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Abstract

Although macroeconomic news has a major impact on corporate earnings, anecdotal evidence suggests that financial analyst research is inefficient with respect to such news. Examining analysts' earnings research, we find that they underreact to negative macroeconomic news. Analysts are not all equal though, as analysts employed at the same firm as an active macroeconomist underreact much less. We find that the benefit of analyst access to an economist is concentrated in firms that are high in cyclicality relative to their industry, high in cyclicality in general, and that are smaller in size. In addition, analysts who are exposed to more accurate or award-winning in-house macroeconomists benefit more. Investors appear to recognize the advantage of access to macroeconomists, reacting more strongly to these analysts' forecast revisions. Overall, our results suggest that the presence of an active in-house macroeconomist improves the efficiency and credibility of analyst research.

Keywords: Sell-side analyst, forecast optimism, macroeconomist, GDP, price efficiency.

JEL Classification: G12, G14, G24.

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I. INTRODUCTION

Although the state of the economy has a large impact on corporate earnings, anecdotal evidence suggests that analysts' earnings forecasts are inefficient with respect to macroeconomic news, especially when economic growth declines (Goedhart, Raj, and Saxena 2010; Schwartz and Dash 2011). However, anecdotes found in the financial press typically characterize analysts as a homogeneous group, ignoring the considerable variation in resources across research firms. In reality, of course, analysts do not produce research in isolation: they leverage in-house resources in a wide variety of forms (Bradshaw 2012).

In a macroeconomic news setting, we conduct analyses to accomplish the following: (i) verify that analysts, in general, are inefficient with respect to negative news, (ii) examine if analysts improve their efficiency when they are employed at the same firm as an active macroeconomist, (iii) investigate the conditions under which economists are of greater help, and, (iv) reveal whether there is a payoff to investment firms for employing macroeconomists in terms of earnings research credibility.

In our empirical implementation, we focus on quarterly earnings forecasts issued during 1998 to 2011, and consider analysts' efficiency in incorporating gross domestic product (GDP) news. We focus on GDP, since it is the most comprehensive indicator of macroeconomic activity (e.g., Henderson, Storeygard, and Weil 2012; Konchitchki and Patatoukas 2014a), and it has a material impact on corporate earnings (e.g., Brown and Ball 1967; Gonedes 1973).

While there are several potential GDP news measures available to financial analysts, we focus on a measure based on the most recent consensus GDP growth forecast. We find that

analysts underreact to negative but not to positive economic news, consistent with anecdotal evidence, as well as findings in recent work by Hann, Ogneva, and Sapriza (2012). This result holds after controlling for a variety of analyst, broker, and firm-level variables.

Beyond documenting analysts' underreaction to negative economic news, it is important to understand what underlies such behavior. There are two common, non-mutually exclusive reasons in the literature for why analysts might underreact to bad news. First, a significant part of analyst optimism is a carryover from coverage initiation (McNichols and O'Brien 1997; Das, Guo, and Zhang 2006). That is, analysts select to cover firms that they are optimistic about in the first place, since better-performing firms are more likely to produce trading commissions, access the capital markets, and acquire other firms. Analysts then maintain this positive outlook unless presented with convincing evidence to the contrary. Second, analysts are subject to conflicts of interest. Under this rationale, an analyst might knowingly ignore bad economic news in order to curry favor with management. While good relations with management can lead to a number of economic benefits, perhaps the most common benefit examined in the literature is maintaining or winning underwriting business (e.g., Dugar and Nathan 1995; Lin and McNichols 1998; Michaely and Womack 1999; Chan, Karceski, and Lakonishok 2007).

Both explanations (analysts' coverage of firms about which they are already optimistic and conflicts of interest) potentially explain why analysts would underreact to negative but not positive macroeconomic news. The primary difference is that the former explanation entertains the possibility of good faith, i.e., analysts maintain a positive outlook unless presented with credible counterevidence. In our setting, we argue that the presence of an active in-house macroeconomist can serve as a credible information source, especially relevant during economic downturns.

The key to such a benefit rests with the interaction between analysts and in-house macroeconomists, which can happen in a number of ways.[1] First, in-house macroeconomists revise their research outlooks quite frequently, often on a daily basis, making timely economic updates available to analysts. Second, macroeconomists are able to add detail and nuance to GDP forecasts, helping analysts to discern the effects on specific industries and companies. Third, in-house macroeconomists are available for follow-up questions, and can provide additional context through morning conference calls, internal reports, and meetings. Fourth, economists often provide seminars and even teach courses in-house on understanding macroeconomic variables and forecasting.

Finally, beyond mere macroeconomic expertise, economists provide an objectivity benefit. That is, analysts are highly dependent on management for much of their information (Brown, Call, Clement, and Sharp 2015). This interdependency can often result in analysts taking on managers' optimistic mindsets. Economists, on the other hand, function at the aggregate level, and therefore do not have the same close relationship with managers. Consequently, not only do the economists have macroeconomic expertise, but they are likely to be more objective concerning how economic news affects specific companies.

Our primary result is that analysts are more efficient in incorporating negative macroeconomic news when they are employed at the same firm as an active macroeconomist.

[1] Our insights on analyst and macroeconomist interaction are based on discussions with macroeconomists, analysts, and Bloomberg representatives. One former analyst told us that she maintained a spreadsheet with GDP and other macro-level estimates linked to individual spreadsheets for each followed company. When the in-house macroeconomist updated his forecasts, she updated her central 'macro' spreadsheet which in turn flowed through to the individual company spreadsheets. As a benefit of having an in-house macroeconomist, she could ask follow-up questions to better understand the GDP estimates, allowing greater insight as to effects on followed companies and industries.

In particular, analysts with access to an economist are able to incorporate roughly 15% more negative macroeconomic news into their earnings forecasts. In contrast, we do not find evidence of inefficiency due to underwriting conflicts. Thus, lack of exposure to macroeconomic expertise rather than a response to underwriting incentives appears to be the stronger determinant of analyst optimism in an adverse economic environment.

We undertake a number of sensitivity analyses that provide additional insights and address potential endogeneity concerns. First, we show that our result is not due to firm or time effects by revealing similar results based on a firm-quarter relative measure of forecast error. Second, we demonstrate that the result is not sensitive to selective GDP forecast submission to Bloomberg by showing a comparable effect when only consistent GDP forecasters are included in the sample. Third, we conduct a placebo test which reveals that macroeconomists do not mitigate analyst inefficiency with respect to past accruals (e.g., Bradshaw, Richardson, and Sloan 2001). Fourth, we use two natural experiments to exploit changes in the availability of active macroeconomists to analysts to corroborate our results. Fifth, we show that firms with macroeconomists that were active in the past but not active currently do not mitigate analyst inefficiency, suggesting that exposure to *timely* economic expertise is a critical factor. Finally, we show that these effects are incremental to both broker resource main effects and interactions. In all instances, we achieve results consistent with our baseline results and in some instances stronger.

In additional analysis, we explore the cross-sectional variation in our result. Such variation is important to examine, since it is plausible that access to economists will provide a greater benefit in some scenarios than in others. In firm-specific partitions, we show that the benefit of economists is concentrated in firms that are high in cyclicality in general, high in cyclicality

relative to their industry, and smaller in size. Examining variation in active economists, we reveal that access to more accurate and award-winning macroeconomists results in greater analyst forecast efficiency.

Finally, although an in-house macroeconomist improves analyst research efficiency, it is not clear whether this increased efficiency translates to direct payoffs for the investment firms in terms of research credibility. Using several sample variations to address confounding events, we find that the market reacts about 13% more strongly to forecast revisions made by analysts linked to an active in-house macroeconomist.

Our findings make several contributions to the literature. First, in contrast to recent papers examining analyst inefficiency with respect to macroeconomic news (e.g., Basu, Markov, and Shivakumar 2010; Hann et al. 2012), we examine an important, potential mitigating factor—exposure to timely economic expertise. Given that analysts' forecasts are widely viewed as important benchmarks for firms' earnings performance (Kothari 2001), our findings suggest the possibility of locating a subset of analysts who are relatively more efficient, especially during economic downturns.

Second, we add to recent work at the intersection of accounting and macroeconomics (e.g., Konchitchki 2011; Gallo, Hann, and Li 2013; Patatoukas 2014; Konchitchki and Patatoukas 2014a, 2014b; Li, Richardson, and Tuna 2014). Although anecdotal evidence portrays analysts as inefficiently responding to changing economic conditions—particularly downturns, little formal evidence of this phenomenon exists. Using over 300,000 observations during the 1998 to 2011 time period, we find that analysts underreact to negative GDP news. We overlap with Hann et al. (2012) and, to some extent, earlier work by Ackert and Hunter (1995) on this

baseline result; however, we depart significantly with our main focus, examining the role of in-house macroeconomists in improving analyst earnings research.

Third, we demonstrate that employing an active in-house macroeconomist leads to greater forecast efficiency, but it is not clear how investment firms benefit from this result per se. We shed light on one such benefit, providing evidence that employing an active in-house macroeconomist is also associated with greater earnings research credibility. Research credibility enhances an investment firm's reputation and ability to provide research support to its clients, both of which are important determinants of their financial performance.

We organize the rest of the paper as follows. Section 2 describes the data and key variables, and reports descriptive statistics. Section 3 presents the main empirical results, and Section 4 concludes.

II. DATA SOURCES, SAMPLE SELECTION, AND KEY VARIABLES

Data Sources

Analyst earnings forecast data are obtained from the Thomson Reuters' Institutional Brokers' Estimate System (I/B/E/S) US Detail file for the 1998 to 2011 period. Financial statement data are obtained from the Compustat quarterly database, and stock return data are obtained from the Center for Research on Security Prices (CRSP) daily stock return files. Information regarding the timing and underwriter of equity offering is obtained from Thomson Reuters' Security Data Company (SDC) Platinum database.

Bloomberg Data

Real GDP growth forecasts are obtained from the Bloomberg macroeconomic survey. To gain insight into this data source, we contacted economists who have participated in the

Bloomberg survey, as well as representatives from Bloomberg.[2] Participants in the Bloomberg survey normally have advanced degrees in economics and are employed at investment banks, security firms, and universities. In earlier years, roughly 40 to 70 economists submitted GDP forecasts each month; in recent years, between 70 and 80 economists submit GDP forecasts each month. Economists are included in the Bloomberg survey either by invitation or by asking to participate. In the latter case, Bloomberg screens them to ensure they are from a credible investment firm or university. Although the economists are not paid directly for their forecasts, Bloomberg compensates them indirectly by providing them access to past survey data and name recognition for being associated with the survey.

