Buy-Side Analysts' Participation on Public Earnings Conference Calls

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Abstract

Using a sample of 28,000 quarterly earnings conference call transcripts from 2008 to 2013, we examine the frequency and nature of buy-side analysts' participation in the Q&A session of corporate earnings conference calls. We find that buy-side analysts appear on approximately 15% of all conference calls, with analysts employed by hedge funds (mutual funds) representing 46% (22%) of buy-side analyst appearances. Buy-side analysts are more likely to appear on conference calls of firms followed by fewer sell-side analysts, with higher bid-ask spreads, and not in the S&P 1500, suggesting that buy-side analysts are more likely to ask questions on conference calls when uncertainty about the firm is high. Management gives buy-side analysts priority by allowing them to ask the first question on a disproportionate number of calls. We also examine the length and tone of analysts' interactions with management, and find that relative to sell-side analysts, buy-side analysts' interactions are shorter and their exchanges with management exhibit less favorable tone. Finally, we document that changes in bid-ask spreads following conference calls are positively associated with buy-side participation on the call and that institutional holdings increase (decrease) when buy-side tone is relatively favorable (unfavorable). Our findings add to a growing literature on buy-side analysts by documenting their use of quarterly earnings conference calls.

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1. Introduction

In spite of their importance in the capital markets, buy-side analysts are not well understood because their research is not disseminated to the public and therefore not subject to examination on a large scale. Recent studies have attempted to overcome these hurdles in various ways, including analyzing small samples of proprietary buy-side data (Groysberg et al., 2008; Groysberg et al., 2015; Rebello and Wei, 2012), administering surveys to buy-side analysts (Brown et al., 2015b), and obtaining data through online social networks of buy-side analysts (Crawford et al., 2014). We further our understanding of buy-side analysts by analyzing their participation in a large sample of public earnings conference calls. Specifically, we perform a detailed analysis of conference call transcripts to address several related research questions. First, how often do buy-side analysts participate in the Q&A portion of public earnings conference calls, both in general and relative to sell-side analysts? Second, what are the conditions associated with buy-side analysts' participation on public earnings conference calls? Third, does company management prioritize buy-side analysts on earnings conference calls? Fourth, how does the tone of buy-side analysts' interactions with management compare with the tone of sell-side analysts' interactions during conference calls? Fifth, how long are the exchanges on conference calls between buy-side analysts and company management relative to the exchanges between sell-side analysts' and company management? Finally, what is the impact of buy-side analyst conference call participation on subsequent excess equity returns, bid-ask spreads, and changes in institutional holdings?

Conference calls transcripts are a useful setting for improving our understanding of buy-side analysts for several reasons. First, as a practical matter, because we are able to obtain 28,503 conference call transcripts for 1,447 firms, we can examine one element of buy-side analysts'

activity (participation on public earnings conference calls) on a large scale and across a broad range of firms. To date, studies of this scope have been rare in the literature on buy-side analysts. Second, public earnings conference calls are a particularly important news event, not just because of the information disseminated in the earnings announcement itself, but also because the accompanying conference call provides buy-side analysts with the opportunity to interact directly with company management as they update their assessment of the firm. Third, because sell-side analysts also participate on public earnings conference calls, this setting allows us to compare buy-side analysts to sell-side analysts on several interesting dimensions.

We collect earnings conference call transcripts from 2008 to 2013 through Capital IQ and employ specialized algorithms to analyze text transcribed from speech during the Q&A portion of each call. We introduce a comprehensive taxonomy to identify the individual asking each question on the conference call as either a buy-side analyst, a sell-side analyst, or a member of the media. Our taxonomy identifies 1,114 institutions and allows us to further distinguish between buy-side analysts employed by hedge funds, mutual funds, or registered investment advisors (RIAs), and to distinguish between affiliated sell-side analysts (whose employer offers investment banking or advisory services), unaffiliated sell-side analysts (broker-dealers), and independent sell-side analysts. In addition, we measure the length and tone of each conference call participant's exchanges with management, shedding further light on the interactions participating analysts have with management.

We find that while sell-side analysts are the most regular conference call participant, buy-side analysts participate on about 15% of all earnings conference calls in our sample. Among buy-side analysts, those employed by hedge funds are the most frequent conference call participant, appearing on about 8% of all conference calls, with analysts employed by mutual

funds and registered investment advisors (RIAs) each appearing on about 4% of all calls. At least one sell-side analyst appears on almost every conference call, with affiliated sell-side analysts participating more frequently (93% of all calls) than unaffiliated and independent analysts (34% and 21% of all conference calls, respectively).

Buy-side analysts, particularly those working for a hedge fund, are more likely to participate on earnings conference calls of firms covered by relatively few sell-side analysts, firms with large bid-ask spreads, and firms that are not in the S&P 1500 index. These findings suggest that buy-side analysts are more likely to pursue their own information on public earnings conference calls when information about the firm is uncertain and when alternative sources of information are scarce.

We also find that buy-side analysts receive preferential treatment from management with respect to question priority on calls. Specifically, while buy-side analysts represent only 2.72% of all conference call participants, they are allowed to ask the first question on 3.96% of all calls, which is 45% more likely than what would be expected by random assignment. Priority on conference calls extends to buy-side analysts employed by hedge funds (31% more likely than would be expected by chance), mutual funds (27% more likely), and RIAs (106% more likely), suggesting that being responsive to buy-side analysts is important to company management. In contrast, affiliated sell-side analysts are less likely to be allowed to ask the first question on a conference call, whereas unaffiliated and independent sell-side analysts also tend to receive priority on these calls.

We also examine the nature of buy-side analysts' participation on earnings conference calls by examining both the length and the tone of their interactions with company management. Management's interactions with buy-side analysts are significantly shorter than are their

interactions with sell-side analysts, perhaps due to buy-side analysts' incentives to avoid revealing private information in a public setting. Further, the tone of buy-side analysts' interactions is significantly less favorable than is the tone of sell-side analysts' interactions, consistent with buy-side analysts having fewer incentives than sell-side analysts to curry favor with company management.

We also investigate the consequences of buy-side analysts' participation on earnings conference calls and find that their participation on conference calls is associated with subsequent increases in equity bid-ask spreads. Because institutional investors are considered relatively informed market participants, this finding suggests markets increase their spreads to reflect greater information asymmetries when buy-side analysts' participate on a call. We also find that buy-side appearances on conference calls are not associated with increases (decreases) in aggregate institutional holdings, except when buy-side analysts' interactions with management exhibit relatively positive (negative) tone.

Our study makes several contributions to the literature. First, our findings provide insight into the activities of buy-side analysts, an important segment of Wall Street that has been the subject of relatively little academic research to date. While it has generally been understood that buy-side investors *listen* to public earnings conference calls, the conventional wisdom has been that buy-side investors do not ask questions on calls because doing so would "tip their hand." We document that buy-side analysts regularly ask questions during the Q&A portion of these conference calls, suggesting that they believe the gains from participation are often greater than the risks of disclosing private information during the call.

Second, we shed new light on buy-side analysts' use of public earnings conference calls as a source of information by documenting that buy-side analysts are more likely to ask

questions during a conference call when information about the firm is scarce or uncertain. Additionally, our analyses of priority on conference calls, as well as the tone and length of their interactions, further our understanding of the dynamics between company management and both buy-side and sell-side analysts during conference calls.

Our study is related to a concurrent working paper, Jung, Wong, and Zhang (2016), which addresses some of the same research questions we examine. However, we note several important differences. First, Jung et al. (2016) examine conference call transcripts from 2002 to 2009, whereas our sample includes more recent conference call transcripts from 2008 to 2013. Second, beyond distinguishing between buy-side and sell-side analysts participating on the calls, our taxonomy allows us to further distinguish between buy-side analysts employed by hedge funds, mutual funds, and registered investment advisors. We also distinguish between affiliated, unaffiliated, and independent sell-side analysts. Further, our study employs a more rigorous phonetic matching algorithm to extract institution and analyst names, rather than relying on character-based text matching. This distinction is important because, unlike 10-K filings, conference call transcripts are generated from speech, and therefore institution and analyst names are commonly spelled differently across various transcripts. Lastly, our study examines some questions Jung et al. (2016) do not address, including the priority of participants in the Q&A session, as well as more detailed analyses of the length and tone of the interactions on conference calls.

2. Background

2.1 BUY-SIDE ANALYSTS

Although buy-side analysts' stock recommendations are not disseminated publicly, their research is important to understand because it provides the basis for institutional investors'

trading. Academic researchers have relied primarily on proprietary archival data or survey data to examine buy-side analysts, and a growing literature in this area provides evidence that buy-side analysts play an important role in capital markets. For example, Rebello and Wei (2014) use proprietary data from a global fund and find that fund managers trade on buy-side analysts' stock recommendation changes. Likewise, Frey and Herbst (2014) find that fund managers trade on buy-side recommendation revisions, and that these trades are associated with positive abnormal returns that exceed the returns from trades based on sell-side recommendations. Cheng et al. (2006) find that portfolio managers rely more on information from their fund's buy-side analysts than on information provided by sell-side analysts, especially when relatively few sell-side analysts cover the stock, sell-side analysts' earnings forecasts exhibit significant dispersion, or sell-side analysts' earnings forecast errors for other stocks in the institution's portfolio are relatively large. Crawford et al. (2014) find that buy-side analysts' stock recommendations generate significant returns, particularly when their buy recommendations are contrary to the consensus sell-side stock recommendation

Other research on the performance of buy-side analysts' stock recommendations has provided evidence that is more mixed. For example, using proprietary data from a large money management firm, Groysberg et al. (2008) find that buy-side earnings forecasts are more optimistic and less accurate than those of sell-side analysts. Groysberg et al. (2013) also find that buy-side analysts' stock recommendations generally underperform those of sell-side analysts; however, they attribute this finding to the fact that buy-side analysts tend to cover larger, more liquid stocks with lower expected returns.

Brown et al. (2015b) survey buy-side analysts from 181 investment firms and examine the incentives and inputs that shape their stock recommendations. In general, their results suggest

that buy-side analysts value the raw inputs sell-side analysts provide (e.g., in-depth industry knowledge and access to company management) more than the summary outputs they provide (e.g., earnings estimates and stock recommendations). The buy-side analysts they survey also indicate that quarterly earnings conference calls are less useful than information in the recent 10-K or 10-Q when determining their stock recommendations, but that quarterly earnings conference calls are more useful than management earnings guidance or the firm's recent earnings and stock return performance. In follow-up interviews with buy-side analysts, some analysts indicated they are reluctant to ask a question on a public earnings conference call because they do not want to reveal their thinking to others listening to the call.

More directly related to our study, Jung et al. (2016) examine the determinants and consequences of buy-side analyst participation on public earnings conference calls. They find that buy-side analysts are more likely to participate on the calls of companies with a relatively poor information environment, and that institutional investors are more likely to trade a company's stock after their buy-side analysts participate in the company's conference call. Their findings suggest buy-side analysts revise their stock recommendations after they participate in earnings conference calls. As noted earlier, our taxonomy allows us to more finely partition buy-side (e.g., hedge fund, mutual fund, RIA) and sell-side (e.g., affiliated, unaffiliated, independent) conference call participants, and our study addresses questions about management's prioritization of participants as well as the length and tone of analysts' interactions with management.

2.2 Earnings Conference Calls

Public earnings conference calls held in conjunction with an earnings announcement have become increasingly common in recent years, and prior research has examined various questions

relating to these calls. Early studies focused on companies' motivations for hosting conference calls. For example, Brown, Hillegeist, and Lo (2004) find that information asymmetry among equity investors is reduced by conference call frequency. In terms of the consequences of conference calls, Hollander et al. (2010) document that when management chooses not to answer an analyst's question during the Q&A session, the market appears to assume the silence represents bad news and reacts negatively. Matsumoto et al. (2011) examine the information content of management's presentation and the Q&A session of earnings conference calls. They find that both portions of conference calls contain incremental information beyond that which is contained in the earnings press release, but the Q&A session appears to contain a greater amount of incremental information.

Some studies have focused on sell-side analysts' participation in the Q&A session of earnings conference calls. Mayew (2008) finds that sell-side analysts with more favorable ratings and higher profiles are more likely to be allowed to participate in earnings conference calls. Mayew, Sharp, and Venkatachalam (2013) find that sell-side analysts who participate on conference calls subsequently issue more accurate and timely earnings estimates than analysts who do not participate. The authors suggest that conference call participation can help identify sell-side analysts with superior private information. Although buy-side analyst participation could also signal the possession of superior private information, buy-side analysts may avoid participation on conference calls in an effort to protect this information. Decomposing the content of earnings conference calls and classifying analysts participating on these calls offers a glimpse into the public information production of buy-side institutions.

