Who Listens to Corporate Conference Calls?
The Effect of "Soft Information" on Institutional Trading*

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Abstract

Active investment management using fundamental techniques (as opposed to quantitative techniques) involves a comprehensive assessment of several public sources of corporate information—including "soft information" conveyed by company management. In this paper, we explore an important conduit for fundamental information flow—the presentation and discussion of soft information that occurs during corporate conference calls (e.g., earnings conference calls). These calls represent a unique platform for the dissemination of information from corporate management to investment managers, as well as providing a regular opportunity for analysts to publicly challenge management's dialogue about a company's profitability outlook; that is, conference calls provide a very public venue through which stock analysts simultaneously interact, in large numbers, with firm management. Using textual analysis of a comprehensive database of transcribed U.S. corporate conference calls from 2006 to 2018, we find that institutional investors significantly react to the "tone" (sentiment) of calls in their trades of stocks. Institutions trade on the tone immediately, and up to four weeks after the call, and, thereafter, continue to trade on conference call-driven analyst recommendation revisions. The trade reaction of institutions to tone is more pronounced when the marginal value of information is higher, e.g., when information is released during the question section of a conference call, when information is released during earnings calls, and when the stock exhibits a higher degree of information asymmetry. Our paper suggests that conference calls are an important channel for stock price discovery in the post Reg-FD era.

I. Introduction

A longstanding issue in finance is how information becomes incorporated into stock prices. In the wake of Regulation Fair Disclosure ("Reg FD"), an increasing literature has focused on public sources of information through which price discovery can plausibly occur. Indeed, recent work has found several innovative channels through which presumably public information becomes disseminated. For instance, Bolandnazar, et al. (2020) find that as little as a few seconds quicker access for a select group of institutions over other investors in the release of public information results in a significant advantage in price discovery for these institutions. Further, Gargano, Rossi, and Wermers (2016) find that publicly available information that is complex and requires significant effort to obtain is exploited by some hedge funds to produce risk-adjusted returns ("alpha").

It is much less clear how so-called "soft information" (i.e., textual information) becomes incorporated into stock prices and is traded by institutional investors. Firms have three major venues for their public disclosure of soft information: management commentary contained in SEC filings, such as annual and quarterly reports (Forms 10-K and 10-Q); firm-initiated corporate news through the news media; and scheduled conference calls. Prior academic literature provides some guidance on how institutions may assimilate soft information embedded in these venues. Examples of institutional trading in reaction to these soft information venues include Huang, Tan, and Wermers (2020), who find that institutions react quickly to the tone of media news bulletins, and Chouliaras (2015), who report that the degree of tone pessimism in a firm's 10-K leads to fewer institutions holding the stock. In this paper, we examine the soft information contained in corporate conference calls.

To the best of our knowledge, ours is the first to directly examine whether, and how, institutional investors interpret and trade on conference call sentiment. The distinction of conference calls from other soft-information venues is important, in our view, given that conference calls are the only forum through which call attendees (generally buy- and sell-side analysts) can directly and immediately interact, in a public

forum, with corporate management—and can challenge the soft information offered by corporate executives in real-time.[1]

Many firms hold pre-arranged conference calls directly after they announce quarterly earnings. While it is unclear why some firms conduct such earnings calls, while others do not, firms tend to persist in holding quarterly calls over time (as we show in this paper). Firms also hold conference calls for major corporate events such as mergers and acquisitions. Regulation Fair Disclosure (Reg FD) prohibits all forms of selective disclosure of material information by public companies to market professionals, such as institutional investors and analysts. If so, conference calls represent an increasingly significant and regular opportunity for soft information to be conveyed by corporate managers to institutional investors, as well as for institutions to challenge the statements and interpretive guidance by corporate managers. Given the strictures imposed by Reg FD, it is possible that the conveyance of soft information by top management presentations, and the further elicitation of soft information through the questions and answers that immediately follow, have become a primary channel through which institutions explore and derive value-relevant information from corporate management.

In this paper, we explore the link between institutional trading and the tone contained within a large sample of conference calls. We match 176,648 conference call transcripts for 6,103 NYSE, Nasdaq, and AMEX stocks between 2006 to 2018, sourced from Capital IQ Transcripts of S&P Global, with the Thomson Reuters 13(f) quarterly institutional holdings database and the high-frequency institutional trading database of ANcerno. Using the Loughran and MacDonald (2011) financial word dictionaries, we derive the sentiment tone conveyed by (1) management's presentation, (2) questions by both buy-side and sell-side institutions, and (3) answers to these questions by management. We seek to determine whether the sentiment conveyed in the entirety of the conference call, as well as in its individual sections (presentation, questions, and answers), leads to institutional trading in both the short- and long-run—incremental to the

[1] We note that prior studies have shown that i) the textual tone of earnings conference calls or its change is related to abnormal returns and trading volume, either during the call or for a period after the call (e.g., Price et al., 2012; Druz et al., 2020); and ii) the existence of buy-side participation in earnings calls is related to higher price jumps and trading volume (Cen et al., 2019; Call et al., 2019), and to contemporaneous quarter institutional ownership (Jung et al., 2018). However, our study is the first, to our knowledge, to conduct an extensive analysis of the relation between the tone of both sell- and buy-side analysts during the different sections of a conference call—(1) presentation, (2) questions, and (3) answers—and the ensuing trades by institutional investors, both in the short- and long-run.

accompanying (e.g., earnings) hard number announcement. Given that institutional investors now own more than two-thirds of US equities, and that conference calls are open to any investor who wishes to listen, our analysis investigates an important channel through which soft information becomes incorporated into stock prices.

We document a number of findings. Although firms, of course, voluntarily hold conference calls, our comprehensive sample of conference calls from Standard and Poor's shows that, after 2011, the percent of CRSP-covered firms that hold calls at least once per year stabilizes at about 75%. While our call sample includes various types of calls, such as earnings and other company conference presentations, we find little evidence that firms strategically time calls, nor do they selectively conduct different types of calls: Almost 100% of the firms that hold conference calls continue to do so over the next two years. Thus, our evidence is consistent with the majority of corporations voluntarily holding regular conference calls in the post-Reg-FD era.

We find that institutions react, with economic significance, to the "net negative tone" of a conference call (the number of negative words minus the number of positive words, divided by the total number of words) through changes in their subsequent quarterly holdings—including both a change in aggregate institutional holdings and a change in the total number of institutions that hold such a stock. To illustrate, we find that, incremental to the impact of a contemporaneous earnings surprise and other controls, a one standard-deviation increase in the net negative tone during each of the 4.16 (on average) calls that a firm holds per year leads to a 19.4 bps—or a mean of $18.85 million—lower aggregate institutional ownership during the subsequent quarter.

After documenting our general findings above, we use a diff-in-diff approach to better control for other influences that might be correlated with the tone of conference calls. Specifically, since a large minority (about 25%) of firms in CRSP do not hold conference calls at any point-in-time during a given year ("non-callers"), we match each conference call firm with a "non-caller" firm during the same quarter, matched on industry, size, and magnitude of earnings surprise. As another diff-in-diff test, in addition to the industry, size, and earnings-surprise matching dimensions, we create a "nested" matched sample by requiring that both the control firm and the treatment firm be held by a common set of institutions before and after the conference call (although this greatly reduces our sample size). In both diff-in-diff tests, where

we benchmark firms holding conference calls against comparable firms that do not hold calls, we continue to observe that the tone of a conference call leads to a corresponding change in institutional ownership—a positive tone (defined as a net negative tone less than zero) leads to increases, while a negative tone leads to decreases.

We further establish channels through which institutions react to the tone of conference calls over a prolonged period. We complement the quarterly 13(f) institutional trading findings with short-term trades of institutions in reaction to the tone of conference calls. Here, we use intra-day time-stamped institutional trading data from ANcerno, which Hu et al. (2018) estimate accounts for more than 10% of all CRSP trading volume. We find that ANcerno institutions, in aggregate, do not trade on conference call sentiment prior to the call, but they trade on call sentiment from the next day, as well as (at least) the next 20 trading days following the call. Thus, institutions trade on conference calls over the short- as well as longer-term.

We recognize that a potential mechanism for institutions to take an extended period of time to react to information contained in conference calls is through consuming sell-side analyst research output built on these analysts' interpretations of conference calls. Institutions use sell-side analysts—for example, in the 2018 hedge fund section ranking of "The All-America Research Team" by Institutional Investor magazine, the top four firms are all from the sell side, despite that a third of the 3,900 participating analysts polled are from the hedge fund industry itself.[2] Further, Brown, Wei, and Wermers (2014) find evidence that U.S. domestic-equity mutual funds strongly follow prior analyst recommendation revisions in their trades. And, anecdotal evidence indicates that sell-side analysts often receive preferential treatment during conference calls, that is, they are often the first to be allowed to ask questions by corporate management.[3]

We show that the tone of conference calls, indeed, leads to analyst stock recommendation updates, and that, within the next 60 days after the call, it takes, on average, 25 days for an analyst to revise or reiterate a recommendation. Furthermore, the ANcerno trading data shows that institutions continue to trade,

[2] Source: https://www.institutionalinvestor.com/article/b1b9qqjbdrpc5b/Hedge-Funds-Disdain-Most-Sell-Side-Analysts-Here-s-Who-They-Actually-Like.

[3] Take, for example, the fiscal Q4 earnings call of Micron Technology, Inc., (MU) on September 29, 2020. A Goldman Sachs sell-side analyst, Toshiya Hari, upgraded Micron from a "Neutral" to a "Buy" recommendation prior to the Monday, September 14, 2020 market open; MU experienced a 3.66% premarket return on this day. During the September 29th earnings call, MU allowed Mr. Hari of Goldman Sachs to ask the first question after the presentation by management.

over the next four weeks after (and, apparently in reaction to) analyst recommendations or recommendation changes induced by conference calls, controlling for the tone of the call. Hence, the evidence suggests that some institutional trades react relatively quickly (within 20 trading days) to the tone of conference calls, while others react more slowly, presumably in response to (somewhat slower-moving) sell-side analyst research output.

Arguably, these potential channels might manifest through returns and the interaction of returns with conference call tone. We find that conference call tone predicts short- and longer-term returns, from the conference call day through the next 30 trading days. Importantly, conference call tone, when coupled with same-direction returns (e.g., a positive-tone call followed by positive abnormal returns), has a reinforcing effect on the quarterly change in institutional ownership. That is, institutions predominantly trade on conference call tone that has subsequent—from the call day to the next 30 trading days—"confirming" returns. Of course, these "early returns" following a call are likely generated by a subset of the institutions, perhaps prompted by a sell-side analyst who "tips," as documented by Irvine, Lipson, and Puckett (2007). Thus, our findings suggest a conduit for information through both sell-side conference call attendees and buy-side institutions.[4]

We also document some interesting cross-sectional heterogeneity in our results. First, we investigate the impact of the three different sections of conference calls. Here, we find that the strongest institutional reaction to the tone of conference calls occurs during the question section of the call, relative to the prepared management presentation and the management answer (to questions posed by analysts) sections. This finding is consistent with institutional investors discounting management's prepared presentation and answers, as they are more likely to contain management biases, and more heavily reacting to the information contained in the analyst questions. Second, the reaction of institutional trades are stronger for earnings calls than for other types of calls, such as conference presentation and investor day calls. Earnings calls directly discuss firms' quarterly earnings releases, and are arguably disciplined by the need

[4] Corporate conference calls give preferential treatment to their favored analysts during the Q&A segment of the call (Mayew, 2008), as noted previously in the anecdote involving MU stock. We note that this strategic gaming by corporate managers (and, in response, sell-side analysts) suggests further research; for our purposes, it suggests that there is valuable private information being transmitted during the Q&A section, and that favored analysts may gain an edge on information that they can pass to their clients through carefully chosen questions.

to discuss actual hard quantitative results and not more vague forecasts, e.g., of future earnings growth and product sales.

Third, while our results hold for a broad cross-section of institutional investors, they are stronger when the institution type contains funds with more homogeneous styles; for instance, when the institution is a bank trust, or is defined as short-term based on portfolio turnover alone, we find that the influence of calls on that institution's trading is more pronounced. And lastly, the results are stronger for stocks of firms with a larger degree of information asymmetry and for firms with weaker prior financial and stock performance. These are cases when information is more valuable to portfolio managers, and where, presumably, any information content contained within the different segments of conference calls is most valuable for making investment decisions.

This paper complements Huang, Tan, and Wermers (2020; HTW), who find that institutions trade quickly on the tone of *unanticipated* media news bulletins that specifically exclude news around corporate earnings announcements. Our results contrast with those of HTW: when information is fast and singular in nature (such as unanticipated news stories in HTW), institutions exhibit a quick processing speed, trading mostly within 30 minutes of the initial news release. However, when information is comprehensive, condensed, and depictional of the entire firm's operation (such as conference call transcripts in our case), some institutions appear to be more cautious in their interpretation of the tone of the textual information. The prolonged reaction period to textual sentiment in conference calls is also consistent with the large post-earnings-announcement-drift literature (e.g., Bernard and Thomas, 1989; Livnat and Mendenhall, 2006).

This paper is also related to the recent rise of the literature that uses conference call transcripts to address the disclosure of value-relevant information by management. To the best of our knowledge, ours is among the first to use the entirety of call transcripts (i.e., including the Q&A section of such calls) provided by Capital IQ Transcripts, which covers all types of conference calls, including earnings calls typically used in the extant literature. Using different and, typically smaller than ours, samples such as StreetEvents from Thomson Reuters or transcripts scraped from websites such as seekingalpha.com, the extant literature using conference calls focuses on addressing the role of analysts, and management's interaction with analysts, such as the finding that conference calls increase analysts' EPS forecast accuracy (e.g., Bowen, Davis, and Matsumoto, 2002); that managers grant more participation to favored analysts (e.g., Mayew, 2008); and

that managerial vocal affect during conference calls contains useful information about firm fundamentals (e.g., Mayew and Venkatachalam, 2012). Our paper is the first, to our knowledge, to study the usefulness of textual tone extracted from a comprehensive sample of conference calls to institutional investor trading behavior.

We contribute to the literature in the following ways. Using a large sample of conference calls, we document the persistence of corporations in holding these calls through time, and present evidence that institutional investors robustly use the "soft information" in conference calls in both the short- and long-term for making trades. And, we document the role of analyst engagement in conference calls, through the Q&A section of such calls, in transmitting information to the market through institutional investors. Our research suggests that conference calls are an important channel that motivates institutional trading and, thus, promotes stock price discovery in the post Reg-FD era.

II. Data and Sample Selection

This study uses conference call transcripts from Standard and Poor's (S&P), 13(f) institutional holdings from Thomson Reuters, and high-frequency institutional trades from ANcerno. We describe our data sources and sample selection process in this section.

