

The Information Content of Discretionary Tone in Interim Management Statements

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Abstract: This paper contributes to the literature on tone management by providing evidence that the discretionary tone of financial disclosures is more incrementally informative of future performance in the third quarter of the financial year than in the first quarter. Using a sample of Interim Management Statements (IMSs) from the period 2008 – 2013, I show that the discretionary tone provides incremental information about year-end earnings and cash flows in the third quarter but often provides noise in the first quarter, with no indication of strategic tone management over and above discretionary accruals. Additionally, in the third quarter, the discretionary tone of negative statements is incrementally informative of both year-end earnings and cash flows but the discretionary tone of positive statements is incrementally informative of year-end earnings only. In both the first and third quarters, the discretionary tone is positively associated with market returns at the time of IMS announcements. The market reaction two months after the IMS announcement is positively associated with the incrementally informative third-quarter discretionary tone, although it is unrelated to the noisier first-quarter discretionary tone. The results are sustained after a series of robustness tests.

Keywords: Discretionary Tone, Tone Management, Interim Management Statements, Textual Analysis.

1. Introduction

A recent study by Huang, Teoh and Zhang (2014) indicate that the abnormal tone of financial disclosures is strategically managed by firms to misinform investors. They decompose tone into a normal component that neutrally describes the reported firm fundamentals and an abnormal component which is driven by managerial incentives and show that the abnormal component of tone predicts negative future earnings and cash flows. They subsequently find that the market reacts positively to abnormal tone at the time of disclosure but has a delayed negative reaction one and two quarters after the announcement. Huang et al. (2014) conclude that the abnormal tone is not incrementally informative of future performance, but is instead used by managers to strategically mislead investors about firm fundamentals at the time of disclosure, although the share prices reverse in the post-announcement period once the market learns the accurate information.

In this study, I argue that there is more to the above story than meets the eye. Firstly, is the abnormal tone strategically managed to misinform investors at all times? It is noteworthy that Huang et al. (2014) use a sample of annual earnings press releases in their study. Annual earnings announcements are typically made towards the beginning of the financial year just before the disclosure of the annual reports and accounts pertaining to the previous year. As the year unfolds, the market is likely to acquire more fundamental information about year-end performance via ad-hoc trading updates, quarterly and interim reports, and at least in some cases, via media articles. Therefore, managerial incentives to misinform investors about year-end performance are likely to be greater around the start of the year than towards the end, as managers do not want to make a statement that can be refuted easily as it can hamper their future credibility or cause managerial penalties (Merkl-Davies & Brennan, 2007). Hence it is useful to examine whether the abnormal tone is more incrementally informative towards the end of the year than at the beginning.

To address the aforementioned issue, I collect from the Perfect Information Navigator database, a sample of 1032 Interim Management Statements (IMSs) of non-financial FTSE All-Share Index firms for the period 2008 – 2013. IMSs are trading updates that firms listed in the UK and EU regulated markets disclose twice in a financial year, one for the first quarter and one for the third quarter. While the content of IMSs is voluntary, much like earnings press releases, they usually contain descriptions of a firm's financial performance and financial position for the quarter. IMSs are suitable for my purpose since they are short trading updates on financial performance, and are issued at two different points in the middle of the year. Following the approach of Rahman, Schleicher and Walker (2017), I read each IMS manually and classify the tone of every statement in the IMS as positive, neutral or negative. I then compute a net tone score for each IMS based on the difference in the number of statements classified as positive and negative in the IMS. To estimate the abnormal tone, I adopt the tone determination model of Huang et al. (2014). This regresses the net tone score on a number of possible tone determinants identified by Li (2010) accounting for firm fundamental information, business and operating risks, complexity and growth opportunities. The normal component of the tone, called normal tone, is the predicted value of the tone determination model and the abnormal component of the tone, called abnormal tone, is the residual value of the model. By construction, normal and abnormal tones are orthogonal to each other (Huang et al., 2014).

The normal tone is the non-discretionary component of the net tone score that neutrally represents reported financial performance, as it is based on firm fundamentals and firm characteristics. The abnormal tone is the discretionary component of the net tone score which is driven by managerial incentives, and hence may be used by managers to improve or to obfuscate the understanding of firm fundamentals (Huang et al., 2014). If the abnormal tone predicts negative future performance, then it is likely that managers have engaged in

strategic tone management to misinform investors. If the abnormal tone is unrelated to future performance, it creates noise. While noisy abnormal tone measures can potentially mislead investors, it does not provide a clear indication of strategic tone management since it may comprise of truthful disclosures unrelated to firm fundamentals. If the abnormal tone predicts positive future performance, then it likely contains incremental information about firm fundamentals that is not disclosed in the normal tone (Huang et al., 2014).

I regress year-end earnings and cash flows on IMS abnormal tone and find that the abnormal tone predicts positive year-end earnings and cash flows, incremental to discretionary accruals. Because it is unlikely that managerial incentives and opportunities to manipulate the tone remain the same throughout the year, I separate the first-quarter IMSs from the third-quarter IMSs in my sample. I find that the first-quarter abnormal tone predicts noisy year-end earnings but has a weak positive association with year-end cash flows, while the third-quarter abnormal tone has strong positive associations with both year-end earnings and cash flows. I further find that the third-quarter abnormal tone predicts positive one-year ahead cash flows. Overall, my results indicate that the IMS abnormal tone often provides noise in the first quarter but incremental information about year-end firm fundamentals in the third quarter. This extends Huang et al.'s (2014) finding that the abnormal tone of annual earnings press releases predict negative year-end earnings and cash flows.² Unlike Huang et al. (2014), I do not find any indication of strategic tone management. Instead, my results suggest that the IMS abnormal tone is more incrementally informative of impending firm fundamentals in the third quarter than in the first quarter.

² I believe that the differences in results between this study and Huang et al. (2014) is not driven by the differences in regulatory and reporting practices between US and UK. Instead, (i) the less extensive culture of litigation and (ii) the absence of mandatory fully fledged quarterly reports in UK, as opposed to the US, are likely to make voluntary disclosures in UK more vulnerable to strategic tone management than the US, not less. It is also unlikely that the differences in results can be attributed to the differences between earnings press releases and IMSs, because both disclosures are voluntary in terms of content and typically discuss financial performance.

Secondly, the disclosure tone is based on both positive and negative statements. A positive (negative) statement is one which portrays the financial performance of the firm favourably (unfavourably). Huang et al. (2014) does not segregate the abnormal tone of positive statements from that of negative statements. However, it is possible that managerial incentives to either strategically misinform investors or to provide them with incremental information is different in negative statements than it is in positive statements. With the exception of downward perception management events like employee stock options, managers typically have more incentives to bias the firm's performance upwards than downwards since favourable performance potentially enhances the share price and increases managerial rewards (Merkl-Davies & Brennan, 2007). Does this imply that the abnormal tone of positive statements is likely to be less incrementally informative than the abnormal tone of negative statements?

To examine this, I compute separate tone measures for the positivity (negativity) of each IMS based on the number of positive (negative) statements in the IMS. I then use the tone determination model in Huang et al. (2014) to compute the normal and abnormal positivity (negativity) for each IMS. If abnormal positivity (negativity) contains incremental firm fundamental information, it should predict positive (negative) year-end earnings and cash flows. If abnormal positivity (negativity) contains strategic tone management, it should predict negative (positive) year-end earnings and cash flows. If abnormal positivity (negativity) contains noise, it should be unrelated to year-end earnings and cash flows. I find that, in the first quarter, both abnormal positivity and abnormal negativity predicts noisy year-end earnings but abnormal negativity predicts negative year-end cash flows. In the third quarter, abnormal positivity (negativity) predicts positive (negative) year-end earnings, consistent with the suggestion that the discretionary tone of both positive and negative statements provide incremental information about year-end earnings in the third quarter.

However, in the third quarter, only abnormal negativity predicts negative year-end cash flows while abnormal positivity provides noise. In sum, while impending negative year-end earnings and cash flows are truthfully disclosed, much of the positive year-end cash flow predictions are uninformative, even in the third quarter.

As an alternative measure of the predictive ability of abnormal tone for future performance, I regress the yearly change in earnings and sales on abnormal tone, the two most frequent item reported in IMSs (see Schleicher & Walker, 2015). I use the yearly change in earnings and sales because financial narratives are often described in comparative terms, i.e. in terms of increase or decrease for the period (Davis, Piger, & Sedor, 2012). I find that abnormal tone predicts positive yearly change in both earnings and sales, for the full sample and in both the first and third quarters, with no indication of strategic tone management for abnormal tone, abnormal positivity and negativity.

I subsequently examine the immediate and post-announcement market reaction to abnormal tone. I find that, at the time of the third-quarter IMS announcement, abnormal tone (positivity, negativity) is positively (positively, negatively) associated with share price movements. This suggests that the market believes that the third-quarter discretionary tone provides incremental information. Further, I find that abnormal tone (negativity) in the third-quarter is positively (negatively) associated with market returns in the two months after the IMS announcement. This lack of price reversal in the post-announcement period of the third quarter suggests that the market continues to find the third-quarter discretionary tone useful as supportive information comes across. At the time of first-quarter IMS announcement, I find that the market reacts positively (positively, negatively) to abnormal tone (positivity, negativity), suggesting that investors do not severely discount for the more noisy first-quarter abnormal tone. However, in the post-announcement period of the first quarter, the abnormal tone (positivity, negativity) ceases any further association with market returns.

Thirdly, all statements in a disclosure are neither likely to be equally informative of the year-end performance, nor are they all likely to be equally value-relevant for the share price. For instance, forward-looking earnings statements are likely to be more informative of year-end earnings than, for instance, backward-looking sales statements. The former is also likely to be more value relevant for share price than the latter since investors are likely to make their buy, hold or sell decisions based on the expected return of a share (Penman, 1980; Waymire, 1984). If investor sentiment is not equally driven by all statements, then a tone measure based on all statements in the disclosure is not the best proxy for a tone measure derived from the one or two important statements that investors use to form their sentiments (Rahman et al., 2017).

If managers want to either strategically misinform investors or to provide them with incremental information about year-end earnings, the best approximation of abnormal tone should be computed from statements that explicitly discuss forward-looking earnings. Because manual textual analysis allows me to distinguish between different types of statements, I now devise a tone measure based solely on group-level earnings forecast statements. I continue to find that the abnormal tone predicts noise in the first quarter but positive year-end earnings in the third quarter. At the time of both first and third-quarter IMS announcements, the market reacts positively to abnormal tone, although the reaction is considerably more pronounced in the third quarter. In the post-announcement period, the third-quarter abnormal tone continues to have positive association with market returns but the first-quarter abnormal tone ceases any association. The explanatory power of both future earnings and market return regressions are now significantly higher than the explanatory power of full document tone estimations. This is similar to the findings of Rahman et al. (2017).

I perform a number of additional tests to examine the generalisability of my results. First, I compute the tone using two automated wordlists: Henry (2008) and Loughran and McDonald (2011). Second, I divide the sample in terms of size, age, financial performance and balance sheet constraints. Third, I add normal tone as an additional explanatory variable in the regression estimates. All the results indicate a consistent trend of IMS abnormal tone providing mostly noise in the first quarter and incremental information in the third quarter for year-end firm fundamentals, with no indication of strategic tone management.

The main contribution of the study is to provide evidence that the discretionary tone provides incremental information about year-end firm fundamentals in the third-quarter. This extends Huang et al.'s (2014) finding that managers strategically manipulate the discretionary tone of annual earnings press releases to misinform investors, and suggests that that abnormal tone is more incrementally informative of future performance in the third quarter of the financial year than in the first. A secondary finding is that the discretionary tone of negative statements is incrementally informative of both year-end earnings and cash flows but the discretionary tone of positive statements is incrementally informative of year-end earnings only. A methodological contribution is to be the first study that uses manual textual analysis in the computation of abnormal tone. This allows me to identify specific types of statements that may be of interest, e.g. earnings forecast statements.

The rest of the paper is organized as follows. Section 2 provides a background to the relevant tone literature. Section 3 describes the methodology and sampling. Section 4 discusses the results. Section 5 analyses the implications of investigating the tone of group-level earnings forecasts statements. Section 6 discusses robustness tests. Section 7 concludes.

2. Background

2.1 Disclosure Tone and Tone Management

The linguistic tone of a financial disclosure, called the disclosure tone, is the sentiment conveyed in narratives, typically about a firm's performance (Henry & Leone, 2016). There are various approaches to measuring the disclosure tone—manual, automated and machine learning. Although there is no universally accepted formula for tone measurement, if manual textual analysis is used, the tone can be measured at the statement level, for selected sections of a document, or for the full document (e.g. Francis, Philbrick, & Schipper, 1994; Francis, Schipper, & Vincent, 2002; Hoskin, Hughes, & Ricks, 1986; Rahman et al., 2017; Schleicher & Walker, 2010, 2015). The tone measured at the statement level indicates the sentiment conveyed solely from the textual sentence in question, which can differ significantly from the overall sentiment of the full document. This technique is often employed if a particular (type of) statement is of special interest to the researcher. If the manual reader concludes that the statement is favourable (unfavourable) or optimistic (pessimistic) in nature, the tone is positive (negative). In contrast, the tone measured for the full document is based on the tones of all individual statements in the document, and conveys an “average” of the sentiment, unless weights are assigned to different types of statements based on their perceived importance. If all statements carry equal weights, the tone is generally computed as a difference between the number of positive and negative statements.

If automated textual analysis is used, the tone is often measured for the full document since most stand-alone automated analysis cannot identify particular statements in a disclosure that may be of special interest (e.g. Henry, 2006, 2008; Henry & Leone, 2016; Huang et al., 2014; Kothari, Li, & Short, 2009; Loughran & McDonald, 2011; Rahman et al., 2017; Tetlock, 2007; Tetlock, Saar-Tsechansky, & Macskassy, 2008). The tone is then computed as the difference between the number of positive and negative keywords based on a wordlist devised for tone measurement, with or without ascribing equal weights to the words concerned. Positive (negative) keywords are likely to describe an optimistic (pessimistic)

message. Alternatively, a machine learning algorithm can be used that deploys a training set of statements to identify a larger dataset of similar statements, then classify the tone of the statements and create a tone measure based on the average of the tone in the statements (e.g. Li, 2010). Prior studies have suggested that the tone of financial disclosures that report earnings content such as annual reports, earnings conference calls, analyst reports and earnings press releases is incrementally informative for share prices (Abrahmason & Amir, 1996; Francis et al., 2002; Henry 2006, 2008; Henry & Leone, 2016; Leavy, Li & Merkley, 2011; Loughran & McDonald, 2011; Tetlock, 2007; Tetlock, et al., 2008).

A few recent studies have examined the relationship between disclosure tone and firm performance. Schleicher and Walker (2010) examine the frequency of positive and negative statements for firms with large annual changes in sales and earnings and find that firms with very poor impending performance bias the tone of forward-looking statements upwards. Li (2010) examine the information content of forward-looking statements and find that the average tone of forward-looking statements is positively associated with future earnings. Demers and Vega (2011) examine the conditions under which the tone predicts impending firm fundamentals. They find that the tone predicts the levels of and the uncertainty associated with firm fundamentals as well as the future earnings of the firm. Davis et al. (2012) examine the predictive ability of the tone for future performance. They assume that managers use disclosures to communicate truthful, value-relevant information to investors because firms weigh up the costs and benefits of truthful disclosures with strategic disclosures and disclose truthfully on average. They find that the tone is positively associated to future performance, and conclude that managers use the disclosure tone to provide truthful information about future performance.

Tone management is the choice in the level of narrative tone that is disproportionately positive or negative to the reported information (Huang et al., 2014). It is distinct from

earnings management where managers use accounting techniques to produce financial reports that overstate the firm's financial performance (Dechow, Sloan, & Sweeney, 1995). As such, tone management activity should generally be estimated incremental to any earnings management efforts. Some previous studies have indicated strategic reporting to obfuscate poor performance (e.g. Larcker & Zakolyukina, 2012; Li, 2008). However, the only study that examines the management of discretionary tone is Huang et al. (2014). They differ from Davis et al. (2012) and argue that, given that since the tone is driven by both economic fundamentals and managerial incentives, both truthful and strategic narratives can co-exist in a disclosure. To separate truthful from strategic disclosures, Huang et al. (2014) segregate the non-discretionary component of the tone that neutrally represents the reported information from the discretionary component of the tone that is excessively optimistic or pessimistic relative to the reported information. They find that the discretionary tone is strategically used to misinform investors about future earnings and cash flows. The market initially acts on this misinformation but corrects itself in the longer term once investors learn the accurate information.

This paper uses the same underlying assumptions of Huang et al. (2014) but investigates the predictive ability of the discretionary tone in the first and third quarters of the year instead of the start, since managerial incentives to manage the discretionary tone is likely to be different at different times of the year. I also devise a tone measure based solely on statements that are most likely to be used for managing the discretionary tone of year-end earnings, i.e. earnings forecast statements. Additionally, I develop separate measures for the discretionary tone of positive and negative statements since managerial incentives to manage the discretionary tone of negative statements might be different from that of positive statements. My findings complement Huang et al. (2014) in that the discretionary tone predicts mostly noise in the first quarter but incremental information in the third quarter about

year-end performance, with no evidence of strategic tone management over and above discretionary accruals. These results hold when a tone measure based on earnings forecast statement is used. Furthermore, I show that the third-quarter discretionary tone of negative statements provides incremental information about more firm fundamentals than positive statements.

