

Accounting Narratives and Disclosure Quality: Empirical evidence from the UK, France and Germany

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Abstract

In this paper, we analyse narrative disclosures from over 28,000 corporate announcements for 137 UK, French and German companies over the years 2003 to 2011. A custom-dictionary, based on software used by Kothari et al (2009) is employed to classify the disclosures into six categories based on theme and content, and the volume of disclosures in each category, in each month is recorded for each firm. The resulting variables are then used in models of disclosure quality based on the accuracy and dispersion of analysts' earnings forecasts, to draw conclusions about the extent to which the quantity of disclosed information is related to disclosure quality. We also investigate the effects of the adoption of International Financial Reporting Standards (IFRS) by the firms during this period, differences between countries and the effect of various company specific factors including the level of intangible assets and goodwill in the firm's balance sheet.

Keywords:

Accounting narrative disclosures, custom dictionary, disclosure quality

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Introduction

Since the adoption of International Financial Reporting Standards (IFRS) by firms quoted on major European stock exchanges in 2005, corporate disclosure in European countries has increased significantly in both volume and complexity. Deloitte (2017) in their annual survey of reporting practices note that the average length of published, UK annual reports has now increased to 155 pages, whereas in 2008 the average length was 85 pages. While the increase in the volume of disclosure is indisputable, there are several reasons why the quality of these disclosures is more difficult to ascertain. The main objectives of financial reporting included in the IASB's conceptual framework (2015) rest on the concept of decision usefulness and it is the relevance of information to investment decisions that is usually taken to be an appropriate measure of disclosure quality. Given this, it is likely that the increasing size and complexity of annual reports renders them less useful, since they make it more difficult for the users of the reports to read and extract the information relevant to their decisions. Moreover, the sources of information about the performance of an organisation, over and above its annual report, have also increased rapidly during this period due to the growth of the internet, an increased number of press releases and the increasing sophistication of investor information services.

It has long been recognised that narrative accounting disclosures play dual, and often contradictory roles (Aerts, 1992). Merkl-Davis and Brennan (2007) identified two potential motivations for disclosure. The first involves opportunistic behaviour by managers facilitated by use of impression management and the second involves the communication of new information to the users and the markets in which they operate. In the first case, managers act to exploit the information asymmetries between them and those outside the organisation by introducing biases into the reporting. In this way, managers can manipulate the overall impression given of organisational performance by using several different techniques such as the obfuscation of information about poor performance (Courtis, 1998; Subramanian et al, 1993); introducing attributional biases (Aerts, 2001;2005; Clatworthy and Jones 2003); the use selective benchmarks; excluding particular items from the reports; the placement of certain items at particular points in the text and the use of evaluative comments about performance (Henry, 2008). In addition to these techniques, Beattie (2014) notes that impression management is not limited to the use of words but may also occur in the use of images, graphics and charts, as well as in the form of text.

The use of impression management techniques by managers is consistent with the idea of weak-form stock market efficiency, where the users of financial reports may not have access to all information about a firm's performance or where they may not be capable of identifying and assessing the effects of management manipulations. The second motive for disclosure, conveying incremental information to users, is more consistent with the idea of strong form stock market efficiency, where the readers of financial reports are capable of recognising and understanding the effects of impression management on the reported performance (Hand 1990). There have been many studies of opportunistic behaviour by managers associated with earnings management and such behaviour is notoriously difficult to capture empirically because much of it takes place in private, inside the organisations, and is by its nature designed to be concealed. The empirical models used in the literature to represent earnings quality include discretionary accruals models (e.g. Dechow et al, 1995); models relating published accounting information to stock returns, which are the basis of many studies; models of the relationship between accounting numbers and analysts' forecasts (e.g. Byard et al, 2011) and models using other more direct measures of earnings characteristics such as earnings persistence, earnings volatility and measures of reporting bias such as conservatism (see Schipper and Vincent, 2003, for a review of the different measures used). Disclosure quality is both a wider and a more complicated concept than earnings quality. The use of impression management is a more subtle way to manipulate the opinions and sentiments of report users than earnings management and therefore even more difficult to identify and measure empirically. For the purposes of our study, we decided to use the accuracy and dispersion of analysts' forecasts as a measure of disclosure quality on the grounds that these measures are related directly to decision usefulness and are likely to capture more of the effects of information asymmetry (see later).

Our paper is based on a study of all firms listed in the primary indices of the stock exchanges of the UK, France and Germany in the years 2003 to 2011 and we analyse all narratives published by them throughout this period, excluding those relating to directors' share dealings. These included annual reports, interim reports, other corporate reports, press statements and all other sources of information found on corporate websites and in major company information databases. In total, the analysis includes over 120 million words contained in over 28,000 company announcements and over 2,800 annual and quarterly reports. From this, we employ a custom-dictionary based on the software used by Kothari et al (2009), specifically adapted to disclosures under IFRS, to classify the disclosures into six categories adapted from Kothari et al (2009) and Beattie et al (2004). These include disclosures relating to industry-specific factors, firm strategy, financial performance,

corporate governance, marketing and the effects of accounting and legal regulation. Six disclosure variables were then constructed for each company on a monthly basis, containing the count of disclosure items in each category. We then analyse the relationships between these variables, the characteristics of analysts' forecasts and other relevant factors, identified from the literature, both at the level of the individual firm, the industry and at country level. This enables us to demonstrate that the narrative disclosures across the six categories are systematically related to disclosure quality, as reflected in the average accuracy of analysts' forecasts and the dispersion of forecasts around that average. The two disclosure categories that produce the largest effect appear to be the disclosures relating to firm strategies and to financial performance, although the relative effects differ across the three countries studied. In addition to the narrative disclosures, three other factors that prove important in explaining the quality of disclosure are the adoption of IFRS, which occurred for most firms during this period, the firm's industry group and the proportion of intangible assets and goodwill in the firm's balance sheet.

The paper is organised into five sections. Following this introduction, there is a review of the literature relating to disclosure quality; after this a description of the data, definitions of variables and models used; then follows the empirical results and finally a summary of the findings and concluding remarks.

Literature review

Early work on accounting narrative disclosures specifically identified two different roles that such disclosures play. The first involves communication of information to markets and to the public arena and the second involves manipulation of the information, designed to influence the views and sentiments of the users of accounting reports (Adelberg, 1979; Aerts 1992). In her review of the literature on accounting narrative disclosures, Beattie (2014), identifies two distinct streams in this area that developed in parallel, which she refers to as deriving from the North American tradition and the European tradition. In part, the different approaches of the two streams reflect the differences in research philosophy between the US and Europe and the different theories and methodologies associated with them. The differences are also reflected in the terminology and language used by writers, with European authors describing the accounting narratives created by organisations and US authors describing the public disclosure of items of information. The problem facing researchers from both traditions is that the characteristics of corporate narrative disclosures and the behaviours around them, being essentially subjective and hidden, are difficult to define,

capture and observe. Mainstream US research on disclosure, which is rooted in economics and positive theory, consists primarily of quantitative, empirical studies involving the construction of proxy measures for concepts such as earnings quality and the “tone” of narrative disclosures (e.g. Kothari et al, 2009; Li 2010). Such studies focus on the information and communication roles of accounting narratives and are generally based on economic arguments about information asymmetry and contracting relationships, where the accounting disclosures are viewed as being based on objective facts. Work from the European tradition has been more eclectic in nature, in some instances using social scientific methodologies to reflect accounting disclosures as narratives conveyed by human actors to create subjective meanings (e.g. Merkl-Davies, Brennan and Macleay, 2011; Davison, 2008). This work draws on discourse based methodologies and focuses more on the role of narratives as a means of impression management designed to manipulate the reactions of the reader. These studies often seek to explain the motives behind the choice of language and content of the narratives and link these to the power relationships and social forces affecting the writers and readers of the accounts. A third type of approach to accounting narratives draws from both of these traditions to produce quantitative, empirical studies, based on content analysis to generate rich descriptions of the choices organisations make in relation to their disclosure, analyse these within the external and internal contexts of the organisation and possibly to identify the drivers for these choices, but with less focus on interpreting the meaning of the specific narrative disclosures (e.g. Aerts and Cormier, 2009; Merkl-Davies and Brennan, 2011). It is within this third group of studies that the current paper is located. The analysis of literature presented below firstly discusses the first type of study, those from Beattie’s (2014) “European tradition”, and then moves on to discuss the more quantitative, economics based studies.

The tendency of managers to manage the overall impression of organisational performance created by a published reported has been linked to ideas of accountability and legitimacy by European authors (Aerts, 1992). Early research on narratives refers to a focus on “self-serving attributional bias” (Aerts 2001; 2005), that is a tendency for managers to claim responsibility for a positive performance but to attribute negative outcomes to external or uncontrollable factors. Aerts (2005) also describes a process of retrospective, opportunistic, attributional framing of the information disclosed and notes that listed companies offer more attributional explanations for a wider range of accounting outcomes, compared to unlisted firms. It is suggested that this is a result of the greater information asymmetry that exists in listed firms. The motivations for impression management behaviour, based on a range of theories, including agency theory, signalling theory, legitimacy theory, stakeholder theory and institutional theory, are discussed by Merkl-Davies and Brennan

(2007). This analysis identifies two main manifestations of impression management in corporate reports. The first concerns managers attempting to conceal negative performance outcomes by obfuscation of this information and the use of positive bias. The second involves the attribution of performance outcomes, so that negative outcomes are associated with external or non-controllable factors and positive outcomes with internal or controllable factors. There is also evidence to suggest that self-serving biases become stronger in situations where the firm is experiencing more pressure. Keusch et al (2012) studied 125 large European companies, in periods of crisis and non-crisis, measuring level and intensity of acclaiming attributions, number of references to the internal and external environment, enhancements to disclosure information and denials made about causality. The conclusion from this was that managers use impression management to a greater extent in crisis periods and that this behaviour is more likely to result from conscious efforts at impression management than from unintentional cognitive biases. Managers of firms experiencing financial distress have also been shown to be more likely to conceal or omit certain pieces of information in order to influence the perceptions of readers (Leung et al, 2015).

