The Information Content of 10-K Narratives:

Comparing MD&A and Footnotes Disclosures

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Abstract

This paper examines the characteristics and variations within firms' 10-K filings over a 20 year time period. We find that investors' reaction to textual characteristics of the MD&A in 10-Ks is much stronger and more timely than their reaction to textual characteristics of the notes to the financial statements. Characteristics of the MD&A and footnotes are also predictive of future returns, volatility, and firm profitability. Our evidence suggests that investor pay limited attention to the footnotes compared to the MD&A and that firms exploit biases in investors' information processing through their disclosure choices within 10-K filings.

1. Introduction

Are companies' annual 10-K filings informative to investors? And if so, what parts of a 10-K are informative? By the time 10-K reports are filed most of the key financial information such as earnings, sales growth etc., is already in the public domain. Not surprisingly, early evidence fails to find any significant market reaction to 10-K filings (Easton and Zmijewski, 1993) or only finds a limited reaction to these filings once prior earnings releases are taken into account (Li and Ramesh, 2009). On the other hand, more recent evidence from textual analyses of 10-K reports finds incremental information content in the tone of the text in the 10-K (Feldman, Givindaraj, Livnat, and Segal, 2010; Loughran and McDonald, 2011), in its readability (Li, 2008; Loughran and McDonald 2014), in year-on-year changes to the MD&A section (Brown and Tucker, 2011; Cohen, Malloy, and Nguyen, 2015) and in specific footnote disclosures (Peterson, 2012; Peterson, Schmardebeck, and Wilks, 2015).[1] These findings seem to suggest that there is incremental information about a firm's prospects beyond the financial statements in the narrative text of the 10-Ks.

Previous research has focused primarily on the stock market's reaction to individual components of 10-K filings, such as the MD&A alone or particular types of footnotes (e.g. pensions, stock options, significant accounting policies) in isolation, or conversely to the 10-K filing as a single piece of homogeneous information. Yet, the psychology literature provides ample evidence that attention diverts depending on the salience of stimuli—their prominence and contrast with other information in the environment (Fiske and Taylor 1991). As a result, it matters not only what is disclosed, but also where and in combination with what else. For example, if salience of the footnotes to the financial statements in the 10-K is low (or lower than of the Management Discussion and Analysis), investors might fail to process the information provided in them; or if information is abstract and heavily loaded

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[1] The practitioner literature also provides ample anecdotal evidence of value in reading companies' annual reports (e.g., Schilit and Perler 2010).

with statistical and quantitative data, people tend to underweight it in their decision making (Kahneman and Tversky, 1973; Nisbett and Ross, 1980). As a consequence, some information in 10-Ks might be revealed less completely and less immediately in market prices because investors under-react to it (Hirshleifer 2001; Bloomfield 2002).

In this paper we examine and compare the information content of several characteristics of two of the most prominent narrative sections in 10-Ks: the *Management's Discussion & Analysis of Financial Condition and Results of Operations* (commonly known as Management's Discussion & Analysis, or the MD&A) and the *Notes to the Financial Statements* (footnotes). Unlike previous work, we study 10-K filings in their entirety, while controlling for correlated information within a filing (i.e., information that is reported in both the footnotes and the MD&A). Jointly examining MD&A and footnote disclosures allows us to infer which part of the narrative in a 10-K filing investors pay attention to, controlling for information characteristics in different parts of a 10-K. We study the cross-sectional variation in the market reaction to firms' MD&A and footnote disclosures and their informativeness about future stock returns and profitability concentrating on textual characteristics of these sections within industries, within firms, and across time.

Prior evidence suggests that investors have limited attention and suffer from information processing biases when interpreting company disclosures (Hirshleifer and Teoh, 2003; Peng and Xiong 2006) and that placement and categorization of accounting information plays an important role for their interpretation (Libby, Bloomfield, and Nelson, 2002). Limited attention leads investors to use short cuts, and use information in the way it is displayed or presented instead of adjusting it if necessary (Slovic, 1972; Payne et al 1993). Information might thus not be fully processed or only processed with errors by investors.

Investors' limited rationality then affords managers the opportunity to strategically report information to their advantage (Schrand and Walther, 2000) and to exploit differences in the

visibility of disclosure outlets. For example, managers might strategically shift or omit pessimistic language from a more visible disclosure outlet to another less salient one (Davis and Tama-Sweet, 2012) or opportunistically structure annual reports to hide adverse information from investors (Li, 2008).

Although 10-K filings are legally required, i.e., mandatory, disclosures, managers have some discretion in content and form of the disclosure (Beyer, Cohen, Lys, & Walther, 2010; Schipper, 2007; Cole & Jones, 2005), as for example in their choice of words, their judgement of what is material and requires disclosure, and in their choice of how much forward-looking information to disclose. There are substantial differences between the two main narrative sections, however: the MD&A contains more contextual disclosure, with safe harbour provisions for forward-looking statements and significant discretion for management; the footnotes tend to be more technical, must comply with accounting standards, and are audited. It is thus likely that these sections differ in the type of information they contain and in the way the same information is presented and hence in their informativeness and ease of interpretation for investors. In this paper we demonstrate that several characteristics of these disclosures on their own and relative to each other are predictive of contemporaneous and future stock returns, volatility and profitability.

We build a sample of MD&A and footnote disclosures from 10-K filings for all US firms that file with the SEC, from 1993 (the start of EDGAR electronic filing) to 2014. From each 10-K we computationally extract the text of two sections, the MD&A and the footnotes. The MD&A and footnotes provide the vast majority of narrative disclosures in 10-K reports. We construct a number of variables that measure the characteristics of these disclosures. We measure their (1) length and (2) the amount of year-on-year changes in the text to capture information content and new information; (3) the similarity of a particular firm's MD&A and footnotes to that of other firms in the same industry reflecting idiosyncratic and industry

information; (4) the similarity between the MD&A and footnotes within a given firm-year; reflecting common information to both sections and (5) the tone in and differences in tone between the MD&A and footnotes to capture sentiment and strategic disclosure.

Our main findings are as follows. MD&A disclosures are more informative to investors than footnote disclosures in the immediate days surrounding the 10-K filing, particularly with respect to firm specific information as opposed to information common to the industry. Our results suggest that firms'10-K narratives that break from the default choice of simply repeating last year's narrative or from being boilerplate disclosures commonly used within the industry are informative to investors. For example, a one standard deviation of MD&A year-on-year textual change is associated with a 37 basis point increase in absolute announcement returns and a one standard deviation increase in MD&A industry similarity is associated with 13 basis points lower absolute returns. At the same time, investors seem to pay less attention to footnotes around the filing days, find them less informative or require more time to process them compared to MD&A disclosures.

More strikingly, we find that the change in the MD&A is strongly negatively associated with filing abnormal returns as is less congruence between the MD&A and footnotes. A departure from previous year's MD&A text and gaps between what managers convey in the MD&A and what they are required to disclose in the footnotes on average signal negative information to investors. However, consistent with limited attention or high processing costs, we also find that investors generally under-react to the negative information as these characteristics are highly predictive of negative future (one year ahead) stock returns after controlling for risk factors as well as associated with significantly lower future operating performance.

We further find evidence that positive tone in the MD&A is predictive of higher future risk-adjusted returns while positive tone in the footnotes is predictive of *negative* future risk-

adjusted returns as well as negative future accounting performance indicating that management might be trying to obscure negative information contained in the quantitative details of the footnotes with a positive tone in their text. Consistent with this interpretation we document a U-shaped relationship between "sentiment spread" (the difference between MD&A sentiment and footnote sentiment) and future returns and profitability. For profitable firms, sentiment spread is predictive of improved future performance. However, for firms in the bottom quartile of profitability, the further management's tone in the MD&A diverges from the footnote tone levels, the worse is future performance.

The findings in this study suggest that investors have difficulties in reading and processing the complex information contained within a 10-K filing in a timely manner. Our results are also suggestive of managerial obfuscation in the face of poor results, particularly in the MD&A section that attracts more attention from investors and which affords management more discretion in their disclosure.

Our study contributes to the literature that investigates the informativeness of 10-K filings and their textual characteristics. Event studies on filings of 10-K reports have produced mixed results, in particular after information that is released in earnings announcements is taken into account (Easton and Zmijewski, 1993; Li and Ramesh, 2009; You and Zhang 2009). However, there is a growing literature that uses textual analyses of 10-K reports to examine the information content of the tone in these reports and finds the tone to be informative (Feldman, Givindaraj, Livnat, and Segal, 2010; Loughran and McDonald, 2011). Other studies use textual characteristics to measure the readability of 10-K reports and find that firms with more complex reports have lower future performance (Li, 2008; Loughran and McDonald 2014). Changes in the text from one reporting period to the next also seem to reflect negative information and are associated with negative future stock returns (Brown and Tucker, 2011; Cohen, Malloy, and Nguyen, 2015).

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Our paper contributes to this line of research by comparing the narratives in MD&A and footnote disclosures, two of the most prominent narrative sections in 10-K filings, across and *within* firms for a large sample over two decades. Prior studies do not allow us to draw conclusions about which sections in the 10-K contain relatively more valuable information for investors, which characteristics of these sections are important and whether there is information content in industry and firm comparisons as well as when comparing different sections within the same 10-K. We examine several textual characteristics of the narratives in the MD&A and the footnotes to explore their information content and test their predictive power for future stock returns and profitability.

The paper proceeds as follows. Section 2 reviews the existing literature and develops our key hypotheses. Section 3 discusses methodology and data. Section 4 presents summary statistics and Section 5 follows with the main regression results and their interpretation. Section 6 concludes.

2. Related literature and hypotheses

2.1. Prior literature

Research on investor reactions to 10-K filings finds that investors react promptly to the filing of 10-Ks, suggesting that they contain marginal information above what is contained in the earnings announcement prior to the 10-K disclosure (Griffin, 2003; You and Zhang 2009). You and Zhang (2009) show that abnormal announcement returns around 10-K filing dates are positively associated with future firm profitability. However, the authors also document a stock price drift over the following 12 months and interpret this as evidence of investor underreaction to the information in the 10-K filing. They further find that the under-reaction is stronger for firms with more complex 10-K filings, as measured by filing length. These findings stand in contrast to earlier work that finds little support for investors responding to 10-K and 10-Q report filings (Easton and Zmijewski, 1993). In concurrent

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research to ours, Cohen, Malloy, and Ngyuen (2015) find that year-on-year changes in the text of 10-K and 10-Q reports are predictive of future negative stock returns and future risk of litigation.

