

Firm-specific risk, managerial certainty and optimism

Firm-specific risk

Protecting value during post-earnings announcement conference calls

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Vivien E. Jancenelle, Susan F. Storrud-Barnes, Anthony L. Iaquinto
and Dominic Buccieri

Cleveland State University, Cleveland, Ohio, USA

Received 22 November 2015

Revised 19 January 2016

25 February 2016

Accepted 12 March 2016

Abstract

Purpose – The purpose of this paper is to focus on investor reactions to unanticipated changes in income, and whether those reactions can be mitigated by managerial discussion. The authors investigate how top-management team certainty and optimism during post-earnings announcement conference calls can serve as corrective actions and add back firm value in times of unexpected changes in firm-specific risk.

Design/methodology/approach – The research question is tested empirically in the context of large, publicly traded, US firms' quarterly earnings announcements, and their subsequent post-earnings announcement conference calls. The authors use the advanced content analysis software DICTION to measure the levels of managerial certainty and optimism displayed during post-earnings announcement conference calls, and event-study methodology to measure investors' reactions.

Findings – Results indicate that earnings surprises are negatively associated with firm value, but that this relationship is mitigated positively by displays of managerial certainty and optimism during post-earnings announcement conference calls.

Originality/value – This work uses an innovative research design to study top-management team rhetoric in post-earnings announcement conference calls, and how specific discussions mitigate investors' negative reactions to increases in firm-specific risk. The study highlights the importance of top-management team certainty and optimism for value creation in times of change in firm-specific risk, and the importance of rhetoric as a tool for corrective action.

Keywords Content analysis, Optimism, Firm-specific risk, Certainty, Earnings conference calls, Top-management teams

Paper type Research paper

Introduction

Years ago, publicly traded corporations relied on press releases and individual phone calls to communicate with investors after quarterly earnings announcements. Today, post-earnings announcement conference calls have become de rigueur, especially among the internet investment press which provides free transcripts (e.g. Seeking Alpha) and on-demand conference call replay platforms (e.g. EarningsCast).

Post-earnings announcement conference calls are typically conducted by the top-management team and are designed to convey information about short-term and long-term future earnings and risks (Kimbrough, 2005; Bushee *et al.*, 2003; Larcker and Zakolyukina, 2012). This study examines the effects of post-earnings announcement conference calls on subsequent performance and the moderating effects of the top-management team's certainty and optimism on investors' perception of a company's earnings-per-share (EPS) targets and perceived increases in that firm's risk.

Prior research in strategic management has conceptualized firm-specific risk as income stream uncertainty, and has viewed it as a factor that lies at the heart of



Journal of Strategy and Management

Vol. 9 No. 3, 2016

pp. 383-402

© Emerald Group Publishing Limited

1755-425X

DOI 10.1108/J SMA-11-2015-0093

competitive strategy (Bettis, 1983). This view of firm-specific risk differs greatly from that of the finance literature which favors the capital-asset pricing model (CAPM). In short, finance literature has assumed that the reduction of firm-specific risk should not be a goal of management (Aaker and Jacobson, 1987), because this type of risk can be managed more efficiently by investor portfolio diversification (Sharpe, 1964).

However, within the strategic management literature, firms with low levels of nonsystematic risk typically have lower costs when raising capital and overall higher equity prices (Copeland and Weston, 1991). These same companies also tend to have lower risks of bankruptcy (Amihud and Lev, 1981). Therefore, investors in firms with steady, smooth, and predictable income flows should not welcome occurrences of earnings surprises as they represent increases in firm-specific risk (Chatterjee *et al.*, 1999). Further, Chatterjee *et al.* (1999) suggested that the market's aversion to unanticipated changes in a firm's earnings can be explained by information asymmetries between investors and management that inhibit an investors' ability to properly forecast a firm's earnings. In this study, we argue that top-management teams can reduce the amount of information asymmetry between investors and the firm through displays of managerial certainty and optimism. More specifically, we posit that investors will perceive top-management team certainty and optimism as providing useful incremental information (Merkl-Davies and Brennan, 2007) that can add back firm value.

Our contributions are threefold. First, our study adds to the strategic management literature view of firm-specific risk (Chatterjee *et al.*, 1999) by further confirming that investors have a negative reaction to unanticipated changes in earnings. Second, our study finds that top-management team narratives during conference calls can provide valuable incremental information to market participants that can mitigate investors' reactions to changes in firm-specific risk and add back firm value. More specifically, we measured the moderating effects of two constructs relevant to managerial convictions about a firm's strategic position and direction: certainty and optimism. Our findings suggest that expressing certainty and optimism during management conference calls provide valuable information to the market which mitigates investment behaviors in the face of increases in firm-specific risk. Lastly, we relied on the advanced computational linguistics software DICTION to measure our constructs, a valid tool for content analysis research in strategic management (Short and Palmer, 2008). This represents an improvement over more traditional text-analysis methods based solely on word counts (the advantages of DICTION are further explained in our methods section).

We first provide a review of the literature on firm-specific risk, and how it impacts managers and investors. We then explain why managerial certainty, that is the level to which managers feel confident in their assessment of the environment and strategic actions of the firm (Milliken, 1987), and managerial optimism, that is the tendency to believe that the best outcomes are possible in the face of uncertainty (Peale, 1956), can mitigate investors' perceptions about the firm's situation and thus provide them with the opportunity to adjust their initial reactions to increases in income stream uncertainty. We then develop three hypotheses from our review of the literature and test those using quarterly earnings releases and their subsequent post-earnings announcement conference calls. We use event-study methodology to measure market reactions (i.e. abnormal returns) within the earnings announcement window, and content analysis using an advanced computer-assisted-text-analysis software to measure levels of managerial certainty and optimism displayed during post-earnings announcement conference calls. We then present our results and conclude this paper with a discussion of our findings, their implications, and directions for future research.