Merkyl-Davies and Brennan (2011) later went on to develop a conceptual framework for impression management, in an attempt to provide an alternative theorisation to the adoption of economic and agency theory by mainstream, and particularly US, research into narrative disclosures. This framework recognises the multidisciplinary nature of the phenomenon and expands the view of impression management to include concepts of accounting information as socially constructed and thus subject to psychological processes of bounded rationality, irrationality or substantive rationality. This allows the authors to consider impression management behaviour in the context of behavioural, social and critical perspectives in addition to the economic perspective taken by most studies. Unerman (2003) also takes a wider perspective on narrative disclosures in his analysis of the disclosures made by Shell in the period 1950 to 1960, which he sets in the context of a theoretical framework based on a classical, political economy of accounting, to illustrate the changing relationships between the oil multinationals and governments.

The literature based on quantitative analyses of narrative accounting disclosures has investigated many different features of narratives and the language in which they are expressed, in an attempt to capture elusive characteristics such as disclosure quality and to measure information content and the usefulness of such information in decision making. In many cases, word counts, as measures of the quantities of various kinds of disclosures, are taken as indications of the quality of information, based on the idea that more disclosure conveys more information (e.g. Schleicher, et al, 2007; Kothari et al, 2009; Loughran and McDonald 2011; Merkl-Davies et al, 2011; Davis et al, 2012 and

Keusch, et al., 2012). This approach assumes that there is not a significant amount of repetition in the disclosures and that, to some extent, the quality of the information disclosed across different categories is relatively uniform.

Because disclosure quality is such a difficult concept to define and measure, a wide range of characteristics of narrative disclosures have been used to represent various different aspects of the concept. Such characteristics include measures of the understandability and readability of accounting disclosures (Jones, 1983; Jones and Smith, 2014; Lehavy, 2011); measures of narrative complexity (Smith and Taffler 1995); measures of the volume of standing information, sometimes referred to as “boilerplate”, that is carried forward from year to year in annual reports (Brown and Tucker, 2011); the extent to which disclosed information is “forward looking” (Schleicher et al, 2007); and many measures of linguistic concepts used to represent the intensity with which ideas in narratives are expressed, for example verb transitivity (Thomas, 1997) or the proportion of abstract or concrete words (Riley et al, 2014).

The most commonly used measures reflect whether the words or phrases used are positive or negative in tone. Although the term “tone” was not adopted until later, early examples of attempts to define and measure the tone of disclosures, are seen in literature from both the European tradition (e.g. Beattie et al 2002; Clatworthy and Jones, 2003) and the US tradition (e.g. Subramanian et al, 1993; Henry 2008). In this latter study, Henry (2008), defined tone in terms of both the content of narratives and word choice. The study comprised two elements, a rhetorical analysis of the content of earnings press releases and an event study of annual press releases issued by firms in the telecommunications and computer industries. Henry noted that the earnings press releases served two purposes, both to provide information and to promote the firm. The techniques she identified by which firms promoted themselves included using specific types of phrases, the selective use of bench marks, excluding certain items, placement of certain items in the text and the insertion of evaluative comments. The study also found that abnormal market returns increased as the tone of the press release became more positive.

Some of the early US work on tone (Lapointe et al., 2006; Hodgdon et al., 2008) and a significant proportion of the European work, is based on manual content analysis and hand collected data (for example Aerts, 2001; Clatworthy and Jones, 2003; Daske and Gebhardt, 2006; Schleicher and Walker, 2010; Verriest et al., 2013). The US literature includes more analyses based on automated techniques and software programming. One of the earliest published examples is a method of analysis using the WORDS software system, described by Frazier et al (1984), which showed how

accounting narratives could be categorised by thematic content based on analysis of word-frequency and contiguity logic. Other studies have been based on a software system called DICTION, used widely in social science research, that analyses the tone of a narrative based on five linguistic characteristics: certainty, activity, optimism, realism and commonality (e.g. Davis et al, 2012; Wisniewskia and Yekini; 2015).

In addition to generic content analysis packages, several studies have involved the development of software based on customised dictionaries, specifically for use with financial reporting narratives. Kothari et al (2009) was one of the first researchers to develop such a software programme, to create a “tone dictionary” to identify positive and negative pieces of information. The use of computer-assisted analysis enabled Kothari et al to analyse over 100,000 published reports from a wide range of sources, rather than just annual or quarterly reports and he created a taxonomy of six different disclosure categories, which is the basis for the analysis of narratives included in the current paper (see later). Overall, Kothari et al’s (2009) results indicated that positive disclosures result in a reduction in firm risk, proxied by the cost of capital, stock return volatility and analyst forecast dispersion, and negative disclosures are associated with increased risk measures, particularly when the source of the disclosures is the business press. Kothari et al’s approach was adapted subsequently by Loughran and McDonald (2011), who used a dictionary developed in the field of psychology (the Harvard Psychosociological Dictionary), to identify word strings that reflected uncertainty or positive sentiment, based on identifying them as strong modal words (e.g. will, must, highest) or weak modal words (e.g. possibly, depending, could) and litigious words. Similar types of customised dictionaries were also employed by Lehavy et al., (2010), Brown and Tucker (2011) and Muslu et al. (2014).

Later work on the tone of accounting narratives included a study by Allee and DeAngelis (2015) on tone dispersion, which suggests that the typical approach in the literature, which of treats narrative disclosures as “a bag of words”, misses important characteristics related to the structure of narratives. Allee and DeAngelis therefore consider tone dispersion, which is the degree to which tone words are spread evenly within a narrative and which is based on a measure of linguistic dispersion from the computational linguistics literature, average reduced frequency (ARF). The results suggest that managers deliberately structure tone as part of their overall narrative and that tone dispersion is significantly associated with firm performance. Another recent study relating to tone is Ball et al (2015) which demonstrates that in US firms undergoing business change, where the value relevance of financial statements is comparatively low, the content of the narratives disclosed on the Management Discussion and Analysis of the firms’ 10-k reports can be

systematically used to explain firm valuation. The most value relevant disclosures related to investment strategies, the issue of securities, marketing, financial constraints and liquidity, and new commercial agreements.

The measures of disclosure quality used in empirical studies also vary significantly. Several early US studies used composite indices deriving from published reports compiled by analysts to represent the informativeness of accounting disclosure. Such reports included the Financial Analysts' Federation Corporate Information Committee reports (used by Lang and Lundholm, 1996 and Sengupta, 1998) and reports from the Center for International Financial Analysts' Research (e.g. Hope 2003a; 2003b). More recent studies have focussed on measures based on stock market returns (e.g. Schleicher et al, 2007; Henry, 2008; Kothari et al, 2009; Brown and Tucker, 2011; Muslu et al, 2014; Wisniewskia and Yekini, 2015; Yekini et al, 2016) reflecting the idea that disclosures of higher quality should reduce information asymmetry and be more closely related to returns. Other measures include proxies for risk such as the firm's cost of capital (Kothari et al, 2009) and measures of discretionary accruals (Ball et al, 2015). Other commonly used measures of earnings quality or disclosure quality include various characteristics of analysts' forecasts such as the size of forecast errors, measures of accuracy, analysts' consensus or forecast dispersion (Barron et al, 1998; Botosan and Harris, 2000; Amir et al, 2003; Byard and Shaw, 2003; Lehavy et al, 2011; Brown and Tucker, 2011 and Merkley, 2014). The concept behind this is that higher quality disclosure should result in smaller average errors in analysts' forecasts and smaller variance in forecasts across different analysts. Botosan and Harris (2000) argue that forecast dispersion is a more direct measure of information asymmetry than measures based on the accuracy of forecasts, as it reflects the degree to which analysts disagree about the effect of disclosure information and allows for the fact that different analysts have different backgrounds, education and personal characteristics.

Two other important issues identified in the literature, in relation to both disclosure quality and earnings quality, are the effects of accounting regulation, in particular the adoption of IFRS, and the effects of specific accounting policies, such as those relating to the measurement and disclosure of intangible assets and goodwill, and the use of fair values. A number of studies have identified differences in these factors across different countries (e.g. Hope et al., 2006; Chua and Taylor, 2008; Kvaal and Nobes, 2010; Kvaal and Nobes, 2012). Country specific factors related to disclosure quality that are widely identified in the literature include cultural and linguistic differences; the effectiveness of financial reporting and legal enforcement systems; the type of legal

system in operation in the country (common law or code law); the extent to which there is a focus on the requirements of capital markets as opposed to other stakeholders such as providers of private debt finance; and the degree of difference between the country's domestic GAAP and IFRS (Lardon and Street, 2004; Nobes, 2006; Kvaal and Nobes, 2010; Kvaal and Nobes, 2012).

The adoption of IFRS by different countries might be expected to improve the comparability of published financial reports and reduce the number of adjustments that analysts feel it necessary to make in comparing firms (Ball, 2006; Hail et al. 2010; Barth et al. 2008; Barth et al. 2012; Horton et al, 2013). In this context, the potential for higher international diversification by investors and lower risk arising from higher quality financial information might also be expected to reduce the average cost of capital facing firms (Ball, 2006; Kothari et al, 2009). However, the empirical evidence on the relationship between IFRS adoption and earnings or disclosure quality is not entirely consistent. A study by Barth et al (2007) across 21 countries suggested that the adoption of IFRS improved accounting quality by reducing earnings management, increasing the speed with which losses were recognised and improving value relevance. Horton et al (2013) also concluded that mandatory IFRS adoption improved the accuracy with which analysts were able to forecast earnings and various other measures of information quality. They also found that the measures they used improved most for firms in countries whose domestic accounting rules were furthest away from IFRS rules in the first place. However, smaller scale studies set in particular countries have provided contradictory results. The study by Daske (2006), based in Germany, found an increase in the cost of capital of German firms on adoption of IFRS.