Early research on textual analysis of financial reports studies the readability of corporate annual reports. Schroeder and Gibson (1990), for example, calculate word length, sentence length, use of passive voice, and Flesch Index for the Management's Discussion and Analysis (MD&A), footnotes, and President's Letter for 40 Fortune 500 companies from 1986. The authors explicitly acknowledge the inherent differences between the MD&A and footnotes as disclosure outlets: "Flexibility is allowed in presenting the MD&A while specific guidelines shape the footnotes. Also, there is a tendency to use boilerplate in footnote disclosure" (Schroeder & Gibson, 1990, p. 80). The authors find significantly more use of the passive voice in the MD&A, although there are no other differences in readability, word, or sentence length between the MD&A and footnotes.[2] In more recent research, Li (2008) finds that firms with easier to read annual reports have more persistent positive earnings, and that poorly performing firms have harder to read annual reports. Similarly, Loughran and McDonald (2014) shows that the file size (in megabytes) of a 10-K is a simple and reliable measure of readability, and is positively associated with abnormal return volatility in the post-filing trading month, absolute standardised unexpected earnings (SUE), and analyst dispersion.[3]

Several papers investigate particular footnote disclosures. De Franco, Wong, and Zhou (2011) use adjustments from Moody's models as a proxy for financial note information (i.e., adjustments that are made after the filing of the 10-K), and find that 10-K filing returns are

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[2] Schroeder and Gibson (1990) cite papers highlighting the poor readability of footnotes from over 50 years ago, as for example in Soper and Dolphin Jr (1964). Li (2010b) provides a thorough literature review of earlier work on textual analysis of accounting disclosures.

[3] The authors also argue that other measures of readability, such as the "fog"-index in Li (2008), which is a function of numbers of words per sentence and proportion of complex words, are not reliable. However, Bonsall IV, Leone, and Miller (2015) show that file size itself might not be a reliable measure of readability. They show that the measure is in fact driven by other exhibits in the 10-K filing (images, HTML, XML, and pdf attachments) and propose other "plain English" measures of readability, although these are not easily calculable. We note that there does not currently seem to be a consensus in the literature on the best (and most parsimonious) way to measure readability of 10-K reports.

related to the sign and magnitude of adjustments, as are equity analysts' target prices and recommendations. Peterson (2012) uses the length of the revenue recognition policy disclosure (and the number of methods of recognition) as a proxy for accounting complexity. This proxy is related to higher incidences of revenue misreporting restatements. Meanwhile, Peterson, Schmardebeck, and Wilks (2015) measure accounting consistency as the cross-sectional (within-industry) and year-on-year similarity of firms' accounting policies footnote. They find that firms with higher time series consistency have higher quality earnings. Higher cross-sectional similarity is also related to lower absolute discretionary accruals.[4]

In their survey and interviews of public company CFOs and standard-setters Dichev, Graham, Harvey, and Rajgopal (2013) highlight a number of footnote disclosure issues associated with poor earnings quality, or earnings quality "red flags". These include levels of disclosure that differ from industry norms, changes in accounting policies, and complex footnotes.

Research has also investigated the MD&A section of the 10-K in more detail (Bryan 1997; Feldman, Govindaraj, Livnat and Segal, 2010; Brown and Tucker, 2011). Feldman et al. (2010) document an association between positive (negative) tone in the MD&A and higher (lower) contemporaneous returns. Brown and Tucker (2011), on other hand, calculate the year-on-year change of the text in the MD&A using a vector space model (VSM) cosine similarity. They find that disclosures change in response to economic changes in the firm, and that investors react to disclosure changes around the filing date of the 10-K. They find, however, that this effect has diminished over time and attribute it to an increase in boilerplate disclosure.

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[4] There are many other papers that show that individual footnotes contain valuable information about firm profitability and earnings characteristics (e.g. Graham, Raedy, & Shackelford, 2012)

2.2. Key hypotheses

We examine the information content of mandatory disclosures in 10-K filings that are not necessarily driven by managerial incentives and agency considerations as are voluntary disclosure choices. We are nevertheless mindful of discretion within and differences between the various disclosure sections of a 10-K report. In particular, we expect the two main narrative disclosure outlets in a 10-K filing—the Management's Discussion and Analysis, and the Notes to the Financial Statements—and differences between them in form and visibility to determine where and how managers provide mandatory information to investors.

We base our empirical tests on hypotheses that follow from the prior literature. Prior evidence suggests that the length of disclosures is related to their information content and also their complexity (Schroeder and Gibson, 1990; You and Zhang, 2009). Consequently, we expect the total length of the narrative disclosures in the MD&A and footnotes to be associated with absolute and signed filing returns and test whether one of the outlets is on average relatively more informative holding the total length constant. On the one hand, the MD&A is considered one of the most important sections of the 10-K (Rogers and Grant 1997) and contains forward looking information protected by the safe harbour provisions of the Private Securities Litigation Reform Act 1995, which should make it more informative than footnotes. On the other hand, the MD&A is not audited like footnotes and there are concerns that is contains mainly boilerplate and generic disclosures (SEC, 2003).

As disclosure length has also been used as proxy for the complexity (or readability) of disclosures (Li, 2008), we further try to distinguish between the informativeness of the MD&A and footnotes and their complexity by examining the association of the length of the two outlets with future return volatility. If market participants are less easily able to extract information from complex reports we expect more uncertainty to remain about the firm after the filing of the 10-K leading to higher return volatility.

Moreover Bloomfield (2003) argues that information that is more costly to extract from public data is less likely to be completely revealed in market prices. Such "incomplete revelation" might arise due to the complexity and extraction costs of the information or due to limited attention of investors as in Hirshleifer and Teoh (2003). If investors do not react fully to the disclosed information we expect the characteristics of the narrative disclosures to be associated with future stock returns and volatility. Moreover, managers might have incentives to exploit investors' limited attention by increasing the complexity in their disclosures or choosing a particular form or outlet of the disclosure when the information is negative (Schrand and Walther, 2000; Bloomfield, 2002). We then expect market participant to only slowly adjust to the new (negative) information leading to a negative association of characteristics of the disclosures with long-term stock returns and profitability.

The notion that managers are likely biased against disclosing negative information (Kothari, Shu, and Wysocki, 2009) might not only affect the complexity of the disclosure, but also the location and disclosure outlet. For example, managers strategically shift or omit pessimistic language from earnings press releases to the MD&A in 10-Q and 10-K filings (Davis and Tama-Sweet, 2012). This shifting behaviour is predictive of low future firm profitability. Similarly, Li (2008) argues that "managers may be opportunistically structuring annual reports to hide adverse information from investors" (p. 245). Meanwhile, experimental evidence suggests that the placement and categorization of information plays an important role for how investors interpret the information (Libby, Bloomfield, and Nelson, 2002) and early evidence in psychology has shown that people tend to underweight abstract and statistical information (Kahneman and Tversky, 1973; Nisbett and Ross, 1980). Accordingly, we expect the characteristics of the footnotes to be more likely associated with negative

future stock returns as investors tend to under-react to the information contained in them around the filing date.[5]

Firms are generally reluctant to deviate from default choices in the language and structure of their annual reports unless absolutely necessary. There is a tendency to use boilerplate language and to include too much information in order to satisfy compliance with standards (Hoogervorst, 2013). That is, it is natural to expect firms to simply repeat content and sentence structures in the MD&A and footnotes from one year to the next if there is no new material information to be presented to investors. Similarly, these disclosures should be similar across firms within the same industry reflecting wider economic and industry trends unless idiosyncratic events have affected the individual firm. In other words, a disclosure that changes provides information both through the new content, and through the fact that a decision was made to change the disclosure. We therefore further test informational content of the narrative disclosures by examining changes and similarities across industry peers, within firms and disclosure outlets over time.

We expect changes over time and differences across industry peers to reveal information to investors. Firms would not deviate from the default choice if there was no news and are likely to contain previous statements in the disclosure to obfuscate additional sentences that signal negative information. We expect negative information signals in particular in relation to changes that occur in the MD&A, where management has more discretion over disclosures compared to the footnotes. Moreover, we expect opportunistic shifting behaviour between the narrative disclosures—reflected in low similarities between the MD&A and footnotes within the same firm—also to be associated with negative information.

In a similar vein, it is suggested that managers engage in "impression management" by using discretion in the tone of narrative disclosures opportunistically to influence investor

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[5] Prior empirical evidence shows that accounting information that is recognized on the face of the financial statements features more heavily in investors' decision making than when it is disclosed in the footnotes (Amir 1993, Aboody 1996; Davis-Friday et al. 1999).

beliefs (Merkl-Davies and Brennan (2007). Typical behaviour includes "concealment by obfuscating negative organisational outcomes and introducing positive bias" (Merkl-Davies and Brennan, 2007, p. 182) and by attributing good news to managers and bad news to external factors. Consequently, we expect the tone in the narratives, whether positive or negative, to influence the investor reaction to the information disclosed. However, we expect under the "impression management"-hypothesis that positive tone is negatively associated with future returns. Moreover, if management's intent is to obfuscate negative information, we expect this negative news to be 'buried' in the footnotes and covered up with positive language, given their higher complexity and investors' limited attention to them compared to the MD&A as outlined above. We now turn to empirically test these hypotheses.

3. Sample Selection and Variables

3.1. Sample Selection

We obtain 10-K filings filed electronically with the SEC on EDGAR from 1993 to 2014. This yields 58,203 10-K filings from which we were able to parse the Management's Discussion and Analysis and the Notes to the Financial Statements. We eliminate disclosures that contain fewer than 1000 characters. This is done to remove any filings that incorporate the MD&A or Footnotes by reference to the annual report. We remove all numerical tables, keeping only the text.

Although there are other written or narrative sections in 10-K filings, the MD&A and Footnotes comprise the majority of these disclosures. Figure 1 shows the page length of Procter & Gamble's 2014 10-K by section as an example. The MD&A and Footnotes are by far the longest disclosures, at 24 and 28 pages respectively, out of a total of approximately 75 pages. This is a fairly typical pattern for public company 10-Ks, and is suggestive that the

MD&A and footnotes (jointly and separately) are of prime importance when studying the information content of narrative disclosures in 10-K filings.