2.1 The conference call sample and the sentiment measures

We obtain conference call transcripts from 2006 to 2018 for all stocks (having such conference calls) that are listed on NYSE, Nasdaq, or AMEX from Capital IQ (CIQ) Transcripts of S&P Global. Each audio-converted call transcript undergoes two manual vetting steps, in which S&P first reviews and edits the audio version (which may be sourced from a third party), then employs third-party proofing. After removing transcripts with less than 500 words, our conference call sample has 176,648 transcripts from 6,103 firms. Table I details the distribution of call and firm numbers by year. The number of calls in the sample experiences a significant increase from 2006 to 2011, then stabilizes at 16,000 to over 19,000 per

year for roughly 3,500 firms.[5] Figure 1 shows that, since 2011, roughly 75% of the stocks in The Center for Research in Security Prices (CRSP) hold conference calls at least once per year in our sample.

[Table I about here.]

[Figure 1 about here.]

The CIQ Transcripts data contains different types of firm conference calls. Untabulated, 73.8% of the calls are earnings calls. The next four major types of calls are company conference presentations (17.2%), shareholder/analyst calls (2.7%), special calls (2.1%), and analyst/investor day calls (1.9%). Table I shows that each firm, on average over the sample period, holds 4.61 calls per year—just slightly greater than the four quarterly earnings releases that firms typically make in a year.

Our data shows that firms rarely discontinue holding conference calls, after they start. Panel (a) of Figure 2 shows the percentage of firms continuing to hold calls during the next year or during the following year. For earnings calls over the sample period, 96.7% (97.9%) of firms continue holding calls the following year (during either of the next two years); for non-earnings calls, 93.3% of firms continue to hold calls during the next two years from 2010 and on, when the sample starts to contain more than 200 such calls each year. Panel (b) of Figure 2 further shows the difference between the number of earnings releases in Compustat and the number of earnings calls. With better data availability for conference calls since 2011, 84.9% of the firms hold the same number of earnings conference calls as they release earnings (i.e., four times per year). In sum, Figure 2 indicates that firms in general do not strategically time the calls, nor do they selectively conduct different types of calls.

[Figure 2 about here.]

All CIQ Transcripts are broken into two sections: a prepared presentation section where management presents the firm event, followed by a question and answer (Q&A) section where external participants interact with firm management.[6] Within a transcript, CIQ Transcripts organizes the

[5] The CIQ Transcripts data starts in 2004. The data, however, has less than 50 calls during years 2004 and 2005, hence, we drop these two years from our sample. The number of firms covered in the CIQ Transcripts since 2008 seems to be somewhat larger than comparable commercial products used in other studies. For example, Jung, Wong, and Zhang (2018) use the Thomson Reuters StreetEvents transcripts database; in 2008 and 2009—the last two years of their sample period, the number of unique firms is about 5% smaller than ours.

[6] CIQ Transcripts classifies the external participants to analysts, shareholders, and attendees.

conversation sequence chronologically by maintaining a separate record, called a "component," for each person's speaking segment during a call. The Q&A section can, thus, be further separated into a question section and an answer section.[7]

We parse components from CIQ Transcripts using the Loughran and MacDonald (2011) financial word dictionary to derive the textual sentiment of each component. We remove all stop words (such as "the" and "a"), forward-looking statements, and call operator statements. Table I shows that the average total number of words for each conference call remains relatively stable across the years at an average of 6,658 words, reflecting the fact that conference calls consistently last for one hour. Following Huang, Tan, and Wermers (2020), our primary sentiment measure is the net negative tone (*Neg_net*), defined as the number of negative-word occurrences net of positive-word occurrences, divided by the total number of words. We calculate *Neg_net* for each component, then derive the section *Neg_net* as the average of component *Neg_net*s, weighted by the number of words in each component in the section. For example, the "question section" sentiment is computed by word-weighting all analysts' questions together into a single question sentiment score for that conference call, *Neg_net_q*. Similarly, we compute a word-weighted "answer section," *Neg_net_a*, as well as "management section," *Neg_net_p*. Finally, the overall conference call word-weighted sentiment is *Neg_net*.

Table I shows the mean value of *Neg_net* by year and by transcript section. The overall transcript tone is positive, with a mean *Neg_net* value of −0.007 (corresponding to, for example, 7 more positive than negative words in a 1,000 word section). Untabulated, the mean positive-word-only ratio is 0.016 (i.e., 16 positive words out of 1,000), implying that it is 1.8 times as likely to say a positive word as compared to a negative word (i.e., 16 vs. 16 minus 7). As expected, the tone positivity is substantially reduced during the global financial crisis of 2007-2009.

The remainder of Table I shows the *Neg_net* values for *Neg_net_p*, *Neg_net_q*, and *Neg_net_a*, the presentation, question, and answer sections, respectively. Both the presentation and answer sections, on average, have a net positive tone across our sample period, with the presentation section being consistently, (across all years) the most positive in tone. The question section is sharply more negative than the

[7] If an analyst asks a question, receives an answer, then asks a "follow-up" question, CIQ records this as two separate questions by that analyst.

presentation and answer sections; except for 2017 and 2018, the question section has a net negative tone over all years. Overall, consistent with the literature (e.g., Brockman et al., 2015), this evidence suggests that management tends to be overly optimistic in conference calls and is particularly so in prepared presentations, at least relative to the more "pointed" questions asked by analysts who attend such calls and are afforded the opportunity.

As mentioned earlier, three quarters of the conference calls are earnings calls; untabulated, 97.5% of the earnings calls take place on the same day or the next day following an earnings release. For these calls, it is possible that the call sentiment, in particular the sentiment of the presentation section, is merely a proxy for the degree of earnings surprise. We find that *Neg_net* and *Neg_net_p* are, however, only mildly related to earnings surprise. In the full sample (and in the earnings-calls-only sample), the correlation between *Neg_net* and the nearest standardized unexpected earnings (*SUE*)—defined as the net income of a fiscal quarter minus that of four quarters ago, divided by the standard deviation of quarterly net income over the past four years—is -0.14 (-0.17); whereas the correlation between the net negative tone of presentation, *Neg_net_p*, and *SUE* is the largest among the three conference call sections, with a -0.18 (-0.20) correlation. Consistent with these correlations, in regressions, we control for the nearest *SUE* to the conference call.

Panel A of Table II compares the characteristics of firms that hold conference calls ("callers") versus those that do not ("non-callers"). Callers are larger in size, have better financial and stock-market performance metrics, such as return on equity and prior three-month returns, exhibit lower return and cash flow volatilities, and have more "following" analysts. These characteristics are consistent with stocks for which institutions appear to actively monitor, suggesting that institutions may also have reasons to care about conference calls for such stocks.

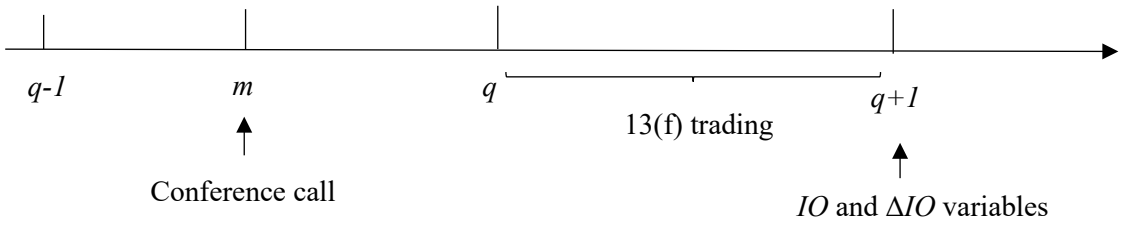
[Table II about here.]

2.2 The institutional holdings data and its intersection with conference calls

We derive our institutional holdings measures from Thomson Reuter's S-34 data, which is based on institutions' 13(f) filings with the SEC. Section 13(f) of the Securities Exchange Act of 1934 mandate that institutional investment managers such as banks, insurance companies, mutual funds, and pension

funds that hold at least $100 million of covered 13(f) securities (primarily U.S. exchange-traded stocks, closed-end funds, and ETFs) must file, within 45 days of the end of a calendar quarter, a quarterly Form 13(f) detailing their holdings of covered securities. We calculate each stock's aggregate institutional ownership, *IO*, as the total shares owned by all 13(f) institutions, divided by the total shares outstanding from CRSP. Both share numbers are adjusted using the adjustment factor from CRSP. We also calculate the number of holding institutions, denoted as *NI*. Our primary measures for institutional ownership change are ΔIO and ΔNI, the change of *IO* and *NI*, respectively, with respect to the previous quarter, reflecting the aggregate trading of the stock by institutions during the quarter.

We, then, intersect institutional holdings with our CIQ Transcripts sentiment metrics. Our interest lies in whether institutions trade on the sentiment of a transcript; hence, we use the following timeline for the mapping of holdings with transcripts,



where the conference call takes place at month *m* between quarters *q*-1 and *q*, and the subsequent 13(f) trading of the stock between quarters *q* and *q*+1, ΔIO, is measured as the difference in aggregate holdings, from *q* to *q+1*. In our first analysis, we do not measure ΔIO during quarter *q*, as quarter *q*'s ΔIO can result from trading before, on, or after the conference call; we wish to focus on trading that occurs after the conference call.

Of the 176,648 transcripts in Table I, we are able to locate a quarter *q*+1 *IO* for 153,179 transcripts (note that some firms do not hold conference calls). Panel B of Table II reports the institutional holdings summary statistics for these firm-transcripts. The mean of *IO* is 65.10% owned by 262.82 institutions, consistent with institutions owning two thirds of U.S. corporate equities during our sample period (e.g.,

Huang, Tan, and Wermers 2020). The mean of ΔIO is 0.13% and of ΔNI is 2.94,[8] reflecting the overall growth in institutional ownership of U.S. equities during our sample period. Untabulated, the correlations between the net-negative-tone conference call sentiment measures in Table I and the institutional ownership measures are all significantly negative; for example, the correlation between *Neg_net* and ΔIO is -0.022 (significant at p=1%), suggesting that a net-negative tone in the conference call leads to institutional net selling of the stock over the subsequent quarter.

The distance between the conference call time *m* and the *q+1* quarter end in the above timeline can be as large as six months; therefore, confounding factors may affect institutional ownership during this period. To mitigate this problem we also replace the 13(f) data with the ANcerno data that records institutions' minute-by-minute transactions. Two drawbacks of ANcerno for our setting are that it is not available throughout our sample period, and that institution (masked) identity is absent for most of the sample period when intersected with our conference calls. Section 4.1 discusses the ANcerno data and the associated results in greater detail.

III. Empirical Results of Conference Call Sentiment and Institutional Ownership Change

In this section, we document the empirical relation between conference call sentiment and institutional ownership changes. We design a number of endogeneity tests to help identify the relation.

3.1 Primary results

We regress *q+1* institutional ownership change variables on previous time-*m* conference call sentiment as discussed above in the timeline. The control variables in the regression include i) analyst characteristics of *SUE* and the number of following analysts; and ii) firm characteristics that are shown to impact institutional ownership and its change, following Gompers and Metrick (2001), and Yan and Zhang (2009). The firm characteristics include firm size (the logarithm of market capitalization), book to market, volatility (previous three-month return volatility), turnover (previous three-month stock turnover ratio), price (the past one month average price), whether the firm is a S&P 500 company, cumulative return over

[8] In regressions, we log-transform both ΔNI and *NI*.

the past three months, cumulative return over months [−12, −4], firm age (the number of months since appearing in CRSP), and trailing-12-month dividend yield. Appendix A provides the variable definitions. To isolate the effect of conference call sentiment, we measure *SUE* and the number of following analysts at the nearest time before the call, and measure firm characteristics variables at or immediately preceding the call. We use industry and individual quarter fixed-effects throughout our regression models to mitigate the concern that our results may be driven by quarterly macro shocks and to address industry preferences in institutional ownership and trading.

Table III presents the results. Both institutional ownership change variables, Δ*IO* and Δ*NI*, are significantly and negatively related to *Neg_net*, with or without the analyst characteristics control variables; that is, negative conference call tone leads to institutions net selling the stock and to fewer institutions holding the stock. These results are robust to controlling for *SUE*. Using Models (2) and (4) where the control variables include both analyst and firm characteristics to evaluate the economic significance of the conference call tone, we find that a one-standard deviation increase in *Neg_net*, leads incrementally to: i) −4.2 bps ownership change in Δ*IO*, and ii) 0.26 fewer institutions holding the stock.[9] Given that firms on average hold 4.61 calls per year (Table I), the annualized economic significance of *Neg_net* so measured would be 19.4 bps for Δ*IO* and 1.21 for Δ*NI*. The mean (median) of firm market capitalization is $9.7 ($1.5) billion in our sample, and hence a 19.4 bps of ownership change translates into a mean (median) dollar impact of $18.85 ($2.91) million in institutional net holding change. These economic significance values are non-trivial.

[Table III about here.]

The results for the control variables are largely in line with the literature. *SUE* positively drives institutional trading. Consistent with Yan and Zhang's (2009) institutional trading results, Δ*IO* is positively related to size, volatility and the S& 500 flag, and is negatively related to turnover and age. In addition, our results indicate that Δ*IO* is positively related to return momentum and negatively related to book-to-market, suggesting a preference among institutions of the momentum and growth asset pricing factors during our

[9] Specifically, the sample standard deviation of *Neg_net* is 0.0062, implying a 4.2 bps (= 0.0062 × 6.752) change in Δ*IO* and a 0.065 (= 0.0062 × 10.367) change in log-transformed Δ*NI*. Using the mean value of 2.94 for Δ*NI* from Table II, 0.065 change in log-transformed Δ*NI* around the mean of Δ*NI* would be 0.26 on the raw value of Δ*NI*.

sample period. Overall, the control variable results suggest that institutional investors as a whole tend to net-buy larger, younger stocks and stocks with higher momentum, more growth opportunities, and lower turnover. These patterns reflect the fact that the "new economy" high-tech firms grow to dominate the US equity market during our sample period of 2006-2018. For example, in 2006 the four largest market-capitalization firms were Exxon Mobil, General Electric, Microsoft and Citigroup; and in 2018 the list changed to Apple, Alphabet, Microsoft and Amazon, all high-tech firms.[10]

To facilitate a comparison of our results with the literature (Gompers and Metrick 2001; Yan and Zhang 2009), in Models (5) and (6) of Table III we regress the level of institutional ownership variables *IO* and *NI* on *Neg_net*. Unlike these authors who use cross-sectional regressions due to stickiness of *IO* over time, we keep the same pooling regression method in Models (1) to (4) for brevity—where in those models we take comfort that the first-degree autocorrelation of ΔIO (ΔNI) is only 0.016 (0.035), or that ΔIO and ΔNI are highly non-sticky. We can report, though, that using cross-sectional regressions for *IO* and *NI* produces qualitatively similar results. Models (5) and (6) of Table III show that except that book-to-market and volatility are negatively and past three-month return is positively related to *IO*, our other control variables have consistent signs with these authors. Again, the results of book-to-market and volatility on the level of institutional ownership at least partially reflect the preference of institutions over new-economy firms in our sample period.

Consistent with Models (1) to (4), Models (5) and (6) show that *Neg_net* is negatively related to *IO* and *NI*. Given that firms holding conference calls exhibit a number of attractive attributes to institutional investors (Panel A, Table II), it is not surprising to observe that *IO* on average is related to call sentiment. Untabulated, Table III's results are robust to controlling for additional firm attributes in Panel A of Table II.