Background and hypotheses

Risk

The CAPM divides risk into two components. On one hand, systematic risk or market risk is represented by the variation of a stock return associated with economy-wide turbulence; on the other hand, nonsystematic risk, also called firm-specific risk, is represented by the variation of a firm's stock price that is not associated with economy-wide turbulence (Sharpe, 1964) but, instead is dependent directly on the firm's capabilities. The CAPM assumes that investors do not pay attention to firm-specific risk, as this risk typically can be eliminated efficiently by investor portfolio diversification. The CAPM thus posits that investors only receive compensation for systematic risk, not nonsystematic risk.

Scholars in strategic management have long pointed out the imperfections of the CAPM. Issues with this view of risk exist both on conceptual and empirical grounds. For example, Aaker and Jacobson (1987) concluded that the CAPM implicitly assumes that the reduction of nonsystematic risk should not be a goal of management. Because managers are agents of investors, they should not diversify or try to reduce the firm's risk, as this action can be done more efficiently by investors themselves. The only scenario in which the CAPM encourages diversification by management is if this diversification has synergistic effects with current operations. Scholars like Chatterjee *et al.* (1999), Merton (1987), and Roll and Ross (1994) have also questioned whether investors are as diversified as assumed by the CAPM, and whether the creation of a fully diversified portfolio is even possible. Additionally, studies have shown that investors do care about nonsystematic risk and look beyond a stock's beta and its association with the market (Lakonishok and Shapiro, 1986; Merton, 1987; Aaker and Jacobson, 1987).

As already intimated, asking top-management teams not to attach importance to nonsystematic risk is contrary to strategic management research (Bettis, 1983). High levels of nonsystematic risk for a firm often leads to career risks for top-management teams (Aaker and Jacobson, 1987). Managers thus have an incentive to take action to try to reduce nonsystematic risk because not acting can increase the firm's probability of bankruptcy, which will have a major negative impact on managers' careers and job security (Amihud and Lev, 1981). Investors that do not encourage managers to reduce firm-specific risk will see the firm's ability to recruit highly talented managers reduced. It is unrealistic to assume that managers are merely agents for investors as they actually try to reconcile the interests of all stakeholders, including themselves and their careers (Hackett, 1985). The strategic management perspective on risk is that managing firm-specific risk lies at the heart of competitive strategy (Bettis, 1983). Managing nonsystematic risk creates value for investors in ways beyond simply attracting better managerial talents. Thus, scholars like Amit and Wernerfelt (1990) believe the management of firm-specific risk to be central to organizational evolution, and one of the critical predictors of a company's survival, growth, decline, and death, making it therefore beneficial to investors.

Firm-specific risk and managerial actions

We draw on Palmer and Wiseman's (1999) seminal work for the definition of nonsystematic risk: firm-specific risk reflects income stream uncertainty. Income stream uncertainty can be influenced by environmental characteristics, as well as managerial actions (and the risk associated with top-management teams' actions). As noted previously, variation in income can have a negative impact on the firm as a whole (Amit and Wernerfelt, 1990), as well as on the firms' managerial opportunities (Miller and

Bromiley, 1990). Firms that are perceived as risky incur higher costs when raising capital, as well as reduced prices for new-equity issues (Copeland and Weston, 1991). Higher capital costs create a competitive disadvantage when competitors have access to lower costs of capital. Further, it has been argued that stability in income favorably affects the relationship a firm has with all its stakeholders (Ronen and Sadan, 1981; Titman, 1984).

Managers can draw on a battery of tactics to reduce income stream volatility. For example, assuming the availability of cash to fund it, hedging is a commonly used financial tactic that is rewarded by the market with a stock price premium (Chatterjee *et al.*, 1999). Hedging can help reduce a firm's operational risk by entering into contingent commitments that reduce the effects of changes in the firm's future input costs, such as fluctuations in raw material and commodity prices, currencies, interest rates, and so forth. Real options also provide firms with a means to reduce earnings surprises by choosing appropriately when to delay or commit resources to a project (Chatterjee *et al.*, 1999). For example, a firm may prefer to exercise a costly real option during a favorable, above-expectations earnings quarter in order to display smooth, unchanged earnings. Other more long-term actions can be taken by managers to reduce income stream uncertainty, like investments in unique resources (Chatterjee *et al.*, 1999) or diversification to help reduce the firm's exposure to a turbulent environment (Amit and Livnat, 1988). Finally, accounting tactics can also have an impact on reported earnings. Ghosh and Olsen (2009), for example, noted that managers use discretionary accruals to influence reported earnings for a given period, while Jiang *et al.* (2010) noted that managers may be able to shift some earnings, costs, and write-downs between periods in order to reduce earnings variability.

Earnings announcements and surprises

Scholars in the earnings management literature (e.g. Jiang *et al.*, 2010; Healy and Palepu, 1995) consider that information asymmetries between investors and management inhibit an investor's ability to forecast a firm's earnings properly. Similarly, Chatterjee *et al.* (1999) observed that information asymmetries between management and investors lead to earnings surprises, which, in the eyes of the financial community, increases firm-specific risk. For a given amount of earnings (i.e. returns), the increased risk leads to a stock price penalty. Conversely, companies that establish good communications with investors and that help them to forecast earnings accurately by eliminating information asymmetries benefit from lower risk premiums and higher firm value (Smith *et al.*, 1994). Drawing on this conceptual and empirical work done on earnings management and firm-specific risk, we develop our first hypothesis.