For each firm, we match the 10-K filings with stock return data on CRSP and accounting data on Compustat.[6] Table 1 provides a summary of the sample construction and matching process. The sample size is further reduced in the analysis through the use of lagged variables and year-on-year changes, and exclusion of financial firms and late filers (where the 10-K is filed over 100 days after the accounting period date). Our final usable sample consist of 28,712 10-K-years with extracted MD&A and footnote sections.

3.2. MD&A and footnote characteristics

We calculate a number of measures that are intended to capture important characteristics of the MD&A and footnote, which we expect to reflect the information content of these disclosures: length, year-on-year change, within-industry similarity, within-filing similarity between MD&A and footnotes, and sentiment.

Disclosure length is a count of the number of words in the MD&A text, and the footnote text. In regressions we use total length (MD&A plus footnotes) and footnote length because it is easier to interpret: we can observe the effect of footnote length, holding constant the total length of disclosures. Hence for a given quantity of disclosure, we can see the effect of changing the composition of the disclosure (i.e. MD&A narrative discussion, or footnotes). Disclosure length provides us with a simple measure of information content. All other things being equal, a longer disclosure should contain more information, which will in turn affect how investors react to this information.[7]

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[6] We match the CIKs from the 10-K filings to GVKEYs using (a) CRSP/Compustat Merged Company Header History, (b) Compustat NAMES file, and (c) WRDS SEC Analytics Suite GVKEY-CIK link table. If these three sources are inconsistent, we use (a) first, then (b), then (c). For the full sample, there are GVKEY matches for approximately 82% of firm-years. With these GVKEY matches, we merge with Compustat and CRSP.

[7] We also use the log of word count, instead of the raw number, in further analyses. Other approaches of using the number of characters, or the number of words after removing stop words and words less than three characters long do not yield materially different results.

Year-on-year change is a measure of how much a firm-year's MD&A and footnotes change compared to the previous fiscal year. Change is calculated as one minus the vector cosine similarity between this year's MD&A (or footnote) text and the previous year's MD&A (or footnote) text as a bag-of-words model.[8] This results in a variable between zero and one, where zero indicates that the two bag-of-words vectors (e.g. this year's MD&A and last year's MD&A) have exactly the same proportion of words and one indicates that the two vectors are orthogonal and contain no shared content.[9]

A disclosure that contains more change is presumed to contain more information—a footnote that does not change compared to the previous year presumably contains very little new information to investors. By comparison, a disclosure that changes a lot provides information both through the new content itself, and through the fact that a decision was made to add, delete, or amend a part of the footnote.[10]

Within-industry similarity measures how similar a firm's MD&A (or footnotes) are compared to other firms in the same industry in the same year. Firms that have the same three-digit SIC code are considered to be in the same industry. For each firm-year, we calculate the vector cosine similarity between the disclosure (MD&A or footnote) and all other disclosures of the same type, in the same industry, in the same fiscal year. This results in a number of pairwise similarity metrics, which are averaged to provide the within-industry similarity for that firm-year, for both the MD&A and the footnotes. Within-industry

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[8] The bag-of-words model represents a document as a vector in which each element corresponds to the term frequency of a particular word. This means that the defining feature of a document in this model is the frequency of each word – word order is lost. We have experimented with using Levenshtein (1966) distance (essentially the minimum number of single character edits required to get from one document to another) as a measure of change but it is overly sensitive to changes in paragraph ordering, absent any change in content. Furthermore our measure does not consider numbers – if the textual structure of a disclosure stays the same but the numbers change, this measure will show no change.

[9] Vector cosine similarity measures are calculated after we force all words to lowercase, remove any remaining tags, punctuation, multiple whitespaces, stop words (generic, names, dates and numbers, geographic, currencies and any other words fewer than three characters in length). We use stop word lists available on Bill McDonald's website: http://www3.nd.edu/~mcdonald/Word_Lists.html

[10] Our discussions with practising accountants suggest that company accountants prefer the path of least resistance and will avoid changing disclosures too much unless completely necessary. This is consistent with ample evidence in behavioural economics that documents the importance of inertia and default choices in decision making.

similarity is intended to measure how similar a firm's disclosures look to its peers, in the cross-section: if similarity is high, a firm's MD&A or footnotes contain a lot of similar content to its peers (i.e. boilerplate, which may possibly be easier for investors to process, but may also possibly contain less information); if similarity is low, the disclosure content substantially differs from peers (i.e. more idiosyncratic disclosures, with potentially more information, but also possibly harder for investors to process).

MD&A-Footnote similarity is a within-filing measure of how similar the MD&A text and footnote text are to each other, for a particular firm-year filing. It is calculated as the vector cosine similarity between a firm's MD&A text and footnote text, for the same firm in the same year. Hence it is a measure of how much information is common to both parts of the disclosure within a firm-year filing. As this variable tends towards one, the MD&A and footnotes share more and more of the same words in the same proportion (proxying the amount of information that is common to both sections). For a given length of disclosure, as this variable decreases, the filing arguably contains more information, as there is less commonality between the MD&A and footnotes. However, within-filing differences may also suggest that management is presenting different information in their narrative discussion compared to the audited footnotes.

Disclosure sentiment is measured as the proportion of *negative* and *positive* words as defined by Loughran and McDonald (2011). We count the number of words in each firm-year disclosure (MD&A and footnotes separately) and divide this by the total number of words in the text. *Negative* words are subtracted from *positive* words to yield a proportion of *net positive* words. To exploit the within-filing variation between MD&A disclosure and footnote disclosures, we also calculate the difference between MD&A *net positive* and footnote *net positive* proportions (MD&A-Footnote *net positive*). This variable, which we call *Sentiment Spread*, is intended to capture the difference in sentiment between a firm's MD&A narrative

disclosure and its audited notes to the financial statements. A positive spread indicates positive sentiment in the MD&A section, which is in part forward-looking, that is not reflected or has not yet been incorporated into footnote disclosures (which one could argue are more backwards looking, as accounting by its nature captures past transactions). Alternatively, management's narrative and discussion about the past fiscal year might be more positive than justified by the audited footnote disclosures.

3.3. Dependent Variables and Other Controls

We measure the information content of 10-K narrative disclosures based on a number of market-based variables: signed (CAR) and absolute (|CAR|) filing returns; 4-factor adjusted returns over the year following the 10-K filing (RET250); and 4-factor residual volatility (RMSE250) during the year following the 10-K filing. Filing returns are an estimate of how investors react at the time of the filing, assuming they read (and process) the disclosures immediately. If the narrative characteristics we measure in the 10-K filings matter, firms' filing 10-Ks with certain narrative characteristics will experience statistically significant returns around the filing date. Returns and volatility over the subsequent year give us an estimate of whether these narrative characteristics have any predictive power for long-term effects.

The filing return (CAR) is a firm's stock return minus the value-weighted CRSP return, summed over the four-day window [-1, +2] surrounding the filing date of the firm's 10-K. The absolute filing return (|CAR|) is the absolute value of CAR. The return window starts at one day before filing and finishes two days after to allow for information leakage, and filings being made after the close of market (Berkman and Truong, 2009).

The 4-factor adjusted returns over the year (RET250) following the filing date are calculated as follows: for each firm-year, we regress daily stock returns on the excess market returns (MKT-RF), a size factor (small-minus-big), a value factor (high-minus-low) and a

momentum factor (up-minus-down) over the estimation window [-250, -21] relative to the 10-K filing date, in order to estimate factor loadings. For each of the event windows [+3, +250] we compound the firm's actual daily stock return, and expected daily stock return based on estimated factor loadings over the window. Adjusted return is then calculated as compounded raw return minus compounded expected return (i.e. the actual buy-and-hold return, minus the expected risk-adjusted buy-and-hold return).

RMSE250 is the root-mean-squared-error from a 4-factor model of returns over the window [+3, +250] relative to the 10-K filing date. This variable represents how much, on average, a firm's daily return deviates from its expected return over the course of the year based on a 4-factor model. We also calculate the RMSE for the year prior to the filing date to use as control variable.

To explore in more detail what fundamental information 10-K disclosure characteristics may contain about current or future earnings we examine the variation between disclosures and contemporaneous and future changes in ROA. This may tell us whether the narratives in the MD&A and footnotes (both, or individually) contain information about future accounting profitability.

The SEC requires certain forward-looking statements in the MD&A concerning "known material trends and uncertainties" and off-balance sheet arrangements while other forward-looking disclosures, generally speaking, are optional (SEC, 2003). It is less clear, however, whether the footnotes contain relevant information about the firm's prospects. Unlike the MD&A management is not protected by "safe harbour" provisions and thus is less likely to explicitly disclose any forward-looking information in the footnotes.[11]

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[11] Safe harbour was originally introduced by the Securities Act of 1933 and the Securities Exchange Act of 1934, and strengthened by the Private Securities Litigation Reform Act of 1995, which intended to reduce frivolous securities litigation.

We calculate the change in return on assets (ΔROA) for the current and next fiscal year. Return on assets (ROA) is operating income after depreciation (OIADP) divided by total assets (AT) at the end of the fiscal year.

We further use following firm control variables: Log(market value) is the natural logarithm of the share price at the end of the fiscal year (PRCC_F) times number of shares outstanding (CSHPRI). Book-to-market is shareholders' equity (SEQ) divided by market value at the end of the fiscal year. Leverage is the sum of short term (DLC) and long term debt (DLTT) divided by total assets (AT) at the end of the fiscal year. Log(number of business segments) is the natural logarithm of the number of business ("BUSSEG") or operating segments ("OPSEG") reported for each firm-year in the Compustat Segments dataset, excluding segments with negative sales or a missing SIC code, as these usually relate to corporate costs or eliminations. Any firm-year with missing segment data in Compustat is assigned a value of one segment. All variables are winsorised at the 1% tails by fiscal year.

4. Summary Statistics

Table 2 Panel A provides summary statistics for our disclosure variables. Footnotes are on average 18% longer than the MD&A section. They have a mean (median) length of 8,832 (7,640) words, compared to a mean (median) length of 7,470 (6,459) words for the MD&A. Year-on-year change is higher for the MD&A than the footnotes, although the difference is not substantial. Mean (median) change for footnotes is 6.0% (4.1%) versus 8.4% (6.3%) for the MD&A.

Within-industry similarity is higher for footnotes, with a mean (median) value of 0.67 (0.69) compared to 0.55 (0.55) for the MD&A. This suggests that within an industry, footnotes have more in common with each other, whereas the MD&A differs more between firms. The higher similarity for footnotes may be caused by the stricter requirements of the

audited financial statements, compared to the narrative and forward-looking MD&A in which managers are likely to have more discretion and scope in what they disclose. This would also be consistent with footnotes being more "boilerplate" compared to the MD&A.

