variable that is set to one if *Neg. GDP Growth* (column 1)*, Recession* (column 2), and *Neg. Stock Market* (column 3) equal one and zero otherwise. *Bad News Dummy* (*Good News Dummy*) is an indicator variable that is set to one if a management forecast is less than (greater than or equal to) the consensus analyst forecast and zero otherwise. Control variables include *Ln(Market Value of Equity), Book Leverage, Profitability, Market-to-Book, Earnings Surprise, Ln(# Analysts), Institutional Ownership, Stock Return, Return Volatility, Bundled, Horizon, Same Day Forecasts, Range Forecast, Forecast Width, Quarterly Forecast, First Forecast,* and *Bad News Dummy*. The appendix provides further definitions of variables. *t*-statistics in parentheses are calculated from heteroscedasticity-robust standard errors clustered by firm and announcement date. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Management vs. Analyst Forecast Accuracy

	Dependent Variable = Forecast Error		
	(1)	(2)	(3)
Mng. Forecast	-0.034***	-0.035***	-0.035***
	(-16.08)	(-15.99)	(-15.37)
Mng. Forecast × Neg. GDP Growth	-0.020***		
	(-4.42)		
Mng. Forecast × Recession		-0.024***	
		(-4.60)	
Mng. Forecast × Neg. Stock Market			-0.007**
			(-2.48)
Inverse Mills	-0.017	-0.017	-0.017
	(-1.54)	(-1.54)	(-1.54)
Control Variables	Yes	Yes	Yes
Announcement Day FEs	Yes	Yes	Yes
Firm FEs	Yes	Yes	Yes
Observations	123,308	123,308	123,308
Adjusted R^2	0.471	0.471	0.471

Table 9 – (*Continued*)

Panel B: Management vs. Analyst Forecast Accuracy for Good and Bad News Forecasts

	Dependent Variable = Forecast Error		
	Downturn = Neg. GDP Growth	Downturn = Recession	Downturn = Neg. Stock Market
	(1)	(2)	(3)
Mng. Forecast × Good News Dummy	-0.032***	-0.032***	-0.034***
	(-11.45)	(-11.91)	(-11.71)
Mng. Forecast × Good News Dummy × Downturn	0.002	0.009	0.008**
	(0.36)	(1.46)	(2.19)
Mng. Forecast × Bad News Dummy	-0.037***	-0.036***	-0.035***
	(-12.73)	(-12.39)	(-11.34)
Mng. Forecast × Bad News Dummy × Downturn	-0.037***	-0.055***	-0.020***
	(-4.69)	(-5.70)	(-4.19)
Bad News Dummy	0.000	0.000	-0.008
	(0.02)	(0.02)	(-1.59)
Bad News Dummy × Downturn	0.019	0.026	0.031***
	(1.39)	(1.64)	(3.89)
Inverse Mills	-0.017	-0.017	-0.017
	(-1.54)	(-1.54)	(-1.54)
Control Variables	Yes	Yes	Yes
Announcement Day FEs	Yes	Yes	Yes
Firm FEs	Yes	Yes	Yes
Observations	123,308	123,308	123,308
Adjusted R^2	0.471	0.471	0.471

Table 10
Are Investors Overreacting to News in Management Forecasts

This table reports the results from OLS regressions relating news in management EPS forecasts to post-announcement stock returns over the years 2002 to 2017. The dependent variable *BHAR 1-Week (BHAR 4-Week)* is the firm's buy-and-hold return over the five trading days [+2,+6] (20 trading days [+2,+21]) after a management forecast less the buy-and-hold return of the CRSP value-weighted index over the same time period. *News* is the management EPS forecast minus the consensus analyst EPS forecast at the time of the management forecast scaled by the absolute value of the consensus analyst EPS forecast. *Good News* equals *News* if *News* is greater than or equal to zero, and zero otherwise. *Bad News* equals *News* if *News* is negative and zero otherwise. *Neg. GDP Growth* is an indicator variable that is set to one if the quarterly U.S. GDP growth rate in the quarter a management forecast is made is negative and zero otherwise. *Recession* is an indicator variable that is set to one if the date when a management forecast is made is during an NBER recession period and zero otherwise. *Neg. Stock Market* is an indicator variable that is set to one if the market-wide stock return in excess of the risk-free rate over the three months before a management forecast is announced is negative and zero otherwise. Control variables include *Ln(Market Value of Equity), Book Leverage, Profitability, Market-to-Book, Earnings Surprise, Ln(# Analysts), Institutional Ownership, Stock Return, Return Volatility, Bundled, Horizon, Same Day Forecasts, Range Forecast, Forecast Width, Quarterly Forecast, First Forecast,* and *Bad News Dummy*. All control variables (except *Bad News Dummy*) are interacted with *News*. The appendix provides further definitions of variables. *t*-statistics in parentheses are calculated from heteroscedasticity-robust standard errors clustered by firm and announcement date. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Overreaction to News in Management Forecasts

