

Impression Management and Non-GAAP Disclosure in Earnings Announcements*

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Abstract

We study the market reaction to the disclosure of non-GAAP earnings measures in earnings announcement press releases that are combined with high impression management. We hand-collect and code quantitative and qualitative information from earnings announcement press releases of large European firms. We construct an impression management score that includes several communication techniques that managers often use to positively bias investors' perceptions of firm performance. We document that non-GAAP adjustments are more persistent when accompanied by higher levels of impression management. This evidence is consistent with managers trying to distort users' perceptions when non-GAAP adjustments are of lower quality. Market reaction tests suggest that investors are able to see through managers' intentions and ignore non-GAAP information that is accompanied by high impression management. Moreover, the negative market reaction is stronger in countries with more sophisticated financial statement users and stronger protection of minority shareholders rights. Our results are robust to a battery of sensitivity tests, including using a machine-coded tone measure.

Keywords: pro forma; alternative performance measures; disclosure tone; capital markets.

JEL classification: M41

I. INTRODUCTION

We study the market's reaction to the disclosure of non-GAAP earnings measures that are accompanied by impression management communication techniques, and explore how this reaction varies across countries. In a corporate reporting context, impression management is a process in which managers select and present information in a way that distorts alter users' perceptions of corporate achievements (Neu et al., 1998).

We find evidence consistent with managers using high levels of impression management to mask the recurring nature of some non-GAAP adjustments. We also find that investors perceive this combination to be strategic and penalize firms for this behavior. Thus, while there is a mean positive market reaction to non-GAAP adjustments, the adjustments that are accompanied by high impression management are ignored. The country-level results suggest that this reaction is more pronounced in environments with more sophisticated financial statement users (stronger presence of institutional investors and financial analysts), and stronger investor protection.

Since markets value persistent earnings (Collins and Kothari, 1989), firms have incentives to separate permanent and transitory earnings components. However, earnings measurement and disclosure is constrained by GAAP and subject to monitoring. In their search for more flexible ways to convey information about

earnings persistence managers have turned to voluntarily disclose non-GAAP in earnings press releases. These earnings measures are calculated by managers, who make adjustments to GAAP earnings. Prior research suggests that investors perceive non-GAAP earnings to be informative (Bhattacharya et al., 2003; Bradshaw and Sloan, 2002), but there are concerns that managers might use non-GAAP disclosures strategically to positively bias investors' perceptions (Andersson and Hellman, 2007; Bhattacharya et al., 2007; Cormier et al., 2011).

In contrast to the US where market regulation exists (Regulation G), in Europe non-GAAP disclosure is virtually unregulated. In addition, capital markets and institutional mechanisms are less developed in Europe than in the US, which suggests that the potential for these disclosures to mislead investors can be high, particularly when it comes to less sophisticated investors. The European Financial Reporting Advisory Group, an organization which provides the European Commission with technical advice on accounting matters, has stressed that non-GAAP disclosures by large European firms is inconsistent and obscure (EFRAG, 2009). Aware about these concerns the European Securities and Markets Authority recently published a set of guidelines for the disclosure of non-GAAP measures (ESMA 2015).

The disclosure of non-GAAP earnings is not the only communication tool that managers may use to manage investor perceptions. Earnings press releases offer great flexibility not only in terms of content but also in terms of format and style of

the message.¹ Managers try to positively influence user's perceptions of firm performance by locating financial measures more prominently in the press release (Files et al., 2009; Garcia Osma and Guillamon-Saorin, 2011; Huang et al., 2013), by repeating information they wish investors to focus on (Garcia Osma and Guillamon-Saorin, 2011), by using positive tone (Garcia Osma and Guillamon-Saorin, 2011; Huang et al., 2014), by reinforcing the positive or negative tone (Garcia Osma and Guillamon-Saorin, 2011) and by selecting benchmarks that give the impression of performance achievement (Garcia Osma and Guillamon-Saorin, 2011; Lewellen et al., 1996; Schrand and Walther, 2000)). We refer to these communication strategies as impression management. Whether or not investors perceive the use of impression management in association with non-GAAP disclosures as misleading is an important empirical question. If European investors are capable of recognizing potentially misleading disclosures then strict regulation, which is costly to design and to enforce, may not be necessary.

We first test whether non-GAAP disclosures are more likely to be opportunistic when associated with high impression management. One possibility is

¹ Press releases are widely used by the business community and offer ample opportunity for discretionary disclosures. Prior research finds evidence of strategic use of communication techniques, such as positive language tone, to influence investors' perceptions about firm performance (Huang et al., 2014; Lang and Lundholm, 2000). Prior studies also find the use of impression management to be associated with other strategic behaviour, such as earnings management (Aerts and Cheng, 2011; Godfrey et al., 2003).

that managers adjust GAAP earnings for recurring expenses, resulting in non-GAAP earnings that overstate permanent earnings. In the spirit of Frankel et al. (2011) and Jennings and Marques (2011) we analyze the cross-sectional variation in the persistence of non-GAAP adjustments to make inferences about informative versus opportunistic intentions. Consistent with these studies we find that the non-GAAP adjustments made by large European firms are recurring in nature. Furthermore, we extend this literature by documenting that when the non-GAAP disclosures are accompanied by a high level of impression management the adjustments made are more persistent (i.e., of lower quality).

We hand-collect data and hand-code non-GAAP and impression management practices from the firms' earnings announcements press releases. We use content analysis to construct a firm-year score capturing the level of impression management related to non-GAAP disclosures. The score captures three specific communication techniques: disclosure tone, emphasis, and performance comparisons.² Our measure includes qualitative and quantitative information, as the

² One could argue that, given the difficulty of identifying who writes the press release (Garcia Osma and Guillamon-Saorin, 2011; Merkl-Davies and Brennan, 2007), it is unlikely that the person preparing the press release is the same person who determines the non-GAAP exclusions and its presentation in the press release. The contra argument is that the manager is the person accountable for the content of the press release. Given the lack of evidence in the literature, we can assume that the quality of firm communication is an equilibrium outcome (Ball, 2006), which implies consistent quality levels across the range of reported information prepared within a firm, regardless of the number of parties involved (Gronstedt, 1996). This leads to the general expectation that impression management and non-GAAP information are positively associated.

combination of numbers and words can either be used to (i) help increase the clarity of a disclosure or (ii) increase the potential of the disclosure to mislead. Our score is, therefore, more comprehensive than a simple language tone measure.

Our first hypothesis explores whether investors' reaction to non-GAAP disclosures around the earnings announcement date varies with the level of impression management. In line with prior studies, which use US data, we find an overall positive market response to non-GAAP disclosures. However, we do not find a significant reaction when non-GAAP disclosures are accompanied by high impression management. This result suggests that investors interpret this combination as a possible managerial attempt to mask the persistence of the non-GAAP adjustments made. This evidence is in line with prior work indicating that investors incorporate the tone of managers' communications in their earnings valuation decisions (Baginski et al., 2011; Davis et al., 2012; Demers and Vega, 2011), but that they are capable of detecting managers' strategic use of communication techniques (Barton and Mercer, 2005; Huang et al., 2014). Another important result of our study is that the market reaction is not limited to language tone. We find a similar market reaction to other communication techniques, such as

emphasis and performance comparisons, both as a component of the impression management score and individually.³

We subsequently evaluate the extent to which countries' institutional and market conditions influence investors' reaction to the combination of non-GAAP disclosure and high impression management. International literature documents that institutional and economic factors such as the level of investors' protection, the quality of enforcement mechanisms, and the sophistication of market participants affect reporting transparency (Bushman et al., 2004; Holthausen, 2009; Lang et al., 2012). Investors are also more likely to have the means to perceive and discount aggressive disclosures in these environments. Our results are consistent with this argument. We find that the market reaction to the combination of non-GAAP disclosures with high impression management is more negative in countries with more sophisticated market participants (i.e. financial analysts and institutional investors), and stronger investor protection. This evidence suggests that developed capital markets are better able to detect and to penalize firms for strategic non-GAAP disclosures. The results are robust to endogeneity and selection bias.

³ Prior research finds that, in the US, investors are sensitive to the location of non-GAAP measures, when compared with the location of GAAP figures, and that location can be used strategically by managers (Elliott, 2006). This measure is referred to as "relative emphasis" in Bowen et al. (2005). Our measure is more comprehensive than the ones used before, as it includes not only location but also repetition and reinforcement (See Figure 1).