One of the key statistics publicly traded firms release is the quarterly EPS figure, which is forecasted by analysts and highly anticipated by the market (O'Brien, 1988). Thus, EPS is the single most-quoted ratio on earnings, and its release often triggers an immediate reaction (Horngren, 1974). EPS that vary from consensus estimates by a few pennies can have a large impact on firm value (Skinner and Sloan, 2002). Consistent with this propensity of the market to react to differences between earnings announcements and earnings expectations, we argue that investors will exhibit a short-term negative reaction toward firms with earnings that differ from the forecast. The negative reaction should be apparent through the presence of abnormal returns to firms' stock prices for the days immediately surrounding the earnings announcement. We also argue (per Ajayi and Mehidian, 1994) that the negative abnormal returns will be present after the release of an earnings surprise regardless of whether the surprise is above or below expectations. Investor negative reactions will be the result of an

inability to accurately forecast a firm's earnings, that is indicative of higher firm-specific risk than initially surmised by investors. Conversely, and consistent with market-efficiency logic, firms exhibiting little or no earnings surprises will see little or no effect on abnormal returns (i.e. earnings expectations are already included in the price of stocks). These arguments lead to our first hypothesis:

H1. Earnings surprises are associated with negative abnormal returns.

Post-earnings announcement conference calls

Post-earnings announcement conference calls participants typically include members of the top-management team – the CEO, President, CFO, and the manager of investor relations – along with stock analysts from various investment houses. The goal of these calls is to inform the market about the firm's strategy and tactics and, of course, the past quarter's revenue streams and costs. The usual format is a formal management discussion and a question and answer session with analysts. These post-earnings announcement conference calls provide managers with a unique opportunity to comment not only on the firm's results for the last quarter but also the chance to discuss expectations for future earnings performance (Kimbrough, 2005).

Prior studies have shown that post-earnings announcement conference calls are informative to market participants because they can initiate stock price responses, in addition to those already triggered by the release of earnings figures (Frankel *et al.*, 1999; Bushee *et al.*, 2003). Research has also shown that levels of trading activity and volatility typically increase during and right after post-earnings announcement conference calls (Frankel *et al.*, 1999), suggesting that post-earnings announcement conference calls provide information that leads investors to make a buy or sell decision. Synthesizing the above, we hypothesize that the discourse of the top-management team during a post-earnings announcement conference call will have an influence on the market's reaction to an earnings surprise. Where our first hypothesis stated that investors would react negatively to an unanticipated change in earnings (i.e. increased income uncertainty), we now modify this argument and posit that this negative reaction can be mitigated by the top-management's discussions in a post-earnings announcement conference calls. Specifically, we explain why we believe managerial certainty and optimism can assuage investors' negative reactions to an earnings surprise.

Certainty. Certainty refers to the degree of confidence displayed by a top-management team regarding their analysis of the firm's environment and the firm's future strategic direction (Isabella and Waddock, 1994; Miliken, 1990) – displays of certainty by a top-management team can be interpreted as the result of an analysis of the environment and selection of appropriate strategies and tactics.

Certainty differs from confidence, because certainty refers to a manager's strong belief in his or her analysis of the firm's environment (Isabella and Waddock, 1994; Miliken, 1990), and not the overall personality trait of confidence. Managers displaying higher levels of certainty in their analysis are likely to be perceived as having valuable information not possessed by investors, because they are better informed about the firm's true economic state and opportunities (Chaney and Lewis, 1995). Managerial certainty will therefore be likely to reduce the information asymmetry that exists between managers and investors, because their strong beliefs in the firm's current and future potential will most likely alleviate investors' concerns and therefore reduce information asymmetry.

The assumption behind the certainty construct is that top managers engage in sense making as a result of environmental scanning and meticulous data gathering, and then develop a set of appropriate actions in the light of multiple realities (Daft and Weick, 1984). States of certainty occur when managers believe they understand the major events or trends in an environment, or when they are able to calculate the probabilities of occurrence of an event (Milliken, 1987). Managers exhibiting high levels of certainty have improved decision speed and implement strategic plans better (Isabella and Waddock, 1994). This reflects the fact that individuals in a state of certainty about their assessments and decisions also exhibit resoluteness, inflexibility, and authoritativeness (Hart, 2000). Therefore, top-management team certainty could have an effect on investors' perceptions of firm performance.

Managers who exhibit certainty in post-earnings announcement conference calls may be perceived more favorably by investors because their comments will suggest that they are better informed about the firm's true situation and true potential. Certainty, that is the strong belief a manager has in his or her assessment of the firm's current state and future state, should lead investors to see the firm as bearing less nonsystematic risk (i.e. they will be more confident in the firm's future income streams) than indicated by the occurrence of earnings surprises. In short, displays of managerial certainty may be reassuring and therefore mitigate investors' concerns about an unanticipated change in income. These arguments lead to our third hypothesis:

- H2.* The negative relationship between earnings surprises and negative abnormal returns will be mitigated by managerial displays of certainty during post-earnings announcement conference calls.

Optimism. Optimism refers to the tendency of an individual to believe that the best outcomes are possible in the face of uncertainty (Peale, 1956). Optimists typically emphasize favorable aspects of situations and are confident that good outcomes will occur in the future (Furnham, 1997). As suggested by Heaton (2002), top-management teams should display higher levels of optimism as individuals typically are more optimistic toward outcomes to which they are highly committed. Additionally, CEOs and top-management team members may also have a tendency to be optimistic about their organization, as the firm's success generally is associated with their personal wealth, professional reputation, and employability (Gilson, 1989). Research also suggests that top-management team members are more likely to possess positive views of themselves, a strong confidence in their abilities to control the environment, and a strong positive view of their future (Larwood and Whittaker, 1977).

Optimism is known to be closely related to self-efficacy, that is the belief in one's capacity to be successful in different situations (Gist and Mitchell, 1992). This belief is derived from factors such as experience, possession of information about the task to be accomplished, and people's judgments of their own capacity to achieve performance (Gist and Mitchell, 1992). All of the above leads us to agree with Chemers *et al.* (2000) who concluded that optimism should lead to improved leadership effectiveness. Additionally, previous research suggests that optimistic top managers are more likely to promote their companies' brands, motivate employees and attract new investors (Wong and Zhang, 2014), elements which have a positive influence on the firm.

