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**Beyond the Numbers: An Analysis of Optimistic and Pessimistic  
Language in Earnings Press Releases**

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## **Beyond the Numbers: An Analysis of Optimistic and Pessimistic Language in Earnings Press Releases**

### **Abstract:**

In this paper, we examine whether managers use optimistic and pessimistic language in earnings press releases to provide information about expected future firm performance to the market, and whether the market responds to optimistic and pessimistic language usage in earnings press releases after controlling for the earnings surprise and other factors likely to influence the market's response to the earnings announcement. We use textual-analysis software to measure levels of optimistic and pessimistic language for a sample of approximately 24,000 earnings press releases issued between 1998 and 2003. We find a positive (negative) association between optimistic (pessimistic) language usage and future firm performance and a significant incremental market response to optimistic and pessimistic language usage in earnings press releases. Results suggest managers use optimistic and pessimistic language to provide credible information about expected future firm performance to the market, and that the market responds to managers' language usage.

Keywords: Disclosure, Press release, Language

JEL Classifications: G14, L25, M41

## 1. INTRODUCTION

Earnings press releases have been characterized as, “the major news event of the season for many companies as well as investors, analysts, financial media, and the market” (Lewis and Mahoney 2004). Required by the NYSE and NASDAQ, earnings press releases comprise an important element of a firm’s overall disclosure strategy and communicate information to investors in both numerical and narrative forms. Recent academic research demonstrates that the information content of earnings press releases has increased in recent decades (Collins et al. 2005; Francis et al. 2002a; Francis et al. 2002b; Landsman and Maydew 2002; Lo and Lys 2001; Kross and Kim 2000). However, this work has focused primarily on elements of numerical disclosures (e.g., the announcement of earnings per se) rather than on elements of narrative disclosures (e.g., the language used) in earnings press releases.<sup>1</sup> Although the role that language usage plays in the perception and understanding of narrative disclosures (e.g., Katz 2001) and in the formation of expectations (e.g., Morris et al. 2005) has been examined in other contexts, accounting researchers have yet to study the role that *language usage* in earnings press releases plays (if any) in the credible communication of information to investors. The purpose of this paper is to examine whether managers use optimistic and pessimistic language in earnings press releases to provide information to market participants about expected future firm performance, and whether the market responds to optimistic and pessimistic language usage in earnings press releases after

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<sup>1</sup> An exception is Hoskin et al. (1986). Although language usage is not the focus of their study, these authors examine the subject matter of officer quotations in addition to the numerical disclosures contained in earnings press releases. Francis et al. (2002b) also examine the information content of officer quotations in earnings press releases. In contrast to these studies which focus solely on officer quotations and employ manual techniques for coding quotation subject matter (and thus analyze relatively small samples), we focus on the language used in all narrative disclosures included in earnings press releases and employ an established textual-analysis software program to systematically measure levels of optimistic and pessimistic language for a relatively large sample of earnings press releases.

controlling for the earnings surprise and other factors likely to influence the market's response to the earnings announcement.

Prior research demonstrates that market participants respond to the subject matter of narrative disclosures. For instance, the market responds to the subject matter of officer quotations in earnings press releases (Hoskin et al. 1986) and causal attributions in management earnings forecasts (i.e., reasons underlying managers' earnings expectations) (Baginski et al. 2000) even after controlling for the underlying determinants of the attributions (Baginski et al. 2004). Information about forecast precision is related to stock price reactions to management earnings forecasts (Baginski et al. 1993; Pownall et al. 1993; and Baginski et al. 1994), and narrative disclosures contained in Management's Discussion and Analysis (MD&A) influence financial analysts' forecasts (Barron et al. 1999; Clarkson et al. 1999; Bryan 1997).

The information communicated via narrative disclosures, however, likely extends beyond the subject matter to other elements of the disclosure. For example, experimental evidence shows that analysts' annual earnings forecasts are influenced by the structure of managers' narrative disclosures, holding the information content of those disclosures constant (Sedor 2002). Further, holding information about stock price trends constant, investors' expectations of trend continuation are influenced by the language used to describe the trend (Morris et al. 2005). Thus, it is possible that managers' use of optimistic and pessimistic language (in addition to disclosure subject matter and structure) provides information to market participants about expected future firm performance. In fact, significant variations in language usage across firms has led investor relations professionals to debate how language used in earnings press releases (which can range from straight

forward to promotional) is interpreted by investors, analysts, and others (Lewis and Mahoney 2004). The crux of this debate is consistent with the view that the language used in a press release is likely to communicate values and sentiments that are not neutral (e.g., Katz 2001).

We focus our investigation on the levels of optimistic and pessimistic language in the narrative disclosures of earnings press releases because managers have significantly more discretion available to them when communicating in narrative versus numerical forms. Therefore, it is likely that managers use the language in earnings press releases to communicate information to investors about managers' expectations for future firm performance beyond that communicated via the numerical disclosure of earnings alone. Current regulation does not explicitly address the language used in earnings press releases and the federal antifraud provisions' general requirement that disclosures be "accurate and complete so as not to mislead" (Trautmann and Hamilton 2003) is likely more difficult to enforce in the context of language usage. Further, it is unclear ex-ante if managers' language usage credibly communicates information to investors about expected future firm performance because language usage, unlike numerical disclosures, is not subject to ex-post verification (e.g., Healy and Palepu 2001). Recent research in the area of management earnings forecasts demonstrates that the market responds to narrative disclosures accompanying management earnings forecasts only when those narrative disclosures are verifiable ex-post (Hutton et al. 2003).

We analyze a sample of approximately 24,000 quarterly earnings press releases published on PR Newswire between 1998 and 2003. A distinctive feature of our study is the use of an established textual-analysis software program to analyze the narrative disclosures contained in earnings press releases and obtain systematic measures of the levels of

optimistic and pessimistic language used therein. In particular, we use textual-analysis software that has been employed extensively to analyze contemporary discourse including: speeches of politicians (Hart 1984, 2000a, b; Hart and Jarvis 1997; Bligh et al. 2003 and 2004); speeches of Federal Reserve policymakers (Bligh and Hess 2005a; 2005b); annual reports to stockholders (Yuthas et al. 2002)<sup>2</sup>; and other business communications (Ober et al. 1999). Because the textual-analysis software program counts words characterized as optimistic (e.g., best, confident, improvement) and pessimistic (e.g., bad, conflict, don't) based on linguistics theory (Hart 1984, 1987, 2000a b, and 2001), our measures of optimistic and pessimistic language are complementary to, but separable from, the subject matter of the earnings press release. To capture the effects of optimistic and pessimistic language usage alone, we include the earnings surprise and other variables likely to influence the market response to the earnings announcement as controls for subject matter.<sup>3</sup>

Our key results are as follows: (1) Levels of optimistic and pessimistic language used by managers in earnings press releases reliably predict future firm performance suggesting that managers use language to communicate information to investors about managers' future earnings expectations. (2) There is a significant market response to the levels of optimistic and pessimistic language in earnings press releases that is incremental to the current period earnings surprise and other factors such as whether the firm beats analysts' expectations, experienced negative earnings, or included a management forecast in the earnings press

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<sup>2</sup> In their study, Yuthas et al. (2002) analyze annual-report narratives to assess the ethical characteristics of the disclosures by reference to Habermas' norms which require communications to be comprehensible, truthful, sincere, and legitimate. Therefore, they do not examine associations between narrative disclosures and either future firm performance or the market's response to the narrative disclosures.