Jeanjean and Stolowy (2008) studied earnings management in the UK, France and Australia, showing that earnings management did not decline, as expected, on adoption of IFRS in the UK and Australia and that earnings management increased in France following IFRS adoption. They conclude that "sharing rules is not a sufficient condition to create a common business language ... management incentives and national institutional factors play an important role in framing financial reporting characteristics, probably more important than accounting standards alone." (Jeanjean and Stolowy, 2008, page. 493). One issue that creates differences across countries in relation to IFRS is the variation in adoption processes. Although around 120 countries have now adopted IFRS, many of them have adapted the process to their own environment, for example by requiring IFRS only for large quoted companies or carving out (not applying) specific parts of the standards (PWC, 2014). Nobes (2006) identified eight motives and opportunities for the survival of national differences under IFRS and in a subsequent study (Nobes, 2011) demonstrated that the differences

he forecasted in 2006 persisted five years later. One significant issue with financial reporting convergence across countries has been that despite the pressure for the integration of accounting rules and practice, the political and market forces affecting the individual firms, national regulators and national professions remain at the local level (Ball, 2006).

The use of fair value accounting in IFRS is one of the reasons suggested by the literature to explain why the expected benefits from IFRS adoption, in terms of greater comparability, greater transparency and reduced risk to investors, might not have occurred consistently (Ball, 2006; Penman, 2007). This is because the use of fair values is likely to result in more volatility in earnings and will increase the complexity of narrative disclosures and reduce forecast accuracy (Liang and Riedl, 2014). There is also some evidence that extensive use of fair values allows more management discretion, which could result in earnings manipulation and impression management (Capkun et al., 2013). In addition to the adoption of IFRS during our period of study, the increasing importance of intangible assets relative to other assets in firms' balance sheets has also created more uncertainty, particularly due to the use of fair values. Various authors have pointed out the inconsistent and diverse treatments of intangibles permitted under IFRS. Such assets are usually not traded in organised, active markets and consequently the estimation of their fair values is complex and often unreliable. Additionally, goodwill impairments, research and development expenses, advertising costs are frequently expensed directly in the income statement and this can potentially contribute to information asymmetry (Aboody and Lev, 2000). Because of this, numerous studies have included measures reflecting the proportion of intangibles and goodwill in firms' balance sheets in models of disclosure quality (Barth et al, 2001; Amir et al., 2003; Matolscy and Wyatt; 2006, Tan et al; 2011).

Many existing studies of earnings quality, such as Byard et al. (2011) and Tan et al. (2011), tend to suffer from a significant weakness, in that the empirical models do not take into account the narrative information that is disclosed in annual reports. Other studies, which do consider narrative information, such as Cotter et al. (2012) and Glaum et al. (2013) do not consider the many other sources of information that contribute to the analysts' information environment, in addition to annual reports. In devising an approach for our own study, we therefore attempted to address both of these gaps by creating a number of variables to reflect the quantity of disclosures made by firms across different disclosure categories and by collecting narrative disclosure from a range of different sources. The main purpose of this approach was to enable us to investigate the relationship between information quantity and information quality and to this end, we adapted the methods used by

Kothari et al. (2009). This study used a customised dictionary for classification purposes only, based on tone, however in the current paper the dictionary is used to automatically analyse the content of narrative disclosures in order to model the analysts' information environment. This approach allows a vast amount of information to be analysed without restricting the research design to specific areas of corporate disclosure such as the narratives in annual reports, directors' reports or the notes to the financial statements.

For this purpose, we developed a new version of the dictionary, specific to disclosure in European companies and under IFRS, to quantify the information transmitted by firms to outsiders through both corporate reports and other sorts of announcements. Our approach avoids the subjectivity involved in many studies of relating word stems to the tone of the narrative but still allows us to draw conclusions about disclosure quality, as represented by analysts' forecast accuracy and forecast dispersion, as a measure of information asymmetry. We examine the properties of analysts' forecasts on a monthly basis and the narrative disclosure variables are also constructed to produce monthly observations. Using monthly observations allows us to model the evolution of the relationship between the forecasts and the disclosure information throughout the financial year rather than just using one observation at each year end, as is the case in most other published studies. We also assess the impact of IFRS adoption on the relationship between analysts' forecasts and narrative disclosures and consider particularly the role of goodwill, goodwill impairments, intangible assets and acquisitions in Europe.

The sample, model and variables

Sample selection

The sample for this study includes firms from three countries, United Kingdom, France and Germany, based on the constituents of the FTSE100, CAC40 and DAX30 indices. All companies that were listed in at least one of the three indices from financial year 2003 to financial year 2011 were included. In common with other similar studies, our sample excludes financial companies, insurance companies and utility companies due to the unique characteristics of these industries. A small number of companies were removed due to missing records in the Thomson One Banker I/B/E/S or Datastream databases and one company reporting under USGAAP was also excluded. The resulting sample includes data relating to 78 UK companies, 34 French companies and 25 German companies.

Dependent variables

Two measures, deriving from the literature, based on analysts' forecasts are used to represent disclosure quality. The first is a measure of average forecast accuracy, since better quality of disclosure should result in more accurate forecasts. The second is the dispersion of analysts' forecasts and we would expect better disclosure quality to result in lower dispersion as, if the information environment improves, all market participants should be able to obtain and analyse published information and draw similar conclusions about its implications for the company's future performance.

Both of the forecast-based variables were measured monthly, and analysts' forecasts for the sample companies from 2001 to 2012 were obtained from I/B/E/S. The monthly forecast accuracy (**MFA**) for each company was estimated each month by finding the absolute value of the percentage errors in the forecast, averaged over the number of forecasts from different analysts.

$$MFA = \left| \frac{\text{Monthly EPS forecast} - \text{EPS actual}}{\text{EPS actual}} \right|$$

The (**MFA**) variable is widely used in the literature to capture the average accuracy of forecasts of firms' earnings, produced by different of analysts. It is important to note that the measure of forecast accuracy used here is based on the absolute value of forecast errors and therefore as analysts' forecasts become more accurate, this measure decreases.

The second measure based on analysts' forecasts, monthly forecast dispersion (**MFD**), is defined as the standard deviation of all the available analysts' earnings forecasts made for a particular company in a particular month.

The model

MFA or MFD

$$\begin{aligned} &= \alpha_0 + \alpha_1 \ln SIZE_{it} + \alpha_2 ROA_{it} + \alpha_3 \ln AGE_{it} + \alpha_4 MB_{it} \\ &+ \alpha_5 DE_{it} + \alpha_6 IGW_{it} + \alpha_7 NIAI_{it} + \alpha_8 VOL_{it} + \alpha_9 \ln NOA + \alpha_{10} IFRS_{it} \\ &+ \alpha_{11} \ln mrkt + \alpha_{12} nfrmst + \alpha_{13} \ln corp gov + \alpha_{14} \ln brnd \\ &+ \alpha_{15} \ln finpos + \alpha_{16} \ln reagacc \\ &+ \text{country dummies} + \text{year dummies} + \text{industry dummies} + \varepsilon_{it} \end{aligned}$$

Following estimation of the models for the whole sample, for the whole time period, 2003-2011 (Table 1), separate estimations were made for the periods before and after the adoption of IFRS (Table 2), in order to demonstrate the effects of IFRS adoption and for each of the separate countries (Tables 3-5) in order to demonstrate specific country effects.

Independent variable definitions

lnSIZE_{it} -the natural log of firm i's market capitalisation at the end of period t

ROA_{it} - the return on assets ratio for firm i in period t

lnAGE_{it} -the natural log of the age of firm i at the end of period t

MB_{it} -the market to book ratio of firm i at the end of period t

DE_{it} - the debt to equity ratio of firm i at the end of period t

IGW_{it} -the goodwill intensity of firm i at the end of period t measured by gross goodwill divided by total assets

NIAI_{it} - intangible assets intensity of firm i at the end of period t measured by net intangible assets divided by total assets

VOL_{it} - the stock price volatility of firm i measured over the company's financial year t.

lnNOA_{it} – the natural log of the number of analysts following the firm i in period t.

IFRS_{it}– an indicator variable showing whether the firm i reported under IFRS or national GAAP during period t

lnmrkt_{it} – the natural log of the number of disclosures made by firm i in time t, relating to market forces

lnfrmstr_{it} – the natural log of the number of disclosures made by firm i in time t, relating to firm strategy

lnincorpgov_{it}– the natural log of the number of disclosures made by firm i in time t, relating to corporate governance

lnbrnd_{it}– the natural log of the number of disclosures made by firm i in time t, relating to brands

lnfinpos_{it} – the natural log of the number of disclosures made by firm i in time t, relating to financial performance

lnreagacc_{it} - the natural log of the number of disclosures made by firm i in time t, relating to government or accounting regulation

Country dummies – 3 indicator variables showing whether firm i reported in the UK, France or Germany in period t

Year dummies – 9 indicator variables showing the calendar year in which firm i is reporting

Industry dummies – 15 indicator variables showing the industry group to which firm i belonged in period t , based on SIC codes.

Control variables

The control variables in the model derive from the literature and are all variables for which there has been found to be a relationship with analysts' forecast accuracy or dispersion and for which there is a theoretical rationale. The data for all control variables were collected from Datastream, with some missing data values being hand collected from published annual reports and added later.