3. Hypotheses

As discussed previously, anecdotal evidence and conventional beliefs about the incentives of buy-side analysts suggest they will choose not to participate on public earnings conference calls. Consistent with these beliefs, Solomon and Soltes (2015) find that, despite the introduction of Regulation FD, some investors continue to meet privately with executives rather than interact in a public forum. Thus, we expect buy-side analyst conference call participation to be, on average, significantly less frequent than for sell-side analysts. Our first objective is to identify whether buy-side analysts actually appear on conference calls with any regularity.

Although buy-side analysts have clear incentives to avoid "tipping their hand," they may choose to participate on the conference calls of companies in their portfolio in order to influence the outcome of the call or the market's response to it. Among the different types of buy-side analysts we examine, there are reasons to believe managers treat analysts employed by hedge funds differently than other buy-side analysts. Specifically, management may be reluctant to allow analysts employed by hedge funds to ask questions during a public conference call if they suspect these analysts are more likely to ask aggressive questions or questions that are designed to drive down the stock price. Therefore, managers may favor analysts from long-only investment firms, such as mutual funds, over analysts working for hedge funds.

There are also reasons to believe analysts employed by hedge funds will be more likely to participate in earnings conference calls than other buy-side analysts. For example, although holding period varies substantially with hedge fund style, median turnover for hedge funds is 102% versus 63% for the average mutual fund (Griffin and Xu, 2009). The more active trading of hedge funds together with their ability to take short positions suggest their analysts are more likely to be actively engaged in a quarterly conference call relative to analysts from mutual funds or RIAs, which tend to be more passive and have longer investment horizons. Furthermore,

because of their ability to take a short position in a stock, hedge fund analysts may find that private access to management is more limited for them than it is for mutual funds or other long-only funds, which would make the Q&A session of a conference call a relatively important opportunity to speak directly with company management. Overall, because it is unclear ex ante whether hedge-fund analysts are more likely than other buy-side analysts to participate on conference calls, we state our first hypothesis in the null form:

H1a: Buy-side analysts employed by a hedge fund are no more likely to ask questions on public earnings conference calls than are other buy-side analysts.

Although buy-side analysts have clear incentives to avoid "tipping their hand," they may choose to participate on public conference calls in an effort to gather information they deem relevant to their institution's investment decision. The need to gather information in a public venue, such as a quarterly earnings conference call, is likely a function of uncertainty about the firm's future prospects and the buy-side analyst's alternative sources of information about the firm. As a result, we predict that buy-side analysts are more likely to ask questions on public earnings conference calls when information about the company is relatively uncertain and/or scarce. Stated formally, our next hypothesis is as follows:

H1b: Buy-side analysts are more likely to ask questions on public earnings conference calls of firms with greater information uncertainty.

Management makes important decisions when managing the conference call queue, and decisions about whom to allow to ask a question during the conference call are non-random (Mayew, 2008; Mayew et al., 2013). Management is likely to prioritize certain conference call participants deemed particularly important to the firm. One form of prioritization is to allow certain participants to ask the first question during the Q&A session (Cen, Chen, Dasgupta, and Ragunathan, 2016). Because time constraints are likely to limit the number of individuals who

are able to participate in the Q&A session of the call, analysts are likely to prefer asking their question early in the call. Given sell-side analysts' primary role as an intermediary between management and institutional investors (Brown et al., 2015a; Brown et al., 2015b), management is also likely to prioritize buy-side analysts on conference calls given the opportunity to interact directly with buy-side investors without using an intermediary.

On the other hand, management has the ability to postpone or avoid questions from participants with whom they do not desire to interact in a public setting by pushing those participants to the back of the conference call queue. Likewise, management may prioritize sell-side participants if they believe it is more efficient to interact with sell-side analysts who can then leverage that interaction into many additional contacts with buy-side clients. Further, if management is concerned that a buy-side analyst from a hedge fund might attempt to drive the company's stock price down to support his portfolio manager's short position in the stock, management may be reluctant to allow the analyst to ask direct questions in such a visible, public forum. Because it is unclear whether management will prioritize buy-side or sell-side participants, we state our next hypothesis in the null form:

H2: Buy-side analysts are no more likely than sell-side analysts to ask the first question on public earnings conference calls.

We also examine the length of time during which conference call participants interact with management during the Q&A session. The total time a given analyst participates with management will be a function of the length of the analyst's question, the length of management's response to the question, and any follow-up questions and responses. Buy-side analysts may favor shorter, more succinct interactions with company management due to concerns about revealing private information in a public setting. Conversely, sell-side analysts would seem to prefer longer interactions with management because sell-side analysts benefit

from the appearance that they are prominent and/or have a good relationship with company management (Brown et al., 2015a; Brown et al., 2015b; Chen and Matsumoto, 2006). Consistent with this motivation, one buy-side analyst interviewed in Brown et al. (2015b, p. 32) stated, "Sell-side analysts ask the questions so if you Google them, it comes up with them in the transcript, and they want to have their name out there as much as possible." This reasoning suggests sell-side analysts will have longer interactions, on average, than buy-side analysts. However, management may be willing to allocate more time to buy-side analysts if they view these interactions as particularly important. Because it is unclear which group will, on average, have longer interactions with management on the call, we do not make a directional prediction:

H3: Interactions between buy-side analysts and company management during public earnings conference calls are no longer than interactions between sell-side analysts and company management.

We also examine the tone of conference call participants' interactions with management during the Q&A session of earnings conference calls. Sell-side analysts have strong incentives to maintain positive relations with company management because negative interactions could result in a loss of access to management (Mayew, 2008; Mayew et al., 2013; Brown et al., 2015a), and access to management is one of the sell-side services that buy-side clients value most (Brown et al. 2015b). In contrast, buy-side analysts do not have the same strong incentives to maintain positive relations with management. When Brown et al. (2015b) asked buy-side analysts about the determinants of their compensation, they rated their relationships with senior management of the companies they cover as the least important determinant. Further, while sell-side analysts have incentives to use positive language in an effort to curry favor with company management, buy-side analysts have incentives to guard their private information are therefore likely to use language that is more neutral. Buy-side analysts who work for hedge funds that trade frequently

and/or take short positions may also deliberately ask questions with negative tone in order to drive the stock price down. Therefore, we state our next hypothesis as follows:

H4: The tone of buy-side analysts' interactions with management on public earnings conference calls is more negative than the tone of sell-side analysts' interactions with management.

Our last hypothesis examines potential post-call effects of buy-side analyst participation. Boehmer and Kelley (2009) link institutional trading activity to more efficient stock prices, while Sarin, Shastri, and Shastri (1999) show that higher institutional ownership increases bid-ask spreads. If buy-side analyst conference call participation is a signal to the marketplace of greater institutional interest in a stock, we may observe abnormal stock returns and increases in equity bid-ask spreads following the conference call, as well as changes in aggregate institutional holdings. Similarly, we may observe abnormal returns, changes in bid-ask spreads, or changes in institutional holdings following the call if the tone of buy-side analysts' interactions with company management reveals information. Stated formally:

H5: Buy-side analyst participation and tone on public earnings conference calls is associated with abnormal firm stock returns, changes in equity bid-ask spreads, and changes in institutional holdings.

4. Analyst Taxonomy of Conference Call Data

We collect all earnings conference call transcripts available through Capital IQ for Standard & Poor's 500 Index members from 2008 to 2013.[1] We also collect transcripts for a random sample of approximately 900 additional firms not in the S&P 500.[2] In total, our sample includes 28,503 quarterly earnings conference call transcripts for 1,447 publicly traded firms.

[1] Capital IQ also makes available a limited number of conference call transcripts from 2006 and 2007. In supplemental tests we include these conference calls in our analyses and find qualitatively similar results.
[2] More than 3,000 firms are included in the CRSP U.S. Total Market Index but are not in the S&P 500. We randomly selected 900 of these firms and identified their conference call transcripts during our sample period.

From each transcript, we extract call date, call time, analyst affiliation, and analyst question sequence.

We employ several steps to identify the affiliation of each conference call participant. We first identify sell-side institutions by matching the name of the analyst's affiliation in the conference call transcripts with a contributing brokerage in I/B/E/S. For all institutions not located in I/B/E/S, we manually search company websites to identify additional sell-side institutions. We classify all conference call participants employed by a sell-side institution (either in I/B/E/S or confirmed by our manual search of company websites) as sell-side analysts.[3] We further use manual searches of company websites to classify every sell-side institution as either an affiliated, an unaffiliated, or an independent brokerage. Affiliated sell-side institutions are those that offer investment banking, transaction advisory, or any other capital raising services for covered firms. Analysts employed by affiliated brokerages often face incentives to issue more favorable stock recommendations and earnings estimates to secure underwriting or M&A business (Lin and McNichols, 1998; Kolasinski and Kothari, 2008). Unaffiliated (independent) sell-side institutions do not provide underwriting services, and operate (do not operate) as a broker-dealer. Figure 1 provides an overview of this taxonomy.

<Insert Figure 1 Here>

After manually identifying sell-side institutions, we employ textual analysis across several databases to identify buy-side institutions. We identify buy-side institutions using the following steps: First, we identify hedge funds with manual, visual verification to a hedge fund

[3] Many investment banks employ both buy-side and sell-side analysts. Unless explicitly stated otherwise on the conference call through a subsidiary name or analyst role identification, we assume that a participating analyst who works for a firm with a sell-side research department is a sell-side analyst. In this respect, the number of buy-side analysts we identify may be understated.

listed on a large, proprietary database of hedge funds.[4] Second, if a previously unidentified institution matches to the Thomson-Reuters institutional holdings (13-F, S34) or mutual fund (S12) databases, we classify the institution as a mutual fund. If an institution matches only to a 13-F record, we manually classify the entry using the institution website, which generally contains descriptions of the institution's operations. If an institution's website is not available, we use a variety of data sources, including Google searches, Capital IQ, and Bloomberg, to classify the institution. Whenever possible we control for changes in institutional type over time.[5] Although we identify eleven different types of buy-side institutions, we categorize the vast majority as hedge funds, mutual funds, or registered investment advisors (RIAs).[6]

If we cannot classify an institution as a sell-side or buy-side institution, we categorize it as either a media outlet or "other." We manually identify media organizations in the conference call transcripts.[7] The "other" category includes institutions we cannot identify as a buy-side institution, a sell-side institution, or a media outlet, and executives of the firm improperly listed on the transcript as a participating analyst, as well as other professionals who are unidentifiable.[8] Our taxonomy successfully identifies 92.87% of the 214,590 conference call participants as either a buy-side analyst, a sell-side analyst, or a member of the media, representing 1,114 unique institutions. In Table 1, we report the most common buy-side and sell-side institutions

[4] We thank Jesse Ellis for sharing the hedge fund names from his database.
[5] For example, we classify Prudential as an unaffiliated sell-side institution until June 7, 2007, after which we categorize it as a buy-side institution. See http://www.businessweek.com/stories/2007-06-08/equity-research-whats-next-businessweek-business-news-stock-market-and-financial-advice
[6] Other types of buy-side institutions we identify include pension funds and insurance firms.
[7] Media outlets include newspapers, magazines, and financial blogs.
[8] For example, transcripts list "Unidentified Analyst" or "Inaudible" for analyst institutions and/or names that are unknown or that cannot be transcribed. Some conference call participants intentionally conceal their identity, making it impossible to identify their employer. An example is Robert Jordan on this conference call: http://seekingalpha.com/article/66925-bluegreen-corp-q4-2007-earnings-call-transcript?part=qanda

with participating analysts in our sample of conference call transcripts, separately for each subcategory (i.e., hedge fund, mutual fund).[9]

<Insert Table 1 Here>

Because the conference call transcripts are derived from audio files, we use the phonetic algorithm Soundex (rather than Levenshtein distances) to determine the number of unique conference call appearances from a given institution.[10] Snae (2007) finds that the Levenshtein matching method underperforms Soundex by 9% and shows that Levenshtein distance calculations require twice as much computing time as Soundex. We manually verify all variants of an institution's name that appear at least five times in our sample. Figure 2 provides an example of a conference call transcript and the outcome of our taxonomy to identify conference call participants.

<Insert Figure 2 Here>

5. Empirical Findings

5.1 SUMMARY OF ANALYST APPEARANCES

Conference call participation rates are presented in Panel A of Table 2. Columns (1) through (4) describe conference call participation among the various types of buy-side analysts, with column (5) showing the total for all buy-side analysts. Columns (6) through (9) exhibit a similar breakdown for sell-side analysts. Columns (10) and (11) pertain to the media and the other/unknown group of participants, and column (12) aggregates the participants across all types.