This study contributes to the voluntary disclosure literature in three ways. First, it indicates that managers complement disclosures of non-GAAP financial measures with impression management techniques. While prior research studies on management communication focus mostly on language tone, we investigate a wide range of impression management techniques, related to qualitative and quantitative information, and assess the market reaction to the combination of these techniques with non-GAAP disclosures. Second, we provide evidence that investors' reaction to the disclosure of non-GAAP earnings with high impression management varies with institutional and economic conditions. Third, we provide some useful insights for European regulators, given that the recent guidelines do not apply to press releases. The design of a regulatory solution can take into account that markets seem to be able to identify certain strategic non-GAAP disclosures, particularly sophisticated markets.

II. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Investors use earnings information to predict future earnings and future returns. The accuracy of these predictions depends on earnings persistence, and prior research suggests that market participants reward persistence (Collins and Kothari, 1989). The possibility of market rewards, as well as reputation and compensation motives, gives managers' incentives to provide investors self-constructed earnings

measures that exclude transitory items from GAAP earnings. Consistent with this idea, extant studies on the informativeness of non-GAAP earnings report that investors perceive non-GAAP performance measures to be more informative about future earnings than GAAP earnings (Bhattacharya et al., 2003; Bradshaw and Sloan, 2002).

However, because non-GAAP earnings disclosed in Europe during the period we analyze are not monitored, and are based mostly on the exclusion of expenses, there is a potential to use them with misleading intentions. While some managers may adjust GAAP earnings to provide a better measure of permanent earnings, others may exclude recurring earnings components in an attempt to enhance investors' perceptions of the persistence of firm's profitability. Whether or not the users of non-GAAP information can see through managers' strategic disclosures depends upon their knowledge and ability to detect them (Christensen et al., 2014). Andersson and Hellman's (2007) experimental evidence in an European context suggests that even financial analysts can be misled by non-GAAP disclosures. European markets are typically viewed as having lower presence of sophisticated investors (Ferreira and Matos, 2008), weaker investor protection, and poorer enforcement quality than US markets (La Porta et al., 2006). These conditions may prompt more aggressive non-GAAP reporting. Accordingly, given the European market characteristics, it is not clear, *ex ante*, that investors will be

able to detect impression management ploys and appropriately discount the non-GAAP adjustments. Our paper examines this important question.

We predict that managers use impression management techniques, a cosmetic disclosure strategy involving potentially misleading practices (such as disclosure tone effects, strategic presentation of performance comparisons or emphasis), to hide the recurring nature of certain non-GAAP adjustments.

Frankel et al. (2011) and Jennings and Marques (2011) examine the cross-sectional variation in the persistence of non-GAAP adjustments to make inferences about managers' opportunistic versus informative intentions. They argue that if the excluded items are purely transitory, their persistence should be close to zero, consistent with managers' claims that the adjustments are informative. On the contrary, evidence that managers adjust for recurring earnings components is a signal of misleading intentions. Frankel et al. (2011) find that non-GAAP adjustments are less persistent than other earnings components but that they are not completely transitory. We contend that when managers exclude recurring expenses they use impression management in their earnings communications to persuade investors that the non-GAAP figures represent persistent earnings better than GAAP earnings and are, therefore, more informative.

Our argument of strategic disclosure is in line with the growing evidence on the use of impression management practices in earnings announcement press releases, such as language tone, to influence users' perceptions of firm performance

(e.g. Tan et al., 2014). Huang et al. (2014) find that managers strategically increase positive tone when they have incentives to manipulate perceptions, such as the desire to meet earnings benchmarks. However, language tone is just one of the impression management techniques that managers can use to influence investors' perceptions of non-GAAP performance. Managers may also use emphasis by location, by repetition, by reinforcement or performance comparisons to enhance the impression of corporate achievements (Bowen et al., 2005; Files et al., 2009; Garcia Osma and Guillamon-Saorin, 2011; Huang et al., 2013; Lewellen et al., 1996; Schrand and Walther, 2000).

To capture these alternative communication techniques we create an impression management score associated with non-GAAP measures⁴. If managers use impression management to enhance the creditability of their non-GAAP earnings measures and to obscure the recurring nature of their adjustments then the impression management score will be greater when managers' non-GAAP adjustments are more persistent. This prediction leads us to question whether or not investors can see through potentially opportunistic non-GAAP disclosures.

⁴ Qualitative information is subject to interpretation by readers and can be easily biased (Behn and Vaupel, 1982). For this reason, managers who intend to persuade users to embrace a certain belief are likely to make more use of qualitative disclosures. Quantitative disclosures, on the other hand, are more precise and can be verified ex-post (Healy and Palepu, 2001), but they can also be biased by managers through presentation techniques. For these reasons, a combination of both qualitative and quantitative information, which yields a more comprehensive score, is used in our study.

Several empirical studies document the capital market effects of manager communication practices such as disclosure tone (Baginski et al., 2011; Davis and Tama-Sweet, 2012). The fact that investors incorporate tone in their stock valuations is not the same as saying that they are not aware of self-serving management communications tactics. “Cheap talk” models predict that corporate communication is costless, non-binding, and unverifiable, and therefore ignored by investors (Bhattacharya and Krishnan, 1999; Crawford and Sobel, 1982).

Evidence consistent with both the informational and “cheap talk” arguments suggests that the receivers of management communications are capable of distinguishing between more- and less-credible messages. In line with this argument, Barton and Mercer (2005) study how financial analysts react to management explanations that blame poor performance on temporary external events. They find that investors punish managers that attribute their poor results to external events unrelated to corporate performance and conclude that while reasonable arguments are accepted by analysts, hard-to-believe explanations backfire. Tan et al. (2014) find experimental evidence suggesting that when readability is low, sophisticated investors are more likely to consider the use of positive language less credible, which has a negative influence on their earnings’ judgments. This evidence suggests that investors can penalize firms when they perceive that managers use the discretion allowed in corporate communications to overstate performance. If investors respond similarly in the case of non-GAAP disclosures then they will

interpret non-GAAP measures communicated with high impression management as a sign of misleading intentions (i.e., as an attempt to portray recurring expenses as transitory expenses). As a result, we should observe a negative market reaction to non-GAAP earnings disclosures with high impression management, assuming that lower quality exclusions are associated with higher impression management. On the other hand, if market participants are not able to see through the strategic combination of the two disclosure mechanisms, then there will be no difference in the reaction to non-GAAP information with higher or with lower impression management. We state our first hypothesis in the alternative form as follows:

HYPOTHESIS 1: Investors react differently to non-GAAP disclosures that are combined with high impression management in earnings announcements.

European markets are characterized by wide variation in (i) market sophistication, (ii) regulation, and (iii) enforcement (Bushman et al., 2004; La Porta et al., 2006). Since country-level institutional conditions affect both managers' disclosure practices and investors' decisions, it is likely that the market response to non-GAAP disclosures combined with high impression management also varies across market characteristics.

We focus on two important country characteristics that are likely to affect investor reaction to non-GAAP information: (1) market's sophistication and (2) strength of regulation aimed at protecting minority investors. A higher level of

overall market sophistication should be associated with a richer information environment and a better understanding of managers' strategic choices. Sophisticated users, such as analysts and institutional investors, collectively produce, gather, validate, and disseminate information to the market. These activities result in improvements in corporate transparency and in information environment (Bushman et al., 2004). Hence, we anticipate that investors are more likely to perceive the combination of non-GAAP figures with high impression management as a strategic disclosure tactic in sophisticated markets. If investors discount managers' non-GAAP adjustments with high impression management, then we expect the discount to be stronger in countries with a higher presence of sophisticated market participants. We expect a similar effect in a setting where enforcement of investor protection against self-dealing by the controlling shareholder is stronger. Both a desirable regulation and an efficient enforcement mechanism seem to be necessary for the development of capital markets and for the improvement in managers' reporting practices (Holthausen, 2009; La Porta et al., 1998).

Following these arguments, we state our second hypothesis as follows:

HYPOTHESIS 2: If investors react to the combination of non-GAAP disclosures and high impression management in earnings announcements negatively, this reaction is more negative in countries with more sophisticated users and stronger enforcement.

III.SAMPLE SELECTION PROCEDURE AND HAND-COLLECTION OF DATA

Our initial sample comprises all industrial firms included in the Financial Times 2006 classification of the 500 largest European companies. This sample allows us to study a group of firms representing a considerable portion of European capital markets. It also allows us to investigate the effects of cross-country variation in market conditions, and to explore a setting where the potential effects of managers' misleading practices can have a great impact.