<sup>3</sup> The control variables may not account for all subject matter in the narrative of the press release, particularly for forward-looking disclosures. To investigate the potential importance of subject matter reflected in forward-looking disclosures, we also conduct sensitively analyses in which we control for the presence of a management forecast in the earnings press release.

release. This result suggests that managers credibly communicate information to investors via optimistic and pessimistic language usage. (3) The market appears to form expectations, prior to the earnings announcement, regarding the levels of optimistic and pessimistic language used in earnings press releases. In particular, we employ a random walk expectation model and find that the unexpected portion of optimistic and pessimistic language is priced, whereas the expected portion is not priced. This finding suggests that managers likely have reputations for optimistic and pessimistic language use, and that the market reacts to levels of optimistic and pessimistic language usage in managers' disclosures that differ from investors' expectations.<sup>4</sup>

Our results contribute to the literature on voluntary disclosure by demonstrating that language usage in narrative disclosure is an important component of earnings press releases and is used by managers to provide information about expected future firm performance to the market. To our knowledge, this is the first study to examine optimistic and pessimistic language usage in earnings press releases, including whether such language usage is associated with future firm performance and whether the stock market reacts to managers' language usage. Further, our large sample size and use of established textual-analysis software to obtain systematic measures of the levels of optimistic and pessimistic language used by managers in earnings press releases differentiates our study from previous studies of narrative disclosure in earnings press releases that employ subjective, manual coding of narrative information (e.g., Hoskin et al. 1986; Francis et al. 2002b).

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<sup>4</sup> For example, "Microsoft's executives treat analysts to a constant patter of cautionary and even downbeat words about the future. After a typically grim presentation by CEO Bill Gates and sales chief Steve Ballmer at an analysts' meeting two years ago, Goldman Sachs analyst Rick Sherlund ran into the pair outside and said, 'Congratulations. You guys scared the hell out of people.' Their response? "They gave each other a high five, Sherlund recalls" (Fox 1997).



The remainder of the paper is organized as follows. Section 2 provides institutional background regarding earnings press releases and motivates our research questions. Section 3 discusses the sample, presents variable definitions, and describes our measures of optimistic and pessimistic language usage in earnings press releases. Section 4 presents descriptive evidence on the narrative disclosures in earnings press releases and presents results of future performance and returns tests along with related sensitivity analyses. Section 5 concludes and discusses future research possibilities.

## **2. BACKGROUND AND MOTIVATION OF RESEARCH QUESTIONS**

Earnings press releases are required by New York Stock Exchange (NYSE) and NASDAQ rules, and both the Financial Executives Institute (FEI) and the National Investor Relations Institute (NIRI) have issued best-practice guidelines for earnings press release preparation (Trautmann and Hamilton 2003). Earnings press releases prepared in accordance with best-practice guidelines should contain: historical data; analyses of operating results; discussions of positive and negative factors affecting key financial indicators; the outlook for upcoming quarters (with appropriate Safe Harbor language); and other information (Trautmann and Hamilton 2003). NIRI and FEI best-practice guidelines state that earnings press releases should present a “reasonably balanced perspective of operating performance”. Consistent with this, NYSE rules require that press releases place news in the “proper perspective” stating that companies should avoid “overly optimistic forecasts, exaggerated claims, and unwarranted promises” (NYSE Manual). All press releases and public announcements fall within the scope of the antifraud requirements of federal securities laws, which state that the information disclosed should be “accurate and complete so as not to

mislead” (Trautmann and Hamilton 2003). Although language usage is regulated in other market contexts (e.g., U.S. Federal Trade Commission, U.S. Food and Drug Administration), current regulation in securities markets does not explicitly address language usage in earnings press releases. Thus, it is likely more difficult to enforce the antifraud requirements for language usage in narrative disclosures, particularly when compared to numerical disclosures (which are prepared in accordance with GAAP and can be traced to SEC filings).<sup>5</sup>

Anecdotal evidence suggests that language usage in earnings press releases varies substantially across firms. In their examination of hundreds of quarterly earnings press releases William Mahoney and John Lewis, authors of “The IR Book”, find that language in earnings press releases can range from “straight-forward recitations of numbers to being quite promotional” with information either presented in a “fact-based, no-frills-added manner or cast in positive-to-superlative terms” (Mahoney and Lewis 2004). Given the inherently subjective nature of language, the discretion existing regulations allow managers when writing earnings press releases, and managers’ incentives to make self-serving voluntary disclosures (Healy and Palepu 2001), it is possible that market participants view the optimistic or pessimistic language used in earnings press releases as lacking credibility and thus ignore it when assessing the information content of earnings press releases. Further, the levels of optimistic and pessimistic language in narrative disclosures are neither subject to assurance by a third-party intermediary (e.g., auditor) nor subject to ex-post verification (in

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<sup>5</sup> Numerical disclosures in earnings press releases are typically prepared in accordance with Generally Accepted Accounting Principles (GAAP). However, in some cases, firms may also include non-GAAP metrics. The SEC’s Regulation G, issued in November 2002, requires firms to reconcile any non-GAAP metrics disclosed in earnings press releases to GAAP-based earnings. Although Regulation G applies to disclosure in earnings press releases, its focus is on the disclosure of non-GAAP metrics in earnings press releases, not on language usage in earnings press releases.

contrast to management earnings forecasts, for example, which can be verified using actual earnings realizations). Therefore, language usage lacks the characteristics of other voluntary disclosures which are subject to mechanisms that enhance the credibility of managers' disclosures (Healy and Palepu 2001). This argument is consistent with Frost (1997) who finds that market participants discount positive-tone disclosures made by UK firms that received modified audit reports<sup>6</sup> and Hutton et al. (2003) who find no evidence that narrative disclosures accompanying management earnings forecasts affect security prices unless those disclosures are verifiable ex-post.

Alternatively, it is possible that managers' language usage in earnings press releases credibly communicates information incremental to that contained in the numerical disclosures of the earnings press release to help market participants develop more accurate expectations of future firm performance.<sup>7</sup> This possibility is consistent with prior research that has demonstrated a market reaction to causal attributions in management earnings forecasts (i.e., reasons underlying managers' earnings expectations) (Baginski et al. 2000) even after controlling for the underlying determinants of the attributions (Baginski et al. 2004); that information about forecast precision is related to stock price reactions to management earnings forecasts (Baginski et al. 1993; Pownall et al. 1993; and Baginski et al. 1994); and that the narrative disclosures contained in Management's Discussion and Analysis

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<sup>6</sup> Frost (1997) investigates how managers respond to the information and credibility challenges faced by 81 financially-distressed UK firms that received audit report modifications from 1982-1990. She subjectively codes disclosure content as: restructuring, financing, prospective, and positive steps, and subjectively codes disclosure tone as positive, negative, or neutral. The nature of the research question; coding methodology; time period examined; characteristics of sample firms; and sample size all differentiate our study from Frost (1997).

<sup>7</sup> Although inconsistent with anecdotal evidence, a third alternative is that managers are non-strategic in their language usage and use similar language to discuss financial results, regardless of the favorability of those results. Untabulated results suggest that although language usage is significantly correlated over time, the levels of optimistic and pessimistic language in earnings press releases do vary with the favorability of the information reported for a specific quarter, such as measures of firm performance.