Panel A of Table IV separately examines the effect of *Neg_net* on institutional ownership changes for the presentation, question, and answer sections. The negative relation between *Neg_net* and institutional ownership changes documented earlier holds for the individual sections of conference calls. In particular, we observe the effect of *Neg_net* is most significant in the question section, followed by presentation and

[10] Source: https://en.wikipedia.org/wiki/List_of_public_corporations_by_market_capitalization.

answer sections, respectively. Untabulated, the economic impact as measured by one standard deviation change of *Neg_net_q* on ΔIO and ΔNI is larger than that of *Neg_net*, and is much larger than those of *Neg_net_p* and *Neg_net_a*. The relative importance of *Neg_net_q* suggests that institutional investors pay closer attention to information contained in impromptu questions asked by analysts and investors—these participants either provide professional service to or are peers of institutional investors. In contrast, institutional investors are likely to discount management's prepared presentation and answers largely based on prepared talk and earnings releases, as presentation and answer sections are likely to contain management biases and optimism—and that even negative parts of the presentation and answer sections may be unclear or purposely obfuscated.

[Table IV about here.]

Panel B of Table IV repeats the regressions for earnings calls only. Compared with Table III and Panel A of Table IV, the economic significance of call sentiment for *Neg_net* and for the individual sections of calls is stronger in earnings calls than that in the full sample. This is not surprising, as earnings calls, directly discussing firms' quarterly earnings releases, are arguably the most comprehensive venue for digesting firm's quarterly fundamentals face-to-face with the management. Textual information regarding firms' fundamentals is important in institutional investors' decision making. Tetlock et al. (2008) show that corporate news stories with the word stem "earn" in the corpus contain more information about firm fundamentals than other news stories and are more informative about future stock returns; and Huang, Tan and Wermers (2020) report that institutions trade more heavily on such news stories. Earnings call transcripts are clearly among the most "earn"-related pieces of information.

3.2 Potential Endogeneity

Our primary results in Tables III and IV relate institutional ownership changes to the tone of conference calls during the prior quarter. In this section, we use a number of schemes to help ameliorate the concern that confounding factors other than the tone of the conference call may contribute to institutional ownership changes during this process. For example, we wish to rule out that our results are sensitive to a conference call being more likely to be held when the tone of such a call is positive.

We first employ a difference-in-difference (DiD) approach for identification. Utilizing the fact that about 25% of firms in CRSP do not hold conference calls ("non-callers" in Figure 1), we identify a match sample out of these non-callers. We create tercile ranks for the cross section of firms on, respectively, size and *SUE* each month (end month of quarter *q*). For each caller firm, we find a non-caller firm, if available, that satisfy the following criteria: i) both firms appear in the same month, and ii) both firms belong to the same 2-digit SIC industry, same size rank, and same *SUE* rank. After we find the (control) match firm for each caller (treatment) firm at the month, we identify the common set of institutions that own both the treatment firm and the control firm in both quarters *q* and *q+1*, and calculate the ownership using only this common set of institutions for a new *IO* variable. If there are multiple matches to the treatment firm-month, we take the average of the institutional ownerships of these multiple matches as the value of *IO* for the match. In sum, the treatment and the control firm share the same set of owning institutions and other matching characteristics (time, industry, size and *SUE*), but differ only in whether holding a conference call in quarter *q*.

We examine the difference in *IO* between the treatment and control firms at quarter end, *q+1*. If the presence of a conference call is not correlated with the tone of the conference call, this approach to benchmarking should not significantly affect our inferences. We are able to identify a control firm for about 2/3 of the caller firms in Table III. Panel A of Table V uses two measures of difference: differences in *IO* and Δ*IO* between the caller and the matched non-caller. We can interpret the difference in *IO* (Δ*IO*) between the treatment and the control firm as the abnormal *IO* (Δ*IO*) above the "normal" value of a comparable firm. Panel A of Table V shows that *Neg_net* is still negatively and significantly related to these differences. For the individual call sections, *Neg_net_q* and *Neg_net_a* are negatively and significantly related on both differences, and *Neg_net_p* significantly impacts the difference in *IO*. Overall, despite a smaller sample, conference call sentiment still leads to change in institutional ownership when firms holding conference calls are benchmarked against comparable firms that do not hold calls.

[Table V about here.]

The control sample used in Panel A of Table V requires a common set of institutions that hold both treatment and control firms in quarters *q* and *q*+1. This matching procedure does not allow institutions exiting a position or entering into a new position. To accommodate such a possibility, we drop the same-

institution requirement and re-create a match sample using only the matching dimensions (i.e., time, industry, *SUE* and size ranks). For this match sample, we can now calculate non-zero differences of *NI* (ΔNI) between the treatment and control firms, in addition to the existing measures of differences of *IO* (ΔIO). Panel B of Table V shows that *Neg_net* is negatively and significantly related to all these differences, while the tone in segments is negatively and significantly related to these differences in most cases (10 out of 12).

A concern in identifying the relation between *Neg_net* and ΔIO is that the time lapse between conference call time *m* and *q+1* quarter-end may introduce confounding factors. Shortening the time lapse would, thus, mitigate the concern. We group the quarter-*q* conference calls to those taking place at the beginning, middle, and end months of the quarter, respectively. Using the quarter-beginning month as the benchmark, we create two interaction terms by interacting the mid-quarter month dummy and the quarter-end month dummy, respectively, with a conference call sentiment measure, and add those two interaction terms to our baseline regression in Table III. The expectation is that our results are stronger in these two interaction terms. Table VI presents the results for the sentiment of the whole transcript and the individual sections. We observe that these two interaction terms are mostly significant on ΔIO and ΔNI for the sentiment of the call and its sections, suggesting that the negative relation between conference call sentiment and ΔIO and ΔNI are more pronounced for mid-quarter and quarter-end months. The significance of the interaction terms is somewhat weaker for *Neg_net_q* than for other sentiment measures, suggesting that the question section receives relatively constant attention.

[Table VI about here.]

3.3 Institutional heterogeneity

In this section we show that our results robustly exist across a number of different types of institutions. We use two institutional classifications, one based on the institution's legal fiduciary duties, and the other based on estimated attributes of the institution. The legal types of institutional investors

include whether the institution is a bank trust and/or an independent investment advisor (IIA), based on the list provided by Brian Bushee.[11] We separately calculate Δ*IO* and Δ*NI* for these types of institutions.

Panel A of Table VII shows the association of Δ*IO* and Δ*NI* with conference call sentiment for the following types of institutions: bank trust, IIA, non-IIA (i.e., bank trust, insurance company investment, corporate pension fund, public pension fund, university and foundation endowments, and miscellaneous), and non-bank & non-IIA. Except for Δ*IO* of IIA, *Neg_net* is significantly and negatively associated with the institutional ownership change measures for all other types. IIAs, or commonly known as independent registered investment advisors (RIAs), manage assets for individual and institutional investors and are an alternative to mutual and hedge funds. IIAs manage assets in a diverse form such as investment management, retirement planning, estate and tax planning, and are characterized by decentralized individual advisors (persons) catering to clients.[12] IIAs account for two-thirds of the S34 holdings observations in our sample period. Perhaps due to this diverse nature of IIAs, it is difficult for their Δ*IO* and Δ*NI* to show a clear pattern on conference calls. What is assuring though, when the institutional type is more clearly defined, for example, for bank trusts, non-IIAs, or non-bank trust & non-IIAs (such as investment companies, insurance companies, and pension funds), their Δ*IO* and Δ*NI* react to *Neg_net*, as well as to sentiment of all sections of conference calls.

[Table VII about here.]

In our second classification, we classify institutions to long- and short-term, following Bushee (1998) and Yan and Zhang (2009). Bushee (1998), along with Bushee and Noe (2000), and Bushee (2001) classify institutions to "transient" and "non-transient" based on nine characteristics of institutions' holdings covering the following aspects: the level of portfolio diversification, the degree of portfolio turnover, and

[11] This list is based on the vintage Spectrum 13(f) data carried over to the S34 data, updated by Bushee and his research assistants for new institutions. The list includes other types such as insurance company, investment company, and corporate pension fund; however we find that these other types account for only a small fraction of the sample, rendering the use of these types less powerful. The institutional classification list data is available at http://acct.wharton.upenn.edu/faculty/bushee/IIclass.html.

[12] For example, Plante Moran, ranked by Forbes Magazine as the largest RIA in 2019 by assets-under-management (AUM), offers services in accounting, tax, investment banking, wealth management, and business advisory. There are also lists such as "Top 100 Independent Advisors in America," featuring individual financial advisors (persons) and client AUM that they advise on.

the trading sensitivity to current earnings. Their "transient" institutions have higher turnover rate along with median diversification. We use the classification list provided by Bushee.

Relatedly, Yan and Zhang (2009) classify institutions into short- and long-term based on the portfolio turnover rate. These authors calculate a portfolio "churn rate" for each institution based on its aggregate purchase and sale each quarter. Using the mean value of the churn rates of the past four quarters, they classify the top (bottom) tercile to short-term (long-term) institutional investors. We calculate ΔIO and ΔNI for each type of institutions. A frequent switching of institutional type across time would inadvertently distort the values of ΔIO and ΔNI. For example, assume that an institution's holding of a stock does not change over two periods but its type changes. In this case, ΔIO and ΔNI of each type of institutions for the stock would change since there is a mechanical entrance into/exit from the stock by the change of institutional type. To mitigate this problem, we use the end of 2005 institutional type for the period of 2006-2009 (before and during the recent financial crisis), and the end of 2009 type for the period of 2010-2018 (post crisis). Our 13(f)-holdings-sample correlation between transient and short-term institutional dummies is 0.56, reflecting that the Bushee (1998) transient institutions are related to, but still different from, the Yan and Zhang (2009) short-term institutions.

Panel B of Table VII shows the effect of call sentiment on institutional ownership changes of these estimated types of institutions. The left part of the Panel shows that the effects of sentiment are stronger for the Yan and Zhang (2009) short-term institutions while they also exist for long-term institutions: ΔIO and ΔNI (only ΔNI) are related to *Neg_net* and section sentiments for short-term (long-term) institutions. That short-term institutions experience larger ownership change sensitivities is consistent with Yan and Zhang (2009), who show that the positive *IO*-induced stock returns documented in Gompers and Metrick (2000) are largely driven by short-term institutions.

The right part of Panel B shows the results for transient and non-transient institutions. In contrast, we find that for transient institutions, call sentiment is significantly related to ΔNI but much less so to ΔIO (of the four sentiment measures, only *Neg_net_q* is significantly related to ΔIO for transient institutions). In contrast, sentiment across the call and its segments is significantly related to ΔIO and ΔNI for non-transient institutions most of the time. We note that only 28% of the S34 holding observations belong to transient institutions and the rest to non-transient institutions; out of the 28% transient holdings, 59% belong

to the Yan and Zhang (2009) short-term institutions. There hence is a significant difference between transient and short-term holdings. This significant difference helps explain different sensitivities of institutional trading to call sentiment across the Bushee (1998) transient and Yan and Zhang (2009) short-term institutions.

In sum, the effect of conference call sentiment on institutional ownership changes holds for a cross section of institutions. Although the relation is somewhat sensitive to different classifications of institutions, it appears that when the institutional type is defined with more singular styles, for instance, when the institution is a bank trust or a non-IIA, or is defined as short-term based on portfolio turnover alone, the effect is more pronounced.

3.4 Firm heterogeneity

Earlier in Table II we showed that firms holding conference calls (callers) exhibit attributes that institutions desire relative to firms that do not hold calls. Table VIII further shows that within callers, the relation between call sentiment and institutional ownership changes is stronger for firms whose incremental information is desired. In the Table, we interact a firm attribute dummy with call sentiment, and add the interaction term to our baseline regressions. We examine two sets of firm attributes. The first set are firm size, idiosyncratic volatility, cash flow volatility, and number of following analysts; these are often firm information asymmetry measures (e.g., Irvine and Pontiff, 2009). The second set are nearest *SUE*, ROE, and price; these roughly represent firm financial and stock performance (e.g., Matsumoto, et al. 2011). Table VIII shows that the interaction term is, by and large, significantly negatively for firms with a larger degree of information asymmetry and for firms with poorer financial and stock performances. These are cases when information is more valuable to portfolio managers.

[Table VIII about here.]

3.5 Robustness checks

Untabulated, we can report that the effect of conference call tone on institutional trading is robust to the following: i) adding the 10-Q sentiment to the regressions; ii) considering if there is any incremental effect during the recent financial crisis; iii) spurious regressions due to lagged institutional ownership changes, and iv) considering additional control variables. We derive the net negative tone of the 10-Q

(quarterly report) document nearest to the conference call from WRDS SEC Analytics Suite and find it does not impact the significance of conference call tone.[13] We interact the recent financial crisis dummy (2007-2009) with the conference call sentiment, and do not find much of significance for the interaction term. To examine regression spuriousness, we, i) regress the contemporaneous institutional changes on call sentiment, and find negative significance on ΔNI but not on ΔIO, supporting that the effect of call sentiment on institutional ownership changes identified in Table III is likely a causal one;[14] and ii) control for the contemporaneous ΔIO and ΔNI in our main regressions in Table III and find our results robust. Lastly, we add the additional firm attributes in Tables II and VIII to our baseline regressions in Table III and find our results robust. In sum, the conference call tone-institutional trading relation is robust to tones in regulatory filings, to different sample periods, and to potential spuriousness in regressions.

IV. Potential Channels for Conference Calls to Impact Institutional Ownership Changes

In this section we examine potential channels for the the effect of call sentiment on institutional trading to take place during a seemingly prolonged period. We argue that the assimilation of conference call sentiment by institutions is mostly a slow process (despite evidence that stock prices react to conference calls during the calls, see, e.g., Matsumoto, et al. 2011). Our argument is consistent with the post earnings announcement drift phenomenon, where *SUE* impacts returns generally for one quarter after quarterly earnings releases (e.g., Livnat and Mendenhall, 2006). Our argument is also consistent with the process it takes to convert audio documents such as conference calls into texts—for instance, the processing involves converting, editing, and third-party proofing in the case of CIQ Transcripts. The assimilation of the conference call sentiment into stock price and trading is thus unlikely to be finished in a short period of time in this case.

[13] If there is no 10-Q nearby the conference call, we use the sentiment of the 6-K (material event) filing [-5, 2] days around the conference call. This mostly applies to non-earnings conference calls in our sample.

[14] Amoozegar et al. (2019) regress the tone of earnings calls on the previous-period *IO* by parsing a sample of calls from seekingalpha.com during the period of 2005-2016, and find that the level of *IO* is negatively related to the (positive) tone of earnings calls. These authors interpret the results as that institutions exercise a monitoring role and therefore suppress the degree of optimism in the subsequent conference call. We fail to find such results in our sample—we instead find an opposite, albeit statistically insignificant, relation to that in Amoozegar et al. (2019). We believe that the difference is at least partially due to sample difference.

We offer three pieces of evidence for our argument. The first piece is based on a high-frequency institutional trading data, and the second piece on analyst recommendation changes following conference calls. In both cases, conference calls have a prolonged effect. Lastly, we directly examine whether conference call tone leads to short- and medium-term returns, and if so, whether conference call tone compounded by returns have a reinforcing effect on the quarterly change in institutional ownership.