[9] An online appendix provides the full list of all 1,114 institutions, along with their classification, total number of appearances in our sample, number of unique analysts, and number of distinct matched text patterns.
[10] For example, if one transcript lists a conference call participant's institution as "J.P. Morgan," and another transcript lists a participant's institution as "JP Morgan," Soundex allows us to determine that both transcripts are referring to the same institution. More information about the Soundex indexing system can be found at: http://www.archives.gov/research/census/soundex.html

<Insert Table 2 Here>

For each group of participants, we first report the mean participation rate, per conference call. The mean of 7.53 for all conference call participants for the full sample period (column 12) suggests that more than 7 individuals ask a question during the Q&A portion of the average conference call in our sample. The majority of these participants are sell-side analysts, and particularly affiliated sell-side analysts. The mean participation rate for buy-side analysts is 0.21.

We also report (i) the maximum number of participants on a single conference call, (ii) the percentage of conference calls with at least one participant, and (iii) the percentage of conference calls with multiple participants. At least one buy-side analyst appears on 15.27% of all conference calls, with one call having as many as nine buy-side participants on a single call. An analysis of participation across years suggests buy-side analysts have become less likely to ask questions on conference calls in recent years.

The mean participation rate for hedge fund (mutual fund) analysts is 0.09 (0.05), suggesting that hedge fund analysts are more active on public earnings conference calls. In Panel B of Table 2, we assess the statistical difference between conference call participation among the various types of buy-side analysts we identify (H1a). In all years, analysts employed by hedge funds are more likely to participate in conference calls than are analysts employed by mutual funds or RIAs. We observe no systematic difference in the likelihood of conference call participation between analysts employed by mutual funds and those employed by RIAs. Our finding that hedge fund analysts more actively participate in conference calls is consistent with their more frequent trading behavior (Griffin and Xu, 2009).

5.2 Determinants of Conference Call Participation

H1b predicts that when information about the firm's future prospects is uncertain, buy-side analysts are more likely to ask questions on earnings conference calls. We employ three proxies to identify a relatively uncertain information environment. First, we measure the number of sell-side analysts following the firm. Sell-side analysts are an important source of information for buy-side analysts because they typically possess a significant amount of industry knowledge, and industry knowledge is an extremely useful input into buy-side analysts' stock recommendations (Brown et al., 2015b). With fewer sell-side analysts covering a stock and in a position to assess the implications of industry-wide information for a given company, buy-side analysts are less able to rely on sell-side analysts to provide valuable information as inputs to their stock recommendations. Second, we measure equity bid-ask spreads, which capture the extent to which information asymmetries exist between market makers and informed traders (such as institutional investors). Third, we include an indicator variable equal to one for firms in the S&P 1500 index, as prior research finds the addition of a stock to an index increases liquidity and investor recognition (Becker-Blease and Paul, 2010). To test H1b, we estimate the following generalized logit model:

$$\begin{aligned}\text{Prob (Buy-Side)} = {} & \alpha + \beta_1 \times \text{S\&P 1500 Index Member} + \beta_2 \times \text{Number of Covering} \\ & \text{Analysts} + \beta_3 \times \text{Equity Bid-Ask Spread} + \beta_4 \times \text{Number of Institutional Investors} + \\ & \beta_5 \times \text{Number of Forecasts per Analyst} + \beta_6 \times \text{Ln(Market Value)} + \beta_7 \times \text{Leverage} + \\ & \beta_8 \times \text{M/B Ratio} + \beta_9 \times \text{Return on Assets} + \beta_{10} \times \text{Dividend Yield} + \beta_{11} \times \text{Implied} \\ & \text{Volatility (Excess)} + \beta_{12} \times \text{Forecast Error} + \beta_{13} \times \text{Runup(-42,-1) CAR} + \\ & \text{Year-Quarter Fixed Effects} + \text{Industry Fixed Effects} + \varepsilon, \end{aligned} \quad (1)$$

The dependent variable is an indicator variable equal to one if the conference call includes at least one buy-side participant, and equal to zero otherwise. Beyond the three proxies for information uncertainty described above, we include several control variables, such as the number of institutional investors holding stock in the firm, the firm's market valuation, leverage, M/B ratio, return on asset, dividend yield, and excess return volatility. We also control for the 2-month (42-day) CAR in the period immediately preceding the conference call. We obtain firm-level data from a variety of sources including CRSP, Compustat, Optionmetrics, and I/B/E/S. We include year-quarter fixed effects to control for differences in conference call participation that may exist over our sample period or across time within a given year (i.e., Q4 conference calls may attract more attention than Q1 conference calls), and industry fixed effects based on two-digit SIC codes.

We present descriptive statistics for the variables included in Equation (1) in Panel A of Table 3. Approximately 37% (66%) of firm observations are from members of the S&P 500 (S&P 1500) indices. Other descriptive data are as expected.

<Insert Table 3 Here>

In Panel B of Table 3, we present the results of estimating Equation (1). We find that buy-side analyst participation on earnings conference calls is more likely for firms with relatively few sell-side analysts covering the firm. This finding holds for analysts working for a hedge fund, mutual fund, or RIA.[11] We also find that hedge fund analysts are more likely to participate on conference calls for firms with large bid-ask spreads and that are not in the S&P 1500 index.

[11] We note that when few sell-side analysts follow the firm, there may be fewer sell-side analysts in the conference call queue, increasing the likelihood that buy-side analysts are allowed to ask a question during the conference call, possibly for reasons unrelated to uncertainty about the firm.

We also note that the frequency of buy-side participation on conference calls is highest in 2008 and 2009, periods of tremendous uncertainty, and lower in subsequent years (see Table 2, Panel A). Relatedly, sell-side participation is lower during 2008 and 2009 than in any other years in our sample. Untabulated tests reveal that buy-side (sell-side) participation is significantly higher (lower) in 2008 and 2009 compared to 2010 through 2013 (p-value < 0.01). These observations are consistent with buy-side analysts playing a more prominent role in conference calls during periods of abnormally high uncertainty. In general, our evidence suggests buy-side analysts are more likely to ask a question on public earnings conference calls when uncertainty is high and alternative sources of information are scarce.

5.3 First-Question Priority on Conference Calls

In Panel A of Table 4, we present evidence on conference call priority, as evidenced by the ability to ask the first question during the Q&A session. In column (1) and column (2), we report the number and percentage of unique conference calls in our sample with at least one participant of each type. Buy-side analysts appear on 4,353 (15.90%) unique conference calls that include a Q&A session, with a total of 5,846 unique appearances (or questions).[12] Consistent with what we observe in Panel A of Table 2, hedge fund analysts are the most frequent participants among all buy-side analysts. Hedge funds represent 45.93% of all buy-side analyst appearances, compared to just 22.49% for mutual funds and 23.28% for RIAs. To our knowledge, these results are the first to show that hedge funds are relatively frequent participants on the earnings conference calls of public firms.

<Insert Table 4 Here>

[12] In Panel A of Table 2, we report that buy-side analysts appear on 15.27% of all conference calls. However, in Panel A of Table 4, we omit from our analysis of conference call priority 1,124 conference calls that do not have a Q&A session; thus, buy-side analysts appear on 15.90% of these remaining calls.

Because buy-side analysts are less likely than sell-side analysts to ask a question on a conference call, only 2.72% of all conference call appearances are from buy-side analysts. However, as reported in column (5), buy-side analysts ask the first question on 1,091 conference calls, or 3.96% of all conference calls in our sample. Thus, while buy-side analysts are responsible for only 2.72% of all questions, they ask the first question on 3.96% of all calls, which is 45.33% higher than would be expected if first-question priority were determined by chance. Our finding that buy-side analysts are disproportionately asking the first question on conference calls extends to all types of buy-side analysts, with hedge fund (mutual fund) analysts exhibiting a differential of 31.07% (26.95%). These findings reject the null hypothesis in H2. In general, considering only the calls on which buy-side analysts appear, they ask the first question on 24.90% (1,084 / 4,353) of these calls.

Sell-side analysts appear on almost every conference call (98.50%), with affiliated analysts being the most common participant. However, we find that sell-side analysts are disproportionately less likely to ask the first question on a call, with sell-side analysts representing 90.04% of all questions, but asking the first question on only 86.75% of all calls.[13] Table 4 Panel A shows that this finding is driven by management's discrimination against affiliated analysts. In contrast, unaffiliated and independent analysts are more likely to ask the first question than would be expected by chance.

In Panel B of Table 4, we further explore the issue of first-question priority among buy-side analysts by estimating the following generalized logit model:

[13] Note that while sell-side analysts ask the first question on 86.75% of all calls, this figure includes many calls without appearances from any buy-side analysts. In fact, buy-side analysts do not appear on 84.10% of all calls with a Q&A session in our sample.

$$\text{Prob (First Question}_j) = \alpha + \beta_1 \times \text{Buy-Side Analyst} + \beta_2 \times \text{Number of Analysts on Call} + \beta_3 \times \text{Number of Words in Q\&A} + \text{Controls} + \text{Year-Quarter Fixed Effects} + \varepsilon. \quad (2)$$

In this regression, we include all conference call participants at the individual level (159,993 conference call participants on calls for firms with available data). The dependent variable is an indicator variable equal to one if the participant asked the first question on the conference call in question, and equal to zero otherwise. We include an indicator variable identifying buy-side participants, and in subsequent regressions (also reported in Panel B) we instead include separate indicator variables for hedge fund, mutual fund, and RIA analysts. We also control for the number of participants on the call, as well as the length of the Q&A session, as proxied by the number of total words used in that session. In addition, we control for the same firm-level characteristics outlined in Equation (1).

We continue to employ year-quarter fixed effects in all specifications, and include industry (columns 3 and 4) or firm (columns 5 and 6) fixed effects in subsequent specifications. In this participant-level specification, we find that buy-side analysts are disproportionately likely to ask the first question on conference calls. This finding appears to be driven primarily by RIA analysts.

5.4 Length of Interaction on Conference Calls

We measure the length of the interaction between company management and conference call participants by counting the number of words from the beginning of the participant's question to the end of management's response.[14] We deem each participant's interaction to begin when the call operator introduces the participant in question, and to end when the operator introduces the next participant. In Panel A of Table 5, we report mean interaction lengths, in

[14] The entire Q&A session of the conference calls in our sample is an average of 4,997 words in length. For context, the presentation portion is an average of 3,211 words in length.

number of words, for each type of conference call participant. For each participant, we also calculate abnormal interaction length as the standardized difference between the participant's actual interaction length and the expected interaction length for the call. This measure controls for systematic differences in the length of interactions across conference calls. Specifically, abnormal interaction length is calculated as:

$$\text{Abnormal Length} = \text{Words in Interaction} - \frac{\text{Total Words in Q\&A Session}}{\text{Number of Participants on Call}}$$

<Insert Table 5 Here>

The average interaction between sell-side analysts and company management is 694.50 words, with abnormal length of 2.97%. Buy-side interactions, on the other hand, average only 605.10 words, with abnormal length of -12.30%. Conference call interactions with members of the media are also relatively short, averaging only 447.29 words (-16.00%).

In Panel B of Table 5, we report the results of statistical tests comparing the length of management's interactions with sell-side analysts and the length of their interactions with various types of buy-side analysts. We consistently find that all types of buy-side analysts (hedge fund, mutual fund, RIA) have shorter interactions with management than do sell-side analysts. These findings reject the null hypothesis in H3.

In Panel C of Table 5, we further explore this issue by estimating the following tobit model:

$$\ln(\text{Words in Interaction}) = \alpha + \beta_1 \times \text{Buy-Side Analyst} + \beta_2 \times \text{Number of Analysts on Call} + \text{Controls} + \text{Year-Quarter Fixed Effects} + \varepsilon. \quad (3)$$

The dependent variable is the natural log of the number of words in the participant's interaction with management. We control for the same firm-level characteristics outlined in

Equation (2), with the exception of the number of words in the entire Q&A session, which is mechanically related to the dependent variable in this model.

As reported in Panel C, we continue to find strong evidence that management's interactions with all types of buy-side analysts are shorter than their interactions with sell-side analysts. These findings again reject H3, and are consistent with the notion that buy-side analysts prefer shorter, more succinct interactions on public earnings conference calls (perhaps to avoid "tipping their hand"), while sell-side analysts take more time on these calls.

5.5 Tone of Interaction on Conference Calls

H4 predicts the tone of buy-side analysts' interactions with company management is less favorable than the tone of sell-side analysts' interactions with company management. We measure tone using the Loughran and McDonald (2011) dictionaries. We separately measure both positive and negative tone as the number of positive (negative) words divided by the total number of words in the interaction.

In Panel A of Table 6, we report mean positive, mean negative, and mean "net" tone (positive tone minus negative tone) for each group of conference call participants. We find that while 1.12% of sell-side analysts' interactions convey positive tone, 0.99% of buy-side analysts' tone is consistent with a positive tone. Similarly, sell-side analysts exhibit less negative tone than do buy-side analysts (0.97% vs. 1.19%). These statistics are fairly consistent across all types of sell-side and buy-side analysts, respectively, with the exception that "other" buy-side analysts exhibit more positive and more negative tone than other buy-side analysts.