(MD&A) influence financial analysts' forecasts (Barron et al. 1999; Clarkson et al. 1999; Bryan 1997). However, unlike MD&A, language usage in earnings press releases, information about forecast precision, and casual attributions are not required disclosures, but rather, are included in managerial communications presumably to enhance market participants' understanding of the disclosures. Language usage in earnings press releases is further differentiated from narrative disclosures accompanying management earnings forecasts (i.e., causal attributions and information about forecast precision). Causal attributions and information about forecast precision are signals directly related to the subject matter of managers' disclosure (i.e., the management earnings forecast). In contrast, language usage can be interpreted as a series of signals about managers' expectations for future firm performance that complement the subject matter of managers' disclosure (i.e., the earnings announcement). This interpretation is consistent with research that examines the use of descriptive language to signal product quality in competitive markets (e.g., Stivers 2005).

Our first research question investigates whether optimistic and pessimistic language usage in earnings press releases is related to future firm performance. Evidence of a positive (negative) association between optimistic (pessimistic) language and future firm performance would be consistent with managers using levels of optimistic and pessimistic language to provide information to market participants regarding managers' expectations of future earnings. Our second research question addresses whether the market responds to the levels of optimistic and pessimistic language in earnings press releases after controlling for the earnings surprise and other factors including whether the firm beats analysts' expectations or experiences negative earnings. Evidence of a positive (negative) relation between optimistic

(pessimistic) language and the market's response to earnings press releases would suggest that investors consider managers' language usage as a credible disclosure relevant to developing expectations for future firm performance and react accordingly.

### **3. DATA AND SAMPLE SELECTION**

#### *3.1 Quarterly Earnings Press Releases*

Our initial sample consists of 73,758 quarterly earnings press releases published by PR Newswire between January 1, 1998 and December 31, 2003, which we accessed electronically using PR Newswire for Journalists. We rely on PR Newswire's classification of press releases by subject to identify earnings press releases. To further ensure that our sample includes only earnings press releases, however, we read electronic files with size of less than 2 kilobytes and eliminated those files containing conference call announcements or other non-earnings related announcements, resulting in the elimination of 1,659 observations.<sup>8</sup>

#### *3.2 Accounting and Financial Market Variables*

For each earnings press release in our sample, we require several accounting and financial market variables for use in our analyses. We measure stock returns around the earnings press release (*CAR*) as the 3-day (-1 to +1) CRSP size-adjusted cumulative return surrounding the earnings announcement date. We measure the current quarter earnings

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<sup>8</sup> It is possible that larger electronic files are not earnings press releases. However, when we collect Compustat data, we require that firms have a report date that falls within 3 days of the press release date. Thus, any non-earnings related press releases that have been misclassified by PR Newswire will remain in our final sample only if the press release date is within 3 days of the report date, which generally corresponds to the earnings announcement date. This data restriction ensures that non-earnings related press releases are unlikely to be included in our final sample and thus, unlikely to influence our results.

surprise (*SURP*) as the scaled difference between I/B/E/S actual earnings and the most recent consensus analyst earnings forecast made prior to the earnings announcement, where the scalar is the stock price measured at the beginning of the current quarter. We define the dummy variable *BEAT* to indicate firms that announced earnings for the current quarter that met or exceeded analysts' expectations, defined as 1 if  $SURP \geq 0$  and 0 otherwise. For our measures of current and future firm performance, we collect return on assets (*ROA*) for the current and four subsequent quarters, defined as Compustat earnings scaled by total assets measured at the beginning of the quarter for which *ROA* is being measured. To identify firms with negative earnings, we define the dummy variable *LOSS* to be 1 if Compustat earnings are negative and 0 otherwise. Finally, we collect current quarter Compustat sales (*REV*) and use its natural logarithm (*LOGREV*) as a measure of firm size. We eliminate any press releases for which we do not have necessary data available on Compustat, CRSP, or I/B/E/S, which eliminates an additional 44,112 observations.

### *3.3 Measures of Optimistic and Pessimistic Language*

Our analyses require measures of optimistic and pessimistic language usage in each of the quarterly earnings press releases in our sample. To avoid the subjectivity introduced by manual coding and to maximize the sample size of earnings press releases to be examined, we employ computerized textual-analysis software to obtain systematic measures of the levels of optimistic and pessimistic language used in earnings press releases. In particular, we use DICTION 5.0 (Hart 2000a, 2001) which has been used extensively to analyze narrative discourse including: speeches of politicians (Hart 1984, 2000a, 2000b; Hart and Jarvis 1997; Bligh et al. 2003 and 2004); speeches of Federal Reserve policymakers (Bligh

and Hess 2005a; 2005b); annual reports to stockholders (Yuthas et al. 2002); and other business communications (Ober et al. 1999). DICTION is a dictionary-based content analysis program that contains the types of words most frequently encountered in contemporary American public discourse (Hart 1984).

The use of DICTION has several advantages over human coding of narrative disclosures in the context of earnings press releases. First, textual analysis techniques based on pre-existing search rules and algorithms are systematic and reliable and thus, free from criticisms of researcher subjectivity and bias that might be levied against human coding. Second, DICTION was designed for the analysis of political discourse and as such, is well-suited for analyzing managers' narrative disclosures which often share common themes with political discourse (e.g., discussing past, present, and future; discussing goals and plans; etc.). In particular, the program is designed to identify subtle aspects of language that even the trained human eye might not readily perceive (Bligh et al. 2004) and thus, the measures of optimistic and pessimistic language obtained are likely to be better calibrated than those subjectively determined by researchers. Third, the use of DICTION allows for a significantly larger sample size than would be possible if each earnings press release was manually read and coded.

The principle disadvantage of using DICTION is that although the program counts words characterized as optimistic or pessimistic based on linguistic theory (Hart 1984, 1987, 2000a, 2000b, 2001), it is incapable of providing analysis of language conditional on the context of the particular statement. The omission of context likely leads to a noisy measure of optimistic and pessimistic language, which makes detection of any information content of optimistic and pessimistic language more difficult.

We begin our analysis with pre-existing word lists developed for DICTION 5.0.<sup>9</sup> These word lists are grounded in linguistic theory and have been used extensively in academic research in applied fields (e.g., Hart 1984, 2000a, b; Hart and Jarvis 1997; Bligh et al. 2003 and 2004; Bligh and Hess 2005a; 2005b; Yuthas et al. 2002). DICTION identifies three word lists as “optimism-increasing”, labeled “Praise”, “Satisfaction” and “Inspiration”, and three word lists as “optimism-decreasing”, labeled “Blame”, “Hardship” and “Denial”. For each earnings press release, we define the variable *OPT* as the percentage of words in the press release (numerical characters are excluded from the calculation) that are “optimism increasing”, and the variable *PESS* as the percentage of words in the press release that are “optimism decreasing”.<sup>10</sup> We define a variable *NETOPT* as the difference between our *OPT* and *PESS* variables ( $OPT - PESS$ ) to provide a measure of the net optimism of the language used in the earnings press release. We also develop an expectations model for optimistic and pessimistic language, which requires that we measure *OPT*, *PESS*, and *NETOPT* in the quarter immediately preceding the current quarter. We label these lagged values *LAGOPT*, *LAGPESS*, and *LAGNETOPT*, respectively.

Hoskin et al. (1986) and Francis et al. (2002b) document that officer quotations included in earnings press releases provide information incremental to other components of the press release. These findings suggest that officer quotations may be an important component of the narrative disclosures provided in an earnings press release. To investigate

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<sup>9</sup> To obtain incidence counts of the DICTION word lists and total word counts for our sample of earnings press releases, as well as to perform all other coding and processing of the earnings press releases, we used QDA Miner 1.1, with the Wordstat 4.0 module.