In the context of a post-earnings announcement conference call following, we argue that displays of optimism by top-management teams will have a positive influence on

firm value. Investors should recognize the benefits associated with managerial optimism for the firm as a whole. In the event of an earnings surprise, investors' presumed negative reaction to an unanticipated change in income stream, and associated perception of increased firm-specific risk, might be reduced by the optimistic discourse of managers about the firm's current and future state. Hence, our third hypothesis:

- H3.* The negative relationship between earnings surprises and negative abnormal returns will be mitigated by managerial displays of optimism during post-earnings announcement conference calls.

Methods

Sample

Our sample draws on firms listed on the Standard and Poor's 500 (S&P 500) and traded on the New York Stock Exchange (NYSE) and the National Association of Securities Dealers Automated Quotations (NASDAQ) during between 2010 and 2014. We adopted a stratified sampling strategy, and identified our sample in the following manner: we gathered the names of firms listed on the S&P 500 and traded on the NYSE or NASDAQ stock exchange from the economic data listed on the Federal Reserve Economic Data database, we sorted our sample by market capitalization and created three stratas of equal size, we randomly selected post-earnings announcement conference calls for the 2010-2014 period such that 134 firms were drawn from strata one, 133 from strata two, and 133 firms from strata three. The total sample identified was composed of 400 post-earnings announcement conference calls. We then obtained from Thomson One data on EPS (necessary for calculating our earnings surprise independent variable) and gathered time series data, industry data, and market capitalization data from the Center of Research in Security Prices. Post-earnings announcement conference call transcripts were retrieved from the Seeking Alpha database, and this is where most of our identified sample attrition came from, as we were able to retrieve only 379 post-earnings announcement conference call transcripts out of the 400 we had identified. Additionally, consistent with the literature on earnings surprises discussed in our literature review, we elected to delete four outliers that exhibited exceptionally high levels of earnings surprises (e.g. some outliers exhibited an earnings surprise of over 300 percent).

Earnings surprises

Past operationalization of the surprise on EPS variable have included both indicator measurements (e.g. Skinner and Sloan, 2002) and continuous measurements (e.g. Balakrishnan *et al.*, 2010; Brown, 1996). For this investigation, we have adopted a continuous computation of our surprise on EPS variable (Krassas, 2008) in order to account for the precise variability of earnings surprises from one firm to another. We collected the reported quarterly EPS (i.e. actual EPS) and the consensus EPS (a composite measure of all analysts' predictions for the quarter) for each firm in our sample. Our independent variable is the difference between the consensus EPS (analysts' prediction) and the reported EPS (actual earnings for the quarter), expressed in the form of a ratio. For example, a surprise of 0.90 means that the firm missed its consensus EPS target by 10 percent, a surprise of 1.00 means that firm reached exactly its consensus EPS (no surprise) and a surprise of 1.1 means that a firm exceeded its consensus EPS by 10 percent.

Content analysis of post-earnings announcement conference calls' discussions

Our two moderating variables were measured with textual analysis. Each post-earnings announcement conference call transcript in our sample was analyzed with a computer-aided content analysis software called DICTION. This software was initially developed to analyze political speech and rhetoric (Hart, 2000), but has since been further developed and used for a variety of research interests, such as the analysis of earnings press releases (Henry, 2008) or the analysis of corporate annual reports (Yuthas *et al.*, 2002; Jancenelle, 2015). Computational linguistic software have also been used to analyze post-earnings announcement conference call transcripts (e.g. Bowen *et al.*, 2002; Larcker and Zakolyukina, 2012).

The DICTION software allows for a more advanced analysis of text than historic text-analysis software packages which relied on user provided word-lists (e.g. Textpack). DICTION has been shown to possess strong empirical validity for content analysis research in strategic management (Short and Palmer, 2008). DICTION uses a series of 31 predefined variables based on dictionaries, representing 10,000 unique search words that were developed from the study of US texts, including business texts such as mission statements, CEO speeches, and annual reports (Hart, 2000). DICTION's predefined dictionary variables contain no duplicate words and are based on linguistic theory and seminal semantic studies (Easton, 1940; Osgood *et al.*, 1957). Each text analyzed with DICTION is given a word-count standardized to 500 words for any of the predefined dictionaries selected by the researcher. Each dictionary variable score includes a minor statistical accommodation for homographs[1] inspired by the early work of Easton (1940) regarding word frequency. The DICTION software also features four calculated variables and five master variables. Calculated variables do not rely on word counts, but are scores based on specific text patterns such as the repetition of words, the ratio of adjectives to verbs, the type-token ratio (Johnson, 1946), and the average number of characters per word. The master variables represent five broad semantic features (certainty, activity, optimism, realism, and commonality) that are based on a combination of both the predefined dictionary variables and the calculated variables. For this content analysis, we elected to use the latest version of this software, DICTION 7.0, to analyze the sample's transcripts with a set of two DICTION master variables based on computations of predefined dictionary variables and calculated variables.

