TONE ANALYSIS AND EARNINGS MANAGEMENT

Xuan Huang, College of Business Administration, California State University, Long Beach, 1250 Bellflower Blvd., Long Beach, CA 90840, 562-985-2756, xuan.huang@csulb.edu
Sudha Krishnan, College of Business Administration, California State University, Long Beach, 1250 Bellflower Blvd., Long Beach, CA 90840, 562-985-5757, sudha.krishnan@csulb.edu
Ping Lin, College of Business Administration, California State University, Long Beach, 1250 Bellflower Blvd., Long Beach, CA 90840, 562-985-4560, ping.lin@csulb.edu

ABSTRACTS

In this study, we examine empirically whether the tone employed in the earnings press release is related to the manager's choice of the sign and amount of the discretionary earnings reported. The results show that managers of firms with high abnormal accruals and firms just meeting or beating earnings targets tend to use more positive words in earnings press releases to hype the discretionary accounting numbers that they subsequently report in financial statements to the SEC. This evidence implies that managers strategically use tone as a complement to earnings management to manage investor perceptions.

Keywords: Tone Analysis, Earnings Management, Earnings Press Release, Discretionary Accruals

INTRODUCTION

Earnings announcements are significant news events. Investors rely heavily on earnings press releases for trading because they are timelier than the annual and quarterly financial statements filed with SEC such as 10K and 10Q. Press releases of earnings announcements contain salient information about both past and future performances of firms. Since Ball and Brown (1968) [1] and Beaver (1968) [2], the academic literature has shown that trading volume and stock price reactions generally are larger around earnings announcements than any other time in the year, except for special event announcements [3].
Quantitative information such as earnings numbers limit investors' ability to predict future performance as they lack qualitative explanation such as outlook of future economic market and the persistence of current earnings. Also, individuals need to first decode information and then process them. By providing the necessary frame of reference, words can help in the decoding process, as is evident in many marketing research [4] [5]. In earnings release, managers can also choose how to present the quantitative information as there is no mandated format and the disclosure is voluntary. As such, they have at their disposal the choice of words to communicate earnings in a certain way or context. The presence of managerial agency issues and misalignment of incentives suggests that managers may strategically choose to paint the quantitative performance in such a way that it could be either helpful or detrimental to investors in their use of the released information to infer future performances. This study seeks to analyze how managers employ words in the earnings press releases, and whether they use such qualitative information strategically to convey their optimism or pessimism.
The psychology literature has shown that framing affects perceptions. When essentially equivalent options are presented to individuals, the contexts and orders the options are presented has a large impact on how individuals decide amongst the options. For example, a description of a glass as half-full evokes different emotions from a description of the same glass as half-empty. The effects of emotionally charged messages (positive vs. negative) on recipients tend to be additive than a neutral syntax [6].

Therefore, the specific question we ask in this study is whether managers choose the tone of the press release to affect recipients' perceptions of the press release, either to hedge or hype the disclosed numbers. Following the previous literature, we consider various linguistic styles, such as positive versus negative styles, for tone. We examine empirically whether the tone employed in the press release is related to the manager's choice of the sign and amount of the discretionary earnings reported.

We also consider various aspects of earnings management. First, we use discretionary accruals to proxy for the amount of managerial bias in reported earnings. The earnings management studies in the literature have focused on extreme discretionary accruals [7] [8] [9]. If tone and discretionary earnings are related, the evidence would suggest that these two instruments are used strategically by the managers in their reporting about the firm to affect investors' perceptions. The earnings management literature has also found evidence that managers behave strategically to meet or beat earnings benchmark by managing earnings in small amounts. Therefore, we focus on the relation between the choice of tone and the tendency to meet or beat earnings benchmark.

HYPOTHESES DEVELOPMENT

Accruals Management

The potential for managers to employ tone strategically should be stronger when managers have incentives to manipulate earnings. Earnings management has been examined extensively in the last decade. The main focus of earnings management research has been on detecting whether and when earnings management happens. Most prior studies detect earnings management based on reported financial statements numbers, such as discretionary accruals and deferred tax expense. However, there is an important question: will managers strategically frame earnings press releases when they have manipulated earnings? Although SEC regulation G provides guidance on firms' disclosure of non-GAAP financial measures, the content in earnings announcements is unregulated. Davis et al. (2008) [10] propose that managers have more opportunities to exercise discretion in earnings press releases in narrative forms than numerical forms because SEC does not regulate the form and content of qualitative disclosure in earnings press releases. Further, verbal disclosures are non-verifiable and less precise than numerical forms. Finally, managers can easily change informative signals of verbal forms by choosing words, structure and length of earnings press releases. It would be interesting to examine the role of tone when managers' report discretionary earnings.