<sup>10</sup> The DICTION word lists used in the computation of *OPT* and *PESS* are summarized in the Appendix. We made one modification to the DICTION word lists, which was to remove the word “loss” from DICTION’s “Hardship” word list. This was done to prevent the *PESS* variable for an earnings press release from being mechanically correlated with whether or not the press release announced negative earnings. Our results are qualitatively similar when “loss” is included in the Hardship word list.



the extent to which our results may be driven by language usage in officer quotations, we code all occurrences of a quotation in each earnings press release using computerized search and coding tools. We then compute *OPT*, *PESS*, *NETOPT*, *LAGOPT*, *LAGPESS*, and *LAGNETOPT* for only those subsamples of narrative disclosures in earnings press releases that do not contain officer quotations.

The requirement that *LAGOPT*, *LAGPESS* and *LAGNETOPT* be measured for each press release eliminates an additional 5,262 observations from our sample. Finally, we trim any observations greater than five standard deviations from the mean for each of the financial-market, accounting, and textual-analysis variables used in our analyses, eliminating a further 762 observations.<sup>11</sup> The final sample used in our analyses is 23,622 firm quarters.

## 4. RESULTS

### 4.1 Descriptive Evidence

We begin by providing descriptive evidence regarding the amount of narrative disclosure contained in earnings press releases. To measure the length of press releases, we compute the total number of words (*WORDCOUNT*) in each press release in our sample. Francis et al. (2002b) document a significant increase in the average length of earnings press releases from 1980 – 1999. Thus, of particular interest is whether this trend continues during our sample period, 1998 – 2003.

Figure 1 plots the median value of *WORDCOUNT* for each year in our sample and shows a large and steady increase in the average length of earnings press releases. The median value of *WORDCOUNT* rises approximately 90% over our sample period, from 878

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<sup>11</sup> We also conducted all analysis using rank regressions estimated using the full (untrimmed) sample and obtained qualitatively similar results.

in 1998 to 1,679 in 2003. Table 1 details the results of a regression of *WORDCOUNT* on the time-trend variable. The trend variable (*TREND*) records the number of months that have passed between January 1998 (the beginning of our sample period) and the date a press release was issued.<sup>12</sup> Consistent with Figure 1, the coefficient on *TREND* is positive and highly statistically significant indicating that, on average, press releases grew in length by 15 words per month over our sample period.

Table 2 provides descriptive statistics on the variables used in our analyses. Our sample includes relatively large firms as indicated by the mean and median of *REV*, \$732 million and \$132 million, respectively. The distribution of *REV* is also highly skewed, so we use the natural logarithm of *REV* in our analyses. The means (medians) of *OPT* and *PESS* are 1.28 (1.18) and 0.46 (0.42) respectively, indicating that on average, 1.28% of the words used in earnings press releases are included in the word lists considered to be “optimism-increasing” whereas 0.46% of the words are included in the “optimism-decreasing” word lists. Descriptive data also indicates that 70.7% of our sample firms report earnings that meet or beat analysts’ forecasts, whereas 25.5% of our sample firms report negative earnings.

Table 3 presents the correlation matrix for variables in our sample. Several of the variables used in our analyses are significantly correlated with each other, indicating that a multivariate analysis is appropriate to investigate our research questions.

#### *4.2 Tests of the association between language usage and future firm performance*

In this section we examine whether managers use optimistic and pessimistic language in earnings press releases to provide information about expected future firm performance to

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<sup>12</sup> All regression coefficient estimates reported in this paper are based on least squares estimation, while reported coefficient standard errors are heteroskedasticity consistent computed as in White (1980).

the market. We investigate this research question by testing whether the optimistic and pessimistic language in the current quarter earnings press release is associated with performance metrics in future quarters.

In particular, we employ a baseline multivariate regression model for explaining future performance based on that used in Core, Holthausen and Larcker (1999), Bowen, Rajgopal and Venkatachalam (2005), and Koh, Matsumoto and Rajgopal (2005). Future performance is measured as the average of *ROA* in the four quarters following the current quarter (*FUTROA*). The following model is then used to explain *FUTROA*:

$$\begin{aligned}
 FUTROA_i = & \beta_0 + \beta_1 ROA_i + \beta_2 \sigma_{ROA,i} + \beta_3 LOGREV_i + \beta_4 SURP_i \\
 & + \beta_5 BEAT_i + \beta_6 LOSS_i + \sum_j \beta_{7j} ID_{ij} + \sum_k \beta_{8k} YEAR_{ik} + \varepsilon_i,
 \end{aligned} \tag{1}$$

where  $\sigma_{ROA,i}$  is the standard deviation of *ROA* over the four quarters subsequent to the current quarter,  $ID_{ij}$  is an indicator variable taking the value 1 if the press release represented in observation  $i$  is for a firm in the  $j^{th}$  two-digit SIC industry and 0 otherwise, and  $YEAR_{ik}$  is an indicator variable taking the value 1 if the press release represented in observation  $i$  was released in year  $k$  and 0 otherwise. In equation (1), *ROA* is included to capture potential mean reversion in performance metrics, while  $\sigma_{ROA,i}$  and *LOGREV* control for the effects of risk and size on future performance. *SURP*, *BEAT* and *LOSS* are included to capture the predictive power of other prominent performance benchmarks included in the earnings press release for future firm performance. Finally, *ID* and *YEAR* capture any industry and year fixed effects.

To evaluate whether optimistic and pessimistic language contains additional predictive power for future performance, we augment equation (1) with *OPT* and *PESS*:

$$\begin{aligned}
FUTROA_i = & \beta_0 + \beta_1 ROA_i + \beta_2 \sigma_{ROA,i} + \beta_3 LOGREV_i + \beta_4 SURP_i + \beta_5 BEAT_i \\
& + \beta_6 LOSS_i + \sum_j \beta_{7j} ID_{ij} + \sum_k \beta_{8k} YEAR_{ik} + \beta_9 OPT_i + \beta_{10} PESS_i + \varepsilon_i.
\end{aligned} \tag{2}$$

In equation (2), the null hypothesis of no predictive power of *OPT* and *PESS* for future performance is specified as the parameter restriction  $\beta_9 = \beta_{10} = 0$ .

Table 4 contains estimation results for equation (2), where we have suppressed the estimated coefficients on the industry and year dummy variables for presentation purposes. The coefficient on *ROA* is estimated to be positive and less than 1, consistent with prior research documenting mean reversion in performance metrics (e.g., Barber and Lyon 1997). Also consistent with prior research, e.g. Core, Holthausen and Larcker (1999), the estimated coefficient on  $\sigma_{ROA,i}$  is negative, while the estimated coefficient on *LOGREV* is positive and statistically significant. The estimated coefficients on *SURP* and *LOSS* are also statistically significant, and suggest that earnings surprises and the occurrence of negative earnings are both negatively correlated with future firm performance.

The estimated coefficients on both *OPT* and *PESS* are also individually and jointly significant, with higher values of *OPT* predicting higher future performance, and higher values of *PESS* predicting lower future performance. Thus, the evidence suggests that optimistic and pessimistic language usage in earnings press releases is significantly associated with future performance, and that this association is incremental to that of a number of other explanatory variables also known to be associated with future performance.

Next, we test whether *OPT* and *PESS* contain differential explanatory power for future firm performance. This is accomplished by testing the restriction  $\beta_9 = -\beta_{10}$  in

equation (2).<sup>13</sup> A Wald test of this restriction has a  $p$ -value of 0.18 and thus cannot be rejected at conventional significance levels. This suggests the following alternative specification of equation (2) in which this symmetry restriction is imposed:

$$\begin{aligned}
 FUTROA_i = & \beta_0 + \beta_1 ROA_i + \beta_2 \sigma_{ROA,i} + \beta_3 LOGREV_i + \beta_4 SURP_i + \beta_5 BEAT_i \\
 & + \beta_6 LOSS_i + \sum_j \beta_{7j} ID_{ij} + \sum_k \beta_{8k} YEAR_{ik} + \beta_9 NETOPT_i + \varepsilon_i.
 \end{aligned} \tag{3}$$

Table 4 also presents the estimation results for equation (3), which are consistent with those for equation (2).

