Words versus Deeds:
Evidence from Post-Call Manager Trades

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Abstract[**]

We examine the impact of conference call tones on the direction and magnitude of subsequent manager trades. Our univariate results show that corporate insiders buy company shares following negative-tone conference calls, and sell shares following positive-tone conference calls. This inverse call tone-trading pattern holds for both managers' introductory sessions and subsequent question and answer (Q&A) sessions. Our multivariate results confirm the univariate call tone-trading patterns and show that contrarian manager trades are mostly driven by managerial selling activity. In contrast to the consistent and strong evidence of managers trading in the opposite direction of their call tones, we find no evidence of managers trading in the same direction of their call tones. We also examine the impact of analyst Q&A challenges on post-call manager trades. Our findings suggest that managers learn from analyst feedback and adjust their post-call trades accordingly.

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1. Introduction

We apply textual analysis to company conference calls and extract the underlying tone that participants (i.e., managers and analysts) convey to current and potential investors. Previous studies show that market prices, investment returns, and firm performance are significantly related to the information contained in emotive tones and qualitative words (e.g., Eliashberg, Hui, and Zhang 2007, Tetlock 2007, Li 2008, Tetlock, Saar-Tsechansky, and Macskassy 2008, Li 2010, Loughran and McDonald 2011, Davis, Piger, and Sedor 2012, Loughran and McDonald 2016). In this study, we examine the relation between the tones communicated by managers and analysts during conference calls and managers' subsequent insider trades. Our main research question is whether managers trade their own accounts in a manner that is consistent with the linguistic tones presented during conference calls. One possibility is that managers express their level of optimism or pessimism during the conference call and then trade in a manner consistent with their conference call presentation. If managers have a positive (negative) view of recent operations and future prospects, then their conference tone and subsequent trading behavior should both reflect this optimism (pessimism).

A second possibility is that managers trade in a manner that is contrary to conference call tones. Such a finding would be consistent with managerial beliefs of investor overreaction. Specifically, if investors systematically overreact to conference call tones, then managers would tend to sell (buy) following positive (negative) call tones. Although this contrarian pattern would be the result of a passive strategy, it is also possible that managers manipulate call tones in an active, strategic manner to achieve private benefits. Managers might actively manipulate their conference call tones in an attempt to guide prices away from fundamental values, and then take

advantage of subsequent mispricings by trading in a contrarian manner. For example, managers could present an overly optimistic (pessimistic) tone in order to dump (accumulate) company shares in the post-call period. Consistent with this view, previous studies have found evidence of managerial disclosure manipulation around significant corporate events, including open-market share repurchases (Brockman, Khurana, and Martin 2008), insider trades (Cheng and Lo 2006), CEO stock option grants and exercises (Brockman, Martin, and Puckett 2010), and seasoned equity offerings (Lang and Lundholm 2000).

In addition to examining the relation between manager tones and subsequent trading, we also investigate the impact of analyst tones on insider trading. Manager tones are first expressed during the introduction sessions of conference calls. Analyst tones are then expressed during the question and answer (Q&A) sessions that follow these introduction sessions. This setting allows us to compare analyst tones during Q&A sessions to the initial managerial tones during the introduction sessions. Using the introduction tones as a baseline, we examine whether deviations in analyst tones have any impact on subsequent managerial trading. We interpret significant changes in managers' post-call trading caused by tone differences (i.e., from introduction sessions to analyst Q&A sessions) as evidence of managerial learning. Research to date has presented conference calls as one-way transfers of information from corporate insiders (i.e., managers) to outsiders (i.e., analysts and investors). To the best of our knowledge, this study is the first to examine the possibility of a two-way information exchange.

We collect a sample of over 65,000 conference call transcripts during the 48-quarter period from 2001 to 2012 and systematically quantify the linguistic information contained in each call. The methodology proceeds as follows: we write computer code which recognizes individual words within a written text, compares those words to a predefined word list (or

specialized dictionary) corresponding to particular categories of interest (e.g., negative words), and then tabulates a weighted frequency distribution of these categories.[1] We employ this process for each distinct section of quarterly earnings conference calls. The first section contains introductory (i.e., prepared) remarks, and the second section contains question and answer (Q&A) remarks. This feature allows us to distinguish between introductory tones versus Q&A tones in our empirical tests. Moreover, we are able to discern the speaker of each Q&A sentence and create separate measures for manager-initiated Q&A tones versus analyst-initiated Q&A tones.

Our empirical results consistently show that managers trade in a manner that is contrary to conference call tones. The univariate findings reveal a negative and significant relation between the introduction conference call tones and subsequent insider trades. Specifically, managers make significantly larger insider buys in the 30-day period after conference calls if the introduction tones expressed in those conference calls are especially pessimistic. Similarly, managers make significantly larger insider sells after conference calls if the introduction tones expressed in those conference calls are optimistic (or relatively less pessimistic).

We find similar results for the Q&A sessions of conference calls – both for managers' Q&A session tones and for analysts' Q&A session tones. Managers make significantly larger insider buys after conference calls if their own (i.e., managerial) Q&A session tones expressed in those conference calls are especially pessimistic; and they make significantly larger insider sells after conference calls if their own Q&A session tones are optimistic or relatively less pessimistic. Similarly, managers make significantly larger insider buys after conference calls if analysts'

[1] See Loughran and McDonald (2011, 2016) and Price, Doran, Peterson, and Bliss (2012) for a more thorough description of this process and an overview of the application, merits, and shortcomings of textual analysis as applied to financial disclosure. See Krippendorf (2004) for a historical perspective of content analysis used in various disciplines.

Q&A session tones are especially pessimistic; and they make significantly larger insider sells after conference calls if analysts' Q&A session tones are optimistic or relatively less pessimistic. All of these univariate results are robust to alternative definitions and trading windows.

We find similar results in a multivariate setting. After controlling for other variables that affect insider trading activity, we show that managers trade in the opposite direction of the introduction tones that they convey during conference calls. We then partition the Q&A session tones into manager-initiated and analyst-initiated, and again find strong evidence of contrarian insider trading in both the manager-initiated and analyst-initiated subsamples. Managers not only trade in a manner that is contrary to the tone of their own introductory sessions, they also trade in a manner that is contrary to both the analyst-initiated and manager-initiated tones during Q&A sessions.

To summarize, we present consistent evidence of contrarian trading on the part of corporate executives who are responsible for setting the tone of their companies' conference calls. When conference call tones are positive and stock prices increase, managers take large sell-side positions in the post-call period. In contrast, when conference call tones are negative and stock prices decrease, managers take large buy-side positions in the post-call period. Following such a contrarian trading strategy suggests that managers view market prices as informationally inefficient in a systematic manner; that is, prices tend to overshoot their fundamental values for both positive and negative information releases. Although we cannot completely rule out the possibility that managers actively participate in pushing prices above or below fundamental values by strategically manipulating conference call tones, our evidence can show that managers play (at a minimum) passive roles by responding to what they perceive as mispriced company shares.

Before examining our managerial learning hypothesis (i.e., that managers learn from analysts during conference calls), we conclude the contrarian trading section of our study by analyzing the potential profitability of these contrarian strategies. We find that cumulative abnormal returns in the post-call period follow the same direction as the conference call tones. For example, when conference call tones are especially pessimistic, subsequent 5-day, 10-day, and 20-day cumulative abnormal returns are negative and significant. Similarly, when conference call tones are especially optimistic, subsequent 5-day, 10-day, and 20-day cumulative abnormal returns are positive and significant. These results suggest that a contrarian trading strategy of buying (selling) shares following negative (positive) conference call tones would allow managers to accumulate (offload) company shares at abnormally low (high) prices. Although this evidence is suggestive, it is important to note that insider trading data do not identify round-trip transactions (i.e., buys and sells). Calculating the actual profitability of post-call buys or sells would require knowledge of the other leg of the transaction.

In the second section of our study, we investigate whether managers adjust the intensity of their contrarian trading activity based on analyst feedback received during Q&A sessions. That is, we test whether managers learn from analysts during their Q&A interactions. Conference calls begin with company monologues during introduction sessions and then move to multi-faceted (and sometimes heated) dialogues during Q&A sessions. Although managers have near-complete control over introduction tones, analysts tend to dominate Q&A session tones by the degree to which they challenged managers' initial representation of company results. This setting allows us to compare introduction call tones to subsequent Q&A tones (separately for analysts and managers, as well as combined). Differences in the tonal evolution from introduction sessions to Q&A sessions provide managers with an opportunity to "test the waters" and learn

from analyst reactions. Our empirical design uses the company's introduction tone as the baseline against which we compare analysts' opinions expressed during the subsequent Q&A session.

We operationalize this framework by constructing new variables that capture differences between the baseline introductory tones and subsequent Q&A session tones. These variables include the full Q&A tone minus the introduction tone, the analyst Q&A tone minus the introduction tone, and the manager Q&A tone minus the introduction tone. The full Q&A tone includes comments from both managers and analysts. We also examine differences within the Q&A session by constructing a variable that compares analyst and manager Q&A tones.

Similar to our contrarian trading results, we present both univariate and multivariate analyses for our managerial learning hypothesis. Both the univariate and multivariate results confirm that managers adjust their post-call insider trading based on what they learn from analyst feedback during their conference calls. We find, for example, that when analysts are significantly more pessimistic during Q&A sessions than managers were during initial introductory sessions, company executives increase their insider sales in the post-call period. So, while managers continue to behave as contrarian investors by trading against the tones of their conference calls, they also make significant adjustments to their contrarian strategies based on what they learn from analysts during Q&A sessions.

Overall, our paper contributes to the literature in three main ways. First, we present strong and consistent evidence that company managers trade against their own conference call tones. They tend to purchase company stock after negative-tone conference calls, and to sell company stock after positive-tone conference calls. This contrarian tone-trading pattern is not only pervasive across firms, it is also consistent across the various stages (or sections) of

company conference calls, including the introduction session tones, analyst-initiated Q&A session tones, and manager-initiated Q&A tones. These findings show that managers do not perceive market prices to be informationally efficient following conference calls. Their post-call trading is consistent with a view that prices deviate from fundamental values in a systematic manner – overreacting to both positive and negative conference call tones. Although it is possible that managers also play an active role in pushing prices above or below fundamental values, our evidence confirms that at a minimum they play a passive role by responding to such mispricing.

Second, we propose and test a managerial learning hypothesis that views conference calls as two-way learning opportunities – from insiders to outsiders, but also from outsiders to insiders. In contrast to most corporate communications (e.g., financial statement disclosures, corporate announcements over the wire services, company advertisements), conference calls include a real-time dialogue between corporate executives and outside investors and analysts. This dialogue provides managers with unscripted feedback on their introductory statements about recent corporate performance and future prospects. Our textual analysis setting allows us to measure tone changes between introduction sessions and subsequent Q&A sessions. We can then test whether managerial post-call trading is influenced by these tone differences. Our empirical results show that managers alter their post-call trading based on what they learn from analysts, thus confirming that conference calls operate as two-way information channels.

Third, this study adds to the growing literature that utilizes textual analysis. Although there is little doubt that market-relevant information can take the form of qualitative words or emotive tones, it is only recently that financial researchers have used these techniques to extract

value-relevant information. Our results confirm that managers and analysts influence market perceptions by altering the tones of their conference call statements.

The rest of the article is organized as follows. Section 2 reviews the literature and develops our research questions. In Section 3 we present our data sources, sample, variable construction, and descriptive statistics. In Section 4 we describe our empirical methods and discuss the results. This section presents and examines the significant relation between conference call tones and subsequent insider trading behavior. And in Section 5 we conclude the study.