	BHAR 1-Week	BHAR 4-Week	BHAR 1-Week	BHAR 4-Week	BHAR 1-Week	BHAR 4-Week
	(1)	(2)	(3)	(4)	(5)	(6)
News	1.873**	2.101	1.823**	2.089	1.709*	2.029
	(2.15)	(1.25)	(2.10)	(1.24)	(1.96)	(1.21)
News × Neg. GDP Growth	0.010	0.568				
	(0.04)	(1.10)				
News × Recession			0.348	0.764		
			(1.03)	(1.33)		
News × Neg. Stock Market					0.531**	0.557
					(2.56)	(1.42)
Inverse Mills	0.030	0.169	0.031	0.170	0.029	0.167
	(0.27)	(0.81)	(0.28)	(0.81)	(0.26)	(0.80)
News × Inverse Mills	0.327	-0.329	0.357	-0.325	0.292	-0.429
	(1.15)	(-0.58)	(1.25)	(-0.57)	(1.03)	(-0.76)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
News × Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Announcement Day FEs	Yes	Yes	Yes	Yes	Yes	Yes
Firm FEs	Yes	Yes	Yes	Yes	Yes	Yes
Observations	62,548	62,548	62,548	62,548	62,548	62,548
Adjusted R^2	0.115	0.127	0.116	0.127	0.116	0.127

Table 10 – (*Continued*)

Panel B: Overreaction to Good and Bad News in Management Forecasts

	BHAR 1-Week (1)	BHAR 4-Week (2)	BHAR 1-Week (3)	BHAR 4-Week (4)	BHAR 1-Week (5)	BHAR 4-Week (6)
Good News	2.097**	3.008*	2.003**	2.849*	1.768*	2.569
	(2.31)	(1.74)	(2.23)	(1.65)	(1.93)	(1.50)
Good News × Neg. GDP Growth	0.194	0.848				
	(0.35)	(0.87)				
Good News × Recession			0.766	1.698		
			(1.25)	(1.61)		
Good News × Neg. Stock Market					1.040***	1.543**
					(2.77)	(2.17)
Bad News	1.766**	1.689	1.720**	1.706	1.658*	1.746
	(2.02)	(1.00)	(1.98)	(1.01)	(1.90)	(1.03)
Bad News × Neg. GDP Growth	-0.055	0.507				
	(-0.15)	(0.73)				
Bad News × Recession			0.144	0.313		
			(0.33)	(0.40)		
Bad News × Neg. Stock Market					0.276	0.070
					(0.98)	(0.13)
Inverse Mills	0.029	0.166	0.030	0.167	0.027	0.161
	(0.26)	(0.80)	(0.27)	(0.80)	(0.24)	(0.77)
News × Inverse Mills	0.318	-0.358	0.348	-0.356	0.275	-0.477
	(1.12)	(-0.63)	(1.22)	(-0.63)	(0.97)	(-0.85)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
News × Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Announcement Day	Yes	Yes	Yes	Yes	Yes	Yes
Firm FEs	Yes	Yes	Yes	Yes	Yes	Yes
Observations	62,548	62,548	62,548	62,548	62,548	62,548
Adjusted R^2	0.115	0.127	0.116	0.127	0.116	0.127