4.1 ANcerno trading on conference call sentiment

We use minute-by-minute institutional trading data from ANcerno Ltd. (formerly Abel Noser Solutions Corporation). Plan sponsors and mutual fund families use ANcerno's trade cost analysis services and report their transactions to ANcerno. Hu et al. (2018) estimate that 12% of all CRSP trading volume during 1999 to 2011 belongs to ANcerno institutions.

The ANcerno data is available to us for the period of 1999 to September, 2014. For each transaction, ANcerno provides, among other items, the unique client code (masked ID) for each institution (for pre-2011 only), the time of execution, the number of shares traded, the execution price, and whether the execution is a buy or sell. This allows us to calculate an aggregate institutional trading measure as in Huang, Tan, and Wermers (2020). Specifically, for each stock at a given day, we calculate its trading imbalance as the net shares traded (i.e., shares purchased minus shares sold) scaled by the stock's total shares outstanding from CRSP. To address the problem that some stocks may be more actively traded than others, we calculate an abnormal trading imbalance (*Abt*) at the firm level, by subtracting the trading imbalance by its average trading imbalance during trading days $[-40, -20]$.[15] The summary statistics of *Abt* are in line with those in Huang, Tan, and Wermers (2020) and are omitted for brevity.

Table IX presents the regression on conference call sentiment of the average-within-horizon *Abt* using the following trading-day horizons relative to the conference call date: $[-2, -1]$, 0, [1, 2], [3, 5], [6, 10], [11, 20], and [21, 30]. Regressions over these horizons would indicate whether institutions trade before

[15] Unlike Huang, Tan, and Wermers (2020), who use a benchmark window of $[-60, -20]$ to calculate *Abt*, we use $[-40, -20]$ to better control for possible confounding effects caused by other conference calls during the benchmark window. The average number of conference calls per year is 4.61 in our sample, implying an average of 55 trading days apart between two conference calls. Considering that firms do not evenly pace the conference calls, the lower bound of 40 days in the benchmark window is a reasonable choice to minimize the occurrence of another conference call during the benchmark window.

the call (days [−2, −1]), on the call date (day 0), or after the call (all other horizons). Since we lack the exact intraday time stamp of the conference call date,[16] trading on day-0 could take place either before or after the conference call end time. With this backdrop, we observe from Panel A of Table IX that *Neg_net* is not related to *Abt* in days [−2, −1] or 0. That is, institutions do not predictively trade on conference call sentiment.

[Table IX about here.]

In contrast, we observe that *Neg_net* is significantly and negatively related to *Abt* in days [1, 2], and all the way to days [11, 20] or up to four calendar weeks. The significance stops for days [21, 30]. Over the significant horizons, the coefficient estimate of *Neg_net* decreases over time, from −0.295 for days [1, 2] to −0.105 for days [11, 20]. As we measure the horizon *Abt* by the mean of *Abt* within the horizon, the decreasing estimate indicates that the effect of *Neg_net* on *Abt* decreases over time.

Panel B of Table IX shows the effect of *Neg_net* of the individual sections of conference calls on *Abt*. We similarly observe that the section *Neg_net*'s impact *Abt* up to 20 days but not before day 0, for various sections of the conference call. *Neg_net_q* is also significantly related to *Abt*[0], again suggesting that sentiment of the question section is more informative. Overall, Table IX suggests that institutions trade on conference call sentiment over the next four weeks, a prolonged period in our view.

The long reaction period for institutions to trade on conference call sentiment seems at odds with Huang, Tan, and Wermers (2020), who show that institutions trade on corporate news only on the news day but not on days surrounding the news. Our study has two features that are distinctive from Huang, Tan, and Wermers (2020, HTW): i) we examine a conference call sample dominated by earnings calls, whereas HTW specifically exclude corporate news around earnings announcements; and ii) conference calls provide a comprehensive review of firms' operation and key events, and are arguably more informative about the firm than corporate news that typically focuses on a single specific event. Reflecting these differences, the sensitivity of *Abt* to *Neg_net* is much higher than that of HTW. For example, the coefficient of *Neg_net* on *Abt*[1, 2] in Table IX is about seven times as large as that in HTW, and is even three times as large as

[16] CIQ Transcripts provides a time stamp indicating when the transcript is created in their database (recall that CIQ transcripts involve several vetting steps), which is different from the actual end time of the transcript.

HTW's *Neg_net* sensitivity on *Abt*[0]. HTW provide two cases when news sentiment has an extended effect lasting for more than one day: when the news is more informative such as when the news contains the word root "earn" (for earnings-related news), and when the news is instead in the earnings announcement period (see their Internet Appendix). Conference calls are arguably one of the most informative corporate events; and hence our results are consistent with HTW's argument that heightened informativeness of textual information leads to longer reaction period by institutions.

4.2 Analyst revision

Institutional investors use sell-side analysts in their decision making (e.g., O'Brien and Bushan 1990; Brown, Wei, and Wermers, 2014). We now show that conference call invokes analysts to make recommendation changes, and that institutions continue to trade on such analyst recommendation changes. In both cases, the reactions are not immediate.

To show whether there is a potential association between analyst research output and conference call sentiment, we examine analyst recommendation change between 60 calendar days before and 60 calendar days after the conference call.[17] Analysts produce three major research outputs: earnings per share, target price, and stock recommendation. Arguably, conference call sentiment is related to all three outputs. We choose stock recommendation as it parsimoniously summarizes the analyst's opinion, and is directly usable in investment decisions. We extract sell-side analyst recommendations from I/B/E/S, where stocks are ranked from strong buy (coded as "1") to strong sell (coded as "5"). If there are multiple recommendations from one analyst, we keep only the closet recommendation before and the closest recommendation after the conference call for the analyst. Within this sample, for firms that analysts issue recommendations before and after the calls, the mean (median) revision distance (time from the call date to the analyst recommendation date post-call) shall a revision exists (including re-iteration of recommendation) is 25.44 (25) days, and the first quartile of the revision distance is six days. These suggest that if analysts react to conference calls, such reaction takes time.

[17] Our focus is on analyst recommendation post conference call, and we look for a period where post-call analyst recommendations are less likely to be compounded by another conference call. Given the frequency of calls per year (4.61 times), 60 calendar days of post-call period is a reasonable choice.

We then average all recommendations before and after the call to derive a consensus recommendation before and after. Δ*REC* is the change in consensus recommendation after the call. We regress Δ*REC* on call sentiment to examine whether analysts react to calls. Panel A of Table X shows that *Neg_net*, as well as *Neg_net_q* and *Neg_net_a*, is significantly and positively related to Δ*REC*—that is, net-negative tone in conference call leads to downgrades, as expected. *Neg_net_p*'s significance on Δ*REC* is only marginal, as it is likely controlled for by *SUE*; in contrast, the effect of *Neg_net_q* is the largest among the call sections, consistent with evidence that the question section plays the most role for Δ*IO*.

[Table X about here.]

Untabulated, we can report that Δ*REC* itself is negatively related to institutional ownership changes; that is, consensus downgrades (upgrades) lead to smaller (larger) institutional ownerships, consistent with Brown, Wei, and Wermers (2014). In light of this, the relation between call sentiment and institutional ownership changes that we documented earlier may be subsumed by Δ*REC*. To mitigate this concern, in Panel B of Table X we provide our main regression of institutional ownership changes on call sentiment, controlled for Δ*REC*. We observe that while Δ*REC* is still negatively related to Δ*IO* and Δ*NI*, the significance and negative relation of call sentiment is preserved for all call sentiment measures.[18]

Earlier using the ANcerno data we showed that institutions directly trade on call sentiment up to four weeks. Given the influence of *Neg_net* on recommendation revision and that analysts on average take 25 days to revise their recommendations post the conference call, it is likely that institutions continue to be (indirectly) influenced by call sentiment by trading on recommendation revision. Table XI provides evidence for this conjecture based on the ANcerno data. In the Table, we examine short-term institutional trading on analyst recommendation change or analyst recommendation announcement for each analyst. Panel A of Table XI uses individual analysts' recommendation changes before and after the call (by requiring that each given analyst issues a recommendation 60 days before the call and a recommendation 60 days after the call), and track *Abt* two (trading) days before and 30 (trading) days after each recommendation change. Without abuse of notation, we still refer to the individual analyst recommendation

[18] Understanding that conference call sentiment drives Δ*REC*, which in turn drives institutional ownership changes, we also employ a two-stage least-squares regression analysis to address the potential endogeneity of Δ*REC*. Untabulated, the results are similar.

change as ΔREC. Despite a small sample (with only around 8,000 individual analyst recommendation changes), Panel A of Table XI, controlled for *Neg_net*, shows that ΔREC is significantly and negatively related to *Abt* of the following horizons: [0], [1, 2], up to [11, 20]—that is, downgrades (upgrades) lead to net-selling (net-buying) up to the next four weeks. *Neg_net* is not significant on *Abt* here—this is because Panel A of Table XI examines *Abt* post analyst recommendation change, which in turn takes place about 25 days after the conference call date (22.34 days to be exact in this subsample).

[Table XI about here.]

Panel B of Table XI addresses the limited sample problem in Panel A by using the level of all individual analyst recommendations ("*REC*") post the conference call. The sample size is increased by about 10 times, yet we observe similar results: *REC* is negatively and significantly related to *Abt* from day 0 to day 20 after the conference call, and *Neg_net* remains insignificant. There are two differences from Panel A of Table XI: *REC* is negatively and significantly related to $Abt[-2, -1]$, and positively and significantly related to $Abt[21, 30]$. The former can be explained by the fact that sell-side analysts frequently sell reports to the buy-side before the I/B/E/S announcement date (i.e., the I/B/E/S publication date) (see, e.g., Brown et al. 2016; and Institutional Investor magazine's sell-side analyst rankings), and the latter can be explained by institutions playing a reversal strategy after a long stretch of trading first on conference call sentiment and then on analyst recommendation. Overall, the evidence in Table XI suggests that institutions continue to trade, over short- and medium-term, on analyst recommendations or recommendation changes induced by conference calls. Combining Table IX, which shows institutions directly trade on call sentiment up to 20 trading days, and Table XI, which shows institutions indirectly trade on call sentiment through analyst revision for another 20 trading days, the evidence suggests that call sentiment has a prolonged effect on institutional trading.

4.3 The Compounded effect of conference call tone by returns

Lastly, we examine whether the impact of conference call on institutional ownership exhibits itself through returns. We show first, consistent with the literature, that conference call tone induces returns. The relation between tone and returns, in turn, reinforces the call tone effect on institutional ownership in both short- and medium-term.

Table XII reports the regression results of conference call tone on returns. We adjust returns by the daily DGTW characteristic-based return benchmark following Daniel, Grinblatt, Titman, and Wermers (1997). To provide a consistent comparison across different return horizons, we measure DGTW return as the horizon mean return. In Panel A, we examine short-term returns on the day of the conference call and days [1, 2] subsequent to the call. The control variables include, among others, *SUE*, previous short-term returns of days [−5, −3] and days [−10, −6], and longer-term returns over months [−12, −4] and months [−3, −1]. The results show that *Neg_net* of the call and the call sections is strongly and negatively related to these returns.[19] In Panel B, we extend the return horizons to [3, 10] (trading) days and [11, 30] days. *Neg_net_q* is strongly related returns of these future horizons, while *Neg_net* and *Neg_net_a* are significantly related to these returns. In sum, conference call tone overall has a long-lasting effect on returns. These results are consistent with Price et al. (2012), who nonetheless use a much smaller sample of conference calls and a less-well-known Henry dictionary of sentiment words to define the textual tone.

[Table XII about here.]

We next examine whether conference call tone compounded by returns have a reinforcing effect on institutional trading. Subsequent returns will "reinforce" the conference tone if they move in the same direction. For example, a negative conference tone followed by negative returns likely signals worse news than followed by positive returns. We create a reinforcing dummy variable that takes the value of one if the tone and subsequent returns over a given horizon move in the same direction (either negative tone to negative returns, or positive tone to positive returns), and we further interact this reinforcing dummy with the conference call tone. Institutional trading on conference tone is likely amplified by reinforcing returns, and hence we expect to see the interaction term carries a negative sign on ΔIO and ΔNI.

Table XIII present the results of ΔIO and ΔNI regressed on the interaction term for the reinforcing dummy created, respectively, over return horizons of [0], [1, 2], [3, 10], and [11, 30]. Untabulated, when *Neg_net* is used for the tone measure, these return horizons consistently show that about 57% of the time returns reinforce the tone (i.e., the value of the reinforcing dummy equals one). Panel A presents the results

[19] The negative relation between conference call tone and return extends to days [−2, −1] but not days [−5, −3]. This is because in our sample earnings are released the day before (about half) or on the same day as (about the remaining half) the conference call.

of the reinforcing effect based on short-term returns of days [0] and [1, 2]. The coefficient estimate of the interaction term (*ReinforceDummy* × Tone) is significantly negative on both Δ*IO* and Δ*NI* in seven out of the eight cases (using either *Neg_net* or *Neg_net_q* for the tone). Moreover, the significance of tone on Δ*IO* and Δ*NI* that we documented earlier is mostly subsumed by the interaction term (with only one case of significantly negative estimate on tone in the eight cases), suggesting that institutional trading on conference call tone is concentrated in these return-reinforced calls. The overall effect of tone on institutional trading, however, is still large, as the coefficient magnitude of the interaction term is much larger than that of the tone itself.

[Table XIII about here.]

Panel B of Table XIII presents the results of the reinforcing effect based on longer-term returns of days [3, 10] and [11, 30]. We again observe that the coefficient estimate of *ReinforceDummy* × Tone is significantly negative on both Δ*IO* and Δ*NI* in seven out of the eight cases, and that the standalone effect of the tone is mostly subsumed by the interaction term, with the interaction term carrying a much larger magnitude of coefficient estimate. We also note that the coefficient estimate of *ReinforceDummy* × Tone is much larger at return horizon [11, 30] than at shorter return horizons. Since we measure DGTW returns as the mean horizon return, this larger coefficient estimate suggests that institutions are on average more sensitive to the conference tone compounded by longer-term returns.[20] Overall, our evidence suggests that institutions trade on their quarterly holdings based on conference call tone compounded by post-call returns of up to 30 trading days (or over half a quarter of 1.5 calendar months).

V. Conclusion

Price discovery post the Regulation Fair Disclosure ("Reg FD") era relies predominantly on non-private sources of information, soft and hard. Among firms' three major venues for public disclosure of soft information (SEC filings, firm news, and conference calls), conference calls provide an exclusive public venue that analysts interact with firm management in large scale. In this paper we examine whether, and how, institutional investors trade on conference call sentiment to facilitate stocks' price discovery.

[20] We note that the reinforcing impact by longer-term returns can be due to institutions trading at the same time driving returns. In this case, though, our premise that institutions trade on the conference call tone is corroborated.

Using an exhaustive database on conference calls from 2006 to 2018 from Standard and Poor's, we find that institutions react, with economic significance, to conference call tone sentiment via changes in holdings and in the number of holding institutions. Incrementally to contemporaneous earnings surprise, a one standard deviation increase in the net negative tone of the call leads to an annualized mean of $18.85 million fewer institutional ownership or 1.21 fewer holding institutions in the firm in the subsequent quarter.