We construct the measure of future performance, *FUTROA*, using over-lapping windows for a given firm over time. This likely introduces serial correlation in model residuals which would render the coefficient standard errors implicit in Table 4 invalid. To address this issue, we estimate equation (3) on a subset of our sample obtained by randomly selecting only a single observation for each firm. The resulting sample contains 3,105 firm-quarter observations. The estimation results for this sub-sample are presented in the final column of Table 4 which presents results consistent with those obtained using the full sample. In particular, all estimated coefficients are similar to their values in the larger sample and remain statistically significant at conventional levels.

#### 4.3 Tests of the market response to optimistic and pessimistic language

The results of the previous section demonstrate that managers use optimistic and pessimistic language in earnings press releases to provide information about expected future

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<sup>13</sup> Note that this test does not necessarily address whether optimistic or pessimistic *language* has differential implications for future performance. This is because *OPT* and *PESS* are not necessarily equally accurate in their measurement of optimistic and pessimistic language. That is, a one unit increase in *OPT* need not capture the same amount of increase in underlying optimistic language as does a one unit increase in *PESS* for pessimistic language. The purpose of this analysis is then primarily as a specification test.

firm performance to the market. In particular, optimistic and pessimistic language in the current quarter earnings press release is associated with performance metrics in future quarters. Our second research question addresses whether the market responds to optimistic and pessimistic language usage in earnings press releases after controlling for other variables likely to influence the market response to the earnings announcement.

In this sub-section we test the null hypothesis that there is no incremental market reaction to the levels of optimistic and pessimistic language in earnings press releases. We estimate a multivariate regression model in which size-adjusted stock returns in a three-day window around the earnings announcement date are regressed on our measures of optimistic and pessimistic language. To measure the incremental response to optimistic and pessimistic language, we also include control variables in our analyses that are known to have information content including: the earnings surprise; an indicator variable identifying firms that beat analysts' earnings expectations; and an indicator variable identifying firms that reported negative earnings. The formal specification of the regression model is as follows:

$$CAR_i = \beta_0 + \beta_1 SURP_i + \beta_2 BEAT_i + \beta_3 LOSS_i + \beta_4 OPT_i + \beta_5 PESS_i + \varepsilon_i, \quad (4)$$

where  $i$  indexes the firm-quarter observation and all variables are defined as in Section 3.<sup>14</sup>

Our null hypothesis of no market response to optimistic and pessimistic language is then given as the parameter restriction  $\beta_4 = \beta_5 = 0$ .

Table 5 presents the estimation results for the parameters of equation (4). Consistent with extant literature, the coefficients on *SURP* and *BEAT* are both positive and statistically significant, while the coefficient on *LOSS* is negative and statistically significant. Further, a Wald test of the null hypothesis of no incremental market response to optimistic and

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<sup>14</sup> All results presented in this sub-section are robust to the inclusion of two-digit SIC industry and year dummy variables in the regression.

pessimistic language, that is  $\beta_4 = \beta_5 = 0$ , has a  $p$ -value less than 0.01, indicating that this null hypothesis can be rejected at the 1% significance level. Further, the coefficient on  $OPT$  is positive and statistically significant at below the 1% level, suggesting that the market responds positively to the amount of optimistic language contained in earnings press releases. The coefficient on  $PESS$  is negative, although not statistically significant at standard levels of significance.

To the extent that managers have reputations for making certain types of disclosures, the market likely forms an expectation regarding managers' usage of optimistic and pessimistic language in earnings press releases. If this is the case, equation (2) is misspecified in that it does not distinguish the language usage itself from the language "surprise" contained in the earnings press release. To provide evidence on this potential misspecification, we use a simple random walk expectations model to measure the expected and unexpected components of optimistic and pessimistic language. That is, we measure the expected components of optimistic and pessimistic language as:

$$E(OPT_i) = LAGOPT_i,$$

$$E(PESS_i) = LAGPESS_i,$$

where  $E$  indicates an expectation measured just prior to the earnings announcement date.

The unexpected components of optimistic and pessimistic language are then given by:

$$OPT_i - E(OPT_i) = OPT_i - LAGOPT_i,$$

$$PESS_i - E(PESS_i) = PESS_i - LAGPESS_i.$$

Based on this expectation model, we reformulate equation (4) to distinguish between the market response to the expected and unexpected components of optimistic and pessimistic language:

$$CAR_i = \beta_0 + \beta_1 SURP_i + \beta_2 BEAT_i + \beta_3 LOSS_i + \beta_4 (OPT_i - LAGOPT_i) + \beta_5 (PESS_i - LAGPESS_i) + \beta_6 LAGOPT_i + \beta_7 LAGPESS_i + \varepsilon_i. \quad (5)$$

Under the assumption that equity prices fully reflect the expected portion of optimistic and pessimistic language prior to the earnings press release, and assuming that a random walk adequately captures market expectations, we expect that any market reaction to optimistic and pessimistic language would be confined to  $\beta_4$  and  $\beta_5$ , the coefficients on the unexpected portion of the language.

Table 5 also presents estimation results for equation (5). As expected, the estimated coefficients on the expected portion of *OPT* and *PESS*,  $\beta_6$  and  $\beta_7$ , are statistically insignificant. By contrast, the estimated coefficients on the unexpected portion of *OPT* and *PESS*,  $\beta_4$  and  $\beta_5$ , are highly statistically significant and exceed the estimates of  $\beta_6$  and  $\beta_7$ . Further, whereas the estimated coefficient on *PESS* in equation (4) was statistically insignificant, the estimated coefficient on the unexpected portion of *PESS* in equation (5) is significant at the 1% level.

We next test whether the documented market response to the unexpected portion of *OPT* and *PESS* is symmetric. In other words, we test the restriction that  $\beta_4 = -\beta_5$  using the estimation results from equation (5). A Wald test cannot reject this restriction ( $p$ -value = 0.90). Our preferred specification is then equation (6), in which we impose the restriction  $\beta_4 = -\beta_5$  and eliminate the expected portions of optimistic and pessimistic language, which were statistically insignificant, from the model:

$$CAR_i = \beta_0 + \beta_1 SURP_i + \beta_2 BEAT_i + \beta_3 LOSS_i + \beta_4 (NETOPT_i - LAGNETOPT_i) + \varepsilon_i. \quad (6)$$

In equation (6), the coefficient  $\beta_4$  captures the market response to the unexpected portion of the net level of optimistic language in the earnings press release. The final column of Table



5 presents the estimated parameters from this regression. Consistent with previously reported results, the estimated coefficient on  $\beta_4$  is positive and statistically significant, suggesting a positive incremental market response to the unexpected portion of the net level of optimistic language in the earnings press release.

Taken as a whole, these results suggests that the optimistic and pessimistic language used in the narrative disclosures of earnings press releases contains information about future firm performance incremental to other factors that are commonly associated with future earnings. This result suggests that market participants consider optimistic and pessimistic language usage to be a credible (at least to some extent) source of information about managers' future earnings expectations.<sup>15</sup> Finally, the association between market returns and the unexpected portion of optimistic and pessimistic language is substantially stronger than the association between market returns and the expected portion of optimistic and pessimistic language. This result suggests that managers likely have reputations for routinely providing optimistic or pessimistic disclosures and that the market responds to language usage that differs from those initial expectations.