2.2 Interim Management Statements

An Interim Management Statement (IMS) is a quarterly trading update introduced by the EU Transparency Directive (Directive 2004/109/EC) (Rahman et al., 2017). IMSs were originally introduced with the intention of reducing information asymmetry, to increase investor confidence and provide greater investor protection in the post Enron years (Schleicher & Walker, 2015). They were mandatory disclosures during 2007 – 2014 when all firms listed in EU regulated markets were required to issue two IMSs per financial year, one in the first quarter and one in the third quarter. As a result of sustained pressure from trade associations and small firms, the disclosure of IMSs has been made voluntary since 2014 (Link, 2012) but many listed firms continue to disclose them. Article 6 of the Transparency Directive requires an IMS to provide a general description of the firm's financial performance and financial position for the quarter and to describe any material events or transactions that have taken place during the period (Schleicher & Walker, 2015). Managers are free to decide which financial line-item to discuss, including whether numbers would be used to describe those. As such, although IMSs were mandatory disclosures for a number of years, the content has always been de-facto voluntary (Rahman et al., 2017).

I believe IMSs are suitable for this study since they report on a firm's financial performance for the first and third quarters. This allows me to examine the predicative ability of abnormal tone at two different points in the middle of the financial year, to see if

managerial tendencies to manipulate the discretionary tone are different in the third quarter than in the first. Further, my findings are also comparable to Huang et al. (2014) who use annual earnings press releases to predict future performance. Rahman et al. (2017) identify a number of additional reasons why IMSs might be suitable for manual textual analysis. I reiterate the relevant ones here as follows. First, the relatively short length of the typical IMSs as opposed to longer disclosures such as quarterly, interim or annual reports make themselves suitable for full document manual reading.³ Second, IMSs are akin to trading updates—they provide backward- and often forward-looking information on performance line items like sales and earnings. As such, IMSs are appropriate for computing financial performance tone and examining its predictive ability for future performance. Third, IMSs typically comprise of textual sentences and do not contain a lot of graphs, charts, tables or diagrams. Therefore, the tone of an IMS is based almost exclusively on narratives; there is little to no need for examining numbers from financial statement extracts to determine tone. Finally, if mandatory IMSs during the period 2007 – 2014 are used for this study, it is likely that most firms will have disclosed two IMSs per year as per the Transparency Directive requirements. This promotes convenience unlike voluntary ad-hoc trading updates where periodic availability is sometimes uncertain.

3. Methodology

3.1 Data and Sample Selection

I begin with the underlying sampling of Rahman et al. (2017), which is described as follows. I choose non-financial firms listed in the FTSE All-Share Index for this study, and

³ For instance, Schleicher and Walker (2015) find that the median IMS in their sample comprises of only 21 sentences and 757 words while Rahman et al. (2017) observe that the median IMS in their sample comprises of 22 statements and 777 words and it takes them about 50 minutes to read one full IMS document. Note that the unit of analysis in Schleicher and Walker (2015) is textual sentences, while in Rahman et al. (2017) it is the number of statements, defined as a group of words that contain distinct information on a topic.

collect their IMSs from the Perfect Information Navigator database which archives trading updates, interim and annual reports and other public filings of a large number of listed and non-listed UK and EU firms. I use 30 June 2008 as the date for initiating the sampling process. There were 668 firms in the FTSE All-Share Index as at that date. From this list, I eliminate: (i) 305 financial firms and (ii) 39 firms which are exempt by the Transparency Directive from disclosing IMSs as they issue full quarterly reports. From the remaining 324 FTSE All-Share non-financial firms as at 30 June 2008, I randomly select 100 firms for textual analysis.⁴

I collect all IMSs disclosed by these 100 firms during the six year period 2008 – 2013. IMSs were a mandatory disclosure during my sample years, and so the maximum likely number of IMSs from 100 firms over six years is 1200. I lose 69 IMSs due to firm collapse or delisting and another 109 IMSs were not released by the firms, resulting in 1022 IMSs. Rahman et al. (2017) use these 1022 IMSs in their study. I perform an updated search on the sample firm-years and obtain 10 additional IMSs misclassified as ‘Trading Statements’, ‘Production Updates’ or ‘Operating Updates’ in the Perfect Information Navigator. This leaves a final tally of 1032 IMSs for textual analysis, consisting of 517 first-quarter IMSs and 515 third-quarter IMSs.

3.2 Textual Analysis and Measurement of Tone

I adopt the underlying textual analysis and tone measurement process of Rahman et al. (2017), which is described as follows. I conduct textual analysis by first manually reading and recording the tone of every statement in an IMS. For the purpose of textual analysis, I define a statement as a phrase or group of words that contains a distinct piece of information on a particular topic. As such, a statement may comprise of: (i) one complete textual sentence

⁴ I observe that 15% of the sample firms are from the FTSE 100 Index, 38% from the FTSE 250 Index, and the remaining 47% from the FTSE Small Cap Index, resulting in a proportional representation of the number of large, medium and small firms in the FTSE All-Share Index.

(ii) fragment of a textual sentence (if multiple topics were reported in one sentence, e.g. ‘Like-for-like sales increased by 10% but like-for-like profits decreased by 5% over the quarter’) (iii) multiple textual sentences (typically in the case of repeated sentences). My unit of analysis is the statement, not the sentence.

I classify the tone of every statement as either ‘Positive’, ‘Neutral’, or ‘Negative’. I define a ‘Positive’ statement as one which is likely to have a favourable impact on the company or one which projects an optimistic sentiment (e.g. ‘Sales increased by 10% over the period’) and a ‘Negative’ statement as one which is likely to have an unfavourable impact on the company or one which projects a pessimistic sentiment (e.g. ‘Net income is expect to decline in the third quarter’). I define all statements which are unlikely to have a distinct positive or negative impact on the company as ‘Neutral’. Typically, these statements describe the following circumstances: (i) no change from prior period’s performance (ii) performance is in line with managerial expectations or market consensus (iii) unrelated to the company’s economic performance (iv) unclear whether the tone is positive or negative.

Additionally, I record up to three additional pieces of information for every statement. First, I record whether the statement provides group-level information. A group-level (‘Group’) statement is one which pertains to the entire company instead of a particular segment (business, product or geographic). Second, I record if the statement is forward-looking in nature. I define a forward-looking statement as one which describes events that are likely to happen in the future. These statements typically provide an expectation for the the future and are often stated in the future tense (e.g. ‘We expect the trading environment to improve over the coming months’). Third, I record if the statement refers to earnings. This is because forward-looking earnings statements are expected to have particularly high value-relevance for share price; investors are expected to make their buy, hold and sell decisions based on the future expected return of a share (Penman, 1980; Waymire, 1984). Statements

referring to profits, EBIT, EPS, net income, or any similar bottom-line measure, are classified as earnings statements. Appendix A provides some examples of the tone measurement process.

After recording the tone and additional information for every statement, I compute the net tone score, $TONE_{itj}$, for firm i year t and IMS j as follows:

$$TONE_{itj} = (POSITIVE_{itj} - NEGATIVE_{itj}) / (POSITIVE_{itj} + NEGATIVE_{itj}) \quad (1)$$

In Equation 1, $POSITIVE_{itj}$ and $NEGATIVE_{itj}$ refer to the total number of positive and negative statements for firm i year t and IMS j . By construction, $TONE$ is a continuous variable ranging from -1 to $+1$. If $TONE$ is greater (less) than 0, the IMS contains an overall positive (negative) sentiment, and there are more positive (negative) statements in the IMS. If $TONE$ is 0, then the sentiment is neutral and the number of positive and negative statements in the IMS is equal.⁵

Additionally, for each IMS, I compute separate measures of positive and negative tone for firm i year t and IMS j , termed POS_{itj} and NEG_{itj} respectively, by dividing the number of positive and negative statements by the total number of statements in the IMS. Hence POS and NEG ranges from 0 to 1, and can be described as the percentage of positive and negative statements in an IMS.

⁵ An alternative measure of tone is to divide the difference between positive and negative statements with the total number of statements in a disclosure. For instance, Huang et al. (2014) and Loughran and McDonad (2011) employ automated textual analysis and measure the tone by dividing the difference between positive and negative words with the total number of words. Although such a tone measure would also range (-1 to 1), I believe it is problematic as two disclosures with the same number of positive and negative statements (or words, depending on the measure) could have very different net tone scores depending on the length of the disclosure. In particular, the tone of shorter disclosures may be more easily biased towards the extremes of the range (-1 to 1), and longer disclosures towards the centre.

3.3 Measurement of Abnormal Tone

I follow the approach of Huang et al. (2014) and assume that for discretionary narratives in unaudited financial statements, both truthful and strategic disclosures are likely to be present. Therefore, the tone consists of a normal and an abnormal component. The normal component, called normal tone, is a neutral representation of the reported financial performance. Therefore, by definition, the normal tone is non-discretionary, as it depends entirely on the reported performance. The abnormal component, called abnormal tone, is the discretionary component of the tone, and may represent one of several things. To begin, the abnormal tone may represent managerial efforts to signal incremental private information to investors not reported in disclosures (Huang et al., 2014). This may include explanatory or causal attributions to the reported performance, designed to provide expanded explanations not included in the normal tone, perhaps due to reporting constraints. Incremental information may also be provided in the discretionary tone to enhance credibility of the reported performance and to reduce information asymmetry. Alternatively, the abnormal tone may be used by managers to strategically misreport a firm's future performance, in order to mislead investors, at least for short-term managerial gain. Huang et al. (2014) defines this practice as strategic tone management. For instance, managers may purposefully overstate the firm's expected year-end earnings to enhance the investors' perceptions about future firm performance, in pursuit of putting an upward pressure on the share price. I conjecture that discretionary narratives may also consist of concealment strategies employed to obfuscate poor performance or to overstate good performance. This includes rhetorical, thematic, visual and structural manipulation, and choice of performance benchmarks (for details, see Merkl-Davies & Brennan, 2007). Hence strategic impression management in discretionary tone can also account for tone management. Alternatively, abnormal tone may simply be noise unrelated to future performance (Huang et al., 2014). While noisy abnormal tone can also

potentially misinform investors, it does not provide a clear indication of strategic tone management. For instance, truthful information unrelated to firm fundamentals may provide noise.

To compute abnormal tone, I decompose the net tone score, $TONE_{it-lj}$ for firm i year t and IMS j , into normal tone $NTONE_{it-lj}$ and abnormal tone $ABTONE_{it-lj}$. Following the approach of Huang et al. (2014), I then run cross-sectional regressions of TONE on a list of tone determinants identified by Li (2010). These tone determinants include various firm characteristics and fundamental information that are typically available to investors at the time of disclosure. The expected net tone model is as follows:⁶

$$\begin{aligned} TONE_{it-lj} = & \alpha + \beta_1 EARN_{it-lj} + \beta_2 STDEARN_{it-lj} + \beta_3 CHEARN_{it-lj} + \beta_4 RET_{it-lj} + \\ & \beta_5 STDRET_{it-lj} + \beta_6 SIZE_{it-lj} + \beta_7 BTM_{it-lj} + \beta_8 LOSS_{it-lj} + \beta_9 AGE_{it-lj} + \\ & \beta_{10} BUSSEG_{it-lj} + \beta_{11} GEOSEG_{it-lj} + \beta_{12} UE_{it-lj} + \beta_{13} ANFOR_{it-lj} + \varepsilon_{it-lj} \end{aligned} \quad (2)$$

All the determinants of TONE are based on Huang et al. (2014). These include a measure of company profitability (EARN), and three earnings performance benchmarks—a 1/0 indicator variable for the profitability status of the company (LOSS), the annual change in profitability (CHEARN) and the unexpected earnings (UE). Additionally, Huang et al. (2014) argues variables for market returns (RET) and book-to-market value of equity (BTM) are expected to capture information about growth opportunities while consensus analyst earnings forecast (ANFOR) should capture information about future firm performance. Further, measures for stock return volatility (STDRET) and earnings volatility (STDEARN) are included in the

⁶ Huang et al. (2014) applies the expected tone model in Equation 2 on a sample of annual earnings press releases. I believe these tone determinants are also applicable for IMSs, which, just like earnings press releases, are comprised of discretionary narratives on a firm's financial performance. Additionally, using the same variables for the expected tone model allows comparability and reduces the likelihood that the computation of abnormal tone is distorted.

model to capture the operating and business risk of a company, the company age (AGE) to capture the life cycle of the company, and company size (SIZE), the number of geographic segments (GEOSEG) and business segments (BUSSEG) to capture the company's operating complexity.⁷ All these variables are defined in Table 1.

[Table 1 near here]

I further argue that separate measures for the tone of positive and negative statements, POS_{it-lj} and NEG_{it-lj} , can also be viewed as a construct of normal and abnormal components, similar to the net tone score, since they measure the sentiment of positive and negative statements. It is possible that tone management in positive statements is different from that of negative statements. For instance, managers have more incentives to manage investor perceptions of future performance upwards than downwards (Merkl-Davies & Brennan, 2007).⁸ It is therefore interesting to see if the predictive ability for future performance of the discretionary tone of negative statements is different from the discretionary tone of positive statements. To examine this, I compute the abnormal components of the tone positive and negative statements—the abnormal positivity and abnormal negativity. This is an extension to the approach of Huang et al. (2014). The normal components of POS and NEG are proportional presentations of reported positive and negative information respectively. On the other hand, abnormal positivity (negativity) may imply additional managerial efforts to: (i) strategically signal private information in positive (negative) statements in an IMS or (ii)

⁷ Please see Li (2010) for more details on the justification for using these variables as tone determinants.

⁸ For example, Huang et al. (2014) find that the abnormal tone in annual earnings preleases which predicts negative future earnings and cash flows, is positively associated with a number of upward perception management events, such as just meeting or beating earnings thresholds, future earnings restatements, seasoned equity offering, and merger and acquisitions. In contrast, the major downward perception management event frequently cited in literature is employee stock options.

overstate (understate) the impact of positive (negative) performance in an IMS. Alternatively, this may be noise unrelated to firm fundamentals. The models for positivity and negativity, POS and NEG, for firm i IMS j and year t , are as follows:

$$\begin{aligned} \text{POS}_{it-lj} = & \alpha + \beta_1 \text{EARN}_{it-lj} + \beta_2 \text{STDEARN}_{it-lj} + \beta_3 \text{CHEARN}_{it-lj} + \beta_4 \text{RET}_{it-lj} + \\ & \beta_5 \text{STDRET}_{it-lj} + \beta_6 \text{SIZE}_{it-lj} + \beta_7 \text{BTM}_{it-lj} + \beta_8 \text{LOSS}_{it-lj} + \beta_9 \text{AGE}_{it-lj} + \\ & \beta_{10} \text{BUSSEG}_{it-lj} + \beta_{11} \text{GEOSEG}_{it-lj} + \beta_{12} \text{UE}_{it-lj} + \beta_{13} \text{ANFOR}_{it-lj} + \varepsilon_{it-lj} \end{aligned} \quad (3)$$

$$\begin{aligned} \text{NEG}_{it-lj} = & \alpha + \beta_1 \text{EARN}_{it-lj} + \beta_2 \text{STDEARN}_{it-lj} + \beta_3 \text{CHEARN}_{it-lj} + \beta_4 \text{RET}_{it-lj} + \\ & \beta_5 \text{STDRET}_{it-lj} + \beta_6 \text{SIZE}_{it-lj} + \beta_7 \text{BTM}_{it-lj} + \beta_8 \text{LOSS}_{it-lj} + \beta_9 \text{AGE}_{it-lj} + \\ & \beta_{10} \text{BUSSEG}_{it-lj} + \beta_{11} \text{GEOSEG}_{it-lj} + \beta_{12} \text{UE}_{it-lj} + \beta_{13} \text{ANFOR}_{it-lj} + \varepsilon_{it-lj} \end{aligned} \quad (4)$$

I use the terms ABPOS_{it-lj} and ABNEG_{it-lj} to represent abnormal positivity and abnormal negativity for firm i IMS j and year t . The normal components of net tone, positivity and negativity, NTONE , NPOS and NNEG , are the predicted values of regressions in Equations 2, 3 and 4 respectively. The corresponding abnormal components, ABTONE , ABPOS and ABNEG , are the residual values of regressions in Equations 2, 3 and 4 respectively.

Table 2 presents the models of expected net tone, positivity and negativity based on Equations 2 – 4. I find that TONE is positively associated with market returns, firm size and unexpected earnings. The tone of short, trading statement like disclosures such as IMSs is unlikely to be significantly determined by profitability measures since the prior year-end's financial bottom-line is not frequently available at the time an IMS is reported in the first quarter and is likely to be reported in other disclosures well before the time a third-quarter IMS is disclosed. As such, I find that a number of profitability and profitability-status measures such as EARN , CHEARN and LOSS have insignificant coefficients. I find that

volatility measures such as STDEARN and STDRET are not significant determinants of TONE either. Further, the measure of company life cycle (AGE) and operating complexity (BUSSEG and GEOSEG) do not play a significant role in determining the tone. This may be due to the fact that there are no differences in IMS reporting requirements for firms with different risk profiles or when the nature and complexity of business is very different.

Whether abnormal tone is informative, noisy or misleading, it is orthogonal to the normal tone, which is based on reported firm fundamentals (Huang et al., 2014). Table 2 suggests that several profitability measures and firm characteristics are not significant determinants of the IMS tone. This indicates that ABTONE is not driven by reported firm fundamentals and is therefore likely to be a good proxy for discretionary tone.⁹

I now turn my attention to the positivity and negativity models. I find that POS is positively associated with company profitability, market returns, firm size and unexpected earnings but negatively associated with profitability status LOSS and the number of geographic segments. NEG is negatively associated with market returns, profitability status LOSS, number of geographic segments and consensus analyst forecast earnings. The negative coefficient of LOSS in the NEG regression indicates that managers tone down negative statements in a loss year. This is consistent with Clatworthy and Jones (2003) who suggest that declining performers emphasise less on negativity in discretionary narratives. I also find that the profitability measure EARN is a significant determinant of POS but not NEG, consistent with Merkl-Davies and Brennan (2007) that since managers have motives to present the firm's financial performance in a favourable light, the tone of discretionary narratives may emphasize positive performance more than negative performance.

[Table 2 near here]

⁹ In Section 6, I discuss some robustness tests using different automated wordlists for the net tone, positivity and negativity models.