A variable representing size, **lnsize**, is widely used in models of disclosure quality (e.g. Amir et al, 2003) and based on the political costs hypothesis (Watts and Zimmerman, 1986). We would expect the size of the firm to be negatively related to forecast accuracy and to forecast dispersion, since larger firms have the incentive to disclose more information to overcome political costs and this leads them to have a higher analyst following. The age of the firm (**lnAge**) has also previously been found to be negatively related to accuracy and to forecast dispersion and this is explained on the grounds that a longer published history results in fewer errors and biases in analysts' forecasts (Amir, et al 2003). Similar to Byard et al (2011) the firm's return on assets (**ROA**) and leverage (**DE**) are included. The expected sign for the **ROA** variable is difficult to predict as the literature identifies two competing effects. Firms making more profit might have incentives to disclose less information in order to protect their advantage and to avoid the attention of regulators (Watts and Zimmerman, 1986), which would imply negative coefficients for this variable. However, firms with more growth opportunities are likely to attract more analysts, who would generate more estimates, which is likely to improve the public information set in relation to that company. In this case we might expect the coefficients on **ROA** to have the opposite sign. The coefficients for variable representing leverage (**DE**) are expected to have positive signs in both models as higher leverage tends to create more volatility in earnings and more uncertainty in estimates. Similarly, the measure relating to the firm's equity, the equity volatility (**VOL**), deriving from Tan et al (2011), is also included. Volatility is assumed to be a measure of market uncertainty about company performance and it would be expected to be positively related to forecast accuracy and to forecast dispersion. The variable representing the number of analysts following the company (**lnNOA**) is therefore also expected to be related negatively to forecast accuracy as a higher analyst following should improve forecast quality. However, the relationship between the number of analysts and forecast dispersion is less clear since although we expect a higher number of forecasts to lead to fewer errors and less

bias on average, a greater number of forecasts may also lead to more dispersion simply because there are more of them in any given month.

A number of previous studies have linked measures of a firm's intangible assets to earnings quality and analysts' forecasts (e.g. Barth and Kasznik, 1999). The intuition here is that higher levels of intangibles would be expected to create more uncertainty about estimates, given the difficulty in valuing such items and recognised weaknesses in the reporting frameworks in this respect. Three variables are included in the model to represent these effects, all of which derive from prior studies (Barth and Kasznik, 1999, Tan et al, 2011), the firm's market to book ratio (**MB**), the goodwill intensity of the firm (**IGW**, measured by gross goodwill divided by total assets) and the intangible assets intensity of firm (**NIAI**), measured by net intangible assets divided by total assets). The presence of more intangibles and goodwill in a firm's balance sheet might be expected to create more forecast errors and thus we would expect the coefficients on these variables to be positive for both forecast accuracy and forecast dispersion. The specific sources and proxies used for the control variables are given in the note below[†].

Finally, the indicator variable **IFRS** is included to reflect the periods in time when a firm adopted IFRS and those when the firm was reporting under the domestic GAAP of the country in which they were located. In most, but not all cases, the firms adopted IFRS around 2005 when this became a requirement for companies quoted in EU member states. Information relating to the adoption of IFRS and the IFRS transition restatements were obtained from the individual annual reports.

The construction of the narrative variables

The model includes six variables relating to the firms' narrative disclosures in the reporting period, the categories for which were adapted from Kothari et al (2009) and Beattie (2004): **Inmrkt** (disclosures relating to market risk, industry analysis and competitive forces); **Infrmstr** (disclosures relating to firm-level strategy intentions, product market performance and the business strategy model in use); **Incorpgov** (disclosures relating to human and organisational capital, quality of

[†] To construct the above independent variables, financial data were obtained from Thomson Reuters Datastream, Thomson One Banker and the published annual reports of individual companies. From Datastream we obtained: market capitalisation at the financial year end (Worldscope item WC08001); PE ratio (Datastream item PE); gross goodwill (Worldscope item WC02502); amortisation and impairment of goodwill (Worldscope item WC18224); base date (since when Datastream had available data for the firm) (Datastream item BDATE); market to book value (Datastream item MTBV); stock price volatility (Worldscope item WC08806); stock price at financial year end (Worldscope item WC05001), Net assets from acquisitions, (WC04355 Total Assets worldscope item WC02999), Total Debt as percentage of Common Equity (Worldscope item WC08231), Return On Assets (Worldscope item WC08326), Total Net Intangibles from Thomson One Banker, EBITDA (Worldscope item WC18198). Any calculations where the result was undefined due to a in a division by zero error, such as those relating to intangibles intensity and goodwill, were replaced by 0.

management performance, corporate governance and leadership); **Inbrnd** (disclosures relating to market recognition, power and consistency of brand image, measures of consumer confidence and trust in brand image); **Infinpos** (disclosures relating to the financial performance of the corporate and business unit) and **Inreagacc** (disclosures relating to government or accounting regulation affecting firm competitiveness, product market performance, and/or disclosure practices).

The disclosure variables were constructed by collecting qualitative data from the firms' annual reports, quarterly reports, earnings guidance statements, investor briefings and monthly company press releases, which were obtained through databases and websites including the individual firms' websites, Morningstar Company Intelligence and www.investegate.co.uk. All corporate announcements from these sources were included except announcements that disclosed directors' dealings, interests in shares and voting rights. The reason for this exclusion is that these announcements are likely to be less informative for analysts and investors, with respect to fundamental analysis, relative to the other corporate disclosures and these announcements tend to bias the disclosure scores for individual companies, due to the high number of times they appear relative to other types of announcements.

The data were hand collected from over 28,000 company announcements and a monthly disclosure profile was created for each firm. The document conversion software *PDF to Text Converter Expert* was employed to convert the annual and quarterly reports, where necessary, to text files. Content analysis was used to pool the data into the different categories of disclosure outlined above. For this purpose, an a priori classification system was adopted to differentiate between the different types of disclosure data and to create disclosure proxies to include in the quantitative analysis. Linguistic Inquiry and Word Count (LIWC) software was used to create a pre-defined dictionary customised to the project's purposes, to systematically analyse the disclosure data. The creation of the custom dictionary began by adopting the disclosure categories classification and including words and word stems that were originally used in Kothari et al. (2009). Further disclosure proxies were added and distributed across the relevant categories in order to adapt the criteria to suit a European context and reflect different synonyms and terms that might be used in practice by the sample firms.

In order to further refine the custom dictionary and to test the validity of the allocation of data to the six disclosure categories, two methods were employed. Firstly, the dictionary categories were compared and reconciled with Beattie's (2004) corporate disclosure framework, as this was a European-based study, and second, a unique feature of LIWC software was exploited to develop more efficient and robust search terms. Specifically, the disclosure model was manually tested with

9 random annual reports covering all three countries containing over 900,000 words and the software indicated which words and phrases were identified as belonging to the search categories and which were not captured by our dictionary. This enabled us to manually review all the “uncaptured” phrases and their frequency of use to identify any synonyms or terms relating to any of the disclosure categories that had not been included in the dictionary up to that point so that they could be added subsequently. An electronic list was then created that included all the words and word stems that comprise the disclosure proxies and we confirmed the ability of the custom dictionary to identify them.

The allocation of the disclosure proxies to each category followed the Kothari et al. (2009) process and it is important to note that disclosure categories are not mutually exclusive as the disclosure proxies were capable of being assigned to more than one category. The software mapping tool scanned the disclosure data and analysed it automatically. Scanning each monthly file, the software gave the value of 1 to each word that matched to the relevant category and yielded the total disclosure proxies for each category. A disclosure score in each category was produced for each company for each month and these measures were added incrementally until the last month of the financial year, when a new annual report was published and forecasts for the subsequent twelve months were issued. The internal consistency and reliability of the disclosure scores were tested using Cronbach’s alpha and the tests demonstrated high internal consistency for both raw scores (88.62%) and scores transformed to the natural logarithm scale (96.01%). Overall, we might expect the disclosure of more information by companies to result in an improved information environment, which would lead to improvements in analysts’ forecasts and reductions in forecast dispersion so the coefficients on these variables would be expected to be negative. However, as discussed earlier, it is not always the case that more disclosure improves the quality of financial reporting. In addition, since the six different information categories are not mutually exclusive, it is difficult to predict the signs on the coefficients for each category in isolation. In interpreting the results, we therefore concentrate on the statistical significance of the categories and the relative size of the coefficients.

In summary, the narrative disclosure analysis aims to a) investigate whether the quantity of narrative disclosures is systematically related to quality, with respect to its ability to affect analysts’ forecasts b) to model the effect of cumulative monthly disclosures in the evolution of forecast accuracy over the course of the financial year and c) to identify the volume of disclosures in the different disclosure categories and investigate which of these categories contribute most to the quality of disclosure.

The research design contributes to the literature in two ways. First by suggesting an approach to investigate the effect of corporate disclosure on the monthly evolution of the forecast errors and second, by employing a custom dictionary method to quantify narrative disclosures in a European context.

Results

The empirical results are presented in five tables and for each configuration of the model we provide estimates using the monthly forecast accuracy (**MFA**) as dependent variable and using monthly forecast dispersion (**MFD**). The tables present the regression coefficients and estimates of standard errors that are robust to heteroskedasticity and based on clustering at the level of the individual firm.

The results for the models using the whole sample of companies for the period 2003-2011, are shown in Table 1. Both the model using **MFA** as the dependent variable and the model using **MFD** are significant overall, with R-squared statistics of 17.31% and 37.8% respectively. Most of the control variables identified from previous studies prove to be significant in our models but not all the coefficients have the expected sign. In particular, the age variable (**Inage**) tends to have coefficients of the opposite signs to those expected throughout the different estimations. It is likely, therefore that this measure is not capturing the same effects as it did in previous studies. A potential explanation is the composition of our sample, which consists only of the largest companies in Europe and which may therefore have a different age profile to samples in other studies. In particular, our sample includes some very long-established French and German companies. In the model based on forecast accuracy, the significant control variables prove to be size, return on assets, leverage, goodwill intensity, intangibles intensity, volatility and the number of analysts following the firm. The coefficients for all of these variables have the expected signs except for the coefficient for goodwill intensity (**IGW**). The significant control variables in the model of forecast dispersion were size, age, market/book ratio, goodwill intensity, volatility and the number of analysts following the firm. All coefficients here had the expected signs, with the exception of those for the age and volatility variables.

In both models, the country dummy variables were highly significant, suggesting country specific factors may be relevant. This is further confirmed by the results tables showing the different effects in individual countries (Tables 3-5, discussed later). In the case of the forecast dispersion model, the IFRS indicator variable is also significant and has a negative coefficient, suggesting that the information environment was improved by the firms' adoption of IFRS, leading to less variation

between analysts' forecasts. The IFRS indicator variable is, however, not significant in the model using monthly forecast accuracy, although the sign of the coefficient is as expected. The literature suggests two possible explanations for the results regarding the IFRS adoption. Those in favour of IFRS had predicted that adoption would result in increased comparability across firms and countries and increased transparency (Hodgson et al., 2008; La Bruslerie and Gabteni, 2010; Cotter et al., 2012; Glaum et al., 2013). In contrast, Ball (2006) suggested that IFRS was likely to bring higher volatility to analysts' earnings forecasts. It is possible that the emphasis of IFRS on fair values and timely disclosure of economic events leads to increased uncertainty in estimates. Our results appear more consistent with the first explanation but it is possible that our other variables capture some of the effects of firms using fair value.

In the interests of producing concise results tables, not all of the results for dummy variables are tabulated here. However, among the dummy variables representing the years 2003-2011, there was a clear difference in the significance in both models of coefficients for the years 2007 to 2009, likely to be due to the financial crisis in this period. The fifteen industry dummy variables included in the models were constructed, based on standard industry classification (SIC) codes, the definitions of which can be found in the appendix. All the coefficients for the industry variables were significant in the model based on forecast dispersion and all but two of the coefficients were significant in the model based on forecast accuracy (results not tabulated here).

In the model based on forecast accuracy, three of the narrative variables (**Inbrnd**, **Infinpos** and **Inregacc**) are statistically significant and all have coefficients of similar size. For the model based on forecast dispersion, all of the narrative variables are significant except for **Inregacc** and the variables reflecting the firm's financial disclosures (**Infinpos**) and disclosures about strategy (**Infrmstr**) have larger coefficients than those for the other variables.

The effect of IFRS adoption

Table 2 contains the results for the model based on monthly forecast dispersion for the periods before and after the adoption of IFRS for each firm. As with the analysis of the whole sample period, the forecast dispersion model is a better fit, with higher overall R-squared statistics and a greater number of significant variables. We have therefore omitted the results for the model based on forecast accuracy before and after IFRS adoption.

In the period after IFRS adoption, the model based on forecast dispersion has an increased R-squared statistic (from 36.9% to 38.8%) and a greater number of variables that are significant. The control variables with coefficients showing the greatest changes on adoption of IFRS are return on assets (**ROA**, where the coefficient changes from 0.01 to -0.74); goodwill intensity (**IGW**, which changes from -0.2 to 0.2); intangibles intensity (**NIAI**, which changes from 0.8 to 0.1) and volatility (**VOL**, which changes from 0.5 to -1.3). These results are consistent with the idea that profitability growth and the reporting of intangible assets and goodwill became more important factors in the analysts' information environment in the period after IFRS adoption. The volatility of the firm's equity also becomes more statistically significant in the period after IFRS adoption.

With respect to the narrative variables, the results reported in Table 2 show the increasing significance of narrative disclosures under IFRS. The coefficients on all narrative disclosure variables are significant, except for **Incorgov** (disclosures relating corporate governance and leadership). The narrative variables with the highest coefficients in both periods are **Infmstr** (disclosures about firm strategy), **Infinfo** (disclosures about financial performance) and **lnmrkt** (disclosures about market forces).

Country specific models

The results for estimations of the models for the UK, France and Germany samples are presented in Tables 3, 4 and 5 respectively. In all cases, the model based on forecast dispersion (**MFD**) is a better fit and more significant overall than the model based on forecast accuracy (**MFA**). R-squared values for the UK are 16.0% for the forecast accuracy model and 32.3% for the forecast dispersion model. Similarly, the values for France are 24.6% for the forecast accuracy model and 35.6% for the forecast dispersion model, while for Germany the R-squared values are 31.0% and 40.5%. Most of the control variables are significant in the estimates for each of the countries, with the exception of **Insize** in the UK and **IGW** and **NIAI** in Germany. The insignificance of firm size in the UK is likely to be due to the lack of variation in size across the UK sample of firms compared to those of France and Germany since this sample is more homogenous in this respect. The two variables capturing effects related to intangibles, **IGW** and **NIAI** are not significant for the German sample in either the model using **MFA** or the model using **MFD**. This may be because the level of reported intangibles in Germany tends to be lower than in the UK or France (see Hao et al, 2008) or because the sample of German companies in this study is smaller than those of the UK or France and this leads to insufficient variation in the intensity of intangibles and goodwill across German firms. The empirical results provide evidence to support the idea that the accounting rules for intangibles and

goodwill have a positive effect on the quality of analysts' forecasts, consistent with Chalmers et al. (2012) and Cheong et al. (2010). The latter study used data from the Pacific area and found that firms with higher goodwill intensity experienced considerable improvements in the analysts' information environment post IFRS adoption. Similarly, the empirical results indicate that higher levels of intangible assets are likely to cause uncertainty to financial analysts and be related to the higher absolute forecast error, similar to other studies on disclosures concerning intangibles (Barron et al., 2002; Amir et al., 2003; Lev and Radhakrishnan, 2005).

All of the narrative variables, with the exception of **lnregacc** (which relates to disclosures about accounting or government regulation), are significant in the model estimation for all three countries. **lnregacc** is the least significant narrative variable and has the smallest regression coefficients overall. Two variables are significant at the 5% level consistently for the UK, France and Germany for the model based on forecast accuracy and the model based on forecast dispersion: **lnfrmstr** (disclosures relating to firm strategy) and **lnfinpos** (disclosures relating to financial performance). Narrative disclosures relating to corporate governance (**lnincorgov**) are also significant in all cases except for the model using forecast accuracy, for the German sample. The results are therefore consistent with the literature that suggests adoption of IFRS improves disclosure quality, possibly through enhanced comparability and transparency (Hodgson et al., 2008; Glaum et al., 2013). Overall, the two categories of disclosure that have the greatest effect are those relating to financial position and performance and those relating to corporate strategy. However, the category relating to market forces and industry analysis also proves important in the UK in the model based on forecast accuracy. In German and French companies more disclosures about financial position and performance appear to result in less accurate but less dispersed earnings forecasts, whereas in the UK they result in more accurate but more dispersed earnings forecasts. More disclosures about corporate strategy in France and German result in analysts' forecasts with higher accuracy but higher dispersion and in the UK, they result in less accuracy but less dispersion. It should be noted though that these effects could be different when testing the periods before and after IFRS adoption separately

Summary and Conclusions

Given the dual roles of accounting narrative disclosures identified in the literature, the role of communicating incremental information and the role of overall impression management, it was by no means certain that the rapid increase in disclosure in recent years would result in improved

information quality. Such a relationship would depend on the users of financial reports being able to identify instances of impression management in accounting narratives and being able to adjust their forecasts of the firm's performance to allow for their effects. This, in turn, is dependent on the efficiency of the market for corporate information and on the level of asymmetry between the managers and those outside the firm. In this study, we seek to explore the relationship between disclosure quantity and quality and do so, using the accuracy and dispersion of analysts' earnings forecasts as a measure of quality. The average accuracy of forecasts reflects how well the analyst is able to use the information disclosed to forecast earnings but the forecast dispersion is possibly a more direct measure of information asymmetry as it reflects the extent to which estimates might vary due to different interpretations of the disclosures and we would expect disclosure of lower quality to cause more differences in estimates. (Botosan and Harris, 2000)

The evidence presented here is based on analysis of over 28,000 corporate announcements for 137 companies UK, French and German companies, over the years 2003 to 2011, a period which includes the adoption of IFRS in Europe. Overall, the empirical results suggest that IFRS adoption is likely to be a factor for the reduction of information asymmetry between insiders and outsiders of the firms, although the effects are not consistent across all three countries. More importantly for this paper, the analysis of narrative disclosures, under various different categories indicates that the additional disclosure improved the analysts' information environment. This is in line with the literature (Hodgson et al., 2008; La Bruslerie and Gabteni, 2010; Cotter et al., 2012; Glaum et al., 2013), which suggests that increases narrative disclosures are likely to convey enhanced comparability and transparency to annual reports but, again, the effect is not identical across the three countries studied. However, most of the narrative disclosure variables prove to be systematically related to the quality of analysts' forecasts, after controlling for a range of other factors affecting forecasts, which were identified from the literature. In addition to the significance of the narrative variables we discovered that, in line with studies such as those by (Aboody and Lev, 2000 Barth et al, 2001; Amir et al., 2003; Matolsky and Wyatt; 2006, Tan et al; 2011), the levels of intangible assets and goodwill in the firm's balance sheet also play a significant role in determining the quality of analysts' forecasts. Our results supported the idea that high levels of intangibles and goodwill cause more uncertainty in earnings forecasts. Clearly, these factors are related to the accounting regulations and standards that govern both the valuation and disclosure of such items.

We were also able to identify from the analysis that two categories of narrative disclosure had the most significant effect on the analysts' information environment. These were the disclosures concerning firm strategy and disclosures concerning financial performance and position. The other

categories such as industry related information, disclosures concerning corporate governance, disclosures about brands and markets and those about the effects of regulation were also statistically significant in the models of both analysts' forecast accuracy and dispersion, but the coefficients on these variables suggest that they have a smaller effect than the disclosures about financial performance and strategy.

In addition to providing evidence on disclosure quality in the sample firms, the paper contributes to the literature in two other ways. Firstly, it suggests a method for classifying narrative disclosures, with the application of a custom-dictionary, based on the dictionary used by Kothari et al (2009), which was obtained from one of the researchers on that project and then adapted for application in a European context. Secondly, because this automated method allowed the analysis of large amounts of data, we were able to draw on disclosure information from many different sources, including firms' annual reports, websites, quarterly reports, earnings guidance statements, investor briefings and company press releases. In addition to the obvious advantage of increasing the size of the samples analysed, this approach has two other advantages. The first is that, it allowed us to produce a more complete model of the information set facing the analysts than is usually the case in such studies, which have relied almost exclusively on annual reports. The second advantage is that we were able to model the evolution of the analysts' forecasts over the months of the financial year, as the time horizon for each annual forecast shortens and the information known about the performance of the firm during the year increases.

Overall, the conclusions of the research are that an increase in the quantity of narrative disclosures resulted in an increase in disclosure quality over this period and that the effect is more pronounced following the adoption of IFRS. This is not to say that the volume of increase in disclosure, when the average size of an annual report has more than doubled in the last ten years, has resulted in a commensurate doubling in disclosure quality but merely that there is a statistically significant relationship between the disclosure variables and the quality of analysts' forecasts. The disclosure categories that play the most significant role in determining the quality of the analysts' information environment are, possibly unsurprisingly, those relating to disclosures about the strategy of the firm and those relating directly to its financial performance. Whilst the information disclosed in the other categories (industry-specific factors, factors concerning corporate governance, those related to marketing and the effects of accounting and legal regulation) frequently proves to be statistically significant in our models, the size of these effects is far smaller. It may be the case therefore that this information has less relevance to analysts or that it is in these categories that the highest degree of impression management occurs.

Finally, the presence of high levels of intangible assets and goodwill in a firm's balance sheet also appears to be a significant factor in determining the quality of disclosure information and the interaction between the disclosure variables and the level of intangibles and goodwill would be an interesting area for further investigation. Although not reported in detail here, the variables relating to the industry grouping of the firms were also highly significant and analysis of the relationship between industry classifications and the disclosure variables may also prove a fruitful line of enquiry.

References

- Aboody, D. and Lev, B. (2000) Information Asymmetry, R&D, and Insider Gains. *The Journal of Finance*, **55:6**, 2747-2766.
- Adelberg, A. H. (1979) Narrative disclosures contained in financial reports: means of communication or manipulation? *Accounting and Business Research*, **35**, 179-189.
- Aerts, W. (1992) Accountability and legitimation, *European Accounting Review*, **1:2**, 454-457.
- Aerts, W. (2001) Inertia in the attributional content of annual accounting narratives, *The European Accounting Review*, **10:1**, 3-32.
- Aerts, W. (2005) Picking up the pieces: impression management in the retrospective attributional framing of accounting outcomes, *Accounting, Organizations and Society*, **30**, 493-517.
- Aerts, W. and Cormier, D. (2009) Corporate governance and information asymmetry between managers and investors *Corporate Governance: The international journal of business in society*, **10:5**, 574-589
- Allee, K. and DeAngelis. M. (2015) The Structure of Voluntary Disclosure Narratives: Evidence from Tone Dispersion, *Journal of Accounting Research*, **53:2**, 241-274.
- Amir E., Lev B. and Sougiannis T. (2003) Do financial analysts get intangibles?, *European Accounting Review*, **12:4**, 635-659.
- Ball, R. (2006) International Financial Reporting Standards, (IFRS): pros and cons for investors, *Accounting and Business Research*, **36**, 5-27.
- Ball, C., Hoberg, G. and Maksimovic, V. (2015) Disclosure, Business Change and Earnings Quality, SSRN Library, https://papers.ssrn.com/sol3/Papers.cfm?abstract_id=2260371
- Barron O., Byard D., Kile C., Riedl E. (2002) High - Technology Intangibles and Analysts' Forecasts. *Journal of Accounting Research* , **40:2**, 289-312.
- Barron O., Kim O., Lim S. and Stevens D. (1998) Using Analysts' Forecasts to Measure Properties of Analysts' Information Environment, *The Accounting Review*, **73**, 421-33.

- Barth E.M. and Kasznik R. (1999) Share Repurchases and intangible assets. *Journal of Accounting and Economics*, **28**, 211-241.
- Barth E.M., Kasznik R. and McNichols F.M. (2001) Analyst Coverage and Intangible Assets. *Journal of Accounting Research*, **39:1**, 1-34.
- Barth M. E., Landsman W. R., and Lang, M. H. (2008) International Accounting Standards and Accounting Quality. *Journal of Accounting Research*, **46**, 467-498.
- Barth M., Landsman W.R., Lang M., and Williams C. (2012) Are IFRS-based and US GAAP-based accounting amounts comparable? *Journal of Accounting and Economics*, **54:1**; 68-93.
- Beattie, V. (2014) Accounting narratives and the narrative turn in accounting research: Issues, theory, methodology, methods and a research framework, *The British Accounting Review*, **46**, 111-134.
- Beattie, V., McInnes B. and Fearnley, S. (2004) A methodology for analysing and evaluating narratives in annual reports: a comprehensive descriptive profile and metrics for disclosure quality attributes, *Accounting Forum*, **28**, 205–236.
- Botosan A.C. and Harris S.M. (2000) Motivations for a Change in Disclosure Frequency and Its Consequences: An Examination of Voluntary Quarterly Segment Disclosures, *Journal of Accounting Research*, **38:2**, 329-353
- Brown S.V. and Tucker J.W. (2011) Large-Sample Evidence on Firms' Year-over-Year MD&A Modifications. *Journal of Accounting Research*, **49**, 309–346.
- Bryman A. (2004) *Social Research Methods*, 2nd Edition. New York: Oxford University Press Ltd.
- Byard, D. and Shaw K. (2003) Corporate disclosure quality and properties of analysts' information environment. *Journal of Accounting, Auditing, and Finance*, **18:3**, 355-378.
- Byard, D., Li, Y. and Yu, Y. (2011) The Effect of Mandatory IFRS Adoption on Financial Analysts' Information Environment. *Journal of Accounting Research* , **49:1**, 69-96.
- Capkun V., Collins D. W., and Jeanjean T. (2013) The Effect of IAS/IFRS Adoption on Earnings Management (Smoothing): A Closer Look at Competing Explanations. Available at SSRN: <http://ssrn.com/abstract=1850228>
- Chalmers K., Clinch G., Godfrey, J. M. and Wei, Z. (2012) Intangible assets, IFRS and analysts' earnings forecasts. *Accounting & Finance*, **52**, 691-721.
- Cheong, C. S., Kim S. and Zurbrugg, R. (2010) The impact of IFRS on financial analysts' forecast accuracy in the Asia - Pacific region: The case of Australia, Hong Kong and New Zealand. *Pacific Accounting Review*, **22**, 124-146.
- Chua W.F. and Taylor S.L. (2008) The rise and rise of IFRS: An examination of IFRS diffusion. *Journal of Accounting Public Policy*, **27**, 462-473.

Clatworthy, M. and Jones, M.J. (2003) Financial reporting of good news and bad news: evidence from accounting narratives, *Accounting and Business Research*, **33:3**, 171-185

Cotter, J., Tarca, A. and Wee, M. (2012) IFRS adoption and analysts' earnings forecasts: Australian evidence. *Accounting & Finance*, **52**, 395- 419.

Courtis, J.K. (1998) Annual report readability variability: Tests of the obfuscation hypothesis. *Accounting, Auditing and Accountability Journal*, **11:4**, 459-471.

Daske H., Hail L., Leuz C., and Verdi R. (2013) Adopting a Label: Heterogeneity in the Economic Consequences Around IAS/IFRS Adoptions. *Journal of Accounting Research*, **51**, 495–547.

Davis, A.K., Piger, J.M. and Sedor, L. (2012) Beyond the Numbers: Measuring the Information Content of Earnings Press Release Language, *Contemporary Accounting Research*, **29:3**, 845–868

Davison, J. (2008). Repetition, rhetoric, reporting and the 'dot.com' era: words, pictures, intangibles. *Accounting, Auditing and Accountability Journal*, **21:6**, 791-826.

Dechow, P., Sloan, R. Sweeney, A (1995), Detecting Earnings Management, *The Accounting Review*, **70:2**, 193-225

Deloitte (2017) Annual Report Insights

<https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/audit/deloitte-uk-annual-report-insights-2017.pdf>

Frazier, K.B., Ingram, R.W. and Tennyson, B.M. (1984) A Methodology for the Analysis of Narrative Accounting Disclosures, *Journal of Accounting Research*, **22:1**, 318-331

Glaum M., Baetge J., Grothe A. and Oberdörster T. (2013) Introduction of International Accounting Standards, Disclosure Quality and Accuracy of Analysts' Earnings Forecasts, *European Accounting Review*, **22:1**, 79-116.

Hand, J. (1990) A Test of the Extended Functional Fixation Hypothesis, *The Accounting Review* **65:4**, 740-763.

Hao, J. X., Manole V. and van Ark, B. (2008) Intangible Assets in France and Germany, published working paper, https://www.conference-board.org/pdf_free/workingPapers/E-0025-08-WP.pdf

Henry, E. (2008) Are Investors Influenced by how Earnings Press Releases are Written? *Journal of Business Communication*, **45:4**, 363-407.

Hodgdon, C., Tondkar R.H., Harless D.W., and Adhikari A. (2008) Compliance with IFRS disclosure requirements and individual analysts' forecast errors, *Journal of International Accounting, Auditing and Taxation* **17:1**, 1-13.

Hope O.K., (2003a) Accounting Policy Disclosures and Analysts' Forecasts. *Contemporary Accounting Research*, **20:2**, 295-321.

Hope O.K., (2003b) Disclosure Practices, Enforcement of Accounting Standards, and Analysts' Forecast Accuracy: An International Study. *Journal of Accounting Research*, **41: 2**, 235-272.

IASB (2015) Conceptual framework for Financial Reporting, Exposure Draft ED/2015/3
http://archive.ifrs.org/Current-Projects/IASB-Projects/Conceptual-Framework/Documents/May%202015/ED_CF_MAY%202015.pdf

Ingram, R.W. and Frazier, K.B. (1983) Narrative Disclosures in Annual Reports, *Journal of Business Research*, **11**, 49-60.

Jeanjean, T. and Stolowy, H. (2008), "Do accounting standards matter? An exploratory analysis of earnings management before and after IFRS adoption", *Journal of Accounting and Public Policy*, **27**, 480–494.

Jones, M. J. (1988) A Longitudinal Study of the Readability of the Chairman's Narratives in the Corporate Reports of a UK Company *Accounting & Business Research*, **18:72**, 297-305.

Jones, M.J. (1983) A Longitudinal Study of the Readability of the Chairman's Narratives in the Corporate Reports of a UK Company, *Accounting and Business Research*, **18:72**, 297-305.

Jones, M.J. and Smith, M. (2014) Traditional and alternative methods of measuring the understandability of accounting narratives, *Accounting, Auditing & Accountability Journal*, **27:1**, 183-208.

Keusch, T., Bollen, L.H. and Hassink, H.F. (2012) Self-serving Bias in Annual Report Narratives: An Empirical Analysis of the Impact of Economic Crises, *European Accounting Review*, **21:3**, 623–648.

Kothari, S.P. Li X. and Short E.J., (2009) The Effect of Disclosures by Management, Analysts, and Business Press on Cost of Capital, Return Volatility, and Analyst Forecasts: A Study Using Content Analysis, *The Accounting Review*, **84:5**, 1639–1670.

Kvaal E. & Nobes C. (2010) International differences in IFRS policy choice: A research note, *Accounting and Business Research*, **40:2**, 173-187.

Kvaal E. & Nobes C. (2012) IFRS Policy Changes and the Continuation of National Patterns of IFRS Practice, *European Accounting Review*, **21:2**, 343-371.

La Bruslerie, H. and Gabteni H. 2012. Voluntary Disclosure vs. Mandatory Disclosure: The Case of IFRS Introduction on European Firms (February 24, 2012). Available at SSRN:
<http://ssrn.com/abstract=2010326> or <http://dx.doi.org/10.2139/ssrn.2010326>

Lang M.H.. and Lundholm R. J. (1996) Corporate Disclosure Policy and Analyst Behavior. *The Accounting Review*, **71:4**, 467-492.

Lapointe A.P., Cormier D., Magnan M., (2006) On the Relationship between Voluntary Disclosure, Earnings Smoothing and the Value-Relevance of Earnings: The Case of Switzerland. *European Accounting Review*, **15:4**, 465-505.

Lardon K.R. and Street D.L. (2004) Convergence with IFRS in an expanding Europe: progress and obstacles identified by large accounting firms' survey. *Journal International Accounting Auditing & Taxation*. **13**, 89-119.

Lehavy R., Li F., and Merkley K.J. (2011) The Effect of Annual Report Readability on Analyst Following and the Properties of Their Earnings Forecasts. *The Accounting Review*, **86:3**, 1087-1115.

Leung, S., Parker, L. and Curtis, J. (2015) Impression management through minimal narrative disclosure in annual reports, *The British Accounting Review*, **47**, 275-289.

Lev B. and Radhakrishnan S. (2005) The Valuation of Organization Capital. National Bureau of Economic Research <http://www.nber.org/chapters/c10619.pdf>

Li S. (2010) Does Mandatory Adoption of International Financial Reporting Standards in the European Union Reduce the Cost of Equity Capital?. *The Accounting Review*. **85:2**, 607-636.

Liang L. and Riedl E.J. (2014) The Effect of Fair Value versus Historical Cost Reporting Model on Analyst Forecast Accuracy. *The Accounting Review*. **89:3**, 1151-1177.

Loughran T. and McDonald B. (2011) When Is a Liability Not a Liability? Textual Analysis, Dictionaries, and 10-Ks. *The Journal of Finance*, **66:1**, 35–65.

Matolcsy Z. and Wyatt, A. (2006) Capitalized intangibles and financial analysts. *Accounting and Finance*, **46**, 457-479.

Merkel-Davies, D.M. and Brennan, N.M. (2011) A conceptual framework of impression management: new insights from psychology, sociology and critical perspectives, *Accounting and Business Research*, **41:5**, 415-437.

Merkel-Davies, D.M. and Brennan, N.M. (2007) Discretionary disclosure strategies in corporate narratives: incremental information or impression management? *Journal of accounting literature*, **26**, 116–194.

Merkel-Davies, D.M., Brennan, N.M., and McLeay, S.J. (2011) Impression management and retrospective sense-making in corporate narratives: a social psychology perspective. *Accounting, auditing and accountability journal*, **24:3**, 315–344.

Merkley, K.J. (2014) Narrative Disclosure and Earnings Performance: Evidence from R&D Disclosures, *The Accounting Review*, **89:2** 725–757.

Muslu V., Radhakrishnan S., Subramanyam, K.R., and Lim D. (2014) Forward Looking MD&A Disclosures and the Information Environment. *Management Science*, **61:5**, 931-948.

Nobes C. (2006) The survival of international differences under IFRS: towards a research agenda, *Accounting and Business Research*, **36:3**, 233-245.

Nobes, C. (2011), IFRS Practices and the Persistence of Accounting System Classification. *Abacus*, **47**, 267–283.

PWC (2014), IFRS Adoption by Country, <https://www.pwc.com/us/en/issues/ifrs-reporting/publications/assets/pwc-ifrs-by-country-2014.pdf>

Riley, T., Semin, G.R. and Yen, A.C. (2014) Patterns of Language Use in Accounting Narratives and Their Impact on Investment-Related Judgments and Decisions, *Behavioral Research in Accounting*, **26:1**, 59–84.

Schipper, K. and Vincent, L (2003) Earnings Quality, *Accounting Horizons*, **17**, Supplement, 197-110.

Schleicher T. and Walker, M. (2010) Bias in the tone of forward-looking narratives, *Accounting and Business Research*, **40:4**, 371-390.

Schleicher, T., Hussainey, K. and Walker, M. (2007) Loss firms' annual report narratives and share price anticipation of earnings, *The British Accounting Review*, **39**, 153–171

Sengupta P. (1998) Corporate Disclosure Quality and the Cost of Debt. *The Accounting Review*, **73:4**, 459-474.

Smith, M. and Taffler, R. (1995) The Incremental Effect of Narrative Accounting Information in Corporate Annual Reports, *Journal of Business Finance & Accounting*, **22:8**, 1195-1210.

Stent, W., Bradbury, M. and Hooks, J. (2013) What Firms' Discretionary Narrative Disclosures Reveal About the Adoption of International Financial Reporting Standards, *Australian Accounting Review*, **66:23**, 252-263.

Subramanian, R., Insley, R. G., Blackwell, R.D., (1993) Performance and Readability: A Comparison of Annual Reports of Profitable and Unprofitable Corporations, *Journal of Business Communication*, **30:1**, 49-61.

Tan H., Wang S. and Welker M. (2011) Foreign analyst following and forecast accuracy around mandated IFRS adoptions. *Journal of Accounting Research* , **49:5**, 1307-1357.

Tennyson, B.M., Ingram, R.W. and Dugan, M.T. (1990) Assessing the Information Content of Narrative Disclosures in Explaining Bankruptcy, *Journal of Business Finance & Accounting*, **17:3**, 391-410.

Thomas, J. (1997) Discourse in the Marketplace: The Making of Meaning in Annual Reports, *Journal of Business Communication*, **34:1**, 47-66.

Tsalavoutas I. and Dionysiou D., (2014) Value relevance of IFRS mandatory disclosure requirements. *Journal of Applied Accounting Research*, **15:1**, 22-42.

Unerman, J. (2003) Enhancing organizational global hegemony with narrative accounting disclosures: an early example, *Accounting Forum*, **27:4**, 425-448.

Verriest A., Gaeremynck A., Thornton B.D. (2013) The Impact of Corporate Governance on IFRS Adoption Choices. *European Accounting Review*, **22:1**, 39-77.

Watts R & Zimmerman, J L (1986) Positive accounting theory, Prentice Hall.

Wisniewskia, T.P. and Yekini S.L. (2015), Stock market returns and the content of annual report narratives, *Accounting Forum*, **39**, 281–294.

Yekini, L.S., Wisniewski, T.P. and Millo, Y. (2016) Market Reaction to the Positiveness of Annual Report Narratives, *The British Accounting Review*, **48**, 415-430.

Table 1 Whole sample 2003-2011

Independent variable	MFA				MFD			
	Coef.	Std. Err.	t	P>t	Coef.	Std. Err.	t	P>t
lnsize	-0.034	0.004	-9.107	0.000	-0.06	0.012	-4.825	0.000
roa	-0.972	0.099	-9.855	0.000	-0.32	0.173	-1.846	0.065
lnage	0.003	0.008	0.301	0.764	0.613	0.022	27.343	0.000
mb	0.000	0.001	0.159	0.874	0.017	0.004	4.738	0.000
de	0.011	0.002	5.079	0.000	0.001	0.008	0.156	0.876
igw	-0.259	0.019	-13.352	0.000	0.156	0.048	3.258	0.001
niai	0.154	0.038	4.016	0.000	0.112	0.082	1.362	0.173
volatility	1.000	0.053	18.881	0.000	-0.67	0.135	-4.971	0.000
noa	0.001	0.001	2.126	0.033	-0.014	0.002	-9.019	0.000
ifrs	-0.033	0.030	-1.081	0.280	-0.267	0.045	-5.998	0.000
lnmrkt	0.024	0.029	0.845	0.398	0.272	0.08	3.410	0.001
lnfrmstr	0.061	0.042	1.449	0.147	-0.787	0.113	-6.966	0.000
lnincorpgov	-0.008	0.016	-0.506	0.613	-0.168	0.047	-3.565	0.000
lnbrnd	-0.052	0.008	-6.583	0.000	0.115	0.021	5.476	0.000
lnfinpos	-0.051	0.022	-2.302	0.021	0.613	0.061	10.04	0.000
lnreagacc	0.042	0.010	4.275	0.000	0.004	0.033	0.122	0.903
UK	-0.168	0.013	-13.356	0.000	1.007	0.027	37.085	0.000
Germany		(omitted)				(omitted)		
France	-0.109	0.013	-8.100	0.000	-0.211	0.021	-10.1	0.000
Years dummies	.	.	.	.	.	.	.	.
Industry dummies	.	.	.	.	.	.	.	.

Number of obs =		14,796			Number of obs =		14,796	
F(40, 14755) =		41.87 [0.000]			F(40, 14755) =		271.78 [0.000]	
R-squared =		0.1731			R-squared =		0.3774	

Table 2: MFD, whole sample, before and after adoption of IFRS

	MFD Pre IFRS				MFD Post IFRS			
	Coef.	Std. Err.	t	P>t	Coef.	Std. Err.	t	P>t
lnsize	-0.137	0.023	-5.872	0.000	-0.101	0.014	-7.276	0.000
roa	-0.009	0.376	-0.025	0.980	-0.742	0.187	-3.970	0.000
lnage	0.462	0.042	11.077	0.000	0.627	0.026	24.209	0.000
mb	0.018	0.006	2.901	0.004	0.018	0.004	4.317	0.000
de	0.085	0.015	5.524	0.000	-0.043	0.009	-4.746	0.000
igw	-0.241	0.089	-2.709	0.007	0.238	0.055	4.299	0.000
niai	0.802	0.187	4.292	0.000	0.096	0.092	1.051	0.293
volatility	0.525	0.258	2.038	0.042	-1.267	0.160	-7.917	0.000
noa	0.014	0.003	4.290	0.000	-0.015	0.002	-8.724	0.000
lnmrkt	0.993	0.152	6.523	0.000	0.257	0.091	2.822	0.005
lnfrmstr	-1.320	0.216	-6.121	0.000	-0.597	0.134	-4.444	0.000
lnincorpgov	0.090	0.076	1.188	0.235	0.047	0.053	0.876	0.381
lnbrnd	0.080	0.043	1.850	0.064	0.069	0.024	2.858	0.004
lnfinpos	0.511	0.114	4.497	0.000	0.560	0.072	7.758	0.000
lnreagacc	-0.088	0.058	-1.530	0.126	-0.172	0.037	-4.657	0.000
uk	1.255	0.048	26.011	0.000	1.285	0.027	47.173	0.000
germany	0.072	0.041	1.745	0.081	0.290	0.023	12.586	0.000
france		(omitted)				(omitted)		
Industry dummies	.	.	.	.	.	.	.	.
cons	-2.470	0.544	-4.538	0.000	-2.409	0.333	-7.236	0.000
Number of obs =		3,444			Number of obs =		11,352	
F(31, 3412) =		96.79			F(31, 11320) =		264	
Prob > F =		0			Prob > F =		0	
R-squared =		0.3691			R-squared =		0.3879	

Table 3:UK sample, 2003-2011

	MFA				MFD			
	Coef.	Std. Err.	t	P>t	Coef.	Std. Err.	t	P>t
lnsize	0.006	0.004	1.387	0.166	-0.005	0.018	-0.272	0.785
roa	-0.617	0.076	-8.065	0.000	1.016	0.234	4.334	0.000
lnage	-0.020	0.006	-3.246	0.001	0.921	0.035	26.162	0.000
mb	0.000	0.001	-0.631	0.528	0.019	0.004	4.468	0.000
de	-0.001	0.002	-0.415	0.679	-0.034	0.010	-3.427	0.001
igw	-0.166	0.020	-8.207	0.000	0.756	0.072	10.480	0.000
niai	0.289	0.058	4.969	0.000	0.363	0.138	2.634	0.008
vol	0.913	0.052	17.577	0.000	-2.590	0.196	-13.194	0.000
noa	0.002	0.001	3.977	0.000	-0.032	0.003	-11.064	0.000
lnmrkt	-0.177	0.026	-6.773	0.000	0.037	0.146	0.251	0.802
lnfrmstr	-0.104	0.048	-2.160	0.031	-1.022	0.185	-5.517	0.000
lnCorpGov	0.140	0.022	6.427	0.000	0.435	0.095	4.564	0.000
lnbrnd	-0.012	0.007	-1.789	0.074	0.185	0.035	5.300	0.000
lnfinpos	0.082	0.032	2.537	0.011	0.442	0.131	3.381	0.001
lnreagacc	0.049	0.009	5.269	0.000	-0.075	0.056	-1.334	0.182
Years dummies	.	.	.	.	.	.	.	.
Industry dummies	.	.	.	.	.	.	.	.
_cons	0.138	0.084	1.642	0.101	-2.276	0.519	-4.384	0.000
Number of obs =		8424			Number of obs =	8424		
F(37, 8386) =		18.860			F(37, 8386) =	264.270		
Prob > F =		0.000			Prob > F =	0.000		
R-squared =		0.160			R-squared =	0.323		

Table 4: French Sample, 2003-2011

	MFA				MFD			
	Coef.	Std. Err.	t	P>t	Coef.	Std. Err.	t	P>t
lnsize	-0.125	0.012	-10.101	0.000	-0.187	0.024	-7.714	0.000
roa	-1.316	0.433	-3.037	0.002	-1.126	0.189	-5.946	0.000
lnage	0.143	0.045	3.200	0.001	-0.397	0.034	-11.559	0.000
mb	-0.015	0.006	-2.626	0.009	0.032	0.016	1.941	0.052
de	0.040	0.008	5.033	0.000	-0.001	0.019	-0.061	0.952
igw	-0.281	0.055	-5.140	0.000	-0.143	0.046	-3.093	0.002
niai	0.101	0.055	1.821	0.069	0.422	0.050	8.462	0.000
volatility	1.116	0.167	6.697	0.000	-0.378	0.124	-3.056	0.002
noa	0.005	0.002	2.454		0.005	0.002	2.897	0.004
lnmrkt	0.046	0.066	0.695	0.487	0.262	0.052	5.033	0.000
lnfrmstr	0.686	0.115	5.977	0.000	0.770	0.112	6.852	0.000
lnincorpgov	-0.142	0.030	-4.677	0.000	-0.531	0.044	-12.179	0.000
lnbrnd	-0.096	0.018	-5.251	0.000	-0.142	0.017	-8.584	0.000
lnfinpos	-0.312	0.054	-5.811	0.000	-0.131	0.046	-2.823	0.005
lnreagacc	-0.063	0.019	-3.290	0.001	-0.108	0.024	-4.525	0.000
Years dummies	.	.	.	.	.	.	.	.
Industry dummies	.	.	.	.	.	.	.	.
_cons	-0.082	0.287	-0.285	0.776	3.027	0.307	9.860	0.000
Number of obs =		3780			Number of obs =		3780	
F(31, 3748) =		35.4			F(31, 3748) =		37.11	
Prob > F =		0.00			Prob > F =		0.00	
R-squared =		0.246			R-squared =		0.356	

Table 5, German sample, 2003-2011

	MFA				MFD			
	Coef.	Std. Err.	t	P>t	Coef.	Std. Err.	t	P>t
lnsize	-0.104	0.025	-4.159	0.000	0.068	0.015	4.374	0.000
roa	-1.982	0.311	-6.370	0.000	0.682	0.230	2.969	0.003
lnage	-0.126	0.035	-3.646	0.000	0.130	0.023	5.622	0.000
mb	-0.016	0.009	-1.736	0.083	-0.082	0.007	-12.176	0.000
de	0.033	0.013	2.516	0.012	0.022	0.005	4.385	0.000
igw	-0.045	0.090	-0.503	0.615	-0.095	0.051	-1.870	0.062
niai	-0.161	0.144	-1.113	0.266	0.004	0.085	0.043	0.966
volatility	1.269	0.227	5.592	0.000	2.240	0.196	11.417	0.000
noa	0.005	0.001	3.613	0.000	-0.007	0.001	-5.497	0.000
lnmrkt	0.116	0.155	0.750	0.453	-0.292	0.076	-3.864	0.000
lnfrmstr	0.403	0.191	2.111	0.035	0.313	0.105	2.976	0.003
lnincorpGov	0.028	0.060	0.468	0.639	0.157	0.050	3.114	0.002
lnbrnd	-0.078	0.048	-1.648	0.099	-0.136	0.026	-5.329	0.000
lnfinpos	-0.768	0.125	-6.145	0.000	-0.143	0.063	-2.268	0.023
lnreagacc	0.083	0.044	1.870	0.062	-0.030	0.022	-1.399	0.162
Years dummies	.	.	.	.	.	.	.	.
Industry dummies	.	.	.	.	.	.	.	.
_cons	4.780	0.451	10.591	0.000	-0.820	0.263	-3.113	0.002
Number of obs =		2592			Number of obs =	2592		
F(29, 2562) =		22.160			F(29, 2562) =	87.280		
Prob > F =		0.000			Prob > F =	0.000		
R-squared =		0.311			R-squared =	0.405		