Certainty. Managerial certainty, referring to the degree of confidence displayed by a top-management team is particularly well suited to being measured through content analysis. Semanticists, like Grandage (1991), believe that the choices of words that push language to the extremes are particularly helpful to estimate certainty (on one hand) and uncertainty (on the other hand). Words connoting hesitation, like those contained in DICTION's Ambivalence predefined dictionary (e.g. perhaps, might, vague, suppose) relate to certainty levels below or well below 100 percent, while words contained in dictionaries such as the Tenacity or Leveling predefined dictionary variables (e.g. has, must, completely, unconditional) relate to levels of certainty close to or at 100 percent. DICTION's certainty master variable is defined as language relating to resoluteness, inflexibility, completeness, and authoritativeness (Hart, 2000). The certainty variable used in this study was composed of six extensive predefined dictionaries and two calculated variables (based on specifics of the text pattern). For the certainty variable, word counts of the Tenacity, Leveling, and Collectives predefined dictionaries are first summed with the text's calculated Insistence score. These variables represent the overall level of certainty in the text. Word counts of predefined dictionaries associated

with uncertainty, that is Numerical terms, Ambivalence, Self-Reference, and the calculated Variety score (type-token ratio) are then subtracted from the score previously obtained. This subtraction of words relating to uncertainty from words relating to certainty allows us to capture how certain a text is, as a whole. (The certainty master variable is fully explained in Table AI, with definitions and examples of words included in each of its components.)

Optimism. Content analysis through the use of the DICTION software is innovative because measures of optimism in the past have mostly relied on proxy variables that included CEO option exercises or the voluntary release of management's own earnings forecasts (Otto, 2014). DICTION's optimism master variable relies on a formula composed of six extensive predefined dictionaries. Word counts belonging to the Blame, Hardship and Denial dictionaries are subtracted from word counts belonging to the Praise, Satisfaction, and Inspiration dictionaries, giving a true estimate of the actual level of optimism present in the text (i.e. the software not only measures the number of words typically associated with optimism, but also subtracts the negative, non-optimistic words from the optimism master variable) – see Table I. (The optimism master variable is fully explained in Table AII, with definitions and examples of words included in each of its components.)

Performance

We used the event-study methodology (Fama *et al.*, 1969) as a part of our research design to measure the market reaction to an earnings surprise, and the following post-earnings announcement conference call. A large body of work uses event studies to analyze the impact of corporate announcements on stock price and overall performance (e.g. Patelli and Pedrini, 2013; Henry, 2008), including research on post-earnings announcement conference calls. For this study, we first identified as t_0 the day of the post-earnings announcement conference call (they always occurred on the same day in our sample). We then defined our event window as $t-1$, t_0 and $t+1$, in order to limit confounding events. This is consistent with other studies done using this methodology (e.g. Corrado, 2011; Schimmer, 2012). We then computed the three-day cumulated abnormal return (CAR) corresponding to our event window, which is used in our analysis as the dependent variable. The S&P 500 market data and stock price data for calculating each CAR for the three-day period was calculated using a 200-day return series beginning with day $t-270$ and ending with day $t-71$ and the CAR was calculated by summing each abnormal return for $t-1$, t_0 and $t+1$ (consistent with previous work, such as Schimmer, 2012; Wolff and Reed, 2000).

Master variable	Definition
Certainty	Language indicating resoluteness, inflexibility, and completeness and a tendency to speak <i>ex cathedra</i> Formula (detailed in Table AII): (Tenacity + Leveling + Collectives + Insistence) – (Numerical terms + Ambivalence + Self-Reference + Variety)
Optimism	Language endorsing some person, group, concept or event or highlighting their positive entailments Formula (detailed in Table AI): (Praise + Satisfaction + Inspiration) – (Blame + Hardship + Denial)

Source: Hart (2000)

Table I.
Overview of the optimism and certainty master variables

Explaining in depth the event-study methodology is beyond the scope of this paper, but the reader can obtain a more detailed summary of the methodology and its equations by reading Fama *et al.* (1969) or McWilliams and Siegel (1997, p. 628). Briefly, the event-study methodology consists in calculating what the normal returns for a stock should have been for the event day (through OLS regression of the stock's rate of return against its index rate of return for the estimation window, in our case a 200-day window) and comparing it to the returns obtained on the event day. The difference between the observed return on the event day and the predicted return for the event day constitute an abnormal return.

Control variables

Size. We controlled for size, consistent with previous studies of earnings surprises and event studies (e.g. Kasznik and Lev, 1995; Jancennele, 2015). Size was operationalized with the logarithm of each firm's market capitalization on the day of the post-earnings announcement conference call.

Missed earnings. As highlighted in our theory development section, research suggests that in general, earnings surprises (positive and negative) will not be welcomed by investors as surprises typically are indicative of information asymmetries, which increase firm-specific risk in the eyes of the financial community (Chaney and Lewis, 1995; Healy and Palepu, 1995; Chatterjee *et al.*, 1999). However, some research has shown that this negative surprise-performance relationship is worse when a firm misses its earnings consensus than when a firm exceeds it (e.g. Skinner and Sloan, 2002). Consistent with this empirical observation, we elected to add an additional control dummy variable for firms who missed their earnings (that is, firms with a reported EPS below analysts' consensus predictions).

Industry. Industry has been shown to have an impact on a firm's market performance, and is commonly used as a control variable in event studies (e.g. Pfarrer *et al.*, 2010). Consistent with other event studies (Wolff and Reed, 2000; Jancennele, 2015), we operationalized our industry control variable through the use of dummy variables representing each firm's 1-digit industry SIC code.

Statistical analysis

We tested our hypotheses using multiple regression analysis (OLS). We used the surprise level of each earnings announcement as an independent variable, and computed our interaction terms by multiplying the standardized scores obtained for optimism and certainty with our earnings surprise variable (i.e. surprise \times optimism and surprise \times certainty). Our dependent variable for this study is the CAR of each stock, for the corresponding post-earnings announcement conference call three-day period. The regression analysis was performed using SAS 9.2.