3.4 Measurement of Discretionary Accruals

I use discretionary accruals as a control variable to proxy for earning management in future performance regressions on abnormal tone. I measure discretionary accruals using the cross-sectional modified Jones model (Dechow et al., 1995; Huang et al., 2014). I begin by computing total accruals as follows:

$$\text{TOTACC}_{it-lj} = \text{EBEI}_{it-lj} - (\text{CFO}_{it-lj} - \text{EIDO}_{it-lj}) \quad (5)$$

In Equation 5, TOTACC refers to total accruals, EBEI refers to income before extraordinary items, CFO refers to cash flow from operations and EIDO refers to extraordinary items and discontinued operations included in CFO.

I then run the following cross-sectional regression, where discretionary accruals DA_{it-lj} is calculated as the regression residuals of:

$$\text{TOTACC}_{it-lj} = \beta_1(1 / \text{TA}_{itj-2}) + \beta_2(\text{CHSALES}_{it-lj} - \text{CHACCR}_{it-lj}) + \beta_3\text{PPE}_{it-lj} + \varepsilon_{it-lj} \quad (6)$$

In Equation 6, TA refers to beginning total assets, CHSALES and CHACCR refers to annual change in sales and annual change in accruals from operating activities, and PPE refers to gross property, plant and equipment scaled by beginning total assets.

3.5 Measurement of Market Returns

For estimating the short-window announcement period market reaction, I measure three-day cumulative abnormal return CAR (−1, +1). The underlying steps for computing CAR (−1, +1) is taken from Rahman et al. (2017). For abnormal returns, I calculate daily

market model adjusted returns, u_{id} , as $u_{id} = R_{id} - (\alpha_i + \beta_i R_{md})$, where R_{id} is the return of firm i on day d , R_{md} is the return of the FTSE All-Share Index on day d and where R_{id} and R_{md} are calculated from DataStream Return Indices, RI. α_i and β_i are firm i 's estimated market model parameters calculated from the non-event period which runs from day $d-60$ to day $d-10$ and from day $d+10$ to day $d+60$ relative to the IMS announcement day $d=0$. CAR $(-1, +1)$ is calculated as the sum of the daily market model adjusted returns, u_{id} , over the three-day event period (days $d-1, d, d+1$), such that $CAR(-1, +1)_{id} = u_{id-1} + u_{id} + u_{id+1}$.

For estimating the post-announcement period market reaction, I measure 60-day cumulative abnormal return CAR $(+2, +61)$ starting from day 2 after the IMS disclosure. The computation of CAR $(+2, +61)$ is similar to CAR $(-1, +1)$ except that firm i 's market model parameters are now calculated from a non-event period which runs from $d-110$ to $d-10$ and $d+70$ to $d+170$ relative to the IMS announcement day $d=0$. $CAR(+2, +61)_{id} = u_{id+2} + \dots + u_{id+61}$.

4. Results

4.1 Descriptive Statistics and Correlations

Table 3 presents the descriptive statistics of the variables used in this study. The mean and median TONE is positive, consistent with prior literature that disclosures convey a greater amount of positive than negative sentiment (e.g. Abrahamsom & Amir, 1996; Henry & Leone, 2016). TONE ranges between -1 and $+1$, the minimum and maximum values it can take. The POS and NEG variables indicate that on average, 24.6% (14.1%) of the statements appearing in an IMS convey a positive (negative) sentiment. The mean of ABTONE, ABPOS and ABNEG are all 0 but each of them has considerable standard deviation (coefficient of variation $\approx \infty$), similar to the findings of Huang et al. (2014).

The other variables also depict expected characteristics. I observe that about 14% of the sample reported a loss. However, there is considerable variation within the sample for loss firms. Additionally, variables that measure earnings and return volatility namely STDEARN and STDRET have high coefficients of variation (> 1). In contrast, variables related to the life cycle and complexity of firm such as AGE, BUSSEG, GEOSEG all have low coefficient of variation (< 1).

[Table 3 near here]

Table 4 presents the correlation coefficients between the tone measures and variables used in the study. Also reported are the tests for differences between the correlation coefficients of tone and abnormal tone measures. A significant difference in the strength of correlation coefficients between tone and abnormal tone with a large number of firm characteristics is indicative of the discretionary tone not being in line with the sentiment in the net tone score. I observe a trend of consistency in the intra-tone correlations between the tone and abnormal tone measures. For instance, both TONE and ABTONE are positively associated with ABPOS and negatively associated with ABNEG. The column presenting Z-statistics indicate that there is no difference in the strength of correlation coefficients between any of the tone and abnormal tone measures. I find that POS (NEG) is positively (negatively) associated with ABPOS and negatively (positively) associated with ABNEG. ABPOS and ABNEG are negatively correlated with each other. This suggests that the discretionary tone of positive (negative) statements is in line with the overall sentiment disseminated by positive (negative) statements.

I find that both TONE and ABTONE have positive correlations with three-day cumulative abnormal return CAR ($-1, +1$). Similarly, POS and ABPOS have a positive

correlation with CAR (-1, +1) while NEG and ABNEG have a negative correlation with CAR (-1, +1). I also observe that TONE and ABTONE have a positive correlation with post-announcement 60-day cumulative abnormal return CAR (+2, +61). This provides no preliminary indication of share price reversal in the two months after the IMS announcement. I continue to observe that POS and ABPOS have a positive correlation with CAR (+2, +61) although its correlation with NEG and ABNEG is not significant at the 5% level. The column presenting Z-statistics indicate that there is no difference in the strength of tone and abnormal tone's correlations with either three-day or 60-day cumulative abnormal return.

Huang et al. (2014) use firm characteristics in their studies to control for the tone components that are likely to be driven by reported performance. Therefore, if abnormal tone is a good proxy for discretionary tone, then ABTONE, ABPOS and ABNEG should not have strong associations with firm characteristics. Likewise, I observe that ABTONE, ABPOS and ABNEG have insignificant correlations with SIZE, BTM, LOSS, AGE, BUSSEG and GEOSEG. This suggests that all three abnormal tone measures are likely to be good proxies for discretionary tone. Additionally, in the case of most of these firm characteristics, I find no difference in their strength of correlations between measures of tone and abnormal tone, indicating a trend of consistency in the tone of discretionary narratives with the overall sentiment in IMSs.

[Table 4 near here]

4.2 The Predictive Ability of Abnormal Tone for Future Performance

In this section, I examine the predictive ability of abnormal tone for future earnings and future cash flows. Since all three abnormal tone measures are regression residuals of TONE, POS and NEG determination models respectively, by definition, ABTONE, ABPOS

and ABNEG are unrelated to current firm performance and characteristics (Huang et al., 2014). I replace the ABTONE in the model with ABPOS and ABNEG to examine whether tone management is likely to be implemented for negative statements differently than positive statements.

Managerial incentives to strategically manage the discretionary tone may be different at different times during the year. Arguably, the greatest incentive to misreport year-end earnings is likely to be around the beginning of the year, when both markets and firms know relatively little about the year-end financial performance. As the year unfolds, managers have availability of more information, and so does the market. Managers are unlikely to make statements in their disclosure that can easily be refuted, as it hampers their future credibility and may lead to managerial and market penalties (Merkel-Davies & Brennan, 2007). As the market knows more about year-end performance towards the end of the year than at the beginning, any efforts to strategically misinform investors are likely to be more easily refuted towards the end of the financial year than at the beginning. Therefore, managerial incentives to strategically manage the tone for year-end performance are likely to diminish as the year unfolds. Further, forward-looking narratives are likely to have less credibility than backward-looking narratives as they cannot be verified at the time of disclosure. Therefore, managers may provide incrementally informative explanations (e.g. attributions, justifications, evidence, etc.) to support any predictions.

In their study, Huang et al. (2014) use annual earnings press releases, which are typically disclosed early on during the year when the incentive for strategically managing the tone for year-end performance is the greatest. In contrast, I use IMSs which are disclosed during a ten week window starting at the end of the relevant quarter it pertains to, till the beginning of the following quarter. Therefore, first (third) quarter IMSs are disclosed towards the end of the first (third) quarter or at the beginning of the second (fourth) quarter. The

opportunity for strategic tone management is likely to be lower in the third and fourth quarters than in the first and second quarters. Hence in addition to examining the predictive ability of the abnormal tone for future earnings of all IMSs, I also examine the predictive ability for the first and third quarter IMSs separately.

If ABTONE (ABPOS, ABNEG) predicts negative (negative, positive) future earnings and cash flows, then it is likely that managers strategically manage the discretionary tone. If ABTONE (ABPOS, ABNEG) is unrelated to future earnings and cash flows, then it simply introduces noise. Alternatively, if the ABTONE (ABPOS, ABNEG) predicts positive (positive, negative) future earnings and cash flows, then it contains incremental managerial private information.

Following Huang et al. (2014), I first estimate the following regressions of year-end and one-year ahead earnings on ABTONE, and subsequently replace ABTONE with ABPOS and ABNEG (excluding industry and year fixed-effects)¹⁰:

$$\begin{aligned} \text{EARN}_{itj+n} = & \alpha + \beta_1 \text{ABTONE}_{it-lj} + \beta_2 \text{DA}_{it-lj} + \beta_3 \text{EARN}_{it-lj} + \beta_4 \text{SIZE}_{it-lj} + \beta_5 \text{BTM}_{it-lj} + \\ & \beta_6 \text{RET}_{it-lj} + \beta_7 \text{STDRET}_{it-lj} + \beta_8 \text{STDEARN}_{it-lj} + \varepsilon_{it-lj} \end{aligned} \quad (7a)$$

$$\begin{aligned} \text{EARN}_{itj+n} = & \alpha + \beta_1 \text{ABPOS}_{it-lj} + \beta_2 \text{ABNEG}_{it-lj} + \beta_3 \text{DA}_{it-lj} + \beta_4 \text{EARN}_{it-lj} + \beta_5 \text{SIZE}_{it-lj} \\ & + \beta_6 \text{BTM}_{it-lj} + \beta_7 \text{RET}_{it-lj} + \beta_8 \text{STDRET}_{it-lj} + \beta_9 \text{STDEARN}_{it-lj} + \varepsilon_{it-lj} \end{aligned} \quad (7b)$$

where $n = 0$ or 1 .

¹⁰ Each regression model in Equations 7 – 15 includes eight industry dummy variables (INDUSTRY FE), based on ICB industry classification, omitting ‘Oil and Gas’ and five year dummy variables (YEAR FE), omitting dummy variable for the year 2008. Huang et al. (2014) does not control for industry and year effects as they use annual earnings press releases. The results in Tables 5 – 10, which report the regression estimations in Equations 7 – 15, are qualitatively similar if industry and year fixed-effects are not included in the regression models.

Table 5 presents the results of Equations 7a and 7b, for the full sample as well as for the first-quarter IMS and the third-quarter IMS separately. For the full sample, I observe that ABTONE predicts positive year-end and one-year ahead earnings. When ABTONE is replaced with ABPOS and ABNEG, I find that ABPOS predicts positive year-end earnings while ABNEG predicts negative year-end earnings. For one-year ahead earnings, I observe that while the coefficient of ABPOS is positive, ABNEG introduces noise. A one standard deviation increase in ABTONE (ABPOS, ABNEG) implies that year-end earnings should increase (increase, decrease) by 78% (25%, 32%). A one standard deviation increase in ABTONE (ABPOS) should increase one-year ahead earnings by 31% (50%).

For first-quarter IMSs, I find that the ABTONE, ABPOS or ABNEG cannot predict future earnings, either at the year-end, or for one-year ahead. For third-quarter IMSs, I find that the ABTONE predicts positive year-end earnings, but noise for one-year ahead. A one standard deviation increase in ABTONE in the third quarter implies an increase in year-end earnings by 80%. When ABTONE is replaced with ABPOS and ABNEG, I observe that ABPOS predicts positive year-end earnings while ABNEG predicts negative year-end earnings. A one standard deviation increase in ABPOS (ABNEG) in the third quarter should increase (decrease) year-end earnings by 49% (44%). Similar to the full sample, for one-year ahead earnings, the coefficient of ABPOS is positive but ABNEG is insignificant. A one standard deviation increase in ABPOS in the third quarter implies an increase in one-year ahead earnings by 71%. With regards to the control variables, I find that DA is negatively associated to year-end and one-year ahead earnings, for the full sample and third quarter. SIZE and EARN are also positively associated with year-end earnings. This is consistent with Huang et al. (2014). Overall, the results in Table 5 provide no clear evidence of strategic tone management at the first quarter but indicate that abnormal tone as well abnormal positivity

and abnormal negativity contains incremental private information in the third quarter about year-end earnings.

[Table 5 near here]

Subsequently, I estimate regressions of year-end and one-year ahead cash flows from operations on: (i) ABTONE (ii) ABPOS and ABNEG (excluding industry and firm fixed-effects):

$$\begin{aligned} \text{CFO}_{itj+n} = & \alpha + \beta_1 \text{ABTONE}_{it-lj} + \beta_2 \text{DA}_{it-lj} + \beta_3 \text{EARN}_{it-lj} + \beta_4 \text{SIZE}_{it-lj} + \beta_5 \text{BTM}_{it-lj} + \\ & \beta_6 \text{RET}_{it-lj} + \beta_7 \text{STDRET}_{it-lj} + \beta_8 \text{STDEARN}_{it-lj} + \varepsilon_{it-lj} \end{aligned} \quad (8a)$$

$$\begin{aligned} \text{CFO}_{itj+n} = & \alpha + \beta_1 \text{ABPOS}_{it-lj} + \beta_2 \text{ABNEG}_{it-lj} + \beta_3 \text{DA}_{it-lj} + \beta_4 \text{EARN}_{it-lj} + \beta_5 \text{SIZE}_{it-lj} + \\ & \beta_6 \text{BTM}_{it-lj} + \beta_7 \text{RET}_{it-lj} + \beta_8 \text{STDRET}_{it-lj} + \beta_9 \text{STDEARN}_{it-lj} + \varepsilon_{it-lj} \end{aligned} \quad (8b)$$

where $n = 0$ or 1 .

Table 6 presents the results of Equations 8a and 8b. For the full sample, I observe that ABTONE predicts positive year-end as well as positive one-year ahead cash flows. But when abnormal tone is replaced with measures of positivity and negativity, I only find that ABNEG predicts negative cash flows at year-end and for one-year ahead, while the ABPOS coefficients are insignificant on both occasions. A one standard deviation increase in ABTONE (ABNEG) implies an increase (decrease) in year-end cash flows by 82% (80%) and an increase (decrease) in one-year ahead cash flows by 96% (72%).

For first-quarter IMSs, I find weak but statistically significant positive ABTONE coefficients both for the year-end and for one-year ahead. ABNEG predicts negative year-end

and one-year ahead cash flows while ABPOS is noisy on both occasions. A one standard deviation increase in ABTONE (ABNEG) in the first quarter implies an increase (decrease) in year-end cash flows by 65% (84%) and an increase (decrease) in one-year ahead cash flows by 71% (74%). For third-quarter IMSs, I find that the ABTONE predicts positive cash flows, both for the year-end and for one-year ahead. A one standard deviation increase in ABTONE in the third quarter increases year-end cash flows by 107% and one-year ahead cash flows by 127%. Similar to the full sample, I find that only ABNEG predicts negative cash flows at the year-end, while ABPOS is insignificant. A one standard deviation increase in ABNEG in the third quarter decreases year-end cash flows by 90%. Both ABPOS and ABNEG introduce noise for one-year ahead cash flows. The control variables are consistent with prior literature and Huang et al. (2014). I find that SIZE, RET and EARN to be positively associated while BTM is negatively associated with year-end and one-year ahead cash flow. STDEARN is positively associated with one-year ahead cash flow.

[Table 6 near here]

Consistent with Table 5, the results in Table 6 suggest incrementally informative abnormal tone for the third quarter, and none of the abnormal positivity and abnormal negativity coefficients provides a clear indication of strategic tone management, even in the first quarter. In both Tables 5 and 6, I find that the model adjusted R-Squares are very similar when ABTONE is replaced by ABPOS and ABNEG. This implies that the power of the model to explain future firm performance remains intact when separate measures of discretionary tone are introduced for positive and negative statements, providing validity to my approach of replacing ABTONE with ABPOS and ABNEG.

However, an important distinction between the results in Tables 5 and 6 is that, for the full sample and the third quarter, the abnormal tones of both positive and negative statements provide incremental information about year-end earnings, but only the abnormal tone of negative statements provides incremental information about year-end cash flows, while the abnormal tone of positive statements provide noise.¹¹

4.3 Abnormal Tone and the Yearly Change in Earnings and Sales

An alternative model for examining the predictive ability of abnormal tone is to replace future financial performance as the dependent variable with the yearly change in financial performance measures. This is because financial performance results are often narrated in relative terms, such as in comparison to prior periods, board or managerial expectations, analyst or market consensus, etc. (Davis et al., 2012). Managers are often uncertain of the precision of performance in future but can gauge the way in which performance is likely to change (for e.g. *increase* or *decrease*). In this section, I examine the predictive ability of abnormal tone for the yearly change in some financial performance measures.

Trading statement like disclosures such as IMSs, which provide information on financial performance are likely to discuss sales and earnings information more frequently than any other items. This is because periodic sales and earnings information is often reported

¹¹ I conjecture this is due to the large number of vague, non-specific statements, typically located in the outlook or trading sections of the disclosure, that imply an impending favourable financial performance without specifying the line-item. While these statements do not specify an earnings measure, they usually imply an increase in future cash flow or shareholder wealth. Some examples of such statements are presented in Appendix B.