MD&A-Footnote similarity (the within-filing similarity between the MD&A and footnotes) has a mean (median) value of 0.64 (0.65). This level is quite close to the average footnote within-industry similarity, implying that within a 10-K, the MD&A and footnotes share about the same content as the footnotes share with other firms in the same industry. There are evidently significant differences between the types of information that are disclosed in the footnotes compared to the MD&A, i.e. they are not simply restatements of one another. There is also substantial spread in the MD&A-Footnote similarity variable, with a 10th percentile of 0.47 and a 90th percentile of 0.80, so some firms do in fact have a lot of overlap between these two disclosures, while others have much less.

Both the MD&A and footnotes have a negative net positive word count (i.e. more negative than positive words), with the footnotes taking a mean (median) value of -1.45% (-1.33%) versus -1.31% (-1.22%) for the MD&A.

We also focus on the within-filing spread between net positive words in the MD&A and in the footnotes (MD&A-Footnote Net Positive). Although the average spread is not large (0.14% mean, 0.15% median) there is substantial variation across firm-years, with a 10th percentile value of -2.94% (MD&A is more negative than the footnotes) and a 90th percentile value of 1.49% (MD&A is more positive than the footnotes). We explore this variation later in the paper: We are interested in whether this *Sentiment Spread* is exists because the MD&A is more forward-looking, and thus this sentiment spread tells us something about future firm performance, or because a manager uses her discretion to write a narrative MD&A disclosure that diverges from underlying financial performance, or some combination of both.

Table 2 Panel B provides summary statistics for the market and accounting dependent variables. 10-K filing cumulative abnormal returns (from 1 day before the filing date to 2 days after) have a mean value of -0.34% and a median of -0.20%. Absolute announcement returns have a mean value of 5.63% and a median of 3.33%. 1-year volatility has a mean value of 4.02% and median of 3.21%. Returns over the 1-year period following the 10-K filing date have a mean (median) of 4.36% and (-2.86%). Current year change on return on assets has a mean value of -0.95% and a median of -0.06%.

Table 3 provides correlations for the main disclosure characteristics and other independent variables. MD&A and footnote textual characteristics are generally positively correlated with the MD&A and footnote length, except for the footnote industry similarity and MD&A positive tone.

5. Empirical Results

5.1. Filing Returns

Table 4 presents results from regressions of absolute filing returns (|CAR|) on disclosure variables and firm controls. Absolute filing returns are consistently increasing with total disclosure length, but decreasing in footnote length. A unit increase in the log of total disclosure length is associated with a highly significant increase in |CAR| of 155 basis points; a unit increase in the log of footnote length (holding total length constant) reduces |CAR| by 38 basis points (Model 2). [12] These results suggest that MD&A disclosures are more informative to investors than footnote disclosures in the immediate days of the 10-K filing. This may obtain because the MD&A section contains more material information, is easier to process or attracts more immediate investor attention over the very short term.

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[12] Total length is the sum of MD&A and footnote length. Thus, an increase in the footnote holding total length constant means an equivalent decrease in the MD&A length.

The results are corroborated by the findings the change in the MD&A is associated with higher absolute announcement returns. A one standard deviation of MD&A change is associated with a 37 basis point increase in absolute announcement returns compared to a one standard deviation of a change in the footnote, which is weakly associated with |CAR| and results in a 7 basis point increase in absolute announcement returns. These results are consistent with the hypothesis that firms' 10-K narratives that break from the default choice of simply repeating last year's narrative contain valuable information for investors. Within these narratives year-on-year changes in the MD&A section seem especially informative to investors.

MD&A within-industry similarity is negatively associated with |CAR|. A one standard deviation increase in MD&A Industry Similarity correlates with a 13 basis point lower absolute return. This suggests that investors extract firm-specific information from the MD&A and that deviations from commonly used narratives within an industry have information content. Similarly, within 10-K-year, MD&A-Footnote Similarity is negatively associated with |CAR|: a one standard deviation increase in within-filing similarity lowers absolute announcement returns by 13 basis points. In other words, holding length constant, increasing the amount of common information between the MD&A and footnotes lowers the informativeness of these disclosures.

Turning to the sentiment in the narratives, the proportion of net positive words in the footnotes, but not the MD&A, is negatively associated with absolute announcement returns. A one percentage point increase in net positive words in the footnotes is associated with a 30 basis point lower |CAR|. At the same time, investors react more strongly to the incremental positive sentiment in the MD&A. These results could indicate that footnotes are more informative to investors with respect to negative information they contain about the firm consistent with prior findings in the literature that negative tone in the 10-K filing is

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associated negatively with excess returns (e.g., Loughran and McDonald 2011), but this remains speculative at this point.

Overall, the results in Table 4 broadly suggest that MD&A disclosures are more informative than footnotes as investors react more strongly to the length and particularly the change in the MD&A than the footnotes, but also find "boilerplate" MD&A (high within-industry similarity), as one might expect, less informative.

Next we investigate whether our narrative disclosure characteristics are associated with positive or negative filing returns. That is, we test whether the characteristics of the narratives in the MD&A and footnotes reflect any positive or negative information about the future prospects of the firm. Accordingly, Table 5 shows the results from regressions of signed filing returns (CAR) on our disclosure variables. Consistent with the results in Table 4 and our conjecture above footnotes seem to generally be informative with respect to negative news. Footnote length is associated with lower CARs. Similarly, confirming the information content of MD&A changes, the change in the MD&A is strongly negatively associated with CAR. A one standard deviation of MD&A change is associated with 38 basis points more negative filing returns, which suggests that changes in the MD&A narrative disclosure on average occur because of bad news. The lack of reaction to footnote change when controlling for MD&A change suggests either that footnotes are not incrementally informative, or that investors need longer than the filling days to process them given that they usually contain more technical information compared to the MD&A. We investigate this further in the next section.

MD&A-Footnote Similarity is positively associated with CAR. A one standard deviation increase is related to 17 basis point higher CAR. Recall, that the relationship with absolute CAR is negative as shown in Table 4. The market generally considers similar (likely boilerplate) discussions in the MD&A and footnotes less informative, but views congruence

between the information in the MD&A and the footnotes as a positive signal. Significant differences between the two narratives signal negative news. They might, for example, be viewed negatively if they suggest that management may be trying to present a different business outlook in one of the narratives, e.g. emphasise certain business aspects in the MD&A, while stressing others in the footnotes or downplay negative information in the footnotes (for which disclosure is regulated and audited) with a relatively more positive tone in the MD&A section.

5.2. Long-Term Returns and Volatility

We next explore whether investors fully impound all information available in the MD&A and footnote sections contemporaneously or under-react to the narrative information in one or both sections due to limited attention or relatively higher extraction costs. Table 6 presents results from regressions of 1-year volatility (RMSE250) on our disclosure variables. Total disclosure length is positively related to future 1-year volatility, with a one unit increase in log(disclosure length) corresponding to a 52 basis point increase in RMSE250 (Model 2). Longer 10-K filings are generally associated with more complex disclosures (Li, 2008) that contain more information to process leading to higher future stock return volatility. Footnote length has the opposite effect, with a one unit increase in log(disclosure length) decreasing RMSE by 12 basis points. Holding total length constant a relatively longer footnote (less long MD&A) reduces future idiosyncratic volatility. This could obtain because footnotes contain more detailed audited information that help investors interpret the financial and nonfinancial information in the 10-Ks. However, the footnote effect is barely significant.[13]

Consistent with MD&A disclosures driving future volatility a higher change in MD&A disclosures is associated with higher future volatility (one standard deviation corresponds to a

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[13] If the footnote length coefficient is zero, then both the MD&A and footnotes are affecting future volatility equally (through the total length variable). If the coefficient is negative, then the MD&A has a stronger effect on future volatility, as increasing the proportion of footnotes for a given length of total disclosure decreases future volatility.

4 basis point increase); the magnitude of the footnote change effect is similar, although it is not statistically significant.

MD&A-Footnote similarity is positively related to future volatility with a one standard deviation increase in within-filing similarity increasing RMSE250 by 3.6 basis points. Firms whose disclosures are more orthogonal (i.e. the MD&A and footnotes each contain distinct information and thus have lower similarity) have lower subsequent volatility. In conjunction with the results on MD&A and footnote length these results suggest that the more information footnotes contain and the more this information is distinct from information contained in the MD&A the less the future uncertainty about the equilibrium price of the stock. This result is consistent with the effect of MD&A-Footnote similarity on absolute filing returns that suggests that the more dissimilar the two narrative disclosures are the more investors react immediately to the information contained in them. In other words, the more distinct information both narratives provide the larger the initial volatility as investors unpick the information and the lower the future volatility once investors have interpreted the information.

Sentiment in the MD&A and footnotes both affect future volatility, with a one percentage point increase in MD&A and footnote net positive words decreasing RMSE250 by 6 basis points and 4 basis points respectively. Negative sentiment increases future uncertainty about the firm (Loughran and McDonald, 2011). We also control for the prior year RMSE (which explains 66% of next year's volatility) to take into account firm-level idiosyncratic volatility that is not explained by the other firm controls.

Next we examine whether 10-K narrative characteristics are associated with future stock returns. If investors underreact to the information contained in these disclosures or if managers use these disclosures strategically to obscure or downplay negative information, the disclosure characteristics will be associated with future stock returns. Table 7 presents result

from regressions of 1-year 4-factor adjusted returns (RET250) on disclosure variables and firm controls. Both total disclosure length and footnote disclosure length have no predictive power for future returns.

The most striking results come from year-on-year changes in the narratives. Changes to both the MD&A and footnotes are associated with substantially lower future returns. A one standard deviation change in MD&A and the footnotes corresponds to a -3.0 and -1.7 percent return, respectively, after controlling for risk factors. These results allow for two interpretations. First, changes in narrative disclosures are highly predictive of negative future performance. Second, investors underreact to the negative information in year-on-year changes in the narratives at the filing date. Recall that filing day returns are highly negative to MD&A changes, but not footnote changes, as presented in Table 5. That is, investors underreact in particular to changes in the footnote narratives.

Consistent with the short-term results MD&A-Footnote similarity is positively related to future returns; a one standard deviation increase in within-filing similarity increases returns by 1.6 percentage points. Disclosing similar information in both disclosure outlets is seen as a positive signal by investors; if the disclosures are substantially different, managers may be attempting to hide negative information or otherwise present an alternate reality.