Results

Table II shows descriptive statistics and correlations for the study's variables. As shown, the average cumulative abnormal return for this study was negative (-0.00756; SD = 0.04235) while the firms in our sample experienced on average a positive surprise on earnings of 3.88 percent (1.03888; SD = 0.10797). Our content analysis measures of certainty and optimism, respectively, exhibited a score of 45.76419 (SD = 2.77313) and 53.53856 (SD = 3.06921). Intercorrelation levels between variables generally are low, especially between optimism and certainty. The low -negative correlation between

Variable	Descriptives		Intercorrelations											
	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Size (log of)	23.45642	1.04958	1.00											
2. Industry 1	0.11467	0.31904	0.13*	1.00										
3. Industry 2	0.09067	0.28752	0.39*	-0.11*	1.00									
4. Industry 3	0.16533	0.37198	-0.14**	-0.16**	-0.14**	1.00								
5. Industry 4	0.21600	0.41206	-0.36**	-0.19	-0.17**	-0.23**	1.00							
6. Industry 5	0.04800	0.21405	-0.08	-0.08	-0.07	-0.10***	-0.12*	1.00						
7. Industry 6	0.13333	0.34039	0.26**	-0.14**	-0.12*	-0.17**	-0.21**	-0.09***	1.00					
8. Industry 7	0.20000	0.40053	-0.03	-0.18**	-0.16**	-0.22**	-0.26**	-0.11*	-0.20**	1.00				
9. Missed earnings	0.23467	0.42436	-0.05	0.01	-0.02	0.01	0.06	-0.07	0.00	-0.06	1.00			
10. Surprise	1.03888	0.10797	0.08	-0.05	0.08	0.10*	-0.09***	-0.01	0.01	0.01	-0.62**	1.00		
11. Certainty	45.76419	2.77313	-0.04	0.17**	0.04	0.06	-0.08	0.02	-0.13**	0.01	0.08	-0.07	1.00	
12. Optimism	53.53856	3.06921	0.15**	-0.03	0.12*	0.05	-0.03	0.05	0.05	-0.14**	-0.10***	0.03	-0.30**	1.00
13. CAR 3-day	-0.00756	0.04235	0.09***	-0.01	-0.07	0.03	-0.15*	0.08	0.08	0.09***	-0.19**	0.17**	0.21**	0.04

Notes: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.10$

Table II. Correlation matrix

optimism and certainty is consistent with the fact that DICTION variables are based on mutually exclusive dictionaries (i.e. a word counted in the calculation of the optimism variable cannot and will not be included in the certainty score) and further confirms its empirical validity for content analysis research in strategic management (Short and Palmer, 2008).

Table III presents the results of the OLS regression analysis. Our overall model exhibited strong statistical significance at ($p = 0.001$; $F = 5.20$). The model explained 11.87 percent of the variance in abnormal returns (adjusted $R^2 = 0.1187$). *H1* was confirmed at the 99.9 percent confidence level ($p = 0.001$). The occurrence of an earnings surprise had a negative impact on three-day CAR. *H2*, which tested whether certainty could moderate the relationship between an earnings surprise and abnormal returns, was also significant ($p = 0.001$). As hypothesized, the presence of certainty in a post-earnings announcement conference call mitigated the negative relationship between earnings surprise and abnormal returns – our interaction term (surprise \times certainty) had a positive impact on the three-day CAR. Finally, our third hypothesis, which addressed whether or not optimism had a moderating effect on the relationship between surprise and abnormal returns, was also confirmed. ($p = 0.05$). This interaction term (surprise \times optimism) also had a positive impact on the three-day CAR.

Discussion

The results of our study confirm that investors dislike surprises, per prior research, but our research adds to the discussion because we found that management can add back firm value by reassuring investors during post-earnings announcement conference calls. Specifically, the results for our first hypothesis that earnings surprises, either negative or positive, have a negative effect on stock prices is consistent with the strategic management literature on the penalties associated with firm-specific risk (Copeland and Weston, 1991; Chatterjee *et al.*, 1999; Palmer and Wiseman, 1999; Amit and Wernerfelt, 1990), and with corollary findings in the

Variable	β	SE	<i>t</i>
Intercept	-0.1413	0.0620	-2.28*
<i>Independent variables</i>			
Surprise (<i>H1</i>)	-0.2167	0.0608	-3.57**
Surprise \times certainty (<i>H2</i>)	0.0040	0.0008	5.18**
Surprise \times optimism (<i>H3</i>)	0.0014	0.0007	2.10*
<i>Control variables</i>			
Size (log of)	0.0039	0.0024	1.60
Industry 1	-0.0054	0.0133	-0.40
Industry 2	-0.0176	0.0140	-1.26
Industry 3	0.0025	0.0127	0.20
Industry 4	-0.0046	0.0124	-0.37
Industry 5	0.0150	0.0150	1.00
Industry 6	0.0098	0.0130	0.76
Industry 7	0.0095	0.0125	0.76
Missed earnings	-0.0119	0.0063	-1.90***
Model properties	$R^2 = 0.1469$	Adj $R^2 = 11.87$	F -value = 5.20**

Table III.
OLS regression
results for predicting
abnormal returns

Notes: $n = 375$. * $p < 0.05$; ** $p < 0.001$; *** $p < 0.10$

accounting literature on the relationship between income smoothing and firm value (Trueman and Titman, 1988; Skinner and Sloan, 2002; Ronen and Sadan, 1981). The negative abnormal return adjustment in stock price that occurs with an earnings surprise is explained by investors' aversion to the unexpected and the associated perceptions of increased riskiness, which arise from information asymmetries that exist between management and the market place (Chaney and Lewis, 1995; Healy and Palepu, 1995; Chatterjee *et al.*, 1999).

Our second hypothesis was also confirmed. Managerial certainty, which is the degree of confidence displayed by a top-management team in their analysis of the firm's environment (Isabella and Waddock, 1994; Miliken, 1990), reduced the negative impact of earnings surprises on abnormal returns. Our results suggest that managers displaying higher levels of certainty are likely to be perceived as having valuable information not possessed by investors. While information asymmetry can be a problem if it is linked to earnings surprises, this type of information asymmetry allows managers to be better informed than investors about the firm's true economic state and its opportunities (Chaney and Lewis, 1995). Decisions that stem from this additional information are likely to be viewed favorably by investors, which alleviates some of the investors' concerns about the firm's future earnings stability.