In the pilot study stage, I identify 796 statements in the sample that could be described as vague, general unspecified statements on financial performance. I find that a substantial portion of such statements have a positive tone (81.7%). I compute an abnormal tone measure for IMSs based solely on the text corpus of these 796 statements and find that in the third quarter, they predict noisy year-end cash flows. However, market return tests indicate that the abnormal tone is positively associated with share price movements in the third quarter at the time of IMS announcement, but ceases to be associated further in the post-announcement period. This is consistent with the third-quarter results in Tables 6 and 8.

as measures of financial performance.¹² As such, I choose the yearly change in sales revenue (CHSALES) and yearly change in two earnings measures: (i) earnings before extraordinary items (CHEARN) and (ii) earnings before interest and tax (CHEBIT). The predictive ability of abnormal tone measures for change in annual performance should be interpreted in a similar way to Tables 5 and 6.

I estimate the following sets of regressions of the yearly change in performance on abnormal tone (excluding industry and firm fixed-effects):

$$\text{CHEARN}_{itj} = \alpha + \beta_1 \text{ABTONE}_{it-lj} + \beta_2 \text{DA}_{it-lj} + \beta_3 \text{EARN}_{it-lj} + \beta_4 \text{SIZE}_{it-lj} + \beta_5 \text{BTM}_{it-lj} + \beta_6 \text{RET}_{it-lj} + \beta_7 \text{STDRET}_{it-lj} + \beta_8 \text{STDEARN}_{it-lj} + \varepsilon_{it-lj} \quad (9a)$$

$$\text{CHEARN}_{itj} = \alpha + \beta_1 \text{ABPOS}_{it-lj} + \beta_2 \text{ABNEG}_{it-lj} + \beta_3 \text{DA}_{it-lj} + \beta_4 \text{EARN}_{it-lj} + \beta_5 \text{SIZE}_{it-lj} + \beta_6 \text{BTM}_{it-lj} + \beta_7 \text{RET}_{it-lj} + \beta_8 \text{STDRET}_{it-lj} + \beta_9 \text{STDEARN}_{it-lj} + \varepsilon_{it-lj} \quad (9b)$$

$$\text{CHEBIT}_{itj} = \alpha + \beta_1 \text{ABTONE}_{it-lj} + \beta_2 \text{DA}_{it-lj} + \beta_3 \text{EARN}_{it-lj} + \beta_4 \text{SIZE}_{it-lj} + \beta_5 \text{BTM}_{it-lj} + \beta_6 \text{RET}_{it-lj} + \beta_7 \text{STDRET}_{it-lj} + \beta_8 \text{STDEARN}_{it-lj} + \varepsilon_{it-lj} \quad (10a)$$

$$\text{CHEBIT}_{itj} = \alpha + \beta_1 \text{ABPOS}_{it-lj} + \beta_2 \text{ABNEG}_{it-lj} + \beta_3 \text{DA}_{it-lj} + \beta_4 \text{EARN}_{it-lj} + \beta_5 \text{SIZE}_{it-lj} + \beta_6 \text{BTM}_{it-lj} + \beta_7 \text{RET}_{it-lj} + \beta_8 \text{STDRET}_{it-lj} + \beta_9 \text{STDEARN}_{it-lj} + \varepsilon_{it-lj} \quad (10b)$$

$$\text{CHSALES}_{itj} = \alpha + \beta_1 \text{ABTONE}_{it-lj} + \beta_2 \text{DA}_{it-lj} + \beta_3 \text{EARN}_{it-lj} + \beta_4 \text{SIZE}_{it-lj} + \beta_5 \text{BTM}_{it-lj} + \beta_6 \text{RET}_{it-lj} + \beta_7 \text{STDRET}_{it-lj} + \beta_8 \text{STDEARN}_{it-lj} + \varepsilon_{it-lj} \quad (11a)$$

$$\text{CHSALES}_{itj} = \alpha + \beta_1 \text{ABPOS}_{it-lj} + \beta_2 \text{ABNEG}_{it-lj} + \beta_3 \text{DA}_{it-lj} + \beta_4 \text{EARN}_{it-lj} + \beta_5 \text{SIZE}_{it-lj} + \beta_6 \text{BTM}_{it-lj} + \beta_7 \text{RET}_{it-lj} + \beta_8 \text{STDRET}_{it-lj} + \beta_9 \text{STDEARN}_{it-lj} + \varepsilon_{it-lj} \quad (11b)$$

¹² For instance, Schleicher and Walker (2015) identify ‘Sales’ and ‘Earnings’ as the two most common financial performance topics reported in an IMS. This includes both backward-looking and forward-looking statements.

The results of Equations 9—11 are presented in Table 7. I observe, for the full sample, as well as for both the first and third quarters, that ABTONE is positively associated with CHEARN, CHEBIT and CHSALES. When ABTONE is replaced with ABPOS and ABNEG, I find that ABNEG predicts negative CHEARN and CHSALES for the full sample and first quarter and while ABPOS predicts positive CHEBIT and CHSALES for the full sample and the first and third quarters.

Overall, the results indicate that the discretionary tone provides incremental information about the yearly change in earnings and sales. Abnormal negativity and abnormal positivity is often incrementally informative of the yearly change in earnings and sales, but none of the abnormal tone measures provide any indication of strategic tone management to misinform investors in either of the quarters.

[Table 7 near here]

4.4 The Market Reaction to Abnormal Tone

I consider the market reaction to abnormal tone by first examining the contemporaneous share price reaction using a short-window event period around the day of IMS announcement. If investors believe managers have engaged in strategic tone management, they would discount for ABTONE, ABPOS and ABNEG. In that case, ABTONE and ABPOS would predict negative market reaction while ABNEG would predict positive market reaction. On the other hand, if investors believe managers have provided useful decision making information, ABTONE and ABPOS would predict positive market reaction while ABNEG would predict negative market reaction.

I run regressions using a short-window event period for share price movement to examine the contemporaneous market reaction to IMS abnormal tone (excluding industry and firm fixed-effects):

$$\begin{aligned} \text{CAR}(-1, +1) = & \alpha + \beta_1 \text{ABTONE}_{it-lj} + \beta_2 \text{DA}_{it-lj} + \beta_3 \text{UE}_{it-lj} + \beta_4 \text{SIZE}_{it-lj} + \beta_5 \text{BTM}_{it-lj} \\ & + \beta_6 \text{RET}_{it-lj} + \beta_7 \text{STDRET}_{it-lj} + \beta_8 \text{STDEARN}_{it-lj} + \varepsilon_{it-lj} \end{aligned} \quad (12a)$$

$$\begin{aligned} \text{CAR}(-1, +1) = & \alpha + \beta_1 \text{ABPOS}_{it-lj} + \beta_2 \text{ABNEG}_{it-lj} + \beta_3 \text{DA}_{it-lj} + \beta_4 \text{UE}_{it-lj} + \beta_5 \text{SIZE}_{it-lj} \\ & + \beta_6 \text{BTM}_{it-lj} + \beta_7 \text{RET}_{it-lj} + \beta_8 \text{STDRET}_{it-lj} + \beta_9 \text{STDEARN}_{it-lj} + \varepsilon_{it-lj} \end{aligned} \quad (12b)$$

In Equations 12a and 12b, $\text{CAR}(-1, +1)$ refers to the three-day cumulative abnormal return around the IMS announcement. Following Huang et al. (2014), I control for DA and UE to proxy for reported information. Further, I include as controls all the variables in Equations 7—10. Panel A of Table 8 reports the regression results of Equations 12a and 12b. For the full sample as well as for the first and third quarters, I find that the coefficient of ABTONE is positive. When abnormal tone is replaced with positivity and negativity, I find that all ABPOS coefficients are positive while all ABNEG coefficients are negative for the full sample, as well as for the first and third quarters, although the reactions are more pronounced for the third quarter. In addition, I find unexpected earnings to be significantly positive for the full sample and the third quarter but insignificant for the first quarter. Overall, the results indicate that at the time of IMS disclosure, the investors believe that ABTONE, ABPOS and ABNEG provide incremental information. Vuong (1989) tests of model preference indicate that the explanatory power of the short-window event period share price

movements is greater in the third quarter than in the first quarter for both the abnormal tone ($p=0.00$) and the abnormal positivity and negativity models ($p=0.00$).¹³

Given the results in Tables 5 – 7, the positive market reaction to abnormal tone measures in Panel A of Table 8 provides no evidence to suggest, in the third quarter and for the full sample, that investors are misled by the discretionary tone or that shares are overpriced. However, while results in Tables 5 predict noisy abnormal tone measures in the first quarter for year-end earnings, the market believes all three abnormal tone measures provide useful information in the first quarter too. This does not necessarily indicate that investors are misinformed or that shares are overpriced in the first quarter, because results in Table 6 suggest that abnormal tone has weak positive association with year-end and one-year ahead cash flows in the first quarter. Further, Table 7 suggests that the first-quarter abnormal tone predicts positive yearly change in earnings and sales items.

Huang et al. (2014) suggest that as more information about firm fundamentals are gradually released to the market, over time the investors learn about initial mispricing, if any. If the abnormal tone had predicted negative future performance and the market did not discount for it at the time of disclosure, we would expect a complete price reversal in the post-announcement period once the market learns the accurate information. Similarly, if abnormal tone provides noise in its prediction for future performance and the market reacted either positively or negatively to it, then at the very least, the market return should cease to react as no supporting information comes across in the post-announcement period. If initial pricing is accurate, we should continue to see positive market return in the post-announcement period as additional information continues to come across supporting the discretionary tone.

¹³ This can be attributed to the more pronounced abnormal tone coefficients as well as the statistically significant unexpected earnings coefficient in the third quarter as opposed to the first quarter.

To examine the post-announcement period reaction to IMS abnormal tone, I run the following regressions (excluding industry and firm fixed-effects):

$$\begin{aligned} \text{CAR (+2, +61)} = & \alpha + \beta_1 \text{ABTONE}_{it-lj} + \beta_2 \text{DA}_{it-lj} + \beta_3 \text{UE}_{it-lj} + \beta_4 \text{SIZE}_{it-lj} + \beta_5 \text{BTM}_{it-lj} \\ & + \beta_6 \text{RET}_{it-lj} + \beta_7 \text{STDRET}_{it-lj} + \beta_8 \text{STDEARN}_{it-lj} + \varepsilon_{it-lj} \end{aligned} \quad (13a)$$

$$\begin{aligned} \text{CAR (+2, +61)} = & \alpha + \beta_1 \text{ABPOS}_{it-lj} + \beta_2 \text{ABNEG}_{it-lj} + \beta_3 \text{DA}_{it-lj} + \beta_4 \text{UE}_{it-lj} + \\ & \beta_5 \text{SIZE}_{it-lj} + \beta_6 \text{BTM}_{it-lj} + \beta_7 \text{RET}_{it-lj} + \beta_8 \text{STDRET}_{it-lj} + \beta_9 \text{STDEARN}_{it-lj} + \\ & \varepsilon_{it-lj} \end{aligned} \quad (13b)$$

In Equations 13a and 13b, CAR (+2, +61) refers to the 60-day cumulative abnormal return starting from the second day after the IMS announcement. The results of these regressions are presented in Panel B of Table 8. I observe that ABTONE continues to be positively associated with market returns in the post-announcement period, for the full sample and the third quarter. This is consistent with the argument that investors find the positive prediction of ABTONE for year-end earnings and cash flow to be informative in the months following the IMS announcement. When ABTONE is replaced with ABPOS and ABNEG, I find that only ABNEG is negatively associated with market returns in the full sample and the third quarter, while the ABPOS coefficient is insignificant. Therefore, for third-quarter IMSs, the market continues to find the discretionary tone of negative statements to be useful in the months following the IMS announcement, and leading towards the end of the year. For the first quarter, I observe that ABTONE, ABPOS and ABNEG do not generate significant market reaction in the post-announcement period. However, there is no indication of a significant price reversal either, perhaps because, among other things, the weak positive predictions of abnormal tone for future cash flows and the change in annual earnings and sales provide some useful information to investors in the first quarter.

With regards to the control variables in Panel B of Table 8, I observe that SIZE is positively associated with CAR (+2, +61) for the full sample and the third quarter. The size-effect anomaly cannot be observed because un-tabulated results show that firm size has negative correlation with profitability status LOSS in the sample ($r = -0.21$). Similar to Huang et al. (2014), the low statistical significance of most variables is consistent with weak post-earnings announcement drift in recent periods. RET is positively associated with market returns in the post-announcement period for the full sample and the first quarter. Similar to Panel A, Vuong (1989) tests indicate that the explanatory power of post-announcement period share price movements is greater in the third quarter than the first quarter, for the abnormal tone ($p=0.00$) as well as the abnormal positivity and negativity models ($p=0.00$). In both panels, I observe that the adjusted R-Squares, for the full sample, first quarter and third quarter models remain similar when ABTONE is replaced with separate measures for ABPOS and ABNEG, suggesting that the power of the models for explaining market returns remain largely intact when the discretionary tone is measured separately for positive and negative statements.

[Table 8 near here]

In sum, the results in Tables 5 – 7 provide no evidence of strategic tone management in the first quarter but suggest that, at least in the third quarter, the discretionary tone provides incremental information about year-end firm fundamentals. At the time of IMS disclosure in both the first and third quarters, the market responds positively to the discretionary tone. Over the next two months, the market reacts positively in the third quarter while no significant reaction is generated in the first quarter.

5. Introducing Information on Statement Types

The tone computed thus far is based on the full IMS text corpus. A potential weakness of this approach is that all statements in the document are given equal importance, although all statements are unlikely to be equally important in describing firm fundamentals or have the same value-relevance for share prices. For instance, for describing future earnings, a statement on the previous quarter's sales performance is likely to be less important than a forward-looking earnings statement. While Huang et al. (2014) use the Loughran and McDonald (2011) wordlist on the full text corpus of full earnings press releases, manual textual analysis in this study makes it possible to compute a more precise measure of tone. In particular, manual textual analysis allows me to distinguish between different types of statements. Therefore, I can compute a tone measure, for instance, based solely on the text corpus of earnings forecast statements. Such a tone measure should provide a better proxy for the sentiment on forward-looking earnings than full document tone and is likely to be more value-relevant for share prices (Rahman et al., 2017) as investors are likely to make their buy, hold or sell decisions based on the future expected return of a share (Penman, 1980).¹⁴ Importantly, if managers wish to influence the investors' perception of future earnings, the most direct way to do so is to manage the discretionary tone of earnings forecast statements, since tone management in the right statements increase the possibility that investors clearly understand the impact of the managers' intended message on the desired line item.

In the textual analysis stage, I had identified every group-level forward-looking statement on earnings. I observe that 227 IMSs from the sample of 1032 contained at least one group-level earnings forecast statement. I now use this subsample of 227 IMSs for a second stage analysis. First, I apply the basic principles outlined in Section 3 and compute the

¹⁴ Statements on one topic may not contain adequate information for reliably predicting other topics. For example, while the tone from the text corpus on earnings forecast statements is likely to be the most accurate tone measure for predicting future earnings, it may not be an accurate measure for predicting future cash flows, sales, or other items.

tone for each IMS based solely on the text corpus related to group-level earnings forecast. The net tone score is computed as the difference between the number of positive and negative group-level earnings forecast statements in an IMS, divided by the total number of group-level earnings forecast statements in the IMS. Second, I compute separate positivity and negativity measures for each IMS as the total number of positive or negative group-level earnings forecast statements in an IMS divided by the total number of group-level earnings forecast statements in the IMS. Consequently, I also compute the tone, positivity and negativity for the remainder of the IMS document based on all statements other than group-level earnings forecasts. I name the tone measures based on earnings forecast statements [E]TONE, [E]POS and [E]NEG and the tone measures for the remainder of the text corpus [R]TONE, [R]POS and [R]NEG. I then compute the abnormal tone, abnormal positivity and abnormal negativity as regression residuals of these new tones scores on the same tone determinants in Equations 2 – 4. I name the abnormal tone measures of group-level earnings forecast statements to be [E]ABTONE, [E]ABPOS and [E]ABNEG and the abnormal tone measures of the remainder of the IMS to be [R]ABTONE, [R]ABPOS and [R]ABNEG.

I now estimate the following regressions to examine the predictive ability of abnormal tone, abnormal positivity and abnormal negativity for year-end earnings (excluding industry and firm fixed-effects):

$$\begin{aligned} \text{EARN}_{itj} = & \alpha + \beta_1[\text{E}]ABTONE_{it-lj} + \beta_2DA_{it-lj} + \beta_3\text{EARN}_{it-lj} + \beta_4\text{SIZE}_{it-lj} + \beta_5\text{BTM}_{it-lj} \\ & + \beta_6\text{RET}_{it-lj} + \beta_7\text{STDRET}_{it-lj} + \beta_8\text{STDEARN}_{it-lj} + \varepsilon_{it-lj} \end{aligned} \quad (14a)$$

$$\begin{aligned} \text{EARN}_{itj} = & \alpha + \beta_1[\text{E}]ABPOS_{it-lj} + \beta_2[\text{E}]ABNEG_{it-lj} + \beta_3DA_{it-lj} + \beta_4\text{EARN}_{it-lj} + \\ & \beta_5\text{SIZE}_{it-lj} + \beta_6\text{BTM}_{it-lj} + \beta_7\text{RET}_{it-lj} + \beta_8\text{STDRET}_{it-lj} + \beta_9\text{STDEARN}_{it-lj} + \\ & \varepsilon_{it-lj} \end{aligned} \quad (14b)$$

$$\begin{aligned} \text{EARN}_{itj} = & \alpha + \beta_1[\text{E}]\text{ABTONE}_{it-lj} + \beta_2[\text{R}]\text{ABTONE}_{it-lj} + \beta_3\text{DA}_{it-lj} + \beta_4\text{EARN}_{it-lj} + \\ & \beta_5\text{SIZE}_{it-lj} + \beta_6\text{BTM}_{it-lj} + \beta_7\text{RET}_{it-lj} + \beta_8\text{STDRET}_{it-lj} + \beta_9\text{STDEARN}_{it-lj} + \\ & \varepsilon_{it-lj} \end{aligned} \quad (14c)$$

$$\begin{aligned} \text{EARN}_{itj} = & \alpha + \beta_1[\text{E}]\text{ABPOS}_{it-lj} + \beta_2[\text{E}]\text{ABNEG}_{it-lj} + \beta_3[\text{R}]\text{ABPOS}_{it-lj} + \\ & \beta_4[\text{R}]\text{ABNEG}_{it-lj} + \beta_5\text{DA}_{it-lj} + \beta_6\text{EARN}_{it-lj} + \beta_7\text{SIZE}_{it-lj} + \beta_8\text{BTM}_{it-lj} + \\ & \beta_9\text{RET}_{it-lj} + \beta_{10}\text{STDRET}_{it-lj} + \beta_{11}\text{STDEARN}_{it-lj} + \varepsilon_{it-lj} \end{aligned} \quad (14d)$$

Equations 14(a) and 14(b) include the tone of the group-level earnings forecast only while Equations 14(c) and 14(d) model the tone of the group-level earnings forecast together with the tone of the remainder of the text. The full sample of IMSs in this case is 227, which include 109 first-quarter IMSs and 118 third-quarter IMSs. The results are presented in Table 9. Panel A of Table 9 reports the regressions in Equations 14(a) and 14(b). Similar to Table 5, I observe that [E]ABTONE predicts positive year-end earnings for the full sample and in the third quarter but is insignificant in the first quarter. When [E]ABTONE is replaced by [E]ABPOS and [E]ABNEG, I find that the discretionary tone of negative earnings forecasts in the third quarter predicts negative year-end earnings, while the rest of the coefficients remain insignificant.