MD&A sentiment is positively related to future returns, with one percentage point increase in sentiment leading to 98 basis point higher returns. Interestingly, over this longer time frame, footnote positive sentiment is negatively related to future returns: a one percentage point increase in footnote net positive words leads to a 130 basis point decrease in 1-year return. Although this relationship is backwards to naïve expectations, it supports the idea that the footnotes and MD&A tend to contain different types of information with footnotes being more informative with respect to future risks. It also support our conjecture that footnotes—as the outlet that receives less attention from investors and is more costly to

process—are used to obfuscate negative information. Consistent with this the sentiment spread (MD&A-Footnote net positive words) is positively related to returns, with a one percentage point higher spread associated with 108 basis point higher returns.

Moreover, once we condition the "sentiment spread" on firm profitability, we see a strong U-shaped effect: We interact MD&A-Footnote Net Positive with a dummy variable (=1 if firm is in bottom ROA quartile by year). When the dummy equals zero (profitable firms), a one percentage point increase in sentiment spread leads to 2.5 percentage point higher stock returns. For firms with low profitability, a one percentage point increase in sentiment spread leads to a 3.4% decrease in returns (Model 8). The positive part of this U-shaped relationship (profitable firms) is consistent with managements' narrative disclosures containing valuable forward-looking information. However, for unprofitable firms, a divergence between the sentiment of management's narrative disclosure and the audited notes to the financial statements is a strong negative signal likely because management has discretion about the tone and content of the MD&A, but less so for footnotes. Management tends to be more positive in their view of firm prospects in the MD&A, and because investors seem to pay more attention to the MD&A than the footnotes, this divergence is not immediately clear to the market. This relationship is consistent with the aforementioned "managerial bias" view of disclosure, where managers' narrative disclosure diverges from the underlying accounting reality. It is, of course, not possible to say whether this might be caused by intended discretion, or simply is the result of biases in the CEOs disclosure behaviour. We are somewhat agnostic about the underlying cause, but solely document the negative implications for investors.

5.3. Operating performance

Thus far we established that 10-K narrative disclosure characteristics are associated with filing returns and future stock returns and volatility. In this section we further examine

whether the 10-K narrative disclosures correlate with contemporaneously recognised (i.e. on the main financial statements) accounting performance and whether they are predictive of the future accounting performance of the firm mirroring the stock market performance.

Table 8 shows results from regressions of contemporaneous change in return on assets (ΔROA(t)) on disclosure variables and firm controls. Length is negatively associated with contemporaneous change in profitability; a one unit increase in log(total disclosure length) correlates to a 323 basis point decrease in current ΔROA. This relationship is not affected by footnote length, so both MD&A and footnotes tend to be longer when a firm has a larger decrease in profitability. This could either be caused by losses requiring more disclosure than profitable results, or might be consistent with the conjecture of managerial obfuscation in the face of poor results. The two interpretations are difficult to distinguish based on these results on their own, but in conjunction with our findings above the latter seems likely.

Change in the MD&A is correlated with a negative current year change in profitability: a one standard deviation increase in MD&A change accompanies a 64 basis point lower ΔROA whereas footnote change is not related to ΔROA, which is consistent with the results on stock returns. A one percentage point increase in MD&A sentiment accompanies a 61 basis point higher ΔROA. For sentiment spread the effect is 39 basis points. Again both results mirror the findings on the market reaction. We do not see a U-shaped effect in sentiment spread and (prior year) profitability in this case; in fact the relationship between sentiment spread and current ΔROA is twice as strong for low profitability firms, so MD&A language does correspond to current performance in all cases here.

Turning to future change in profitability, both MD&A and footnotes have a strong relationship with future firm performance. Table 9 shows results from regressions of one-year-ahead change in return on assets (ΔROA(t+1)) on disclosure variables and firm controls.

Total disclosure length has a weak negative relationship with future profitability, but this disappears after controlling for footnote disclosure length. We also see a relationship between MD&A change and future profitability that we see with future returns: a one standard deviation change in MD&A predicts a 56 basis point lower ΔROA. Footnote change does not have predictive power on future profitability. Firms with higher MD&A-Footnote similarity (within-filing) have moderately higher future changes in profitability, with a one standard deviation increase in within-filing similarity leading to 21 basis point higher ΔROA(t+1). This is a similar relationship to the one we observe for future one-year returns, and is consistent with high common disclosures between footnotes and MD&A being a positive signal. Footnote sentiment is negatively related to ΔROA, with a one percentage point increase predicting a 27 basis point decrease in future profitability. Although this negative relationship between positive sentiment and future performance is counterintuitive, it is consistent with the pattern we see in 1-year future returns and confirms our conjecture about managerial obfuscation of bad underlying financial results using positive sounding narratives.

Although sentiment spread is not significant by itself, when it is interacted with a "low profitability" dummy variable, the U-shaped relationship we found with stock returns is corroborated. For "high profitability" firms (not in lowest quartile by year), sentiment spread (MD&A-Footnote net positive) is strongly related to future ΔROA, with a one percentage point increase in spread related to a 37 basis point increase in next year's profitability. For "low profitability" firms (bottom quartile of ROA), a one percentage point increase in sentiment spread predicts a 92 basis point lower ΔROA. Firms with reasonable profitability seem to use the MD&A to signal future performance; for low profitability firms, it seems that a manager's optimism is inversely related to the reality of future performance.

5.4. Interpretation of results and further tests

The analyses in this paper show a number of results in which MD&A and footnote disclosure characteristics are predictive of contemporaneous and long-term stock returns, volatility and future changes in firms' profitability. We find that investors' reaction to the MD&A narrative in 10-Ks is much stronger and more timely than their reaction to the notes to the financial statements. Textual characteristics of 10-K filings are predictive of future returns, volatility, and firm profitability. This predictive power suggests that investors do not fully process 10-K written disclosures when they are filed, perhaps due to limited attention or information processing biases. Investors muted short-term reaction to the footnotes could be because there is no marginal information of value compared to the MD&A, or because the footnotes are more difficult or costly to process. Our evidence suggests the latter, as footnote characteristics are related to long-term returns, volatility and profitability.

We also find some evidence of managers' attempts to obfuscate negative information in the MD&A narrative and particularly the footnotes through tone. Both are associated with negative subsequent stock returns, particularly for underperforming firms. It is of course difficult to distinguish intentional reporting choices from unintentional biases in reporting behavior. We investigate this further by examining the relationship of the narrative characteristics with future discretionary accruals. The untabulated results are consistent with the prior patterns of associations of MD&A and footnote characteristics with future stock returns and profitability. Longer footnote disclosures (holding total length constant) predict higher discretionary accruals and MD&A within-industry similarity and footnote within-industry similarity have statistically significant and opposite effects on discretionary accruals. Firms with higher footnote similarity (i.e. more boilerplate disclosure, less idiosyncratic disclosure) show evidence of subsequently higher earnings management, while firms with higher MD&A similarity show signs of lower subsequent earnings management.

From the perspective of management, the MD&A is the more visible disclosure (given its relationship with signed and absolute announcement returns), and also allows greater discretion due to safe harbour laws and the fact that it is not (strictly) audited.[14] By making the MD&A less comparable to other companies, it will be more difficult for investors to process this information and assess the firm's situation in context. In contrast, higher similarity in the footnotes may be a result of managers in turn trying to avoid disclosures that indicate to outsiders that something is wrong or different. One possible explanation could be that managers actively choose what information to put into the MD&A, where they have greater discretion, and then simply try to structure the footnotes to minimise informative disclosures, in efforts to maximise obfuscation. Admittedly, this argument is speculative and very difficult to test. Nevertheless, the overall consistent patterns in the results suggest that this is a likely possibility. Our results also show consistent patterns in the relationship between the narrative sections within 10-K filings. The MD&A and the footnotes have differing, and sometimes opposite effects on stock returns and profitability. The fact that the signs of the association of the tone in the two narratives differ supports the notion that the MD&A and footnotes are fundamentally different disclosure outlets.

Our results also suggest limited attention of investors and biases in information processing, that is the marginal investor's inability to read and process the complex information contained within a 10-K filing in a timely manner. It is conceivable, for example, that the marginal investors make decisions partly based on stale information that is disclosed in the most recent, and previous, 10-Ks. For these investors, the information may be "new", because they have not taken it upon themselves to read (in detail) years of prior 10-Ks for companies that were not previously on their "investment radar". Given the time constraints

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[14] Auditors can be engaged to review the MD&A, even though it is not subject to accounting standards in the same way as the notes to the financial statements. Nevertheless, auditors will typically check that the MD&A is consistent with the figures presented in the audited statements (AICPA, 2001).

and portfolio size of even institutional investors, and the limited availability of machine-readable 10-K narrative sections up to recently this is at least a possibility.

On the other hand, the relationships we observe on long-term stock returns might be driven by compensation for some type of information risk that is captured by disclosure characteristics. Easley and O'Hara (2004) produce an asset pricing model in which a firm's information environment affects the cost of capital, whereby cost of capital is decreasing in information quality (i.e. less private information) and information precision. Increasing the difficulty of testing theoretical predictions, Lambert et al. (2007) and Gao (2010) show that the direction of the relationship between cost of capital and disclosure quality is very much ambiguous and Kothari et al. (2009) show empirically that measures of disclosure quality and disclosure content are often conflated. Yet, although, risk-based explanations of our findings are possible, many of the relationships that we observe in the data are more consistent with managers exploiting limited investor attention.

There are a range of other mandatory and voluntary disclosures that are ignored in this study: quarterly 10-Q filings, management forecasts, earnings announcements and pre-announcements, and so on. If characteristics of these disclosures are correlated with 10-K disclosures, there is a possibility that we are capturing some unobserved effects. However, the 10-K is arguably the most difficult to process piece of information disclosed by US firms; other disclosures are shorter and easier to digest.

6.   Conclusion

This paper examines the characteristics and variations within firms' 10-K filings over a 20 year sample period. We find that MD&A disclosures are more informative to investors than footnote disclosures in the immediate days of the 10-K filing. Our results further suggest that firms'10-K narratives that break from the default choice of simply repeating last year's

narrative or from being boilerplate disclosures commonly used within the industry are informative to investors. However, consistent with limited attention or high processing costs, we also find that investors generally under-react to negative information contained in the 10-K narratives as their characteristics are highly predictive of negative future stock returns after controlling for risk factors as well as associated with significantly lower future operating performance. Our results are also suggestive of managers' incentives to exploit investors' limited attention through disclosure tone and through the disclosure of information that is different in nature and content in the MD&A section compared to the footnotes.