We use a number of schemes to establish institutions' prolonged reaction to conference call tone. We first find little evidence that firms strategically time calls to "game" institutional ownership. Second, we create a match sample from firms that do not hold conference calls by matching on time, industry, size, and earnings surprise, and a common set of holding institutions. When we benchmark caller firms against such comparable yet non-caller firms, we continue to observe institutions trade on conference call tone. Third, we completement Thomson Reuter's quarterly 13(f) institutional holding data with high-frequency institutional trading data from ANcerno, and find that institutions trade on the call sentiment immediately to four weeks after the call. Furthermore, analysts revise their recommendations post the call and the revision on average takes 25 days; and institutions continue to trade, again over the next four weeks, on analyst recommendations and recommendation revisions induced by conference calls. Finally, we find that conference call tone predicts short- and longer-term returns, from the conference call day to the next six weeks. Institutions, in turn, predominantly trade during the quarter on conference call tone that is reinforced by such same-direction post-call returns.

Institutions' reaction to tone is more pronounced when the marginal value of information is higher: (1) in the question section of the call as compared to the prepared presentation and management sections, (2) in earnings calls as compared to other types of calls, (3) when the stock exhibits a higher degree of information asymmetry and had poorer financial and return performance, and (4) when the information user (institutions themselves) is more singular and exhibits more-clearly-defined investment styles.

Our findings point to conference call as one robust information source that institutions process in portfolio management. In light of Reg FD and the limited venues of firm public disclosure, conference calls perhaps represent the most important and widely available channels for access to management by finance professionals. Institutional investors' potential assimilation of soft information in corporate conference calls

resembles price-setters' use of one of most important information sources. Our paper overall suggests that conference calls are an important channel for stock price discovery in the post Reg-FD era.

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Appendix A Variable Definitions

Variable	Definition
IO	Aggregate institutional ownership of a stock at the quarter end, defined as the total shares owned by the 13F institutions, divided by the shares outstanding from CRSP, times 100. Both share numbers are adjusted using the adjustment factor from CRSP.
NI	Number of holding institutions at the quarter end. In regressions, *NI* is log-transformed as log(*NI* + 1).
Δ*IO*	Change of *IO* relative to the previous quarter.
Δ*NI*	Change of *NI* relative to the previous quarter. In regressions, Δ*NI* is log-transformed as the sign of Δ*NI* times log[abs(Δ*NI*) + 1].
Neg_net	The fraction of total negative word count net of total positive word count relative to the total number of words in a conference call. The word list is from Loughran and McDonald (2011). *Neg_net_p*, *Neg_net_q*, *Neg_net_a* denotes *Neg_net* for presentation, question, and answer sections, respectively.
Pos	The fraction of total positive word count relative to the total number of words in a conference call. The word list is from Loughran and McDonald (2011).
Neg	The fraction of total negative word count relative to the total number of words in a conference call. The word list is from Loughran and McDonald (2011).
Abt	Abnormal institutional trading imbalance, measured as the net trading imbalance (buy minus sell as percent of volume turnover from ANcerno), relative to the average net trading imbalance of the benchmark window [-40,-20] days of the conference call. Day-0 *Abt* refers to the abnormal trading imbalance on the call day; and *Abt* of a specific day range, such as *Abt*[1, 2], refers to the cumulative *Abt* of the day range.
REC	Analyst recommendation from I/B/E/S, with strong buy coded as 1 and strong sell coded as 5.
Δ*REC*	Change of *REC* between 60 days before the conference call and 60 days after the conference call, for either the consensus recommendations or an individual analyst's recommendations before and after.
SUE	Standardized unexpected earnings of the quarter nearest to the call, defined as the actual net income (before extraordinary items) of the quarter minus net income four quarters ago, divided by the standard deviation of quarterly net income over the past four years.
Analyst Number	The number of following analysts of the firm for the quarter nearest to the call.
Size	The logarithm of month-end market capitalization prior to the conference call.
Book-to-market	Book value of equity divided by the market capitalization prior to the conference call.
Volatility	The standard deviation of daily stock returns within the month, averaged over the past three months prior to the conference call month.
Turnover	The average monthly stock turnover ratio (overall CRSP market trading volume / shares outstanding), averaged over the three months prior to the conference call month.
Price	The logarithm of the average daily stock price of the month prior to the conference call month.
S&P 500	A dummy variable that equals one if the stock is included in the S&P 500 index.
$\text{Return}_{m-3,m}$	Cumulative gross returns of the three months prior to the conference call month.
$\text{Return}_{m-12,m-4}$	Cumulative gross returns of months [-12, -4] prior to the conference call month.
Age	The logarithm of the number of months that a stock has appeared in the CRSP.

Dividend Yield	The annualized dividend yield of the past 12 months (past 12-month cash dividend / beginning-of-the-month price).
DGTW Return	Average daily returns within a given return horizon. Returns are adjusted by the DGTW characteristic-based return benchmark following Daniel, Grinblatt, Titman, and Wermers (1997). For instance, DGTW $Return_{t-5,t-3}$ refers to mean daily DGTW returns in days [-5, -3] relative to the benchmark date (conference call date unless otherwise specified).
ReinforceDummy	A dummy variable that equals to one with either i) positive *Neg_net* and negative DGTW return over the given range, or ii) negative *Neg_net* and positive DGTW return over the given range. The variable equals zero otherwise.

Table I Summary Statistics of Conference Calls

This table presents the summary statistics of the sample of conference calls. *Neg_net* is the fraction of total negative word count net of total positive word count, divided by the total number of words in a conference call. *Neg_net_p*, *Neg_net_q*, and *Neg_net_a* denote the corresponding *Neg_net* for presentation, question, and answer sections, respectively.

year	# of calls	# of firms	# of calls per firm-year	Average total # of words per call	*Neg_net*	*Neg_net_p*	*Neg_net_q*	*Neg_net_a*
2006	1,144	408	2.80	7,293.09	-0.009	-0.012	0.0000	-0.008
2007	2,790	1,548	1.80	7,241.37	-0.007	-0.011	0.0026	-0.006
2008	9,435	3,221	2.93	6,692.08	-0.005	-0.007	0.0022	-0.005
2009	9,605	2,853	3.37	6,555.01	-0.004	-0.006	0.0022	-0.005
2010	11,012	3,226	3.41	6,480.81	-0.006	-0.010	0.0013	-0.007
2011	16,371	3,477	4.73	6,674.90	-0.006	-0.010	0.0010	-0.007
2012	18,270	3,421	5.36	6,625.37	-0.006	-0.010	0.0017	-0.007
2013	17,572	3,276	5.39	6,692.41	-0.007	-0.011	0.0006	-0.008
2014	17,584	3,282	5.39	6,791.29	-0.007	-0.011	0.0003	-0.008
2015	17,487	3,333	5.29	6,797.52	-0.007	-0.011	0.0005	-0.008
2016	16,828	3,318	5.12	6,759.13	-0.007	-0.011	0.0003	-0.008
2017	19,408	3,542	5.52	6,407.50	-0.008	-0.012	-0.0009	-0.008
2018	18,962	3,557	5.37	6,575.52	-0.008	-0.013	-0.0010	-0.009
Full sample	176,468	6,103	4.61	6,658.45	-0.007	-0.010	0.0006	-0.007

Table II Conference Call Firm Attributes and Institutional Ownership Summary Statistics

Panel A presents the attributes of firms that hold conference calls ("callers"). Callers are defined as firm-years that have at least one conference call. Panel A compares quarterly variables between callers and non-callers; "FF-4 idio volatility" is the Fama-French four-factor idiosyncratic return volatility of daily returns during the previous month, "CFO volatility" is the standard deviation of cash flows from operation over the past sixteen quarters, "Analyst Number" is the number of following anlysts, and "*SUE*" is earnings surprise. *IO* (Δ*IO*) is (the quarterly change in) the percentage of equity owned by 13f institutions, and *NI* (Δ*NI*) is (the quarterly change in) the number of holding institutions. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Firms that hold conference calls ("callers") vs. those that do not ("non-callers")

	Market equity	Book-to-market	ROE	Prior 3-m return	Prior 1-m price	FF-4 idio volatility	CFO volatility	Analyst Number	*SUE*
Callers	4,892	0.98	-0.01	0.02	29.83	0.02	1.61	8.10	0.08
Non-callers	1,140	1.52	-0.10	0.01	17.30	0.03	3.30	4.15	0.06
Callers - Non-callers	3,751***	-0.53***	0.10***	0.01***	12.53***	-0.01***	-1.69***	3.95***	0.02***

Panel B: Summary statistics of institutional ownership measures

	N	Mean	Median	Std Dev	Minimum	Maximum
IO (%)	153,579	65.10	73.15	27.42	0.09	99.08
NI	153,579	262.82	157.00	305.41	2.00	1,655.00
Δ*IO* (%)	152,902	0.13	0.05	5.65	-22.98	23.06
Δ*NI*	152,902	2.94	1.00	18.36	-54.00	72.00

Table III Regressions of Institutional Ownership on Conference Call Sentiment

IO (Δ*IO*) is (the quarterly change in) the percentage of equity owned by 13f institutions, and *NI* (Δ*NI*) is (the quarterly change in) the number of holding institutions. *Neg_net* is the fraction of total negative word count net of total positive word count, dividend by the total number of words in a conference call. All regressions include industry and individual quarter fixed effects. Robust *t*-statistics are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Δ*IO*	Δ*IO*	Δ*NI*	Δ*NI*	*IO*	*NI*
Neg_net	-8.494***	-6.752***	-11.960***	-10.367***	-62.383***	-2.699***
	(-4.42)	(-3.32)	(-12.45)	(-9.70)	(-5.82)	(-7.85)
SUE		0.019*		0.071***	-0.459***	0.007***
		(1.82)		(13.06)	(-8.73)	(4.46)
Analyst Number		-0.004*		0.002	0.149***	0.006***
		(-1.71)		(1.28)	(11.74)	(14.88)
Size	0.015	0.045***	0.084***	0.097***	0.564***	0.409***
	(1.24)	(3.30)	(14.11)	(13.59)	(6.76)	(147.50)
Book-to-market	-0.061***	-0.088***	-0.014***	-0.021***	-0.876***	-0.024***
	(-5.15)	(-5.56)	(-3.92)	(-4.24)	(-11.35)	(-8.29)
Volatility	2.330	5.468***	1.883***	3.215***	-352.889***	-3.936***
	(1.45)	(3.00)	(2.92)	(4.26)	(-41.03)	(-13.83)
Turnover	-1.757***	-1.945***	-0.532***	-0.591***	22.524***	0.244***
	(-17.35)	(-17.53)	(-13.96)	(-13.64)	(43.76)	(15.23)
Price	-0.151***	-0.160***	0.073***	0.077***	7.798***	0.060***
	(-7.93)	(-7.93)	(7.60)	(7.25)	(66.70)	(14.55)
S&P 500	0.219***	0.229***	0.088***	0.058***	-5.209***	0.113***
	(6.51)	(6.34)	(4.26)	(2.60)	(-24.17)	(15.74)
$Return_{m-3,m}$	1.561***	1.496***	0.932***	0.907***	1.257***	-0.057***
	(21.94)	(19.06)	(31.63)	(27.02)	(3.40)	(-4.79)
$Return_{m-12,m-4}$	0.800***	0.795***	0.118***	0.065***	-0.101	-0.035***
	(20.92)	(18.90)	(7.07)	(3.39)	(-0.48)	(-5.20)
Age	-0.209***	-0.227***	-0.121***	-0.129***	0.435***	0.077***
	(-14.75)	(-14.97)	(-19.53)	(-19.00)	(5.93)	(32.54)
Dividend Yield	0.458	0.175	-0.025	0.745	-116.692***	0.688***
	(0.41)	(0.15)	(-0.04)	(1.07)	(-17.74)	(3.25)
Constant	1.222***	1.126***	0.029	-0.052	40.971***	1.386***
	(10.14)	(8.38)	(0.55)	(-0.86)	(59.27)	(62.14)
Observations	149,296	130,744	149,296	130,744	131,196	131,196
Adj R-squared	0.136	0.150	0.138	0.146	0.241	0.630

Table IV Regressions of Institutional Ownership on Sentiment of Conference Call Sections and of Earnings Calls

Δ*IO* is the quarterly change in the percentage of equity owned by 13f institutions, and Δ*NI* is the quarterly change in the number of holding institutions. *Neg_net_p*, *Neg_net_q*, and *Neg_net_a* denote the corresponding *Neg_net* for presentation, question, and answer sections, respectively. Regressions in Table III are repeated for different sections of conference calls (Panel A), and for earnings conference calls only (Panel B). Control variables are omitted for brevity. All regressions include industry and individual quarter fixed effects. Robust *t*-statistics are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Regressions for different sections of conference calls

	(1)	(2)	(3)	(4)	(5)	(6)
	Δ*IO*	Δ*NI*	Δ*IO*	Δ*NI*	Δ*IO*	Δ*NI*
Neg_net_p	-3.850**	-5.570***				
	(-2.41)	(-6.76)				
Neg_net_q			-4.670***	-10.548***		
			(-3.08)	(-13.65)		
Neg_net_a					-2.684	-9.035***
					(-1.36)	(-8.84)
Observations	106,931	106,931	124,656	124,656	124,181	124,181
Adj R-squared	0.146	0.144	0.151	0.148	0.152	0.147

Panel B: Regressions for the earnings calls-only sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Δ*IO*	Δ*NI*	Δ*IO*	Δ*NI*	Δ*IO*	Δ*NI*	Δ*IO*	Δ*NI*
Neg_net	-8.594***	-13.149***						
	(-3.32)	(-10.54)						
Neg_net_p			-4.126**	-7.096***				
			(-2.33)	(-8.00)				
Neg_net_q					-8.694***	-11.933***		
					(-4.19)	(-12.37)		
Neg_net_a							-4.922**	-11.624***
							(-2.04)	(-9.97)
Observations	94,763	94,763	93,469	93,469	92,340	92,340	92,057	92,057
Adj R-squared	0.148	0.146	0.149	0.145	0.149	0.146	0.150	0.146

Table V Regressions of Institutional Ownership on Call Sentiment using a Control Sample