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<sup>15</sup> A positive (negative) and significant coefficient on our measures of optimistic and pessimistic language indicates that there is at least *some* information gleaned from such language in earnings announcements that is incremental to *SURP*, *BEAT* and *LOSS*. It does not rule out the possibility that managers may also use optimistic language opportunistically in attempt to mislead investors and other stakeholders.

#### 4.4 Robustness Checks and Additional Analysis

##### 4.4.1 Effects of Language Usage in Officer Quotations

In their analysis of additional disclosures in earnings press releases, Hoskin et al. (1986) find an incremental market response to prospective officer quotations during the sample period (i.e., 1984). In a study of the increased informativeness of earnings announcements over time, Francis et al. (2002b) confirm an incremental market response to prospective officer quotations for their sample period (1980 – 1999). These findings suggest that officer quotations are an important narrative disclosure in earnings press releases. Thus, it is possible that our results are driven by optimistic and pessimistic language usage in officer quotations. To assess the extent to which the language in direct officer quotations influences our main results, we perform separate analyses on the portion of the earnings press releases that are not direct quotations from managers (i.e., the “non-quote” sample). Results from these additional analyses are not tabulated, but inferences remain unchanged – the coefficient on *NETOPT* is 0.0010 in the future performance regression (equation 3) and 0.0072 in the market response regression (equation 6), and both coefficients remain significant ( $p$ -values = 0.000). Therefore, optimistic and pessimistic language usage in the non-quote portion of narrative disclosures in earnings press releases does not differ from that used in direct officer quotations in terms of either predictive power for future firm performance or information content.

##### 4.4.2 Effects of Management Forecasts Included in Earnings Press Releases

Another potential issue is the extent to which management earnings forecasts included in earnings press releases influence our results. Hoskin et al. (1986) find that 31%

of earnings announcements in their sample include management earnings forecasts and there is extensive prior research documenting a market response to the news in management forecasts (e.g., Patell 1976; Penman 1980; Waymire 1984; Jennings 1987; Pownall and Waymire 1989; Pownall et al. 1993; Baginski et al 1993, Skinner 1994; Hutton et al. 2003; Baginski et al. 2004). If the news in management forecasts is correlated with optimistic or pessimistic language usage in narrative disclosures in the earnings press release, then inclusion of management earnings forecasts in our sample could lead to a correlated omitted variable in our future performance and returns models. To assess the extent to which management forecasts are included in the earnings press releases in our sample, we search the narrative disclosures of all earnings press releases issued in 2003 and classify earnings press releases as including management forecasts if the press releases include the word “guidance”.<sup>16</sup> We then test the sensitivity of our results to the inclusion of management forecasts by performing analyses on the 1,482 firm quarters in 2003 that we identify as containing management forecasts separately from the 2,693 firm-quarters that do not contain management forecasts.<sup>17</sup>

Results from the future performance regressions (equation 3) indicate a positive and significant coefficient on *NETOPT* for “guidance” ( $\beta_9 = 0.0018$  and  $p$ -value = 0.018) and

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<sup>16</sup> We base our selection of the word “guidance” as an indicator of the presence of a management forecast on a review of a random sample of our earnings press releases across all years. Our review indicated that firms did not use unique and systematic language to describe a management earnings forecasts in the early years of our sample, but began regularly using the term “guidance” to describe management earnings forecasts in the latter portion of our sample period. We thus focus our sensitivity analyses on earnings press releases in 2003. To validate the efficacy of our split on the word “guidance”, we read 100 of the earnings press releases from 2003 to determine whether the presence or absence of the word “guidance” accurately identified whether the press release contained a management forecast, and found that this split accurately classified the press releases for over 90% of the cases considered.

<sup>17</sup> This proportion of the sample that we identify as containing management earnings forecast (36%) is consistent with prior research (e.g., Hoskin et al. (1986) find 31% of their sample earnings releases include management forecasts while Miller (2002) finds, depending on firm performance, between 30% and 48% of his sample includes management forecasts).

“non-guidance” ( $\beta_3 = 0.0023$  and  $p$ -value = 0.001) firm quarters. These coefficients are not significantly different from one another ( $p$ -value = 0.646). Further, results from the market response regressions (equation 6) indicate a positive and significant coefficient on *NETOPT* for both “guidance” ( $\beta_4 = 0.0112$  and  $p$ -value = 0.027) and “non-guidance” ( $\beta_4 = 0.0103$  and  $p$ -value = 0.003) firm quarters. These coefficients are not significantly different from one another ( $p$ -value = 0.873). Overall, additional analyses suggest that management earnings forecasts included in earnings press releases do not influence our main results and inferences remain unchanged.

## 5. CONCLUSION

Earnings press releases are the primary means by which managers communicate quarterly financial results to investors and other stakeholders. Although a vast amount of academic research has examined elements of numerical disclosures in earnings press releases, very few studies have examined elements of narrative disclosures contained in earnings press releases. To our knowledge, ours is the first study to examine the role that *language usage* plays in the credible communication of information to investors. We argue that elements of narrative disclosures (e.g., language usage) differ from elements of numerical disclosures on several important dimensions, including their inherent subjectivity and the lack of explicit regulation governing their use in earnings press releases. The purpose of this paper is to examine whether managers use optimistic and pessimistic language in earnings press releases to provide information to market participants about expected future firm performance, and whether the market responds to optimistic and pessimistic language usage in earnings press releases.

We analyze a sample of approximately 24,000 quarterly earnings press releases published on PR Newswire between 1998 and 2003. A unique feature of our study is the use of an established textual-analysis software program to counts words in earnings press releases characterized as optimistic (e.g., best, confident, improvement) and pessimistic (e.g., bad, conflict, don't) based on linguistics theory (Hart 1984, 1987, 2000a b, and 2001). Thus, our measures of optimistic and pessimistic language are complementary to the subject matter of the earnings press release (i.e., the earnings announcement). To capture the effects of optimistic and pessimistic language usage alone, we include the earnings surprise and other variables likely to influence the market response to the earnings announcement as controls for subject matter. As our controls may not adequately proxy for the subject matter contained in forward-looking disclosures such as management earnings forecasts contained in press releases, we also perform sensitivity analyses in which we control for the presence of a management forecast.

Our evidence suggests that optimistic and pessimistic language is predictive of firm performance in future quarters. We interpret this evidence to suggest that managers use optimistic and pessimistic language in earnings press releases to provide information about expected future firm performance to the market. We find a significant market response to the levels and unexpected amounts of optimistic and pessimistic language in earnings press releases after controlling for other factors known to influence the market response to the announcement of earnings per se. These results suggest that market participants consider at least some portion of optimistic and pessimistic language usage in earnings press releases to be credible, despite the potential for managers to behave opportunistically when selecting language to include in the narrative disclosures of earnings press releases. Taken together,

our results suggest that managers use optimistic and pessimistic language to provide credible information about expected future firm performance to the market, and that the market responds to optimistic and pessimistic language usage.

Overall, our evidence suggests that language usage is an important element of narrative disclosures in earnings press releases, and that managers use optimistic and pessimistic language to provide information about expected future firm performance to investors. However, we cannot eliminate the possibility that managers also behave opportunistically when writing earnings press releases. We intend to further explore managers' opportunistic language usage in future research.