<Insert Figure 6 Here>

In Panel B, we perform formal statistical tests comparing tone comparing each type of buy-side analyst to sell-side analysts. Hedge fund, mutual fund, and RIA analysts consistently

exhibit less positive and more negative tone than do sell-side analysts. We also report the results of estimating the following tobit model to further address differences in tone between buy-side and sell-side interactions with company management:

$$\text{Tone} = \alpha + \beta_1 \times \text{Buy-Side Analyst} + \beta_2 \times \text{Number of Analysts on Call} + \beta_3 \times \text{Number of Words in Call Q\&A} + \text{Controls} + \text{Year-Quarter Fixed Effects} + \varepsilon. \quad (4)$$

The dependent variable is the percentage of words exhibiting positive (and alternatively, negative) tone. We also estimate Equation (4) using the net tone (positive tone minus negative tone). As reported in Panel C of Table 6, we continue to find that company management's interactions with buy-side analysts employed by hedge funds, mutual funds, or RIAs exhibit less positive and more negative tone, relative to management's interactions with sell-side analysts. These findings are consistent with buy-side analysts' desire to avoid revealing their beliefs about a company and with sell-side analysts' incentives to curry favor with management.

5.6 Implications of Buy-Side Participation

We first test H5 using a simple univariate analysis of value-weighted four-factor Fama and French (1996) excess returns over the 3-day event window around the conference call, changes in equity bid-ask spreads, and changes in institutional holdings following public earnings conference calls. In Panel A of Table 7, we report univariate results for various subsamples. In row (i), we report averages for all conference calls in our sample. In rows (ii) and (iii), we report averages for all conference calls without and with buy-side participation, respectively. And in rows (iv) through (ix), we report averages for subsamples based on the average tone (positive tone minus negative tone) of the interactions between company management and conference call participants.

As reported in significance tests at the bottom of Panel A, short-window abnormal returns are significantly lower when buy-side analysts participate on the conference call. Further, abnormal returns surrounding conference calls are predictably associated with tone on the call, where for all conference call participants, abnormal returns are larger following calls with positive tone than following calls with negative tone. We note that sell-side analysts exhibit positive tone on 63% of all conference calls in which they participate, while buy-side analysts exhibit positive tone on only 44% of calls in which they participate, consistent with our earlier finding that buy-side analysts exhibit less favorable tone than do sell-side analysts, on average. Lastly, increases in bid-ask spreads are larger following conference calls in which buy-side analysts participate than following conference calls without buy-side participation, and increases in spreads are also larger following calls with positive buy-side tone than following calls with positive sell-side tone.

We further analyze these changes in a multiple-regression framework as follows:

$$\begin{aligned}\text{Consequence} = {} & \alpha + \beta_1 \times \text{Buy-Side Appearance} + \beta_2 \times \text{Buy-Side Tone} + \beta_3 \times \text{Sell-Side Tone} + \beta_4 \times \text{Number of Analysts on Call} + \beta_5 \times \text{Number of Words in Q\&A} + \beta_6 \times \text{S\&P 1500 Index Member} + \beta_7 \times \text{Number of Institutional Investors} + \beta_8 \times \text{Number of Covering Analysts} + \beta_9 \times \text{Number of Forecasts per Analyst} + \beta_{10} \times \text{Forecast Error} + \beta_{11} \times \text{Runup(-42,-1) CAR} + \text{Year-Quarter Fixed Effects} + \text{Industry Fixed Effects} + \varepsilon. \end{aligned} \quad (5)$$

The dependent variable is, alternatively, the 3-day abnormal return around the conference call, the change in mean equity bid-ask spread in the 30-day period prior to and after the conference call, and the change in institutional ownership (as a percentage of total firm ownership) from the 13-F filings by owning institutions immediately prior to the conference call

to the 13-F filings immediately after the conference call. Independent variables include an indicator variable equal to one for conference calls with buy-side analyst participation and equal to zero otherwise (Buy-Side Appearance), and the average tone (positive tone minus negative tone) of buy-side analysts' interactions with company management (Buy-Side Tone).[15,16] We control for the average sell-side tone on the call, as well as several additional control variables discussed previously. If buy-side analysts' participation (or tone) on public earnings conference calls conveys information to other market participants, it may be manifested by abnormal stock returns, changes in bid-ask spreads, or changes in institutional holdings.

After controlling for other determinants of the market response to earnings conference calls, we find that buy-side analysts' appearance in and tone on the calls are not significantly related to the short-window abnormal returns. However, we find that buy-side analysts' participation on earnings conference calls is associated with subsequent changes in equity bid-ask spreads. This finding suggests markets increase their spreads to reflect greater information asymmetries when buy-side analysts participate on calls. We also find that buy-side appearances on conference calls are not associated with changes in aggregate institutional holdings, but that institutions do increase (decrease) their holdings in firms following conference calls on which buy-side analysts' interactions with management exhibit relatively positive (negative) tone.

6. Conclusion

Buy-side analysts represent an important segment of Wall Street, yet because of the private nature of their research, we know relatively little about their research activities. Quarterly earnings conference calls present a unique opportunity to observe buy-side analysts' behavior at

[15] We set Buy-Side Tone equal to zero for conference calls without buy-side participation.
[16] When the dependent variable is change in equity bid-ask spread, Buy-Side Tone is defined as the absolute value of buy-side tone, because extreme tone of either sign (positive or negative) is more likely to be associated with subsequent information asymmetry.

because the call transcripts are publicly available and because earnings conference calls are an important news event for market participants.

We extract more than 28,000 conference call transcripts from 2008 through 2013 and identify the frequency and nature of buy-side (and sell-side) analysts' interactions with company management during public earnings conference calls. Importantly, our taxonomy allows us to separately identify various types of buy-side analysts (hedge fund, mutual fund, RIA) and sell-side analysts (affiliated, unaffiliated, independent) asking questions on the call. We find that buy-side analysts participate in about 15% of all conference calls, and that among buy-side analysts, hedge fund analysts are the most common conference call participants. Buy-side analysts are more likely to ask questions on calls with a relatively weak information environment.

We also find that buy-side analysts get preferential first-question priority on conference calls. Further, relative to sell-side analysts, buy-side analysts' interactions with company management are shorter and exhibit less favorable tone, consistent with buy-side analysts' incentives to avoid revealing their private information. Finally, following earnings conference calls with buy-side analyst participation, equity bid-ask spreads increase. Institutional holdings also increase (decrease) following conference calls where interactions between management and buy-side participants is relatively favorable (unfavorable). Our findings provide new evidence on the role of public earnings conference calls in buy-side research.

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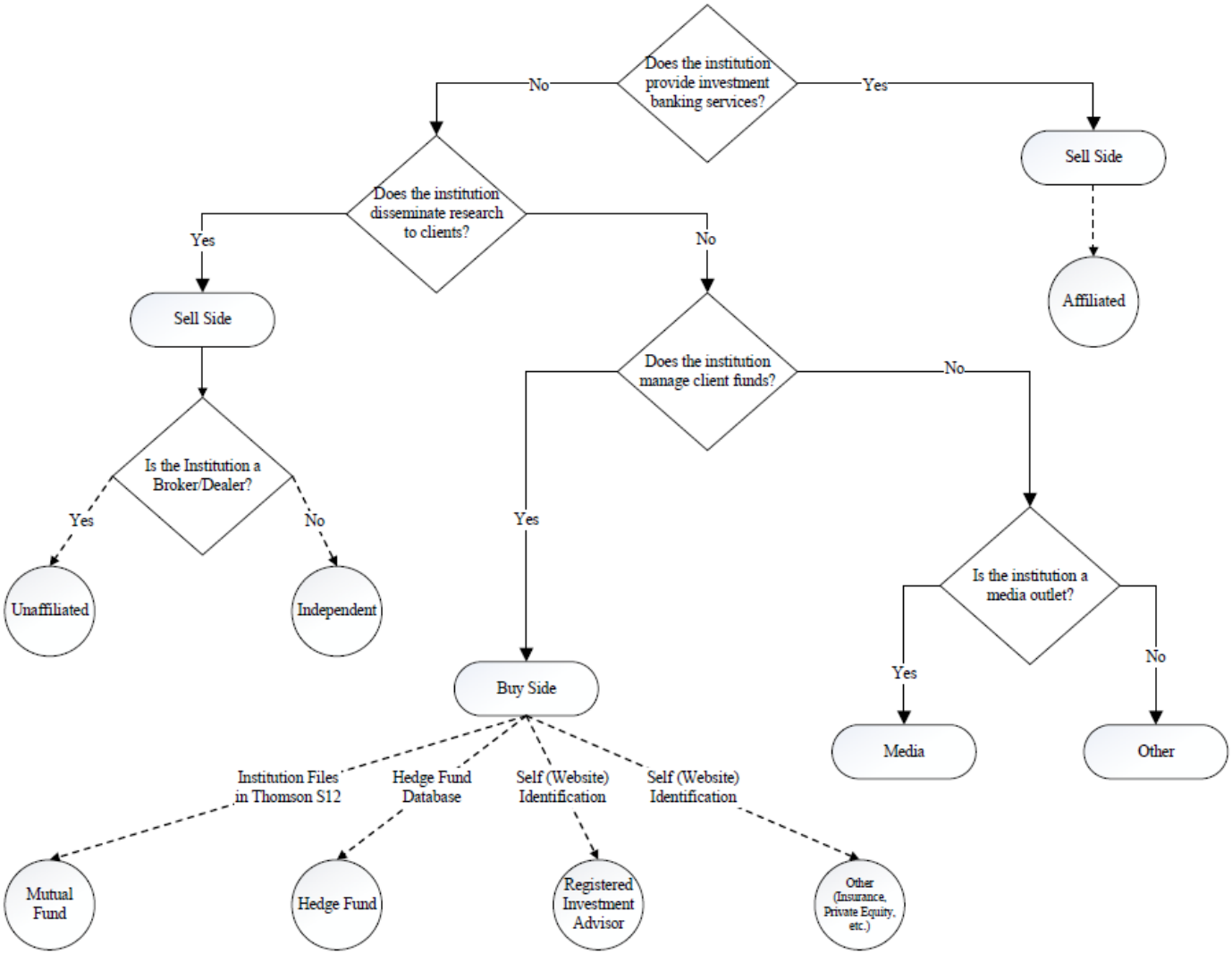
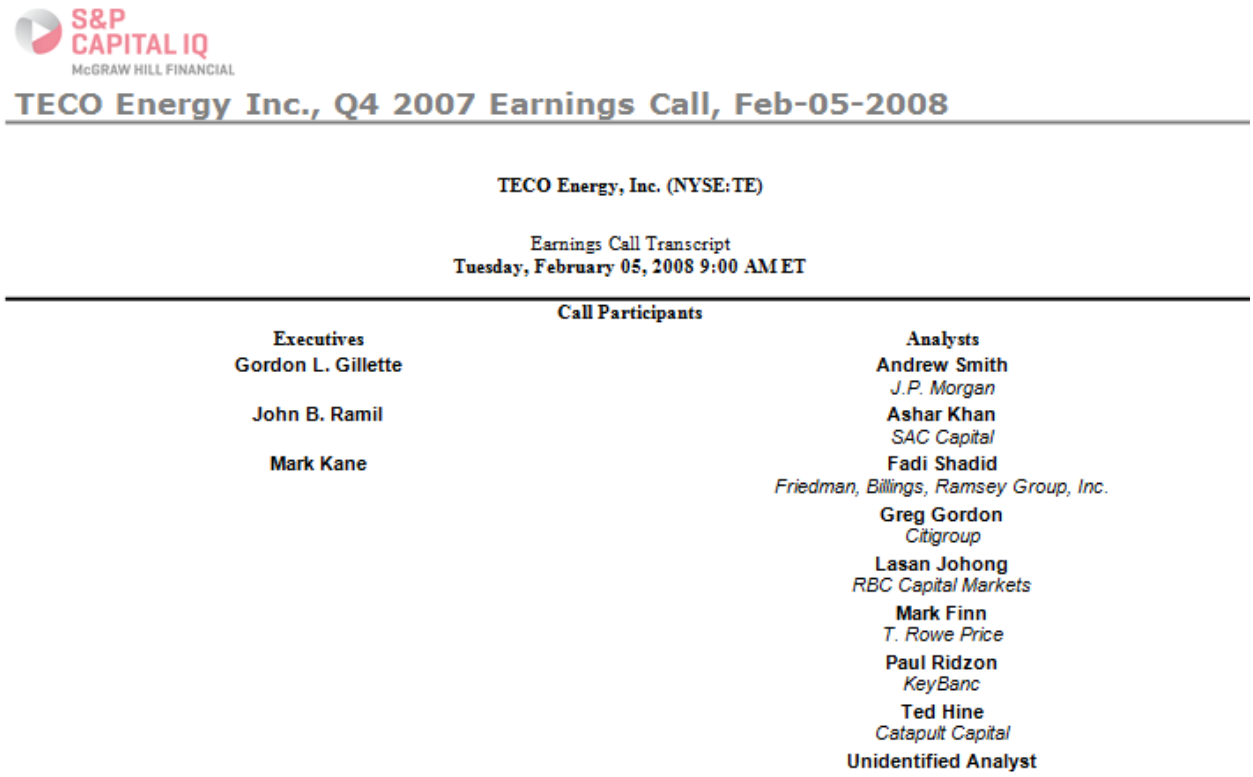
Figure 1 – Institution Taxonomy Process



This figure describes the taxonomy we use to classify institutions. Rounded rectangles (circles) are primary (secondary) classifications.