Table 11
Robustness: Controlling for Investor Sentiment

This table reports the results from OLS regressions relating stock market reactions to news in management EPS forecasts over the years 2002 to 2017. The dependent variable *CAR(-1, +1)* is the cumulative abnormal return over the ±1 trading days around the date when a forecast is announced. *News* is the management EPS forecast minus the consensus analyst EPS forecast at the time of the management forecast scaled by the absolute value of the consensus analyst EPS forecast. *BW Sentiment* is the investor sentiment index from Baker and Wurgler (2006, 2007). *MI Sentiment* is the Index of Consumer Sentiment from the University of Michigan's Survey of Consumers. *Neg. GDP Growth* is an indicator variable that is set to one if the quarterly U.S. GDP growth rate in the quarter a management forecast is made is negative and zero otherwise. *Recession* is an indicator variable that is set to one if the date when a management forecast is made is during an NBER recession period and zero otherwise. *Neg. Stock Market* is an indicator variable that is set to one if the market-wide stock return in excess of the risk-free rate over the three months before a management forecast is announced is negative and zero otherwise. Control variables include *Ln(Market Value of Equity), Book Leverage, Profitability, Market-to-Book, Earnings Surprise, Ln(# Analysts), Institutional Ownership, Stock Return, Return Volatility, Bundled, Horizon, Same Day Forecasts, Range Forecast, Forecast Width, Quarterly Forecast, First Forecast,* and *Bad News Dummy*. All control variables (except *Bad News Dummy*) are interacted with *News*. The appendix provides further definitions of variables. *t*-statistics in parentheses are calculated from heteroscedasticity-robust standard errors clustered by firm and announcement date. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable = CAR(-1, +1) × 100					
	(1)	(2)	(3)	(4)	(5)	(6)
News	6.319***	6.383***	6.295***	3.780*	3.764*	6.521***
	(3.99)	(4.02)	(3.96)	(1.78)	(1.67)	(3.23)
News × Neg. GDP Growth	1.841***			2.396***		
	(3.81)			(4.35)		
News × Recession		1.729***			2.420***	
		(3.41)			(3.78)	
News × Neg. Stock Market			1.088***			1.060***
			(2.91)			(2.81)
News × BW Sentiment	0.136	0.003	-0.186			
	(0.26)	(0.00)	(-0.36)			
News × MI Sentiment				0.033*	0.034*	-0.003
				(1.81)	(1.66)	(-0.17)
Inverse Mills	-0.130	-0.130	-0.136	-0.134	-0.134	-0.136
	(-0.68)	(-0.69)	(-0.72)	(-0.70)	(-0.71)	(-0.71)
News × Inverse Mills	-1.290***	-1.313***	-1.499***	-1.364***	-1.422***	-1.523***
	(-2.64)	(-2.67)	(-3.08)	(-2.84)	(-2.96)	(-3.17)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
News × Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Announcement Day FEs	Yes	Yes	Yes	Yes	Yes	Yes
Firm FEs	Yes	Yes	Yes	Yes	Yes	Yes
Observations	62,549	62,549	62,549	62,549	62,549	62,549
Adjusted R^2	0.179	0.179	0.178	0.179	0.179	0.178

Table 12
Robustness: Small Denominator Effects and Alternative Measure of News

This table reports the results from OLS regressions relating stock market reactions to news in management EPS forecasts over the years 2002 to 2017. The dependent variable *CAR(-1, +1)* in Panels A and B is the cumulative abnormal return over the ±1 trading days around the date when a forecast is announced. *News* is the management EPS forecast minus the consensus analyst EPS forecast at the time of the management forecast scaled by the absolute value of the consensus analyst EPS forecast. *News Unscaled* is the management EPS forecast minus the consensus analyst EPS forecast at the time of the management forecast. *News Alt.* is the management EPS forecast minus the consensus analyst EPS forecast at the time of the management forecast scaled by the standard deviation of analyst EPS forecasts at the time of the management forecast. *Neg. GDP Growth* is an indicator variable that is set to one if the quarterly U.S. GDP growth rate in the quarter a management forecast is made is negative and zero otherwise. *Recession* is an indicator variable that is set to one if the date when a management forecast is made is during an NBER recession period and zero otherwise. *Neg. Stock Market* is an indicator variable that is set to one if the market-wide stock return in excess of the risk-free rate over the three months before a management forecast is announced is negative and zero otherwise. Control variables include *Ln(Market Value of Equity), Book Leverage, Profitability, Market-to-Book, Earnings Surprise, Ln(# Analysts), Institutional Ownership, Stock Return, Return Volatility, Bundled, Horizon, Same Day Forecasts, Range Forecast, Forecast Width, Quarterly Forecasts, First Forecast, Inverse Mills* and *Bad News Dummy*. All control variables (except *Bad News Dummy*) are interacted with *News*. The appendix provides further definitions of variables. *t*-statistics in parentheses are calculated from heteroscedasticity-robust standard errors clustered by firm and announcement date. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Dealing with a Small Denominator Effect