In un-tabulated results, I find that [E]ABTONE also predicts positive one-year ahead earnings in the third quarter ($p < 0.10$) but is insignificant in the first quarter. When [E]ABTONE is replaced by [E]ABPOS and [E]ABNEG, there is no significant association for one-year ahead earnings but no clear indication of strategic tone management either, even in the first quarter. Overall, the results are supportive of the third quarter discretionary tone of earnings forecast statements providing incremental information about future earnings.

Panel B of Table 9 reports the regressions in Equations 14(c) and 14(d). I continue to find that [E]ABTONE predicts positive year-end earnings for the full sample and the third

quarter, but not in the first quarter. I also find that [R]ABTONE is not significantly associated with year-end earnings, which is expected given that the tone of non-earnings forecast text is unlikely to predict earnings. However, there is no indication of strategic tone management, either in the earnings forecast text or the remainder of the document. The coefficient values of [E]ABTONE in Panel B is slightly smaller but very similar to Panel A when modelled without [R]ABTONE. This, together with the insignificant [R]TONE coefficients, suggest that the discretionary tone of earnings forecast text provides if any at all, very little information outside of year-end earnings. When [E]ABTONE is replaced by [E]ABPOS and [E]ABNEG and [R]ABTONE is replaced by [R]ABPOS and [R]ABNEG, I find that [E]ABNEG predicts negative year-end earnings in the third quarter. No other abnormal tone variable is significantly associated with year-end earnings, but I find no evidence of strategic tone management either. I observe that the adjusted R-Squares of the models in both Panels A and B are more elevated than Panel A in Table 5, suggesting that being able to identify an earnings forecast in the disclosure expands the model explanatory power. In un-tabulated results, I continue to find that [E]ABTONE predicts positive one-year ahead earnings for the third quarter ($p < 0.10$), but provides noise in the first quarter.

[Table 9 near here]

For supplementary analysis, I replace the dependent variable in Equation 14 with the yearly change in two frequently reported earnings measures used in Equations 9 and 10—earnings before extraordinary items and earnings before interest and tax and sales. The results are un-tabulated for brevity. I find that [E]ABTONE is positively associated with the yearly change in both earnings measures, for the full sample, as well as for the first and third quarters ($p < 0.05$ in all cases). Additionally, when [E]ABTONE is replaced with [E]ABPOS

and [E]ABNEG, I observe that none of these variables suggest any evidence of strategic tone management in either the first or the third quarter. Further, [E]ABNEG is typically negatively associated with yearly changes in both earnings measures for the full sample and in both quarters, while [E]ABPOS is positively associated with changes in earnings before extraordinary income in the first quarter. In sum, the discretionary tone of earnings forecasts is used for providing incremental information on the yearly change in earnings items in both the first and third quarters, and the results are usually sustained when abnormal tone is replaced with abnormal positivity and negativity measures.

Finally, to examine how abnormal tone of group-level earnings forecast statements affects market returns, I estimate the following regressions (excluding industry and firm fixed-effects):

$$CAR(-1, +1) = \alpha + \beta_1[E]ABTONE_{it-lj} + \beta_2DA_{it-lj} + \beta_3UE_{it-lj} + \beta_4SIZE_{it-lj} + \beta_5BTM_{it-lj} + \beta_6RET_{it-lj} + \beta_7STDRET_{it-lj} + \beta_8STDEARN_{it-lj} + \varepsilon_{it-lj} \quad (15a)$$

$$CAR(-1, +1) = \alpha + \beta_1[E]ABPOS_{it-lj} + \beta_2[E]ABNEG_{it-lj} + \beta_3DA_{it-lj} + \beta_4UE_{it-lj} + \beta_5SIZE_{it-lj} + \beta_6BTM_{it-lj} + \beta_7RET_{it-lj} + \beta_8STDRET_{it-lj} + \beta_9STDEARN_{it-lj} + \varepsilon_{it-lj} \quad (15b)$$

$$CAR(-1, +1) = \alpha + \beta_1[E]ABTONE_{it-lj} + \beta_2[R]ABTONE_{it-lj} + \beta_3DA_{it-lj} + \beta_4UE_{it-lj} + \beta_5SIZE_{it-lj} + \beta_6BTM_{it-lj} + \beta_7RET_{it-lj} + \beta_8STDRET_{it-lj} + \beta_9STDEARN_{it-lj} + \varepsilon_{it-lj} \quad (15c)$$

$$CAR(-1, +1) = \alpha + \beta_1[E]ABPOS_{it-lj} + \beta_2[E]ABNEG_{it-lj} + \beta_3[R]ABPOS_{it-lj} + \beta_4[R]ABNEG_{it-lj} + \beta_5DA_{it-lj} + \beta_6UE_{it-lj} + \beta_7SIZE_{it-lj} + \beta_8BTM_{it-lj} + \beta_9RET_{it-lj} + \beta_{10}STDRET_{it-lj} + \beta_{11}STDEARN_{it-lj} + \varepsilon_{it-lj} \quad (15d)$$

The results of the estimations from Equation 15 are presented in Table 10. To begin, I observe that the adjusted R-Squares of all the models in Table 10 are considerably elevated from the models of Panel A in the full sample of 1032 IMSs in Table 8. This indicates that the explanatory power for short-window share price movement is expanded when: (i) only group-level earnings forecasts are examined (ii) when all documents in the sample contain earnings forecast information. This is consistent with the findings of Rahman et al. (2017) and suggests that earnings forecast statements are more value-relevant for share prices than other statements in the IMS. Panel A of Table 10 presents the results of Equations 15(a) and 15(b). I find that [E]ABTONE is positively associated with CAR $(-1, +1)$ for the full sample and in both the first quarter and the third quarter. When [E]ABTONE is replaced with [E]ABPOS and [E]ABNEG, I find, for the full sample and the third quarter, that [E]ABPOS is positively associated and [E]ABNEG is negatively associated with market returns. For the first quarter, only [E]ABNEG is negatively associated with market return whereas [E]ABPOS has no significant association.

In Panel B, I present the results of Equations 15(c) and 15(d). When modelled with the tone of the remainder of the IMS, I continue to find that [E]ABTONE is positively associated with market returns for the full sample both the first and third quarters. When [E]ABTONE is replaced with [E]ABPOS and [E]ABNEG, I observe that, while first quarter coefficients are insignificant, [E]ABPOS is positively associated with market returns for the full sample and the third quarter. Further, [E]ABNEG is negatively associated with market returns for the full sample, the first quarter and the third quarter.

In both panels, I find that SIZE is positively associated with market returns, consistent with the un-tabulated finding that SIZE is negatively correlated with LOSS. I also find that return volatility is negatively associated with market returns, consistent with Huang et al. (2014). Overall, the results in Table 10 are consistent with the suggestion that the market

believes that the discretionary tone of earnings forecast statements provide useful information at the time of IMS disclosure, with and without being modelled with the discretionary tone of the non-earnings forecast statements. Similar to Table 8, Vuong (1989) tests indicate that the model explanatory power in the third quarter is greater than the first quarter for both abnormal tone and abnormal positivity and negativity models, with and without being modelled with the tone of non-earnings forecast statements ($p=0.00$ in all cases).

[Table 10 near here]

If the market overreacted at the time of IMS announcement, one would expect to see price reversal in the post-announcement period. Therefore, I now regress $CAR(+2, +61)$ on the same set of explanatory variables in Equation 15. In un-tabulated results, I continue to see elevated adjusted R-Squares compared to Panel B of Table 8. I find no evidence of price reversal in any of the models in the two months after IMS disclosure, even in the first quarter. Instead, I find that $[E]ABTONE$ is positively associated with market returns in the post-announcement period after the third quarter, with ($p<0.10$) and without ($p<0.05$) being modelled with $[R]ABTONE$, while $[E]ABTONE$ is unrelated to market returns in the first quarter.

6. Robustness Tests

I perform the following robustness tests to examine the generalizability of my results (the results are un-tabulated for brevity):

6.1 Subsample Analyses

I create different subsamples to check whether certain kinds of firms are more likely to manage their discretionary tone. For this, I rank all observations in terms of size, age,

financial performance and balance sheet constraints and create two subsamples in each of these cases containing 50% of the observations.¹⁵ The results are as follows.

Smaller firms have lower visibility and issue less voluntary trading statements around the year. Therefore, these firms are more likely to manage their discretionary tone than larger firms. After dividing the sample in terms of SIZE, I find that in the smaller firm sample (n=516) that abnormal tone is unrelated to year-end earnings and cash flows in the first quarter (n=257). In the third quarter (n=259), abnormal tone predicts positive year-end earnings ($p<0.05$) and generates positive market reaction ($p<0.01$) but has no significant relationship with year-end cash flows.¹⁶

Huang et al. (2014) suggest that older firms are more likely to engage in strategic tone management in annual earnings press releases. After dividing the sample in terms of AGE, I find that the abnormal tone in old firms (n=516) predicts positive year-end earnings and cash flows and is positively associated with market returns for the third quarter (n=259) and the full sample ($p<0.01$ in all cases) while the results are insignificant in the first quarter (n=257).¹⁷

Low performing firms may be more inclined to manage their tone to mislead investors since managers have incentives to portray their firm's financial performance in a favourable light (Merkl-Davies & Brennan, 2007). I divide the sample on the basis of return on assets (ROA) as a measure of performance. I find that low ROA firms predict positive year-end earnings for the third quarter (n=256; $p<0.05$) but not for the first-quarter (n=260). This is

¹⁵ I do not retain less than 50% of my observations in each subsample to allow for more than 200 observations when these subsamples are further examined for first and third quarter IMSs.

¹⁶ For larger firms, I observe that, for the full sample (n=516) and the third quarter (n=256), abnormal tone predicts positive year-end earnings ($p<0.01$) and cash flows ($p<0.10$) and generate positive market reaction at the time of IMS issuance ($p<0.05$). Further, there is no indication of abnormal tone predicting negative earnings or cash flows in the first quarter (n=260).

¹⁷ I find that young firms (n=516) predict positive year-end earnings and is positively associated with market returns at the third quarter (n=256; $p<0.10$ in both cases) but not for the full sample or the first quarter (n=260).

consistent with no evidence of strategic tone management in either well performing or poor performing firms.¹⁸

Finally, I divide the sample in terms of balance sheet constraints to accruals management, as defined by Huang et al. (2014): net operating assets. Huang et al. (2014) find that firms with higher balance sheet constraints are more likely to engage in strategic tone management. For firms with high balance sheet constraints (n=516), the abnormal tone predicts positive year-end earnings in the third quarter (n=253; $p<0.1$) and is positively associated with market returns ($p<0.01$). Overall, none of the suspect subsamples provide any indication of strategic tone management or mispricing. In addition, the subsamples with high SIZE, ROA and low AGE and balance-sheet constraints typically provide incremental information about year-end financial performance and are positively associated with market returns, particularly in the third quarter.¹⁹

6.2 Automated Wordlists

I repeat the estimations for the predictive ability of abnormal tone for future earnings for the full sample of 1032 IMSs using two automated wordlists: Henry (2008) and Loughran and McDonald (2011) (henceforth ‘LM’). Computer-assisted word counts are less likely to capture the contextual meaning and subtleties employed in language than manual textual analysis (Rahman et al., 2017; Schleicher & Walker, 2010). Nevertheless, using automated wordlists can provide greater validity to my findings. First, I find that the tone determination models for both the Henry and LM wordlists are very similar to my results in Table 2. For

¹⁸ High ROA firms predict positive year-end earnings and cash flows for the full sample (n=516) and the third quarter (n=259; $p<0.05$ in all cases). Additionally, abnormal tone is associated with positive market returns for the full sample and the third quarter ($p<0.01$).

¹⁹ For firms with low balance sheet constraints, abnormal tone predicts positive year-end earnings for the full sample (n=516; $p<0.05$) and the third quarter (n=262; $p<0.01$) and is positively associated with market returns ($p<0.01$ in both cases) while the results are insignificant at the first quarter.

instance, I find that EARN, STDEARN, CHEARN and a number of firm characteristic variables such as STDRET, BTM, BUSSEG, and GEOSEG are insignificant in both the Henry and LM wordlists, while RET and SIZE have positive association with TONE. This is similar to the results in Table 2 and provides greater reliability to my manual scoring.

When year-end earnings is regressed on abnormal tone, I find that both Henry and LM wordlists show no definite association in the first quarter but the LM wordlist shows a positive association for the full sample ($p < 0.10$) and the third quarter ($p < 0.05$). The Henry wordlist has a positive abnormal tone coefficient for the full sample and the third quarter but narrowly fails to be significant at the 10% level in both cases. When abnormal tone is replaced with abnormal positivity and abnormal negativity, I find that abnormal positivity has no significant relationship with year-end in either quarter. However, for both wordlists, I find that abnormal negativity has negative association with year-end earnings for the full sample and the third quarter, but is insignificant in the first quarter. When one-year ahead earnings are regressed on abnormal tone, and separately on abnormal positivity and abnormal negativity, both wordlists show insignificant associations for the full sample and in both quarters. As expected, with automated wordlists, the overall results are often weaker in terms of statistical significance but qualitatively similar to the findings in Table 5. They provide no clear evidence of strategic tone management in the first quarter, and suggest that the discretionary tone provides incremental information about future earnings in the third quarter.²⁰

I subsequently examine the market reaction to abnormal tone, abnormal positivity and negativity using the Henry and LM wordlists. I observe that the magnitude of market reaction to abnormal tone is generally lower in Henry and LM wordlists than my results in Table 8. However, I find that both wordlists generate positive market reaction at the time of IMS

²⁰ Regressing year-end and one-year ahead cash flows on abnormal tone produce qualitatively similar findings with no evidence of tone management, even in the first quarter.

disclosure for the full sample and the third quarter while the market reaction is insignificant in the first quarter. In the post-announcement period, I find that abnormal tone has positive market reaction in the LM wordlist in the third quarter only while the Henry wordlist does not generate any significant market reaction. Importantly, none of the wordlists indicate a negative market reaction at the time of IMS disclosure, or a price reversal in the post-announcement period. When the abnormal tone is replaced with abnormal positivity and abnormal negativity, I find that in both the Henry and LM wordlists that abnormal negativity generates negative market reaction in the full sample and the third quarter at the time of IMS disclosure while abnormal positivity is unrelated. Neither abnormal positivity nor abnormal negativity shows any evidence of price reversal in the post-announcement period. These results are consistent with my findings in Table 8.

6.3 Inclusion of Normal Tone in Regressions

I include the normal tone measures NTONE, NPOS and NNEG along with the abnormal tone measures ABTONE, ABPOS and ABNEG in the regression estimates of future performance and market returns. The normal tone presents reported performance without any excessive optimism or pessimism and therefore should not depict a significant association with future performance or market return after the relevant news content in the performance measure is controlled, i.e. EARN for future performance regressions and UE for market return regressions.²¹ I now find that ABTONE predicts noise in the first quarter but

²¹ Consistent with this study, Huang et al. (2014) find that normal tone is not associated with market returns at the time of earnings press release announcement or during the post-announcement period. Further, despite using a much larger sample, Huang et al. (2014) only find weak positive associations of the normal tone with year-end earnings and cash flows but no association in either case in the subsequent years. Since the normal component of the tone is a neutral representation of reported performance, I believe it should neither be significantly associated with future performance nor with market returns once the news content in the disclosure is controlled for. The minor difference in the significance level of normal tone coefficient between this paper and Huang et al. (2014) is likely because: (i) Huang et al. (2014) use earnings press releases and I use IMSs; since the majority of IMSs does not have an earnings forecast, a neutral representation of the IMS tone is unlikely to be able to predict future earnings (ii) Huang et al. (2014) use the LM wordlist while I use manual analysis since automated wordlists are less likely to be able to capture differences in meaning and context.

continues to predict positive year-end earnings for the full sample and the third quarter ($p < 0.01$ in both cases), consistent with the suggestion that third-quarter discretionary tone is incrementally informative of year-end earnings. When the tone measures are replaced with positivity and negativity, I find that ABPOS predicts positive year-end earnings for the third quarter ($p < 0.05$) while ABNEG predicts negative year-end earnings for the full sample ($p < 0.05$) and the third quarter ($p < 0.05$) but there is still no indication of strategic tone management in the first quarter for either ABPOS or ABNEG. In the regression models, NPOS and NNEG remain insignificant. Further, I continue to find no indication of strategic tone management for one-year ahead earnings, even in the first quarter.