Figure 2 – Conference Call Taxonomy Example



S&P CAPITAL IQ
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TECO Energy Inc., Q4 2007 Earnings Call, Feb-05-2008

TECO Energy, Inc. (NYSE:TE)

Earnings Call Transcript
Tuesday, February 05, 2008 9:00 AM ET

Call Participants

Executives

Gordon L. Gillette

John B. Ramil

Mark Kane

Analysts

Andrew Smith
J.P. Morgan

Ashar Khan
SAC Capital

Fadi Shadid
Friedman, Billings, Ramsey Group, Inc.

Greg Gordon
Citigroup

Lasan Johong
RBC Capital Markets

Mark Finn
T. Rowe Price

Paul Ridzon
KeyBanc

Ted Hine
Catapult Capital

Unidentified Analyst

# in Call	Analyst Name	Institution Text	Institution Soundex(6)	Primary Classification	Secondary Classification
1	Andrew Smith	J.P. Morgan	J15625	Sell Side	Affiliated
4	Ashar Kahn	SAC Capital	S22134	Buy Side	Hedge Fund
7	Fadi Shadid	Friedman, Billings, Ramsey Group, Inc.	F63551	Sell Side	Affiliated
3	Greg Gordon	Citigroup	C32610	Sell Side	Affiliated
2	Lasan Johong	RBC Capital Markets	R12213	Sell Side	Affiliated
9	Mark Finn	T. Rowe Price	T61620	Buy Side	Mutual Fund
5	Paul Ridzon	KeyBanc	K15200	Sell Side	Affiliated
8	Ted Hine	Catapult Capital	C31432	Buy Side	Hedge Fund
6	Unidentified Analyst			Other/Unknown	

This figure provides an example of a participant list from an earnings conference call transcript and how the text for each participant's name and institution is translated into a Soundex string, along with the classification of each participant's institution.

Table 1 – Examples of Most Frequent Conference Call Participant Types

Panel A: Buy-Side Firms

Research Institution Name	Secondary Type	Total Appearances	Number of Analysts
Adage Capital Management	Hedge Fund	136	5
Catapult Capital Management LLC	Hedge Fund	112	18
Longbow Capital Partners LP	Hedge Fund	81	7
Millennium Management LLC	Hedge Fund	76	16
SAC Capital Advisors	Hedge Fund	73	2
Lord, Abbett & Co. LLC	Mutual Fund	109	10
Columbia Management Group LLC	Mutual Fund	90	19
Cardinal Capital Management, LLC	Mutual Fund	65	8
AllianceBernstein	Mutual Fund	60	12
Federated Investors, Inc.	Mutual Fund	54	8
Thompson Davis & Co.	Registered Investment Advisor	96	3
Tieton Capital Management, LLC	Registered Investment Advisor	77	3
Kennedy Capital Management, Inc.	Registered Investment Advisor	55	12
Philadelphia Financial	Registered Investment Advisor	55	4
Barry Vogel & Associates	Registered Investment Advisor	52	3

Panel B: Sell-Side Firms

Research Institution Name	Secondary Type	Total Appearances	Number of Analysts
J.P. Morgan Chase	Affiliated	10036	413
Goldman Sachs	Affiliated	8780	350
Bank of America	Affiliated	8259	337
Citigroup Global	Affiliated	7483	240
Credit Suisse Group	Affiliated	7333	301
Sanford C. Bernstein & Co., LLC	Unaffiliated	2582	78
Longbow Research	Unaffiliated	1398	55
Buckingham Research Group, Inc.	Unaffiliated	1273	41
International Strategy & Investment Group	Unaffiliated	1208	52
Susquehanna International Group, LLP	Unaffiliated	1110	75
Sidoti & Company, LLC	Independent	2747	138
Morningstar	Independent	750	82
Cleveland Research Company	Independent	562	18
Glenrock Associates LLC	Independent	364	1
Vertical Research Partners, LLC	Independent	318	10

We report the institutions in each category that appear the most frequently in the conference call transcripts. An exhaustive list of all 1,114 identified institutions appearing in earnings conference calls in this study is available in an online appendix.

Table 2 – Conference Call Participation by Analyst Type

Panel A – Time series of conference call participation

		Buy-Side					Sell-Side						
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		Hedge	Mutual			Buy-Side				Sell-Side		Other or	Aggregate
Year		Fund	Fund	RIA	Other	Total	Affiliated	Unaffiliated	Independent	Total	Media	Unknown	Total
2008-2013	Mean Participants per Call	0.09	0.05	0.05	0.02	0.21	6.10	0.44	0.24	6.78	0.01	0.54	7.53
(N = 28,503)	Max Participants per Call	6	3	3	3	9	24	6	5	27	7	17	28
	% of Calls with at Least One	7.77%	4.31%	4.36%	1.63%	15.27%	93.48%	34.05%	21.45%	94.61%	0.20%	35.99%	
	% of Calls with Multiple	1.27%	0.28%	0.37%	0.06%	3.64%	87.64%	8.27%	2.35%	90.54%	0.10%	11.06%	
2008	Mean Participants per Call	0.17	0.09	0.08	0.03	0.38	5.72	0.39	0.19	6.30	0.01	0.62	7.31
(N = 4,089)	Max Participants per Call	6	3	3	3	8	20	5	4	23	7	17	23
	% of Calls with at Least One	13.01%	8.56%	7.09%	2.93%	25.41%	91.49%	31.28%	17.19%	92.13%	0.34%	37.61%	
	% of Calls with Multiple	3.15%	0.73%	0.78%	0.20%	8.29%	87.14%	6.21%	1.35%	89.17%	0.20%	13.26%	
2009	Mean Participants per Call	0.14	0.07	0.07	0.03	0.31	5.65	0.43	0.23	6.31	0.01	0.68	7.32
(N = 4,345)	Max Participants per Call	6	3	3	3	9	24	5	4	26	7	15	28
	% of Calls with at Least One	10.75%	6.44%	6.49%	2.90%	21.17%	91.44%	34.25%	19.56%	92.61%	0.37%	37.65%	
	% of Calls with Multiple	2.44%	0.62%	0.58%	0.12%	6.49%	85.73%	7.43%	2.55%	88.56%	0.16%	15.14%	
2010	Mean Participants per Call	0.10	0.05	0.05	0.03	0.22	6.13	0.42	0.22	6.77	0.01	0.48	7.48
(N = 4,716)	Max Participants per Call	5	3	3	2	6	22	4	5	24	5	15	26
	% of Calls with at Least One	8.88%	4.24%	4.35%	2.50%	17.24%	92.85%	34.20%	19.02%	93.64%	0.30%	33.59%	
	% of Calls with Multiple	1.06%	0.25%	0.38%	0.04%	3.37%	87.07%	7.15%	2.21%	89.84%	0.13%	9.44%	
2011	Mean Participants per Call	0.09	0.04	0.04	0.02	0.18	6.30	0.46	0.22	6.98	0.01	0.50	7.66
(N = 5,174)	Max Participants per Call	3	2	3	2	5	24	5	3	26	6	7	27
	% of Calls with at Least One	7.36%	3.42%	3.98%	1.53%	14.19%	93.70%	35.45%	19.81%	94.76%	0.23%	36.32%	
	% of Calls with Multiple	1.01%	0.12%	0.29%	0.02%	2.92%	87.71%	9.14%	2.01%	90.36%	0.14%	9.91%	
2012	Mean Participants per Call	0.04	0.02	0.03	0.00	0.10	6.37	0.47	0.29	7.13	0.00	0.52	7.75
(N = 5,209)	Max Participants per Call	2	2	2	1	3	21	6	3	22	0	7	23
	% of Calls with at Least One	4.15%	2.36%	2.63%	0.19%	8.68%	95.28%	34.73%	25.57%	96.60%	0.00%	37.07%	
	% of Calls with Multiple	0.29%	0.06%	0.19%	0.00%	1.11%	88.90%	9.69%	2.92%	92.28%	0.00%	10.52%	
2013	Mean Participants per Call	0.04	0.02	0.03	0.00	0.09	6.28	0.45	0.29	7.02	0.00	0.46	7.57
(N = 4,970)	Max Participants per Call	2	2	3	1	4	24	5	3	27	0	6	27
	% of Calls with at Least One	4.00%	1.97%	2.49%	0.26%	7.95%	95.37%	33.86%	26.30%	97.10%	0.00%	34.00%	
	% of Calls with Multiple	0.20%	0.04%	0.12%	0.00%	0.97%	88.85%	9.38%	2.90%	92.41%	0.00%	8.99%	

We report mean and maximum conference call participation, as well as the percentage of calls with at least one (multiple) appearances for each type of institution.

Table 2 – Conference Call Participation by Analyst Type

Panel B – Significance tests

Year		(1) Hedge Fund vs Mutual Fund	(2) Hedge Fund vs RIA	(3) Mutual Fund vs RIA
2008-2013	t-stat	20.634 ***	19.287 ***	-0.870
	z-stat	19.544 ***	18.384 ***	-0.422
2008	t-stat	8.964 ***	10.429 ***	2.043 **
	z-stat	7.869 ***	9.658 ***	2.326 **
2009	t-stat	9.210 ***	9.051 ***	0.000
	z-stat	8.423 ***	8.125 ***	0.039
2010	t-stat	10.109 ***	9.282 ***	-0.507
	z-stat	10.063 ***	9.310 ***	-0.269
2011	t-stat	10.094 ***	8.151 ***	-1.934 *
	z-stat	9.742 ***	7.897 ***	-1.620
2012	t-stat	5.511 ***	4.186 ***	-1.257
	z-stat	5.158 ***	4.353 ***	-0.970
2013	t-stat	6.438 ***	4.225 ***	-2.040 **
	z-stat	6.307 ***	4.436 ***	-1.834 *

Parametric (t-test statistic) and non-parametric (Wilcoxon signed-rank z-statistic) comparing conference call participation rates across buy-side institutions. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 3 – Determinants of Buy-Side Analyst Conference Call Participation

Panel A – Descriptive statistics for sample firm-quarters

	(1) N	(2) Mean	(3) Median	(4) Stdev	(5) Min	(6) Max
S&P 500 Index Member	28,503	0.3699	0	0.4828	0	1
S&P 1500 Index Member	28,503	0.6599	1	0.4738	0	1
Market Value ($mm)	28,174	9,224	2,180	21,260	60.3049	148,596
Leverage (Market)	28,145	2.8998	1.6018	3.8892	1.0256	26.4864
M/B Ratio	28,146	2.6982	1.8688	3.8712	-10.7144	24.9117
Return on Assets (LTM)	28,180	0.0186	0.0202	0.0782	-0.3938	0.2054
Dividend Yield	28,503	0.0039	0.0000	0.0100	0.0000	0.0500
Equity Bid-Ask Spread (×10)	28,179	0.0153	0.0078	0.0228	0.0012	0.1529
Implied Volatility (Excess)	24,085	0.1999	-0.3415	0.1957	-0.3415	3.1073
Runup (-42,-1) CAR	26,827	-0.0032	-0.0029	0.1663	-0.5062	0.5539
Number of Institutional Investors	28,503	255.2	171	257.8	0	1,375
Number of Covering Analysts	28,503	10.4218	9	7.7568	0	33
Number of Forecasts per Analyst	28,503	59.5146	41	58.7732	0.0000	302
Forecast Error	26,662	0.0750	0.0385	0.9071	-4.0833	4.8889

Transcript level descriptive statistics for 28,503 quarterly earnings conference calls. All continuous variables are winsorized at 1% and 99%. Variable definitions are available in the appendix.

Table 3 – Determinants of Buy-Side Conference Call Participation

Panel B – Logit models of sample firm quarters Logit models for buy-side analyst conference call participation.