	Dependent Variable = CAR(-1, +1) × 100					
	Keep Observations if Abs(Analyst EPS)>$0.05.			*Keep Observations if Abs(Analyst EPS)>$0.185.*		
	(1)	(2)	(3)	(4)	(5)	(6)
News	5.408***	5.613***	5.229***	8.802***	8.852***	8.381***
	(2.86)	(2.97)	(2.74)	(3.22)	(3.21)	(3.07)
News × Neg. GDP Growth	2.277***			3.397***		
	(3.74)			(3.51)		
News × Recession		1.654***			2.480**	
		(2.62)			(2.49)	
News × Neg. Stock Market			1.564***			1.420**
			(3.34)			(2.08)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
News × Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Announcement Day FEs	Yes	Yes	Yes	Yes	Yes	Yes
Firm FEs	Yes	Yes	Yes	Yes	Yes	Yes
Observations	61,110	61,110	61,110	56,149	56,149	56,149
Adjusted R^2	0.178	0.178	0.178	0.173	0.173	0.173

Table 12 – (*Continued*)

Panel B: Alternative Denominator in News

	Dependent Variable = CAR(-1, +1) × 100					
	(1)	(2)	(3)	(4)	(5)	(6)
News Unscaled	14.869***	15.110***	14.402***			
	(4.74)	(4.82)	(4.61)			
News Unscaled × Neg. GDP Growth	3.269***					
	(4.16)					
News Unscaled × Recession		3.353***				
		(3.75)				
News Unscaled × Neg. Stock Market			2.043***			
			(3.67)			
News Alt.				0.258*	0.263**	0.235*
				(1.95)	(1.99)	(1.78)
News Alt. × Neg. GDP Growth				0.083**		
				(2.15)		
News Alt. × Recession					0.121***	
					(2.83)	
News Alt. × Neg. Stock Market						0.073***
						(2.87)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
News Unscaled × Control Variables	Yes	Yes	Yes	No	No	No
News Alt. × Control Variables	No	No	No	Yes	Yes	Yes
Announcement Day FEs	Yes	Yes	Yes	Yes	Yes	Yes
Firm FEs	Yes	Yes	Yes	Yes	Yes	Yes
Observations	62,549	62,549	62,549	39,671	39,671	39,671
Adjusted R^2	0.178	0.178	0.178	0.197	0.198	0.197

Economic Downturns and the Value of Management Earnings Forecasts

Internet Appendix

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Table A1
Stock Market Reactions to News in Management Forecasts