In the market return regressions, I continue to find a positive ABTONE coefficient around the time of IMS announcement ($p < 0.01$) and in the post-announcement period ($p < 0.01$). When ABTONE is replaced with ABPOS and ABNEG, I observe that around the time of IMS announcement, ABPOS (ABNEG) is positively (negatively) associated with the market returns ($p < 0.01$ in both cases) but are unrelated in the post-announcement period. The normal tone measures NTONE, NPOS and NNEG are all statistically insignificant in these models. Overall, the results indicate that after the normal tone is included in the models, the market still believes that ABTONE, ABPOS and ABNEG provide incremental information at the time of IMS announcement, with no indication of price reversal in the post-announcement period.

6.4 Excluding Unexpected Earnings in Market Return Regressions

I believe that a fair case can be made against the inclusion of unexpected earnings in my market return regression models. This is because IMSs are more akin to trading statements than earnings announcements. It is expected that most earnings announcements will contain earnings information, including some information on earnings forecast.

However, this may not be true for trading statement like disclosures such as IMSs which have no obligation to report earnings. Further, like trading statements, IMSs rarely include income statement extracts, so it can be argued that it is unnecessary to control for news outside of the narratives. In this study, I find that only 21% of IMSs disclose group-level earnings forecasts. Similarly, Schleicher and Walker (2015) find that only 18% of IMSs disclose group-level earnings forecasts, and only 4% of earnings forecasts in IMSs are quantitative in nature, and almost always embedded within the narrative.²²

I include unexpected earnings UE in the market return estimations in Table 8 to facilitate comparability with Huang et al. (2014). I now re-estimate the regressions in Table 8 without UE. I find that the direction and statistical significance of abnormal tone measures have remained almost identical. Further, the size of the abnormal tone coefficients is nearly indistinguishable from the Table 8 results in most cases. For example, in the full sample CAR (-1, +1) regressions without UE, the ABTONE coefficient is now 0.0331 ($p < 0.01$) while the adjusted R-Squared of the model is now slightly lower (2.54%) than Table 8. When ABTONE is replaced with ABPOS and ABNEG, the ABPOS and ABNEG coefficients are now 0.0608 ($p < 0.01$) and -0.1025 ($p < 0.01$) respectively, very similar to the coefficients in Table 8, and the adjusted R-Squared of the model is now 2.58%. Vuong (1989) tests of model preference do not find a difference in the explanatory power of the models when UE is excluded.

The remaining market return regressions for CAR (-1, +1) and CAR (+2, +61) are qualitatively similar to Table 8 with often identical ABTONE, ABPOS and ABNEG coefficients. For example, in the CAR (+2, +61) regression, the ABTONE coefficient is still 0.0252 ($p < 0.01$) and the model adjusted R-Squared is now 2.08%. This means, without

²² This does not include backward-looking earnings information. If backward-looking information is considered, up to 45% of IMSs provide earnings information (Schleicher & Walker, 2015). I do not record backward-looking earnings statements in this study.

controlling for UE, I continue to find that the market believes that discretionary tone provides incremental information at the time of IMS announcement, with no indication of price reversal for the first quarter in the post-announcement period while the third quarter continues to generate positive market return in the two months after IMS announcement. Overall, these regressions, coupled with the Vuong (1989) tests indicate that although UE is significantly associated with market returns for the full sample estimations in Table 8, the exclusion of UE does not significantly alter the explanatory power of the abnormal tone models. In effect, this further validates ABTONE, ABPOS and ABNEG as good proxies for discretionary tone measures.

7. Conclusions

While most studies on disclosure tone examine annual report sections or earnings press releases, I use IMSs in this study. IMSs are an interesting policy initiative by the EU, because although they are required to report on financial performance for the quarter, their content is almost entirely comprised of discretionary narratives. As such, managers have considerable opportunity to either strategically manage the tone to misinform investors about impending firm fundamentals or to provide them with incremental information. Also, IMSs are disclosed for the first and third quarters of the financial year. This allows me to complement Huang et al. (2014) who examines the predictive ability of the discretionary tone of annual earnings press releases for future performance, typically issued at the beginning of the year.

In this study, I examine tone management in IMSs. I find that the discretionary tone of third-quarter IMSs provides incremental information about year-end earnings and cash flows while the discretionary tone of first-quarter IMSs often provides noise. These results are also sustained when I devise a tone measure based solely on group-level earnings

forecasts. This extends Huang et al. (2014) who find that managers strategically manipulate the discretionary tone of annual earnings press releases to misinform investors about future firm fundamentals. Overall, my results are inconsistent with any strategic tone manipulation. Rather, it suggests that the discretionary tone becomes more incrementally informative about future performance as the year progresses. I also devise the discretionary tone measure for positive and negative statements separately, since managers have more incentives to bias the firm's performance upwards than downwards. I find that the discretionary tone of negative statements is incrementally informative about more impending firm fundamentals than the discretionary tone of positive statements.

The market reaction tests indicate that when the discretionary tone is incrementally informative, i.e. in the third quarter, the market reacts positively at the time of IMS announcement and continues to be positively associated in the post-announcement period. When the discretionary tone is mostly noise, i.e. in the first quarter, the market reacts positively at the outset but ceases to react in the post-announcement period. The results are generally consistent with accurate market pricing and provide no definite evidence of strategic manipulation in the discretionary tone of IMSs.

Future research can examine the predictive ability or the market reaction of the discretionary tone of quarterly, interim or annual report sections, MD&A, 10K or 10Q filings, etc. which contain financial statements. Such documents may also yield a more pronounced measure of the normal component of the tone. Further research can also be conducted on comparing the efficacy of different textual analysis methods, including automated wordlists and machine-learning approaches, for determining the discretionary tone. Since the income streams of financial and non-financial firms are different, future studies can also compare tonal differences in the discretionary tones of financial and non-financial firms.

References

- Abrahamson, E., & Amir, E. (1996). The information content of the president's letter to shareholders. *Journal of Business, Finance and Accounting*, 23(8), 1157–1182.
- Baginski, S., Hassell, J., & Hillison, W. (2000). Voluntary causal disclosures: Techniques and capital market reaction. *Review of Quantitative Finance and Accounting*, 15(1), 371–389.
- Clatworthy, M., & Jones, M.J. (2003). Financial reporting of good news and bad news: Evidence from accounting narratives. *Accounting and Business Research*, 33(3), 171–185.
- Davis, A.K., Piger, J.M., & Sedor, L.M. (2012). Beyond the numbers: Measuring the information content of earnings press release language. *Contemporary Accounting Research*, 29(3), 845–868.
- Dechow, P., Sloan, R. & Sweeny, A. (1995). Detecting earnings management. *The Accounting Review* 70(2), 193–225.
- Demers, E. & Vega, C. (2011). Linguistic tone in earnings announcements: News or noise? Working paper.
- Francis, J., Philbrick, D., & Schipper, K. (1994). Shareholder litigation and corporate disclosures. *Journal of Accounting Research*, 32(2), 137–164.
- Francis, J., Schipper, K. & Vincent, L. (2002). Expanded disclosures and increased usefulness of earnings announcements. *The Accounting Review*, 30(1), 185–209.
- Henry, E. (2006). Market reaction to verbal components of earnings press releases: Event study using a predictive algorithm. *Journal of Emerging Technologies in Accounting*, 3(1), 1–19.
- Henry, E. (2008). Are investors influenced by how earnings press releases are written? *Journal of Business Communication*, 45(4), 363–407.
- Henry, E., & Leone, A.J. (2016). Measuring qualitative information in capital markets research: Comparison of alternative methodologies to measure disclosure tone. *The Accounting Review*, 91(1), 153–178.
- Hoskin, R.E., Hughes, J.S., & Ricks, W.E. (1986). Evidence on the incremental information content of additional firm disclosures made concurrently with earnings. *Journal of Accounting Research*, 24(1), 1-32.
- Huang, X., Teoh, S.H. & Zhang, Y. (2014). Tone management. *The Accounting Review*, 89(3), 1083–1113.
- Kothari, S.P., Li, X., & Short, J. (2009). The effect of disclosures by management, analysts, and financial press on cost of capital, return volatility, and analyst forecasts: A study using content analysis. *The Accounting Review*, 84(5), 1639–1670.

- Larcker, D., & Zakolyukina, A. (2012). Detecting deceptive discussions in conference calls. *Journal of Accounting Research* 50(2), 495–540.
- Lehavy, R., Li, F., & Merkley, K. (2011). The effect of annual report readability on analyst following and the properties of their earnings forecasts. *The Accounting Review* 86(3): 1087–1115.
- Li, F. (2008). Annual report readability, current earnings and earnings persistence. *Journal of Accounting and Economics*, 45(2-3), 221–247.
- Li, F. (2010). The information content of forward-looking statements in corporate filings—A naïve Bayesian machine learnings approach. *Journal of Accounting Research*, 48(5): 1049–1102.
- Link, B. (2012). The struggle for a common interim frequency regime in Europe. *Accounting in Europe*, 9(2), 191–226.
- Loughran, T., & McDonald, B. (2011). When is a liability not a liability? Textual analysis, dictionaries, and 10-Ks. *The Journal of Finance*, 66(1), 35–65.
- Merkel-Davies, D.M., & Brennan, N.M. (2007). Discretionary disclosure strategies in corporate narratives: incremental information or impression management? *Journal of Accounting Literature*, 27(1), 116–196.
- Penman, S. (1980). An empirical investigation of the voluntary disclosure of corporate earnings forecasts. *Journal of Accounting Research* 18(1), 132–160.
- Rahman, S., Schleicher, T., & Walker, M. (2017). Modelling the market response to the tone of Interim Management Statements: A comparison of manual and automated methods. Working paper.
- Schleicher, T., & Walker, M. (2010). Bias in the tone of forward-looking narratives. *Accounting and Business Research*, 40(4), 371–390.
- Schleicher, T., & Walker, M. (2015). Are interim management statements redundant? *Accounting and Business Research*, 45(2), 229–255.
- Tetlock, P. C. (2007). Giving content to investor sentiment: The role of media in the stock market. *The Journal of Finance*, 62(3), 1139–1168.
- Tetlock, P., Saar-Tsechansky, & M. Macskassy, S. (2008). More than words: Quantifying language to measure firms' fundamentals. *The Journal of Finance*, 63(3), 1437–1467.
- Vuong, Q. H. (1989). Likelihood ratio tests for model selection and non-nested hypotheses. *Econometrica*, 57(2), 307–333.
- Waymire, G. (1984). Additional evidence on the information content of management earnings forecasts. *Journal of Accounting Research* 22(2), 703–718.

Table 1. Variable Definitions

<i>Variable</i>	<i>Definition</i>
TONE	The net tone score computed as the difference between the number of positive and negative statements in an IMS divided by the sum of positive and negative statements in the IMS.
POS	The positivity score computed as the number of positive statements in an IMS divided by the total number of statements in the IMS.
NEG	The negativity score computed as the number of negative statements in an IMS divided by the total number of statements in the IMS.
ABTONE	The abnormal component of tone computed as the difference between the TONE of an IMS and the normal component of the tone in that IMS derived from the net tone model.
ABPOS	The abnormal component of positivity computed as the difference between the POS of an IMS and the normal component of positivity in that IMS derived from the positivity model.
ABNEG	The abnormal component of negativity computed as the difference between the NEG of an IMS and the normal component of negativity in that IMS derived from the negativity model.
DA	Discretionary accruals based on cross-sectional modified Jones model, computed as the residuals of a regression of total accruals on: (i) (1 / beginning total assets), (ii) the difference between annual change in sales and annual change in accounts receivable from operating activities, and (iii) gross property, plant and equipment scaled by beginning total assets. Total accruals is computed by deducting cash flow from operations (net of extraordinary items and discontinued operations) from income before extraordinary items.
EARN	Earnings before extraordinary items divided by beginning total assets.
STDEARN	Standard deviation of EARN over the past four years.
CHEARN	Annual change in earnings before extraordinary items divided by beginning total assets.
RET	Annual buy-and-hold raw returns.
STDRET	Standard deviation of RET over the last four years.
SIZE	Natural logarithm of market value of equity.
BTM	Book-to-market value of equity.
LOSS	Indicator variable taking the value of 1 if EARN is negative, and 0 otherwise.
AGE	Natural logarithm of (1 + number of years since the firm appears in DataStream).
BUSSEG	Natural logarithm of (1 + number of business segments).
GEOSEG	Natural logarithm of (1 + number of geographic segments).
UE	Unexpected earnings computed as the difference between actual EPS and the latest median analyst forecast from I/B/E/S divided by the beginning share price.
ANFOR	Analyst consensus EPS forecast divided by the beginning share price.
CFO	Operating cash flow divided by beginning total assets.
CHEBIT	Annual change in earnings before interest and tax divided by beginning total assets.
CHSALES	Annual change in sales revenue divided by beginning total assets.
CAR (−1, +1)	Three day cumulative abnormal return, from one day before to one day after the announcement of IMS. For abnormal returns, daily market model adjusted returns, u_{id} , is computed as $u_{id} = R_{id} - (\alpha_i + \beta_i R_{md})$, where R_{id} is the return of firm i on day d , R_{md} is the return of the FTSE All-Share Index on day d and where R_{id} and R_{md} are calculated from DataStream Return Indices, RI. α_i and β_i are firm i 's estimated market model parameters calculated from the non-event period which runs from $d-60$ to $d-10$ and $d+10$ to $d+60$ relative to the IMS announcement day $d=0$. The cumulative abnormal return is calculated as the sum of the daily market model adjusted returns, u_{it} , over the three-day event period (days $d-1$, d , $d+1$), such that $CAR(-1, +1)_{it} = u_{id-1} + u_{id} + u_{id+1}$.
CAR (+2, +61)	60-day cumulative abnormal return, starting from the second day after the announcement of IMS. The computation is similar to three-day CAR except that firm i 's market model parameters are now calculated from a non-event period which runs from $d-110$ to $d-10$ and $d+70$ to $d+170$ relative to the IMS announcement day $d=0$. $CAR(+2, +61)_{id} = u_{id+2} + \dots + u_{id+61}$.

Table 2. Expected Tone Model

<i>Variables</i>	Dependent: TONE _{it-lj}		Dependent: POS _{it-lj}		Dependent: NEG _{it-lj}	
	<i>Coeff.</i>	<i>P-Value</i>	<i>Coeff.</i>	<i>P-Value</i>	<i>Coeff.</i>	<i>P-Value</i>
INTERCEPT	−0.1811	0.319	0.0675	0.253	0.2088	0.000
EARN _{it-lj}	0.2437	0.187	0.1238	0.039	0.0066	0.884
STDEARN _{it-lj}	−0.0319	0.825	−0.0206	0.660	0.0081	0.818
CHEARN _{it-lj}	0.0106	0.364	0.0002	0.968	−0.0025	0.380
RET _{it-lj}	0.1129	0.000	0.0184	0.050	−0.0279	0.000
STDRET _{it-lj}	−0.0004	0.881	−0.0002	0.766	0.0001	0.863
SIZE _{it-lj}	0.0264	0.005	0.0116	0.000	−0.0026	0.256
BTM _{it-lj}	0.0036	0.852	0.0090	0.150	0.0046	0.321
LOSS _{it-lj}	−0.0467	0.291	−0.0539	0.000	−0.0198	0.065
AGE _{it-lj}	−0.0153	0.785	0.0068	0.708	−0.0053	0.694
BUSSEG _{it-lj}	−0.0502	0.267	−0.0118	0.422	0.0145	0.188
GEOSEG _{it-lj}	−0.0007	0.988	−0.0618	0.000	−0.0268	0.015
UE _{it-lj}	0.0008	0.051	0.0002	0.087	−0.0000	0.619
ANFOR _{it-lj}	0.0357	0.672	−0.0056	0.840	−0.0387	0.063
F-VALUE	4.14	0.000	6.81	0.000	2.47	0.003
OBS	1032		1032		1032	
ADJ R-SQ	0.0502		0.0682		0.0182	

Notes: The table reports the regression coefficients and p-values of the net tone, positivity and negativity models based on 1032 IMSs during the period 2008—2013. Coeff: Coefficient. OBS: number of observations. All variables are defined in Table 1.

Table 3. Descriptive Statistics

<i>Variable</i>	<i>Mean</i>	<i>Std. Dev</i>	<i>Median</i>	<i>Minimum</i>	<i>Maximum</i>
TONE	0.2555	0.4333	0.2727	−1.0000	1.0000
POS	0.2457	0.1430	0.2300	0.0000	0.8235
NEG	0.1417	0.1041	0.1250	0.0000	0.5556
ABTONE	0.0000	0.4223	−0.0056	−1.3154	0.9281
ABPOS	0.0000	0.1372	−0.0162	−0.2990	0.5635
ABNEG	0.0000	0.1025	−0.0143	−0.1702	0.4155
DA	0.0027	0.0090	0.0003	−0.0000	0.0637
EARN	0.0975	0.0885	0.0839	−0.0886	0.5835
STDEARN	0.0376	0.0947	0.0202	0.0000	1.5948
CHEARN	0.0098	0.0852	0.0068	−0.6236	1.1480
RET	0.1253	0.5410	0.0000	−0.8510	3.9312
STDRET	0.7048	5.7226	0.3488	0.0000	175.51
SIZE	17.748	1.6079	17.483	12.676	22.592
BTM	0.5855	1.1918	0.4775	−12.526	25.000
LOSS	0.1398	0.3350	0.0000	0.0000	1.0000
AGE	1.7205	0.2517	1.7482	0.9542	2.1987
BUSSEG	0.7723	0.3011	0.7782	0.3010	1.2788
GEOSEG	0.6974	0.3093	0.7782	0.3010	1.8062
UE	−2.3563	33.805	−0.2400	−73.800	28.410
ANFOR	0.0777	0.1670	0.0226	−0.1088	1.5381
CFO	−0.1376	4.4749	0.1103	−98.824	79.680
CHEBIT	0.0099	0.1309	0.0068	−0.5856	1.3111
CHSALES	0.0797	0.2425	0.0577	−1.9051	1.3399
CAR (−1, +1)	0.0004	0.0851	0.0009	−0.5632	1.2239
CAR (+2, +61)	0.0089	0.1242	0.0151	−1.0778	0.4664

Notes: The table reports the summary statistics of variables used in this study based on 1032 IMSs during the period 2008—2013. All variables are defined in Table 1.