Sample Selection

Table 1 shows the sample selection procedure. While the Bloomberg macroeconomic survey data has become available since 1997, our sample period begins in 1998 as we require prior period data to measure macroeconomic news. We focus on analysts' initial one-quarter-ahead quarterly earnings forecasts occurring after the release of the prior quarter's earnings announcement.[3] Since the GDP forecasts used in our study are on a calendar-quarter basis, we retain firms reporting on a calendar-quarter basis (i.e., fiscal year-ends in March, June,

[2] There are alternative economic forecast data sources, namely the Survey of Professional Forecasters (SPF) conducted by Philadelphia Fed, and the Blue Chip Economic Indicators by Aspen Publishers. We consider the Bloomberg survey to be the most appropriate in our setting for the following reasons: (i) relative to SPF, Bloomberg is more timely (i.e., monthly versus quarterly for SPF), and provides the name and affiliation of each forecaster, and (ii) relative to Blue Chip, Bloomberg has more participants overall, and more participants associated with I/B/E/S brokers.

[3] Using analyst forecasts issued after prior earnings announcements not only ensures that the financial information and forecast error from last quarter are known but also alleviates the impact of stale forecasts.

September, or December) to synchronize GDP and analysts' earnings forecasts. In addition, we require that the first macroeconomic survey for the quarter is available to ensure that analysts have access to the current macroeconomic forecasts.

[Insert Table 1 about here]

Key Variables

Primary Dependent Variable

The dependent variable in our main analyses is the signed analyst forecast error, FE, defined as actual EPS minus the analyst earnings forecast, scaled by the price at the beginning of the quarter. Accordingly, a negative analyst forecast error indicates analyst optimism, whereas a positive analyst forecast error indicates analyst pessimism.

Macroeconomic News Variable

As a macroeconomic news proxy, we use the current quarter news, $NEWS_t$, defined as the consensus real GDP growth forecast for quarter t minus the actual real GDP growth for quarter t-4. In untabulated tests, we evaluate several alternative news measures that are within analysts' feasible information set, including those based on both prior GDP growth realizations and forward-looking consensus GDP forecasts. Overall, we find that our contemporaneous news measure, $NEWS_t$, has the strongest association with current earnings, and, more importantly, that it is the only news measure that is associated with analyst forecast errors.

Macroeconomist Variables

We are interested in whether or not access to an active in-house macroeconomist can improve analyst efficiency with respect to macroeconomic news. We measure the economist variable, MACRO, with an indicator set to 1 if the in-house economist's GDP forecast is included in the most recent Bloomberg macroeconomic survey, and 0 otherwise.

Within the set of active economists, we proxy for the quality of their expertise with both their GDP forecast accuracy and *Institutional Investor* award status. Specifically, we measure GDP forecast accuracy, MACRO_ACCURACY, by the economist's absolute GDP forecast error in the most recent survey, scaled by the absolute median consensus GDP forecast error, and then multiplied by (-1), so that a higher value of the variable means greater accuracy. As accuracy is not the only determinant of high quality economic research (Lamont 1995), we also measure the quality of research with the economist's award status during the year, MACRO_AWARD, which is an indicator variable set to 1 if the economist is ranked in the top three or as a runner-up by the *Institutional Investor* magazine, and 0 otherwise.[4]

Equity Underwriting Variables

An additional set of variables is related to analysts' equity underwriting incentives. The indicator variable EQ_AFFIL represents the existing underwriter-client relationship, which is set to 1 if an investment firm acts as the lead manager or co-manager of the firm's equity underwriting team in the year prior to its analyst's earnings forecast for the firm, and 0 otherwise (Lin and McNichols 1998). The indicator variable EQ_OPPORT represents a potential future equity underwriting opportunity and is set to 1 if a firm announces an equity offering in the year following an analyst's earnings forecast for the firm, and 0 otherwise (Feng and McVay 2010).

[4] *Institutional Investor* announces the economist awards along with the other awards in the October issue each year. In our setting, we wish to proxy for better quality research underlying the award; therefore, we set MACRO_AWARD = 1 for the year leading up to the economist's award. For example, if economist i receives the award in the October 2001 issue, we set MACRO_AWARD = 1 for the period Nov. 2000 - Oct. 2001. The MACRO_AWARD indicator is set to 1 in the same fashion for other years in which she/he were a winner, and set to 0 for any non-winning years.

Descriptive Statistics

Table 2 presents descriptive statistics for the variables used in our study. In Panel A, focusing on the key variables in our study, we find that the mean price-deflated analyst forecast error (FE) is optimistic for both bad and good news samples. We report that 27.9% (30.1%) of earnings forecasts in the negative (positive) macroeconomic news sample are supplied by analysts who have access to in-house macroeconomist's research, 3.8% (4.4%) of earnings forecasts are supplied by analysts with existing equity underwriter-client relationship, and 6.4% (5.3%) of earnings forecasts are issued by analysts in the year prior to a firm's SEO announcement.

In Panel B, the number of observations available for the short-window market response tests is reduced due to the calculation of price-deflated analyst forecast revisions, REV, which require a benchmark earnings expectation (i.e., consensus analyst forecast within [-30,-2]). The mean and median revisions are depressed due to the price-deflation; however, in untabulated tests, we find that the mean REV is significantly different from zero for both bad and good news samples, and the mean REV is significantly less for the bad news sample than for the good news sample. The mean (median) market capitalization for our sample is approximately $11 ($3) billion. Since the distribution of firm size is skewed, we use the natural logarithm of firm size to control for firm size in our short-window market reaction tests.

[Insert Table 2 about here]

III. EMPIRICAL RESULTS

In this section, we present our main empirical results. First, we examine the link between observable GDP news and firm earnings. Next, we examine analyst efficiency with respect to macroeconomic news, and whether the availability of in-house macroeconomists' research is

associated with analyst forecast efficiency. We then examine firm and economist-specific factors that influence the economic impact of an in-house macroeconomist. Last, we investigate whether there is evidence of an economic payoff to an investment firm's economic sophistication in terms of research credibility.

Link between Observable GDP News and Firm Earnings

Implicit in this study's motivation is the existence of a meaningful link between observable GDP news and firm earnings. Thus, before presenting our main results, we verify the association between GDP news and corporate earnings.

Table 3 presents R^2 descriptives from estimating firm-specific OLS regressions of earnings changes on GDP news for sample firms during the 1998 to 2011 period. Earnings changes are seasonally adjusted changes in earnings, calculated as income before extraordinary items for quarter t minus income before extraordinary items for quarter t-4, scaled by average total assets for quarter t. Current quarter observable GDP news, $NEWS_t$, is defined as the most recent consensus real GDP growth forecast for quarter t minus the actual real GDP growth for quarter t-4. Industries are based on the Fama-French 12 industry classification.

We find the mean of individual firm R^2s to be 0.114 and 0.201 in the negative and positive GDP news samples, respectively. Examining the heterogeneity across industries, we find that the weakest association across samples is Utilities (mean R^2s of 0.064 and 0.119 in the negative and positive news samples, respectively), while the strongest is Consumer Durables (mean R^2s of 0.164 and 0.303 in the negative and positive news samples, respectively). These findings support our assumption that observable GDP news is consistently associated with quarterly

firm earnings across industries. The findings also highlight the inter-industry variation in cyclicality.

[Insert Table 3 about here]

Analyst Efficiency with Respect to Macroeconomic News

Model Specification

We examine analyst efficiency with respect to macroeconomic news by regressing the forecast error, FE, on the macroeconomic news variable, NEWS, and control variables. To ensure that the inferences derived from the empirical tests are not specific to our definition of current quarter macroeconomic news, we also evaluate the following two measures: (i) the most recent consensus real GDP growth forecast for the quarter minus the final consensus real GDP growth forecast for the same quarter last year (i.e., $FGDP_t$ - $FGDP_{t-4}$), and (ii) the actual real GDP growth for the quarter minus the actual real GDP growth for the same quarter last year (i.e., GDP_t - GDP_{t-4}), respectively.

There are three classes of controls that are relevant to our setting. First, there are analyst-specific variables that are known to be associated with forecast error, including forecast horizon, HORIZON, forecast frequency, FREQ, the number of industries covered, NIND, number of firms covered, NFIRM, firm-specific experience, FEXP, and the analyst's prior forecast error, LAG_FE (e.g., Mikhail, Walther, and Willis 1997; Clement 1999; Jacob, Lys, and Neale 1999).

Second, investment firm resources have been shown to affect the quality of analyst research. To capture those effects, we use investment firm size, BSIZE, a categorical measure of investment firm size, TOP_BROKER, and the magnitude of underwriting activity, UW_RANK. Finally, our controls for firm-specific variables likely to affect the forecast error include total accruals, LAG_TACC, prior abnormal buy-and-hold returns, PRIOR_BHR, and

earnings sensitivity to macroeconomic news, CYCLICALITY (e.g., Bradshaw et al. 2001; Mikhail, Walther, and Willis 2003; Hutton, Lee, and Shu 2012).

Based on the preceding discussion, we specify the following OLS regression model, where indexes for analyst, firm, and quarter are omitted for brevity:

$$\begin{aligned} FE = {} & \alpha_0 + \alpha_1 \cdot NEWS + \text{Analyst Controls} + \text{Broker Controls} + \text{Firm Controls} \\ & + \text{Industry Effects} + \text{Year Effects} + \varepsilon_1 \end{aligned} \quad (1)$$

The variables in this model are defined as follows.

FE	Forecast error, calculated as firm j's actual EPS for quarter t minus analyst i's earnings forecast for firm j in quarter t, scaled by the stock price at the beginning of quarter t.
NEWS	Macroeconomic news, defined as the most recent median consensus real GDP growth forecast for quarter t available at the time of analyst i's earnings forecast for firm j in quarter t, minus the actual real GDP growth for quarter t-4.

Analyst-specific controls:

HORIZON	Forecast horizon, defined as the natural logarithm of the days between analyst i's earnings forecast for firm j in quarter t and firm j's earnings announcement for quarter t.
FREQ	Forecast frequency, defined as the number of earnings forecasts issued by analyst i for firm j in quarter t.
NIND	Number of Fama-French 48 industries that analyst i follows in quarter t.
NFIRM	Number of firms that analyst i follows in quarter t.
FEXP	Firm-specific experience, defined as the number of quarters that analyst i has issued at least one earnings forecast for firm j prior to quarter t.
LAG_FE	Lagged analyst forecast error, calculated as firm j's actual EPS for quarter t-1 minus analyst i's last earnings forecast for firm j in quarter t-1, scaled by the stock price at the beginning of quarter t-1.