	(1)	(2)	(3)	(4)
	Hedge Fund	Mutual Fund	RIA	Any Buy-Side
S&P 1500 Index Member	-0.3248***	-0.0823	0.0493	-0.1882***
	(-3.4968)	(-0.8361)	(0.5144)	(-3.8911)
Number of Covering Analysts	-0.0615***	-0.0790***	-0.0871***	-0.0710***
	(-6.6356)	(-9.5839)	(-11.9870)	(-9.8866)
Equity Bid-Ask Spread	9.8742***	0.9361	-2.2206	5.2426**
	(5.0843)	(0.3688)	(-0.7088)	(2.3233)
Number of Institutional Investors	-0.0009***	-0.0006	0.0013***	0.0001
	(-2.8404)	(-1.5984)	(5.1620)	(0.4785)
Number of Forecasts per Analyst	0.0136**	-0.0013	-0.0325**	0.0073
	(1.9735)	(-0.1016)	(-2.0355)	(1.4610)
Ln(Market Value)	0.1775***	0.1731**	-0.3114***	-0.0011
	(2.7278)	(2.5731)	(-6.5818)	(-0.0260)
Leverage (Market)	0.0027	0.0104	-0.0074	0.0000
	(0.4164)	(0.9973)	(-0.7022)	(-0.0007)
M/B Ratio	-0.0115	-0.0062	-0.0009	-0.0002
	(-1.4064)	(-0.7170)	(-0.0810)	(-0.0452)
Return on Assets	-0.0136	1.9641***	1.5866**	0.9107***
	(-0.0392)	(4.6846)	(2.0848)	(3.9731)
Dividend Yield	7.7881***	3.6095	8.3532*	8.0709***
	(2.7857)	(0.7541)	(1.9595)	(2.9463)
Implied Volatility (Excess)	-0.3208***	0.2161	-0.8975***	-0.4555***
	(-2.6342)	(0.9632)	(-3.7044)	(-3.3986)
Forecast Error	0.0002	-0.0228	-0.0206	-0.0113
	(0.0076)	(-0.7640)	(-0.5490)	(-0.5896)
Runup (-42,-1) CAR	-0.0572	0.0940	-0.2501**	-0.1209
	(-0.3216)	(0.4217)	(-2.1737)	(-0.9795)
Intercept	-2.2258***	-2.9129***	1.2427***	0.0711
	(-3.7904)	(-5.1950)	(2.5878)	(0.1966)
N	21,504	21,504	21,504	21,504
Industry FE	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes
Log-Likelihood	-4866.23	-3443.97	-3073.17	-7859.31
Pseudo R^2	0.1483	0.1031	0.1336	0.1228

Standard errors are clustered at the year-quarter level and t-statistics in reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are available in the appendix.

Table 4 – First-Question Priority on Conference Calls

Panel A – Aggregate participation and first-question priority by analyst type

	(1) # of Calls with Type	(2) % of Calls with Type	(3) # of Appearances	(4) % of Appearances	(5) # of Calls with 1st Question	(6) % of Calls with 1st Question	(7) Marginal Diff (6 - 4)/4	
Buy Side	4,353	15.90%	5,846	2.72%	1,084	3.96%	45.33%	***
Hedge Fund	2,214	8.09%	2,685	1.25%	449	1.64%	31.07%	***
Mutual Fund	1,228	4.49%	1,315	0.61%	213	0.78%	26.95%	***
RIA	1,244	4.54%	1,361	0.63%	358	1.31%	106.17%	***
Other	466	1.70%	485	0.23%	64	0.23%	3.43%	
Sell Side	26,968	98.50%	193,208	90.04%	23,750	86.75%	-3.65%	***
Affiliated	26,664	97.39%	173,811	81.00%	20,868	76.22%	-5.90%	***
Unaffiliated	9,706	35.45%	12,526	5.84%	1,824	6.66%	14.13%	***
Independent	6,114	22.33%	6,871	3.20%	1,058	3.86%	20.69%	***
Media	56	0.20%	145	0.07%	13	0.05%	-29.73%	
Other or Unknown	10,258	37.47%	15,391	7.17%	2,532	9.25%	28.94%	***

Columns (1) and (2) report the number and percentage of calls with participation from each analyst type. Column (3) reports the total number of analyst appearances and Column (4) reports the percentage of all appearances for each analyst type. Columns (5) indicates the number of calls for which the analyst type asks the first question during the Q&A session. Column (6) displays the percentage of all calls for which the corresponding analyst type asks the first question. Column (7) reports the unexpected frequency of first-question priority, calculated as the percentage of calls on which a participant of that type asked the first question (column (6)) minus the percentage of calls with any participation from that participant type (column (4)), all scaled by the percentage of calls with any participation from that participant type (column (4)). We also report the results of a difference in proportions test between columns (6) and (4). ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 4 – First-Question Priority on Conference Calls

Panel B – Logit analysis of first-question priority

	(1)	(2)	(3)	(4)	(5)	(6)
Buy-Side Analyst	0.1740***		0.1577**		0.1276*	
	(2.5874)		(2.2783)		(1.6690)	
Hedge Fund Analyst		0.1621*		0.1327		0.0968
		(1.8842)		(1.4968)		(0.9838)
Mutual Fund Analyst		-0.1288		-0.1434		-0.1870
		(-1.0461)		(-1.1604)		(-1.4211)
RIA Analyst		0.4753***		0.4789***		0.4865***
		(3.1233)		(3.1079)		(2.8816)
Number of Analysts on Call	-0.1301***	-0.1302***	-0.1299***	-0.1300***	-0.1235***	-0.1235***
	(-46.1963)	(-46.2432)	(-47.4570)	(-47.4822)	(-47.2164)	(-47.2048)
Number of Words in Call Q&A	-0.0000***	-0.0000***	-0.0000***	-0.0000***	-0.0000***	-0.0000***
	(-8.4646)	(-8.4394)	(-8.9037)	(-8.8738)	(-10.0990)	(-10.0987)
S&P 1500 Index Member	-0.0025	-0.0028	-0.0100	-0.0106	-0.0560*	-0.0531*
	(-0.1637)	(-0.1831)	(-0.6589)	(-0.6931)	(-1.7673)	(-1.6796)
Number of Institutional Investors	0.0002***	0.0002***	0.0002***	0.0002***	0.0002***	0.0002**
	(4.6742)	(4.5277)	(4.5983)	(4.4608)	(2.6476)	(2.5619)
Number of Covering Analysts	0.0002	0.0001	-0.0003	-0.0003	0.0001	0.0001
	(0.1521)	(0.1160)	(-0.2296)	(-0.2547)	(0.0543)	(0.0357)
Number of Forecasts per Analyst	0.0030*	0.0030*	0.0041**	0.0042**	0.0032*	0.0032*
	(1.8859)	(1.9310)	(2.2971)	(2.3358)	(1.9598)	(1.9379)
Equity Bid-Ask Spread	1.7411***	1.7699***	1.6231***	1.6469***	1.4103***	1.4496***
	(3.6070)	(3.6466)	(3.5018)	(3.5316)	(3.0406)	(3.1021)
Ln(Market Value)	-0.0413***	-0.0396***	-0.0398***	-0.0383***	-0.0460***	-0.0444***
	(-4.8075)	(-4.5852)	(-4.5812)	(-4.3921)	(-3.0633)	(-2.9491)
Leverage (Market)	-0.0036**	-0.0036**	-0.0003	-0.0002	-0.0024	-0.0019
	(-2.0827)	(-2.0833)	(-0.1581)	(-0.0984)	(-0.9328)	(-0.7300)
M/B Ratio	0.0020*	0.0020*	0.0020*	0.0020*	0.0021*	0.0021*
	(1.8145)	(1.8376)	(1.8167)	(1.8479)	(1.8220)	(1.8853)
Return on Assets	0.0732	0.0706	0.0700	0.0683	0.0301	0.0334
	(1.1832)	(1.1401)	(1.1181)	(1.0927)	(0.4530)	(0.5073)
Dividend Yield	0.8161*	0.8027*	1.2594**	1.2500**	1.3558**	1.3773**
	(1.6732)	(1.6452)	(2.5328)	(2.5162)	(2.3227)	(2.3530)
Implied Volatility (Excess)	0.0502	0.0516	0.0472	0.0496	0.0461	0.0451
	(1.4196)	(1.4535)	(1.3939)	(1.4584)	(1.3024)	(1.2767)
Forecast Error	0.0058	0.0058	0.0057	0.0057	0.0095**	0.0094**
	(1.2783)	(1.2790)	(1.2802)	(1.2717)	(2.1305)	(2.1117)
Runup (-42,-1) CAR	0.0259	0.0274	0.0221	0.0235	0.0223	0.0241
	(1.2701)	(1.3373)	(1.0893)	(1.1526)	(1.0996)	(1.1855)
Intercept	-0.2526***	-0.2641***	-0.2271***	-0.2380***	0.9168***	0.8631***
	(-3.7295)	(-3.8617)	(-2.8369)	(-2.9291)	(8.4367)	(7.8111)
N	159,993	159,993	159,993	159,993	159,993	159,993
Firm FE	No	No	No	No	Yes	Yes
Industry FE	No	No	Yes	Yes	No	No
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.0395	0.0397	0.0400	0.0402	0.0459	0.0462

Participant level logit models predicting the analyst asking the first question on a call. T-statistics (with standard errors clustered by year-quarter) are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are available in the appendix.

Table 5 – Analyst-Executive Question & Answer Interaction Length

Panel A – Interaction length by analyst type

		Buy-Side					Sell-Side						
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Year		Hedge Fund	Mutual Fund	RIA	Other	Buy-Side Total	Affiliated	Unaffiliated	Independent	Sell-Side Total	Media	Other or Unknown	Aggregate Total
2008-2013	Mean Words/Analyst	597.31	627.64	646.37	450.41	605.10	694.84	639.26	678.47	694.50	447.29	530.68	692.76
(N = 28,503)	Mean Abnormal % of Q&A	-10.13%	-9.89%	-11.63%	-28.94%	-12.30%	3.21%	2.77%	0.00%	2.97%	-16.00%	-14.18%	
2008	Mean Words/Analyst	569.56	558.81	587.58	472.78	562.84	692.79	645.59	696.23	692.11	304.12	398.87	671.88
(N = 4,089)	Mean Abnormal % of Q&A	-9.23%	-16.39%	-14.89%	-26.26%	-14.03%	6.54%	4.37%	4.98%	6.24%	-36.31%	-14.87%	
2009	Mean Words/Analyst	559.88	593.06	625.54	435.08	568.39	690.14	645.67	686.96	690.30	487.56	462.07	675.17
(N = 4,345)	Mean Abnormal % of Q&A	-9.59%	-10.61%	-10.47%	-25.80%	-12.70%	4.77%	5.87%	3.81%	4.73%	-10.62%	-12.61%	
2010	Mean Words/Analyst	601.20	691.17	664.32	459.44	617.16	678.24	643.71	695.15	679.73	580.77	579.46	700.57
(N = 4,716)	Mean Abnormal % of Q&A	-11.21%	-3.06%	-9.49%	-30.57%	-11.66%	1.00%	2.75%	2.55%	1.07%	6.50%	-10.19%	
2011	Mean Words/Analyst	609.94	677.57	635.32	407.73	608.37	697.53	647.84	668.82	698.35	404.93	587.74	703.93
(N = 5,174)	Mean Abnormal % of Q&A	-13.32%	-4.63%	-12.42%	-38.43%	-14.01%	2.50%	2.16%	-1.61%	2.46%	-25.74%	-12.81%	
2012	Mean Words/Analyst	645.49	721.59	699.41	394.30	679.95	699.92	625.89	676.78	698.75	N/A	583.12	697.24
(N = 5,209)	Mean Abnormal % of Q&A	-9.78%	-5.79%	-13.67%	-30.34%	-9.90%	2.28%	0.93%	-1.89%	1.82%	N/A	-14.34%	
2013	Mean Words/Analyst	674.65	634.51	761.30	613.00	685.20	707.66	629.53	661.24	705.02	N/A	547.90	700.53
(N = 4,970)	Mean Abnormal % of Q&A	-5.79%	-13.17%	-6.64%	-10.69%	-7.67%	2.99%	1.50%	-3.72%	2.41%	N/A	-19.76%	

Average length of analyst-executive interactions (in words) by analyst type, along with average abnormal % of Q&A, which is the standardized difference between the actual length and the expected length (total Q&A length / number of analysts) of the Q&A interaction.