Our main source of data is the earnings announcement press releases which we gather from the companies' websites and through Factiva. We analyze only those that are written in English, eliminating possible problems of incorrect translation. After eliminating observations for which we are unable to find press releases, our potential sample consists of 2,212 firm-year observations, covering fiscal years 2003 to 2009. We read all press releases to identify those which include non-GAAP

disclosures. We find that 436 press releases do not include non-GAAP measures. We code non-GAAP measures and impression management techniques related to these measures, when they are located in the first two sections of the press release. These sections are considered the most prominent locations where managers are likely to create a “first positive impression” by emphasizing good news (Guillamon-Saorin et al., 2012; Huang et al., 2013). We obtain data on financial items and market returns from Thomson Reuters Datastream and data on analysts’ forecasts from I/B/E/S. Country-level factors are from published sources. We eliminate observations with missing values in any variable, and observations from countries with less than ten firm-years. Table 1 reports that the final sample comprises 845 observations corresponding to 243 firms. We next describe in detail how we obtain the data on non-GAAP disclosures and impression management.

Non-GAAP earnings measures

We hand-collect and code the type and the value of non-GAAP measures included in annual earnings announcement press releases. We compare non-GAAP earnings with GAAP earnings reported in the financial statements to calculate the value of the adjustments made by managers. Based on the categories of non-GAAP measures identified in earlier literature, we code the following non-GAAP earnings measures: (i) non-GAAP earnings per share, (ii) non-GAAP from continuing operations per share, (iii) non-GAAP net income, (iv) non-GAAP income from

continuing operations, and (v) adjusted versions of EBITDA and EBIT. We do not collect non-GAAP cash measures, adjusted values for sales, or ratios.

Furthermore, in order to be conservative, we exclude non-GAAP financial measures with ambiguous labels and non-GAAP measures that are commonly used by the accounting and finance community (such as EBITDA and EBIT) because they can be viewed by capital market participants as GAAP measures. Unlike the situation in the US, in some European countries national accounting standards establish a defined format for the income statement, which includes subtotals as EBITDA and EBIT. That practice continued even after the introduction of IFRS. The measures studied in this paper are usually labeled in the press releases as “adjusted net income”, “net income excluding...”, and “adjusted earnings per share”.

Measuring impression management

We perform a manual content analysis to obtain a score for impression management related to the non-GAAP figures disclosed in the earnings announcement press releases. Although potentially subjective, manual content analysis offers great flexibility to collect in detail a diverse range of practices that cannot be captured by computer-aid techniques (Linderman, 2001). For example, it is not possible to code performance comparisons using machine-based methods. Most textual analysis papers using machine-based methods focus mainly on generic

features of narrative disclosures such as length, tone, readability. Furthermore, research using computer-aided methods to investigate the tone of the announcement rely on pre-specified wordlists, which does not consider the fact that managers are likely to use a combined range of disclosure practices to impress users (Davis et al., 2012; Rogers et al., 2011). Finally, Li (2010) suggests that computer-based methods of content analysis may not work well for analyzing corporate filings.

We focus our content analysis in the most prominent locations of the press releases, as managers are likely to seek a “first positive impression” by emphasizing good news in the headlines. Research in psychology indicates that humans hold a cognitive bias that drives them to create a first opinion, and use subsequent information to support it. This tendency is termed “confirmatory bias” (Rabin and Schrag, 1999). Thus, when analyzing press releases one must pay attention to headlines as a strategic location for potential misleading disclosures (Guillamon-Saorin et al., 2012; Huang et al., 2013).

To code the impression management in each earnings announcement we follow the schema developed by Brennan et al. (2009) and empirically tested by Garcia Osma and Guillamon-Saorin (2011). We analyze the three impression management disclosure techniques described below.⁵

⁵ We do not consider selectivity as non-GAAP measures are not part of financial statements.

- (1) *Tone* consists of using positive language, keywords, statements, or numerical amounts to create a positive image of corporate results that would not be achieved using more neutral statements. Our analysis of tone is based on qualitative and quantitative information related to non-GAAP figures. We categorize keywords as positive or negative based on a list of keywords (Abrahamson and Amir, 1996; Abrahamson and Park, 1994; Clatworthy and Jones, 2003) customized to include other keywords that appear in the press releases. For example, in “2003 net income adjusted for special items shows strong increase: +17% to 7.34 billion for results in euro” (Total, press release 2003), “increase” is coded as a positive keyword related to a non-GAAP figure. We further classify all non-GAAP amounts included in the most- and next-most emphasized sections of earnings press releases as positive (negative) if current year amount is higher (lower) than previous year or if it is explicitly stated as positive or negative. In Total’s press release, income adjusted for special items is explicitly stated as positive and therefore coded as positive non-GAAP amount.
- (2) *Emphasis* consists of making a particular piece of information more obvious to the reader by using three strategies: (a) placing the information strategically in the press release (emphasis by location), (b) repeating the same piece of information in the press release (emphasis by repetition), and (c) reinforcing keywords by adding a qualifier to emphasize their connotation (emphasis by reinforcement). In Total’s 2003 press release, for example, the net income

adjusted for special items is located in the highlights and repeated again in the main text. This practice is coded as a repetition of a positive non-GAAP amount.⁶ Moreover, the word “strong” is coded as a positive reinforcement because it enhances the positive connotation of the positive keyword “increase”.

(3) *Performance comparisons* relates to managers’ decisions to include a benchmark to compare with current year figures depending on the firm performance. Firms may also choose a benchmark strategically to show positive rather than negative changes. In Total’s 2003 press release the percentage “17%” is considered and coded as a reinforcement of the current year non-GAAP amount (7.34 billion).

Based on the three impression management practices described previously, we calculate an impression management score (NGIM). Figure 1 in the Appendix explains the methods followed to code and analyze the impression management techniques, using the 2006 press release of Yell Group as an example. For the qualitative information related to non-GAAP figures, we give each keyword a weight of 1. If the keyword appears in the most-emphasized section, we add a weight of 1; for the next-most emphasized section, we add a weight of 0.5. If the keyword is reinforced, we add a weight of 0.5. If the statement is repeated, we add a weight of

⁶ Although it is common that information included in the headline is also included in the main body of the press release, we consider this practice as emphasis by repetition because it is up to the manager to (1) provide the press release with a headline (2) to include the same piece of information in the headline and in the main body of the press release.

0.5. Similarly, for the quantitative information, we give a weight of 1.0 to each non-GAAP quantitative amount identified in the press release. If the quantitative amount appears in the most-emphasized section, we add a weight of 1; for the next-most emphasized section we add a weight of 0.5. If the quantitative amount is accompanied by a performance comparison, we add a weight of 0.5. If the quantitative amount is repeated, we add a weight of 0.5. These weights are either positive or negative depending on the keyword or amount positive or negative connotation. The final impression management score is calculated as the total composite score for all positive keywords and amounts minus the total composite score for all negative keywords and amounts, divided by the total number of words in the sections analyzed, as in earlier literature (Tetlock et al., 2008). This scaling allows for comparisons between press release sections of different lengths (Rogers et al., 2011). Figure 2 illustrates the calculation of the score.

IV. RESEARCH DESIGN

We argue that managers may attempt to hide the persistence of non-GAAP adjustments by associating the disclosure of these figures to the use of impression management techniques. In order to assess whether this association exists we test the persistence of the non-GAAP adjustments disclosed with a high level of impression

management. We estimate a model similar to that used by Frankel et al. (2011) and Jennings and Marques (2011), as follows:

$$\begin{aligned}
 EPS_{i,t+1} = & \alpha_0 + \alpha_1 NG_EPS_{i,t} + \alpha_2 NG_adjustment_{i,t} + \\
 & \alpha_3 High_NGIM_{i,t} + \alpha_4 High_NGIM \times NG_adjustment_{i,t} + \\
 & \alpha_5 High_NGIM \times NG_adjustment_{i,t} + FirmControls_{i,t} + \\
 & TimeControls_{i,t} + IndControls_{i,t} + CountryControls_{i,t} + \mu_{i,t}
 \end{aligned} \tag{1}$$

The dependent variable is GAAP earnings per share (EPS) for period $t+1$.

We also estimate the model using operating income per share at $t+1$. Using operating income removes a potential mechanical relation between EPS_{t+1} and $NG_adjustment$ resulting from recurring adjustments such as depreciation or amortization (Frankel et al., 2011).