2. Literature Review and Research Questions

Previous studies on insider trading examine insiders' ability to earn abnormal profits as well as their pervasive use of contrarian trading strategies. The empirical literature on insider profitability is controversial because of data limitations. Researchers are not able to match specific insider purchases to specific insider sales (i.e., calculate profitability) without access to private trading accounts. In addition, researchers have to make assumptions about insiders' desired holding periods to estimate relevant unrealized gains and losses. Lastly, insiders can exploit inside information not only to generate upside gains, but also to limit downside losses. While researchers have limited ability to detect the former (for the reasons given above), they have almost no ability to detect the latter. With these caveats in mind, most empirical insider trading studies find that corporate insiders behave as informed traders. Seyhun (1988), for example, shows that aggregate insider trading patterns forecast aggregate market returns. This finding suggests that insiders have superior information about macroeconomic conditions, possibly due to their knowledge about trends in new orders, sales, or other industry-related

fundamentals. Consistent with this view of insiders as informed traders, Seyhun (1990) also shows that insider purchases increased substantially following the 1987 stock market crash, suggesting that insiders were able to exploit market overreaction to the crash.

Previous empirical research reveals consistent evidence of contrarian trading on the part of insiders. It is often difficult to distinguish between insiders who might be contrarians by disposition (i.e., having a penchant for contrarian views), and insiders who are actively exploiting their private information to trade against the uninformed. Ke, Huddart, and Petroni (2003), for example, show that insiders make profitable trades in anticipation of breaks in earnings trends, selling just before earnings peaks and buying just before earnings troughs. Noe (1999), Givoly and Palmon (1985), Allen and Ramanan (1995), and Cheng, Nagar, and Rajan (2007) find that managers trade on their superior knowledge of future earnings patterns as well as on other forms of private information. Karpoff and Lee (1991) and Kahle (2000) find that insiders sell in anticipation of new equity issue announcements, which typically result in significant price declines. Since these price declines follow earlier price run-ups, such insider trades are also consistent with an uninformed contrarian trading strategy that does not rely on the exploitation of private information. However, as the evidence of such trading patterns increases, it becomes more difficult to view these results as the consequence of simple (uninformed) contrarian trading strategies.

In addition to the claim that insiders trade on private information, recent research suggests that insiders actively manipulate firm-related information and then trade on it. Much of this evidence comes from the literature on voluntary disclosures. Previous research shows that managers engage in voluntary disclosure opportunism around significant events, including insider trades, open-market share repurchases, CEO stock option grants and exercises, and

seasoned equity offerings. Cheng and Lo (2006) find that managers who intend to buy shares for their own account also tend to release abnormally negative news in the period just before their insider purchases.[2] The release of negative information drives prices down so that their purchases are more likely to be profitable. Rogers (2008) finds that managers strategically alter their disclosure quality and provide higher (lower) quality disclosures prior to selling (buying) shares on their own account. These patterns of insider trading might appear at first to be another example of contrarian trading, but actually represent the active manipulation of stock market prices.

Shleifer and Vishny's (2003) theoretical model shows that managers take advantage of an inefficient capital market by acquiring target firms through stock-financed acquisitions when their (i.e., the acquirers') equity is overvalued. Managers are not (necessarily) responsible for this overvaluation – they simply respond to it in a rational manner by trading as contrarians. There are other studies, however, showing that managers play an active role in the overvaluation of their equity before acquisitions. Erickson and Wang (1999) find that stock-financed acquirers manage their earnings upward through income-increasing accruals in the pre-acquisition period. In contrast, they do not find significant abnormal accruals in the pre-acquisition period for cash-financed acquisitions. Louis (2004) confirms that stock-financed acquirers report positive and significant abnormal accruals in the quarter preceding the acquisition announcement.[3] Also consistent with the use of active strategic disclosures, Lennox and Ge (2011) show that

[2] Other studies find similar evidence of an active managerial role in strategic (or deceptive) corporate disclosures. Brockman, Khurana, and Martin (2008) find that managers tend to release negative news before repurchasing their company stock in the open market. Aboody and Kasznik (2000) show that managers release negative news before stock option grants in order to fix relatively low strike prices. Similarly, Brockman, Martin, and Puckett (2010) find that managers release abnormally positive news before stock option exercises to obtain relatively high sales prices. Lang and Lundholm (2000) show that managers use voluntary disclosures to temporarily boost stock prices before seasoned equity offerings.

[3] In contrast to the findings in Erickson and Wang (1999) and Louis (2004), Heron and Lie (2002) do not find evidence of earnings management in the pre-acquisition period.

acquiring-firm managers use deceptive voluntary disclosures when making stock-financed acquisitions.

Our study is somewhat related to this "active managerial role" in the setting of conference calls. Managerial tone during conference calls is a deliberate (voluntary) form of communication that takes place between senior managers and company investors. Previous research demonstrates that investors price such information, and managers know that their presentation tone can guide stock prices toward, or away from, their perception of fair market value. It is possible that managers attempt to deceive investors during their conference calls and, if successful, trade against the misinformed public after the call. If this were the case, our empirical analyses would find an inverse relation between manager tones and manager trading patterns; that is, positive manager tones followed by insider sells, and negative tones followed by insider buys.[4] This view holds that managers actively manipulate their conference call tones to guide prices away from fair market value in order to maximize insider trading profits; that is, they present an overly optimistic (pessimistic) tone in order to dump (accumulate) company shares in the post-call period.

Although our main focus is to examine the extent to which managers' insider trading is consistent with managers' conference call tones, we also examine the extent to which managers incorporate analyst views (i.e., tones) into their subsequent trading. The evolution of the conference call from the introduction session to the Q&A session allows us to isolate a manager-determined introductory tone. We use this introductory tone as a benchmark against which we measure any subsequent tone changes during the Q&A session. Specifically, we compare the

[4] Huang, Teoh, and Zhang (2014) support this view when they investigate how firms manage the tones of earnings press releases, and how investors react to such tone management. Their study concludes that managers appear to use strategic tone management to mislead investors about firm fundamentals.

subsequent (analyst-driven) Q&A tone to the introductory benchmark tone to extract analyst views about the managers' initial claims. We then examine the extent to which these deviations (i.e., analyst tones during Q&A sessions versus manager tones during introduction session) affect post-call managerial trading. We interpret a significant influence on trading as evidence of managerial learning from analyst feedback.

3. Data, Sample, and Variable Construction

With the implementation of Regulation Fair Disclosure (Reg FD) on October 23 of 2000, firms are required to make conference calls available to the entire investment community simultaneously. Such full and fair disclosure is typically accomplished by webcasting conference calls (NIRI 2004). Moreover, compliant firms publish their call transcripts on the Fair Disclosure Wire and LexisNexis, the legal-information services provider, has archived these transcripts in their FD Database. We download all transcripts filed under Reg FD for a twelve year period from 2001 – 2012 and exclude those calls hosted by non-corporate filers such as state and federal agencies. This procedure results in an initial sample of roughly 65,000 observations after filtering by insider trading data availability.

We obtain insider trading data for all open market purchases and sales from SEC Form 4 filings in the Thompson Financial Insider Trading database. Prior studies find that trades by top management are significantly more informative than the trading activity of non-executive insiders since the former have more intimate knowledge about their firm's prospects and operational environment (Seyhun 1986, Lin and Howe 1990, Jeng, Metrick, and Zeckhauser 2003). Thus, we include only those insider transactions made by chief executive officers, the individuals ultimately responsible for the firms' conference call disclosures.

We focus on insider trades that occur within 30 calendar days of the conference call date, starting on day t+1, to avoid overlapping with subsequent quarterly calls. Panel A of Table 1 presents the dollar amount of shares purchased ($BUY AMOUNT) and sold ($SELL AMOUNT) by insiders during the 30-day insider trading periods. Corporate insiders purchase an average (median) amount of $845,875 ($78,335) during 2,092 of the 65,009 firm-quarter observations; they sell an average (median) amount of $5,640,937 ($1,191,293) during 5,527 of the 65,009 firm-quarter observations. These results are consistent with previous studies showing that insiders are much more likely to be sellers than buyers of their company shares. We also report log-transformed dollar amounts as follows: BUY AMOUNT and SELL AMOUNT are the log-transforms of $BUY AMOUNT and $SELL AMOUNT, respectively, for the full sample of firm-quarter observations. NET AMOUNT is equal to the log-transform of one plus the absolute value of net purchases (buy dollar amount minus sell dollar amount), with the sign of net purchases added back.

In Panel B of Table 1, we present descriptive statistics for our conference call variables. To obtain measures of conference call tone, we identify each word by speaker (using C++ computer code) within a given conference call transcript. We tabulate the speaker-specific frequency distribution of those words corresponding to predefined word lists (i.e., specialized dictionaries) associated with categories of interest (i.e., the negative tones of pessimistic words).[5] In order to construct more refined tone variables we further control for prefixes and negation following Brau, Cicon, and McQueen (2016). For example, prefix control allows for "ability" and "approve" to be on the positive word list as well as "inability" and "disapprove" on the negative word list. A word is negated when preceded by a word such as "not," that reverses the

[5] See Loughran and McDonald (2011, 2016) for the dictionary used to categorize words and a detailed description of this process as applied in financial statements research.

word's meaning. We incorporate six negation words used in Loughran and McDonald (2011): "neither," "never," "no," "nobody," "none," and "not." To their list we add another 22 negation words.[6] In addition, we incorporate "too" into our negation list since, for example, "too strong" often carries a negative connotation whereas "strong" is generally positive. Thus, in the phrase "was always right," we consider "right" as a positive word, whereas, in the phrase "was never right," we consider "right" combined with "never" as negative. We negate the original word whenever one of these 29 negation words occurs within two words preceding a Loughran and McDonald (2011) dictionary word (e.g., "not actually reduced" would also be considered positive).

Additionally, we implement the term weighting scheme from Equation (1) of Loughran and McDonald (2011) which controls for the impact of words that are only a mechanical feature of the particular communications medium.[7] For example, the words "Question" and "Questions" represent nearly 50% of the negative words used in the Q&A portion of the calls. However, once the weighting scheme is applied the combined weighted total of the two terms only represents about 2% of the negative words used.[8] With weighting in place, no single term accounts for more than 1.5% of the negative word usage.[9] Lastly, we compute tone measures for each portion of each call as the weighted number of negative words in a particular section divided by the total number of words in that section, where the number of negative words

[6] These words are: "aren't," "cannot," "can't," "couldn't," "didn't," "doesn't," "don't," "hadn't," "hasn't," "haven't," "isn't," "mustn't," "needn't," "nor," "nothing," "nowhere," "shouldn't," "wasn't," "weren't," "without," "won't," and "wouldn't."

[7] Manning and Schutze (2003) provide an expanded technical discussion of weighting schemes.

[8] We confirm that our inferences are not driven by these particular words by repeating our analysis with the terms omitted from the word list and find identical results.

[9] The 25 words with the highest weights for negative sentiment in our sample are (in alphabetical order): "accusations," "assault," "assertions," "casualties," "cautions," "contesting," "controversies," "disagreements," "disciplinary," "divorce," "foreclosing," "ineffectiveness," "inequitable," "insufficiency," "interfering," "invalidated," "irreversible," "kickback," "misrepresentation," "negligence," "nonproducing," "overturning," "plaintiff," "undelivered," and "verdicts."

includes the weighted count of negative words that have not been negated and the weighted count of positive words which have been negated.

INTRO TONE represents the weighted negativity in the introductory session, which can be thought of as a standardized pessimism measure. MANAGER Q&A TONE and ANALYST Q&A TONE are calculated in a like manner for manager and analyst statements during the Q&A session, respectively. The parsing of introduction and Q&A session tones allows us to control for the tone of press releases by splitting the conference calls into separate sections as in Matsumoto, Pronk, and Roelofsen (2011). Kimbrough (2005) and Matsumoto, Pronk, and Roelofsen (2011) suggest that the statements by management at the beginning of a call, INTRO TONE, are more likely to be scripted and, to a large extent, simply reiterate the information in the carefully crafted press release.