Broker-specific controls:

BSIZE	Investment firm size, calculated as the natural logarithm of the number of unique analysts employed by analyst i's investment firm in quarter t.
TOP_BROKER	An indicator that is set to 1 if analyst i's investment firm size is within top 10% in a given calendar year, and 0 otherwise.
UW_RANK	Investment firm's underwriting rank, measured by the percentile rank of total equity underwriting dollar amounts of analyst i's investment firm in the year prior to analyst i's earnings forecast for firm j in quarter t.

Firm-specific controls:

LAG_TACC	Lagged total accruals, calculated as firm j's income before extraordinary items minus total cash flow from operations in quarter t-1, scaled by average total assets of quarter t-1.
PRIOR_BHR	Prior abnormal buy-and-hold return, defined as the size-adjusted abnormal buy-and-hold return for firm j within [-90,-2] of analyst i's earnings forecast for firm j in quarter t.
CYCLICALITY	Earnings sensitivity to GDP news, measured as the R^2 from the regression of the firm's seasonal change in quarterly earnings on the corresponding quarterly GDP news over the sample period.
Industry Effects	Industry indicator variables based on the Fama-French 48 industry group classification.
Year Effects	Year indicator variables.
ε_1	Error term.

Based on our definition of analyst forecast error, FE, a negative (positive) FE indicates analyst optimism (pessimism). Since the macroeconomic news variable is signed, a *negative* coefficient estimate on NEWS, α_1, indicates analyst overreaction to macroeconomic news, either negative or positive. By contrast, a *positive* coefficient estimate on NEWS, α_1, indicates analyst underreaction to macroeconomic news, either negative or positive. For example, both analyst underreaction to negative news (i.e., positive α_1 times negative NEWS) and

overreaction to positive news (i.e., negative α_1 times positive NEWS) would increase analyst optimism (i.e., result in a more negative forecast error). The following table summarizes signs and interpretations of coefficient estimates on the macroeconomic news variable.

Potential coefficient estimates on NEWS, α_1, and interpretation of estimates:		
Analyst response:	Negative macro news:	Positive macro news:
Underreact to news	$\alpha_1 > 0$ (i.e., analysts are too optimistic)	$\alpha_1 > 0$ (i.e., analysts are too pessimistic)
Overreact to news	$\alpha_1 < 0$ (i.e., analysts are too pessimistic)	$\alpha_1 < 0$ (i.e., analysts are too optimistic)

Both anecdotal evidence (Goedhart et al. 2010; Schwartz and Dash 2011) and empirical evidence (Hong and Stein 1999; Hong, Lim, and Stein 2000) suggest that analysts, on average, do not fully incorporate bad news into their earnings forecasts. Therefore, we expect analysts to underreact to negative macroeconomic news, resulting in forecasts that are too optimistic (i.e., $\alpha_1 > 0$ for the negative news sample).

Multivariate Results

Table 4 reports the results of OLS regressions of Eq. (1). For all regressions in this study, continuous variables are winsorized at the top and bottom 1%, and the t-statistics reported in parentheses are clustered by firm and quarter to address cross-sectional and time-series dependence (Gow, Ormazabal, and Taylor 2010).[5] We find that the coefficient estimate on NEWS is positive and significant across the negative news samples and is not significantly

[5] For the market reaction tests, standard errors are clustered by firm and day; the statistical significance is stronger when clustered by firm and quarter. We also evaluate the results with clustering by analyst and quarter; the results across all tables remain statistically significant at the $p < 10\%$ level or better.

different from zero in the positive news samples, regardless of the NEWS measure used. These estimates suggest that individual analysts underreact to negative macroeconomic news but fully incorporate positive macroeconomic news.[6] In economic terms, a one standard deviation increase in negative GDP news results in an expected $0.04 increase in forecast error, which is approximately 15% of the median firm EPS of $0.27 in the corresponding negative GDP news sample.[7]

[Insert Table 4 about here]

Based on these results, in untabulated analyses, we examine the question of whether analysts' forecast *revisions* are related to GDP news. We note that for the positive news sample, it is likely to be true given the absence of an association between the news variable and the forecast error. However, the negative news sample result is an empirical question. When we regress analyst forecast revisions, (defined as the forecast for quarter t minus the actual earnings for quarter t-4 and then scaled by price), on negative and positive economic news and control variables per Table 4, we observe positive and significant coefficient estimates on the NEWS variable in both the negative and positive samples. Thus, the results indicate that while analyst

[6] To ensure that the relation between FE and NEWS is not influenced by any bias in the macro-consensus forecast (from which the NEWS variable is constructed), we take two measures. First, we replace the forecast with the GDP realization in Columns 5 and 6, showing similar results. Second, we modify Eq. (1) to include the unsigned macro-consensus forecast error, GDP_FE, and interact this variable with NEWS. The coefficient estimate on NEWS * GDP_FE is not significant in any of our specifications, indicating that the relation between FE and NEWS is not influenced by the macro-consensus forecast error.

[7] A one standard deviation increase in bad NEWS (2.02%) * coefficient estimate from Table 4 (0.0731) = 0.15% increase in the price-deflated forecast error. Based on the median beginning price in the bad news sample ($24.4), the increase in forecast error is approximately $24.4 * 0.15% = $0.04.

revisions are related to both negative and positive news, their forecast revisions are incomplete with respect to negative news.

Given that individual analysts are inefficient only with respect to negative macroeconomic news, we focus our subsequent analyses and discussions on the negative news sample. In addition, for brevity, we include but do not tabulate the results of the analyst, broker, and firm controls in the subsequent analyses.

In-House Macroeconomists and Analyst Forecast Efficiency

Model Specification

After observing analysts' underreaction to negative macroeconomic news, we turn our attention to what causes the inefficiency. One reason for analyst research optimism is that analysts normally initiate coverage with optimistic research (McNichols and O'Brien 1997; Das et al. 2006), and, without convincing evidence to the contrary, analysts persist in this positive outlook. With respect to bad economic news, we use an active in-house macroeconomist as a potential source of "evidence to the contrary." A second reason put forth for analyst optimism is conflicts of interest related to underwriting incentives (e.g., Dugar and Nathan 1995; Lin and McNichols 1998; Michaely and Womack 1999). To investigate these non-mutually exclusive explanations, we specify the following OLS regression model:

$$\begin{aligned} FE = {} & \beta_0 + \beta_1 \cdot NEWS + \beta_2 \cdot MACRO + \beta_3 \cdot MACRO * NEWS + \beta_4 \cdot EQ\_AFFIL \\ & + \beta_5 \cdot EQ\_AFFIL * NEWS + \beta_6 \cdot EQ\_OPPORT \\ & + \beta_7 \cdot EQ\_OPPORT * NEWS + Analyst\ Controls + Broker\ Controls \\ & + Firm\ Controls + Industry\ Effects + Year\ Effects + \varepsilon_2 \end{aligned} \quad (2)$$

The variables not previously defined are as follows.

MACRO	Availability of an active in-house macroeconomist, an indicator variable that is set to 1 if the real GDP growth forecast for quarter t, made by the economist employed by analyst i's investment firm, is included in the Bloomberg survey most recent to analyst i's earnings forecast for firm j in quarter t, and 0 otherwise.
EQ_AFFIL	Equity underwriter-client relationship, an indicator variable that is set to 1 if analyst i is employed by the investment firm that acted as the lead manager or co-manager of firm j's equity underwriting team in the year prior to analyst i's earnings forecast for firm j in quarter t, and 0 otherwise.
EQ_OPPORT	Equity underwriting opportunity, an indicator variable that is set to 1 if firm j announces an equity offering in the year following analyst i's earnings forecast for firm j in quarter t, and 0 otherwise.
ε_2	Error term.

If analyst inefficiency with respect to negative macroeconomic news can be at least partly attributed to the lack of access to an active in-house macroeconomist, we expect the estimate of β_3 to be negative, indicating that analysts with access underreact less to negative macroeconomic news. Similarly, if part of analyst inefficiency with respect to negative macroeconomic news stems from their equity underwriting incentives, we expect the estimates of either or both β_5 and β_7 to be positive, meaning that analysts underreact more to negative macroeconomic news in the presence of such economic incentives.

Multivariate Results

In Panel A of Table 5, we provide some descriptives on research firms that employ an active macroeconomist versus those that do not. Although most differences are statistically significant, only a few appear economically meaningful. In particular, analysts at firms with access to a macroeconomist tend to forecast more frequently, cover more firms, and have

greater firm-specific forecasting experience. In addition, research firms with active macroeconomists are significantly larger, emphasizing the need to evaluate broker resources as an alternative explanation.

Panel B of Table 5 reports the results based on Eq. (2). Focusing on the full sample in column 1, we find a significant estimate on the macroeconomic news variable, NEWS (β_1 = 0.0772, $p < 0.01$). Germane to our conjecture, we find the estimate on MACRO * NEWS to be negative and significant (β_3 = -0.0117, $p < 0.05$). This evidence suggests that analysts underreact less to negative macroeconomic news in the presence of an active in-house macroeconomist. Specifically, when analysts have access to an in-house macroeconomist, on average, they incorporate approximately 15% (= 0.0117 ÷ 0.0772) more negative macroeconomic news into their earnings forecasts.

Regarding analysts' equity underwriting incentives, we find no evidence that analysts' underreaction to negative macroeconomic news is driven by existing, EQ_AFFIL, or future equity underwriting opportunities, EQ_OPPORT.

Sensitivity Results

Within Table 5, Panel B, we address the following potential concerns with our results: (i) firm-quarter effects on the forecast error (column 2), (ii) selectively submitted GDP forecasts (column 3), and (iii) broker resources as alternative explanations (columns 4 - 8).

In column 2, we provide an alternative approach commonly used in the literature to control for firm-quarter effects when evaluating analyst forecasting performance (e.g., Clement 1999; Jacob et al. 1999; Lim 2001; Clement and Tse 2003). This method calculates each analyst's firm-quarter dependent and independent variables relative to that of all analysts forecasting for the same firm-quarter. For example, the relative version of the dependent variable FE is equal

to analyst i's forecast error for firm j in quarter t minus the mean FE for all analysts following firm j in quarter t. The analyst and broker independent variables are calculated in the same fashion, and, of course, the firm, industry, and time effects drop out of this model specification. Results based on this relative forecast error measure are consistent with those based on the signed absolute forecast error variable.