In classic persistence models, the independent variable of interest would be GAAP EPS for period t . Since we are interested in analyzing the persistence of non-GAAP adjustments, and GAAP EPS is equal to non-GAAP EPS (NG_EPS) minus the non-GAAP adjustments on a per share basis ($NG_adjustment$), we use these two variables instead. If the non-GAAP adjustments are transitory items they should not be persistent and the estimated coefficient for $NG_adjustment$ should not be statistically different from zero. However, given Frankel et al.'s (2011) and Jennings and Marques' (2011) results, we anticipate that at least some of the adjustments are

recurring items. We expect to find a negative coefficient on *NG_adjustment*, because these exclusions are almost always expenses. The main variable of interest is the interaction term *High_NGIM* x *NG_adjustment*. *High_NGIM* is an indicator variable coded as one when the firm's impression management score for non-GAAP disclosure is higher than the sample median score, and zero otherwise. A significantly negative coefficient indicates that the adjustments made by managers who use a high level of impression management are more persistent (i.e., they are of lower quality), consistent with our prediction.

As in Frankel et al. (2011), we include the following some firm-level controls. *Size* is the logarithm of total assets. *Growth* is a common factor of three variables: book-to-market assets, average sales growth in the last three years, and capital expenditures to total assets. *Loss* is an indicator variable coded as one if the value of GAAP earnings is negative, and zero otherwise. *ROA Volatility* is calculated as the standard deviation of ROA (return on assets) over the previous three years. We also include year, industry (based on one-digit SIC codes), and country indicators. All variables are for firm *i* and year *t*.

Our first hypothesis assesses whether market participants react differently to the disclosure of non-GAAP earnings that are communicated with high impression management. We use the following model to test it:

$$\begin{aligned}
CAR = & \beta_0 + \beta_1 GAAP_surprise_{i,t} + \beta_2 NG_adjustment_{i,t} \\
& + \beta_3 High_NGIM_{i,t} + \beta_4 High_NGIM \times NG_adjustment_{i,t} \\
& + IndustryControls_{i,t} + CountryControls_{i,t} + \varepsilon_{i,t}
\end{aligned} \tag{2}$$

CAR is the cumulative abnormal return for a three-day window centered on the date of the earnings announcement press release (k). CAR is calculated as $\prod_{k=-1,+1}(1+AR_k)-1$, where AR is the abnormal return obtained from the Fama-French three factor model (Fama and French, 1993) estimated over the previous 365 days and ending on day $k-2$. Given the international nature of the sample, we use country-specific risk factors, specifically market premium, size, and book-to-market international risk factors obtained from Ferreira et al. (2012, 2013).

The definition of variables *GAAP_surprise* and *NG_adjustment* is based on Marques' (2006) methodology but takes into consideration the measurement issues discussed in Cohen et al. (2007) and Bradshaw et al. (2014). Given that I/B/E/S provides GAAP forecasts as well as non-GAAP forecasts, these two measures are used to calculate GAAP surprise and non-GAAP surprise, respectively.⁷ We split the total earnings surprise of non-GAAP earnings measures (i.e., the difference between

⁷ Marques (2006) considers I/B/E/S consensus forecasts as the benchmark to compute GAAP surprise because no other analysts' forecast data was available at that time. The fact that this practice introduces measurement error is pointed out by Cohen et al. (2007). Now that there are two sets of I/B/E/S forecasts available (GAAP and non-GAAP) this practice is no longer necessary. Bradshaw et al.'s (2014) findings indicate that after correcting for measurement error non-GAAP earnings are more informative to investors than GAAP earnings, even in settings that previously generated inconclusive results.

non-GAAP earnings and the median consensus non-GAAP earnings forecast) into two components. The first component is *GAAP_surprise*, and it is calculated as the difference between GAAP earnings per share and the median consensus GAAP earnings forecast, scaled by share price at the end of the previous year. The second component is *NG_adjustment*, representing the adjustments made by managers to obtain non-GAAP earnings. It is calculated as the difference between non-GAAP and GAAP earnings per share, scaled by share price at the end of the previous year.⁸ If non-GAAP earnings are more valuable to financial markets than GAAP earnings, the estimated coefficient for *NG_adjustment* (β_2) should be positive. We expect a positive coefficient for *High_NGIM* (β_3) as prior literature provides evidence that the tone of corporate narratives influences the market valuations positively (Davis et al., 2012).

Our focus is on the coefficient of the interaction between *High_NGIM* and *NG_adjustment* (β_4). If market participants do not understand managers' attempts to promote their overstated versions of earnings through the use of a high level of impression management, then the coefficient β_4 should be positive and statistically significant. However, if investors interpret earnings announcements containing non-GAAP information combined with high impression management as an attempt to

⁸ We note that the variable *NG_adjustment* is unscaled in equation (1), whereas in equations (2) and (3) it is scaled by share price.

camouflage the recurring nature of non-GAAP adjustments, there are two possible scenarios: either they ignore it or they react negatively. In the first scenario, we expect the estimated coefficient β_4 to be zero, while in the second we expect the coefficient to be negative (which can be interpreted as a punishment for managers' behavior).

Hypothesis 2 states that if investors react to the combination of non-GAAP disclosures and high impression management negatively, this reaction is more negative in countries with more sophisticated users and stronger enforcement. To test this proposition, we extend model (2) as follows:

$$\begin{aligned}
 CAR = & \gamma_0 + \gamma_1 GAAP_surprise_{i,t} + \gamma_2 NG_adjustment_{i,t} + \gamma_3 High_NGIM_{i,t} \\
 & + \gamma_4 High_NGIM \times NG_adjustment_{i,t} + \gamma_5 High_Country \\
 & + \gamma_6 High_NGIM \times NG_adjustment_{i,t} \times High_Country \\
 & + IndControls_{i,t} + v_{i,t}
 \end{aligned} \tag{3}$$

We use two measures to assess the level of sophistication of capital markets. The first is the percentage of institutional investment to market capitalization in the country, from Ferreira and Matos (2008). The second is the number of analysts in a country as reported in Bae et al. (2008). We assess the strength of investor protection with the anti-self-dealing index created by Djankov et al. (2008). To facilitate the interpretation of results for each of the country measure, we create indicator variables coded as one if the country's value, for each variable, is above

the sample median, and zero otherwise. These are mentioned as *High_Country* in equation (3).

The main focus of model (3) is the coefficient of the three-way interaction term *High_NGIM* x *NG_adjustment* x *High_Country* (γ_6). Consistent with hypothesis 2, we expect γ_6 to be significantly negative. The definitions of the remaining variables and expected coefficients are as discussed previously for model (2). All variables are for firm *i* and year *t*.

V. EMPIRICAL RESULTS

Descriptive statistics and univariate tests

Table 2 presents the descriptive statistics for the non-GAAP impression management score (NGIM), the non-GAAP adjustments made by managers and country factors, all by country. The mean NGIM score is positive for all countries, indicating an overall positive impression in the sample press releases. We find the highest NGIM score in Ireland (0.060) and the lowest in Hungary (0.001). A score of 0.060 means that in every 100 words analyzed there are six points more of positively biased content than negative biased content. Hungary's score indicates a more neutral content.

The mean values of the adjustments (both unscaled and scaled by market price) vary substantially, suggesting the existence of country-level effects. The mean

of the country-level variables also vary substantially, which encourages our belief that differences in institutional and economic conditions are likely to result in differences in the market reaction to non-GAAP disclosures. Hungary has the lowest percentage of institutional ownership (8.8%) and Finland and Sweden have the highest (33.8%). The number of analysts ranges from a minimum of 34 (Hungary) to a maximum of 1,272 (France). Investor protection score is highest in the U.K. (0.93) and lowest in Hungary (0.20).

Panel A of Table 3 presents descriptive statistics of the main variables included in our models. The mean *GAAP_surprise* is -0.017, indicating that on average GAAP earnings misses analysts' GAAP forecasts by approximately 0.2 cents (per each Euro of its price). On average, non-GAAP earnings are higher than GAAP earnings as the mean *NG_adjustment* is 0.035. The positive mean is consistent with prior evidence and results from managers' excluding mostly expenses. Panel B of Table 3 presents Pearson correlations and their level of significance. Correlations are generally low. The *NGIM score* is positively correlated with *CAR* and *NG_adjustment*.

Table 4 presents univariate tests of the association between impression management and several aggressive non-GAAP disclosure practices. Black and Christensen (2009) find that managers intentionally exclude recurring items, such as R&D, depreciation and amortization, stock-based compensation, and tax items. This

is considered an aggressive reporting practice, as it may mislead investors. The univariate results in Panel A of Table 4 indicate that the level of the NGIM score is higher when firms make adjustments for recurring items. This finding is consistent with a strategic use of the combination of non-GAAP disclosures and the use of impression management techniques. We also find that firms that disclose non-GAAP figures with higher emphasis than GAAP figures tend to have a significantly higher impression management score (Panel B).⁹ Moreover, we observe that firms that beat analysts' forecasts only on a non-GAAP basis (i.e., when GAAP earnings miss the benchmarks) disclose non-GAAP measures with higher impression management (Panel C).