Our third hypothesis, which also was confirmed, was that managerial optimism mitigated the negative impact from earnings surprises. In a review of prior literature, this is a new moderator finding. More managerial optimism is better than less in so far as it helps reduce nervousness and the consequent negative abnormal stock returns. This finding is consistent with extant research of other studies on optimism, which report that optimism improves leadership effectiveness (Chemers *et al.*, 2000), enhances managers' opinions about themselves and their capabilities (Gist and Mitchell, 1992), and pushes senior management to promote their companies, motivate their employees, and attract new investors (Wong and Zhang, 2014). However, using post-earnings announcement conference calls constitutes a new application of optimism.

Limitations and areas for future research

As with all research, this work has limitations. The data supporting our statistical analysis is drawn from firms listed in the S&P 500. Although the data from these firms spans different industries, generalizability of our results may be limited to large, publicly traded, US firms; thus, our results may not be generalizable to smaller or non-US firms. Future research should investigate whether our findings still hold for firms in other countries and for firms of different sizes. Additionally, while DICTION is an advanced content analysis software, that makes statistical adjustments for homographs and uses elements of artificial intelligence to reveal patterns of word usage that may be missed by other forms of content analysis relying solely on word counts (Short and Palmer, 2008), it still has some limitations. For example, like other content analysis software, DICTION is unable to detect broad contextual clues as to why people choose one word rather than another. Future research could adopt other types of content analysis, such as qualitative content analysis or the use of trained raters. There are also limitations associated with the use of the event-study methodology (Fama *et al.*, 1969). A three-day event window does not inform our understanding of the long-term market impact of an earnings surprise and the mitigating effects of the discourse included in a post-earning announcement conference call, but is simply representative of investors' reactions at the time of the earnings surprise's event window ($t-1$, t_0 and $t+1$). Future research could, for example rely on

accounting measures of performance to assess the actual financial long-term impact of top-management team certainty and optimism. Finally, our study only focussed on two moderating constructs: certainty and optimism. Future research may investigate other types of corporate narratives, such as impression management, a common corporate rhetoric behavior that may lead to reporting bias (Merkl-Davies and Brennan, 2011).

Implications for research

We found very little literature on the relationship between managerial optimism, managerial certainty, and perceived risk. Current research mainly has looked at other constructs, such as confidence and overconfidence, risk propensity, or team heterogeneity. The literature on optimism is divided, with some studies highlighting its negative effects on performance (Hmieleski and Baron, 2009; Heaton, 2002) and some studies highlighting its positive effects on performance (Chemers *et al.*, 2000; Medlin and Green, 2009). As explained, we found that optimism had a positive impact on market performance, suggesting that optimism, and optimistic managers create value for the firm.

The literature on managerial certainty is much less extensive. As mentioned earlier, certainty and confidence are related but distinct constructs. Certainty refers to the degree of confidence displayed by a manager in its analysis of the firm's environment (Isabella and Waddock, 1994; Miliken, 1990), and not the overall personality trait of confidence. This work adds to our knowledge of the link between managerial certainty and market performance, suggesting that the market reacts positively to displays of certainty by top-management teams. These results are consistent with Isabella and Waddock's (1994, p. 853) suggestion that more certain management teams are able to "develop better strategies that outperform less effective strategies, because they understand the environment better than competitors and develop strategies that are more effective than those developed by teams with less understanding." Thus, this work adds to a relatively small body of work that has studied the impact of certainty on performance (Isabella and Waddock, 1994; Ober *et al.*, 1999). Given that certainty stems from managerial sense making as a result of a thorough reading of the environment and the investigation of the multiple paths possible to a firm (Daft and Weick, 1984), it may be more informative to market participants than the level of confidence of a top manager. This leads us to believe that managerial certainty may be an appropriate construct for strategic management research. Given that it is the job of senior managers to portray the firm in the best possible light, the lack of research attention to their certainty is surprising.

Implications for practice

Two major implications for managers can be inferred from this work. First, it is important that surprises, both positive and negative, be eliminated or, at least, reduced so that perceptions of firm-specific risk remain realistic. Additional research is needed to examine the impact of different "surprising types," such as financial surprises vs strategic surprises or surprises external to the organization vs those internal to the organization. Our results further confirm that investors generally react negatively to an unanticipated change in income stream, relative to the anticipated and consensus earnings (O'Brien, 1988). As explained earlier, there are a wide range of tactics that can be used to manage earnings – hedging and real options, accounting tactics such as the proper use of discretionary accruals, and more – as well as

eliminating barriers to information asymmetries by improving the quality of earnings forecasts. There exists a wide range of ways by which such communication can be achieved. For example, the required filing of SEC documents, such as 8-Ks, which provide investors with additional or unusual information; and traditional release of CEO letters (Bournois and Point, 2006), or corporate environmental disclosures (Cho *et al.*, 2010) and sustainability reports.

Our second implication for managers focusses more on corrective actions that can be taken in order to mitigate the market's negative reaction. As our findings suggested, certainty and optimism mitigate the investors' negative reactions to an unanticipated change in earnings. The main issue here is that the tone of the communication really counts. Thus, executive coaching before a post-earnings announcement conference call could be useful. Future research could investigate whether coached managers perform differently from non-coached managers during post-earnings announcement conference calls.

Conclusion

Our study investigated the impact of earnings surprises on stock performance, in the context of the quarterly earnings announcements and the subsequent post-earnings announcement conference calls. We were able to further and confirm that investors have a negative reaction to any type of unanticipated changes in earnings, but we add to the literature by finding that this reaction can be mitigated by displays of managerial certainty and managerial optimism during the post-earnings announcement conference calls.