In column 3, we evaluate the possible influence of selectively submitted forecasts. Due to the nature of the Bloomberg data, it is possible that in-house macroeconomists may submit their GDP forecasts to Bloomberg only at certain times, e.g., when they are more confident in their forecast accuracy. As a result, our MACRO measure may simply capture quarters for which there are better GDP forecasts, rather than active macroeconomists *in general*. To address this issue, we conduct a test aimed at excluding macroeconomists who may 'jump in and out' of the survey. In particular, we restrict the sample to economists who submit to Bloomberg consistently, defined as those who submit forecasts in each of the four consecutive quarters preceding the same-firm's analyst earnings forecast.[8] The results provide two insights. First, the sample size does not drop very much, indicating that forecast submission to Bloomberg is fairly stable. Second, as a result of the first point, these findings are very similar in economic magnitude and significance to those based on the full sample.

In columns 4 - 8, we conduct several tests to evaluate broker resources as an alternative explanation. If the MACRO variable captures greater broker resources or expertise in general and not macroeconomic expertise in particular, then this variable may reduce the forecast error

[8] In an untabulated analysis, we find similar results if we also define consistent economists as those who submit forecasts in the 12 consecutive months preceding the same-firm's analyst earnings forecast.

for other inefficiencies as well. One candidate for a placebo test is the lagged total accruals since prior research has shown analyst inefficiency with respect to accruals (Bradshaw et al. 2001). In this setting, macroeconomic expertise is not likely to be helpful in understanding past firm-specific accruals, whereas general expertise may be helpful.[9] Consistent with prior literature, column 4 reveals that analysts are inefficient with respect to past accruals (here, LAG_TACC is multiplied by -1, to render an interpretation consistent with the negative NEWS variable); however, the presence of an active macroeconomist does not mitigate this inefficiency.

In columns 5 and 6, we use two natural experiments to examine the effect of changes in analysts and changes in active economists at banks. In column 5, we identify when an analyst moves from an investment firm without an active macroeconomist to a firm with an active in-house macroeconomist (here, a change to macroeconomist availability), as well as the opposite scenario, when an analyst moves from a firm with an active in-house macroeconomist to a firm without an active macroeconomist (here, a change away from macroeconomist availability). We then compare the earnings forecasts issued by the same analyst for the same set of firms one year before and one year after the year of the change. The slope estimate on the NEWS term captures analysts *without* macroeconomist availability, and the incremental slope on the MACRO * NEWS interaction represents the additional effect of the same analysts *with* macroeconomist availability. We find that the same analysts underreact to negative macroeconomic news when they are without macroeconomist availability, and that their

[9] Of course, certain anomalies may continue to prevail despite a high level of broker resources and expertise; therefore, the results of this test should be interpreted cautiously and not be taken as conclusive evidence against the resources alternative explanation.

forecast efficiency improves significantly when they have access to an active in-house macroeconomist. Since this change in analyst forecast efficiency occurs around analyst turnover within a relatively short window, the improved forecast efficiency is unlikely to reflect unmodeled analyst characteristics.

In column 6, we address a similar concern related to unmodeled broker-specific variables. We identify when an investment firm changes from not having an active in-house macroeconomist to having one, as well as the opposite scenario, when the firm changes from having an active in-house macroeconomist to not having one. We then compare the earnings forecasts issued by analysts forecasting for the same firms one year before and one year after the year of change in availability. We find that analysts underreact to negative macroeconomic news when their investment firm does not have an active in-house macroeconomist, and that their forecast efficiency improves significantly when the investment firm has an active macroeconomist. Overall, the results from these two experiments indicate that the results are unlikely to reflect the presence of either unmodeled analyst or broker variables.

In column 7, we examine the effect of "inactive" macroeconomists. In particular, brokers with inactive economists have the resources to employ macroeconomists; however, these economists are less likely to be up to speed on current GDP. We modify the specification to include an INACTIVE indicator and an INACTIVE * NEWS interaction. In this specification, INACTIVE is defined as a macroeconomist who did not issue a GDP forecast for quarter t, but did issue a GDP forecast for at least one quarter prior to quarter t. As can be seen, the inactive macroeconomists do not improve the analysts' forecast errors.[10] Based on our conversations

[10] We also implement a more restrictive definition of inactive macroeconomists whereby we include only analysts' forecast observations that fall in between economist i's first and last GDP forecast at broker j. The objective of

with economists and analysts, we believe that, since these economists are not forecasting GDP currently, they are unable to aid analysts to the same degree that the more active economists can.

Finally, in column 8, we provide interactions with broker resource variables. Although the main effects of broker resource variables are included in all models, we include both the main effects (suppressed), as well as the interactions between resources and the NEWS variable. The result on the interaction of interest, MACRO * NEWS, remains significant, and even becomes slightly stronger in terms of the parameter estimate magnitude and significance.

In sum, our findings in Table 5 suggest that analysts' underreaction to negative macroeconomic news is due, at least in part, to their lack of access to macroeconomic expertise, and that broker resources in general are not likely to be an alternative explanation.

[Insert Table 5 about here]

Cross-Sectional Factors Affecting the Benefit of Access to a Macroeconomist

Model Specification

Thus far, we find that the availability of an active in-house macroeconomist is positively associated with analyst forecast efficiency in the negative macroeconomic news environment. However, it is not likely that macroeconomists provide the same benefit in all circumstances. In this section, we examine the effects of cyclicality and firm size on the benefit provided by the economists.

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this constraint is to capture the economists who we are reasonably certain remain at the broker but do not have a current quarter GDP forecast. This more restrictive definition provides results that are inferentially similar.

While economists should have greater potential to help analysts following more cyclical firms (Hann et al. 2012), the relationship with firm size is less certain. On one hand, larger firms' earnings may be tied to a greater extent to the macroeconomy, providing a larger potential benefit of access to a macroeconomist. On the other hand, firm size may also capture broker revenue incentives (Hann et al. 2012). If true, then analysts may resist the advice of economists for firms that are larger in a negative news environment. In addition, forecast errors may simply be smaller for larger firms due to their richer information environments (e.g., Lim 2001; Zhang 2008), creating less potential for improvement via the economist's input.

We proxy for cyclicality, CYCLICALITY, with the R^2 from the regression of the firm's seasonal change in quarterly earnings on the corresponding quarterly GDP news over the sample period. In addition to comparing cyclicality among all firms, we also make this comparison within-industry, where each firm is ranked based on CYCLICALITY within its relevant Fama-French 12 industry category. Finally, we measure firm size, SIZE, as previously defined. To simplify the interpretation, we partition samples across the three cross-sectional variables of interest into high and low samples based on median splits.

Multivariate Results

Table 6 reports the results based on the sample partitions. We find the estimate on MACRO * NEWS to be negative and significant only in the top half of each partition based on general cyclicality and within-industry cyclicality.[11] We also find the estimate to be negative

[11] To examine if these results are sensitive to our measure of cyclicality, we create the following two alternative measures: (i) 'GDP-sales beta' which is the slope coefficient from a firm-specific time-series regression of quarterly firm-specific sales growth on quarterly growth in GDP (Jones and Tuzel 2013), and (ii) 'GDP-earnings beta' where the only difference is that we use firm-specific earnings growth in place of sales growth. Untabulated results reveal that both of these measures yield inferences similar to those of the original measure.

and significant only for the bottom half of the firm size partition. This evidence suggests that the benefit of economists is concentrated in firms that are high in cyclicality in general, high in cyclicality relative to their industry, and firms that are smaller in size.

[Insert Table 6 about here]

Examining Variation in Macroeconomist Expertise

Model Specification

It is not likely that all active macroeconomists provide the same benefit to analysts. Specifically, we posit that analyst exposure to higher-quality macroeconomists may result in greater improvement to forecast efficiency.

We proxy for macroeconomists' expertise by their GDP forecast accuracy, as well as their All-American Research Team award status. Regarding award status, each year, the *Institutional Investor* magazine polls institutional investors to determine the top Wall Street macroeconomists. Anecdotally, regarding Ed Hyman, an award-winning economist at ISI Group, buy-side clients remarked that they value his industry surveys of staffing companies and manufacturers which provide "a timely read on business sentiments" (Institutional Investor 2011). Assuming such economic insights are also impactful internally, award-winning macroeconomists should lead to incremental improvements in their analysts' forecast efficiency.

In these tests, we evaluate variation within the set of active macroeconomists (all MACRO variables = 1), and replace MACRO in Eq. (2) with the economist-specific variables, and their interactions with NEWS. Retaining all control variables from the prior models leads to the following specification.

$$
\begin{aligned}
FE = {} & \gamma_0 + \gamma_1 \cdot NEWS + \gamma_2 \cdot MACRO\_ACCURACY \\
& + \gamma_3 \cdot MACRO\_ACCURACY * NEWS + \gamma_4 \cdot MACRO\_AWARD \\
& + \gamma_5 \cdot MACRO\_AWARD * NEWS + \gamma_6 \cdot EQ\_AFFIL \\
& + \gamma_7 \cdot EQ\_AFFIL * NEWS + \gamma_8 \cdot EQ\_OPPORT \\
& + \gamma_9 \cdot EQ\_OPPORT * NEWS + Analyst\ Controls + Broker\ Controls \\
& + Firm\ Controls + Industry\ Effects + Year\ Effects + \varepsilon_3
\end{aligned}
\tag{3}
$$

The variables not previously defined are as follows.

MACRO_ ACCURACY	In-house macroeconomist's forecast accuracy, calculated as the economist's absolute GDP forecast error in the most recent research, scaled by the absolute median consensus GDP forecast error, and then multiplied by (-1).
MACRO_ AWARD	In-house macroeconomist's All-American Research Team award status, an indicator variable that is set to 1 if the economist employed by analyst i's investment firm is ranked in the top three or as a runner-up by *Institutional Investor* during the year, and 0 otherwise.
ε_3	Error term.

Regarding economist-specific variables, we expect analysts' efficiency in incorporating negative macroeconomic news to be positively associated with both the accuracy and the award status of their in-house macroeconomists. Specifically, we expect the γ_3 and γ_5 estimates to be negative for the interactions of these two economist-specific variables with NEWS.