The results in Table 1, Panel B, show that the mean (median) INTRO TONE is 0.013 (0.011). Similarly, the mean (median) MANAGER Q&A TONE is 0.010 (0.009), and the corresponding mean (median) ANALYST Q&A TONE is 0.011 (0.010). Given the weighting mechanism we are unable to directly interpret these figures as meaning that roughly 1% of all the words used in the various sections of the calls are pessimistic as we would if the TONE measures were simple proportions. However, in untabulated results we construct simple proportions (i.e., the number of negative words divided by the total words)[10] and find the mean (median) INTRO TONE is 0.012 (0.010), the mean (median) MANAGER Q&A TONE is 0.011 (0.010), and the corresponding mean (median) ANALYST Q&A TONE is 0.010 (0.009). This confirms that roughly 1% of the words used are negative, on average.

We note that the minimum values for each weighted TONE measure is 0.000. Such an observation means that either a conference call section is completely devoid of words on the

[10] We do not incorporate negation into these simple proportions.

Loughran and McDonald (2011) word lists, or that the weighting scheme effectively lowers the value applied to the negative words that are used to the extent that the standardized measure is zero. We hand check the small number of observations where this is the case and find instances where the call section in question is particularly short, making it easier to actively avoid the use of negative words. The only section of the calls where observations do not contain any negative words in our sample is in the manager responses in the Q&A. The introductory and analyst question portions all have at least some use of negative words. Here we confirm instances where a simple count of negative words results in small non-zero proportions, but the corresponding weighted word counts are zero. It is not surprising to find such occurrences given the large number of calls in the sample.[11] It is also interesting to note that the introductory tone is more negative than the Q&A tones. This result is likely due to management concerns about legal liabilities (i.e., litigation risk). Managers attempt to protect the firm by including disclosures of all potentially-adverse contingencies, thus generating many negative words and a high pessimism measure.

INTRO COUNT, MANAGER COUNT, and ANALYST COUNT indicate word counts, in thousands, for the separate portions of the conference calls. The introductory remarks of conference calls contain the largest number of words with a mean (median) word count (INTRO COUNT) of 2,875 (2,693) words. Managerial response word counts (MANAGER COUNT) are substantially longer than their corresponding analyst question word counts (ANALYST COUNT) with means (medians) of 2,496 (2,365) words versus 1,203 (1,152) words, respectively.

[11] In untabulated results we repeat our analyses with these observations omitted from the sample. The results do not change.

Panel C of Table 1 includes descriptive statistics for the control variables used to adjust for various firm characteristics which may affect the information environment or managerial behavior. These variables include measures of unexpected earnings, firm size, book-to-market equity, profitability, leverage, returns volatility, analyst coverage, the announcement return, and the run-up in stock price for firm *j*.[12] They are defined as follows: SURPRISE is calculated as the difference between current earnings-per-share and earnings-per-share in the same quarter of the prior year is scaled by the stock price at the close of the lagged quarter; UNEXPECTED EARNINGS is standardized unexpected earnings, where the difference between actual earnings and the most recent consensus analyst forecast are scaled by the standard deviation of analyst estimates for the same period. SIZE is the log of firm market capitalization in thousands from the previous quarter; BOOK-TO-MARKET is the ratio of book-to-market equity as of the end of the previous quarter; RETURN-ON-ASSETS represents return on assets, defined as net income divided by total assets; LEVERAGE is the ratio of total liabilities to total assets; VOLATILITY is the standard deviation of daily returns for the 90-day period ending ten days prior to the conference call; COVERAGE is the log of the number of analysts which cover a given firm; CAR(-1,1) is the cumulative abnormal return from trading day -1 to trading day +1 relative to the conference call, where the abnormal return is the difference between the return for firm *j* on day *t* and the mean return on day *t* for all firms in the same size decile[13] as firm *j*; and CAR(-60,-2) is the cumulative abnormal return from trading day -60 to trading day -2 relative to the conference call. It is important to include the above variables since insiders are generally contrarian investors. By capturing the prior price run-up, initial price reaction, earnings surprise, etc., we control for the determinants of contrarian trading strategies.

[12] We select these control variables following related work by Tetlock (2007), Tetlock, Saar-Tsechansky, and Macskassy (2008), Engelberg (2008), Davis, Piger, and Sedor (2012), and Frankel, Mayew, and Sun (2010).
[13] Size deciles are determined using NYSE size breakpoints as found on Ken French's website.

4. Empirical Results and Analysis

We begin the empirical analysis by examining unconditional correlations among all of the variables used in subsequent tests. The first six rows in Table 2 present the main variables of interest, including BUY AMOUNT, SELL AMOUNT, NET AMOUNT, INTRO TONE, MANAGER Q&A TONE, and ANALYST Q&A TONE. While the magnitude of the correlation coefficients is small, the signs suggest that managers increase their insider buys with increasing levels of pessimism in introduction tones, manager Q&A tones, and analyst Q&A tones (i.e., positive correlations). In contrast, managers decrease their insider sells with increasing levels of pessimism in introduction tones, manager Q&A tones, and analyst Q&A tones (negative correlations). Both of these findings point to contrarian trading strategies on the part of managers. Managers tend to buy (sell) more shares when the tones of their conference calls are more negative (positive).[14]

The next three rows in Table 2 (i.e., rows 7-9) present correlations related to the length of conference calls, including INTRO COUNT, MANAGER COUNT, and ANALYST COUNT. Lengthier calls (i.e., larger INTRO, MANAGER, and ANALYST COUNTs) are positively correlated with insider sells. In contrast, insider buys are negatively correlated with both MANAGER and ANALYST COUNTs, but positively correlated with INTRO COUNT. The results also suggest that ANALYST TONE (i.e., analyst pessimism) is positively correlated with all three conference call-length measures, including INTRO, MANAGER, and ANALYST COUNTs. Similarly, MANAGER TONE (i.e., manager pessimism) is positively correlated with MANAGER and ANALYST COUNTs. These findings suggest that more words are required to explain and/or challenge weak company performance. We also find a positive correlation

[14] Although not shown, each of the correlation coefficients in rows (1) – (6) is significantly different from zero (p-values of 0.0000.)

between INTRO COUNT and INTRO TONE. This result is consistent with our earlier interpretation that introductory tones serve the purpose of mitigating litigation risk. Since poor firm performance leads to higher (i.e., more pessimistic) INTRO TONEs, more total words (INTRO COUNT) will be needed to offset the necessary negative words with positive (marketing-motivated) words.

Finally, we note that the correlations among independent variables (with the exception of SIZE) are generally low, most often less than 10% in absolute value. Similarly, correlations among COVERAGE, CAR(-1,1), and CAR(-60,-2) are all less than 10% in absolute value. We therefore do not expect multicollinearity to present interpretation problems of subsequent multivariate results.

4.1. Univariate tests: Portfolio sorts

In Table 3, we present univariate results that test for differences in the dollar amounts of insider trades (i.e., BUY AMOUNT, SELL AMOUNT, and NET AMOUNT) across tercile portfolios sorted by TONE (i.e., high, medium, and low). Specifically, for each TONE-sorted tercile portfolio, we calculate its average insider trading AMOUNT. This approach allows us to analyze how insider trading AMOUNTs correspond to high, medium, and low TONEs. We perform these tests for BUY AMOUNTs, SELL AMOUNTs, and NET AMOUNTs using tercile-portfolio sorts on INTRO TONES in Panel A, MANAGER Q&A TONES in Panel B, and ANALYST Q&A TONES in Panel C.

The first column of Panel A shows that managers make their largest dollar purchases of company shares (BUY AMOUNT = 0.44) when INTRO TONEs are the most pessimistic (i.e., high TONE tercile). In contrast, managers make their smallest dollar purchases of company shares (BUY AMOUNT = 0.28) when INTRO TONEs are the least pessimistic (i.e., low TONE

tercile).[15] Managerial BUY AMOUNTs for the middle TONE tercile (0.38) lie between the high and low TONE terciles. The difference in BUY AMOUNTs between the highest and lowest TONE tercile portfolios (0.16) is statistically significant at the 1% level. These contrarian results confirm that, following conference calls, managers buy the largest (smallest) dollar amounts of company shares when their introductory tones are the most (least) pessimistic.

To further illustrate this pattern we mention a couple of anecdotal examples. The Q3 2008 earnings conference call for Citigroup, Inc. was held in mid-October of that year. The INTRO TONE measure for the call of 0.033 is roughly 3 standard deviations above the mean, indicating a rather pessimistic presentation. Statements in the call include phrases such as, "To summarize our third quarter results, our net revenues declined 23% year-over-year…" along with terms such as "write-downs," "losses," "declines," "extreme uncertainty," "unprecedented events," "discontinued operations," "continued volatility," "unusually slow," "continued deterioration," "market disruption," and more. However, within a month CEO Vikram Pandit executed multiple purchase transactions of Citigroup stock valued at nearly $14 million. Similarly, there is evidence of the same pattern with small firms too. The earnings call during the same quarter for Penford Corporation, a food ingredients company, produced an INTRO TONE measure of 0.34. Within days CEO Thomas Malkoski purchased roughly $21,000 worth of Penford common stock.

[15] Recall that the BUY and SELL AMOUNTs are defined as the natural logarithm of $BUY and $SELL AMOUNTs (i.e., dollar buy and dollar sell amounts), so 0.44 and 0.28 correspond to $1.55 and $1.32, respectively. Similar to the summary statistics in Table 1, these small mean (transformed) amounts are due to a combination of (1) a positively-skewed sample, and (2) the mathematical properties of calculating the mean value of log transformed variables versus the log of the mean value of these same variables. Specifically, Jensen's Inequality applied to a strictly concave function (i.e., the natural logarithm) states that the mean of the log transformed variables is less than the log of the mean of these same (untransformed) variables. To gain a clearer view of the actual distribution of dollar trading amounts in these tercile portfolios, the high (low) INTRO TONE tercile, for example, has a 1st percentile, 25th percentile, median, 75th percentile and 99th percentile buy dollar amount of $0, $0, $0, $0 and $208,624 ($0, $0, $0, $0 and $120,500), respectively. Using these same percentiles the sale dollar amounts for the high (low) INTRO TONE tercile are $0, $0, $0, $0 and $5,519,035 ($0, $0, $0, $0 and $11,703,000), respectively.

We find similar evidence of contrarian trading in the second column of Panel A when managers are selling company shares. Managers make their smallest dollar sales (SELL AMOUNT = 0.78) when INTRO TONEs are the most pessimistic (i.e., high TONE tercile). In contrast, they make their largest dollar sales (SELL AMOUNT = 1.59) when INTRO TONEs are the least pessimistic (i.e., low TONE tercile). SELL AMOUNTs for the middle TONE tercile (1.17) again lie between the high and low TONE terciles. The difference in SELL AMOUNTs between the highest and lowest TONE tercile portfolios (-0.81) is statistically significant at the 1% level. Although we include NET AMOUNT results in the third column of Panel A for the sake of completeness, we do not discuss them separately in the interest of space.