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## Appendix

### Summary of Diction 5.0 Word Lists

#### Praise Word List

<b>Description:<sup>r</sup></b>	Affirmations of some person, group or abstract entity. Included are terms isolating important social qualities, physical qualities, intellectual qualities, entrepreneurial qualities, and moral qualities. All terms in this dictionary are adjectives.
<b>Number of Words:</b>	195
<b>Sample Words:</b>	best, better, capable, favorable, good, great, important, positive, profitable, strong, successful

#### Satisfaction Word List

<b>Description:</b>	Terms associated with positive affective states, with moments of undiminished joy and pleasurable diversion, or with moments of triumph. Also included are words of nurturance.
<b>Number of Words:</b>	315
<b>Sample Words:</b>	applaud, attracts, celebrate, comfortable, confident, delighted, enjoy, enthusiasm, excited, pleased, satisfied

#### Inspiration Word List

<b>Description:</b>	Abstract virtues deserving of universal respect. Most of the terms are nouns isolating desirable moral qualities as well as attractive personal qualities. Social and political ideals are also included.
<b>Number of Words:</b>	122
<b>Sample Words:</b>	commitment, dedication, enrichment, improvement, loyalty, productivity, progress, promise, quality

#### Blame Word List

<b>Description:</b>	Terms designating social inappropriateness and evil. In addition, adjectives describing unfortunate circumstances or unplanned vicissitudes are included. Also contains outright denigrations.
<b>Number of Words:</b>	346
<b>Sample Words:</b>	adverse, bad, bleak, careless, costly, grim, hard, mediocre, struggling, troubled, unstable, upsetting

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<sup>r</sup> Descriptions of each word list are from Diction documentation.

## **Hardship Word List**

**Description:** Contains natural disasters, hostile actions and censurable human behavior. Also includes unsavory political outcomes as well as normal human fears and incapacities.

**Number of Words:** 470

**Sample Words:** abuse, alarmed, battle, burden, conflict, depressed, disappointing, discouraged, fail, fear, hardship, problem, regret, setback, threaten, unfortunately, weakness

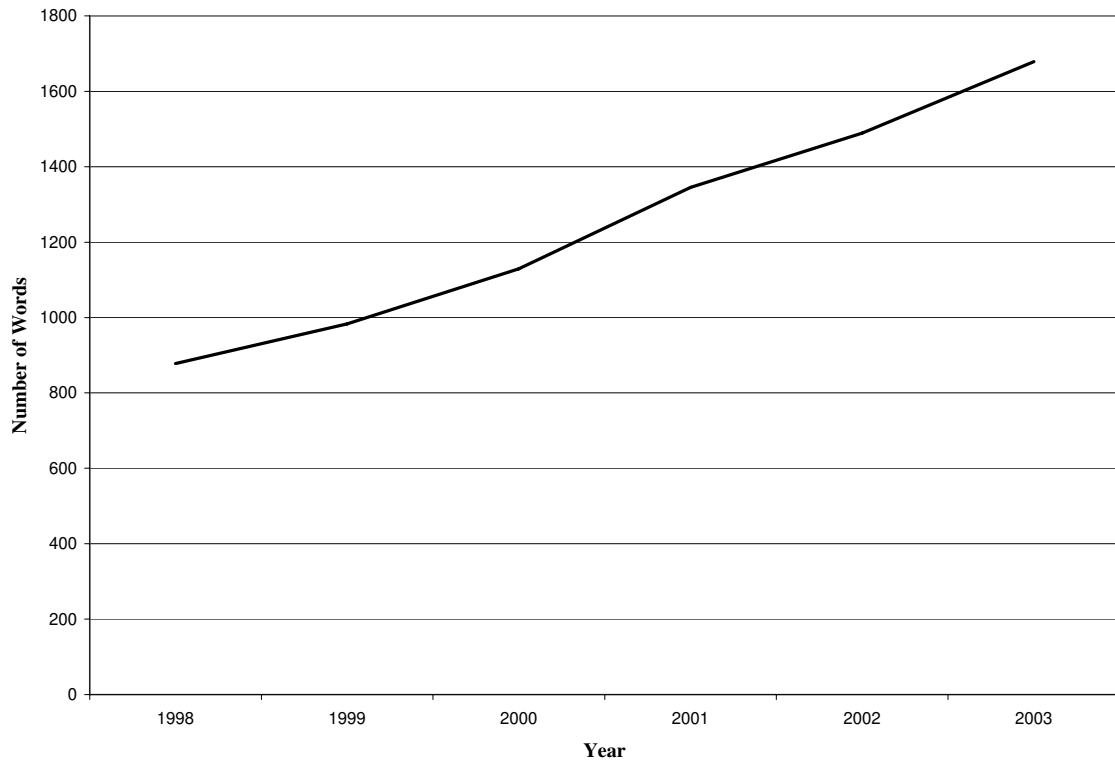
## **Denial Word List**

**Description:** Consists of standard negative contractions, negative function words, and terms designating null sets.

**Number of Words:** 39

**Sample Words:** aren't, cannot, didn't, shouldn't, don't, nor, not, nothing

**Figure 1**  
**Median Earnings Press Release Word Counts by Year**



**Table 1**  
**Time Trends in Earnings Press Release Length**

$$WORDCOUNT = \beta_0 + \beta_1 * TREND + \varepsilon_i$$

Variable	
<i>INTERCEPT</i>	858.5751 <sup>***</sup> (146.87)
<i>TREND</i>	15.4004 <sup>***</sup> (81.38)
Adjusted R <sup>2</sup>	0.165
Sample Size	23,622

Notes: *WORDCOUNT* is the total number of words in the earnings press release. *TREND* is the number of months having passed since January 1998 and the month the press release was issued. T-statistics constructed using White (1980) heteroskedasticity robust standard errors are presented in parenthesis. \*/\*\*/\*\* denotes statistical significance at the 10%, 5% and 1% level based on a two tailed t-test.

**Table 2**  
**Descriptive Statistics**

	<i>CAR</i>	<i>SURP</i>	<i>BEAT</i>	<i>LOSS</i>	<i>ROA</i>	<i>OPT</i>	<i>PESS</i>	<i>NETOPT</i>	<i>REV</i>
<b>Mean</b>	0.0052	-0.0017	0.7068	0.2548	0.0017	1.2756	0.4614	0.8143	731.73
<b>Median</b>	0.0030	0.0000	1.0000	0.0000	0.0074	1.1800	0.4200	0.7400	133.75
<b>Maximum</b>	0.4900	2.7660	1.0000	1.0000	0.3156	4.4400	1.9500	4.2500	66,903.06
<b>Minimum</b>	-0.4830	-5.1330	0.0000	0.0000	-0.3232	0.0000	0.0000	-1.4700	0.00
<b>Std. Dev.</b>	0.0910	0.0683	0.4552	0.4358	0.0429	0.6218	0.2873	0.6984	2,628.51

Notes: *CAR* is the cumulative abnormal returns over the three-day window centered on the press release date relative to the firm's size-decile portfolio. *SURP* is actual I/B/E/S earnings for the current quarter less the I/B/E/S consensus forecast from the summary file scaled by price at the beginning of the current quarter. *BEAT* is equal to 1 if  $SURP \geq 0$  and is 0 otherwise. *LOSS* is equal to 1 if Compustat earnings are negative and is 0 otherwise. *ROA* is Compustat earnings in the current quarter scaled by total assets measured at the beginning of the current quarter. *OPT* is the percent of words in the text of the press release included in the praise, inspiration, or satisfaction dictionaries. *PESS* is the percent of words in the text of the press release included in the blame, hardship, or denial dictionaries. *NETOPT* is equal to  $OPT - PESS$ . *REV* is current quarter Compustat sales.