Results for the persistence analysis

Table 5 reports estimation results for the two versions of model (1). As expected, the coefficients of *NG_EPS* are positive and statistically significant, which is an indication that future earnings are associated with current earnings. Consistent with our expectations and prior evidence, we find that some of the managers' adjustments are persistent. The estimated coefficients of *NG_adjustment* are negative (values are -0.476 and -0.703) and statistically significant. The estimated

⁹ We caution that our impression management score includes measures of emphasis and thus it is not surprising that impression management and the emphasis of non-GAAP earnings are positively related.

coefficients for the interaction variable *High_NGIM* x *NG_adjustment* are negative and significant, in both versions of the model. In other words, the non-GAAP adjustments made by the *High_NGIM* group are more recurring (i.e., of lower quality). This is consistent with our argument that managers use communication strategically in an attempt to mask the persistence of the adjustments, and portray non-GAAP earnings as a better measure of recurring performance than GAAP earnings.

Results for the market reaction (H1)

We now test whether investors react to non-GAAP disclosures that are combined with high impression management. Table 6, Column (1) presents the results for a base model that includes only the *GAAP_surprise* and the constant term. As expected, the estimated coefficient is positive and statistically significant, indicating that the market interprets the announcement of GAAP results above analysts' expectations as good news. In column (2) we add *NG_adjustment* to the model. This version of the model examines whether the market perceives alternative earnings numbers voluntarily disclosed by managers to be relevant information, in addition to that conveyed by GAAP. This effect has been established in US markets, but to the best of our knowledge, has never been tested internationally. The positive and statistically significant coefficient (coefficient = 0.061, t-statistic = 2.44) is

consistent with the notion that non-GAAP information has incremental information content and previous results. This result can be interpreted as the investors' perception that the non-GAAP adjustments lead to a higher earnings surprise than that indicated by the GAAP figure. In column (3) we test whether there is a market reaction for the use of a high level of impression management accompanying non-GAAP disclosures. Our results indicate that the market, in general, reacts positively this disclosure practice.

Column (4) of Table 6 presents the results of estimating model (2). The coefficient of interest, *High_NGIM x NG_adjustment*, is negative (-0.130) and statistically significant (t-statistic = -5.78), indicating the market has a lower market reaction to non-GAAP adjustments when the disclosure of the non-GAAP is accompanied by a high level of impression management. The abnormal return for the non-GAAP adjustments, when the disclosure of non-GAAP is accompanied by a low or moderate level of impression management is 0.125, whereas the reaction to the adjustments, when the non-GAAP disclosure is accompanied by high impression management is economically and statistically zero ($0.125 - 0.130$). This empirical evidence suggests investors ignore non-GAAP information when managers communicate that information aggressively. Given our persistence results, one possible explanation is that investors perceive the aggressive communication style as an attempt to inflate the firm's operating profitability and penalize managers for it.

The remaining coefficients in column (4) are in line with the results in the previous estimations. The positive estimated coefficient for *High_NGIM* (0.046) is consistent with prior evidence of a general positive market reaction to the use of communication techniques to convey earnings information.

One could wonder whether the effect observed for non-GAAP impression management is a spill-over effect of general impression management. To test this possibility, we add to the model a measure of impression management that captures the impression management used on the remaining information. We create an indicator variable, *High_OtherIM*, coded as one when the impression management in the text unrelated to non-GAAP disclosures is above the sample median, and zero otherwise. We then interact the indicator variable with *GAAP_surprise*, and include it in the model. The estimated coefficient for *High_NGIM* and its interaction with *NG_adjustment* remain significant, indicating that there is an effect for general impression management that is different from that observed for non-GAAP disclosures.

Results of country-level effects (H2)

Hypothesis 2 states that if investors react negatively to the combination of non-GAAP disclosures and impression management this penalty is stronger in countries with more sophisticated markets, and with stronger enforcement. To test it

we interact *High_NGIM* x *NG_adjustment* with the indicator variable *High_Country*, which is coded as one when the country has score above the sample median in each of the three country factors (percentage of institutional investors, number of financial analysts, and private enforcement of anti-self dealing), considered separately, and zero otherwise. Table 7 presents the results. The negative and statistically significant coefficients of *High_NGIM* x *NG_adjustment* x *High_Country* indicate that the market reaction to non-GAAP adjustments that are accompanied by high impression management is lower for firms from countries with a higher presence of institutional investors and analysts, and with strong enforcement of minority investors' rights.

We next combine the three country variables in principal components. This exercise helps to understand the relative importance of each country factor, and whether they capture different institutional features. We identify two principal factors with eigenvalues greater than one. The variables percentage of institutional investors and number of analysts have the highest loadings in factor one, so we name factor one SOPH (for sophistication). Investor protection loads almost exclusively in the second factor, and thus we name it PROT. Column (4) presents the results of estimating a model with the two principal components. The estimated coefficients for *High_NGIM* x *NG_adjustment* x *High_SOPH* and *High_NGIM* x *NG_adjustment* x *High_PROT* are negative and statistically significant, and there is no statistical difference between them. This result suggests that the country factors

are equally relevant and capture different aspects of the information and regulatory environment of our sample countries. Overall, our results are consistent with H2 and can be interpreted as evidence that developed markets penalize the firms that strategically use communication techniques to diminish the transparency of non-GAAP disclosures.

VI. ADDITIONAL ANALYSES

Selection and endogeneity issues

Our main analyses are based on cases that disclose non-GAAP earnings measures in the same section in which we measure impression management. This requirement ensures that the impression management score is directly related to non-GAAP reporting, but creates potential selection problems. These problems arise because we analyze only firms that choose to disclose non-GAAP information, and that choice is likely to be a result of specific conditions rather than a random choice. To address this concern we estimate a two-step selection model (Heckman, 1979), assuming *NG_adjustment* to be an endogenous decision of managers. The selection equation models the decision to disclose a non-GAAP figure in the earnings announcements, considering determinants previously identified in the literature (e.g. Heflin and Hsu, 2008; Lougee and Marquardt, 2004; Marques, 2006). The selection results are consistent with our previous results (Table 8). The coefficients on the

interaction terms of interest, *High_NGIM* x *NG_adjustment* and its interactions with the country-level variables, are negative and statistically significant.

Alternative measures of impression management

Our impression management score incorporates three different techniques: tone, emphasis, and performance comparisons. In order to assess the market effects of the individual techniques we re-estimate model (2) for each individual technique. We obtain similar results for all three techniques, as the three estimated coefficients for the interaction term *NGIM_technique* x *NG_adjustment* are negative and statistically significant.

Next, we test the sensitivity of our findings to alternative measures of impression management. Our first approach is to repeat the analysis using an industry adjusted measure of impression management. The second is to calculate an abnormal measure of impression management similar to that proposed by Huang et al. (2013). The abnormal impression management is the residual of a regression of non-GAAP impression management on firm characteristics that are likely to determine the use of impression management. We include changes in ROA and loss, as managers might use impression management to mask undesirable performance. We also use abnormal accruals, which proxies for earnings management, size, and leverage. In general the results are qualitatively similar.

Finally, we change the weighting scheme of the impression management score, as weights can be subjective (Beattie et al., 2004). We repeat our empirical tests using an unweighted impression management score. We also use weights that are twice those initially assigned to tone for emphasis and performance comparisons. The idea is that these characteristics are likely to enhance more the positiveness or negativeness of information than tone. Again our conclusions remain qualitatively the same.

Machine-based measures

The manual content analysis applied in this study allows us to obtain a measure of impression management that is specifically tailored for non-GAAP disclosures, and covers several communication techniques. However, manual content analysis can introduce subjectivity in the analysis. To test the robustness of our results we construct three machine-based measures of language tone. We focus only on tone because commonly used machine-based methods are typically developed to capture tone. The three measures of language tone are based on: (i) the Loughran and McDonald dictionary, (ii) the Harvard dictionary (Loughran and McDonald, 2011;

Loughran and McDonald, 2015), and (iii) the list of words derived from our manual content analysis.¹⁰

Similarly to the impression management analysis, we convert the scores obtained into indicator variables, using the sample median (we name the variable *High_Tone*). The market reaction results for the machine-coded scores are similar to those presented in tables 6 and 7, but slightly weaker. For example, the coefficients and correspondent *t*-statistics for the interaction term in equation 2 (*High_Tone x NG_adjustment*) are -0.094 (t-stat = -1.45) in the case of Loughran and McDonald score, -0.092 (t-stat=-1.73) for the Harvard dictionary score, and -0.093 (t-stat=-1.82) for the score based on our own wordlist. For the interaction terms with country-level variables in equation 3 the results are again similar.¹¹ We believe the weaker results are a consequence of two factors. First, the machine-coded score captures only tone and ignores other communication techniques which are captured

¹⁰ The Loughran and McDonald list is available at http://www.nd.edu/~mcdonald/Word_Lists.html. The *Harvard Psychosociological Dictionary*, is available through the GI website (see <http://www.wjh.harvard.edu/~inquirer/>). The list derived from the manual content analysis of the press releases included in this study is available upon request. The Loughran and McDonald list and the Harvard list are chosen because they have been widely used in accounting and finance research. However, they have also been criticised. First, the Harvard list is developed for psychological research and includes words which are not common in a finance context (e.g. mine or cancer) and it has been argued that it misclassifies words in financial applications (Loughran and McDonald, 2011). Second, the Loughran and McDonald list is developed for corporate 10K but it is biased towards a negative content (the list includes 354 positive words and 2,329 negative words).