Table 4. Tone Correlations

<i>Variables</i>	<i>TONE</i>	<i>ABTONE</i>	<i>Z-Score</i>	<i>POS</i>	<i>ABPOS</i>	<i>Z-Score</i>	<i>NEG</i>	<i>ABNEG</i>	<i>Z-Score</i>
ABTONE	0.9754	1.0000	N/A	0.6057	0.6374	-1.17	-0.7292	-0.7410	0.58
ABPOS	0.6184	0.6374	-0.71	0.9457	1.0000	N/A	-0.0796	-0.0828	0.07
ABNEG	-0.7182	-0.7410	1.11	-0.0617	-0.0828	0.48	0.9790	1.0000	N/A
DA	-0.0002	-0.0626	1.42	0.0920	-0.0054	2.22	0.0725	0.0834	-0.25
EARN	0.1459	0.0397	2.43	0.2018	0.0639	3.19	-0.0387	-0.0018	-0.84
STDEARN	0.0283	-0.0225	1.15	0.0276	-0.0260	1.21	-0.0214	0.0021	-0.53
CHEARN	0.3211	0.2645	1.40	0.1875	0.1283	1.38	-0.2745	-0.2350	-0.96
RET	0.2077	0.0724	3.14	0.1622	0.0317	3.00	-0.1579	-0.0473	-2.54
STDRET	0.0932	0.0226	1.61	0.0677	-0.0020	1.58	-0.0634	-0.0158	-1.08
SIZE	0.1205	0.0041	2.65	0.1707	-0.0051	4.03	-0.0195	0.0193	-0.88
BTM	-0.0758	0.0259	-2.31	-0.0757	0.0130	-2.02	-0.0593	-0.0194	-0.91
LOSS	-0.0830	0.0034	-1.96	-0.1925	0.0055	-4.54	-0.0560	-0.0175	-0.88
AGE	0.0109	0.0152	-0.10	0.0589	0.0070	1.18	0.0103	0.0046	0.13
BUSSEG	-0.0049	0.0138	-0.42	0.0263	0.0234	0.07	0.0209	-0.0149	0.81
GEOSEG	0.0127	-0.0028	0.35	-0.1280	-0.0202	-2.46	-0.0947	-0.0092	-1.95
UE	0.0274	0.0259	0.03	0.1055	0.1119	-0.15	-0.0336	-0.0378	0.10
ANFOR	0.0792	0.0565	0.52	0.1415	0.1025	0.90	0.0061	0.0127	-0.15
CFO	0.1301	0.0667	1.45	0.1371	0.0587	1.80	-0.0561	-0.0329	-0.53
CHEBIT	0.2617	0.2249	0.89	0.1906	0.1752	0.36	-0.1908	-0.1388	-1.21
CHSALES	0.2908	0.2452	1.11	0.1720	0.1101	1.43	-0.2419	-0.2300	-0.29
CAR (-1, +1)	0.2107	0.2120	-0.31	0.1379	0.1464	-0.20	-0.1604	-0.1545	-0.14
CAR (+2, +61)	0.0706	0.0790	-0.19	0.0515	0.0550	-0.08	-0.0345	-0.0392	0.11

Notes: The table reports the Spearman's rank correlations between the variables used in this study and tone, positivity and negativity measures. Also presented are Z-statistics of the test of the difference in correlation coefficients between tone and abnormal tone measures. The test of difference between two correlation coefficients is performed by Fisher's r to z transformation which changes the sampling distribution of a correlation coefficient so that it becomes normally distributed by converting the correlation coefficient to Z-scores, so that a test of difference can be performed. All variables are defined in Table 1. Correlation coefficients and Z-statistics are shown in bold if significant at the 5% level.

Table 5. Abnormal Tone and Future Earnings

Panel A: Dependent Variable EARN _{itj}						
<i>Variables</i>	FULL SAMPLE		FIRST QUARTER		THIRD QUARTER	
	(1)	(2)	(1)	(2)	(1)	(2)
INTERCEPT	−0.0060***	−0.0597***	−0.0538	−0.0545	−0.0632**	−0.0642**
ABTONE _{it-lj}	0.0184***		0.0040		0.0190***	
ABPOS _{it-lj}		0.0185*		0.0056		0.0359**
ABNEG _{it-lj}		−0.0315**		−0.0191		−0.0427**
DA _{it-lj}	−0.5628**	−0.5744***	−0.3465	−0.3516	−0.7637**	−0.7915**
EARN _{it-lj}	0.8015***	0.8016***	0.8300***	0.8288***	0.7782***	0.7812***
SIZE _{it-lj}	0.0029**	0.0030**	0.0025	0.0025	0.0035**	0.0036**
BTM _{it-lj}	−0.0028	−0.0028	−0.0021	−0.0021	−0.0031	−0.0031
RET _{it-lj}	0.0066*	0.0066*	0.0061	0.0062	0.0072	0.0069
STDRET _{it-lj}	0.0000	0.0000	0.0000	0.0000	−0.0006	−0.0004
STDEARN _{it-lj}	0.0151	0.0149	−0.0080	−0.0076	0.0290	0.0275
INDUSTRY FE	YES	YES	YES	YES	YES	YES
YEAR FE	YES	YES	YES	YES	YES	YES
OBS	1032	1032	517	517	515	515
ADJ R-SQ	0.7193	0.7188	0.7141	0.7138	0.7176	0.7152
Panel B: Dependent Variable EARN _{it+lj}						
<i>Variables</i>	FULL SAMPLE		FIRST QUARTER		THIRD QUARTER	
	(1)	(2)	(1)	(2)	(1)	(2)
INTERCEPT	−0.0044	−0.0455	−0.0347	−0.0343	−0.0529	−0.0581
ABTONE _{it-lj}	0.0075*		0.0044		0.0105	
ABPOS _{it-lj}		0.0361**		0.0232		0.0516**
ABNEG _{it-lj}		0.0043		0.0022		0.0120
DA _{it-lj}	−0.8667***	−0.9177***	−0.5678	−0.5857	−1.1488***	−1.2512***
EARN _{it-lj}	0.6998***	0.7017***	0.7517***	0.7530***	0.6561***	0.6584***
SIZE _{it-lj}	0.0023	0.0026	0.0018	0.0019	0.0029	0.0036
BTM _{it-lj}	−0.0014	−0.0012	−0.0000	0.0002	−0.0024	−0.0022
RET _{it-lj}	−0.0033	−0.0035	−0.0043	−0.0045	−0.0025	−0.0028
STDRET _{it-lj}	−0.0000	−0.0000	−0.0001	−0.0001	−0.0000	−0.0002
STDEARN _{it-lj}	0.0611***	0.0588***	0.0061	0.0059	0.0940***	0.0892***
INDUSTRY FE	YES	YES	YES	YES	YES	YES
YEAR FE	YES	YES	YES	YES	YES	YES
OBS	1032	1032	517	517	515	515
ADJ R-SQ	0.5540	0.5551	0.5616	0.5616	0.5351	0.5367

Notes: The table reports regressions of future earnings on abnormal tone of 1032 IMSs during the period 2008–2013. Separate first and third quarter results are also reported. INDUSTRY FE includes eight ICB classification 1/0 indicator variables, omitting ‘Oil and Gas’, YEAR FE includes five 1/0 indicator variables for each year in sample, omitting the year 2008. OBS: number of observations. All variables are defined in Table 1.

*** Two-tailed significance at the 1% level.

** Two-tailed significance at the 5% level.

* Two-tailed significance at the 10% level.

Table 6. Abnormal Tone and Future Cash Flows

Panel A: Dependent Variable CFO_{itj}						
<i>Variables</i>	FULL SAMPLE		FIRST QUARTER		THIRD QUARTER	
	(1)	(2)	(1)	(2)	(1)	(2)
INTERCEPT	−3.4778	−3.2570	−0.4256	−0.4537	−7.0929	−6.8190
ABTONE _{it-lj}	0.0193***		0.0155*		0.0254***	
ABPOS _{it-lj}		−0.0075		−0.0113		0.0147
ABNEG _{it-lj}		−0.0784***		−0.0826**		−0.0880**
DA _{it-lj}	−0.3826	−0.3519	−0.0591	−0.0621	−0.7935	−0.7466
EARN _{it-lj}	0.7300***	0.7278***	0.7681***	0.7607***	0.6973***	0.0095***
SIZE _{it-lj}	0.0071***	0.0067***	0.0048	0.0046	0.0099***	0.0095***
BTM _{it-lj}	−0.0017***	−0.0017***	−0.0017***	−0.0017***	−0.0016***	−0.0017***
RET _{it-lj}	0.0300***	0.0302***	0.0307***	0.0313***	0.0295***	0.0292***
STDRET _{it-lj}	−0.0021	−0.0002	−0.0001	−0.0001	−0.0023	−0.0021
STDEARN _{it-lj}	0.0389	0.0414	−0.0104	−0.0095	0.0672*	0.0691*
INDUSTRY FE	YES	YES	YES	YES	YES	YES
YEAR FE	YES	YES	YES	YES	YES	YES
OBS	1032	1032	517	517	515	515
ADJ R-SQ	0.4553	0.4552	0.4418	0.4426	0.4531	0.4503
Panel B: Dependent Variable CFO_{it+l_j}						
<i>Variables</i>	FULL SAMPLE		FIRST QUARTER		THIRD QUARTER	
	(1)	(2)	(1)	(2)	(1)	(2)
INTERCEPT	−2.3234	−2.2148	−0.8043	−0.8142	−5.9102	−6.0749
ABTONE _{it-lj}	0.0227***		0.0169*		0.0301***	
ABPOS _{it-lj}		0.0243		0.0059		0.0467
ABNEG _{it-lj}		−0.0705**		−0.0724*		−0.0671
DA _{it-lj}	−0.6992	−0.7097	−0.2738	−0.2890	−1.2393*	−1.2751**
EARN _{it-lj}	0.8336***	0.8329***	0.9037***	0.8977***	0.7757***	0.7796***
SIZE _{it-lj}	0.0063**	0.0062**	0.0043	0.0042	0.0090**	0.0091**
BTM _{it-lj}	−0.0013***	−0.0013***	−0.0011**	−0.0012**	−0.0012*	−0.0012*
RET _{it-lj}	0.0187**	0.0188**	0.0188*	0.0193*	0.0191*	0.0186*
STDRET _{it-lj}	−0.0002	−0.0002	0.0001	−0.0001	−0.0029	−0.0027
STDEARN _{it-lj}	0.1080***	0.1085***	−0.0163	−0.0157	0.1823***	0.1807***
INDUSTRY FE	YES	YES	YES	YES	YES	YES
YEAR FE	YES	YES	YES	YES	YES	YES
OBS	1032	1032	517	517	515	515
ADJ R-SQ	0.4318	0.4300	0.4340	0.4331	0.4213	0.4168

Notes: The table reports regressions of future cash flows on abnormal tone of 1032 IMSs during the period 2008–2013. Separate first and third quarter results are also reported. INDUSTRY FE includes eight ICB classification 1/0 indicator variables, omitting ‘Oil and Gas’, YEAR FE includes five 1/0 indicator variables for each year in sample, omitting the year 2008. OBS: number of observations. All variables are defined in Table 1.

*** Two-tailed significance at the 1% level.

** Two-tailed significance at the 5% level.

* Two-tailed significance at the 10% level.

Table 7. The Predictive Ability of IMS Abnormal Tone: Yearly Change in Earnings and Sales

Panel A: Dependent Variable CHEARN _{itj}													
<i>SAMPLE</i>	α	<i>ABTONE</i> _{it-1j}	<i>ABPOS</i> _{it-1j}	<i>ABNEG</i> _{it-1j}	<i>DA</i> _{it-1j}	<i>EARN</i> _{it-1j}	<i>SIZE</i> _{it-1j}	<i>BTM</i> _{it-1j}	<i>RET</i> _{it-1j}	<i>STDRET</i> _{it-1j}	<i>STDEARN</i> _{it-1j}	<i>OBS</i>	<i>Adj. R-SQ.</i>
FULL	0.024	0.023			0.476	0.325	−0.000	0.021	−0.007	−0.000	−0.013	1032	0.1332
FULL	0.025		0.041	−0.076	0.461	0.326	−0.000	0.021	−0.007	−0.000	−0.013	1032	0.1345
1ST QTR	0.020	0.028			0.652	0.339	−0.008	0.021	−0.008	−0.000	−0.007	517	0.1235
1ST QTR	−0.021		0.038	−0.092	0.608	0.334	−0.001	0.021	−0.008	−0.000	−0.006	517	0.1195
3RD QTR	0.016	0.018			0.239	0.314	0.000	0.022	−0.006	−0.002	−0.012	515	0.1104
3RD QTR	0.018		0.051	−0.062	0.235	0.319	0.000	0.022	−0.007	−0.002	−0.015	515	0.1141
Panel B: Dependent Variable CHEBIT _{itj}													
<i>SAMPLE</i>	α	<i>ABTONE</i> _{it-1j}	<i>ABPOS</i> _{it-1j}	<i>ABNEG</i> _{it-1j}	<i>DA</i> _{it-1j}	<i>EARN</i> _{it-1j}	<i>SIZE</i> _{it-1j}	<i>BTM</i> _{it-1j}	<i>RET</i> _{it-1j}	<i>STDRET</i> _{it-1j}	<i>STDEARN</i> _{it-1j}	<i>OBS</i>	<i>Adj. R-SQ.</i>
FULL	−0.022	0.041			0.266	0.167	−0.002	0.007	0.012	0.000	−0.119	1032	0.0448
FULL	−0.023		0.098	−0.072	0.154	0.169	0.001	0.007	0.012	0.000	−0.123	1032	0.0419
1ST QTR	0.045	0.044			0.768	0.175	−0.004	0.004	0.014	0.001	−0.134	517	0.0300
1ST QTR	0.051		0.096	−0.075	0.669	0.173	−0.003	0.005	0.014	0.000	−0.136	517	0.0230
3RD QTR	−0.102	0.039			−0.440	0.160	0.006	0.010	0.112	−0.006	−0.103	515	0.0307
3RD QTR	−0.106		0.106	−0.067	−0.563	0.168	0.007	0.011	0.011	−0.006	−0.110	515	0.0289
Panel C: Dependent Variable CHSALES _{itj}													
<i>SAMPLE</i>	α	<i>ABTONE</i> _{it-1j}	<i>ABPOS</i> _{it-1j}	<i>ABNEG</i> _{it-1j}	<i>DA</i> _{it-1j}	<i>EARN</i> _{it-1j}	<i>SIZE</i> _{it-1j}	<i>BTM</i> _{it-1j}	<i>RET</i> _{it-1j}	<i>STDRET</i> _{it-1j}	<i>STDEARN</i> _{it-1j}	<i>OBS</i>	<i>Adj. R-SQ.</i>
FULL	−0.001	0.111			0.060	0.635	0.005	0.012	0.060	−0.002	−0.125	1032	0.2012
FULL	0.003		0.143	−0.338	0.020	0.633	0.012	−0.016	0.060	−0.002	−0.123	1032	0.1929
1ST QTR	−0.195	0.134			0.232	0.681	0.021	−0.016	0.063	−0.002	−0.078	517	0.1843
1ST QTR	−0.179		0.165	−0.348	−0.449	0.659	0.021	−0.015	0.064	−0.002	−0.080	517	0.1654
3RD QTR	0.125	0.104			0.151	0.592	0.006	−0.014	0.055	−0.003	−0.141	515	0.2072
3RD QTR	0.138		0.132	−0.368	0.291	0.610	0.005	−0.014	0.054	−0.003	−0.139	515	0.2076

Notes: The table reports regressions of the yearly change in earnings before extraordinary items, earnings before interest and tax, and sales on abnormal tone of 1032 IMSs during the period 2008–2013. Separate first and third quarter results are also reported. 1ST QTR: first quarter. 3rd QTR: third quarter. INDUSTRY FE and YEAR FE are included in each regression model but unreported for brevity. INDUSTRY FE includes eight ICB classification 1/0 indicator variables, omitting ‘Oil and Gas’, YEAR FE includes five 1/0 indicator variables for each year in sample, omitting the year 2008. OBS: number of observations. All variables are defined in Table 1. Coefficients reported in bold are significant at the 5% level.