**Table 3**  
**Correlation Statistics**

	<i>CAR</i>	<i>SURP</i>	<i>BEAT</i>	<i>LOSS</i>	<i>ROA</i>	<i>OPT</i>	<i>PESS</i>	<i>NETOPT</i>	<i>REV</i>
<i>CAR</i>	1.000								
<i>SURP</i>	0.051 <0.001	1.000							
<i>BEAT</i>	0.171 <0.001	0.139 <0.001	1.000						
<i>LOSS</i>	-0.079 <0.001	-0.066 <0.001	-0.202 <0.001	1.000					
<i>ROA</i>	0.088 <0.001	0.082 <0.001	0.174 <0.001	-0.653 <0.001	1.000				
<i>OPT</i>	0.037 <0.001	0.008 <0.001	0.082 <0.001	-0.163 <0.001	0.129 <0.001	1.000			
<i>PESS</i>	-0.027 <0.001	-0.015 <0.001	-0.078 <0.001	0.151 <0.001	-0.126 <0.001	-0.052 <0.001	1.000		
<i>NETOPT</i>	0.044 <0.001	0.013 <0.001	0.105 <0.001	-0.207 <0.001	0.166 <0.001	0.912 <0.001	-0.458 <0.001	1.000	
<i>REV</i>	-0.005 0.4677	0.007 0.255	0.045 <0.001	-0.081 <0.001	0.064 <0.001	0.036 <0.001	-0.041 <0.001	0.049 <0.001	1.000

Notes: Pearson correlation coefficients are reported. P-values are shown below each correlation coefficient. Variable definitions are provided in the notes to Table 2.



**Table 4**  
**Association between Future Performance and Optimistic and Pessimistic Language**

$$\text{Equation 2: } FUTROA_i = \beta_0 + \beta_1 ROA_i + \beta_2 \sigma_{ROA,i} + \beta_3 LOGREV_i + \beta_4 SURP_i + \beta_5 BEAT_i + \beta_6 LOSS_i + \sum_j \beta_{7j} ID_{ij} + \sum_k \beta_{8k} YEAR_{ik} + \beta_9 OPT_i + \beta_{10} PESS_i + \varepsilon_i.$$

$$\text{Equation 3: } FUTROA_i = \beta_0 + \beta_1 ROA_i + \beta_2 \sigma_{ROA,i} + \beta_3 LOGREV_i + \beta_4 SURP_i + \beta_5 BEAT_i + \beta_6 LOSS_i + \sum_j \beta_{7j} ID_{ij} + \sum_k \beta_{8k} YEAR_{ik} + \beta_9 NETOPT_i + \varepsilon_i.$$

Variable	Equation 2	Equation 3	Equation 3 (restricted sample)
<i>INTERCEPT</i>	0.0172 <sup>***</sup> (4.28)	0.0166 <sup>***</sup> (4.17)	0.0101 (0.81)
<i>ROA</i>	0.4384 <sup>***</sup> (32.88)	0.4385 <sup>***</sup> (32.88)	0.5000 <sup>***</sup> (14.63)
$\sigma_{ROA}$	-0.5000 <sup>***</sup> (-29.71)	-0.5000 <sup>***</sup> (-29.71)	-0.5142 <sup>***</sup> (-11.97)
<i>LOGREV</i>	0.0023 <sup>***</sup> (20.86)	0.0023 <sup>***</sup> (20.87)	0.0025 <sup>***</sup> (6.99)
<i>SURP</i>	-0.0099 <sup>**</sup> (-2.03)	-0.0100 <sup>**</sup> (-2.03)	-0.0087 (-0.50)
<i>BEAT</i>	0.0003 (0.861)	0.0003 (0.91)	0.0010 (0.87)
<i>LOSS</i>	-0.0055 <sup>***</sup> (-8.13)	-0.0055 <sup>***</sup> (-8.13)	-0.0049 <sup>***</sup> (-2.60)
<i>OPT</i>	0.0012 <sup>***</sup> (4.93)	---	---
<i>PESS</i>	-0.0021 <sup>***</sup> (-3.53)	---	---
<i>NETOPT</i>	---	0.0014 <sup>***</sup> (6.07)	0.0017 <sup>**</sup> (2.47)
Adjusted R <sup>2</sup>	0.620	0.619	0.652
Sample Size	23,622	23,622	3,105

Notes: *FUTROA* and  $\sigma_{ROA}$  are the mean and standard deviation of *ROA* in the four quarters following the current quarter. *LOGREV* is the natural logarithm of *REV*. *ID* and *YEAR* are two-digit SIC industry and year dummy variables respectively. Coefficient estimates for *ID* and *YEAR* are omitted for presentation purposes. Other variable definitions are provided in the notes to Table 2. “Restricted Sample” refers to a sub-sample chosen by randomly selecting a single observation for each firm in the full sample. T-statistics constructed using White (1980) heteroskedasticity robust standard errors are presented in parenthesis. \*/\*\*/\*\* denotes statistical significance at the 10%, 5% and 1% level based on a two tailed t-test.

**Table 5**  
**Market Response to Optimistic and Pessimistic Language**

Equation 4:  $CAR_i = \beta_0 + \beta_1 SURP_i + \beta_2 BEAT_i + \beta_3 LOSS_i + \beta_4 OPT_i + \beta_5 PESS_i + \varepsilon_i$

Equation 5:  $CAR_i = \beta_0 + \beta_1 SURP_i + \beta_2 BEAT_i + \beta_3 LOSS_i + \beta_4 (OPT_i - LAGOPT_i) + \beta_5 (PESS_i - LAGPESS_i) + \beta_6 LAGOPT_i + \beta_7 LAGPESS_i + \varepsilon_i$ .

Equation 6:  $CAR_i = \beta_0 + \beta_1 SURP_i + \beta_2 BEAT_i + \beta_3 LOSS_i + \beta_4 (NETOPT_i - LAGNETOPT_i) + \varepsilon_i$ .

Variable	Equation 4	Equation 5	Equation 6
<i>INTERCEPT</i>	-0.0168*** (-8.73)	-0.0150*** (-7.48)	-0.0143*** (-12.08)
<i>SURP</i>	0.0344** (2.27)	0.0343** (2.27)	0.0342** (2.26)
<i>BEAT</i>	0.0314*** (23.48)	0.0311*** (23.32)	0.0312*** (23.38)
<i>LOSS</i>	-0.0088*** (-5.53)	-0.0094*** (-5.88)	-0.0096*** (-6.14)
<i>OPT</i>	0.0025*** (2.73)	---	---
<i>PESS</i>	-0.0023 (-1.14)	---	---
<i>OPT-LAGOPT</i>	---	0.0079*** (5.71)	---
<i>PESS-LAGPESS</i>	---	-0.0075*** (-2.60)	---
<i>LAGOPT</i>	---	0.0007 (0.72)	---
<i>LAGPESS</i>	---	-0.0003 (-0.12)	---
<i>NETOPT- LAGNETOPT</i>	---	---	0.0075*** (6.51)
Adjusted R <sup>2</sup>	0.032	0.033	0.034
Sample Size	23,622	23,622	23,622

Notes: *LAGOPT*, *LAGPESS* and *LAGNETOPT* are the values of *OPT*, *PESS*, and *NETOPT* in the quarter immediately prior to the current quarter. Other variable definitions are provided in the notes to Table 2. T-statistics constructed using White (1980) heteroskedasticity robust standard errors are presented in parenthesis. \*/\*\*/\*\* denotes statistical significance at the 10%, 5% and 1% level based on a two tailed t-test.