Anecdotal evidence further illustrates the pattern of selling after highly positive (i.e. less negative) conference calls. In March 2012, Ross Stores CEO Michael Balmuth raved about the recent performance with the following opening call remarks: "We are very pleased with our robust sales and earnings in the fourth quarter and fiscal year of 2011, especially considering they were achieved on top of strong multi-year gains. Our healthy revenue growth continues to be driven mainly by our ability to deliver compelling bargains on a wide assortment of exciting name-brand fashions for the family and the home to today's increasingly value-focused consumers..." Additionally, terms such as "grew," "increases," "profit," "gains," and so forth are used throughout the call. The INTRO TONE measure for this call is 0.0003, nearly two standard deviations below the mean, indicating very little use of negative words. Within a week after this call Mr. Balmuth sold roughly $16 million worth of Ross stock. Similarly, Petmed Express Inc., a small online pharmacy that sells drugs for pets, had a highly optimistic earnings conference call in July 2009. With an INTRO TONE measure of 0.002 the level of negativity was well below

the mean of 0.013. Shortly thereafter CEO Menderes Akdag sold nearly $141,000 worth of stock.

Next, we examine the relation between MANAGER Q&A TONE and managerial insider trading behavior in Panel B. The contrarian patterns, if not the magnitudes, are identical to those in Panel A. Managers make their largest dollar purchases of company shares (BUY AMOUNT = 0.41) when MANAGER Q&A TONEs are the most pessimistic; they make their smallest dollar purchases of company shares (BUY AMOUNT = 0.32) when MANAGER Q&A TONEs are the least pessimistic; and managerial BUY AMOUNTs for the middle TONE tercile (0.37) lie between the high and low TONE terciles. The difference in BUY AMOUNTs between the highest and lowest TONE tercile portfolios (0.09) is statistically significant at the 1% level. On the sell side, managers make their smallest dollar sales (SELL AMOUNT = 0.91) when MANAGER Q&A TONEs are the most pessimistic; they make their largest dollar sales (SELL AMOUNT = 1.38) when MANAGER Q&A TONEs are the least pessimistic; and managerial SELL AMOUNTs for the middle TONE tercile (1.28) lie between the high and low TONE terciles. The difference in SELL AMOUNTs between the highest and lowest TONE tercile portfolios (-0.47) is statistically significant at the 1% level.

Finally, we examine the relation between ANALYST Q&A TONE and managerial insider trading behavior in Panel C. Again, we find strong evidence of contrarian trading. Managers make their largest dollar purchases of company shares (BUY AMOUNT = 0.43) when ANALYST Q&A TONEs are the most pessimistic; they make their smallest dollar purchases of company shares (BUY AMOUNT = 0.32) when ANALYST Q&A TONEs are the least pessimistic; and managerial BUY AMOUNTs for the middle TONE tercile (0.34) lie between the high and low TONE terciles. The difference in BUY AMOUNTs between the highest and

lowest TONE tercile portfolios (0.11) is statistically significant at the 1% level. On the sell side, managers make their smallest dollar sales (SELL AMOUNT = 0.93) when ANALYST Q&A TONEs are the most pessimistic; they make their largest dollar sales (SELL AMOUNT = 1.41) when ANALYST Q&A TONEs are the least pessimistic; and managerial SELL AMOUNTs for the middle TONE tercile (1.30) lie between the high and low TONE terciles. The difference in SELL AMOUNTs between the highest and lowest TONE tercile portfolios (-0.48) is statistically significant at the 1% level.

Overall, these univariate tests present consistently-strong evidence of contrarian insider trading on the part of corporate managers. When conference call tones are most pessimistic, managers are enthusiastic buyers; and when conference call tones are most optimistic (least pessimistic), managers turn into enthusiastic sellers.

4.2. Multivariate tests: Regression analyses

In Table 4, we present multivariate results from regressing our insider trading measures (BUY AMOUNT, SELL AMOUNT, and NET AMOUNT) on the conference call tone variables (INTRO TONE, MANAGER Q&A TONE, and ANALYST Q&A TONE) and the set of control variables described above. The first three columns in Table 4 present results using a seasonal random walk model to control for earnings surprises (SURPRISE), and the last three columns use analysts' forecasts to control for earnings surprises (UNEXPECTED EARNINGS). The number of observations between the sets of regression results differs. This is due to the lack of analyst forecast data for many small firms which results in a loss of roughly 25% of the sample.

The results in Table 4 show that the contrarian trading pattern observed previously generally holds in the multivariate framework as well. For the BUY AMOUNT regression in column 1 (i.e., using SURPRISE to control for earnings expectations), we find positive but

insignificant coefficients for each of the tone measures; specifically, the INTRO, MANAGER Q&A, and ANALYST Q&A TONE coefficients are 1.48 (t-value = 0.69), 3.22 (t-value = 1.55), and 2.62 (t-value = 1.23), respectively. For the SELL AMOUNT regression in column 2, we find negative and significant coefficients for each of the tone measures. The INTRO, MANAGER Q&A, and ANALYST Q&A TONE coefficients are -19.35 (t-value = -4.91), -8.09 (t-value = -1.88), and -8.90 (t-value = -2.80), respectively. The combined results of managerial buying and selling (NET AMOUNT) in column 3 are positive and significant for each of the tone measures as well, with INTRO, MANAGER Q&A, and ANALYST Q&A TONE coefficients of 20.67 (t-value = 4.47), 11.39 (t-value = 2.40), and 11.64 (t-value = 2.98), respectively. Overall, these multivariate results confirm our earlier univariate results by showing that managers tend to trade in a manner that is contrary to the verbal tones expressed during both the introductory and Q&A sessions of conference calls. In addition, the use of control variables in a multivariate framework shows that the relation between conference call tones and insider sells is more significant than the relation between call tones and insider buys.

The results in columns 4 to 6 (i.e., using analyst forecasts to control for expected earnings) are similar to, though somewhat weaker than, those reported in columns 1 to 3. For the BUY AMOUNT regression in column 4, we find positive but insignificant coefficients for two of the three tone measures and one that is significant; specifically, the INTRO, MANAGER Q&A, and ANALYST Q&A TONE coefficients are 1.44 (t-value = 0.58), 5.00 (t-value = 1.83), and 2.92 (t-value = 1.04), respectively. For the SELL AMOUNT regression in column 5, we find negative and significant coefficients for two of the three tone measures. The INTRO, MANAGER Q&A, and ANALYST Q&A TONE coefficients are -18.98 (t-value = -3.88), -2.38 (t-value = -0.48), and -7.77 (t-value = -1.82), respectively. And for the NET AMOUNT

regression in column 6, we find positive and significant coefficients for two of the three tone measures as well. The INTRO, MANAGER Q&A, and ANALYST Q&A TONE coefficients are 20.40 (t-value = 3.58), 7.52 (t-value = 1.29), and 10.72 (t-value = 1.99), respectively.

Taken together, our Table 4 results reveal a consistent pattern of post-call managerial trading that is contrary to the tones expressed at their conference calls – during both the introductory and Q&A sessions. In contrast to this evidence of contrarian trading behavior, we find no evidence of managerial trading that is consistent with the tones expressed in their conference calls – neither during the introductory session, nor during the Q&A session. It is well documented that investors react to conference calls in the same direction as the tones expressed by managers and analysts. This raises the possibility that managers are taking advantage of this known investor-tone trading pattern to incrementally increase their own buying (selling) when call tone pessimism is high (low).

4.3. Multivariate tests: Abnormal tones and changes-in-tones

In this section, we examine the relation between our dependent variables (post-call insider trading BUY AMOUNT, SELL AMOUNT, and NET AMOUNT) and two new sets of experimental variables (abnormal tones and change-in-tones), along with the control variables used in Table 4. Our abnormal tone measure is designed to capture deviations from expected tones at the cross-sectional level (i.e., relative to other firms at the same time), while our change-in-tone measure is designed to capture deviations in expected tones at the time-series level (i.e., relative to the same firm through time). We report the abnormal tone results in Panel A of Table 5 and the change-in-tone results in Panel B.

Following Huang, Teoh, and Zhang (2014) and Brockman, Li, and Price (2015), we estimate abnormal tone by separately regressing each tone measure on various determinants in a

cross-sectional panel and then use the residual to capture that portion of the tones which are otherwise unexplained (i.e., abnormal.) The set of determinants includes the earnings surprise, size, book-to-market equity, return on assets, leverage, the run up in stock price, analyst coverage, and controls for firm and time effects. We then regress the insider trading variables on this new set of experimental variables (the orthogonalized measures INTRO ABTONE, MANAGER Q&A ABTONE, and ANALYST Q&A ABTONE) and report the results in Panel A of Table 5. We suppress the control variable results for the sake of brevity.

The abnormal tone results are generally consistent with prior results in terms of positive/negative signs, but fewer coefficients are statistically significant. For the BUY AMOUNT regression, we find positive but insignificant coefficients for INTRO ABTONE (coefficient = 0.41, t-value = 0.15) and MANAGER Q&A ABTONE (coefficient = 2.13, t-value = 0.73), and an insignificantly-negative coefficient for ANALYST Q&A ABTONE (coefficient = -0.33, t-value = -0.33). For the SELL AMOUNT regression, we find a negative and significant coefficient for INTRO ABTONE (coefficient = -12.97, t-value = -2.70), as well as negative but insignificant coefficients for MANAGER Q&A and ANALYST Q&A ABTONEs (coefficients = -5.65 and -4.62, t-values = -1.37 and -1.32, respectively). Similarly, for the NET AMOUNT regression, we find a positive and significant coefficient for INTRO ABTONE (coefficient = 13.33, t-value = 2.45), as well as positive but insignificant coefficients for MANAGER Q&A and ANALYST Q&A ABTONEs (coefficients = 7.86 and 4.43, t-values = 1.51 and 0.92, respectively). Overall, these abnormal tone results are consistent with (although weaker than) the earlier (normal) tone results.

In Panel B, we examine deviations from expected tones (across time) using the firm's previous conference call tones (i.e., INTRO, MANAGER Q&A, and ANALYST Q&A) as the

benchmarks. Specifically, we define INTRO (MANAGER Q&A, ANALYST Q&A) ΔTONE as the INTRO (MANAGER Q&A, ANALYST Q&A) TONE in the current quarter minus the INTRO (MANAGER Q&A, ANALYST Q&A) TONE in the previous quarter. We then regress the insider trading variables on this new set of experimental variables (INTRO ΔTONE, MANAGER Q&A ΔTONE, and ANALYST Q&A ΔTONE) and report the results in Panel B – again, suppressing the control variable results for the sake of brevity.

The change-in-tone results are consistent with the abnormal tone results in terms of positive/negative signs, only with more coefficients that are statistically significant. For the BUY AMOUNT regression, we find positive and significant coefficients for each of the tone measures; specifically, the INTRO, MANAGER Q&A, and ANALYST Q&A ΔTONE coefficients are 3.80 (t-value = 2.09), 3.71 (t-value = 2.36), and 2.89 (t-value = 2.02), respectively. These results show that managers are more likely to increase their insider buys when this period's conference call tones (both introductory and Q&A sessions) are more pessimistic than last period's conference call tones – a clear pattern of contrarian trading. For the SELL AMOUNT regression, we find negative but insignificant coefficients for INTRO and MANAGER Q&A ΔTONEs (coefficients = -0.85 and -2.77, t-value = -0.24 and -0.97, respectively), and an insignificantly positive coefficient for ANALYST Q&A ΔTONE (coefficient = 1.23, t-value = 0.50). For the NET AMOUNT regression, we find a positive and insignificant coefficient for INTRO ΔTONE (coefficient = 4.69, t-value = 1.00), a positive and significant coefficient for MANAGER Q&A ΔTONE (coefficient = 6.47, t-value = 2.20), and a positive but insignificant coefficient for ANALYST Q&A ΔTONE (coefficient = 1.59, t-value = 0.53). Overall, these change-in-tone results present additional evidence of contrarian trading. Corporate insiders increase their own-company buys when current conference call tones are

more pessimistic than previous call tones. In contrast, we find no significant examples (in Panels A or B) of managers trading in a manner that is consistent with their conference call tones.