Table 8. Market Reaction to Abnormal Tone

Panel A: Dependent Variable CAR (−1, +1)						
<i>Variables</i>	FULL SAMPLE		FIRST QUARTER		THIRD QUARTER	
	(1)	(2)	(1)	(2)	(1)	(2)
INTERCEPT	0.0010	0.0019	0.0094	0.0099	0.0155	0.0185
ABTONE _{it-lj}	0.0330***		0.0244***		0.0374***	
ABPOS _{it-lj}		0.0610***		0.0538*		0.0654**
ABNEG _{it-lj}		−0.1021***		−0.0682*		−0.1267***
DA _{it-lj}	−0.1667	−0.1987	−0.4288	−0.4740	0.2324	0.2805
UE _{it-lj}	0.0002**	0.0001**	−0.0001	−0.0001	0.0004***	0.0004***
SIZE _{it-lj}	0.0017	0.0018	0.0027	0.0029	−0.0005	−0.0007
BTM _{it-lj}	−0.0028	−0.0027	0.0011	0.0014	−0.0073	−0.0076*
RET _{it-lj}	0.0071	0.0071	0.00390	0.0039	0.0116	0.0116
STDRET _{it-lj}	−0.0009**	−0.0010**	−0.0008*	−0.0008*	−0.0012	−0.0010
STDEARN _{it-lj}	−0.0357	−0.0360	−0.0412	−0.0411	0.0272	−0.0273
INDUSTRY FE	YES	YES	YES	YES	YES	YES
YEAR FE	YES	YES	YES	YES	YES	YES
OBS	1032	1032	517	517	515	515
ADJ R-SQ	0.0281	0.0285	0.0130	0.0125	0.0708	0.0749
Panel B: Dependent Variable CAR (+2, +61)						
<i>Variables</i>	FULL SAMPLE		FIRST QUARTER		THIRD QUARTER	
	(1)	(2)	(1)	(2)	(1)	(2)
INTERCEPT	−0.1575***	−0.1566***	0.0664	0.0683	−0.2717***	−0.2698***
ABTONE _{it-lj}	0.0259***		−0.0111		0.0442***	
ABPOS _{it-lj}		0.0319		−0.0053		0.0442
ABNEG _{it-lj}		−0.0651*		0.0701		−0.1359**
DA _{it-lj}	−0.4632	−0.4945	−0.5876	−0.5943	0.0973	0.1288
UE _{it-lj}	−0.0001	−0.0001	0.0005	0.0000	−0.0002	−0.0002
SIZE _{it-lj}	0.0074**	0.0074**	0.0002	0.0003	0.0094**	0.0090*
BTM _{it-lj}	0.0095*	0.0096*	0.0136**	0.0136**	0.0023	0.0018
RET _{it-lj}	0.0203**	0.0214**	0.0245**	0.0246**	0.0165	0.0167
STDRET _{it-lj}	0.0005	0.0005	0.0001	0.0001	0.0051	0.0054
STDEARN _{it-lj}	−0.0114	−0.0117	−0.0452	−0.0458	0.0025	0.0041
INDUSTRY FE	YES	YES	YES	YES	YES	YES
YEAR FE	YES	YES	YES	YES	YES	YES
OBS	1032	1032	517	517	515	515
ADJ R-SQ	0.0228	0.0188	−0.0025	−0.0022	0.0926	0.0863

Notes: The table reports regressions of cumulative abnormal return on abnormal tone of 1032 IMSs during the period 2008–2013. Separate first and third quarter results are also reported. INDUSTRY FE includes eight ICB classification 1/0 indicator variables, omitting ‘Oil and Gas’, YEAR FE includes five 1/0 indicator variables for each year in sample, omitting the year 2008. OBS: number of observations. All variables are defined in Table 1.

*** Two-tailed significance at the 1% level.

** Two-tailed significance at the 5% level.

* Two-tailed significance at the 10% level.

Table 9. Abnormal Tone and Future Earnings: ‘Group’ Earnings Forecast Statements

Dependent Variable: $EARN_{itj}$						
Panel A: Text Corpus of ‘Group’ Earnings Forecasts						
<i>Variables</i>	FULL SAMPLE		FIRST QUARTER		THIRD QUARTER	
	(1)	(2)	(1)	(2)	(1)	(2)
INTERCEPT	−0.0056	−0.0026	−0.0288	−0.0235	0.0078	0.0119
[E]ABTONE _{it-lj}	0.0078**		0.0030		0.0129**	
[E]ABPOS _{it-lj}		0.0041		0.0076		0.0035
[E]ABNEG _{it-lj}		−0.0090		0.0093		−0.0246**
DA _{it-lj}	−0.3356	−0.4839	−0.5007	−0.5940	−0.1343	−0.1575
EARN _{it-lj}	0.8989***	0.8944***	0.9184***	0.9178***	0.8951***	0.8926***
SIZE _{it-lj}	0.0011	0.0007	0.0018	0.0016	0.0013	0.0008
BTM _{it-lj}	0.0008	0.0017	0.0035	0.0041	−0.0011	0.0009
RET _{it-lj}	−0.0089	−0.0107	−0.0115	−0.0117	−0.0083	−0.0125
STDRET _{it-lj}	0.0001	0.0001	0.0002	0.0001	−0.0012	−0.0011
STDEARN _{it-lj}	0.0163	0.0173	0.0311	0.0334	0.0064	0.0043
INDUSTRY FE	YES	YES	YES	YES	YES	YES
YEAR FE	YES	YES	YES	YES	YES	YES
OBS	227	227	109	109	118	118
ADJ R-SQ	0.8171	0.8034	0.8463	0.8254	0.7586	0.7577
Panel B: Full IMS Documents						
<i>Variables</i>	FULL SAMPLE		FIRST QUARTER		THIRD QUARTER	
	(1)	(2)	(1)	(2)	(1)	(2)
INTERCEPT	−0.0030	−0.0007	−0.0435	−0.0314	0.0120	0.0185
[E]ABTONE _{it-lj}	0.0068*		−0.0000		0.0123*	
[R]ABTONE _{it-lj}	0.0045		0.0138		0.0024	
[E]ABPOS _{it-lj}		0.0037		0.0051		0.0036
[R]ABPOS _{it-lj}		0.0045		0.0241		−0.0178
[E]ABNEG _{it-lj}		−0.0074		0.0111		−0.0227*
[R]ABNEG _{it-lj}		−0.0161		−0.0228		−0.0290
DA _{it-lj}	−0.2992	−0.4471	−0.4182	−0.5668	−0.1158	−0.0289
EARN _{it-lj}	0.8983***	0.8940***	0.9312***	0.9269***	0.8908***	0.8865***
SIZE _{it-lj}	0.0009	0.0005	0.0015	0.0014	0.0010	0.0008
BTM _{it-lj}	0.0010	0.0017	0.0043	0.0045	−0.0009	0.0005
RET _{it-lj}	−0.0090	−0.0104	−0.0147	−0.0127	−0.0081	−0.0120
STDRET _{it-lj}	0.0001	0.0001	0.0002	0.0002	−0.0011	−0.0008
STDEARN _{it-lj}	0.0174	0.0187	0.0373	0.0401	0.0066	−0.0071
INDUSTRY FE	YES	YES	YES	YES	YES	YES
YEAR FE	YES	YES	YES	YES	YES	YES
OBS	227	227	109	109	118	118
ADJ R-SQ	0.8169	0.8023	0.8478	0.8235	0.7579	0.7558

Notes: The table reports regressions of future earnings on abnormal tone of ‘Group’ earnings forecast statements in 227 IMSs during the period 2008–2013. Separate first and third quarter results are also reported. Variables with prefix [E] imply tones computed from ‘Group’ earnings forecasts while variables with prefix [R] imply tones computed from the rest of the document. INDUSTRY FE includes eight ICB classification 1/0 indicator variables, omitting ‘Oil and Gas’, YEAR FE includes five 1/0 indicator variables for each year in sample, omitting the year 2008. OBS: number of observations. All variables are defined in Table 1.

*** Two-tailed significance at the 1% level.

** Two-tailed significance at the 5% level.

* Two-tailed significance at the 10% level.

Table 10. Market Reaction to Abnormal Tone in ‘Group’ Earnings Forecast Statements

Dependent Variable: CAR (−1, +1)						
Panel A: Text Corpus of ‘Group’ Earnings Forecasts						
<i>Variables</i>	FULL SAMPLE		FIRST QUARTER		THIRD QUARTER	
	(1)	(2)	(1)	(2)	(1)	(2)
INTERCEPT	−0.2561***	−0.2322***	−0.2720***	−0.2546**	−0.2888**	−0.2506**
[E]ABTONE _{it-lj}	0.0402***		0.0182**		0.0617***	
[E]ABPOS _{it-lj}		0.0240**		0.0075		0.0420**
[E]ABNEG _{it-lj}		−0.0629***		−0.0323*		−0.0917***
DA _{it-lj}	−0.8123	−0.8784	−0.0382	0.2954	−1.4575	−1.2892
UE _{it-lj}	−0.0002	−0.0001	−0.0004	−0.0003	−0.0023	−0.0029
SIZE _{it-lj}	0.0132***	0.0114**	0.0117**	0.0105**	0.0182**	0.0151
BTM _{it-lj}	−0.0050	−0.0001	−0.0015	0.0014	−0.0076	0.0002
RET _{it-lj}	0.0153	0.0033	0.0113*	0.0053	0.0203	0.0019
STDRET _{it-lj}	−0.0014***	−0.0013***	−0.0012***	−0.0013***	−0.0055	−0.0053
STDEARN _{it-lj}	−0.0099	−0.0199	−0.0309	−0.0352	0.0202	0.0025
INDUSTRY FE	YES	YES	YES	YES	YES	YES
YEAR FE	YES	YES	YES	YES	YES	YES
OBS	227	227	109	109	118	118
ADJ R-SQ	0.1520	0.1621	0.1178	0.1124	0.2105	0.2152
Panel B: Full IMS Documents						
<i>Variables</i>	FULL SAMPLE		FIRST QUARTER		THIRD QUARTER	
	(1)	(2)	(1)	(2)	(1)	(2)
INTERCEPT	−0.2498***	−0.2276***	−0.2805***	−0.2556**	−0.2693**	−0.2446**
[E]ABTONE _{it-lj}	0.0366***		0.0166*		0.0579***	
[R]ABTONE _{it-lj}	0.0193		0.0080		0.0233	
[E]ABPOS _{it-lj}		0.0211*		0.0062		0.0395**
[R]ABPOS _{it-lj}		0.0463		0.0148		0.0877
[E]ABNEG _{it-lj}		−0.0586***		−0.0329*		−0.0849***
[R]ABNEG _{it-lj}		−0.0351		0.0024		−0.0173
DA _{it-lj}	−0.6765	0.8269	−0.0131	0.3051	−1.2756	−1.4862
UE _{it-lj}	−0.0002	−0.0001	−0.0004	−0.0003	−0.0021	−0.0029
SIZE _{it-lj}	0.0125***	0.0111**	0.0116**	0.0105**	0.0170**	0.0158**
BTM _{it-lj}	−0.0046	0.0001	−0.0014	0.0016	−0.0064	0.0021
RET _{it-lj}	0.0154	0.0049	0.0101*	0.0053	0.0228	0.0044
STDRET _{it-lj}	−0.0013***	−0.0013***	−0.0012***	−0.0013***	−0.0055	−0.0058
STDEARN _{it-lj}	−0.0069	−0.0159	−0.0275	−0.0324	0.0194	−0.0044
INDUSTRY FE	YES	YES	YES	YES	YES	YES
YEAR FE	YES	YES	YES	YES	YES	YES
OBS	227	227	109	109	118	118
ADJ R-SQ	0.1562	0.1619	0.1102	0.0931	0.2104	0.2120

Notes: The table reports regressions of cumulative abnormal return on abnormal tone of ‘Group’ earnings forecast statements in 227 IMSs during the period 2008—2013. Separate first and third quarter results are also reported. Variables with prefix [E] imply tones computed from ‘Group’ earnings forecasts while variables with prefix [R] imply tones computed from the rest of the document. INDUSTRY FE includes eight ICB classification 1/0 indicator variables, omitting ‘Oil and Gas’, YEAR FE includes five 1/0 indicator variables for each year in sample, omitting the year 2008. OBS: number of observations. All variables are defined in Table 1.

*** Two-tailed significance at the 1% level.

** Two-tailed significance at the 5% level.

* Two-tailed significance at the 10% level.

Appendix A - Tone Measurement: IMS Examples

Example 1 *[Our financial performance since the year end has been in line with market expectations, and] we anticipate that our half yearly report will show earnings and pre-tax profits significantly ahead of the figures for the comparable period last year.* (Telecom Plus plc, 14 July 2010)

Group-Yes; Forecast-Yes; Earnings-Yes; Tone-Positive. Statement Tone Score: 1

Example 2 *Our financial performance since the year end has been in line with market expectations, [and we anticipate that our half yearly report will show earnings and pre-tax profits significantly ahead of the figures for the comparable period last year.]* (Telecom Plus plc, 14 July 2010)

Group-Yes; Forecast-No; Earnings-No; Tone-Neutral. Statement Tone Score: 0

Example 3 *Revenue in the Operations' division has been at a very similar level to the same period last year, [but profitability has moved ahead strongly, helped by exceptional performances in Japan and Germany.]* (Photo-Me International plc, 8 March 2013)

Group-No; Forecast-No; Earnings-No; Tone-Neutral. Statement Tone Score: 0

Example 4 *We estimate that the Group would incur approximately 1m in incremental costs for every percentage point above 15% that the rate of duty is set.* (Rank Group plc, 8 October 2009)

Group-Yes; Forecast-Yes; Earnings-No; Tone-Negative. Statement Tone Score: -1

Example 5 *Stevie Spring, Future plc Chief Executive said: "We expect the trading environment to remain challenging throughout 2011, [but our progress online and in customer publishing - our main growth areas - and in our tablet and mobile development - is pleasing.]"* (Future plc, 9 February 2011)

Group-Yes; Forecast-Yes; Earnings-No; Tone-Negative. Statement Tone Score: -1

Example 6 *[Stevie Spring, Future plc Chief Executive said: "We expect the trading environment to remain challenging throughout 2011, but] our progress online and in customer publishing - our main growth areas - and in our tablet and mobile development - is pleasing."* (Future plc, 9 February 2011)

Group-No; Forecast-No; Earnings-No; Tone-Positive. Statement Tone Score: 1

Example 7 *[The period since acquisition has proceeded well] and the Group anticipates the acquisition being earnings enhancing for the year ending 31 December 2012.* (Mears Group plc, 10 November 2011)

Group-Yes; Forecast-Yes; Earnings-Yes; Tone-Positive. Statement Tone Score: 1

Example 8 *The period since acquisition has proceeded well [and the Group anticipates the acquisition being earnings enhancing for the year ending 31 December 2012.]* (Mears Group plc, 10 November 2011)

Group-Yes; Forecast-No; Earnings-No; Tone-Positive. Statement Tone Score: 1

Example 9 *Including petrol, Group sales decreased by (0.8)% at actual exchange rates and by (1.2)% at constant rates.* (Tesco plc, 4 December 2013)

Group-Yes; Forecast-No; Earnings-No; Tone-Negative. Statement Tone Score: -1

Example 10 *Christmas trading was ahead of our expectations.* (Associated British Foods, 17 January 2008)

Group-Yes; Forecast-No; Earnings-No; Tone-Positive. Statement Tone Score: 1

Example 11 *As expected, the prepay segment remains weak, with a significant decline in low-end prepay sales year-on-year.* (Dixon's Retail plc, 24 January 2012)

Group-No; Forecast-No; Earnings-No; Tone-Negative. Statement Tone Score: -1

Example 12 *Losses here are currently expected to be materially higher than previous guidance.* (Centrica plc, 12 May 2008)

Group-Yes; Forecast-Yes; Earnings-Yes; Tone-Negative. Statement Tone Score: -1

Notes: The appendix presents the textual analysis process for measuring tone of some selected statements. Company names and IMS publication dates are given in parenthesis () after the statement. Separate statements within a sentence, the tone scores of which are not shown in the example, are separated with brackets []. Group: 'Yes' if the statement is group-level, 'No' otherwise. Forecast: 'Yes' if the statement is forward-looking, 'No' otherwise. Earnings: 'Yes' if the statement is related to earnings, no otherwise, 'No' otherwise. Tone: 'Positive' if statement is favourable, 'Negative' if statement is unfavourable, 'Neutral' otherwise. Statement Tone Score: 1 if tone is 'Positive', -1 if tone is 'Negative', 0 if tone is 'Neutral'.

Appendix B - Tone Measurement: General Unspecified Statements

Example 1 *The Board remains confident of the outlook for the full year.* (Intec Telecom System plc, 19 August 2008)

Group-Yes; Forecast-Yes; Earnings-No; Tone-Positive. Statement Tone Score: 1

Example 2 [Despite the difficult market backdrop] *we are increasingly confident of the substantial longer term prospects and value that the division can bring to the Group.* (Morgan Sindall Group plc, 10 November 2009)

Group-No; Forecast-Yes; Earnings-No; Tone-Positive. Statement Tone Score: 1

Example 3 [The Board is pleased with the Group's progress during the period and] *the outlook for the remainder of the financial year remains encouraging.* (Eaga plc, 15 April 2010)

Group-Yes; Forecast-Yes; Earnings-No; Tone-Positive. Statement Tone Score: 1

Example 4 *We remain confident about the outlook for the Group.* (Balfour Beatty plc, 11 November 2010)

Group-Yes; Forecast-Yes; Earnings-No; Tone-Positive. Statement Tone Score: 1

Example 5 [Despite higher feed costs,] *we expect to continue to make good progress in the year ahead and fully to meet the Board's expectations for the year.* (Genus plc, 11 November 2010)

Group-Yes; Forecast-Yes; Earnings-No; Tone-Positive. Statement Tone Score: 1

Example 6 *In conclusion, the Board remains confident of the Group's performance and prospects.* (WSP Group plc, 3 May 2012)

Group-Yes; Forecast-No; Earnings-No; Tone-Positive. Statement Tone Score: 1

Example 7 *We remain confident in the Group's long-term growth prospects.* (Rank Group plc, 13 May 2013)

Group-Yes; Forecast-Yes; Earnings-No; Tone-Positive. Statement Tone Score: 1

Example 8 *The Board remains confident of the Company's prospects for the current year.* (Renishaw plc, 10 October 2008)

Group-Yes; Forecast-Yes; Earnings-No; Tone-Positive. Statement Tone Score: 1

Notes: The appendix presents the textual analysis process for measuring tone of general unspecified statements of financial performance. Company names and IMS publication dates are given in parenthesis () after the statement. Separate statements within a sentence, the tone scores of which are not shown in the example, are separated with brackets []. Group: 'Yes' if the statement is group-level, 'No' otherwise. Forecast: 'Yes' if the statement is forward-looking, 'No' otherwise. Earnings: 'Yes' if the statement is related to earnings, no otherwise, 'No' otherwise. Tone: 'Positive' if statement is favourable, 'Negative' if statement is unfavourable, 'Neutral' otherwise. Statement Tone Score: 1 if tone is 'Positive', -1 if tone is 'Negative', 0 if tone is 'Neutral'.