If managers' report discretionary earnings, will they employ tone to hide true performance as well? If managers strategically report earnings, they can also exercise discretion on narrative disclosures in the accompanying press releases to bolster the image of reported performance rather than disclose underlying performance. Specifically, if managers inflate earnings strategically, they can use more positive or optimistic words to complement the high reported numbers in an attempt to persuade investors that performance is good. If managers manipulate earnings downward to create cookie jar reserves, they can choose negative words to reinforce the low reported numbers and hide their true performance. In both cases, managers employ numbers and tone strategically in the same direction. Managers use tone to hype the reported numbers.

On the other hand, managers have litigation concerns and reputation concerns, which can constrain earnings manipulation. If managers manipulate earnings upward, they may use less positive or even negative words to "hedge" high reported earnings. Rogers, Van Buskirk and Zechman (2009) [11] find that optimistic disclosure language increases the firms' likelihood of being sued. This suggests that managers may dampen the tone of earnings press releases to reduce ligation risk. If managers manipulate earnings downward to create cookie jar reserves or for capital market reasons, managers know their performance is not so bad, and don't want to let investors be too disappointed at their

performance. So managers may use positive words to "hedge" the low reported earnings. In both cases, managers employ numbers and tone strategically in the opposite direction.
Thus it is unclear whether and how managers use tone when managing earnings. The relation between tone of earnings press release and the discretionary earnings reported is an empirical question. We propose hypothesis 1 as below:

H1: Tone of earnings press releases is affected by the manager's choice of the sign and amount of the discretionary earnings reported.

Earnings Management to Meet or Beat Earnings Targets

Researchers have investigated different measures of earnings management and sample firms with strong incentives to manage earnings. Dechow and Skinner (2000) [12] argue that focusing on managerial incentives is a fruitful way to identify firms that practice earnings management. They posit that academic research should focus more on capital incentives, in particular, managers' incentives to manage earnings to maintain and improve stock market valuations. Regarding earnings management incentives, Dechow and Skinner (2000) [12] propose earnings benchmarks as strong capital market incentives. Thus, our next step is to focus on the setting where managers manipulate earnings to meet or beat benchmarks.
Previous literature has documented that managers manipulate earnings to meet or beat target earnings benchmarks: earnings level (loss avoidance), earnings improvement (earnings changes), and analyst forecasts. Therefore, we consider these three situations following Phillips, Pincus and Rego (2003) [13]: firms with zero or slightly positive earnings changes versus firms with slightly negative earnings changes and firms with zero or slightly positive earnings levels versus firms with slightly negative earnings levels, and firms whose earnings exactly equal or slightly exceed analysts' forecasts versus firms whose earnings slightly miss analysts' forecasts.
For firms just meeting or beating earnings benchmarks, managers are more likely to manipulate earnings to meet or beat these thresholds. We expect these managers strategically employ tone as well in these earnings management situations. The tone of just-meet/beat firms should be different from tone of just-missed firms.

H2: Tone in earnings press releases of just-meet/beat firms is different from that of just-missed firms.

DATA AND EMPIRICAL METHODS

Sample

The sample is collected as follows: (1) we start with the CRSP/Compustat merged database; (2) obtain annual earnings press releases for the period from 1998 to 2007 from PR newswire and business wire; (3) match earnings press releases with the CRSP/Compustat merged database using company name, the announcement date and fiscal year; (4) consistent with previous literature, we exclude financial institutions (SIC 6000 to 6999) from the sample. We also exclude all firm-years with missing financial variables, negative book values and stock price below $1. This yields a sample of 4924 firms and 22,188 firm-years observations.
For the analysis of analysts' earnings forecasts, we obtain forecast and actual earnings data from Thomson Financial (I/B/E/S), and use the last mean forecast prior to annual earnings announcements over the 1998–2007 period.