¹¹ We run nine different specifications of equation 3 (3 country-level factors * 3 dictionaries). For “number of analysts” and “investor protection” the 3-way interaction term (*High_Tone x NG_adjustment x High_country*) is negative and statistically significant for all three dictionaries. But it is statistically stronger in the case of our own wordlist. For “percentage of institutional investors” the interaction term is always negative but not statistically significant.

by our main score. Second, the lists are not developed with announcements of financial data in mind. Overall, we conclude that computer-based methods of content analysis may not work as well as manual analysis for studying specific aspects of corporate disclosures.

VII. CONCLUSION

Managers use the flexibility allowed by earnings announcement press releases to disclose non-GAAP earnings measures that exclude transitory components, and are potentially a better presentation of permanent earnings. But the discretionary nature of non-GAAP calculations also creates opportunities to mislead investors. This possibility is intensified in environments where there are no stringent rules on non-GAAP reporting, investor protection is weaker, and investors' sophistication is low. In addition, the flexibility allowed by earnings announcement press releases offers managers the opportunity to use communication techniques (i.e. impression management) to persuade investors and other users that their non-GAAP disclosures are a good representation of the firm's persistent profitability.

For a sample of large European firms, we find that managers exclude recurring items from non-GAAP earnings, and that they use high impression management to mask that recurring nature in an attempt to overstate firms' performance. We also find that investors seem to understand that strategic disclosure

behavior as they react negatively to the disclosure of non-GAAP information that is combined with impression management. Our evidence suggests that the market players correctly identify high impression management as an attempt to positively bias their perception about the persistence of non-GAAP earnings. Finally, we analyze whether the market reactions vary with country-level conditions such as users' sophistication and protection of minority shareholders rights. Our results indicate that in countries with sophisticated users and strong investor protection the penalty for potentially misleading disclosures is higher. We conduct a number of robustness checks, including replacing our manually constructed score of impression management by a machine-coded score, and find similar results.

Appendix

Measuring Impression Management

Yell Group plc- Final Results

8097 words

23 May 2006

07:01

Regulatory News Service

English

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RSN Number: 3958D Yell Group plc 23 May 2006

Yell Group plc financial results for the year ended 31 March 2006

Strong growth across all business. Successful integration of TransWestern

} **Most
emphasized
section**

-- Group revenue up 26.1% to £1,621.3 million

-- Group adjusted EBITDA **up** ^{Keyword+} 28.0% ^{Bench+} to **£502.9** ^{NUM+ NG} million

-- Adjusted profit after tax **up** ^{Keyword+} 26.1% ^{Bench+} to **£233.6** ^{NUM+ NG} million

-- Group operating cash conversion of 88.9% compared to 88.4% last year

-- Adjusted diluted earnings per share **up** ^{Keyword+} 25.2% ^{Bench+} to **32.8** ^{NUM+ NG} pence

-- Proposed final dividend up 21.4% to 10.2 pence per share

} **Next most
emphasised
section**

Statutory results (unaudited)

	2005	2006	Change
Revenue	1,285.3	1,621.3	26.1%
Operating profit	327.7	449.9	37.3%
Profit after tax	162.5	212.3	30.6%
Cash generated from operations	357.8	411.5	15.0%
Diluted earnings per share (pence)	22.9	29.7	29.7%

} **Least
emphasised
section**

Key: NUM+/-=positive/negative amount, Bench+/-= positive/negative performance comparisons, Keyword+/-=positive/negative keyword

NG= Non-GAAP figure

We illustrate impression management practices using a specific press release of a company included in our sample: Yell Group plc, year of 2006. We perform manual content analysis, which allows a detailed scrutiny of the press release in search of potentially misleading disclosure practices. We manually code the three potentially misleading disclosure practices investigated in the current study. Each press release is assigned three levels of emphasis (most-, next-most and least- emphasized sections) and the qualitative and quantitative information is coded for each section separately. For the purposes of this study we focus on the first two sections of the press release (most- and next-most emphasized sections).

The impression management score is calculated following the method included in Figure 1, and the calculation is in Figure 2.

Figure 1: Method to measure impression management (management positiveness/negativeness)

Technique	Object of technique	Measure
(1) Tone	Keywords	Number of positive and negative keywords
	Quantitative amounts	Number of quantitative positive and negative amounts
(2) Emphasis	(a) Location/positioning/presentation of keywords	Most-, next-most emphasized section
	Location/positioning/presentation of amounts	Most-, next-most emphasized section
	(b) Repetition of statements	Number of positive and negative repetitions of statements
	Repetition of quantitative amounts	Number of positive and negative repetitions of amounts
	(c) Reinforcement of keywords	Number of positive and negative reinforcements
(3) Performance comparisons	Quantitative amounts	Benchmark, Previous year amount, Both

Figure 2: Calculating impression management score (NGIM)

Measure	Positive keywords	Negative keywords	Positive amounts	Negative amounts
① Number of disclosures (Keywords and amounts)	<u>3</u>	<u>0</u>	<u>3</u>	<u>0</u>
② Impression management score (NGIM)	Positive score	Negative score	Positive score	Negative score
(1) Disclosure of keywords and quantitative performance monetary and non-monetary amounts	3x1.0	0x1.0	3x1.0	0x1.0
(2)(a) Emphasis – Location:				
- Most-	0 x 1.0	0 x 1.0	0 x 0.0	0 x 0.0
- Next-most	3 x 0.5	0 x 0.5	3 x 0.5	0 x 0.5
(2)(b) Emphasis – Repetition	0 x 0.5	0 x 0.5	0 x 0.5	0 x 0.5
(2) (c) Emphasis – Reinforcement of keywords	0 x 0.5	0 x 0.5	0 x 0.5	0 x 0.5
(3) Performance comparisons	0 x 0.5	0 x 0.5	3 x 0.5	0 x 0.5
Total impression management score	<u>4.5</u>	<u>0.0</u>	<u>6.0</u>	<u>0.0</u>
③NGIM Score calculation				
$10.5 \text{Positive score} - 0.0 \text{Negative score} = 10.5 \text{Net positive score} / 74 \text{ Total number of words in sections coded} = + 0.1418$				

Although in this illustration we focus on the press release of Yell Group plc for 2006, our analysis involves the study of five consecutive years (2003 to 2009). Yell Group has a loss of £40.6 million in 2003. In 2004 the company increases losses to £51.1 million, in 2005 it has a profit of £94.2 million, in 2006 profit goes up to £212.3 million. In 2007 the company has profit of £212.7 million and in 2008 profit decreases to £206.7 million. In 2009 profit decreased dramatically to a loss of £1,141.4 million. Despite this overall poor performance, the press releases for all years from 2003 up to 2009 for Yell Group have a positive non-GAAP impression management score (NGIM) as measured in this study. This reflects an overall positive tone of the qualitative and quantitative information included in its press release. The IM Score for Yell Group is 0.00 for 2003, 0.061 for 2004, 0.094 for 2005, 0.014 for 2006, 0.046 for 2007 and 2008, and 0.38 for 2009.

The company did not include a non-GAAP amount in the sections analyzed for the 2003 press release. However, the company included three non-GAAP earnings figures in each of the following years from 2004 throughout 2009 in the prominent sections of the press releases analyzed in this study. In all cases the non-GAAP figures were positive (only one non-GAAP amount included in the sections analyzed of the press release for 2004 was neutral) and all included performance comparisons showing a positive change from earlier years. In all cases, the non-GAAP amounts were located in the second section of the press release, always before the GAAP earnings figures. In all cases, the non-GAAP figures included in the press release were larger than the GAAP figures. For example, in the press release for 2006 Yell Group included adjusted EBITDA (£502.9), adjusted profit after tax (£233.6), and adjusted diluted earnings per share (£32.8) - amounts are highlighted in the Appendix. The corresponding GAAP amounts were operating profit (£449.3), net income (£212.7), and diluted earnings per share (£27.09). The use of non-GAAP information and impression management is even more striking in the press release of 2009, where even though the company reported GAAP losses, all the non-GAAP figures in the press release were positive, and the NGIM score is positive.