The dependent variable, Diff(*IO*) (Diff(Δ*IO*)), is the difference of *IO* (Δ*IO*) between the conference call sample and a corresponding match sample; and Diff(*NI*) (Diff(Δ*NI*)) is the difference of *NI* (Δ*NI*) between the conference call sample and a corresponding match sample. Panel A uses a match sample based on industry, calendar month, firm size, *SUE*, and same holding institutions; and Panel B uses a match sample based on industry, calendar month, firm size, and *SUE*. *Neg_net* is the fraction of total negative word count net of total positive word count, dividend by the total number of words in a conference call. *Neg_net_p*, *Neg_net_q*, and *Neg_net_a* denote the corresponding *Neg_net* for presentation, question, and answer sections, respectively. In Panel B, the regression specification is the same as Panel A with results of control variables omitted for brevity. All regressions include industry and individual quarter fixed effects. Robust *t*-statistics are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Match sample based on industry, time, size, *SUE*, and holding institutions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Diff(*IO*)	Diff(*IO*)	Diff(*IO*)	Diff(*IO*)	Diff(Δ*IO*)	Diff(Δ*IO*)	Diff(Δ*IO*)	Diff(Δ*IO*)
Neg_net	-12.246***				-1.444**			
	(-3.39)				(-2.14)			
Neg_net_p		-6.650**				-0.744		
		(-2.45)				(-1.49)		
Neg_net_q			-11.051***				-0.816*	
			(-4.20)				(-1.75)	
Neg_net_a				-6.355*				-1.649***
				(-1.87)				(-2.63)
SUE	-0.013	-0.007	-0.008	-0.004	-0.001	-0.000	0.000	-0.000
	(-0.71)	(-0.37)	(-0.44)	(-0.25)	(-0.40)	(-0.07)	(0.02)	(-0.10)
Analyst Number	0.003	0.004	0.001	0.001	-0.000	-0.000	-0.000	-0.000
	(0.64)	(0.88)	(0.11)	(0.21)	(-0.14)	(-0.21)	(-0.25)	(-0.29)
Size	-0.978***	-0.980***	-0.959***	-0.972***	-0.007	-0.007	-0.006	-0.006
	(-38.47)	(-37.54)	(-37.06)	(-37.49)	(-1.55)	(-1.51)	(-1.27)	(-1.31)
Book-to-market	0.048**	0.059***	0.067***	0.064***	-0.011***	-0.009**	-0.010**	-0.010**
	(2.46)	(2.92)	(3.27)	(3.11)	(-2.70)	(-2.38)	(-2.57)	(-2.45)
Volatility	-37.371***	-38.349***	-36.933***	-37.232***	0.797*	0.957*	0.862*	0.872*
	(-15.60)	(-15.50)	(-15.18)	(-15.21)	(1.67)	(1.94)	(1.76)	(1.77)
Turnover	3.992***	3.985***	3.947***	3.950***	-0.332***	-0.344***	-0.328***	-0.331***
	(26.82)	(25.86)	(25.84)	(25.77)	(-11.29)	(-11.34)	(-10.90)	(-10.92)
Price	0.809***	0.809***	0.806***	0.814***	-0.008	-0.006	-0.006	-0.006
	(22.76)	(22.13)	(22.26)	(22.41)	(-1.16)	(-0.92)	(-0.97)	(-0.94)
S&P 500	-0.269***	-0.296***	-0.303***	-0.292***	0.027*	0.025*	0.024	0.021
	(-3.47)	(-3.69)	(-3.83)	(-3.68)	(1.87)	(1.73)	(1.62)	(1.46)
$Return_{m-3.m}$	0.343***	0.326***	0.320***	0.345***	0.131***	0.131***	0.128***	0.125***
	(3.14)	(2.88)	(2.87)	(3.09)	(6.25)	(6.02)	(5.98)	(5.84)
$Return_{m-12.m-4}$	0.113*	0.115*	0.107*	0.109*	0.008	0.008	0.009	0.009
	(1.83)	(1.81)	(1.70)	(1.73)	(0.65)	(0.61)	(0.72)	(0.75)
Age	0.378***	0.384***	0.379***	0.380***	-0.028***	-0.027***	-0.029***	-0.028***
	(16.29)	(16.03)	(16.06)	(16.03)	(-6.76)	(-6.37)	(-6.77)	(-6.66)
Dividend Yield	-4.446*	-3.724	-4.380*	-4.462*	0.092	0.233	0.242	0.214
	(-1.74)	(-1.42)	(-1.69)	(-1.72)	(0.20)	(0.50)	(0.52)	(0.46)
Constant	2.307***	2.304***	2.275***	2.288***	-0.006	-0.017	-0.006	-0.019
	(11.37)	(11.05)	(11.11)	(11.05)	(-0.16)	(-0.44)	(-0.17)	(-0.50)
Observations	86,865	83,047	83,921	83,633	86,865	83,047	83,921	83,633
Adj R-squared	0.060	0.061	0.059	0.059	0.051	0.050	0.050	0.050

Panel B: Match sample on size, SUE, industry, and time

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Diff(*IO*)	Diff(*IO*)	Diff(*IO*)	Diff(*IO*)	Diff(Δ*IO*)	Diff(Δ*IO*)	Diff(Δ*IO*)	Diff(Δ*IO*)
Neg_net	-58.27***				-6.59**			
	(-4.05)				(-2.19)			
Neg_net_p		-27.83***				-4.26**		
		(-2.68)				(-2.00)		
Neg_net_q			-100.77***				-2.22	
			(-8.92)				(-0.96)	
Neg_net_a				-54.48***				-3.71
				(-3.90)				(-1.28)
Observations	88,407	84,547	85,419	85,128	88,069	84,218	85,102	84,812
Adj R-squared	0.06	0.06	0.06	0.06	0.036	0.036	0.036	0.036

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Diff(*NI*)	Diff(*NI*)	Diff(*NI*)	Diff(*NI*)	Diff(Δ*NI*)	Diff(Δ*NI*)	Diff(Δ*NI*)	Diff(Δ*NI*)
Neg_net	-17.78***				-78.61***			
	(-7.94)				(-7.40)			
Neg_net_p		-6.08***				-40.81***		
		(-3.73)				(-5.19)		
Neg_net_q			-10.46***				-58.27***	
			(-6.18)				(-7.51)	
Neg_net_a				-16.75***				-64.30***
				(-7.85)				(-6.38)
Observations	88,407	84,547	85,419	85,128	88,069	84,218	85,102	84,812
Adj R-squared	0.234	0.231	0.232	0.232	0.029	0.029	0.028	0.028

Table VI The Effect of Call Sentiment on Institutional Ownership Changes for Mid-Quarter and Quarter-End Months

The dependent variable is Δ*IO* (Δ*NI*), the quarterly change in institutional ownership (holding institutions). Sentiment variable includes *Neg_net* (net negative word ratio), and *Neg_net_p*, *Neg_net_q*, and *Neg_net_a* (the corresponding *Neg_net* for presentation, question, and answer sections, respectively). *midqtr* (*qtrend*) is a dummy variable for mid-quarter (quarter-end) month. Control variables include those in the baseline regression in Table III, with their results omitted for brevity. All regressions include industry and individual quarter fixed effects. Robust *t*-statistics are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Neg_net on		*Neg_net_p* on		*Neg_net_q* on		*Neg_net_a* on	
	Δ*IO*	Δ*NI*	Δ*IO*	Δ*NI*	Δ*IO*	Δ*NI*	Δ*IO*	Δ*NI*
Sentiment	7.664**	-8.146***	6.506***	-3.945***	0.223	-9.659***	7.175**	-7.504***
	(2.32)	(-4.64)	(2.84)	(-3.14)	(0.09)	(-7.14)	(2.22)	(-4.38)
midqtr	-0.229***	-0.041**	-0.229***	-0.052**	-0.050*	-0.033**	-0.189***	-0.036
	(-5.39)	(-1.98)	(-4.73)	(-2.24)	(-1.74)	(-2.14)	(-4.19)	(-1.62)
qtrend	-0.110**	-0.024	-0.136*	-0.056*	0.011	0.029	-0.058	-0.021
	(-2.04)	(-0.89)	(-1.93)	(-1.68)	(0.32)	(1.55)	(-1.03)	(-0.75)
midqtr × Sentiment	-24.697***	-0.865	-17.174***	-1.742	-11.291***	-0.819	-17.525***	-0.194
	(-5.66)	(-0.39)	(-5.35)	(-1.06)	(-3.29)	(-0.47)	(-4.13)	(-0.09)
qtrend × Sentiment	-16.488***	-8.842***	-19.014***	-6.178***	1.213	-1.670	-8.583*	-6.857**
	(-3.07)	(-3.11)	(-3.95)	(-2.60)	(0.31)	(-0.80)	(-1.67)	(-2.49)

Table VII The Effect of Call Sentiment on Institutional Ownership Changes for Different Types of Institutions

The dependent variable is Δ*IO* (Δ*NI*), the quarterly change in institutional ownership (holding institutions). For each type of institution, Δ*IO* and Δ*NI* are calculated based only on the type itself. *Neg_net* is the net negative word ratio, and *Neg_net_p*, *Neg_net_q*, and *Neg_net_a* is the corresponding *Neg_net* for presentation, question, and answer sections, respectively. Each cell represents a regression, where the control variables include those in the baseline regression in Table III. The results of the control variables are omitted for brevity. All regressions include industry and individual quarter fixed effects. Robust *t*-statistics are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Known Types

	Bank (14% of the S34 holdings)		**IIA (67%)**		**Non-IIA (33%)**		**Non-Bank & Non-IIA (19%)**	
	Δ*IO*	Δ*NI*	Δ*IO*	Δ*NI*	Δ*IO*	Δ*NI*	Δ*IO*	Δ*NI*
Neg_net	-1.611**	-2.853***	0.402	-7.943***	-5.172***	-6.041***	-3.694***	-4.709***
	(-2.39)	(-5.91)	(0.22)	(-8.27)	(-3.97)	(-9.30)	(-3.48)	(-8.41)
Neg_net_p	-1.222**	-1.849***	0.047	-4.527***	-3.123***	-3.524***	-2.167***	-2.312***
	(-2.31)	(-4.95)	(0.03)	(-6.08)	(-3.04)	(-6.98)	(-2.61)	(-5.32)
Neg_net_q	-1.031**	-2.786***	-1.874	-8.676***	-2.961***	-5.619***	-1.919**	-4.095***
	(-2.17)	(-8.06)	(-1.36)	(-12.52)	(-3.10)	(-12.02)	(-2.45)	(-10.19)
Neg_net_a	-1.011	-2.046***	1.753	-7.335***	-5.084***	-4.352***	-3.977***	-3.416***
	(-1.61)	(-4.42)	(0.98)	(-7.94)	(-4.12)	(-6.97)	(-3.96)	(-6.37)

Panel B: Estimated Types

	Short-Term (39%)		**Long-Term (24%)**		**Transient (28%)**		**Non-transient (72%)**	
	Δ*IO*	Δ*NI*	Δ*IO*	Δ*NI*	Δ*IO*	Δ*NI*	Δ*IO*	Δ*NI*
Neg_net	-6.087***	-7.143***	-0.010	-6.743***	-1.113	-4.121***	-3.497*	-9.081***
	(-2.83)	(-7.64)	(-0.01)	(-9.77)	(-0.71)	(-4.48)	(-1.81)	(-10.95)
Neg_net_p	-4.275**	-3.636***	-0.262	-3.719***	-0.427	-1.670**	-2.539*	-5.588***
	(-2.52)	(-5.01)	(-0.20)	(-6.96)	(-0.35)	(-2.34)	(-1.67)	(-8.72)
Neg_net_q	-3.744**	-7.974***	-0.430	-5.863***	-2.030*	-6.590***	-2.759*	-7.604***
	(-2.33)	(-11.81)	(-0.36)	(-11.86)	(-1.76)	(-9.91)	(-1.93)	(-12.73)
Neg_net_a	-3.002	-6.529***	-1.014	-5.785***	-2.041	-4.602***	-1.277	-6.914***
	(-1.46)	(-7.26)	(-0.65)	(-8.78)	(-1.35)	(-5.19)	(-0.69)	(-8.69)

Table VIII The Effect of Call Sentiment on Institutional Ownership Changes for Different Firm Types

The dependent variable is Δ*IO* (Δ*NI*), the quarterly change in institutional ownership (holding institutions). Each column represents a regression by a firm type. Control variables are the same as those in Table III and are omitted for brevity. Firm types are based on the median value of the variables of interest, quarter by quarter. Firm type variables include firm size (market capitalization), IV (Fama-French four-factor idiosyncratic return volatility), CFV (cash flow volatility over the past sixteen quarters), analyst following (number of following analysts), SUE (standardized unexpected earnings), ROE (return on equity), and price (past one-month price). All regressions include industry and individual quarter fixed effects. Robust *t*-statistics are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	dummy = 1 for			
	Smaller firms	High-IV firms	High-CFV firms	Less-followed firms
	ΔIO	*ΔIO*	*ΔIO*	*ΔIO*
Neg_net	-20.346***	1.090	-4.904**	-13.479***
	(-7.45)	(0.52)	(-2.25)	(-5.63)
*Neg_net**dummy	-24.674***	-19.225***	-6.350**	-10.125***
	(-7.92)	(-7.03)	(-2.52)	(-4.04)

	dummy = 1 for		
	Lower-SUE firms	Lower-ROE firms	Lower-price firms
	ΔIO	*ΔIO*	*ΔIO*
Neg_net	-7.005***	-10.925***	-19.906***
	(-2.86)	(-4.43)	(-7.37)
*Neg_net**dummy	2.176	-5.452**	-23.750***
	(0.79)	(-2.14)	(-7.84)

Table IX Short- and Medium-Term Institutional Trading on *Neg_net*

The dependent variable is *Abt* (abnormal institutional trading imbalance from ANcerno), measured cumulatively over a day range, such as those over days [-2, -1], benchmarked against the conference call date. *Neg_net* is the net negative word ratio, and *Neg_net_p*, *Neg_net_q*, and *Neg_net_a* is the corresponding *Neg_net* for presentation, question, and answer sections, respectively. Panel B has the same regression specification as Panel A, with control variable results omitted for brevity. All regressions include industry and individual quarter fixed effects. Robust *t*-statistics are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Regressions for *Neg_net*