Measure of Tone in Earnings Press Releases

Loughran and McDonald (2011) [14] argue that word classifications developed for other disciplines are not appropriate for the business area. Based on the analysis of 41, 842 firm-year 10-Ks from 1994 and 2007, they find that many words classified as negative in the Harvard Psychological Dictionary (IV-4) are not typically negative in financial reports. Words like *tax*, *liability* or *foreign* are defined as negative words in the Harvard Psychological Dictionary, but have little negative connotations in financial reports. Same for words employed in the Diction software, which is a language processing algorithm. Loughran and McDonald create new six categories of financial words: negative, positive, uncertain, litigious and strong and weak modal words. Uncertainty indicates the general notion of imprecision rather than risk, such as *approximate*, *uncertain*, and *variability*. Litigious words reflect a propensity for legal contest or litigiousness, such as *claimant*, *deposition*, and *testimony*. Strong and weak modal words include terms expressing levels of confidence. Examples of strong modal words are *always*, *highest*, *must*, and *will*. Examples of weak modal words are *could*, *depending*, *might*, and *possibly*. They show new word categories are significantly related to different return measures, alleged accounting fraud, and disclosures of material weaknesses in internal control.

We use the word lists developed by Loughran and McDonald (2011) [14]. Even though their word lists are created from 10-Ks, we expect the word categories can also be applied to other financial disclosures. We focus on positive and negative words. Word-based measures are frequency of the words relative to an earnings announcement's total non-numerical words. Following Loughran and McDonald (2011) [14], we account for simple negation for positive words. If there are negation words (*no*, *not*, *none*, *neither*, *never*, *nobody)* immediately before a positive word, we count the positive word as negative. We create the variable net positive (NET-POS), which is defined as the frequency difference between positive and negative words in a document. We also count the instances of double negatives, i.e., negation words immediately before other negative words, and find the frequency is 2%. The results remain the same by either counting them as positive or ignoring them.

Measure of earnings management

Earnings can be decomposed into operating cash flow and total accruals. Based on prior research on earnings management, accruals consist of normal and abnormal accruals. Normal accruals are modeled as a function of a firm's operating activity and fixed capacity. Abnormal accruals are the difference between total accruals and normal accruals, which can be used to estimate earnings management. Following the prior earnings management literature, this study employs annual performance-matched modified Jones model abnormal accruals (*PMMJ*).

Regression Models and Control variables

Li (2010) [15] is the first one to examine the determinants of tone, specifically, economic factors that may explain the variations in MD&A tones of 10-K and 10-Q. Even though he only examines the forward-looking statements in the MD&A section (sentences containing: "will," "should," "can," "could," "may," "might," "expect," "anticipate," "believe," "plan," "hope," "intend," "seek," "project," "forecast," "objective," or "goal."), the economic factors should be able to explain the variations in earnings press releases tone as well since both SEC filings and earnings press releases are managerial disclosures. We hand collected MD&A sections of 10-K report of 1000 firms from 10-K wizard and correlate tone measures of MD&A sections with matched earnings press releases. The tone measures are highly and significantly correlated. Therefore, the determinants of the MD&A should be applied to earnings press releases as well.

Li (2010) [15] identifies determinants of the MD&A forward looking statement tones, which are total accruals, current firm performance (proxied by current earnings and contemporaneous stock returns), firm size, market-to-book ratio, and volatility of operations (proxied by stock return volatility and earnings volatility). We use the following regression model to test the association between discretionary accruals and tone of earnings announcements:

$$\text{Tone (NET-POS)} = \alpha + \beta_0\ \text{PMMJ}_{jt} + \beta_1\ \text{NA}_{jt} + \beta_2\ \text{CFO}_{jt} + \beta_3\ \text{SIZE}_{jt} + \beta_4\ \text{MTB}_{jt} + \beta_5\ \text{RET}_{jt} + \beta_6\ \text{STD\_RET}_{jt} + \beta_7\ \text{STD\_EARN}_{jt} + \varepsilon_{jt} \tag{1}$$

Where

$PMMJ_{jt}$ = firm *j*'s performance-matched modified Jones model abnormal accruals in year *t*;

NA_{jt} = firm *j*'s normal accruals estimated from performance-matched modified Jones model;

CFO_{jt} = firm *j*'s cash flows from operations in year *t;*

$SIZE_{jt}$ = firm *j*'s log of the market value of equity at the end of the year *t*;

MTB_{jt} = firm *j*'s market value of equity plus the book value of total liability scaled by the book value of total assets at the end of the year *t*;

RET_{jt} = firm *j*'s contemporaneous stock returns at fiscal year *t*;

STD_RET_{jt} = firm *j*'s standard deviation of stock return calculated using daily data from the last fiscal year to this fiscal year ending data.