4.4. Contrarian trading and profitability

Since one possible motivation for managers to trade against their conference call tones is personal profit, we examine the potential ability of corporate executives to profit from the contrarian strategies documented above. We have shown that managers' insider trades tend to be inconsistent with their own tones (i.e., both during introduction and Q&A sessions), but the question remains as to whether such contrarian trading strategies are profitable. We address this issue by constructing tercile portfolios based on high, medium, and low TONEs (similar to the portfolio sorting procedure used in Table 3) and then calculate the average cumulative abnormal returns (CARs) in each tercile. We use three CAR windows of varying length, including CAR(1,5), CAR(1,10), and CAR(1,20), to capture short-run versus longer-run trading opportunities.[16] This approach allows us to analyze how the opportunities for insider trading profits (i.e., CARs) correspond to high, medium, and low TONEs. We perform these tests for CAR(1,5), CAR(1,10), and CAR(1,20) using INTRO TONEs in Panel A of Table 6, MANAGER Q&A TONEs in Panel B, and ANALYST Q&A TONEs in Panel C.

The first column of Panel A examines cumulative abnormal returns over the 5-day window (i.e., CAR(1,5)) following the conference call. The results show that the largest CARs (CAR(1,5) = 0.22) occur when INTRO TONEs are the least pessimistic (i.e., low TONE tercile), and the smallest CARs (CAR(1,5) = -0.64) occur when INTRO TONEs are the most pessimistic (i.e., high TONE tercile). The CARs associated with the medium INTRO TONE tercile (CAR(1,5) = -0.35) lie between the high and low INTRO TONE terciles. The difference in CARs

[16] We define CAR(1,5) as the cumulative abnormal return beginning one day after the conference call and ending five days after the conference call. We define CAR(1,10) and CAR(1,20) in the same manner; they begin one day after the conference call and end 10 and 20 days, respectively, after the conference call.

between the high INTRO TONE tercile and the low INTRO TONE tercile portfolios (-0.86) is statistically significant at the 1% level. We find identical patterns with comparable magnitudes at the longer CAR windows of CAR(1,10) and CAR(1,20). In all cases, the largest (smallest) CARs occur in the least (most) pessimistic INTRO TONE terciles, and CAR differences between the high and low INTRO TONE terciles are statistically significant at the 1% level.

The results in Panel A show that post-call abnormal returns follow the same direction as that of the call's INTRO TONE. Specifically, when the INTRO TONE is positive (negative), post-call cumulative abnormal returns continue to drift up upward (downward) over the following 5-day, 10-day, and 20-day windows. These findings suggest that managers who implement contrarian trading strategies would tend to buy (sell) shares when their prices are abnormally low (high) – evidence of profitable contrarian trading opportunities.

The results in Panel B report cumulative abnormal returns associated with MANAGER Q&A TONEs over 5-day, 10-day, and 20-day windows following the conference call. We restrict our discussion to the findings in the first column (i.e., CAR(1,5)) since the other two CAR windows report similar patterns. The results in the first column show that the largest CARs (CAR(1,5) = -0.04) occur when MANAGER Q&A TONEs are the least pessimistic (i.e., low TONE tercile), and the smallest CARs (CAR(1,5) = -0.49) occur when MANAGER Q&A TONEs are the most pessimistic (i.e., high TONE tercile). The CARs associated with the medium MANAGER Q&A TONE tercile (CAR(1,5) = -0.21) lie between the high and low TONE terciles. The difference in CARs between the high and the low MANAGER Q&A TONE tercile portfolios (-0.45) is statistically significant at the 1% level.

The results in Panel C report CARs associated with ANALYST Q&A TONEs over 5-day, 10-day, and 20-day windows. We again restrict our discussion to the findings in the first

column (i.e., CAR(1,5)) since the other two CAR windows show similar patterns. The results in the first column show that the largest CARs (CAR(1,5) = 0.09) occur when ANALYST Q&A TONEs are the least pessimistic, and the smallest CARs (CAR(1,5) = -0.65) occur when ANALYST Q&A TONEs are the most pessimistic. The CARs associated with the medium ANALYST Q&A TONE tercile (CAR(1,5) = -0.13) lie between the high and low TONE terciles. The difference in CARs between the high and the low ANALYST Q&A TONE tercile portfolios (-0.73) is statistically significant at the 1% level.

Similar to our findings in Panel A, the results in Panels B and C show that post-call abnormal returns follow the same direction as that of the call's Q&A TONE, both for managers and analysts. When Q&A TONEs are positive (negative), post-call cumulative abnormal returns continue to drift up upward (downward) over the following 5-day, 10-day, and 20-day windows. Overall, our Table 6 results suggest that managers can trade profitably by following a contrarian strategy of buying when tones (and therefore post-call CARs) are negative, and selling when tones are positive.

4.5. Do managers learn during conference calls?

Our evidence thus far has shown a consistent pattern of contrarian trading on the part of corporate insiders. When the tone of the conference call is more (less) pessimistic, managers are more likely to submit buy (sell) orders in the post-call period. These results suggest that managers believe their company shares to be mispriced in a systematic manner; that is, undervalued when conference call tones are pessimistic, and overvalued when conference call tones are optimistic. Managers then reveal these underlying (contrarian) beliefs by trading in a manner that is inconsistent with the verbal tone expressed during conference calls. The extent to which some managers might play an active role in driving stock prices away from fundamental

values is difficult to tease out of the data, but they play at least a passive role by trading against investor misperceptions. In this section, we investigate in more detail the determinants of managers' insider trades following conference calls. Specifically, we examine whether managers adjust the intensity of their contrarian trading strategies based on the analyst feedback that they obtain during conference calls.

The timing of conference calls follows a systematic procedure beginning with the company monologue during an introductory session and ending with a multi-faceted dialogue during the Q&A session. Although managers have near-complete control over their introductory tones, they have little control over analyst tones during the Q&A sessions. And since managers' Q&A tones are strongly influenced by (if not driven by) the nature and tone of analysts' questions, differences between the introductory tone and the subsequent Q&A tone can capture differences in opinion between managers and analysts. In the introductory session, managers are free to present the tone/information that they would like to convey to the public (via analysts); while in the subsequent Q&A session, analysts are free to challenge any of these introductory remarks – as well as to raise other issues not addressed in the manager's introductory session. Simply put, the Q&A session is where the (Q&A) rubber meets the (introductory) road.

Based on this conceptual framework, we construct new experimental variables that capture differences between the manager's baseline introductory tone and subsequent Q&A session tones, including Q&A – INTRO TONE (i.e., the full Q&A tone minus the introduction tone), ANALYST Q&A – INTRO TONE, and MANAGER Q&A – INTRO TONE. The full Q&A tone includes comments from both managers and analysts. We also examine any differences within the Q&A session by constructing a variable for ANALYST – MANAGER Q&A TONE, thus using the manager's Q&A tone as the benchmark tone. Interpretation of these

new variables (i.e., differences between two pessimistic tone measures) is straightforward. Higher (lower) values correspond to more (less) pessimistic tones during the Q&A session relative to the introductory session; and more (less) pessimistic tones for the analysts relative to the managers during the Q&A session.

We regress insider trading amounts (i.e., BUY AMOUNT, SELL AMOUNT, and NET AMOUNT) on the set of experimental variables described above (i.e., Q&A – INTRO TONE, ANALYST Q&A – INTRO TONE, MANAGER Q&A – INTRO TONE, and ANALYST – MANAGER Q&A TONE), along with the complete set of control variables described in Table 4. We report the regression results in Table 7, suppressing the control variables for the sake of brevity.[17]

The results in Panel A show that when the tone of the full Q&A session is more pessimistic than the introductory session (i.e., higher values for Q&A – INTRO TONE), managers make significantly larger sales. Specifically, the estimated coefficient for Q&A – INTRO TONE in the SELL AMOUNT regression is 14.10, with a t-value of 3.23. This evidence is consistent with managers learning from analyst feedback during the Q&A session since the independent/experimental variable, Q&A – INTRO TONE, captures the difference between the manager's initial tone as expressed during the introductory session and the subsequent Q&A session tone (largely driven by analysts). The difference between these two tones provides the manager an opportunity to learn the analysts' points of view. For the BUY AMOUNT regression, the estimated coefficient for Q&A – INTRO TONE is 0.39, with a t-value of 0.18. This result suggests that managers do not significantly alter their insider buys based on what they

[17] In untabulated results we also conduct univariate sorts, similar to those presented in Table 3, where we test for differences in the dollar amounts of insider trades across tercile portfolios (i.e., high, medium, and low.) The sorts are separately performed using the experimental TONE difference variables (i.e., Q&A – INTRO TONE, ANALYST Q&A – INTRO TONE, MANAGER Q&A – INTRO TONE, and ANALYST – MANAGER Q&A TONE.) The univariate portfolio sorting results are consistent with the regression coefficients shown in Table 7.

learn from analysts in Q&A sessions. The NET AMOUNT regression results reflect the SELL AMOUNT results by showing that managers are significantly influenced by analyst feedback. For the NET AMOUNT regression, the estimated coefficient for Q&A – INTRO TONE is -13.65, with a t-value of -2.66.

In Panels B and C, we examine separately the impact of ANALYST Q&A – INTRO TONE and MANAGER Q&A – INTRO TONE, respectively, on managerial insider trades. The ANALYST Q&A – INTRO TONE results in Panel B show that analyst feedback during the Q&A session has a positive and insignificant impact on managerial BUY AMOUNTs (coefficient = 0.22, t-value = 0.12), a positive and significant impact on managerial SELL AMOUNTs (coefficient = 8.97, t-value = 2.53), and an overall negative and significant impact on managerial NET AMOUNTs (coefficient = -8.75, t-value = -2.18). These results are consistent with those reported in Panel A, and suggest that managers alter their selling behavior based on what they learn from analyst tones during Q&A sessions. The MANAGER Q&A – INTRO TONE results in Panel C are similar to those in Panel B. Specifically, we find a positive and insignificant impact on BUY AMOUNTs (coefficient = 0.24, t-value = 0.12), a positive and significant impact on SELL AMOUNTs (coefficient = 12.43, t-value = 3.42), and an overall negative and significant impact on NET AMOUNTs (coefficient = -12.14, t-value = -2.71).

Although analyst tones are likely to lead manager tones during the Q&A session (as analyst questions "lead to" manager answers), we still examine differences in these two tones in Panel D. Not only are managers limited in their ability to control analyst tones, but since many of their own statements are in response to analyst inquiries and challenges, they also have less control over their own tones during Q&A sessions. We nonetheless examine the impact of ANALYST – MANAGER Q&A TONE on subsequent managerial trades and report the results

in Panel D. We find that differences between analyst and manager tones have no significant impact on insider trades. In the BUY, SELL, and NET AMOUNT regressions, the ANALYST – MANAGER Q&A TONE coefficients are -0.46, -3.60, and 3.10, with t-values of -0.21, -0.94, and 0.65, respectively.

In summary, the results in Table 7 provide additional evidence of managerial learning. Managers adjust their post-call insider trading based on what they learn from analyst feedback during their conference calls. When analysts are significantly more pessimistic during the Q&A session than managers were during their initial introductory session, managers take heed and sell more (and/or buy less) in the post-call period. Therefore, while managers display an overall contrarian trading strategy by trading against their conference call tones, they also make significant adjustments in their post-call trading for deviations between introductory and Q&A session tones. This latter result is evidence of managerial learning.