Multivariate Results

Table 7 reports the results based on Eq. (3). Focusing on the full model in column 3, we find a negative and significant coefficient estimate on the MACRO_ACCURACY interaction (γ_3 = -0.0086, $p < 0.05$), and a negative and significant estimate on the MACRO_AWARD interaction (γ_5 = -0.0190, $p < 0.01$), respectively suggesting that more accurate and higher-quality in-house macroeconomists improve analyst efficiency to a greater extent. Specifically, a one standard deviation increase in MACRO_ACCURACY in negative macroeconomic news quarters is associated with a 16% increase in analyst efficiency with respect to negative

macroeconomic news (= 1.13% * 0.0086 ÷ 0.0610). Similarly, if an in-house macroeconomist receives the All-American Research Team award from *Institutional Investor*, the analysts at the same firm, on average, incorporate approximately 31% (= 0.0190 ÷ 0.0610) more negative macroeconomic news into their earnings forecasts.

To summarize, our findings in Table 7 suggest that the benefits of access to an active in-house macroeconomist vary with the quality of the in-house macroeconomist's research.

[Insert Table 7 about here]

In-House Macroeconomists and Research Credibility

Model Specification

If analysts with access to in-house macroeconomists' research are more efficient in incorporating negative macroeconomic news, their forecasts should be more accurate and hence more informative to investors (e.g., Park and Stice 2000; Mikhail, Walther, and Willis 2004; Chen, Francis, and Jiang 2005). However, it has also been shown that investors often fail to weight or underweight accuracy-related cues (e.g., Gleason and Lee 2003; Clement and Tse 2003; Bonner, Hugon, and Walther 2007).

Whether investors reward access to a macroeconomist with enhanced earnings research credibility is ultimately an empirical question; however, there are several reasons to believe that investors may do so. First, active macroeconomists regularly appear on internet forums, television, radio, and are quoted by wire services. Second, macroeconomists frequently make presentations to institutional clients, government entities, and individual investors. One macroeconomist we spoke to said he had visited over 40 countries to give presentations to professional investors and institutions; similarly, another economist recalled making over 100

presentations in just one year. Third, many macroeconomists write economic outlook updates every day which are distributed externally to current and prospective clients.

Empirically, we examine the question of research credibility with the following model:

$$\begin{aligned} CAR = {} & \theta_0 + \theta_1 \cdot REV + \theta_2 \cdot MACRO + \theta_3 \cdot MACRO * REV + \theta_4 \cdot PRIOR\_ACC \\ & + \theta_5 \cdot PRIOR\_ACC * REV + \theta_6 \cdot SIZE + \theta_7 \cdot SIZE * REV + \theta_8 \cdot BM \\ & + \theta_9 \cdot BM * REV + \theta_{10} \cdot BETA + \theta_{11} \cdot BETA * REV \\ & + Analyst\ Controls + Analyst\ Controls * REV + Broker\ Controls \\ & + Broker\ Controls * REV + Firm\ Controls + Firm\ Controls * REV \\ & + Industry\ Effects + Year\ Effects + \varepsilon_4 \end{aligned} \quad (4)$$

The variables not previously defined are as follows.

CAR	Three-day cumulative size-adjusted abnormal return surrounding analyst i's earnings forecast for firm j in quarter t.
REV	Analyst forecast revision, defined as analyst i's earnings forecast for firm j in quarter t minus the most recent mean consensus forecast (within [-30,-2]), scaled by the stock price at the beginning of quarter t.
PRIOR_ACC	Analyst prior accuracy, calculated as the average of analyst i's price-deflated absolute forecast errors over the prior four quarters multiplied by -1, so that the variable is increasing in accuracy.
BM	Book-to-market ratio of firm j at the beginning of quarter t.
BETA	Market beta, defined as firm j's market beta in the calendar year preceding analyst i's earnings forecast for firm j in quarter t.
ε_4	Error term.

To address the impact of confounding information events within the return window, we consider four different sample selection criteria: (1) all forecasts from our primary sample (i.e., no restrictions other than the availability of short-window returns, forecast revision, and control variables), (2) all forecasts excluding those issued within the event window of an earnings announcement, (3) all forecasts excluding those issued within the event window of

management guidance, and (4) all forecasts excluding those issued within the event window of either earnings announcement or management guidance.

The coefficient estimate θ_1 is expected to be positive given prior research that finds the analyst forecast revision is informative to the market (e.g., Givoly and Lakonishok 1979; Frankel, Kothari, and Weber 2006). If the greater forecast efficiency with respect to negative macroeconomic news enhances the credibility of analyst research, we expect the θ_3 estimate to be positive, indicating that there is an incremental market reaction for analysts who have access to an active in-house macroeconomist.

Multivariate Results

Table 8 reports that the coefficient estimate on REV is positive and significant ($\theta_1 = 4.5916$, $p < 0.01$). More importantly, we find the estimate on the interaction of interest, MACRO * REV, to be positive and significant ($\theta_3 = 0.5953$, $p < 0.01$), suggesting that investors consider the forecasts issued by analysts with access to in-house macroeconomists' research more credible. Specifically, the market reaction is approximately 13% (= 0.5953 ÷ 4.5916) greater for analysts with access to in-house macroeconomists' research.

In sum, the market seems to attribute greater credibility to analysts with access to in-house macroeconomists during negative macroeconomic news periods.

[Insert Table 8 about here]

IV. SUMMARY AND CONCLUSION

Anecdotal evidence suggests that financial analysts are too optimistic during economic downturns. Consistent with this assertion, we demonstrate that analysts underreact to negative macroeconomic news, but not to positive news. In terms of mitigating this inefficiency, we find that analysts appear to benefit from the availability of an active in-house macroeconomist. This

benefit is concentrated in firms that are high in cyclicality relative to their industry, high in cyclicality in general, and that are smaller in size. Moreover, we find that analysts realize greater forecasting benefits in the presence of more accurate or award-winning in-house macroeconomists. Finally, examining the impact of in-house macroeconomists on market prices, we find that investors act as if they recognize this benefit to analysts' forecast efficiency. That is, they react more strongly to earnings research from analysts who have access to in-house macroeconomists.

These findings make several contributions to the literature. First, while prior literature on analyst efficiency almost exclusively focuses on firm-level information, our paper investigates analyst efficiency with respect to an important determinant of corporate earnings, macroeconomic news. Second, within a macroeconomic news setting, we document the benefit of an in-house macroeconomist for analyst earnings research. Given that analyst forecasts are important benchmarks of a firm's financial performance, our findings suggest the possibility of identifying analysts who are relatively more sensitive to macroeconomic changes. Finally, our findings suggest that in-house macroeconomists not only play an important role in analysts' forecast efficiency, but also influence the market credibility of analyst research.

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Table 1
Sample Selection

Sample Selection Criteria	Firm-Quarter Forecasts	Firm-Quarters	Distinct Firms
I/B/E/S initial one-quarter ahead earnings forecasts, 1998 – 2011.	1,169,236	212,095	11,678
Retain: earnings forecasts with actual EPS to calculate forecast errors.	1,159,760	208,274	11,444
Retain: earnings forecasts with unique I/B/E/S analyst identifiers.	1,153,101	207,777	11,432
Retain: earnings forecasts issued between prior and current actual earnings announcement dates.	919,114	146,528	6,653
Retain: earnings forecasts for firms with calendar fiscal quarters to synchronize GDP and earnings forecasts.	797,857	129,796	6,056
Retain: earnings forecasts with non-missing Compustat financial data to calculate lagged total accruals and cyclicality.	760,910	121,083	5,776
Retain: earnings forecasts with non-missing CRSP price to calculate prior abnormal buy-and-hold returns.	705,544	110,994	5,391
Retain: earnings forecasts with individual analysts' prior-period forecast errors.	535,784	105,122	5,326
Retain: earnings forecasts issued after availability of first real GDP growth forecast for quarter t.	315,962	83,231	5,238
Primary Sample	315,962	83,231	5,238

Table 2
Descriptive Statistics

Panel A. Key Variables

	Negative News			Positive News		
Variable	N	Mean	Median	N	Mean	Median
FE	185,678	-0.002	0.000	130,284	-0.001	0.000
NEWS	185,678	-0.024	-0.020	130,284	0.033	0.019
HORIZON	185,678	75.584	83.000	130,284	74.094	83.000
FREQ	185,678	1.397	1.000	130,284	1.377	1.000
NIND	185,678	5.029	4.000	130,284	5.083	4.000
NFIRM	185,678	12.720	12.000	130,284	12.641	12.000
FEXP	185,678	8.701	6.000	130,284	8.644	6.000
LAG_FE	185,678	-0.001	0.000	130,284	0.000	0.000
BSIZE	185,678	42.187	36.000	130,284	41.231	35.000
TOP_BROKER	185,678	0.116	0.000	130,284	0.113	0.000
UW_RANK	185,678	0.479	0.510	130,284	0.477	0.500
LAG_TACC	185,678	-0.040	-0.025	130,284	-0.037	-0.025
PRIOR_BHR	185,678	-0.001	-0.009	130,284	-0.002	-0.009
CYCLICALITY	185,678	0.092	0.033	130,284	0.091	0.032
MACRO	185,678	0.279	0.000	130,284	0.301	0.000
EQ_AFFIL	185,678	0.038	0.000	130,284	0.044	0.000
EQ_OPPORT	185,678	0.064	0.000	130,284	0.053	0.000
MACRO_ACCURACY	51,934	-1.334	-1.000	39,253	-1.247	-1.000
MACRO_AWARD	51,934	0.120	0.000	39,253	0.132	0.000

Panel B. Additional Variables for Market Tests

	Negative News			Positive News		
Variable	N	Mean	Median	N	Mean	Median
CAR	61,187	-0.002	-0.001	46,208	-0.002	-0.001
REV	61,187	-0.000	0.000	46,208	-0.000	0.000
PRIOR_ACC	61,187	-0.005	-0.002	46,208	-0.005	-0.002
SIZE	61,187	10.757	2.987	46,208	10.797	3.175
BM	61,187	0.532	0.453	46,208	0.515	0.454
BETA	61,187	1.124	1.055	46,208	1.146	1.062

Table Notes:

This table presents descriptive statistics for the 1998 to 2011 period. FE = Analyst's forecast error, calculated as actual EPS minus analyst earnings forecast, scaled by the stock price at the beginning of the quarter. NEWS = Macroeconomic news, defined as the most recent median consensus real GDP growth forecast for the quarter minus the actual real GDP growth for the same quarter last year. HORIZON = Analyst's forecast horizon, defined as the days between the analyst's earnings forecast date and the firm's earnings announcement date for the quarter. FREQ = Analyst's forecast frequency, defined as the number of earnings forecasts issued by the analyst for the firm during the quarter. NIND = The number of Fama-French 48 industries that the analyst follows during the quarter. NFIRM = The number of firms that the analyst follows during the quarter. FEXP = Analyst's firm-specific experience, defined as the number of quarters that the analyst has issued at least one earnings forecast for the firm prior to the quarter. LAG_FE = Analyst's prior-period forecast error, calculated as actual EPS minus analyst's last earnings forecast for the prior quarter, scaled by the stock price at the beginning of the prior quarter. BSIZE = Investment firm size, calculated as the number of unique analysts employed by the analyst's investment firm during the quarter. TOP_BROKER = An indicator that is set to 1 if the analyst's investment firm size is within top 10% in a given calendar year, and 0 otherwise. UW_RANK = Investment firm's underwriting rank, measured by the percentile rank of total equity underwriting dollar amounts of the analyst's investment firm in the year prior to the analyst's earnings forecast for the firm. LAG_TACC = Lagged total accruals, calculated as the firm's income before extraordinary items minus total cash flow from operations for the prior quarter, scaled by average total assets of the prior quarter. PRIOR_BHR = Prior abnormal buy-and-hold return, defined as the size-adjusted abnormal buy-and-hold return for the firm within [-90,-2] of the analyst's earnings forecast. CYCLICALITY = Earnings sensitivity to GDP news, measured as the R^2 from the regression of the firm's seasonal change in quarterly earnings on the corresponding quarterly GDP news over the entire sample period. MACRO = Availability of an active in-house macroeconomist, an indicator variable that is set to 1 if the analyst has access to in-house macroeconomist's most recent research, and 0 otherwise. EQ_AFFIL = Equity underwriter-client relationship, an indicator variable that is set to 1 if the analyst is employed by the investment firm that acted as the lead manager or co-manager of the firm's equity underwriting team in the year prior to the analyst's earnings forecast, and 0 otherwise. EQ_OPPORT = Equity underwriting opportunity, an indicator variable that is set to 1 if the firm announces an equity offering in the year following the analyst's earnings forecast, and 0 otherwise. MACRO_ACCURACY = In-house macroeconomist's forecast accuracy, calculated as an economist's absolute GDP forecast error in the most recent research, scaled by the absolute median consensus GDP forecast error in the most recent Bloomberg macroeconomic survey, and then multiplied by (-1). MACRO_AWARD = In-house macroeconomist's All-American Research Team award status, an indicator variable that is set to 1 if the economist is ranked in the top three or as a runner-up by *Institutional Investor* during the year, and 0 otherwise. CAR = Three-day cumulative size-adjusted abnormal return surrounding the analyst's earnings forecast date. REV = Analyst's forecast revision, calculated as the analyst's earnings forecast for the firm minus the most recent mean consensus analyst forecast (within [-30,-2]), scaled by the stock price at the beginning of the quarter. PRIOR_ACC = Analyst prior accuracy, calculated as the average of analyst's price-deflated absolute forecast errors over the prior four quarters multiplied by -1. SIZE = The market value of the firm's common stock at the beginning of the quarter.

BM = Book-to-market ratio of the firm at the beginning of the quarter. BETA = Market beta, defined as the firm's market beta in the calendar year preceding the analyst's earnings forecast.

Table 3
Earnings Sensitivity to Macroeconomic News

	Earnings Sensitivity to Negative News						Earnings Sensitivity to Positive News					
Industry	N	Mean	StDev	25%	50%	75%	N	Mean	StDev	25%	50%	75%
Consumer nondurables	194	0.081	0.120	0.010	0.035	0.094	188	0.217	0.267	0.020	0.099	0.364
Consumer durables	87	0.164	0.201	0.036	0.093	0.213	80	0.303	0.284	0.050	0.218	0.461
Manufacturing	417	0.126	0.168	0.017	0.067	0.172	400	0.171	0.223	0.016	0.079	0.244
Energy	237	0.103	0.167	0.008	0.032	0.122	233	0.229	0.257	0.030	0.119	0.363
Chemicals	98	0.116	0.174	0.014	0.047	0.143	95	0.188	0.236	0.023	0.086	0.308
Business equipment	1,116	0.123	0.201	0.014	0.048	0.133	1,053	0.217	0.266	0.020	0.097	0.339
Telecom	177	0.103	0.170	0.013	0.046	0.112	165	0.209	0.270	0.011	0.074	0.353
Utilities	131	0.064	0.143	0.006	0.023	0.060	131	0.119	0.208	0.006	0.030	0.130
Wholesale, retail, and services	319	0.104	0.162	0.013	0.054	0.132	307	0.229	0.275	0.019	0.124	0.378
Healthcare	692	0.121	0.201	0.011	0.043	0.129	662	0.207	0.278	0.016	0.073	0.296
Financial	1,032	0.114	0.184	0.012	0.055	0.136	1,019	0.181	0.235	0.019	0.081	0.264
Others	643	0.109	0.171	0.010	0.041	0.137	617	0.191	0.241	0.021	0.089	0.276
Overall	5,143	0.114	0.182	0.012	0.047	0.134	4,950	0.201	0.229	0.023	0.108	0.317

Table Notes:

This table presents the R^2s from estimating the firm-specific OLS regressions of earnings changes on GDP news for all sample firms during the 1998 to 2011 period. Earnings changes are seasonally-adjusted changes in quarterly earnings, calculated as income before extraordinary items for quarter t minus income before extraordinary items for quarter t-4, scaled by average total assets for quarter t. GDP news is defined as the most recent median consensus real GDP growth forecast for the quarter minus the actual real GDP growth for the same quarter last year (i.e., $FGDP_t$ - GDP_{t-4}). Industries are based on Fama-French 12 industry classification.

Table 4
Analysts' Efficiency in Incorporating Current Macroeconomic News

NEWS =	*Primary News Measure:*		*Alternative Current Quarter News Measures:*			
	$FGDP_t$ - GDP_{t-4}		$FGDP_t$ - $FGDP_{t-4}$		GDP_t - GDP_{t-4}	
	Neg News	Pos News	Neg News	Pos News	Neg News	Pos News
	(1)	(2)	(3)	(4)	(5)	(6)
DEP. VAR. =	FE	FE	FE	FE	FE	FE
INTERCEPT	0.0063***	0.0103***	0.0066***	-0.0011	0.0065***	-0.0005
	(2.95)	(3.16)	(3.08)	(-0.40)	(3.29)	(-0.13)
NEWS	0.0731***	-0.0023	0.0763***	-0.0057	0.0747***	0.0001
	(3.17)	(-0.38)	(3.29)	(-0.81)	(3.62)	(0.02)
Analyst-specific controls:						
HORIZON	-0.0012***	-0.0008***	-0.0012***	-0.0008***	-0.0011***	-0.0009***
	(-4.75)	(-5.68)	(-4.70)	(-5.43)	(-5.13)	(-4.71)
FREQ	-0.0018***	-0.0011***	-0.0018***	-0.0011***	-0.0017***	-0.0011***
	(-5.54)	(-3.73)	(-5.37)	(-3.72)	(-5.54)	(-3.48)
NIND	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	(1.12)	(0.92)	(1.02)	(0.88)	(1.23)	(0.47)
NFIRM	-0.0000**	-0.0000**	-0.0000**	-0.0000***	-0.0000***	-0.0000**
	(-2.55)	(-2.36)	(-2.54)	(-2.58)	(-2.68)	(-2.06)
FEXP	0.0000	0.0000**	0.0000	0.0000**	0.0000	0.0000***
	(0.91)	(2.01)	(0.97)	(2.04)	(0.77)	(3.25)
LAG_FE	0.2740***	0.2590***	0.2750***	0.2580***	0.2740***	0.2600***
	(10.40)	(8.54)	(10.43)	(8.45)	(10.50)	(8.29)
Broker-specific controls:						
BSIZE	0.0005***	0.0002**	0.0005***	0.0002**	0.0005***	0.0002***
	(5.33)	(2.53)	(5.18)	(2.52)	(4.93)	(2.65)
TOP_BROKER	0.0002	0.0003**	0.0002	0.0003**	0.0003	0.0003*
	(1.23)	(2.19)	(1.14)	(2.27)	(1.41)	(1.88)
UW_RANK	-0.0005***	0.0000	-0.0005***	0.0000	-0.0005**	-0.0000
	(-3.09)	(0.14)	(-3.07)	(0.04)	(-2.54)	(-0.10)
Firm-specific controls:						
LAG_TACC	-0.0040**	-0.0026**	-0.0041**	-0.0026**	-0.0042**	-0.0021*
	(-2.29)	(-2.10)	(-2.25)	(-2.06)	(-2.54)	(-1.93)
PRIOR_BHR	0.0055***	0.0050***	0.0055***	0.0051***	0.0056***	0.0049***
	(5.90)	(4.98)	(5.67)	(5.02)	(6.14)	(4.72)
CYCLICALITY	-0.0036	-0.0009	-0.0037	-0.0008	-0.0035	-0.0008
	(-1.17)	(-0.61)	(-1.16)	(-0.54)	(-1.21)	(-0.52)
Industry FE	Included	Included	Included	Included	Included	Included
Year FE	Included	Included	Included	Included	Included	Included
Observations	185,678	130,284	179,806	128,485	194,937	121,025
Adjusted R^2	0.078	0.065	0.078	0.065	0.077	0.065

Table Notes:

This table presents the results from estimating the OLS regression of Equation (1). FE = Analyst's forecast error, calculated as actual EPS minus analyst earnings forecast, scaled by the stock price at the beginning of the quarter. NEWS = Macroeconomic news, defined as (1) the most recent median consensus real GDP growth forecast for the quarter minus the actual real GDP growth for the same quarter last year (i.e. $FGDP_t$ - GDP_{t-4}), (2) the most recent median consensus real GDP growth forecast for the quarter minus the final median consensus real GDP growth for the same quarter last year (i.e. $FGDP_t$ - $FGDP_{t-4}$), or (3) the actual real GDP growth forecast for the quarter minus the actual real GDP growth for the same quarter last year (i.e. GDP_t - GDP_{t-4}). HORIZON = Analyst's forecast horizon, defined as the natural logarithm of the days between the analyst's earnings forecast date and the firm's earnings announcement date for the quarter. FREQ = Analyst's forecast frequency, defined as the number of earnings forecasts issued by the analyst for the firm during the quarter. NIND = The number of Fama-French 48 industries that the analyst follows during the quarter. NFIRM = The number of firms that the analyst follows during the quarter. FEXP = Analyst's firm-specific experience, defined as the number of quarters that the analyst has issued at least one earnings forecast for the firm prior to the quarter. LAG_FE = Analyst's prior-period forecast error, calculated as actual EPS minus analyst's last earnings forecast for the prior quarter, scaled by the stock price at the beginning of the prior quarter. BSIZE = Investment firm size, calculated as the natural logarithm of the number of unique analysts employed by the analyst's investment firm during the quarter. TOP_BROKER = An indicator that is set to 1 if the analyst's investment firm size is within top 10% in a given calendar year, and 0 otherwise. UW_RANK= Investment firm's underwriting rank, measured by the percentile rank of total equity underwriting dollar amounts of the analyst's investment firm in the year prior to the analyst's earnings forecast for the firm. LAG_TACC = Lagged total accruals, calculated as the firm's income before extraordinary items minus total cash flow from operations for the prior quarter, scaled by average total assets of the prior quarter. PRIOR_BHR = Prior abnormal buy-and-hold return, defined as the size-adjusted abnormal buy-and-hold return for the firm within [-90,-2] of the analyst's earnings forecast. CYCLICALITY = Earnings sensitivity to GDP news, measured as the R^2 from the regression of the firm's seasonal change in quarterly earnings on the corresponding quarterly GDP news over the entire sample period. Analyst earnings forecasts are classified into negative macroeconomic news or positive macroeconomic news samples based on the sign of NEWS. For the dependent variable, FE, a negative (positive) value indicates analyst optimism (pessimism); for the independent variable NEWS, a positive (negative) coefficient estimate indicates analyst under-reaction (overreaction). Two-tailed *t*-statistics (in parenthesis) are calculated using two-way clustered standard errors, clustered by firm and quarter. *, **, ***, indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 5
In-House Macroeconomist with a Current GDP Forecast and Analysts' Efficiency in Incorporating Negative Macroeconomic News

Panel A. Descriptive Statistics

	Negative News					
	MACRO = 0		MACRO = 1		t-test	Wilcoxon rank-sum test
Variable	Mean	Median	Mean	Median	t-stats	z-stats
FE	-0.002	0.000	-0.001	0.000	***	***
HORIZON	75.478	83.000	75.854	83.000	***	***
FREQ	1.377	1.000	1.447	1.000	***	***
NIND	5.031	4.000	5.024	4.000	n.s.	**
NFIRM	12.282	11.000	13.848	13.000	***	***
FEXP	8.380	6.000	9.529	7.000	***	***
LAG_FE	-0.001	0.000	-0.000	0.000	***	***
BSIZE	29.968	24.000	73.655	77.000	***	***
TOP_BROKER	0.046	0.000	0.297	0.000	***	***
UW_RANK	0.368	0.380	0.767	0.830	***	***
N	133,744		51,934			

Panel B. Empirical Tests

	Negative News							
		Firm-quarter relative FE measure:	*Only consistent macro-forecasters:*	*Placebo test:* NEWS = LAG_TACC	*Natural experiments:*		*Control for inactive macro-forecasters:*	*Control for broker resource interactions:*
	(1) Full sample	(2) Firms with Nanalyst > 5	(3) Over prior 4 quarters	(4) Full sample	(5) Analyst change	(6) Economist change	(7) Full sample	(8) Full sample
DEP. VAR. =	FE	FE	FE	FE	FE	FE	FE	FE
INTERCEPT	0.0064***	0.0001	0.0049**	0.0064***	0.0028	0.0034	0.0071***	0.0065***
	(2.96)	(1.53)	(2.19)	(2.76)	(0.56)	(0.76)	(3.38)	(2.79)
NEWS	0.0772***	0.0012*	0.0779***	0.0037**	0.0921**	0.0618***	0.0843***	0.0833**
	(3.40)	(1.84)	(3.37)	(2.15)	(2.06)	(3.71)	(4.28)	(2.53)
MACRO	-0.0003	-0.0002***	-0.0003	0.0005	-0.0019	-0.0019	-0.0003*	-0.0004***
	(-1.62)	(-2.79)	(-1.46)	(1.23)	(-0.84)	(-1.46)	(-1.90)	(-2.88)
MACRO * NEWS	-0.0117**	-0.0022**	-0.0107**	0.0200	-0.0981*	-0.0654**	-0.0119**	-0.0169***
	(-2.07)	(-2.24)	(-2.04)	(1.17)	(-1.71)	(-1.98)	(-2.03)	(-3.30)
EQ_AFFIL	0.0001	0.0002***	0.0001	0.0005	0.0009	-0.0010	0.0001	0.0001
	(0.26)	(2.67)	(0.19)	(1.00)	(0.21)	(-1.02)	(0.26)	(0.11)
EQ_AFFIL * NEWS	-0.0050	0.0038	-0.0051	0.0144	0.0959	-0.0119	-0.0044	-0.0079
	(-0.30)	(1.21)	(-0.30)	(0.93)	(0.33)	(-0.12)	(-0.28)	(-0.48)
EQ_OPPORT	0.0003	NA	0.0002	0.0009	-0.0016	0.0043**	0.0002	0.0003
	(0.57)		(0.49)	(1.33)	(-0.38)	(2.07)	(0.49)	(0.56)
EQ_OPPORT * NEWS	-0.0070	NA	-0.0068	0.0196	0.0605	0.1568**	-0.0075	-0.0072
	(-0.79)		(-0.76)	(0.88)	(0.61)	(2.30)	(-0.81)	(-0.82)
INACTIVE							-0.0002	
							(-1.29)	

INACTIVE * NEWS							0.0002	
							(0.05)	
BSIZE * NEWS								-0.0054
								(-1.39)
TOP_BROKER * NEWS								-0.0077
								(-0.74)
UW_RANK * NEWS								0.0301***
								(3.39)
Analyst-specific controls	Included	Included	Included	Included	Included	Included	Included	Included
Broker-specific controls	Included	Included	Included	Included	Included	Included	Included	Included
Firm-specific controls	Included	Not Included	Included	Included	Included	Included	Included	Included
Industry fixed effects	Included	Not Included	Included	Included	Included	Included	Included	Included
Year fixed effects	Included	Not Included	Included	Included	Included	Included	Included	Included
Observations	185,678	108,797	179,021	185,678	1,604	2,362	185,678	185,678
Adjusted R^2	0.078	0.036	0.079	0.076	0.069	0.030	0.078	0.078

Table Notes:

This table presents the results from estimating the OLS regression of Equation (2) for the negative macroeconomic news sample. FE = Analyst's forecast error, calculated as actual EPS minus analyst earnings forecast, scaled by the stock price at the beginning of the quarter. NEWS = Macroeconomic news, defined as the most recent median consensus real GDP growth forecast for the quarter minus the actual real GDP growth for the same quarter last year. MACRO = Availability of an active in-house macroeconomist, an indicator variable that is set to 1 if the analyst has access to in-house macroeconomist's most recent research, and 0 otherwise. EQ_AFFIL = Equity underwriter-client relationship, an indicator variable that is set to 1 if the analyst is employed by the investment firm that acted as the lead manager or co-manager of the firm's equity underwriting team in the year prior to the analyst's earnings forecast, and 0 otherwise. EQ_OPPORT = Equity underwriting opportunity, an indicator variable that is set to 1 if the firm announces an equity offering in the year following the analyst's earnings forecast, and 0 otherwise. INACTIVE = Inactive in-house macroeconomist, an indicator variable that is set to 1 if the brokerage firm has an active in-house macroeconomist in the past but not for the current quarter, and 0 otherwise. Analyst-specific controls (HORIZON, FREQ, NIND, NFIRM, FEXP, and LAG_FE), broker-specific controls (BSIZE, TOP_BROKER, and UW_RANK), and firm-specific controls (LAG_TACC, PRIOR_BHR, and CYCLICALITY) are as previously defined. For the dependent variable, FE, a negative (positive) value indicates analyst optimism (pessimism); for the independent variable NEWS, a positive (negative) coefficient estimate indicates analyst under-reaction (overreaction). In Column 2, the FE dependent variable and the analyst and broker independent variables are mean-adjusted by firm-quarter. Two-tailed t-statistics (in parenthesis) are calculated using two-way clustered standard errors, clustered by firm and quarter. *, **, ***, indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 6
In-House Macroeconomist with a Current GDP Forecast and Analysts' Efficiency in Incorporating Negative Macroeconomic News: Cyclicality and Firm Size Partitions

	Negative News					
	Low cyclicality (among all firms)	*High cyclicality (among all firms)*	*Low cyclicality (within industry)*	*High cyclicality (within industry)*	*Large firms*	*Small firms*
	(1)	(2)	(3)	(4)	(5)	(6)
DEP. VAR. =	FE	FE	FE	FE	FE	FE
INTERCEPT	0.0092**	0.0040*	0.0078*	0.0043	0.0046***	0.0068*
	(2.52)	(1.71)	(1.91)	(1.64)	(2.84)	(1.75)
NEWS	0.0269***	0.1279***	0.0324***	0.1227***	0.0509***	0.0965***
	(2.96)	(3.44)	(2.81)	(3.52)	(3.59)	(3.32)
MACRO	0.0000	-0.0005**	0.0000	-0.0005**	-0.0001	-0.0009***
	(0.19)	(-2.52)	(0.12)	(-2.41)	(-0.78)	(-2.61)
MACRO * NEWS	-0.0070	-0.0153**	-0.0068	-0.0157**	0.0001	-0.0225**
	(-1.13)	(-2.20)	(-1.27)	(-2.50)	(0.05)	(-2.28)
EQ_AFFIL	-0.0003	0.0004	-0.0004	0.0005	-0.0000	0.0004
	(-0.44)	(0.74)	(-0.54)	(0.85)	(-0.07)	(0.52)
EQ_AFFIL * NEWS	0.0018	-0.0141	-0.0025	-0.0111	-0.0004	-0.0123
	(0.05)	(-0.62)	(-0.07)	(-0.52)	(-0.03)	(-0.41)
EQ_OPPORT	0.0009*	-0.0004	0.0006	-0.0001	0.0001	0.0004
	(1.95)	(-0.66)	(1.20)	(-0.14)	(0.12)	(0.45)
EQ_OPPORT * NEWS	-0.0076	-0.0099	-0.0034	-0.0126	0.0440	-0.0425**
	(-0.86)	(-0.63)	(-0.73)	(-1.06)	(1.32)	(-2.25)
Analyst-specific controls	Included	Included	Included	Included	Included	Included
Broker-specific controls	Included	Included	Included	Included	Included	Included
Firm-specific controls	Included	Included	Included	Included	Included	Included