The findings in this paper have implications for regulators, accounting standard-setters, and preparers of financial statements. For regulators and standard-setters, the differential between investors' reactions to the MD&A narrative and their reaction to the Notes to the Financial Statements may be concerning. The current Chairwoman of the SEC has expressed the need for disclosure reform to tackle the "information overload" (White, 2013) that investors face as a result of excessive, boilerplate, or complex disclosures. Big Four firms are currently proposing changes to MD&A and footnote disclosures to improve presentation to investors (EY, 2014). Our research adds to this debate by highlighting areas of disclosure that investors seem to have greater difficulty processing. For the preparers of financial statements, this research has obvious implications about how to structure disclosures to provide more effective and digestible disclosures to the market, or conversely how to enhance earnings management and obscure information from investors. For investors the message is clear: there is value in reading companies' annual reports, and especially understanding the cause of changes to narrative disclosures and footnotes.

Further research could study the relative characteristics of within-firm voluntary and mandatory disclosures to produce a comprehensive picture of how managers vary disclosure by outlet, and the effects on investor reaction and information content. This is beyond the

scope of this study. Nonetheless, this research details significant information content in accounting disclosures and differences in the impact of characteristics of the MD&A and footnotes.

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Figure 1. Procter & Gamble 10-K for the year ended 30 June 2014. This table provides a breakdown of the length of Procter & Gamble's 2014 10-K by section, including the item number and title for each section, as well as a page count. Proxy indicates that the 10-K refers to the firm's proxy filing (DEF 14A).

Item	Title	# Pages
Part I		
1	Business	2
1A	Risk Factors	3.5
1B, 2, 3, 4	Miscellaneous	0.5
	Executive Officers	2
Part II		
5	Stock price, dividends, repurchases	4
6	Selected Financial Data	1
7	Management's Discussion and Analysis	24
8	Financial Statements	8
	Notes to the Financial Statements	28
Part III		
10, 11	Corporate governance and executive compensation	Proxy
12	Employee share plans	2
13, 14, 15	Related parties, director independence	Proxy

Table 1. Sample Construction. This table shows the sample selection process of the Management Discussion & Analysis (MD&A) and Notes to the Financial Statements (Footnotes) from 1993-2014. The process involves downloading all available 10-K filings from the SEC EDGAR database, extracting the MD&A and Footnotes, matching CIK firm identifiers to GVKEYs (Compustat) and PERMNOs (CRSP), and merging the data with CRSP and Compustat.

Initial sample of extracted MD&A and Footnotes	58,203
MD&A and Footnotes < 1000 characters	(6,198)
Duplicate CIK-fiscal years	(94)
No GVKEY match	(9,265)
No PERMNO match	(9,937)
Missing Compustat data (missing Total Assets)	(2,882)
Missing CRSP return data (missing 1-year raw ret.)	(1,115)
Final usable sample	**28,712**

Table 2. Sample Summary Statistics.

This table shows summary statistics for the sample of firm-years with both MD&A and Footnote disclosures available from 1993 to 2014. Panel A shows summary statistics for variables related to MD&A and Footnote disclosures. Variables are defined in Section 3 of the text. *Length* is the number of words in a disclosure after removing tables; *Change* is one minus a firm's year-on-year vector cosine similarity; *Within-Industry Similarity* is the average pairwise similarity between a firm's disclosures and all other firms' disclosures in a given year, within three-digit SIC code industry; *MD&A-Footnote Similarity* is the vector cosine similarity between the MD&A disclosure and Footnote disclosure within a firm-year filing; *Sentiment* is the number of Loughran-McDonald (2011) financial sentiment words as a percentage of words in each disclosure; *Net Positive* is the percentage of Positive words minus the percentage of Negative words within a firm-year disclosure.

Panel B shows summary statistics for the dependent variables measuring investor response and firm performance. Variables are defined in Section 3 of the text. CAR is the market-adjusted cumulative abnormal return in the [-1, +2] window around the 10-K filing date. Absolute CAR is the absolute value of CAR. RMSE (20 day) and RMSE (1 year) are the root-mean-squared-errors of a 4-factor returns model for the windows [+3, +20] and [+3, +250] following the 10-K filing date, respectively. 4 Factor Return (1 month) and 4 Factor Return (1 year) are the difference between a firm's buy-and-hold return minus a buy-and-hold risk-adjusted benchmark return over the windows [+3, +20] and [+3, +250] following the 10-K filing date, respectively. ΔROA (t) and ΔROA (t+1) are the change in return on assets for the current and subsequent fiscal year, respectively. Discretionary Accruals (t) and Discretionary Accruals (t+1) are the Jones Model discretionary accruals estimated cross-sectionally within 2-digit SIC codes, for the current and subsequent fiscal year respectively.

Panel A: Disclosure Variables

Disclosure Variables	Mean	St. Dev.	1%	10%	25%	50%	75%	90%	99%
Footnote Length (Words)	8,832	5,186	1,377	3,748	5,226	7,640	11,117	15,355	27,577
MD&A Length (Words)	7,470	4,722	1,251	2,645	3,984	6,459	9,764	13,569	24,052
Footnote Change	0.06	0.07	0.01	0.02	0.03	0.04	0.07	0.11	0.41
MD&A Change	0.08	0.07	0.01	0.02	0.04	0.06	0.10	0.17	0.36
Footnote Within-Industry Sim.	0.67	0.10	0.34	0.54	0.62	0.69	0.73	0.76	0.81
MD&A Within Industry Sim.	0.55	0.10	0.32	0.43	0.49	0.55	0.61	0.68	0.78
MD&A-Footnote Similarity	0.64	0.13	0.30	0.47	0.56	0.65	0.74	0.80	0.90
Footnote Sentiment									
Positive	0.95%	0.33%	0.30%	0.57%	0.73%	0.92%	1.14%	1.38%	1.95%
Negative	2.40%	0.96%	0.62%	1.29%	1.74%	2.28%	2.93%	3.69%	5.25%
"Net Positive"	-1.45%	0.98%	-4.31%	-2.75%	-1.99%	-1.33%	-0.78%	-0.31%	0.45%
MD&A Sentiment									
Positive	1.43%	0.55%	0.47%	0.81%	1.05%	1.35%	1.73%	2.15%	3.10%
Negative	2.74%	1.20%	0.58%	1.35%	1.88%	2.58%	3.45%	4.39%	6.06%
"Net Positive"	-1.31%	1.23%	-4.56%	-2.94%	-2.07%	-1.22%	-0.47%	0.18%	1.28%
Net Positive: MD&A - FN	0.14%	1.12%	-2.63%	-1.27%	-0.55%	0.15%	0.83%	1.49%	2.94%

Panel B: Dependent Variables

Dependent Variables	Mean	St. Dev.	1%	10%	25%	50%	75%	90%	99%
CAR	-0.34%	8.45%	-26.73%	-8.86%	-3.57%	-0.20%	3.07%	8.04%	25.39%
Absolute CAR	5.63%	6.85%	0.07%	0.54%	1.42%	3.33%	7.07%	13.48%	33.53%
RMSE (1 year)	4.02%	2.91%	0.80%	1.39%	2.03%	3.21%	5.06%	7.67%	15.32%
4 Factor Return (1 year)	4.36%	81.82%	-159.30%	-67.71%	-33.15%	-2.86%	26.95%	71.92%	303.51%
ΔROA (t)	-0.95%	14.54%	-55.59%	-11.85%	-3.45%	-0.06%	2.51%	8.62%	46.12%
ΔROA (t+1)	-1.02%	14.60%	-55.10%	-11.94%	-3.41%	-0.06%	2.48%	8.47%	46.57%

Table 3. Correlations. This table shows Spearman (below the diagonal) and Pearson (above the diagonal) correlations for disclosure and firm characteristics. Variables are defined in Table 2, and Section 3 of the text. * denotes significance at the 1% level.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 Footnote Log-Length		0.7460*	0.1122*	0.1499*	-0.0400*	0.0820*	0.3672*	0.1589*	0.3746*	-0.0701*	0.1522*	0.3970*	0.002	0.0216*	0.0956*	0.3433*
2 MD&A Log-Length	0.7549*		0.0516*	0.2067*	-0.0668*	0.1326*	0.2861*	0.0961*	0.3042*	0.0011	0.3001*	0.3952*	0.0053	0.0306*	0.0350*	0.3239*
3 Footnote Change	0.1832*	0.1075*		0.2615*	0.2839*	0.0687*	0.0936*	0.0529*	0.018	0.0155	-0.0252*	0.0585*	-0.0005	0.0266*	-0.0112	0.0317*
4 MD&A Change	0.1659*	0.2792*	0.4317*		0.0695*	0.2527*	0.1629*	0.0693*	0.0430*	-0.0359*	-0.0285*	0.1159*	0.0079	0.1152*	-0.0579*	0.0618*
5 Footnote Industry Similarity	-0.1748*	-0.1667*	0.0908*	0.0034		0.4686*	0.0507*	0.0203*	0.0259*	0.0202*	0.0346*	-0.0954*	0.0081	-0.0146	-0.0945*	-0.1071*
6 MD&A Industry Similarity	0.0128	0.0477*	0.0288*	0.1112*	0.4128*		0.2087*	0.0529*	0.0671*	-0.0372*	0.0970*	0.0119	0.0058	0.0616*	-0.0533*	-0.0646*
7 MD&A-Footnote Similarity	0.3734*	0.3066*	0.0294*	0.1229*	-0.1025*	0.1812*		0.1644*	0.2558*	-0.0948*	0.1215*	0.1061*	0.0069	0.0503*	0.1032*	0.1338*
8 Footnote % positive	0.2277*	0.1420*	0.0801*	0.0652*	-0.0347*	0.0429*	0.1629*		0.0854*	0.3380*	0.0401*	0.1272*	-0.0072	-0.0152	-0.0176*	0.0977*
9 Footnote % negative	0.4077*	0.3367*	-0.0106	0.0323*	-0.0461*	0.0392*	0.2230*	0.1057*		-0.0223*	0.4844*	0.0403*	-0.0123	-0.0726*	-0.0053	0.0941*
10 MD&A % positive	-0.0548*	0.0548*	0.0095	-0.013	0.0590*	0.0493*	-0.0609*	0.3332*	0.0122		0.1501*	0.0822*	-0.0133	-0.0136	-0.0496*	0.0160*
11 MD&A % negative	0.1434*	0.2768*	-0.0435*	-0.0363*	0.0338*	0.0951*	0.1466*	0.0413*	0.4969*	0.1719*		-0.0718*	0.0163*	-0.1090*	-0.0249*	0.0728*
12 Log Market Capitalisation	0.4214*	0.4271*	0.1351*	0.1645*	-0.1181*	0.0478*	0.0961*	0.1775*	0.0397*	0.0827*	-0.0925*		-0.0354*	0.2504*	-0.0211*	0.3029*
13 Boot-to-market	-0.0605*	-0.0668*	0.0229*	0.0094	0.0078	0.0482*	0.0841*	-0.0376*	0.0328*	-0.0625*	0.1506*	-0.3683*		0.0082	-0.0347*	-0.0021
14 ROA	-0.0500*	-0.0262*	0.0865*	0.1503*	-0.0270*	0.0275*	-0.0065	-0.0218*	-0.1967*	0.0134	-0.2514*	0.4066*	-0.1877*		-0.1272*	0.1175*
15 Leverage	0.1986*	0.0789*	0.0063	-0.0735*	-0.1037*	0.0014	0.1833*	-0.0209*	-0.0376*	-0.0816*	-0.0419*	0.0231*	-0.0037	0.0392*		0.0414*
16 Number of Business Segments	0.3028*	0.2766*	0.0823*	0.0658*	-0.1273*	-0.0798*	0.1465*	0.1046*	0.0693*	0.0024	0.0619*	0.2549*	0.0811*	0.1251*	0.1344*	