5. Conclusion

The main objective of this study is to examine insider trading patterns following conference calls. Specifically, we address the question of whether managers tend to trade in a manner that is consistent with their conference call tones (i.e., matching words with deeds) or whether managers tend to trade in a contrarian manner following their conference calls. We collect a sample of over 65,000 conference call transcripts during the 48-quarter period from 2001 to 2012 and then apply textual analysis to the content of each conference call. We calculate an introductory tone, as well as separate measures for manager-initiated Q&A tones and analyst-initiated Q&A tones.

Our univariate results show that managers trade in a manner that is contrary to conference call tones – including introductory tones, manager Q&A tones, and analyst Q&A tones. That is, managers are significantly more likely to purchase company shares in the 30-day period after a conference call if the tone expressed in that conference is negative or pessimistic. Our multivariate results confirm that managers consistently trade against their own conference call tones. They trade against introduction tones, analyst Q&A tones, and manager Q&A tones. In contrast, we do not find any evidence (i.e., from introductory tones, analyst Q&A tones, or manager Q&A tones) of managers trading in a manner that is consistent with their conference call tones. Since managers are responsible for "setting the tone" of the conference call – fully responsible for introduction tones and partially responsible for Q&A tones – we conclude that managers do not match their words with their deeds.

We also investigate whether managers learn from analysts during the dialogue (Q&A) sessions of conference calls; specifically, the managerial learning hypothesis. We use the company's introduction tone as the baseline against which we compare analysts' opinions expressed during the subsequent Q&A session. Our univariate and multivariate results confirm that managers adjust their post-call insider trading depending on what they learn from analyst feedback during Q&A sessions. When analyst tones are increasingly more (less) pessimistic as the conference call evolves from the introduction session to the Q&A session, company managers increase (decrease) their insider sales in the post-call period. While managers pursue a consistently-contrarian trading strategy with respect to conference call tones, they also make significant adjustments to this overall strategy by taking analyst feedback into consideration.

Overall, our paper contributes to the literature in three main ways. First, we find pervasive evidence that managers trade against their own conference call tones by purchasing

company stock after negative-tone conference calls, and selling company stock after positive-tone conference calls. These contrarian results hold for introduction tones, analyst Q&A tones, and manager Q&A tones. Our findings suggest that managers do not view their companies' stock prices as reflecting fundamental values. Instead, stock prices deviate from fundamental values in a systematic manner by overshooting both positive- and negative-tone conference calls. Managers then take advantage of these price discrepancies by trading against less-informed investors in the post-call period.

Second, we posit and confirm the managerial learning hypothesis which argues that conference calls represent two-way learning opportunities – from company insiders to analyst/investor outsiders, and vice versa. Our empirical results show that managers adjust their post-call trading patterns based on analyst feedback during Q&A sessions. Finally, our study adds to the growing textual analysis literature. The application of textual analysis to corporate finance has provided fresh insights into corporate decision making and stock market behavior. Our study presents new evidence on the informational roles played by managers and analysts during conference calls, as well as the impact of tone on post-call insider trading.

References

Aboody, D., Kasznik, R., 2000. CEO stock option awards and the timing of voluntary corporate disclosures. Journal of Accounting and Economics 29, 73-100.

Allen, S. and Ramanan, R., 1995. Insider trading, earnings changes, and stock prices. Management Science 41, 653-668.

Brau, J., Cicon, J., McQueen, G., 2016. Soft strategic information and IPO underpricing. Journal of Behavioral Finance, forthcoming.

Brockman, P., Khurana, I., Martin, X., 2008. Voluntary disclosures around share repurchases. Journal of Financial Economics 89, 175-191.

Brockman, P., Li, X., Price, S.M., 2015. Differences in conference call tones: Managers versus Analysts. Financial Analyst Journal 71, 24-42.

Brockman, P., Martin, X., Puckett, A., 2010. Voluntary disclosures around CEO stock option exercises. Journal Corporate Finance 16, 120-136.

Cheng, Q., Lo, K., 2006. Insider trading and voluntary disclosure. Journal of Accounting Research 44, 815-848.

Cheng, S, Nagar, V., Rajan, M., 2007. Insider trades and private information: the special case of delayed disclosure trades. Review of Financial Studies 20, 1833-1864.

Davis, A.K., Piger, J.M., Sedor, L.M., 2012. Beyond the numbers: Measuring the information content of earnings press release language. Contemporary Accounting Research 29, 845-868.

Eliashberg, J., Hui, S.K., Zhang, Z.J., 2007. From story line to box office: A new approach for green-lighting movie scripts. Management Science 53, 881-893.

Engelberg, J., 2008. Costly information processing: Evidence from earnings announcements. Unpublished working paper. Northwestern University.

Erickson, M., Wang, S., 1999. Earnings management by acquiring firms in stock for stock mergers. Journal of Accounting and Economics 27, 149‐176.

Frankel, R.M., Mayew, W.J., Sun, Y., 2010. Do pennies matter? Investor relations consequences of small negative earnings surprises. Review of Accounting Studies 15, 220-242.

Givoly, D., Palmon, D., 1985. Insider trading and the exploitation of inside information: Some empirical evidence. Journal of Business 58, 69-87.

Heron, R., Lie, E., 2002. Operating performance and the method of payment in takeovers. Journal of Financial and Quantitative Analysis 37, 137-155.

Huang, X., Teoh, SH., Zhang, Y., 2014. Tone management. Accounting Review 89, 1083-1113.

Jeng, L., Metrick, A., Zeckhauser, R., 2003. Estimating the returns to insider trading: A performance-evaluation perspective. Review of Economics and Statistics 85, 453-471.

Kahle, K., 2000. Insider trading and the long-run performance of new security issues. Journal of Corporate Finance 6, 25-53.

Karpoff, L., Lee, D., 1991. Insider trading before new issue announcements. Financial Management 20, 18-26.

Ke, B., Huddart, S., Petroni, K., 2003. What insiders know about future earnings and how they use it: Evidence from insider trades. Journal of Accounting and Economics 35, 315-346.

Kimbrough, M.D., 2005. The effect of conference calls on analyst and market underreaction to earnings announcements. Accounting Review 80, 189-219.

Krippendorf, K., 2004. Content analysis: An introduction to its methodology. Sage Publications Inc., Thousand Oaks, CA.

Lang, M., Lundholm, R., 2000. Voluntary disclosure and equity offering: reducing information asymmetry or hyping the stock? Contemporary Accounting Research 17, 623-662.

Lennox, C. S., Ge, R., 2011. Do acquirers disclose good news or withhold bad news when they finance their acquisitions? Review of Accounting Studies 16, 183-217

Li, F., 2008. Annual report readability, current earnings, and earnings persistence. Journal of Accounting and Economics 45, 221-247.

Li, F., 2010. The information content of forward-looking statements in corporate filings—A naıve Bayesian machine learning approach. Journal of Accounting Research 48, 1049-1102.

Lin, J., Howe, J., 1990. Insider trading in the OTC market. Journal of Finance 45, 1273-1284.

Loughran, T., McDonald, B., 2011. When is a liability not a liability? Textual analysis, dictionaries, and 10-Ks. Journal of Finance 66, 35-65.

Loughran, T., McDonald, B., 2016. Textual analysis in accounting and finance: A survey. Journal of Accounting Research, forthcoming.

Louis, H., 2004. Earnings management and the market performance of acquiring firms. Journal of Financial Economics 74, 121-148.

Manning, C.D., Schutze, H., 2003. Foundations of Statistical Natural Language Processing. MIT Press, Cambridge, MA.

Matsumoto, D., Pronk, M., Roelofsen, E., 2011. What makes conference calls useful? The information content of managers' presentations and analysts discussion sessions. Accounting Review 86, 1383-1414.

NIRI, 2004. Standards of practice for investor relations. National Investor Relations Institute, Vienna, VA.

Noe, C., 1999. Voluntary disclosures and insider transactions. Journal of Accounting and Economics 27, 305-26.

Petersen, M.A., 2009. Estimating standard errors in finance panel data sets: Comparing approaches. Review of Financial Studies 22, 435-480.

Price, S.M., Doran, J.S., Peterson, D.R., Bliss, B.A., 2012. Earnings conference calls and stock returns: The incremental informativeness of textual tone. Journal of Banking and Finance 36, 992-1011.

Rogers, J.L., 2008. Disclosure quality and management trading incentives. Journal of Accounting Research 46, 1265-1296.

Shleifer, A., Vishny, R., 2003. Stock market driven acquisitions. Journal of Financial Economics 70, 295-312.

Seyhun, N., 1986. Insiders' profits, costs of trading, and market efficiency. Journal of Financial Economics 16, 189-212.

Seyhun, N., 1988. The information content of aggregate insider trading. Journal of Business 61, 1-24.

Seyhun, N., 1990. Overreaction or fundamentals: Some lessons from insiders' response to the market crash of 1987. Journal of Finance 45, 1363-1368.

Tetlock, P.C., 2007. Giving content to investor sentiment: The role of media in the stock market. Journal of Finance 62, 1139-1168.

Tetlock, P.C., Saar-Tsechansky, M., Macskassy, S., 2008. More than words: Quantifying language to measure firms' fundamentals. Journal of Finance 63, 1437-1467.

White, H., 1980. A heteroskedasticity-consistent covariance matrix estimator and a direct test of heteroskedasticity. Econometrica 48, 817-838.

Table 1
Descriptive Statistics

Panel A	Mean	Median	Max	Min	Std.Dev.	N
$BUY AMOUNT	845,875	78,335	201,000,000	158	7,851,968	2,092
$SELL AMOUNT	5,640,937	1,191,293	2,940,000,000	3	51,900,000	5,527
BUY AMOUNT	0.364	0.000	19.121	0.000	2.021	65,009
SELL AMOUNT	1.184	0.000	21.801	0.000	3.919	65,009
NET AMOUNT	-0.821	0.000	19.121	-21.801	4.503	65,009
Panel B						
INTRO TONE	0.013	0.011	0.403	0.000	0.007	64,205
MANAGER Q&A TONE	0.010	0.009	0.235	0.000	0.006	59,866
ANALYST Q&A TONE	0.011	0.010	0.191	0.000	0.006	56,595
INTRO COUNT	2.875	2.693	12.471	0.004	1.423	64,205
MANAGER COUNT	2.496	2.365	12.172	0.004	1.446	59,866
ANALYST COUNT	1.203	1.152	7.303	0.006	0.630	56,595
Panel C						
SURPRISE	0.010	0.001	66.984	-21.154	0.463	62,765
UNEXPECTED EARNINGS	0.696	0.667	184.667	-695.000	8.154	45,284
SIZE	13.813	13.741	20.159	5.740	1.839	64,335
BOOK-TO-MARKET	2.343	0.527	13731.650	0.000	92.630	63,848
RETURN-ON-ASSETS	-0.001	0.009	0.909	-6.516	0.072	64,496
LEVERAGE	0.508	0.510	6.722	0.002	0.240	64,532
VOLATILITY	0.028	0.024	0.356	0.001	0.018	64,371
COVERAGE	3.121	3.434	5.187	0.000	1.135	65,009
CAR(-1,1)	0.001	0.000	6.260	-1.014	0.098	64,675
CAR(-60,-2)	-0.007	-0.010	2.512	-2.032	0.198	64,676