	Abt at trading day(s)						
	[-2, -1]	0	[1, 2]	[3, 5]	[6, 10]	[11, 20]	[21, 30]
Neg net	0.019	-0.174	-0.295**	-0.190**	-0.195**	-0.105*	0.024
	(0.20)	(-0.98)	(-2.33)	(-2.06)	(-2.50)	(-1.70)	(0.35)
SUE	-0.000	-0.002**	0.000	0.002***	0.002***	0.002***	0.001**
	(-0.41)	(-2.17)	(0.35)	(3.18)	(5.49)	(5.36)	(2.07)
Analyst Number	0.000	-0.000	0.000	0.000	0.000	0.000**	0.000
	(1.48)	(-0.06)	(1.35)	(0.58)	(0.39)	(2.27)	(1.12)
Size	-0.000	0.001	-0.001	-0.001	-0.000	-0.001**	-0.001
	(-0.05)	(0.49)	(-1.54)	(-1.21)	(-0.68)	(-2.10)	(-1.29)
Book-to-market	0.002**	-0.000	-0.000	0.000	0.001	-0.000	0.000
	(2.27)	(-0.10)	(-0.10)	(0.03)	(0.91)	(-0.79)	(0.91)
Volatility	0.067	0.316**	0.047	0.031	0.033	0.003	-0.123**
	(0.91)	(2.31)	(0.49)	(0.43)	(0.53)	(0.06)	(-2.41)
Turnover	-0.026***	-0.020**	0.008	-0.001	0.005	0.006**	0.010***
	(-5.69)	(-2.48)	(1.38)	(-0.27)	(1.23)	(2.09)	(3.24)
Price	-0.004***	-0.002	0.003**	0.003***	0.002**	0.003***	0.002***
	(-4.03)	(-0.92)	(2.22)	(2.71)	(2.45)	(5.10)	(3.38)
S&P 500	0.003	0.007**	0.000	-0.001	0.000	-0.002*	-0.003**
	(1.59)	(2.07)	(0.17)	(-0.53)	(0.08)	(-1.93)	(-2.11)
$Return_{m-3,m}$	-0.031***	-0.030***	-0.012***	-0.025***	-0.023***	-0.021***	-0.017***
	(-9.07)	(-4.82)	(-2.63)	(-7.59)	(-8.18)	(-8.82)	(-7.25)
$Return_{m-12,m-4}$	-0.005**	-0.004	-0.001	-0.004**	-0.004**	-0.002	-0.002
	(-2.50)	(-1.10)	(-0.30)	(-2.03)	(-2.47)	(-1.60)	(-1.50)
Age	0.002***	0.001	0.001	0.000	-0.001	-0.001***	-0.001**
	(3.69)	(1.14)	(1.41)	(0.58)	(-1.59)	(-3.15)	(-2.40)
Dividend Yield	-0.007	-0.053	-0.022	0.085	-0.010	-0.026	0.028
	(-0.13)	(-0.52)	(-0.32)	(1.63)	(-0.23)	(-0.71)	(0.73)
Constant	-0.008	-0.017	-0.008	-0.004	0.001	0.005	0.007*
	(-1.28)	(-1.53)	(-1.07)	(-0.77)	(0.11)	(1.21)	(1.78)
Observations	52,176	50,657	52,988	53,801	54,714	55,499	55,310
Adj R-squared	0.009	0.003	0.001	0.002	0.004	0.006	0.006

Panel B: Regressions for different sections of conference calls

	Abt at trading day(s)						
	[-2, -1]	0	[1, 2]	[3, 5]	[6, 10]	[11, 20]	[21, 30]
Neg net p	0.055	-0.168	-0.116	-0.065	-0.102*	-0.125***	-0.045
	(0.81)	(-1.30)	(-1.27)	(-1.00)	(-1.85)	(-2.70)	(-0.93)
Neg_net_q	0.045	-0.366**	-0.343***	-0.130*	-0.100*	-0.070	0.181***
	(0.59)	(-2.53)	(-3.38)	(-1.77)	(-1.66)	(-1.33)	(3.28)
Neg_net_a	0.026	-0.220	-0.361***	-0.183**	-0.138*	-0.070	-0.009
	(0.29)	(-1.28)	(-2.99)	(-2.11)	(-1.89)	(-1.13)	(-0.13)

Table X Conference Call Sentiment and Analyst Recommendation Change

In Panel A, the dependent variable is Δ*REC*, the change of consensus analyst recommendation (with strong buy coded as 1) between 60 days before and 60 days after the conference call. In Panel B, the dependent variable is Δ*IO* (Δ*NI*), the quarterly change in institutional ownership (holding institutions); missing Δ*REC* there (indicating no recommendation change) is set to zero. *Neg_net* is the net negative word ratio, and *Neg_net_p*, *Neg_net_q*, and *Neg_net_a* is the corresponding *Neg_net* for presentation, question, and answer sections, respectively. In Panel B, control variables include those in the baseline regression in Table III, with their results omitted for brevity. All regressions include industry and individual quarter fixed effects. Robust *t*-statistics are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Conference call sentiment on analyst recommendation change

	(1)	(2)	(3)	(4)
	Δ*REC*	Δ*REC*	Δ*REC*	Δ*REC*
Neg_net	1.705**			
	(2.52)			
Neg_net_p		0.902		
		(1.64)		
Neg_net_q			1.515***	
			(2.97)	
Neg_net_a				1.462**
				(2.18)
SUE	0.006*	0.007*	0.006*	0.005*
	(1.73)	(1.91)	(1.69)	(1.66)
Analyst Number	0.000	-0.000	0.000	0.000
	(0.72)	(-0.41)	(0.79)	(0.74)
Size	0.002	0.003	0.001	0.002
	(0.39)	(0.51)	(0.13)	(0.34)
Book-to-market	-0.007	-0.009*	-0.008*	-0.008
	(-1.57)	(-1.90)	(-1.68)	(-1.62)
Volatility	-0.239	-0.442	-0.089	-0.214
	(-0.44)	(-0.72)	(-0.16)	(-0.38)
Turnover	-0.013	0.004	-0.021	-0.016
	(-0.55)	(0.15)	(-0.85)	(-0.66)
Price	-0.005	-0.002	-0.003	-0.004
	(-0.70)	(-0.31)	(-0.47)	(-0.64)
S&P 500	-0.002	0.003	0.000	0.000
	(-0.17)	(0.20)	(0.02)	(0.01)
$Return_{m-3,m}$	0.072***	0.068***	0.075***	0.074***
	(3.28)	(2.74)	(3.35)	(3.29)
$Return_{m-12,m-4}$	-0.028**	-0.038***	-0.027**	-0.028**
	(-2.26)	(-2.62)	(-2.15)	(-2.20)
Age	-0.007	-0.009*	-0.008*	-0.008*
	(-1.51)	(-1.84)	(-1.70)	(-1.75)
Dividend Yield	-0.756*	-0.888*	-0.779*	-0.794*
	(-1.77)	(-1.75)	(-1.78)	(-1.82)
Constant	0.063	0.067	0.059	0.069
	(1.40)	(1.32)	(1.29)	(1.51)
Observations	66,065	50,513	63,121	62,899
Adj R-squared	0.005	0.005	0.005	0.005

Panel B: Institutional ownership change on call sentiment, controlled for Δ*REC*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Δ*IO*	Δ*NI*	Δ*IO*	Δ*NI*	Δ*IO*	Δ*NI*	Δ*IO*	Δ*NI*
Neg_net	-6.695***	-10.323***						
	(-3.29)	(-9.66)						
Neg_net_p			-3.813**	-5.554***				
			(-2.38)	(-6.74)				
Neg_net_q					-4.625***	-10.516***		
					(-3.05)	(-13.60)		
Neg_net_a							-2.632	-8.998***
							(-1.34)	(-8.80)
Δ*REC*	-0.061***	-0.047***	-0.076***	-0.033***	-0.070***	-0.050***	-0.070***	-0.050***
	(-3.37)	(-4.69)	(-3.60)	(-3.01)	(-3.75)	(-4.93)	(-3.74)	(-4.96)
Observations	130,744	130,744	106,931	106,931	124,656	124,656	124,181	124,181
Adj R-squared	0.150	0.147	0.146	0.144	0.152	0.148	0.152	0.147

Table XI Institutional Trading on Individual Analyst Recommendations Changes

In Panel A, Δ*REC* refers to an individual analyst's change of recommendation (with strong buy coded as 1) between 60 days before and 60 days after the conference call. The dependent variable is *Abt* (abnormal institutional trading imbalance), measured cumulatively over a day range (such as those over days [-2, -1]) and *benchmarked against the individual analyst's recommendation change date* (on average it takes 25 days after the conference call date for a recommendation change to occur). In Panel B, *REC* refers to an individual analyst's recommendation within 60 days post the conference call. *Neg_net* is the net negative word ratio of the conference call. Panel B has the same regression specification as Panel A, with control variable results omitted for brevity. All regressions include industry and individual quarter fixed effects. Robust *t*-statistics are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Institutional trading on individual recommendation changes

	Abt at trading day(s)						
	[-2, -1]	0	[1, 2]	[3, 5]	[6, 10]	[11, 20]	[21, 30]
Δ*REC*	-0.001	-0.012***	-0.007***	-0.006***	-0.006***	-0.003***	-0.001
	(-0.37)	(-5.15)	(-5.03)	(-5.12)	(-5.55)	(-4.04)	(-0.87)
Neg_net	-0.314	-0.428	-0.123	0.324	-0.167	0.003	-0.099
	(-0.97)	(-0.81)	(-0.37)	(1.14)	(-0.66)	(0.01)	(-0.45)
SUE	0.001	-0.002	0.002	0.003**	0.003**	0.001	-0.001
	(0.60)	(-0.76)	(1.31)	(2.41)	(2.24)	(0.59)	(-1.10)
Analyst Number	0.000	0.001	0.001**	0.000	0.000	0.000	-0.000
	(0.97)	(1.25)	(2.09)	(0.69)	(0.50)	(0.60)	(-0.39)
Size	0.001	0.005	-0.002	-0.001	-0.002	-0.002	-0.003**
	(0.56)	(1.46)	(-0.86)	(-0.55)	(-1.43)	(-1.41)	(-2.22)
Book-to-market	0.005*	0.007**	0.007***	0.004	0.005**	0.002	-0.003*
	(1.78)	(2.14)	(2.81)	(1.58)	(2.43)	(0.93)	(-1.72)
Volatility	-0.223	-0.524	-0.611**	-0.673***	-0.244	-0.027	0.123
	(-0.96)	(-1.44)	(-2.53)	(-3.40)	(-1.43)	(-0.19)	(0.83)
Turnover	-0.001	0.019	0.017	0.017*	0.008	0.001	-0.009
	(-0.13)	(1.08)	(1.49)	(1.72)	(0.92)	(0.09)	(-1.24)
Price	-0.001	-0.011**	-0.003	-0.002	0.002	0.002	0.004*
	(-0.24)	(-2.12)	(-0.84)	(-0.65)	(0.80)	(0.92)	(1.81)
S&P 500	0.000	-0.003	-0.004	-0.004	0.001	-0.001	0.003
	(0.02)	(-0.39)	(-0.81)	(-0.95)	(0.25)	(-0.38)	(0.76)
$Return_{m-3,m}$	-0.024**	0.007	-0.015	-0.023***	-0.031***	-0.022***	-0.012*
	(-2.39)	(0.47)	(-1.49)	(-2.69)	(-4.16)	(-3.51)	(-1.93)
$Return_{m-12,m-4}$	-0.004	0.001	-0.001	0.003	-0.001	-0.003	0.005
	(-0.65)	(0.12)	(-0.23)	(0.48)	(-0.14)	(-0.72)	(1.22)
Age	-0.004*	0.000	0.003	0.000	-0.001	-0.001	-0.000
	(-1.77)	(0.10)	(1.48)	(0.12)	(-0.90)	(-0.59)	(-0.26)
Dividend Yield	0.110	0.369	-0.015	0.009	0.125	-0.099	-0.080
	(0.58)	(1.42)	(-0.09)	(0.06)	(0.96)	(-0.85)	(-0.63)
Constant	0.013	-0.017	0.007	0.026	0.020	0.014	0.014
	(0.62)	(-0.52)	(0.33)	(1.50)	(1.29)	(1.14)	(1.06)
Observations	7,896	7,754	7,883	7,943	7,968	7,999	7,951
Adj R-squared	0.003	0.007	0.006	0.007	0.010	0.007	0.007

Panel B: Institutional trading on individual recommendations post conference calls

	Abt at trading day(s)						
	[-2, -1]	0	[1, 2]	[3, 5]	[6, 10]	[11, 20]	[21, 30]
REC	-0.003***	-0.011***	-0.008***	-0.006***	-0.004***	-0.003***	0.002***
	(-5.11)	(-12.87)	(-14.77)	(-12.98)	(-10.68)	(-7.86)	(5.34)
Neg_net	-0.055	0.050	0.060	0.061	0.028	0.114*	-0.072
	(-0.58)	(0.33)	(0.60)	(0.74)	(0.40)	(1.88)	(-1.11)
Observations	80,373	78,794	80,519	81,055	81,456	81,654	81,014
Adj R-squared	0.003	0.003	0.005	0.005	0.005	0.004	0.004

Table XII Returns on Conference Call Tone

The dependent variable is DGTW return, average daily returns over a given return horizon benchmarked against the conference call date adjusted by the DGTW characteristic-based return benchmark following Daniel, Grinblatt, Titman, and Wermers (1997); for instance, DGTW Return$_{t-5,t-3}$ refers to DGTW returns in trading days [-5, -3]. *Neg_net* is the net negative word ratio, and *Neg_net_p*, *Neg_net_q*, and *Neg_net_a* is the corresponding *Neg_net* for presentation, question, and answer sections, respectively. Panel B has the same regression specification as Panel A, with control variable results omitted for brevity. All regressions include industry and individual quarter fixed effects. Robust *t*-statistics are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Shorter-Term Returns

	DGTW Return over				DGTW Return over			
	[0]	[0]	[0]	[0]	[1, 2]	[1, 2]	[1, 2]	[1, 2]
Neg_net	-0.934***				-0.344***			
	(-35.61)				(-24.32)			
Neg_net_p		-0.694***				-0.235***		
		(-31.57)				(-20.67)		
Neg_net_q			-0.556***				-0.248***	
			(-30.46)				(-24.99)	
Neg_net_a				-0.676***				-0.262***
				(-26.74)				(-19.20)
SUE	0.004***	0.004***	0.004***	0.004***	0.001***	0.002***	0.001***	0.001***
	(28.81)	(27.87)	(30.38)	(30.29)	(19.17)	(19.30)	(19.99)	(20.00)
Analyst Number	0.000***	0.000***	0.000***	0.000***	0.000	0.000	0.000	0.000
	(4.12)	(3.83)	(3.85)	(3.54)	(0.49)	(0.92)	(0.36)	(0.13)
Size	-0.001***	-0.001***	-0.001***	-0.001***	0.000	-0.000	0.000	0.000
	(-5.41)	(-6.40)	(-3.53)	(-4.99)	(0.41)	(-0.57)	(1.37)	(0.24)
Book-to-market	-0.000	-0.000	-0.000	-0.000	0.001***	0.001***	0.001***	0.001***
	(-1.03)	(-0.82)	(-0.61)	(-0.59)	(3.53)	(3.74)	(3.91)	(4.02)
Volatility	0.023	0.018	0.001	0.016	-0.017	-0.027*	-0.025*	-0.020
	(0.94)	(0.63)	(0.05)	(0.63)	(-1.24)	(-1.74)	(-1.75)	(-1.38)
Turnover	-0.000	-0.001	-0.000	-0.001	-0.001*	-0.002**	-0.001	-0.001
	(-0.19)	(-0.58)	(-0.32)	(-0.69)	(-1.92)	(-2.18)	(-1.52)	(-1.63)
Price	0.001***	0.001***	0.000	0.001***	0.001***	0.001***	0.001***	0.001***
	(3.49)	(3.06)	(1.44)	(2.66)	(6.23)	(5.38)	(4.69)	(5.65)
S&P 500	-0.001*	-0.000	-0.000	-0.001	-0.001***	-0.001***	-0.001***	-0.001***
	(-1.86)	(-0.44)	(-0.02)	(-1.24)	(-5.93)	(-4.65)	(-4.25)	(-5.16)
Return$_{m-3,m}$	-0.005***	-0.005***	-0.004***	-0.004***	0.001**	0.002**	0.001**	0.002***
	(-4.81)	(-4.57)	(-4.03)	(-3.80)	(1.99)	(2.26)	(2.41)	(2.66)
Return$_{m-12,m-4}$	-0.003***	-0.004***	-0.003***	-0.003***	-0.001***	-0.002***	-0.001***	-0.001***
	(-5.19)	(-5.73)	(-5.10)	(-4.70)	(-4.30)	(-4.93)	(-4.05)	(-3.67)
Age	-0.000**	-0.000	-0.000**	-0.000**	-0.000	0.000	-0.000	-0.000
	(-2.25)	(-1.35)	(-2.12)	(-2.04)	(-0.54)	(0.48)	(-0.21)	(-0.22)
Dividend Yield	0.024	0.025	0.018	0.022	0.003	0.007	0.003	0.005
	(1.50)	(1.25)	(1.11)	(1.32)	(0.48)	(0.80)	(0.48)	(0.70)
DGTW Return$_{t-5,t-3}$	-0.066***	-0.066***	-0.061***	-0.057***	-0.003	-0.001	-0.005	-0.002
	(-4.11)	(-3.45)	(-3.68)	(-3.45)	(-0.39)	(-0.08)	(-0.51)	(-0.27)
DGTW Return$_{t-10,t-6}$	-0.066***	-0.077***	-0.067***	-0.068***	-0.014	-0.012	-0.014	-0.013
	(-3.19)	(-3.17)	(-3.12)	(-3.17)	(-1.17)	(-0.87)	(-1.21)	(-1.12)
Constant	0.001	0.002	0.006***	0.002	-0.005***	-0.005***	-0.003***	-0.004***
	(0.31)	(0.85)	(3.52)	(1.14)	(-4.93)	(-4.25)	(-2.77)	(-4.37)
Observations	121,782	98,811	116,326	115,900	121,785	98,814	116,329	115,903
Adj R-squared	0.0224	0.0240	0.0188	0.0179	0.0121	0.0129	0.0120	0.0102