Table 5 – Analyst-Executive Question & Answer Interaction Length

Panel B – Univariate significance tests

Year		(1) Buy Side vs Sell Side	(2) Hedge Fund vs Sell Side	(3) Mutual Fund vs Sell Side	(4) RIA vs Sell Side
2008-2013	Words Per Analyst t-stat	-17.321 ***	-11.974 ***	-7.510 ***	-8.383 ***
	Abnormal % of Q&A t-stat	-18.914 ***	-12.224 ***	-8.110 ***	-10.254 ***
2008	Words Per Analyst t-stat	-10.930 ***	-6.189 ***	-7.387 ***	-5.502 ***
	Abnormal % of Q&A t-stat	-10.066 ***	-4.879 ***	-7.979 ***	-6.923 ***
2009	Words Per Analyst t-stat	-9.228 ***	-5.545 ***	-4.396 ***	-3.738 ***
	Abnormal % of Q&A t-stat	-10.080 ***	-5.963 ***	-5.101 ***	-3.907 ***
2010	Words Per Analyst t-stat	-4.552 ***	-4.970 ***	-0.792	-2.239 **
	Abnormal % of Q&A t-stat	-5.331 ***	-5.609 ***	-0.848	-2.853 ***
2011	Words Per Analyst t-stat	-8.381 ***	-5.557 ***	-1.917 *	-4.110 ***
	Abnormal % of Q&A t-stat	-10.018 ***	-7.053 ***	-2.140 **	-4.510 ***
2012	Words Per Analyst t-stat	-4.339 ***	-3.084 ***	-1.951 *	-2.874 ***
	Abnormal % of Q&A t-stat	-5.779 ***	-3.659 ***	-2.686 ***	-3.828 ***
2013	Words Per Analyst t-stat	-4.694 ***	-3.217 ***	-4.376 ***	-1.546
	Abnormal % of Q&A t-stat	-5.924 ***	-3.794 ***	-4.782 ***	-2.572 **

Parametric test statistic (t-test) comparing interaction length between buy-side and sell-side analysts. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 5 – Analyst-Executive Question & Answer Interaction Length

Panel C – Tobit analysis of analyst-executive length

	(1)	(2)	(3)	(4)	(5)	6)
Buy-Side Analyst	-0.2513***		-0.2439***		-0.2553***	
	(-14.1730)		(-14.4384)		(-16.0295)	
Hedge Fund Analyst		-0.2740***		-0.2570***		-0.2609***
		(-10.6637)		(-10.8425)		(-11.7645)
Mutual Fund Analyst		-0.2317***		-0.2319***		-0.2563***
		(-8.1132)		(-8.2549)		(-9.4313)
RIA Analyst		-0.2444***		-0.2508***		-0.2628***
		(-6.8642)		(-7.0101)		(-7.7050)
Number of Analysts on Call	-0.0354***	-0.0354***	-0.0354***	-0.0354***	-0.0304***	-0.0304***
	(-19.6223)	(-19.6274)	(-22.0376)	(-22.0647)	(-27.6917)	(-27.7258)
S&P 1500 Index Member	0.0098	0.0099	0.0025	0.0026	-0.0254	-0.0254
	(0.6439)	(0.6479)	(0.1725)	(0.1808)	(-1.6351)	(-1.6391)
Number of Institutional Investors	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	(0.0287)	(0.0177)	(0.3243)	(0.3145)	(0.5667)	(0.5551)
Number of Covering Analysts	-0.0057***	-0.0057***	-0.0068***	-0.0067***	-0.0007	-0.0007
	(-4.7622)	(-4.7398)	(-5.4508)	(-5.4272)	(-0.7562)	(-0.7248)
Number of Forecasts per Analyst	-0.0020	-0.0020	-0.0026*	-0.0026*	-0.0000	0.0000
	(-1.3024)	(-1.3118)	(-1.7816)	(-1.7731)	(-0.0002)	(0.0068)
Equity Bid-Ask Spread	-0.2522	-0.2655	0.1428	0.1272	0.2632	0.2431
	(-0.6344)	(-0.6684)	(0.3598)	(0.3204)	(0.9372)	(0.8673)
Ln(Market Value)	-0.0015	-0.0014	0.0056	0.0056	0.0119	0.0120
	(-0.1345)	(-0.1300)	(0.5406)	(0.5417)	(1.2815)	(1.2927)
Leverage (Market)	0.0044***	0.0044***	0.0003	0.0003	-0.0031*	-0.0031*
	(2.7839)	(2.7875)	(0.1761)	(0.1728)	(-1.7805)	(-1.7682)
M/B Ratio	-0.0030**	-0.0030**	-0.0017	-0.0017	-0.0008	-0.0008
	(-2.3463)	(-2.3462)	(-1.5742)	(-1.5775)	(-1.0397)	(-1.0275)
Return on Assets	0.0615	0.0620	0.0408	0.0412	-0.0088	-0.0080
	(0.8760)	(0.8838)	(0.6717)	(0.6794)	(-0.2340)	(-0.2135)
Dividend Yield	0.6370	0.6392	0.5951	0.5971	0.3336	0.3330
	(1.4584)	(1.4647)	(1.4901)	(1.4964)	(1.4842)	(1.4767)
Implied Volatility (Excess)	-0.0213	-0.0210	-0.0064	-0.0063	0.0424**	0.0424**
	(-0.5791)	(-0.5702)	(-0.1909)	(-0.1886)	(2.0626)	(2.0592)
Forecast Error	-0.0024	-0.0024	-0.0027	-0.0027	-0.0031	-0.0031
	(-0.7692)	(-0.7694)	(-0.9486)	(-0.9460)	(-1.4961)	(-1.5058)
Runup (-42,-1) CAR	-0.0508***	-0.0508***	-0.0466***	-0.0467***	-0.0442***	-0.0442***
	(-4.1758)	(-4.1901)	(-4.1669)	(-4.1798)	(-4.3389)	(-4.3501)
Intercept	6.7593***	6.7586***	6.7086***	6.7069***	6.7204***	6.7205***
	(89.4146)	(89.3597)	(78.9622)	(78.8799)	(109.5204)	(109.0844)
N	159,993	159,993	159,993	159,993	159,993	159,993
Firm FE	No	No	No	No	Yes	Yes
Industry FE	No	No	Yes	Yes	No	No
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.0936	0.0935	0.1123	0.1122	0.2065	0.2064

Tobit models (left censored at zero) of the natural log of the word length of conference call question and answer analyst-executive interactions. T-statistics are presented in parentheses and are calculated based on standard errors clustered by firm. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are available in the appendix.

Table 6 –Analyst-Executive Question & Answer Interaction Tone

Panel A – Interaction tone by analyst type

		Buy-Side					Sell-Side						
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Year		Hedge Fund	Mutual Fund	RIA	Other	Buy-Side Total	Affiliated	Unaffiliated	Independent	Sell-Side Total	Media	Other or Unknown	Aggregate Total
2008-2013	Mean Positive	0.98%	0.99%	1.01%	1.83%	0.99%	1.12%	1.17%	1.11%	1.12%	0.99%	2.30%	1.13%
(N = 28,503)	Mean Negative	1.24%	1.19%	1.18%	2.04%	1.19%	0.97%	1.03%	1.01%	0.97%	1.25%	2.09%	1.00%
	Mean Pos-Neg	-0.26%	-0.19%	-0.18%	-0.21%	-0.20%	0.15%	0.14%	0.11%	0.15%	-0.26%	0.21%	0.13%
2008	Mean Positive	1.01%	1.04%	0.98%	1.93%	1.01%	1.17%	1.25%	1.20%	1.17%	1.13%	2.27%	1.17%
(N = 4,089)	Mean Negative	1.26%	1.41%	1.35%	2.47%	1.31%	1.13%	1.18%	1.15%	1.12%	1.46%	2.17%	1.15%
	Mean Pos-Neg	-0.25%	-0.37%	-0.37%	-0.54%	-0.30%	0.05%	0.07%	0.05%	0.05%	-0.32%	0.10%	0.03%
2009	Mean Positive	0.97%	0.96%	0.98%	2.74%	0.95%	1.10%	1.15%	1.13%	1.10%	0.93%	2.20%	1.12%
(N = 4,345)	Mean Negative	1.31%	1.28%	1.23%	2.69%	1.26%	1.09%	1.14%	1.11%	1.09%	1.31%	2.28%	1.12%
	Mean Pos-Neg	-0.35%	-0.32%	-0.25%	0.05%	-0.31%	0.01%	0.01%	0.02%	0.01%	-0.38%	-0.09%	-0.01%
2010	Mean Positive	0.99%	0.91%	1.04%	1.36%	0.98%	1.12%	1.15%	1.10%	1.11%	0.90%	2.16%	1.12%
(N = 4,716)	Mean Negative	1.13%	1.05%	1.05%	1.37%	1.07%	0.93%	0.98%	0.96%	0.93%	0.94%	1.91%	0.95%
	Mean Pos-Neg	-0.15%	-0.13%	-0.01%	-0.01%	-0.10%	0.19%	0.17%	0.15%	0.19%	-0.04%	0.25%	0.17%
2011	Mean Positive	0.97%	0.98%	1.07%	1.16%	1.01%	1.11%	1.12%	1.12%	1.11%	0.99%	2.20%	1.11%
(N = 5,174)	Mean Negative	1.29%	1.05%	1.11%	1.42%	1.12%	0.93%	0.99%	0.95%	0.93%	1.30%	1.99%	0.96%
	Mean Pos-Neg	-0.32%	-0.07%	-0.04%	-0.25%	-0.10%	0.18%	0.13%	0.17%	0.18%	-0.31%	0.21%	0.15%
2012	Mean Positive	0.92%	1.04%	0.97%	1.01%	0.96%	1.10%	1.15%	1.07%	1.09%	N/A	2.40%	1.10%
(N = 5,209)	Mean Negative	1.24%	0.95%	1.24%	1.50%	1.17%	0.92%	0.99%	0.98%	0.92%	N/A	2.13%	0.95%
	Mean Pos-Neg	-0.32%	0.09%	-0.27%	-0.49%	-0.21%	0.18%	0.15%	0.09%	0.17%	N/A	2.13%	0.95%
2013	Mean Positive	0.96%	1.03%	1.02%	0.67%	0.98%	1.14%	1.24%	1.10%	1.14%	N/A	2.55%	1.15%
(N = 4,970)	Mean Negative	1.15%	0.95%	0.96%	1.13%	1.04%	0.89%	0.95%	0.97%	0.89%	N/A	2.11%	0.92%
	Mean Pos-Neg	-0.19%	0.08%	0.06%	-0.46%	-0.06%	0.25%	0.29%	0.14%	0.25%	N/A	0.44%	0.23%

Mean analyst-executive interaction tone (positive, negative, and positive minus negative) based on the Loughran and McDonald (2011) dictionaries, as a percentage of words spoken.

Table 6 –Analyst-Executive Question & Answer Interaction Tone

Panel B – Univariate significance tests

Year		(1) Buy Side vs Sell Side	(2) Hedge Fund vs Sell Side	(3) Mutual Fund vs Sell Side	(4) RIA vs Sell Side
2008-2013	Positive Tone t-stat	-7.066 ***	-4.563 ***	-4.146 ***	-3.525 ***
	Negative Tone t-stat	10.826 ***	8.526 ***	4.928 ***	5.351 ***
	Pos-Neg Tone t-stat	-12.534 ***	-9.410 ***	-6.356 ***	-5.988 ***
2008	Positive Tone t-stat	-4.471 ***	-3.244 ***	-1.833 *	-3.502 ***
	Negative Tone t-stat	5.871 ***	3.538 ***	3.714 ***	2.750 ***
	Pos-Neg Tone t-stat	-7.555 ***	-4.990 ***	-4.328 ***	-3.889 ***
2009	Positive Tone t-stat	-3.523 ***	-0.936	-2.190 **	-1.880 *
	Negative Tone t-stat	4.789 ***	3.785 ***	2.765 ***	2.569 **
	Pos-Neg Tone t-stat	-5.604 ***	-3.625 ***	-3.337 ***	-2.981 ***
2010	Positive Tone t-stat	-3.033 ***	-1.858 *	-3.422 ***	-0.570
	Negative Tone t-stat	3.210 ***	3.204 ***	1.292	0.896
	Pos-Neg Tone t-stat	-4.331 ***	-3.646 ***	-3.232 ***	-0.994
2011	Positive Tone t-stat	-1.600	-1.526	-1.376	-0.876
	Negative Tone t-stat	4.326 ***	4.320 ***	1.538	1.721 *
	Pos-Neg Tone t-stat	-4.245 ***	-4.310 ***	-1.886 *	-1.794 *
2012	Positive Tone t-stat	-1.614	-1.730 *	-0.452	-0.514
	Negative Tone t-stat	4.808 ***	2.926 ***	0.596	3.683 ***
	Pos-Neg Tone t-stat	-4.491 ***	-3.143 ***	-0.675	-3.114 ***
2013	Positive Tone t-stat	-2.518 **	-1.891 *	-0.901	-0.272
	Negative Tone t-stat	3.070 ***	3.170 ***	0.398	1.004
	Pos-Neg Tone t-stat	-3.744 ***	-3.340 ***	-0.795	-0.927

Parametric test statistic (t-test) comparing interaction tone between buy-side and sell-side analysts. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels respectively.