This table provides descriptive statistics (mean, median, maximum, minimum, standard deviation, and number of observations). $BUY AMOUNT represents the dollar amount of insider purchase transactions during the 30 calendar days following a conference call (t=1 to t=30). $SELL AMOUNT is the dollar amount of insider sell transactions during the same period. BUY AMOUNT and SELL AMOUNT are the log-transforms of $BUY AMOUNT and $SELL AMOUNT, respectively, for the full sample of firm-quarter observations. NET AMOUNT is equal to the log transform of one plus the absolute value of net purchases (buy dollar amount minus sell dollar amount), with the sign of net purchases added back. INTRO TONE represents the proportion of words in the introductory section of the call that are found on the negative word list of Loughran and McDonald (2011). MANAGER Q&A TONE and ANALYST Q&A TONE are calculated in like manner only for the managerial statements made during the question and answer portion of each conference call and the words spoken by analysts, respectively. COUNT is the number of words, in thousands, for a given conference call. The prefixes INTRO, MANAGER, and ANALYST indicate word counts, in thousands, for the specific portion of the conference calls. SURPRISE is the earnings surprise calculated as {[EPS(qtr) – EPS(qtr-4)]/Stock Price(end of qtr-4)}. UNEXPECTED EARNINGS is standardized unexpected earnings, calculate as the difference between actual earnings and the most recent consensus analyst forecast, then scaled by the standard deviation of analyst estimates for the same period. SIZE is the log of firm market capitalization in thousands from the previous quarter. BOOK-TO-MARKET is the ratio of book-to-market equity as of the end of the previous quarter. RETURN-ON-ASSETS represents return on assets, calculated as net income divided by total assets. LEVERAGE is the ratio of total liabilities to total assets. VOLATILITY is calculated as the standard deviation of daily returns for the ninety trading-days ending ten days prior to the conference call. COVERAGE is the log of the number of analysts which cover a given firm. CAR(-1,1) is the 3-trading-day cumulative abnormal return, where day 0 is the conference call date, where the abnormal returns are estimated using size-adjusted returns calculated as $AR_{j,t} = R_{j,t} - R_{p,t}$, where the abnormal return for firm *j* on day *t* is the difference between the return for firm *j* on day *t* and the mean return on day *t* for all firms in the same size decile as firm *j*. CAR(-60,-2) is calculated in the same manner as CAR(-1,1) only it is cumulated from trading-days -60 through -2.

Table 2
Correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) BUY AMOUNT	1.00									
(2) SELL AMOUNT	-0.05	1.00								
(3) NET AMOUNT	0.46	-0.91	1.00							
(4) INTRO TONE	0.04	-0.08	0.09	1.00						
(5) MANAGER Q&A TONE	0.03	-0.05	0.06	0.43	1.00					
(6) ANALYST Q&A TONE	0.03	-0.05	0.06	0.37	0.40	1.00				
(7) INTRO COUNT	0.02	0.01	0.00	0.04	-0.01	0.03	1.00			
(8) MANAGER COUNT	-0.01	0.04	-0.04	-0.01	0.03	0.02	0.17	1.00		
(9) ANALYST COUNT	-0.02	0.05	-0.05	0.00	0.03	0.04	0.01	0.59	1.00	
(10) SURPRISE	-0.01	0.00	-0.01	0.01	0.00	-0.01	0.01	0.00	0.00	1.00
(11) UNEXPECTED EARNINGS	-0.02	0.03	-0.04	-0.04	-0.02	-0.03	0.02	0.02	0.02	0.03
(12) SIZE	-0.06	0.08	-0.09	-0.02	0.01	0.06	0.21	0.27	0.35	0.00
(13) BOOK-TO-MARKET	0.00	-0.06	0.05	0.09	0.07	0.07	-0.01	-0.06	-0.04	0.00
(14) RETURN-ON-ASSETS	-0.04	0.07	-0.08	-0.11	-0.03	-0.03	0.03	0.07	0.10	0.07
(15) LEVERAGE	0.02	-0.06	0.07	0.21	0.15	0.15	0.08	0.02	0.05	0.00
(16) VOLATILITY	0.06	-0.07	0.09	0.16	0.08	0.07	0.01	-0.05	-0.07	-0.01
(17) COVERAGE	-0.01	0.04	-0.04	0.01	0.02	0.02	-0.06	0.51	0.82	0.00
(18) CAR(-1,1)	-0.07	0.08	-0.10	-0.08	-0.06	-0.10	-0.02	-0.03	-0.03	0.01
(19) CAR(-60,-2)	-0.06	0.07	-0.08	-0.07	-0.06	-0.09	-0.02	-0.04	-0.03	0.02

	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
(11) UNEXPECTED EARNINGS	1.00								
(12) SIZE	0.06	1.00							
(13) BOOK-TO-MARKET	-0.04	-0.13	1.00						
(14) RETURN-ON-ASSETS	0.19	0.24	-0.03	1.00					
(15) LEVERAGE	-0.03	0.21	0.06	-0.07	1.00				
(16) VOLATILITY	-0.07	-0.38	0.09	-0.25	-0.05	1.00			
(17) COVERAGE	0.02	0.22	-0.06	0.09	0.06	-0.05	1.00		
(18) CAR(-1,1)	0.05	-0.02	0.01	0.07	-0.01	0.01	-0.01	1.00	
(19) CAR(-60,-2)	0.03	-0.08	0.03	0.04	-0.03	0.09	-0.02	-0.02	1.00

This table provides unconditional correlations for the full sample firm-quarter observations. BUY AMOUNT is the log transform of the dollar amount of shares purchased by insiders during the 30 calendar days following a conference call. SELL AMOUNT is the log transform of the dollar amount of shares sold by insiders during the same period. NET AMOUNT is equal to the log transform of one plus the absolute value of net purchases (buy dollar amount minus sell dollar amount), with the sign of net purchases added back. INTRO TONE represents the proportion of words in the introductory section of the call that are found on the negative word list of Loughran and McDonald (2011). MANAGER Q&A TONE and ANALYST Q&A TONE are calculated in like manner only for the managerial statements made during the question and answer portion of each conference call and the words spoken by analysts, respectively. COUNT is the number of words, in thousands, for a given conference call. The prefixes INTRO, MANAGER,

and ANALYST indicate word counts, in thousands, for the specific portion of the conference calls. SURPRISE is the earnings surprise calculated as {[EPS(qtr) – EPS(qtr-4)]/Stock Price(end of qtr-4)}. UNEXPECTED EARNINGS is standardized unexpected earnings, calculate as the difference between actual earnings and the most recent consensus analyst forecast, then scaled by the standard deviation of analyst estimates for the same period. SIZE is the log of firm market capitalization in thousands from the previous quarter. BOOK-TO-MARKET is the ratio of book-to-market equity as of the end of the previous quarter. RETURN-ON-ASSETS represents return on assets, calculated as net income divided by total assets. LEVERAGE is the ratio of total liabilities to total assets. VOLATILITY is calculated as the standard deviation of daily returns for the ninety trading-days ending ten days prior to the conference call. COVERAGE is the log of the number of analysts which cover a given firm. CAR(-1,1) is the 3-trading-day cumulative abnormal return, where day 0 is the conference call date, where the abnormal returns are estimated using size-adjusted returns calculated as $AR_{j,t} = R_{j,t} - R_{p,t}$, where the abnormal return for firm *j* on day *t* is the difference between the return for firm *j* on day *t* and the mean return on day *t* for all firms in the same size decile as firm *j*. CAR(-60,-2) is calculated in the same manner as CAR(-1,1) only it is cumulated from trading-days -60 through -2.

Table 3

Portfolio Sorts, Insider Trading Amounts by Call Tones

Panel A: INTRO TONE	**BUY AMOUNT**	**SELL AMOUNT**	**NET AMOUNT**
Low	0.28	1.59	-1.31
N	21,402	21,402	21,402
Med	0.38	1.17	-0.80
N	21,402	21,402	21,402
High	0.44	0.78	-0.34
N	21,401	21,401	21,401
High – Low	0.16***	-0.81***	0.97***
t-statistic	(8.12)	(-21.34)	(22.29)
Panel B: MANAGER Q&A TONE			
Low	0.32	1.38	-1.06
N	19,956	19,956	19,956
Med	0.37	1.28	-0.92
N	19,955	19,955	19,955
High	0.41	0.91	-0.50
N	19,955	19,955	19,955
High – Low	0.09***	-0.47***	0.56***
t-statistic	(4.50)	(-12.14)	(12.63)
Panel C: ANALYST Q&A TONE			
Low	0.32	1.41	-1.09
N	18,865	18,865	18,865
Med	0.34	1.30	-0.97
N	18,865	18,865	18,865
High	0.43	0.93	-0.50
N	18,865	18,865	18,865
High – Low	0.11***	-0.48***	0.59***
t-statistic	(5.03)	(-12.05)	(12.75)

***p<0.01, **p<0.05, *p<0.10

This table presents insider trading amounts when sorted into tercile portfolios by INTRO TONE (Panel A), MANAGER Q&A TONE (Panel B), and ANALYST Q&A TONE (Panel C). INTRO TONE represents the proportion of words in the introductory section of the call that are found on the negative word list of Loughran and McDonald (2011). MANAGER Q&A TONE and ANALYST Q&A TONE are calculated in like manner only for the managerial statements made during the question and answer portion of each conference call and the words spoken by analysts, respectively. BUY AMOUNT is the log transform of the dollar amount of shares purchased by insiders during the 30 calendar days following a conference call. SELL AMOUNT is the log transform of the dollar amount of shares sold by insiders during the same period. NET AMOUNT is equal to the log transform of one plus the absolute value

of net purchases (buy dollar amount minus sell dollar amount), with the sign of net purchases added back. The t-statistics are in parentheses.

Table 4
Multivariate Regressions, Insider Trading Measures on Decomposed Call Tone and Controls

	Seasonal Random Walk Model			Analyst Forecast Model		
	BUY AMOUNT	**SELL AMOUNT**	**NET AMOUNT**	**BUY AMOUNT**	**SELL AMOUNT**	**NET AMOUNT**
INTRO TONE	1.48	-19.35***	20.67***	1.44	-18.98***	20.40***
	(0.69)	(-4.91)	(4.47)	(0.58)	(-3.88)	(3.58)
MANAGER Q&A TONE	3.22	-8.09*	11.39**	5.00*	-2.38	7.52
	(1.55)	(-1.88)	(2.40)	(1.83)	(-0.48)	(1.29)
ANALYST Q&A TONE	2.62	-8.90***	11.64***	2.92	-7.77*	10.72**
	(1.23)	(-2.80)	(2.98)	(1.04)	(-1.82)	(1.99)
INTRO COUNT	0.05***	0.04*	0.01	0.04***	0.02	0.02
	(4.40)	(1.81)	(0.18)	(3.24)	(0.84)	(0.46)
MANAGER COUNT	0.00	0.03	-0.03	-0.00	0.03	-0.03
	(0.01)	(0.90)	(-0.81)	(-0.34)	(0.72)	(-0.76)
ANALYST COUNT	0.02	0.09	-0.07	0.03	0.09	-0.05
	(0.68)	(1.02)	(-0.69)	(0.79)	(0.76)	(-0.44)
SURPRISE	0.10	-0.66***	0.76**			
	(0.39)	(-3.35)	(2.41)			
UNEXPECTED EARNINGS				0.00	0.02**	-0.02**
				(0.04)	(2.47)	(-2.29)
SIZE	-0.10***	0.15***	-0.24***	-0.09***	0.14***	-0.23***
	(-6.93)	(5.04)	(-7.49)	(-5.69)	(3.82)	(-5.82)
BOOK-TO-MARKET	-0.03***	-0.09***	0.07***	-0.01	-0.22***	0.21***
	(-6.96)	(-10.72)	(6.28)	(-1.54)	(-5.87)	(5.10)
RETURN-ON-ASSETS	-0.30	3.20***	-3.51***	-0.18	2.31***	-2.49***
	(-1.07)	(5.73)	(-5.19)	(-0.53)	(3.51)	(-3.17)
LEVERAGE	0.27***	-1.03***	1.31***	0.26***	-1.14***	1.41***
	(3.46)	(-6.16)	(7.11)	(3.40)	(-5.72)	(6.63)
VOLATILITY	4.00**	-7.41***	11.46***	3.83*	-8.89***	12.74***
	(2.39)	(-3.63)	(3.98)	(1.89)	(-3.53)	(3.55)
COVERAGE	-0.03	0.11	-0.13	-0.03	0.11	-0.14
	(-0.85)	(1.36)	(-1.52)	(-0.75)	(1.03)	(-1.19)
CAR(-1,1)	-1.63***	3.77***	-5.41***	-1.84***	4.30***	-6.14***
	(-8.35)	(8.06)	(-11.75)	(-8.84)	(8.32)	(-12.27)
CAR(-60,-2)	-0.82***	1.58***	-2.39***	-0.83***	1.93***	-2.75***
	(-7.98)	(9.84)	(-13.51)	(-6.54)	(9.48)	(-13.30)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Constant	1.17***	-0.55	1.71***	1.05***	-0.49	1.54**
	(5.29)	(-1.29)	(3.46)	(3.77)	(-0.87)	(2.36)
Observations	51,887	51,887	51,887	38,448	38,448	38,448
R-squared	0.02	0.04	0.05	0.02	0.04	0.05