This table reports the results from OLS regressions relating stock market reactions to news in management EPS forecasts over the years 2002 to 2017. The results correspond to columns 4-9 in Table 5. The dependent variable *CAR(-1, +1)* is the cumulative abnormal return over the ±1 trading days around the date when a management forecast is announced. *News* is the management EPS forecast minus the consensus analyst EPS forecast at the time of the management forecast scaled by the absolute value of the consensus analyst EPS forecast. *Neg. GDP Growth* is an indicator variable that is set to one if the quarterly U.S. GDP growth rate in the quarter a management forecast is made is negative and zero otherwise. *Recession* is an indicator variable that is set to one if the date when a management forecast is made is during an NBER recession period and zero otherwise. *Neg. Stock Market* is an indicator variable that is set to one if the market-wide stock return in excess of the risk-free rate over the three months before a management forecast is announced is negative and zero otherwise. The appendix provides further definitions of variables. *t*-statistics in parentheses are calculated from heteroscedasticity-robust standard errors clustered by firm and announcement date. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable = CAR(-1, +1) × 100					
	(4)	(5)	(6)	(7)	(8)	(9)
News	4.280***	4.361***	4.173***	6.314***	6.383***	6.308***
	(17.60)	(18.12)	(15.86)	(3.98)	(4.01)	(3.95)
News × Neg. GDP Growth	1.642***			1.827***		
	(3.40)			(3.81)		
News × Recession		1.453***			1.729***	
		(2.70)			(3.42)	
News × Neg. Stock Market			1.221***			1.080***
			(3.20)			(2.90)
Ln(Market Value of Equity)	-2.263***	-2.261***	-2.260***	-2.299***	-2.296***	-2.298***
	(-16.57)	(-16.52)	(-16.53)	(-16.74)	(-16.70)	(-16.73)
Book Leverage	-0.047	-0.059	-0.049	-0.057	-0.071	-0.060
	(-0.09)	(-0.11)	(-0.09)	(-0.11)	(-0.13)	(-0.11)
Profitability	40.165***	40.076***	40.008***	40.834***	40.794***	40.691***
	(12.51)	(12.49)	(12.46)	(12.76)	(12.75)	(12.72)
Market-to-Book	-0.027**	-0.027**	-0.027**	-0.029**	-0.028**	-0.029**
	(-2.29)	(-2.29)	(-2.28)	(-2.34)	(-2.34)	(-2.34)
Earnings Surprise	0.096	0.095	0.097	0.074	0.074	0.078
	(0.88)	(0.87)	(0.88)	(0.67)	(0.67)	(0.70)
Ln(# Analysts)	0.173***	0.174***	0.176***	0.166***	0.167***	0.170***
	(3.64)	(3.66)	(3.69)	(3.53)	(3.56)	(3.60)
Institutional Ownership	-0.649*	-0.650*	-0.652*	-0.628*	-0.631*	-0.628*
	(-1.78)	(-1.78)	(-1.79)	(-1.73)	(-1.74)	(-1.73)
Stock Return	-3.428***	-3.416***	-3.440***	-3.774***	-3.759***	-3.763***
	(-5.74)	(-5.72)	(-5.76)	(-6.38)	(-6.36)	(-6.36)
Return Volatility	0.263	0.264	0.272	0.458	0.456	0.471
	(0.61)	(0.61)	(0.63)	(1.06)	(1.06)	(1.09)
Bundled	0.750***	0.748***	0.737***	0.678***	0.677***	0.672***
	(6.01)	(6.00)	(5.92)	(5.54)	(5.53)	(5.49)
Horizon	0.205*	0.210*	0.216**	0.186*	0.190*	0.199*
	(1.89)	(1.93)	(1.99)	(1.72)	(1.76)	(1.84)
Same Day Forecasts	-0.034	-0.037	-0.035	-0.060	-0.062	-0.060
	(-0.41)	(-0.44)	(-0.41)	(-0.72)	(-0.74)	(-0.73)
Range Forecast	-0.194	-0.194	-0.193	-0.072	-0.071	-0.071
	(-1.52)	(-1.52)	(-1.51)	(-0.58)	(-0.57)	(-0.57)
Forecast Width	0.675**	0.660**	0.654**	-0.036	-0.049	-0.053
	(2.56)	(2.50)	(2.48)	(-0.14)	(-0.19)	(-0.21)