Note

1. Words that are spelled the same, but that have different meanings (e.g. bow, lead, close).

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Certainty =	Brief description of the dictionaries included (Hart, 2000)
(Tenacity	All uses of the verb to be (<i>is, am, will, shall</i>), three definitive verb forms (<i>has, must, do</i>) and their variants, as well as all associated contraction's (<i>he'll, they've, ain't</i>). These verbs connote confidence and totality
+ Leveling	Words used to ignore individual differences and to build a sense of completeness and assurance. Included are totalizing terms (<i>everybody, anyone, each, fully</i>), adverbs of permanence (<i>always, completely, inevitably, consistently</i>), and resolute adjectives (<i>unconditional, consummate, absolute, open-and-shut</i>)
+ Collectives	Singular nouns connoting plurality that function to decrease specificity. These words reflect a dependence on categorical modes of thought. Included are social groupings (<i>crowd, choir, team, humanity</i>), task groups (<i>army, congress, legislature, staff</i>), and geographical entities (<i>county, world, kingdom, republic</i>)
+ Insistence)	This is a measure of code-restriction and semantic contentedness. The assumption is that repetition of key terms indicates a preference for a limited, ordered world. In calculating <i>Insistence</i> , all words occurring three or more times that function as nouns or noun-derived adjectives are identified (either cybernetically or with the user's assistance) and the following calculation performed: (number of eligible words × sum of their occurrences)/10. For small input files, high-frequency terms used two or more times are used in the calculation
- (Numerical terms	Any sum, date, or product specifying the facts in a given case. This dictionary treats each isolated integer as a single word and each separate group of integers as a single word. In addition, the dictionary contains common numbers in lexical format (<i>one, tenfold, hundred, zero</i>) as well as terms indicating numerical operations (<i>subtract, divide, multiply, percentage</i>) and quantitative topics (<i>digitize, tally, mathematics</i>). The presumption is that <i>Numerical terms</i> hyper-specify a claim, thus detracting from its universality
+ Ambivalence	Words expressing hesitation or uncertainty, implying a speaker's inability or unwillingness to commit to the verbalization being made. Included are hedges (<i>allegedly, perhaps, might</i>), statements of inexactness (<i>almost, approximate, vague, somewhere</i>) and confusion (<i>baffled, puzzling, hesitate</i>). Also included are words of restrained possibility (<i>could, would, he'd</i>) and mystery (<i>dilemma, guess, suppose, seems</i>)
+ Self-Reference	All first-person references , including <i>I, I'd, I'll, I'm, I've, me, mine, my, myself</i> . Self-references are treated as acts of indexing whereby the locus of action appears to reside in the speaker and not in the world at large thereby implicitly acknowledging the speaker's limited vision
+ Variety)	This measure conforms to Wendell Johnson's (1946) type-token ratio which divides the number of different words in a passage by the passage's total words. A high score indicates a speaker's avoidance of overstatement and a preference for precise, molecular statements

Source: Hart (2000)

Table AI.
Composition of the certainty master variable

Optimism =	Brief description of the dictionaries included (Hart, 2000)
(Praise	Affirmations of some person, group, or abstract entity. Included are terms isolating important social qualities (<i>dear, delightful, witty</i>), physical qualities (<i>mighty, handsome, beautiful</i>), intellectual qualities (<i>shrewd, bright, vigilant, reasonable</i>), entrepreneurial qualities (<i>successful, conscientious, renowned</i>), and moral qualities (<i>faithful, good, noble</i>). All terms in this dictionary are adjectives
+ Satisfaction	Terms associated with positive affective states (<i>cheerful, passionate, happiness</i>), with moments of undiminished joy (<i>thanks, smile, welcome</i>) and pleasurable diversion (<i>excited, fun, lucky</i>), or with moments of triumph (<i>celebrating, pride, auspicious</i>). Also included are words of nurturance : <i>healing, encourage, secure, relieved</i>
+ Inspiration)	Abstract virtues deserving of universal respect. Most of the terms in this dictionary are nouns isolating desirable moral qualities (<i>faith, honesty, self-sacrifice, virtue</i>) as well as attractive personal qualities (<i>courage, dedication, wisdom, mercy</i>). Social and political ideals are also included: <i>patriotism, success, education, justice</i>
– (Blame	Terms designating social inappropriateness (<i>mean, naive, sloppy, stupid</i>) as well as downright evil (<i>fascist, blood-thirsty, repugnant, malicious</i>) compose this dictionary. In addition, adjectives describing unfortunate circumstances (<i>bankrupt, rash, morbid, embarrassing</i>) or unplanned vicissitudes (<i>weary, nervous, painful, detrimental</i>) are included. The dictionary also contains outright denigrations : <i>cruel, illegitimate, offensive, miserly</i>
+ Hardship	This dictionary contains natural disasters (<i>earthquake, starvation, tornado, pollution</i>), hostile actions (<i>killers, bankruptcy, enemies, vices</i>) and censurable human behavior (<i>infidelity, despots, betrayal</i>). It also includes unsavory political outcomes (<i>injustice, slavery, exploitation, rebellion</i>) as well as normal human fears (<i>grief, unemployment, died, apprehension</i>) and in capacities (<i>error, cop-outs, weakness</i>)
+ Denial)	A dictionary consisting of standard negative contractions (<i>aren't, shouldn't, don't</i>), negative functions words (<i>nor, not, nay</i>), and terms designating null sets (<i>nothing, nobody, none</i>)
Source: Hart (2000)	

Table AII.
Composition of the
optimism master
variable

Corresponding author

Vivien E. Jancenelle can be contacted at: v.jancenelle@vikes.csuohio.edu

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