Panel B: Longer-term returns

	DGTW Return over				DGTW Return over			
	[3, 10]	[3, 10]	[3, 10]	[3, 10]	[11, 30]	[11, 30]	[11, 30]	[11, 30]
Neg_net	-0.004				-0.005**			
	(-0.97)				(-2.31)			
Neg_net_p		0.001				-0.001		
		(0.20)				(-0.30)		
Neg_net_q			-0.009***				-0.004**	
			(-2.93)				(-2.07)	
Neg_net_a				-0.005				-0.007***
				(-1.32)				(-3.13)

Table XIII The Joint Reinforcing Effects of Conference Call Tone and Return on Institutional Trading

The dependent variable is Δ*IO* (Δ*NI*), the quarterly change in institutional ownership (holding institutions). Tone is either *Neg_net* (the net negative word ratio) o *Neg_net_q* (the corresponding *Neg_net* for the question section). *ReinforceDummy* is a dummy variable that equals to one with either i) positive *Neg_net* and negative DGTW return over the given range, or ii) negative *Neg_net* and positive DGTW return over the given range. DGTW return is average DGTW daily returns over a given return horizon; for instance, DGTW Return$_{t-5,t-3}$ refers to mean DGTW returns in trading days [-5, -3]. Panel B has the same regression specification as Panel A, with control variable results omitted for brevity. All regressions include industry and individual quarter fixed effects. Robust *t*-statistics are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Shorter-term return-reinforcing tone on institutional trading

	ReinforceDummy measured on DGTW return of							
	[0]	[0]	[1, 2]	[1, 2]	[0]	[0]	[1, 2]	[1, 2]
	Dependent variable							
	Δ*IO*	Δ*IO*	Δ*IO*	Δ*IO*	Δ*NI*	Δ*NI*	Δ*NI*	Δ*NI*
Neg_net	0.524		-2.086		-3.886**		-2.536	
	(0.17)		(-0.69)		(-2.32)		(-1.56)	
Neg_net_q		4.478*		2.081		-1.326		1.017
		(1.95)		(0.91)		(-1.05)		(0.83)
ReinforceDummy	0.004	-0.025	0.055	-0.027	0.069***	0.015	0.086***	0.005
	(0.11)	(-0.99)	(1.41)	(-1.07)	(3.49)	(1.10)	(4.36)	(0.34)
ReinforceDummy × Tone	-7.173*	-13.431***	-2.572	-9.210***	-9.358***	-15.051***	-12.461***	-19.803***
	(-1.78)	(-4.34)	(-0.64)	(-2.98)	(-4.32)	(-9.01)	(-5.79)	(-11.91)
SUE	0.009	0.010	0.010	0.011	0.069***	0.069***	0.068***	0.069***
	(0.87)	(0.89)	(0.88)	(1.00)	(11.56)	(11.43)	(11.51)	(11.41)
Analyst Number	-0.002	-0.002	-0.002	-0.002	0.002	0.001	0.002	0.001
	(-0.96)	(-0.93)	(-0.96)	(-0.91)	(1.27)	(0.83)	(1.25)	(0.82)
Size	0.016	0.017	0.016	0.016	0.108***	0.114***	0.108***	0.114***
	(0.98)	(1.01)	(0.97)	(1.00)	(12.30)	(12.64)	(12.30)	(12.65)
Book-to-market	-0.152***	-0.160***	-0.153***	-0.161***	-0.040***	-0.041***	-0.041***	-0.041***
	(-6.74)	(-6.97)	(-6.76)	(-6.98)	(-5.12)	(-5.08)	(-5.24)	(-5.14)
Volatility	4.148**	5.070**	4.136**	5.091**	3.883***	3.778***	3.896***	3.811***
	(2.11)	(2.52)	(2.11)	(2.53)	(4.56)	(4.32)	(4.57)	(4.36)
Turnover	-2.166***	-2.202***	-2.165***	-2.202***	-0.706***	-0.712***	-0.703***	-0.710***
	(-17.91)	(-17.65)	(-17.90)	(-17.65)	(-13.84)	(-13.60)	(-13.80)	(-13.57)
Price	-0.147***	-0.150***	-0.147***	-0.150***	0.073***	0.068***	0.072***	0.068***
	(-6.73)	(-6.68)	(-6.74)	(-6.68)	(6.13)	(5.57)	(6.06)	(5.54)
S&P 500	0.277***	0.284***	0.277***	0.285***	0.013	0.013	0.012	0.014
	(6.72)	(6.74)	(6.71)	(6.76)	(0.50)	(0.51)	(0.48)	(0.56)
Return$_{m-3,m}$	1.375***	1.390***	1.371***	1.386***	0.853***	0.849***	0.846***	0.844***
	(16.09)	(15.90)	(16.06)	(15.86)	(22.62)	(21.99)	(22.42)	(21.86)
Return$_{m-12,m-4}$	0.848***	0.832***	0.849***	0.831***	0.046**	0.041*	0.047**	0.041*
	(18.56)	(17.83)	(18.58)	(17.83)	(2.17)	(1.89)	(2.24)	(1.89)
Age	-0.174***	-0.177***	-0.174***	-0.178***	-0.104***	-0.100***	-0.104***	-0.101***
	(-10.41)	(-10.38)	(-10.40)	(-10.43)	(-12.95)	(-12.26)	(-12.90)	(-12.34)
Dividend Yield	0.364	1.429	0.340	1.408	1.230	1.517*	1.191	1.498*
	(0.29)	(1.12)	(0.27)	(1.10)	(1.54)	(1.85)	(1.49)	(1.82)
DGTW Return$_{t-5,t-3}$	5.869***	6.099***	5.825***	6.070***	5.778***	5.512***	5.694***	5.483***
	(4.47)	(4.52)	(4.43)	(4.49)	(10.30)	(9.56)	(10.15)	(9.50)
DGTW Return$_{t-10,t-6}$	5.918***	5.851***	5.900***	5.820***	8.372***	8.260***	8.319***	8.208***
	(3.47)	(3.34)	(3.46)	(3.32)	(11.47)	(11.00)	(11.40)	(10.92)
Constant	1.115***	1.159***	1.091***	1.165***	-0.243***	-0.184**	-0.250***	-0.173**
	(7.41)	(7.58)	(7.25)	(7.61)	(-3.44)	(-2.57)	(-3.54)	(-2.42)
Observations	109,758	104,762	109,758	104,762	109,758	104,762	109,758	104,762
Adj R-squared	0.177	0.178	0.177	0.178	0.156	0.157	0.156	0.157

Panel B: Longer-term return-reinforcing tone on institutional trading

	ReinforceDummy measured on DGTW return of							
	[3, 10]	[3, 10]	[11, 30]	[11, 30]	[3, 10]	[3, 10]	[11, 30]	[11, 30]
	Dependent variable							
	Δ*IO*	Δ*IO*	Δ*IO*	Δ*IO*	Δ*NI*	Δ*NI*	Δ*NI*	Δ*NI*
Neg_net	-3.021		4.037		0.075		9.574***	
	(-1.05)		(1.39)		(0.05)		(6.04)	
Neg_net_q		2.155		6.775***		2.132*		16.722***
		(0.97)		(3.06)		(1.78)		(14.06)
ReinforceDummy	0.019	-0.023	-0.011	-0.005	0.064***	0.009	0.194***	0.010
	(0.49)	(-0.90)	(-0.27)	(-0.20)	(3.26)	(0.68)	(9.88)	(0.77)
ReinforceDummy × Tone	-1.028	-9.891***	-15.049***	-19.084***	-18.914***	-23.057***	-37.300***	-52.057***
	(-0.26)	(-3.20)	(-3.75)	(-6.18)	(-8.81)	(-13.93)	(-17.43)	(-31.55)

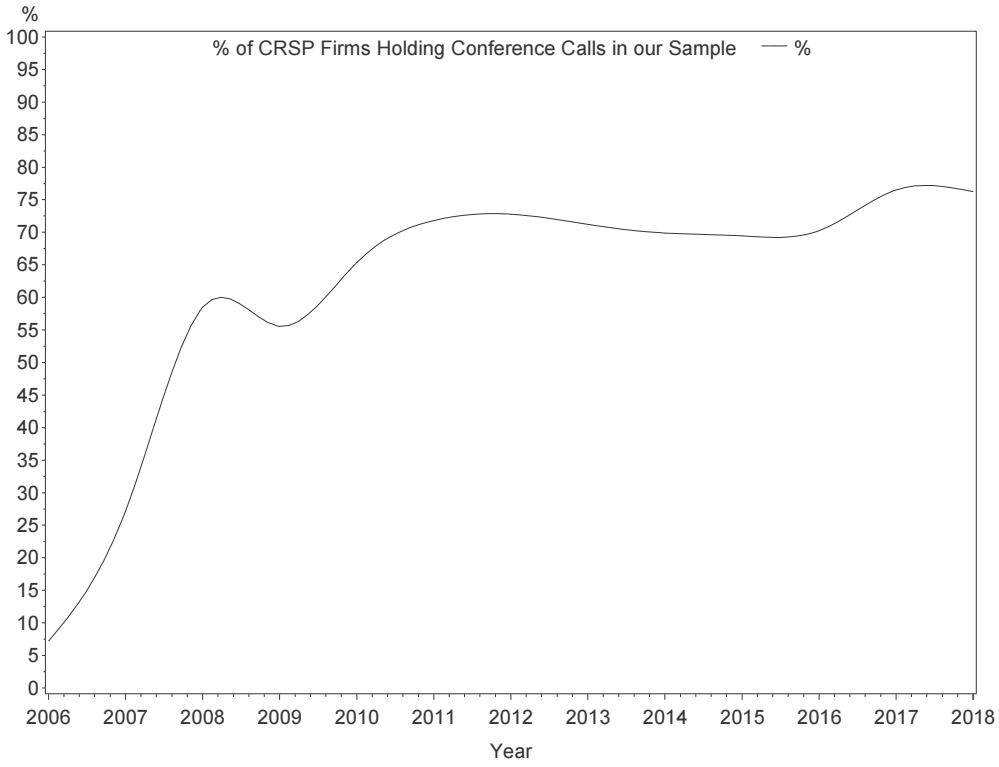
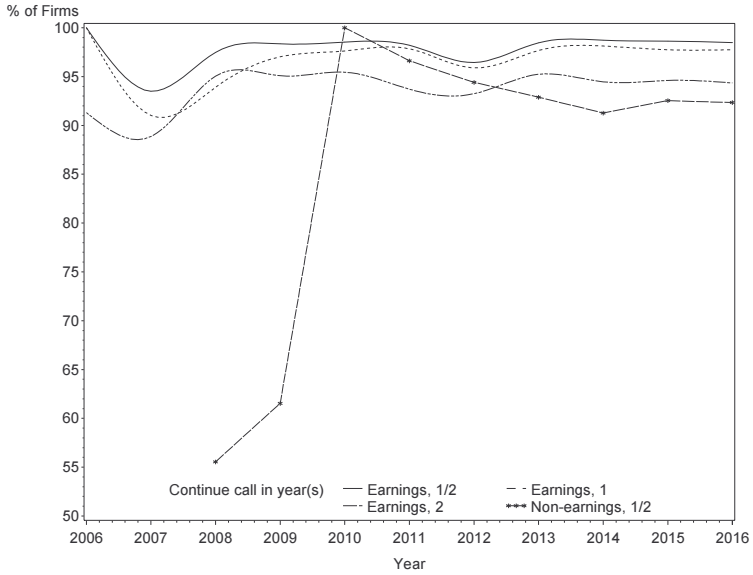
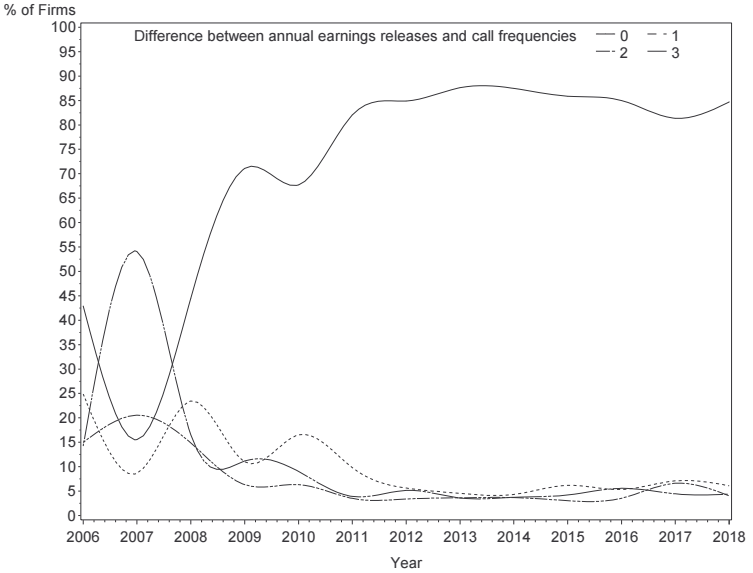


Figure 1: This figure shows the percentage of CRSP stocks holding at least one conference call in a given year in our sample.



(a) The percentage of firms continuing to hold calls in the next year (year "1"), the year after the next (year "2"), or any year in the next two years (year "1/2"), for earnings and non-earnings calls.



(b) Among the firms that give earnings conference calls, this panel shows the difference between the earnings conference call frequency and the number of earnings releases in a given year. For example, the solid line indicates that post 2011, about 85% of firms hold the same number of earnings calls as earnings releases (i.e., four times a year).

Figure 2: Continuation and frequency of calls