Quarterly Forecasts	0.313***	0.314***	0.320***	0.390***	0.390***	0.393***
	(3.33)	(3.34)	(3.41)	(4.18)	(4.19)	(4.22)
First Forecast	0.217***	0.218***	0.217***	0.265***	0.266***	0.265***
	(2.71)	(2.71)	(2.71)	(3.33)	(3.34)	(3.33)
Inverse Mills	-0.103	-0.102	-0.101	-0.130	-0.130	-0.136
	(-0.54)	(-0.54)	(-0.53)	(-0.68)	(-0.69)	(-0.72)
Bad News Dummy	-1.991***	-1.988***	-1.981***	-1.636***	-1.632***	-1.632***
	(-25.50)	(-25.47)	(-25.44)	(-20.54)	(-20.47)	(-20.44)
News × Ln(Market Value of Equity)				-0.294*	-0.291*	-0.349**
				(-1.86)	(-1.82)	(-2.20)
News × Book Leverage				0.298	0.198	0.254
				(0.27)	(0.18)	(0.23)
News × Profitability				50.705***	51.988***	50.333***
				(8.01)	(7.96)	(7.80)
News × Market-to-Book				0.010	0.015	0.007
				(0.20)	(0.29)	(0.14)
News × Earnings Surprise				0.042	0.069	0.084
				(0.18)	(0.29)	(0.36)
News × Ln(# Analysts)				-0.407*	-0.408*	-0.368
				(-1.77)	(-1.77)	(-1.60)
News × Institutional Ownership				1.133	1.021	1.345*
				(1.48)	(1.32)	(1.75)
News × Stock Return				-2.200	-2.235	-1.678
				(-1.43)	(-1.46)	(-1.07)
News × Return Volatility				3.114***	3.073***	3.241***
				(3.24)	(3.17)	(3.33)
News × Bundled				-2.353***	-2.343***	-2.257***
				(-5.19)	(-5.18)	(-4.98)
News × Horizon				-0.386	-0.384	-0.340
				(-0.45)	(-0.45)	(-0.40)
News × Same Day Forecasts				-1.468***	-1.436***	-1.429***
				(-6.78)	(-6.43)	(-6.55)
News × Range Forecast				4.865***	4.868***	4.942***
				(8.65)	(8.62)	(8.65)
News × Forecast Width				-4.519***	-4.504***	-4.473***
				(-13.93)	(-13.73)	(-13.64)
News × Quarterly Forecasts				-0.993*	-1.045*	-1.095*
				(-1.70)	(-1.78)	(-1.87)
News × First Forecast				1.915***	1.968***	1.969***
				(4.67)	(4.83)	(4.82)
News × Inverse Mills				-1.262***	-1.313***	-1.539***
				(-2.63)	(-2.73)	(-3.25)
Announcement Day FEs	Yes	Yes	Yes	Yes	Yes	Yes
Firm FEs	Yes	Yes	Yes	Yes	Yes	Yes
Observations	62,549	62,549	62,549	62,549	62,549	62,549
Adjusted R^2	0.166	0.166	0.166	0.179	0.179	0.178

Table A2
Management and Analyst Forecast Accuracy

This table reports the results from OLS regressions examining the EPS forecast accuracy of managers and analysts over the years 2002 to 2017. The dependent variable *Management Error – Analyst Error* is the difference between the management forecast error and the analyst forecast error. The management forecast error is the absolute value of the difference between the management EPS forecast and the actual EPS at the end of the forecast period all scaled by the absolute value of the average of the management forecast and the consensus analyst forecast at the time of the management forecast. The analyst forecast error is the absolute value of the difference between the analyst consensus EPS forecast at the time of the management forecast and the actual EPS at the end of the forecast period all scaled by the absolute value of the average of the management forecast and the consensus analyst forecast. *Neg. GDP Growth* is an indicator variable that is set to one if the quarterly U.S. GDP growth rate in the quarter a management forecast is made is negative and zero otherwise. *Recession* is an indicator variable that is set to one if the date when a management forecast is made is during an NBER recession period and zero otherwise. *Neg. Stock Market* is an indicator variable that is set to one if the market-wide stock return in excess of the risk-free rate over the three months before a management forecast is announced is negative and zero otherwise. Control variables include *Ln(Market Value of Equity), Book Leverage, Profitability, Market-to-Book, Earnings Surprise, Ln(# Analysts), Institutional Ownership, Stock Return, Return Volatility, Bundled, Horizon, Same Day Forecasts, Range Forecast, Forecast Width, Quarterly Forecasts, First Forecast,* and *Bad News Dummy*. The appendix provides further definitions of variables. *t*-statistics in parentheses are calculated from heteroscedasticity-robust standard errors clustered by firm and announcement date. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable = Management Error – Analyst Error		
	(1)	(2)	(3)
Neg. GDP Growth	-0.010***		
	(-3.15)		
Recession		-0.010***	
		(-2.60)	
Neg. Stock Market			-0.004**
			(-1.98)
Inverse Mills	-0.011**	-0.011*	-0.010*
	(-1.97)	(-1.95)	(-1.79)
Control Variables	Yes	Yes	Yes
Month × Year Trend	Yes	Yes	Yes
Firm FEs	Yes	Yes	Yes
Observations	61,621	61,621	61,621
Adjusted R^2	0.155	0.155	0.155