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TABLE 1**Sample selection**

	Firm-years
Financial Times top 500 European industrial companies, 2003-2009	2,373
Unavailable press releases	-161
	2,212
Firms without non-GAAP measures in press release	-436
	1,776
Firms with non-GAAP measures, but not in section 1 or 2 of the press release	-170
	1,606
Missing data on accounting, analysts, market, and country variables	-761
Final sample	845
<i>Corresponding to 243 firms</i>	

This table shows the sample selection details. Numbers in parentheses are observations that are dropped. Observations from countries with less than ten firm-years were also eliminated.

TABLE 2 - Descriptive statistics by country

Country	N	Mean NGIM score	Mean NG_adjust. (unscaled)	Mean NG_adjust. (scaled)	Percentage institutional ownership	Number analysts	Investor protection score
Austria	10	0.025	0.130	0.003	13.2	99	0.21
Belgium	13	0.012	0.239	0.014	9.8	383	0.54
Denmark	19	0.016	1.231	0.056	20.5	323	0.47
Finland	23	0.008	0.148	0.009	33.8	331	0.46
France	133	0.035	1.070	0.039	21.1	1,272	0.38
Germany	61	0.031	0.259	0.012	21.0	807	0.28
Greece	16	0.045	0.124	0.011	10.2	78	0.23
Hungary	10	0.001	-0.159	-0.015	8.8	34	0.20
Ireland	18	0.060	0.144	0.010	30.5	180	0.79
Italy	33	0.011	0.150	0.015	13.6	736	0.39
Netherlands	28	0.028	0.843	0.032	32.4	867	0.21
Norway	17	0.015	1.326	0.191	21.1	269	0.44
Portugal	13	0.011	-0.001	0.000	9.0	208	0.49
Russia	14	0.013	0.381	0.002	12.4	41	0.48
Spain	31	0.032	-0.071	-0.008	16.6	634	0.37
Sweden	39	0.017	0.305	0.034	33.8	625	0.34
Switzerland	48	0.033	1.021	0.058	22.9	341	0.27
U.K.	319	0.039	0.332	0.043	20.1	601	0.93

This table presents the number of observations (N), the mean impression management score accompanying non-GAAP disclosures (NGIM), the mean non-GAAP adjustments disclosed by managers (unscaled and scaled by share price at the end of the previous year), and means of the country-level variables, all by country. *NG_adjustment* is the difference between non-GAAP disclosed by managers and GAAP earnings.

TABLE 3 - Descriptive statistics, for all observations

Panel A: Summary statistics for main variables

	Mean	1Q	Median	3Q	St.dev.
CAR	0.068	0.016	0.071	0.127	0.087
GAAP_surprise	-0.017	-0.012	-0.001	0.004	0.514
NG_adjustment	0.035	0.001	0.005	0.037	0.119
NGIM score	0.031	0.000	0.026	0.054	0.051
Size	9.174	8.339	9.143	9.983	1.194
Book-to-Market Assets	0.349	0.211	0.321	0.465	0.213
Capital expenditures	0.590	0.255	0.556	0.897	0.378
Average sales growth	0.092	0.008	0.064	0.149	0.166
Loss	0.088	0.000	0.000	0.000	0.283
ROA volatility	0.032	0.009	0.019	0.034	0.054

Panel B: Pearson correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) CAR	1									
(2) GAAP_surprise	0.086*	1								
(3) NG_adjustment	0.025	0.033	1							
(4) NGIM Score	0.217*	0.012	0.098*	1						
(5) Size	-0.082*	-0.002	-0.089*	0.018	1					
(6) Book-to-market assets	-0.131*	0.011	0.087*	-0.123*	0.237*	1				
(7) Capital expenditures	0.042	0.019	-0.038	-0.106*	0.107*	0.129*	1			
(8) Average sales growth	0.114*	-0.003	0.044	0.102*	-0.069	0.010	-0.053	1		
(9) Loss	-0.147*	-0.073*	0.055	-0.145*	0.082*	0.174*	-0.008	-0.005	1	
(10)ROA Volatility	-0.074*	-0.023	0.056	-0.101*	-0.215*	-0.064	-0.012	0.069	0.248*	1

This table presents summary statistics (Panel A) and correlation coefficients (Panel B) of the main variables. The definition of variables is as follows. *CAR* is the three-day abnormal market return adjusted for country-specific market premium, size, and book-to-market. *GAAP_surprise* is the difference between GAAP earnings per share and the median consensus GAAP EPS forecast, scaled by share price at the end of the previous year. *NG_adjustment* is the difference between non-GAAP disclosed by managers and GAAP earnings, scaled by share price at the end of the previous year. *NGIM* is a score representing impression management around the disclosure of non-GAAP earnings measures (see Appendix). *Size* is the logarithm of total assets. *Book-to-market assets* is the ratio of book value of equity to market value of equity plus book value of total debt. *Capital expenditures* is the ratio of PPE to total assets. *Average sales growth* is growth in sales over the last 3 years. *Loss* is an indicator variable coded as one if GAAP earnings is negative, and zero otherwise. *ROA Volatility* is calculated as the standard deviation of ROA (return on assets) over the previous three years. The number of observations is 845. The *symbol next to the Pearson correlation coefficient indicates significance at the 5% level.

TABLE 4 – Impression management and aggressive non-GAAP disclosure***Panel A: Exclusion of recurring items***

	NGIM score	
	<i>Mean</i>	<i>Median</i>
No recurring adjustments	0.025	0.016
Recurring adjustments	0.035	0.024
<i>Test of difference [p-value]</i>	<i>0.062</i>	<i>0.059</i>

Panel B: Non-GAAP earnings with higher emphasis

	NGIM score	
	<i>Mean</i>	<i>Median</i>
NG earnings have lower or same emphasis than GAAP earnings	0.029	0.024
NG earnings have higher emphasis than GAAP earnings	0.045	0.038
<i>Test of difference [p-value]</i>	<i>0.001</i>	<i><0.001</i>

Panel C: Beating analyst forecasts with non-GAAP

	NGIM score	
	<i>Mean</i>	<i>Median</i>
Otherwise	0.033	0.029
NG earnings meets/beats forecast but GAAP earnings does not	0.041	0.037
<i>Test of difference [p-value]</i>	<i>0.071</i>	<i>0.024</i>

TABLE 5 - Persistence of non-GAAP adjustments and impression management

	Future Earnings	Future operating income
NG_EPS	1.552*** (5.55)	2.706*** (5.14)
<i>NG_adjustment</i>	<i>-0.476*** (-3.68)</i>	<i>-0.703*** (-2.88)</i>
High_NGIM	-0.331 (-0.28)	-1.455 (-0.66)
High_NGIM*NG_EPS	0.170 (1.23)	0.213 (0.81)
<i>High_NGIM*NG_adjustment</i>	<i>-0.581*** (-4.50)</i>	<i>-0.803*** (-3.29)</i>
Size	0.130 (0.32)	0.553 (0.71)
Growth	-0.466 (-0.69)	-0.969 (-0.74)
Loss	-3.223** (-2.33)	-5.930** (-2.36)
ROA volatility	0.198 (0.57)	0.469 (0.70)
Constant	5.218** (2.15)	11.276*** (2.62)
Time controls	Yes	Yes
Industry controls	Yes	Yes
Country controls	Yes	Yes
N	845	845
Adjusted R2	0.853	0.903

This table presents regression results of the persistence of earnings and managers non-GAAP adjustments moderated by impression management. The definition of variables is as follows. *NG_EPS* is non-GAAP earnings per share. *NG_Adjustment* is the difference between non-GAAP earnings disclosed by managers and GAAP earnings. *High_NGIM* is an indicator variable coded as one if the impression management score around non-GAAP disclosures is above the sample median, and zero otherwise. *Size* is the logarithm of total assets. *Growth* is a common factor of three variables: book-to-market assets, average sales growth in last three years, and capital expenditures to total assets. *Loss* is an indicator variable coded as one if GAAP earnings is negative, and zero otherwise. *ROA volatility* is calculated as the standard deviation of ROA (return on assets) over the previous three years. The symbols *, **, and *** indicate significant coefficients at the 0.10, 0.05, and 0.01 levels, respectively (two-tailed). Parameter estimates are reported first, followed by robust *t*-statistics corrected for firm-level clustering in parentheses.