Industry fixed effects	Included	Included	Included	Included	Included	Included
Year fixed effects	Included	Included	Included	Included	Included	Included
Observations	92,643	93,035	93,135	92,543	91,570	93,711
Adjusted R^2	0.061	0.094	0.059	0.098	0.110	0.076

Table Notes:

This table presents the results from estimating the OLS regression of Equation (2) for the negative macroeconomic news sample, conditional on high/low cyclicality or firm size, where cyclicality is measured as the R^2 from the regression of the firm's seasonal change in quarterly earnings on the corresponding quarterly GDP news over the entire sample period and firm size is measured as the market value of the firm's common stock at the beginning of the quarter. FE = Analyst's forecast error, calculated as actual EPS minus analyst earnings forecast, scaled by the stock price at the beginning of the quarter. NEWS = Macroeconomic news, defined as the most recent median consensus real GDP growth forecast for the quarter minus the actual real GDP growth for the same quarter last year. MACRO = Availability of an active in-house macroeconomist, an indicator variable that is set to 1 if the analyst has access to in-house macroeconomist's most recent research, and 0 otherwise. EQ_AFFIL = Equity underwriter-client relationship, an indicator variable that is set to 1 if the analyst is employed by the investment firm that acted as the lead manager or co-manager of the firm's equity underwriting team in the year prior to the analyst's earnings forecast, and 0 otherwise. EQ_OPPORT = Equity underwriting opportunity, an indicator variable that is set to 1 if the firm announces an equity offering in the year following the analyst's earnings forecast, and 0 otherwise. Analyst-specific controls (HORIZON, FREQ, NIND, NFIRM, FEXP, and LAG_FE), broker-specific controls (BSIZE, TOP_BROKER, and UW_RANK), and firm-specific controls (LAG_TACC, PRIOR_BHR, and CYCLICALITY) are as previously defined. For the dependent variable, FE, a negative (positive) value indicates analyst optimism (pessimism); for the independent variable NEWS, a positive (negative) coefficient estimate indicates analyst under-reaction (overreaction). Two-tailed t-statistics (in parenthesis) are calculated using two-way clustered standard errors, clustered by firm and quarter. *, **, ***, indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 7
All In-House Macroeconomists with a Current GDP Forecast:
Economist Factors Affecting Efficiency in Incorporating Negative Macroeconomic News

	Negative News (MACRO = 1)		
	(1)	(2)	(3)
DEP. VAR. =	FE	FE	FE
INTERCEPT	0.0273***	0.0279***	0.0278***
	(10.52)	(10.80)	(10.92)
NEWS	0.0576***	0.0744***	0.0610***
	(2.66)	(3.24)	(2.83)
MACRO_ACCURACY	-0.0001		-0.0001
	(-0.71)		(-0.70)
MACRO_ACCURACY * NEWS	-0.0091**		-0.0086**
	(-2.36)		(-2.26)
MACRO_AWARD		-0.0004	-0.0004
		(-1.00)	(-0.96)
MACRO_AWARD * NEWS		-0.0212***	-0.0190***
		(-2.73)	(-2.70)
EQ_AFFIL	0.0002	0.0002	0.0002
	(0.46)	(0.41)	(0.43)
EQ_AFFIL * NEWS	-0.0057	-0.0070	-0.0063
	(-0.29)	(-0.35)	(-0.32)
EQ_OPPORT	0.0002	0.0002	0.0002
	(1.06)	(1.09)	(1.07)
EQ_OPPORT * NEWS	-0.0074	-0.0067	-0.0074
	(-1.37)	(-1.12)	(-1.39)
Analyst-specific controls	Included	Included	Included
Broker-specific controls	Included	Included	Included
Firm-specific controls	Included	Included	Included
Industry fixed effects	Included	Included	Included
Year fixed effects	Included	Included	Included
Observations	51,934	51,934	51,934
Adjusted R^2	0.083	0.083	0.083

Table Notes:

This table presents the results from estimating the OLS regression of Equation (3) for the negative macroeconomic news sample. FE = Analyst's forecast error, calculated as actual EPS minus analyst earnings forecast, scaled by the stock price at the beginning of the quarter. NEWS = Macroeconomic news, defined as the most recent median consensus real GDP growth forecast for the quarter minus the actual real GDP growth for the same quarter last year. MACRO_ACCURACY = In-house macroeconomist's forecast accuracy, calculated as an economist's absolute GDP forecast error in the most recent research, scaled by the absolute median consensus GDP forecast

error in the most recent Bloomberg macroeconomic survey, and then multiplied by (-1). MACRO_AWARD = In-house macroeconomist's All-American Research Team award status, an indicator variable that is set to 1 if the economist is ranked in the top three or as a runner-up by *Institutional Investor* during the year, and 0 otherwise. EQ_AFFIL = Equity underwriter-client relationship, an indicator variable that is set to 1 if the analyst is employed by the investment firm that acted as the lead manager or co-manager of the firm's equity underwriting team in the year prior to the analyst's earnings forecast, and 0 otherwise. EQ_OPPORT = Equity underwriting opportunity, an indicator variable that is set to 1 if the firm announces an equity offering in the year following the analyst's earnings forecast, and 0 otherwise. Analyst-specific controls (HORIZON, FREQ, NIND, NFIRM, FEXP, and LAG_FE), broker-specific controls (BSIZE, TOP_BROKER, and UW_RANK), and firm-specific controls (LAG_TACC, PRIOR_BHR, and CYCLICALITY) are as previously defined. For the dependent variable, FE, a negative (positive) value indicates analyst optimism (pessimism); for the independent variable NEWS, a positive (negative) coefficient estimate indicates analyst under-reaction (overreaction). Two-tailed *t*-statistics (in parenthesis) are calculated using two-way clustered standard errors, clustered by firm and quarter. *, **, ***, indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 8
Market Credibility of Analysts' Earnings Research

	Negative News			
	(1) = All forecasts from primary sample	(2) = (1), excluding forecasts within EA window	(3) = (1), excluding forecasts within MG window	(4) = (1), excluding forecasts within EA or MG window
DEP. VAR. =	CAR[-1,+1]	CAR[-1,+1]	CAR[-1,+1]	CAR[-1,+1]
INTERCEPT	-0.0417***	-0.0427***	-0.0367***	-0.0374***
	(-3.96)	(-4.04)	(-3.49)	(-3.55)
REV	4.5916***	4.6707***	2.4069***	2.4464***
	(6.10)	(6.14)	(3.57)	(3.58)
MACRO	-0.0004	-0.0004	-0.0009	-0.0009
	(-0.57)	(-0.55)	(-1.27)	(-1.27)
MACRO * REV	0.5953***	0.5941***	0.4734**	0.4742**
	(2.85)	(2.84)	(2.40)	(2.40)
PRIOR_ACC	0.0752**	0.0748**	0.0689**	0.0686**
	(2.29)	(2.28)	(2.10)	(2.09)
PRIOR_ACC * REV	4.9871***	4.9878***	3.9540***	3.9558***
	(2.97)	(2.97)	(2.62)	(2.62)
SIZE	0.0003	0.0003	0.0001	0.0001
	(1.15)	(1.15)	(0.57)	(0.57)
SIZE * REV	-0.1537***	-0.1551***	-0.1076**	-0.1086**
	(-2.87)	(-2.88)	(-2.25)	(-2.26)
BM	0.0048***	0.0050***	0.0049***	0.0050***
	(2.84)	(2.92)	(2.90)	(2.95)
BM * REV	-0.5306***	-0.5366***	-0.4057***	-0.4102***
	(-4.56)	(-4.61)	(-3.67)	(-3.71)
BETA	-0.0003	-0.0004	0.0003	0.0003
	(-0.34)	(-0.37)	(0.32)	(0.28)
BETA * REV	0.1325	0.1332	0.1651	0.1660
	(1.01)	(1.02)	(1.42)	(1.43)
Analyst-specific controls	Included	Included	Included	Included
Broker-specific controls	Included	Included	Included	Included
Firm-specific controls	Included	Included	Included	Included
Industry fixed effects	Included	Included	Included	Included
Year fixed effects	Included	Included	Included	Included
Observations	61,187	60,794	58,974	58,710
Adjusted R^2	0.029	0.029	0.021	0.022

Table Notes:

This table presents the results from estimating the OLS regression of Equation (4) for the negative macroeconomic news sample. CAR = Three-day cumulative size-adjusted abnormal return surrounding the analyst's earnings forecast date. REV = Analyst's forecast revision, calculated as the analyst's earnings forecast for the firm minus the most recent mean consensus analyst forecast (within [-30,-2]), scaled by the stock price at the beginning of the quarter. MACRO = Availability of an active in-house macroeconomist, an indicator variable that is set to 1 if the analyst has access to in-house macroeconomist's most recent research, and 0 otherwise. PRIOR_ACC = Analyst prior accuracy, calculated as the average of the analyst's price-deflated absolute forecast errors over the prior four quarters multiplied by -1, so that the variable is increasing in accuracy. SIZE = The natural logarithm of the market value of the firm's common stock at the beginning of the quarter. BM = Book-to-market ratio of the firm at the beginning of the quarter. BETA = Market beta, defined as the firm's market beta in the calendar year preceding the analyst's earnings forecast. Analyst-specific controls (HORIZON, FREQ, NIND, NFIRM, FEXP, and LAG_FE), broker-specific controls (BSIZE, TOP_BROKER, and UW_RANK), and firm-specific controls (LAG_TACC, PRIOR_BHR, and CYCLICALITY) are as previously defined. Two-tailed *t*-statistics (in parenthesis) are calculated using two-way clustered standard errors, clustered by firm and day. *, **, ***, indicate significance at the 10%, 5%, and 1% levels, respectively.