Table 6 –Analyst-Executive Question & Answer Interaction Tone

Panel C – Tobit analysis of analyst-executive interaction tone

	Positive Tone		Negative Tone		Positive - Negative	
	(1)	(2)	(3)	(4)	(5)	(6)
Buy-Side Analyst	-0.0009***		0.0013***		-0.0020***	
	(-6.0331)		(8.0368)		(-9.4647)	
Hedge Fund Analyst		-0.0008***		0.0015***		-0.0021***
		(-3.7732)		(6.3097)		(-7.1796)
Mutual Fund Analyst		-0.0008***		0.0012***		-0.0018***
		(-3.2340)		(3.5622)		(-4.2081)
RIA Analyst		-0.0010***		0.0014***		-0.0022***
		(-3.1122)		(4.6176)		(-4.7181)
Number of Analysts on Call	-0.0001***	-0.0001***	0.0002***	0.0002***	-0.0003***	-0.0003***
	(-5.2728)	(-5.2972)	(16.8353)	(16.8449)	(-12.8488)	(-12.8710)
Number of Words in Call Q&A	0.0000	0.0000	-0.0000***	-0.0000***	0.0000***	0.0000***
	(0.9599)	(0.9759)	(-15.7653)	(-15.7945)	(9.8409)	(9.8623)
S&P 1500 Index Member	0.0001	0.0001	0.0007***	0.0007***	-0.0006**	-0.0006**
	(0.5919)	(0.5869)	(3.9191)	(3.9229)	(-2.3002)	(-2.3062)
Number of Institutional Investors	-0.0000	-0.0000	0.0000	0.0000	-0.0000	-0.0000
	(-0.4174)	(-0.4187)	(0.7303)	(0.7315)	(-0.7266)	(-0.7284)
Number of Covering Analysts	0.0000	0.0000	0.0000	0.0000	-0.0000	-0.0000
	(0.0798)	(0.0901)	(0.1872)	(0.1794)	(-0.1696)	(-0.1580)
Number of Forecasts per Analyst	-0.0000	-0.0000	0.0000***	0.0000***	-0.0000**	-0.0000**
	(-0.5227)	(-0.5202)	(3.0329)	(3.0281)	(-2.4016)	(-2.3973)
Equity Bid-Ask Spread	-0.0025	-0.0026	-0.0065*	-0.0064*	0.0038	0.0036
	(-0.6959)	(-0.7193)	(-1.8398)	(-1.8155)	(0.7403)	(0.7093)
Ln(Market Value)	-0.0001	-0.0001	-0.0003***	-0.0003***	0.0003	0.0003
	(-0.6919)	(-0.6891)	(-3.0249)	(-3.0241)	(1.5659)	(1.5672)
Leverage (Market)	-0.0000	-0.0000	0.0001**	0.0001**	-0.0001**	-0.0001**
	(-1.5576)	(-1.5572)	(2.0299)	(2.0308)	(-2.2884)	(-2.2892)
M/B Ratio	0.0000	0.0000	-0.0000	-0.0000	0.0000	0.0000
	(0.3565)	(0.3560)	(-1.6117)	(-1.6207)	(1.2920)	(1.2981)
Return on Assets	0.0015***	0.0015***	-0.0017***	-0.0017***	0.0031***	0.0031***
	(2.8529)	(2.8554)	(-3.9042)	(-3.9158)	(4.4716)	(4.4815)
Dividend Yield	-0.0113***	-0.0113***	0.0085***	0.0085***	-0.0191***	-0.0191***
	(-3.6363)	(-3.6393)	(2.7128)	(2.7150)	(-4.0217)	(-4.0244)
Implied Volatility (Excess)	-0.0012***	-0.0012***	0.0014***	0.0014***	-0.0026***	-0.0026***
	(-4.0335)	(-4.0325)	(5.7362)	(5.7336)	(-6.4024)	(-6.3997)
Forecast Error	0.0001***	0.0001***	-0.0001**	-0.0001**	0.0001***	0.0001***
	(3.1836)	(3.1813)	(-2.1110)	(-2.1079)	(3.6602)	(3.6570)
Runup (-42,-1) CAR	0.0005***	0.0005***	-0.0006***	-0.0006***	0.0011***	0.0011***
	(3.4563)	(3.4539)	(-4.2596)	(-4.2592)	(5.3145)	(5.3158)
Intercept	0.0113***	0.0113***	0.0140***	0.0140***	-0.0027**	-0.0027**
	(14.1137)	(14.1434)	(18.5891)	(18.5912)	(-2.4235)	(-2.4095)
N	159,993	159,993	159,993	159,993	159,993	159,993
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.111	0.111	0.1078	0.1078	0.1101	0.1101

Tobit models (left censored at zero) of analyst-executive interaction tone. In specifications (1) through (4), positive and negative tone is based on the percentage of words spoken. In specifications (5) and (6), positive minus negative tone is censored at [-1,+1]. T-statistics based on standard errors clustered by firm. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are available in the appendix.

Table 7 – Implications of Buy-Side Analyst Conference Call Participation

Panel A – Summary statistics and univariate tests

		(1) CAR (-1,+1)		(2) Δ Equity Bid-Ask Spread		(3) Δ Institutional Holdings %	
(i) Overall	N	26,826		28,177		25,721	
	Mean	0.0013	***	0.0053	***	-0.0029	***
(ii) No Buy-side Analysts	N	22,730		23,879		21,733	
	Mean	0.0018	***	0.0046	***	-0.0030	***
(iii) Buy-side Analyst Appearance	N	4,096		4,298		3,988	
	Mean	-0.0015		0.0095	***	-0.0006	***
(iv) Overall Tone (Pos-Neg) > 0	N	16,071		16,939		15,331	
	Mean	0.0088	***	0.0054	***	-0.0028	***
(v) Overall Tone (Pos-Neg) < 0	N	10,123		10,573		9,779	
	Mean	-0.0105	***	0.0053	***	-0.0030	***
(vi) Sell-side Tone (Pos-Neg) > 0	N	15,569		16,399		14,798	
	Mean	0.0084	***	0.0046	***	-0.0027	***
(vii) Sell-side Tone (Pos-Neg) < 0	N	9,231		9,626		8,887	
	Mean	-0.0106	***	0.0054	***	-0.0033	***
(viii) Buy-side Tone (Pos-Neg) > 0	N	1,597		1,685		1,551	
	Mean	0.0051	**	0.0116	***	-0.0007	
(ix) Buy-side Tone (Pos-Neg) < 0	N	2,063		2,160		2,012	
	Mean	-0.0052	***	0.0092	***	-0.0038	***
Buyside Appearance: (iii) versus (ii)	t-stat	-2.3740	**	4.0102	***	0.5778	
Overall Tone: (iv) versus (v)	t-stat	18.8611	***	0.0729		0.3099	
Sellside Tone: (vi) versus (vii)	t-stat	17.7113	***	-1.1459		0.9562	
Buyside Tone: (viii) versus (ix)	t-stat	3.2012	***	0.6642		1.5938	
Buy/Sell Pos Tone: (viii) versus (vi)	t-stat	-3.0396	***	3.4843	***	1.5348	
Buy/Sell Neg TOne: (ix) versus (vii)	t-stat	1.9812	**	1.3287		0.0080	

Mean abnormal returns (-1, +1), changes in bid-ask spreads, and changes in institutional holdings around the conference call for various subsamples. Unpaired sample t-statistics are also presented. Detailed variable definitions are available in the appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 7 – Implications of Buy-Side Analyst Conference Call Participation

Panel B – OLS regressions

Dependent Variable	CAR (-1,+1)		Δ Equity Bid-Ask Spread		Δ Institutional Holdings %	
	(1)	(2)	(3)	(4)	(5)	(6)
Buy-Side Appearance	-0.0030	-0.0026	0.0031**	0.0047**	0.0001	0.0003
	(-1.6857)	(-1.5852)	(2.5201)	(2.4647)	(0.1112)	(0.3369)
Buy-Side Tone		0.2217		-0.2205		0.1221**
		(1.5073)		(-1.6603)		(2.1192)
Sell-Side Tone	2.1470***	2.1340***	0.1063	0.1107	0.1290*	0.1218
	(14.0238)	(13.9719)	(0.5828)	(0.6086)	(1.7319)	(1.6515)
Number of Analysts on Call	0.0008***	0.0008***	-0.0003	-0.0003	-0.0000	-0.0000
	(4.6931)	(4.7208)	(-1.5492)	(-1.5161)	(-0.1084)	(-0.0563)
Number of Words in Call Q&A	-0.0000***	-0.0000***	0.0000	0.0000	0.0000	0.0000
	(-5.7043)	(-5.7089)	(0.8362)	(0.8024)	(1.1070)	(1.0801)
S&P 1500 Index Member	-0.0001	-0.0001	-0.0010	-0.0010	-0.0052**	-0.0052**
	(-0.0549)	(-0.0688)	(-0.3137)	(-0.3103)	(-2.1040)	(-2.1064)
Number of Institutional Investors	-0.0000**	-0.0000**	0.0000	0.0000	0.0000	0.0000
	(-2.3494)	(-2.3362)	(0.6688)	(0.6858)	(0.6398)	(0.6425)
Number of Covering Analysts	0.0000	0.0000	-0.0001	-0.0001	-0.0001	-0.0001
	(0.1307)	(0.1431)	(-0.8200)	(-0.8078)	(-0.7162)	(-0.7036)
Number of Forecasts per Analyst	0.0003	0.0003	-0.0001	-0.0001	-0.0002	-0.0002
	(1.5921)	(1.6101)	(-0.3240)	(-0.3170)	(-1.4150)	(-1.4076)
Forecast Error	0.0051***	0.0052***	0.0003	0.0003	-0.0000	0.0000
	(4.3389)	(4.3557)	(0.7379)	(0.7444)	(-0.0028)	(0.0013)
Runup (-42,-1) CAR	0.0265***	0.0265***	0.0354***	0.0354***	0.0194***	0.0194***
	(3.8931)	(3.9091)	(3.1806)	(3.1814)	(6.8202)	(6.8034)
Intercept	-0.0020	-0.0021	-0.0049	-0.0048	0.0050	0.0050
	(-0.2395)	(-0.2404)	(-0.9188)	(-0.9063)	(1.2089)	(1.2038)
N	24,718	24,718	24,718	24,718	24,662	24,662
Industry FE (SIC2)	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.0292	0.0292	0.0483	0.0483	0.2767	0.2768

OLS models analyzing the determinants of abnormal returns (columns (1) and (2)), changes in bid-ask spread (columns (3) and (4)), and changes in the firm's aggregate institutional holdings (columns (5) and (6)). In specifications (3) and (4) use the absolute value of analyst tone (positive minus negative). T-statistics based on standard errors clustered by year-quarter are reported in parentheses. Variable definitions are available in the appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Appendix – Variable Definitions

Variable Name	Variable Definition
S&P 500 Index Member	Indicator variable equal to one if a firm is a member of the Standard & Poor's 500 index and equal to zero otherwise (Compustat).
S&P 1500 Index Member	Indicator variable equal to one if a firm is a member of the Standard & Poor's 1500 index and equal to zero otherwise (Compustat).
Number of Institutional Investors	Number of institutional investors in the Thomson Reuters 13-F filing immediately prior to conference call date.
Number of Covering Analysts	Number of analysts from covering the firm prior to conference call. (I/B/E/S)
Number of Forecasts per Analyst	Mean number of annual forecasts made by each analyst in the year prior to the conference call. (I/B/E/S)
Market Value	Equity market capitalization, in millions of US dollars, as of 30 days prior to the conference call. (CRSP)
Leverage (Market)	Book value of debt and equity (Compustat) divided by the market value of equity (CRSP).
M/B Ratio	Ratio of market value of equity (CRSP) to book value of equity (Compustat).
Return on Assets	Net income over the last twelve months divided by total book value of assets. (Compustat)
Dividend Yield	Net income divided by average total assets over the last twelve months. (Compustat)
Implied Volatility (Excess)	Implied volatility in excess of the CBOE Volatility Index (VIX).
Forecast Error	The ratio of the difference between actual EPS and the consensus EPS estimate, divided by the consensus EPS estimate. (I/B/E/S)
Runup (-42,-1) CAR	Four factor Fama-French model adjusted runup return over the (-42,-1) window relative to the conference call date. (Eventus)
Q&A Length	Number of words spoken from the beginning of the analyst's question to the end of the interaction with management.
Q&A Tone	Percentage of words spoken that match positve and negative dictionaries according to Loughran and McDonald (2011).
3-day (-1,+1) CAR	Four factor Fama-French model adjusted value-weighted abnormal return over the (-1,+1) window relative to the conference call date. (Eventus)
Δ Equity Bid-Ask Spread	Standardized change in equity bid-ask spread over the (-30,+30) window relative to the conference call date. (CRSP)
Δ Institutional Holdings %	Change in percentage of firm ownership by institutions from the Thomson Reuters 13-F filing immediately prior to the conference call to the filing immediately after the conference call.