TABLE 6 - Market reaction to non-GAAP adjustments and impression management

	(1)	(2)	(3)	(4)	(5)
GAAP_surprise	0.134*** (3.00)	0.118** (2.42)	0.132*** (3.14)	0.131*** (5.37)	0.119*** (7.35)
NG_adjustment		0.061** (2.44)		0.125** (2.97)	0.110** (2.60)
High_NGIM			0.047*** (5.35)	0.046*** (4.79)	0.037*** (3.82)
<i>High_NGIM x NG_adjustment</i>				<i>-0.130*** (-5.78)</i>	<i>-0.124*** (-4.49)</i>
High_OTHIM					0.027*** (4.90)
High_OTHIM x GAAP_surprise					0.206 (1.22)
Constant	0.057*** (4.50)	0.047*** (2.81)	0.020 (1.45)	0.024*** (4.56)	0.016** (3.32)
N	845	845	845	845	845
Adjusted R2	4.7%	5.8%	8.7%	8.9%	11.3%
Industry controls	Yes	Yes	Yes	Yes	Yes
Country controls	Yes	Yes	Yes	Yes	Yes

This table presents regression results of the market reaction to non-GAAP disclosures moderated by impression management. The definition of variables is as follows. *CAR* is the three-day cumulative abnormal market return adjusted for country-specific market premium, size, and book to market. *GAAP_surprise* is the difference between GAAP earnings per share and the median consensus GAAP EPS forecast, scaled by share price at the end of the previous year. *NG_adjustment* is the difference between non-GAAP earnings disclosed by managers and GAAP earnings, scaled by share price at the end of the previous year. *High_NGIM* is an indicator variable coded as one if the impression management score around non-GAAP disclosures is above the sample median and zero otherwise. The symbols *, **, and *** indicate significant coefficients at the 0.10, 0.05, and 0.01 levels, respectively (two-tailed). Parameter estimates are reported first, followed by robust *t*-statistics corrected for firm-level clustering in parentheses.

TABLE 7 - Market reaction to non-GAAP adjustments and impression management in different institutional environments

	Institutional Investors (1)	Number of analysts (2)	Investor protection (3)	Principal components (4)
GAAP_surprise	0.138*** (3.48)	0.115*** (6.77)	0.120*** (5.76)	0.111*** (7.21)
NG_adjustment	0.130** (2.59)	0.133*** (2.67)	0.131** (2.56)	0.128** (2.50)
High_NGIM	0.045*** (5.17)	0.046*** (5.30)	0.046*** (5.31)	0.045*** (5.30)
High_NGIM x NG_adjustment	-0.117* (-1.88)	-0.154*** (-2.62)	-0.112* (-1.89)	-0.152** (-2.45)
High_Country	-0.006 (-0.98)	-0.000 (-0.04)	0.013* (1.72)	
<i>High_NGIM x NG_adjustment x High_Country</i>	<i>-0.111** (-2.03)</i>	<i>-0.113*** (-4.92)</i>	<i>-0.085*** (-3.42)</i>	
High_SOPH				0.005 (1.12)
High_PROT				0.009*** (4.15)
<i>High_NGIM x NG_adjustment x High_SOPH</i>				<i>-0.084*** (-3.16)</i>
<i>High_NGIM x NG_adjustment x High_PROT</i>				<i>-0.028* (-1.72)</i>
Constant	0.033** (2.48)	0.031** (2.11)	0.022 (1.56)	0.020 (1.45)
N	845	845	845	845
Adjusted R2	5.5%	6.2%	6.0%	8.3%
Industry controls	Yes	Yes	Yes	Yes

This table presents the regression results of the market reaction to non-GAAP disclosures moderated by impression management and country-level variables. The definition of variables is as follows. *CAR* is the three-day cumulative abnormal market return adjusted for country-specific market premium, size, and book to market. *GAAP_surprise* is the difference between GAAP earnings per share and the median consensus GAAP EPS forecast, scaled by share price at the end of the previous year. *NG_adjustment* is the difference between non-GAAP earnings disclosed by managers and GAAP earnings, scaled by share price at the end of the previous year. *High_NGIM* is an indicator variable coded as one if the impression management score around non-GAAP disclosures is above the sample median and zero otherwise. *High_country* is an indicator variable coded one if the country's percentage of institutional ownership, number of analysts, or investor protection is above the sample median, and zero otherwise. In column (4) the three country measures are aggregated in two principal components that represent investor sophistication (*SOPH*) and investor protection (*PROT*). The symbols *, **, and *** indicate significant coefficients at the 0.10, 0.05, and 0.01 levels, respectively (two-tailed). Parameter estimates are reported first, followed by robust *t*-statistics corrected for firm-level clustering in parentheses.

TABLE 8 - Selection model

Panel A: Market reaction to non-GAAP adjustments and impression management in in different institutional environments

	Institutional Investors (1)	Number of analysts (2)	Investor protection (3)
GAAP_surprise	0.078*** (6.00)	0.079*** (6.01)	0.080*** (6.05)
NG_adjustment	0.171*** (4.31)	0.171*** (4.74)	0.168*** (4.87)
High_NGIM	0.028** (2.21)	0.029** (2.13)	0.030** (2.25)
<i>High_NGIM x NG_adjustment</i>	<i>-0.070*** (-2.82)</i>	<i>-0.066** (-2.27)</i>	<i>-0.046* (-1.75)</i>
High_Country	-0.006 (-1.45)	0.012*** (3.98)	0.015*** (3.23)
<i>High_NGIM x NG_adjustment x High_Country</i>	<i>-0.079*** (-2.74)</i>	<i>-0.115*** (-3.62)</i>	<i>-0.151*** (-3.43)</i>
Constant	-0.009 (-0.80)	-0.015 (-1.42)	-0.020** (-2.28)
Industry controls	Yes	Yes	Yes
Test of independence of equations (Chi2)	16.75***	16.84***	17.49***

Panel B: Determinants of non-GAAP disclosure (selection equation)

	Institutional Investors (1)	Number of analysts (2)	Investor protection (3)
Analyst expectations	0.228*** (5.61)	0.226*** (5.51)	0.227*** (5.58)
Growth in profit	0.080 (1.32)	0.080 (1.30)	0.081 (1.31)
Intangibility	0.843*** (2.72)	0.839*** (2.80)	0.844*** (2.80)
ROA volatility	0.093 (0.12)	-0.101 (-0.12)	-0.103 (-0.12)
Special items	0.129 (1.32)	0.133 (1.39)	0.131 (1.35)
Size	0.027 (0.60)	0.029 (0.65)	0.027 (0.62)
Leverage	-0.068 (-0.29)	-0.086 (-0.39)	-0.088 (-0.39)
Constant	-0.127 (-0.41)	-0.134 (-0.43)	-0.122 (-0.39)

This table presents the estimation results of a selection model that analyzes the market reaction to non-GAAP disclosures moderated by impression management and country-level factors. Panel A reports the results for the second-stage equation of market reaction, and Panel B reports the results for the first-stage selection equation. *CAR* is the three-day cumulative abnormal market return adjusted for country-specific market premium, size, and book to market. *GAAP_surprise* is the difference between GAAP earnings per share and the median consensus GAAP EPS forecast, scaled by share price at the end of the previous year. *NG_adjustment* is the difference between non-GAAP earnings disclosed by managers and GAAP earnings, scaled by share price at the end of the previous year. *High_NGIM* is an indicator variable coded as one if the impression management score around non-GAAP disclosures is above the sample median, and zero otherwise. *High_country* is an indicator variable coded one if the country's percentage of institutional ownership, number of analysts, or investor protection is above the sample median, and zero otherwise. Panel B reports the estimation results of the selection equation. The variables are as follows: *Analyst Expectations* is an indicator variable coded as one if non-GAAP earnings meet or beat the analyst consensus forecast, and zero otherwise. *Profit growth* is an indicator variable coded as one if non-GAAP earnings exceed previous year's GAAP earnings, and zero otherwise. *Intangibility* is the ratio of intangible assets to total assets. *Special items* is an indicator variable coded as one when the firm reports special or extraordinary items, and zero otherwise. *Size* is the logarithm of total assets. *Leverage* is the ratio of total debt to total assets. The symbols *, **, and *** indicate significant coefficients at the 0.10, 0.05, and 0.01 levels, respectively (two-tailed). Parameter estimates are reported first, followed by robust *t*-statistics corrected for firm-level clustering in parentheses.