Table 4. Absolute Announcement Returns. This table shows the results of OLS regressions of Absolute CAR (dependent variable) on disclosure and firm characteristics. The regressions use industry (Ken French's 48 industry classification) and fiscal year fixed effects. Errors are clustered by industry. Variables are defined in Table 2, and Section 3 of the text. T-statistics are shown in brackets. ***, **, and * denote significance at the 1%, 5% and 10% levels respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Total Log-Length	1.17***	1.55***	1.65***	1.65***	1.57***	1.32***	1.62***
	(8.89)	(7.89)	(4.87)	(7.48)	(7.82)	(6.85)	(8.28)
Footnote Log-Length		-0.38**	-0.37	-0.44**	-0.29*	-0.45***	-0.44***
		(-2.42)	(-1.52)	(-2.32)	(-1.79)	(-2.78)	(-2.83)
MD&A Change			5.21***				
			(6.13)				
Footnote Change			1.05*				
			(1.76)				
MD&A Industry Similarity				-1.38*			
				(-1.97)			
Footnote Industry Similarity				0.44			
				(0.67)			
MD&A-Footnote Similarity					-1.03**		
					(-2.16)		
MD&A Net Positive %						-0.05	
						(-1.37)	
Footnote Net Positive %						-0.30***	
						(-4.53)	
MD&A-Footnote Net. Pos.							0.07*
							(1.84)
Log Market Capitalisation	-0.67***	-0.66***	-0.63***	-0.67***	-0.66***	-0.65***	-0.66***
	(-15.31)	(-15.60)	(-11.87)	(-14.60)	(-15.62)	(-16.34)	(-15.33)
Book-to-market	-0.04	-0.04	0.02	-0.06	-0.04	-0.06	-0.04
	(-0.46)	(-0.45)	(0.17)	(-0.76)	(-0.45)	(-0.75)	(-0.45)
ROA	-4.17***	-4.16***	-4.33***	-4.07***	-4.16***	-3.95***	-4.16***
	(-5.79)	(-5.83)	(-6.26)	(5.79)	(-5.83)	(-6.13)	(-5.85)
ΔROA	0.34	0.34	0.73	0.29	0.34	0.25	0.34
	(0.52)	(0.52)	(1.42)	(0.44)	(0.52)	(0.41)	(0.52)
Leverage	1.20***	1.17***	1.05***	1.15***	1.17***	1.13***	1.17***
	(4.93)	(4.82)	(4.76)	(4.71)	(4.94)	(4.84)	(4.82)
Log Number of Business Segments	-0.07	-0.08	-0.06	-0.11	-0.08	-0.08	-0.08
	(-0.72)	(-0.79)	(-0.57)	(-1.10)	(-0.79)	(-0.88)	(-0.79)
N	22,964	22,964	14,929	22,344	22,964	22,964	22,964
Adjusted R²	0.500	0.500	0.501	0.501	0.500	0.501	0.500
Fixed Effects	Year & Ind.	Year & Ind.	Year & Ind.	Year & Ind.	Year & Ind.	Year & Ind.	Year & Ind.
Error Clustering	Industry	Industry	Industry	Industry	Industry	Industry	Industry

Table 5. Signed Announcement Returns. This table shows the results of OLS regressions of CAR (dependent variable) on disclosure and firm characteristics. The regressions use industry (Ken French's 48 industry classification) and fiscal year fixed effects. Errors are clustered by industry. Variables are defined in Table 2, and Section 3 of the text. T-statistics are shown in brackets. ***, **, and * denote significance at the 1%, 5% and 10% levels respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Total Log-Length	-0.41**	-0.04	-0.14	-0.11	-0.07	0.02	0.02
	(-2.09)	(-0.12)	(-0.36)	(-0.33)	(-0.21)	(0.05)	(0.08)
Footnote Log-Length		-0.37*	-0.17	-0.32	-0.49**	-0.44*	-0.42*
		(-1.86)	(-0.78)	(-1.45)	(-2.57)	(-2.00)	(-1.95)
MD&A Change			-5.44***				
			(-4.60)				
Footnote Change			-0.44				
			(-0.46)				
MD&A Industry Similarity				0.80			
				(1.00)			
Footnote Industry Similarity				-0.16			
				(-0.22)			
MD&A-Footnote Similarity					1.29***		
					(2.86)		
MD&A Net Positive %						0.07	
						(1.02)	
Footnote Net Positive %						-0.09	
						(-1.57)	
MD&A-Footnote Net. Pos.							0.07
							(1.22)
Log Market Capitalisation	-0.08	-0.08	-0.09	-0.08	-0.08	-0.09	-0.08
	(-1.25)	(-1.25)	(-1.34)	(-1.17)	(-1.22)	(-1.33)	(-1.30)
Book-to-market	0.02	0.02	0.11	0.02	0.02	0.03	0.02
	(0.10)	(0.10)	(0.59)	(0.11)	(0.09)	(0.15)	(0.14)
ROA	3.33***	3.33***	3.42***	3.34***	3.32***	3.30***	3.31***
	(6.41)	(6.40)	(5.55)	(6.31)	(6.40)	(6.21)	(6.39)
ΔROA	-0.31	-0.31	-0.38	-0.31	-0.31	-0.31	-0.31
	(-0.61)	(-0.61)	(-0.63)	(-0.60)	(-0.61)	(-0.61)	(-0.62)
Leverage	0.07	0.07	0.14	0.08	0.05	0.07	0.07
	(0.22)	(0.22)	(0.39)	(0.26)	(0.17)	(0.24)	(0.23)
Log Number of Business Segments	0.28*	0.28*	0.34*	0.27*	0.28*	0.28*	0.28*
	(1.80)	(1.81)	(1.92)	(1.71)	(1.83)	(1.81)	(1.81)
N	22,964	22,964	14,929	22,344	22,964	22,964	22,964
Adjusted R²	0.019	0.019	0.025	0.019	0.019	0.019	0.019
Fixed Effects	Year & Ind.	Year & Ind.	Year & Ind.	Year & Ind.	Year & Ind.	Year & Ind.	Year & Ind.
Error Clustering	Industry	Industry	Industry	Industry	Industry	Industry	Industry

Table 6. One-Year Future Volatility. This table shows the results of OLS regressions of 1-year 4-factor RMSE (dependent variable) on disclosure and firm characteristics. The regressions use industry (Ken French's 48 industry classification) and fiscal year fixed effects. Errors are clustered by industry. Variables are defined in Table 2, and Section 3 of the text. T-statistics are shown in brackets. ***, **, and * denote significance at the 1%, 5% and 10% levels respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Total Log-Length	0.39***	0.52***	0.55***	0.52***	0.51***	0.41***	0.49***
	(10.33)	(6.46)	(5.86)	(6.15)	(6.54)	(4.66)	(6.17)
Footnote Log-Length		-0.12*	-0.12	-0.13*	-0.15**	-0.10	-0.10
		(-1.95)	(-1.43)	(-1.86)	(-2.16)	(-1.60)	(-1.67)
MD&A Change			0.55**				
			(2.64)				
Footnote Change			0.48				
			(1.50)				
MD&A Industry Similarity				0.08			
				(0.49)			
Footnote Industry Similarity				0.03			
				(0.16)			
MD&A-Footnote Similarity					0.28**		
					(2.15)		
MD&A Net Positive %						-0.06***	
						(-4.65)	
Footnote Net Positive %						-0.04*	
						(-1.77)	
MD&A-Footnote Net. Pos.							-0.02*
							(-1.93)
Prior Year RMSE	0.66***	0.66***	0.64***	0.66***	0.66***	0.65***	0.66***
	(35.93)	(35.81)	(30.49)	(34.99)	(35.63)	(35.16)	(35.86)
Log Market Capitalisation	-0.23***	-0.23***	-0.23***	-0.23***	-0.23***	-0.23***	-0.23***
	(-14.93)	(-15.04)	(-12.11)	(-14.61)	(-14.81)	(-15.31)	(-14.84)
Book-to-market	0.00	0.00	0.01	0.01	0.00	-0.01	0.00
	(0.06)	(0.07)	(0.31)	(0.25)	(0.02)	(-0.29)	(0.01)
ROA	-1.55***	-1.56***	-1.66***	-1.54***	-1.56***	-1.51***	-1.55***
	(-8.50)	(-8.58)	(-7.50)	(-8.58)	(-8.64)	(-9.34)	(-8.61)
ΔROA	-0.31***	-0.31***	-0.32**	-0.30***	-0.30**	-0.32***	-0.31***
	(-2.70)	(-2.71)	(-2.36)	(-2.70)	(-2.69)	(-2.76)	(-2.71)
Leverage	0.82***	0.82***	0.78***	0.81***	0.80***	0.81***	0.82***
	(10.03)	(9.86)	(7.08)	(9.64)	(9.63)	(9.56)	(9.88)
Log Number of Business Segments	-0.03	-0.03	-0.01	-0.02	-0.03	-0.03*	-0.03
	(-1.42)	(1.53)	(-0.52)	(-1.26)	(-1.42)	(-1.78)	(-1.55)
N	22,991	22,991	14,946	22,371	22,991	22,991	22,991
Adjusted R²	0.873	0.873	0.874	0.873	0.873	0.873	0.873
Fixed Effects	Year & Ind.	Year & Ind.	Year & Ind.	Year & Ind.	Year & Ind.	Year & Ind.	Year & Ind.
Error Clustering	Industry	Industry	Industry	Industry	Industry	Industry	Industry