***p<0.01, **p<0.05, *p<0.10

This table provides results for cross-sectional regressions of insider trading variables regressed on decomposed conference call tone measures and controls. Columns 1 – 3 use the seasonal random walk model for the earnings surprise. Columns 4 – 6 substitutes an analyst forecast model for unexpected earnings. BUY AMOUNT is the log transform of the dollar amount of shares purchased by insiders during the 30 calendar days following a conference call. SELL AMOUNT is the log transform of the dollar amount of shares sold by insiders during the same period. NET AMOUNT is equal to the log transform of one plus the absolute value of net purchases (buy dollar amount minus sell dollar amount), with the sign of net purchases added back. INTRO TONE represents the proportion of

words in the introductory section of the call that are found on the negative word list of Loughran and McDonald (2011). MANAGER Q&A TONE and ANALYST Q&A TONE are calculated in like manner only for the managerial statements made during the question and answer portion of each conference call and the words spoken by analysts, respectively. COUNT is the number of words, in thousands, for a given conference call. The prefixes INTRO, MANAGER, and ANALYST indicate word counts, in thousands, for the specific portion of the conference calls as described above. SURPRISE is the earnings surprise calculated as {[EPS(qtr) – EPS(qtr-4)]/Stock Price(end of qtr-4)}. UNEXPECTED EARNINGS is standardized unexpected earnings, calculate as the difference between actual earnings and the most recent consensus analyst forecast, then scaled by the standard deviation of analyst estimates for the same period. SIZE is the log of firm market capitalization in thousands from the previous quarter. BOOK-TO-MARKET is the ratio of book-to-market equity as of the end of the previous quarter. RETURN-ON-ASSETS represents return on assets, calculated as net income divided by total assets. LEVERAGE is the ratio of total liabilities to total assets. VOLATILITY is calculated as the standard deviation of daily returns for the ninety trading-days ending ten days prior to the conference call. COVERAGE is the log of the number of analysts which cover a given firm. CAR(-1,1) is the 3-trading-day cumulative abnormal return, where day 0 is the conference call date, where the abnormal returns are estimated using size-adjusted returns calculated as $AR_{j,t} = R_{j,t} - R_{p,t}$, where the abnormal return for firm *j* on day *t* is the difference between the return for firm *j* on day *t* and the mean return on day *t* for all firms in the same size decile as firm *j*. CAR(-60,-2) is calculated in the same manner as CAR(-1,1) only it is cumulated from trading-days -60 through -2. All variables which are not in log transform have been Winsorized at the 1% level. Year Dummies denotes that indicator variables for each year are included in the specification. Standard errors are adjusted for heteroscedasticity following White (1980) and for clustering by firm and quarter following Petersen (2009). The t-statistics are in parentheses.

Table 5

Multivariate Regressions, Insider Trading Measures on Abnormal Tone and Controls

Panel A	BUY AMOUNT	SELL AMOUNT	NET AMOUNT
INTRO ABTONE	0.41	-12.97***	13.33**
	(0.15)	(-2.70)	(2.45)
MANAGER Q&A ABTONE	2.13	-5.65	7.86
	(0.73)	(-1.37)	(1.51)
ANALYST Q&A ABTONE	-0.33	-4.62	4.43
	(-0.13)	(-1.32)	(0.92)
Controls	Yes	Yes	Yes
Observations	37,608	37,608	37,608
R-squared	0.02	0.04	0.05
Panel B			
Δ INTRO TONE	3.16*	-0.83	4.03
	(1.73)	(-0.23)	(0.86)
Δ MANAGER Q&A TONE	3.63**	-2.98	6.60**
	(2.18)	(-1.03)	(2.16)
Δ ANALYST Q&A TONE	2.45*	1.38	1.01
	(1.74)	(0.57)	(0.36)
Controls	Yes	Yes	Yes
Observations	33,878	33,878	33,878
R-squared	0.02	0.04	0.05

***p<0.01, **p<0.05, *p<0.10

This table provides results for regressions of insider trading variables on measures of cross-sectional abnormal call tone (Panel A), measures of firm-specific abnormal call tone (Panel B), and the same controls as in Table 4, Columns 4 - 6. In Panel A, ABTONE represents the residuals from a panel regression of individual TONE variables on a set of tone determinants and controls for firm- and quarter-effects, where TONE represents the proportion of words appearing on the Loughran and McDonald (2011) negative word list. The variable prefixes INTRO, MANAGER Q&A, and ANALYST Q&A indicate that the referenced tone measures are for the introductory managerial statement, the managerial statements made during the question and answer portion of each conference call, and the words spoken by analysts, respectively. In Panel B, Δ indicates that the tone measure is the current quarter TONE minus the previous quarter TONE. BUY AMOUNT is the log transform of the dollar amount of shares purchased by insiders during the 30 calendar days following a conference call. SELL AMOUNT is the log transform of the dollar amount of shares sold by insiders during the same period. NET AMOUNT is equal to the log transform of one plus the absolute value of net purchases (buy dollar amount minus sell dollar amount), with the sign of net purchases added back. All variables which are not in log transform have been Winsorized at the 1% level. Standard errors are adjusted for heteroscedasticity following White (1980) and for clustering by firm and quarter following Petersen (2009). The t-statistics are in parentheses.

Table 6

Portfolio Sorts, Cumulative Abnormal Returns by Call Tones

Panel A: INTRO TONE		CAR(1,5)	CAR(1,10)	CAR(1,20)
	Low	0.22	0.20	0.18
	N	21,292	21,292	21,292
	Med	-0.35	-0.30	-0.30
	N	21,300	21,300	21,300
	High	-0.64	-0.65	-0.77
	N	21,282	21,282	21,282
	High – Low	-0.86***	-0.85***	-0.95***
	t-statistic	(-10.19)	(-8.35)	(-7.51)
Panel B: MANAGER Q&A TONE				
	Low	-0.04	0.00	0.06
	N	19,870	19,870	19,870
	Med	-0.21	-0.21	-0.20
	N	19,856	19,856	19,856
	High	-0.49	-0.53	-0.71
	N	19,839	19,839	19,839
	High – Low	-0.45***	-0.52***	-0.78***
	t-statistic	(-5.19)	(-4.92)	(-5.84)
Panel C: ANALYST Q&A TONE				
	Low	0.09	0.16	0.26
	N	18,769	18,769	18,769
	Med	-0.13	-0.21	-0.33
	N	18,773	18,773	18,773
	High	-0.65	-0.68	-0.79
	N	18,761	18,761	18,761
	High – Low	-0.73***	-0.84***	-1.05***
	t-statistic	(-8.22)	(-7.78)	(-7.76)

***p<0.01, **p<0.05, *p<0.10

This table presents cumulative abnormal returns when sorted into tercile portfolios by INTRO TONE (Panel A), MANAGER Q&A TONE (Panel B), and ANALYST Q&A TONE (Panel C). INTRO TONE represents the proportion of words in the introductory section of the call that are found on the negative word list of Loughran and McDonald (2011). MANAGER Q&A TONE and ANALYST Q&A TONE are calculated in like manner only for the managerial statements made during the question and answer portion of each conference call and the words spoken by analysts, respectively. CAR(1,5) is the 5-trading-day cumulative abnormal return, where day 1 is the trading-day immediately following the conference call date, and abnormal returns are estimated using size-adjusted returns calculated as $AR_{j,t} = R_{j,t} - R_{p,t}$, where the abnormal return for firm *j* on day *t* is the difference between the return for firm *j* on day *t* and the mean return on day *t* for all firms in the same size decile as firm *j*. CAR(1,10) and CAR(1,20) are calculated in

the same manner as CAR(1,5) only they are accumulated through trading-days 10 and 20, respectively. For ease of exposition in this table, CARs are shown in percent. The t-statistics are in parentheses.

Table 7

Multivariate Regressions, Insider Trading Measures on Tone Differences and Controls

Panel A	BUY AMOUNT	SELL AMOUNT	NET AMOUNT
Q&A TONE			
- INTRO TONE	0.39	14.10***	-13.65***
	(0.18)	(3.23)	(-2.66)
Controls	Yes	Yes	Yes
Observations	38,448	38,448	38,448
R-squared	0.02	0.04	0.05
Panel B			
ANALYST Q&A TONE			
- INTRO TONE	0.22	8.97**	-8.75**
	(0.12)	(2.53)	(-2.18)
Controls	Yes	Yes	Yes
Observations	39,424	39,424	39,424
R-squared	0.02	0.04	0.05
Panel C			
MANAGER Q&A TONE			
- INTRO TONE	0.24	12.43***	-12.14***
	(0.12)	(3.42)	(-2.71)
Controls	Yes	Yes	Yes
Observations	41,446	41,446	41,446
R-squared	0.02	0.04	0.05
Panel D			
ANALYST Q&A TONE			
- MANAGER Q&A TONE	-0.46	-3.60	3.10
	(-0.21)	(-0.94)	(0.65)
Controls	Yes	Yes	Yes
Observations	38,448	38,448	38,448
R-squared	0.02	0.04	0.05

***p<0.01, **p<0.05, *p<0.10

This table provides results for cross-sectional regressions of insider trading variables regressed on call tone differences and the same controls as in Table 4, Columns 4 – 6. We examine insider trading as it relates to the call-specific differences between Q&A TONE and INTRO TONE (Panel A), the call-specific differences between ANALYST Q&A TONE and INTRO TONE (Panel B), MANAGER Q&A TONE and INTRO TONE (Panel C), and the call-specific differences between ANALYST Q&A TONE and MANAGER Q&A TONE (Panel D); where INTRO TONE represents the proportion of words in the introductory section of the call that are found on the negative word list of Loughran and McDonald (2011) and Q&A TONE, MANAGER Q&A TONE, and ANALYST Q&A TONE are calculated in like manner only for the question and answer session, the managerial statements made during the question and answer portion of each conference call, and the words spoken by analysts, respectively. BUY AMOUNT is the log transform of the dollar amount of shares purchased by insiders during the 30 calendar days following a conference call. SELL AMOUNT is the log transform of the dollar amount of shares sold by insiders during the same period. NET AMOUNT is equal to the log transform of one plus the absolute value of net purchases (buy dollar amount minus sell dollar amount), with the sign of net purchases added back. Controls include differences in the COUNT variables that correspond to the respective tone variables used in the tone difference calculations. All other controls are as defined in Table 4. All variables which are not in log transform have been Winsorized at the 1% level. Standard errors are adjusted for heteroscedasticity following White (1980) and for clustering by firm and quarter following Petersen (2009). The t-statistics are in parentheses.