STD_EARN_{jt} = firm *j*'s standard deviation of earnings scaled by book value of assets calculated using data from the last 5 years.

ε_{jt} = the error term.

For meet/beat samples, we use the following regression to estimate H2:

$$\text{Tone (NET-POS)} = \beta_0 + \beta_1\ \text{MEET} + \beta_2 \text{TAC}_{jt} + \beta_3 \text{EARN}_{jt} + \beta_4\ \text{SIZE}_{jt} + \beta_5\ \text{MTB}_{jt} + \beta_6\ \text{RET}_{jt} + \beta_7\ \text{STD\_RET}_{jt} + \beta_8 \text{STD\_EARN}_{jt} + \varepsilon_{jt} \tag{2}$$

where

1) meet or beat earnings changes

MEET=1 if zero and slightly positive earnings changes (the change in firm *j*'s net income from year *t*-1 to *t* divided by the market value of equity at the end of year *t*-2 is ≥ 0 and < 0.01) and 0 if slightly negative earnings changes (the change in net income ≥ -0.01 and < 0);

2) meet or beat earnings levels

MEET=1 if zero and slightly positive scaled earnings levels (firm *j*'s net income in year *t* divided by the market value of equity at the end of year *t*-1 is ≥ 0 and < 0.02) and 0 if slightly negative scaled earnings levels (net income ≥ -0.02 and <0);

3) meet or beat analysts' forecast

MEET=1 if zero and slightly positive analysts' earnings forecast error (firm *j*'s actual EPS less mean analysts' forecast in year t ≥ 0 and ≤ 0.01) and 0 if slightly negative forecast error (forecast error ≥ -0.01 and <0).

. TAC_t = firm *j*'s total accruals in year *t*;

$EARN_{jt}$ = firm *j*'s earnings in year *t*;

β_1 indicates the tone effect for just meet/beat firms relative to just missed firms.

EMPIRICAL RESULTS

Multivariate Analysis

Managers tend to use more (less) positive words with discretionary accruals increase (decrease). It implies managers use tone as the same direction with discretionary accruals to hype the reported numbers. For other control variables, the tone of earnings press releases is negatively related to SIZE (the coefficient on SIZE is -0.018 with a t-statistic of -3.63). The result indicates that large firms release more negative earnings press releases. It is consistent with the findings in Li (2010) [15], which proposes that large firms are more cautious in disclosures because of political and legal costs concerns. The coefficient on MTB is significantly positive (0.039 with a t-statistic of 8.57), indicating that firms with high market-to-book ratio have more positive tones. High market-to-book firms are growth firms, and have more uncertain information environments and generally less successful performance. They tend to report more positive discussions to investors. Firms with more volatile returns have more positive earnings press releases (the coefficient on STD_RET is 0.135 with a t-statistic of 1.81). This implies that volatile firms tend to convey positive information to make up volatile performance. While firms with more volatile earnings have less positive earnings press releases (the coefficient on STD_EARN is -0.085 with a t-statistic of -2.66).

We present regression estimates of H2 across three earnings management settings. The first set of results indicates earnings management to avoid an earnings decline. The second set shows the results for earnings management to avoid a loss, and the third set shows the results for earnings management to avoid failure to meet or beat analysts' earnings forecasts. For the first set of results, the coefficient on MEET is positive and significant (0.147 with t-statistic of 5.61). The second set shows the positive coefficient on MEET as well (0.075 with t-statistic of 1.73). In the third set, MEET has a positive and significant coefficient (0.111 with t-statistic of 3.32). These results are consistent for all three earnings management settings, implying that managers of just-meet/beat firms use more positive words in earnings press releases than just-missed firms.

CONCLUSION

In the study, we investigate how tone of words is related to the manager's choice of the sign and amount of the discretionary earnings reported, and earnings management to beat or meet analysts' benchmarks versus miss benchmarks. The results show that managers of firms with high abnormal accruals tend to use more positive words in earnings press releases to hype the reported discretionary accounting numbers. Managers of just-meet/beat firms employ more positive tone in earnings press releases than just-missed firms.

This study contributes to the extant literature of textual analysis and earnings management. Previous literature on earnings management focuses on numbers, while this study provides a new perspective – qualitative information related to earnings management. The managers choose tone of earnings press releases to complement the message they convey in their choice of the discretionarily reported numbers. Managers do strategically use tone beyond the numbers in their disclosures to affect investor perceptions.

Reference available upon request from Ping Lin, ping.lin@csulb.edu, 562-985-4560