Table 7. One-Year Future Returns. This table shows the results of OLS regressions of 1-year 4-factor returns (dependent variable) on disclosure and firm characteristics. The regressions use industry (Ken French's 48 industry classification) and fiscal year fixed effects. Errors are clustered by industry. Variables are defined in Table 2, and Section 3 of the text. T-statistics are shown in brackets. ***, **, and * denote significance at the 1%, 5% and 10% levels respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Total Log-Length	1.21	4.51	3.87	4.29	4.24	5.31	5.55	4.84
	(0.64)	(1.09)	(0.69)	(0.99)	(1.01)	(1.27)	(1.35)	(1.23)
Footnote Log-Length		-3.27	-3.01	-3.45	-4.47	-4.20	-4.18	-3.75
		(-0.93)	(-0.61)	(-0.94)	(-1.26)	(-1.18)	(-1.18)	(-1.09)
MD&A Change			-43.02***					
			(-4.19)					
Footnote Change			-24.92**					
			(-2.36)					
MD&A Industry Similarity				4.88				
				(0.48)				
Footnote Industry Similarity				4.52				
				(0.63)				
MD&A-Footnote Similarity					12.69***			
					(2.73)			
MD&A Net Positive %						0.98*		
						(1.74)		
Footnote Net Positive %						-1.30**		
						(-2.06)		
MD&A-Footnote Net. Pos.							1.08*	2.48***
							(2.01)	(5.87)
Low Quartile ROA Dummy (D)								-0.41
								(-0.21)
(D) x MD&A-FN Net. Pos.								-5.62***
								(-3.97)
Log Market Capitalisation	-2.97***	-2.98***	-3.33***	-3.05***	-2.96***	-3.00***	-3.02***	-3.46***
	(-7.73)	(-7.86)	(-8.03)	(-8.54)	(-7.85)	(-8.26)	(-8.10)	(-8.27)
Book-to-market	7.12***	7.12***	7.14***	6.59***	7.10***	7.16***	7.18***	6.99***
	(4.81)	(4.82)	(3.60)	(4.67)	(4.83)	(4.80)	(4.83)	(4.63)
ROA	18.59***	18.49***	18.07***	18.67***	18.39***	18.52***	18.34***	18.08**
	(2.89)	(2.87)	(2.73)	(2.86)	(2.84)	(2.91)	(2.86)	(2.58)
ΔROA	-15.12*	-15.09*	-20.64**	-15.33*	-15.04*	-15.18*	-15.11*	-16.22*
	(-1.82)	(-1.82)	(-2.24)	(-1.83)	(-1.81)	(-1.83)	(-1.82)	(-1.98)
Leverage	-1.25	-0.96	-3.35	-0.98	-1.14	-0.97	-0.93	-0.82
	(-0.29)	(-0.22)	(-0.58)	(-0.23)	(-0.27)	(-0.22)	(-0.22)	(-0.28)
Log Num. of Business Segments	1.37	1.43	1.48	1.17	1.45	1.44	1.45	1.32
	(1.36)	(1.41)	(1.09)	(1.18)	(1.42)	(1.41)	(1.42)	(1.21)
N	22,991	22,991	14,946	22,371	22,991	22,991	22,991	22,991
Adjusted R²	0.046	0.046	0.052	0.045	0.046	0.046	0.046	0.047
Fixed Effects	Year & Ind.	Year & Ind.	Year & Ind.	Year & Ind.	Year & Ind.	Year & Ind.	Year & Ind.	Year & Ind.
Error Clustering	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry

Table 8. Contemporaneous ΔROA. This table shows the results of OLS regressions of ΔROA (t) (dependent variable) on disclosure and firm characteristics. The regressions use industry (Ken French's 48 industry classification) and fiscal year fixed effects. Errors are clustered by industry. Variables are defined in Table 2, and Section 3 of the text. T-statistics are shown in brackets. ***, **, and * denote significance at the 1%, 5% and 10% levels respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Total Log-Length	-2.99***	-3.23***	-3.25***	-3.14***	-3.28***	-2.32***	-2.85***
	(-3.67)	(-3.51)	(-3.82)	(-3.40)	(-3.59)	(-2.83)	(-3.17)
Footnote Log-Length		0.24	0.35	0.06	0.01	-0.10	-0.09
		(0.47)	(0.65)	(0.10)	(0.02)	(-0.20)	(-0.17)
MD&A Change			-9.13***				
			(-3.63)				
Footnote Change			-0.92				
			(-0.44)				
MD&A Industry Similarity				0.10			
				(0.05)			
Footnote Industry Similarity				1.33			
				(0.74)			
MD&A-Footnote Similarity					2.46		
					(2.88)		
MD&A Net Positive %						0.61***	
						(9.21)	
Footnote Net Positive %						-0.02	
						(-0.22)	
MD&A-Footnote Net. Pos.							0.39***
							(6.57)
Log Market Capitalisation	1.31***	1.31***	1.21***	1.35***	1.32***	1.24***	1.29***
	(4.90)	(4.89)	(3.87)	(4.88)	(4.89)	(4.62)	(4.79)
Book-to-market	0.35	0.35	0.18	0.38	0.34	0.43	0.38
	(1.01)	(1.01)	(0.52)	(1.04)	(0.99)	(1.24)	(1.10)
ROA (t-1)	-13.61***	-13.61***	-13.16***	-13.63***	-13.62***	-13.84***	-13.65***
	(-4.61)	(-4.61)	(-3.26)	(-4.57)	(-4.61)	(-4.61)	(-4.62)
Leverage	-0.57	-0.56	0.10	-0.43	-0.61	-0.46	-0.54
	(-0.88)	(-0.85)	(0.17)	(-0.63)	(-0.91)	(-0.71)	(-0.83)
Log Number of Business Segments	0.34*	0.34*	0.24	0.42**	0.35*	0.35*	0.35*
	(1.80)	(1.83)	(1.21)	(2.20)	(1.88)	(1.84)	(1.88)
N	23,038	23,038	14,975	22,417	23,038	23,038	23,038
Adjusted R²	0.101	0.101	0.107	0.101	0.101	0.103	0.102
Fixed Effects	Year & Ind.	Year & Ind.	Year & Ind.	Year & Ind.	Year & Ind.	Year & Ind.	Year & Ind.
Error Clustering	Industry	Industry	Industry	Industry	Industry	Industry	Industry

Table 9. Future ΔROA. This table shows the results of OLS regressions of ΔROA (t+1) (dependent variable) on disclosure and firm characteristics. The regressions use industry (Ken French's 48 industry classification) and fiscal year fixed effects. Errors are clustered by industry. Variables are defined in Table 2, and Section 3 of the text. T-statistics are shown in brackets. ***, **, and * denote significance at the 1%, 5% and 10% levels respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Total Log-Length	-0.85*	-0.47	-0.86	-0.47	-0.50	-0.65	-0.39	-0.29
	(-1.73)	(-0.63)	(-1.45)	(-0.52)	(-0.67)	(-0.88)	(-0.53)	(-0.38)
Footnote Log-Length		-0.38	-0.15	-0.39	-0.53	-0.43	-0.45	-0.43
		(-0.87)	(-0.36)	(-0.75)	(-1.19)	(-0.92)	(-0.96)	(-0.93)
MD&A Change			-7.88**					
			(-2.51)					
Footnote Change			-2.33					
			(-1.32)					
MD&A Industry Similarity				-1.10				
				(-0.34)				
Footnote Industry Similarity				-0.11				
				(-0.08)				
MD&A-Footnote Similarity					1.62*			
					(1.89)			
MD&A Net Positive %						-0.03		
						(-0.33)		
Footnote Net Positive %						-0.27**		
						(-2.01)		
MD&A-Footnote Net. Pos.							0.09	0.37***
							(0.87)	(3.24)
Low Quartile ROA Dummy (D)								-2.86***
								(-3.35)
(D) x MD&A-FN Net. Pos.								-1.29***
								(-4.58)
Log Market Capitalisation	0.29***	0.29***	0.24***	0.27***	0.29***	0.30***	0.29***	0.29***
	(4.32)	(4.34)	(2.85)	(4.61)	(4.47)	(4.22)	(4.24)	(4.24)
Book-to-market	-0.43**	-0.43**	-0.31*	-0.46**	-0.43**	-0.45**	-0.42**	-0.42**
	(-2.22)	(-2.24)	(-1.70)	(-2.33)	(-2.27)	(-2.28)	(-2.22)	(-2.22)
ROA	-15.62***	-15.63***	-15.22***	-15.52***	-15.64***	-15.49***	-15.64***	-15.64***
	(-8.28)	(8.30)	(-7.52)	(-8.06)	(-8.29)	(-8.31)	(-8.29)	(-8.29)
ΔROA	-12.26***	-12.26***	-14.15***	-12.35***	-12.26***	-12.32***	-12.26***	-12.26***
	(-4.94)	(-4.95)	(-4.82)	(-4.93)	(4.94)	(-5.01)	(-4.95)	(-4.95)
Leverage	4.73***	4.77***	4.51***	4.74***	4.76***	4.75***	4.78***	4.78***
	(7.17)	(7.20)	(5.89)	(7.10)	(7.13)	(7.25)	(7.22)	(7.22)
Log Num. of Business Segments	0.88***	0.89***	0.75***	0.87***	0.90***	0.89***	0.89***	0.89***
	(4.39)	(4.49)	(3.78)	(4.36)	(4.55)	(4.53)	(4.49)	(4.49)
N	20,862	20,862	13,587	20,288	20,862	20,862	20,862	20,862
Adjusted R²	0.113	0.113	0.122	0.113	0.114	0.114	0.113	0.118
Fixed Effects	Year & Ind.	Year & Ind.	Year & Ind.	Year & Ind.	Year & Ind.	Year & Ind.	Year & Ind.	Year & Ind.
Error Clustering	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry