



Notes Readability and Discretionary Accruals

Ayman Aldahray^a

a) Accounting Department, College of Business Administration, Taibah University, Al Madinah-SAUDI ARABIA.

^aCorresponding author.

E-mail address: adahry@taibah.edu.sa

ARTICLE INFO

Article history:

Received 9 December 2020
Accepted 2 November 2022
Available online 01 July 2024

JEL classification:
M41

Keywords:

Discretionary accruals
Fog Index
Notes to the financial statements

ABSTRACT

Narrative disclosures should help external users to better understand managerial discretionary accruals. However, both narrative disclosures and accruals earnings are subject to managerial discretion. This study investigates the relationship expected between earnings management, as gauged by discretionary accruals (DA), and readability, as measured by the Fog Index (Li, 2008). Prior studies investigate the relationship in terms of the readability of the management discussion and analysis (MD&A) which is not directly related to the disclosure of accruals estimation and is also not an audited section of the company's annual report. This study makes a unique contribution to the extant literature by providing empirical evidence on the association between DA and the readability of the notes to the financial statements (hereafter, Notes). Based on 1,021 observations for UK data drawn from FTSE All Share non-financial firms over the period 2005 to 2011, an ordinary least squares (OLS) regression finds a positive relation between DA and the readability of the Notes. A positive association shows that managers of firms who manage DA tend to produce more readable Notes. This result is likely due to the absence of an incentive to manage DA along with managers awareness of the associated risk of producing less-readable Notes, which might result in deeper analysis by auditors and, consequently, a greater chance of them detecting DA. Thus, market participants should not always rely on the greater readability of the Notes as an indicator of higher-quality financial statement numbers, as the results suggest that greater readability is associated with higher DA.

©2024 ASEPUC. Published by EDITUM - Universidad de Murcia. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Legibilidad de las notas y devengo discrecional

RESUMEN

La información narrativa debería ayudar a los usuarios externos a comprender mejor los ajustes por periodificación discrecionales de la dirección. Sin embargo, tanto la información narrativa como los beneficios devengados están sujetos a la discrecionalidad de la dirección. Este estudio investiga la relación esperada entre la gestión de los beneficios, medida por los devengos discrecionales (DA), y la legibilidad, medida por el índice Fog (Li, 2008). Los estudios anteriores investigan la relación en términos de legibilidad de la discusión y análisis de la dirección (MD&A), que no está directamente relacionada con la divulgación de la estimación de los devengos y tampoco es una sección auditada del informe anual de la empresa. Este estudio aporta una contribución única a la literatura existente al proporcionar evidencia empírica sobre la asociación entre los DA y la legibilidad de las notas a los estados financieros. Basándose en 1.021 observaciones de datos del Reino Unido extraídos de empresas no financieras del FTSE All Share durante el período 2005 a 2011, una regresión por mínimos cuadrados ordinarios (MCO) encuentra una relación positiva entre los DA y la legibilidad de las Notas. Una asociación positiva muestra que los directivos de las empresas que gestionan los DA tienden a producir Notas más legibles. Es probable que este resultado se deba a la ausencia de incentivos para gestionar los DA y a que los directivos son conscientes del riesgo que conlleva producir notas menos legibles, lo que podría dar lugar a un análisis más profundo por parte de los auditores y, en consecuencia, a una mayor probabilidad de que detecten los DA. Así pues, los participantes en el mercado no deberían confiar siempre en la mayor legibilidad de las notas como indicador de una mayor calidad de los estados financieros, ya que los resultados sugieren que una mayor legibilidad está asociada a un mayor DA.

©2024 ASEPUC. Publicado por EDITUM - Universidad de Murcia. Este es un artículo Open Access bajo la licencia CC BY-NC-ND (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Códigos JEL:
M41

Palabras clave:

Devengo discrecional
Índice de niebla
Notas a los estados financieros

1. Introduction

The term ‘earnings management’ refers to the process of altering the financial statements based on managers’ judgement for either misleading the users of financial statements about a firm’s performance or affecting contractual outcomes that rely on reported earnings (Healy & Wahlen, 1999). Discretionary accruals (DA) as a proxy of earnings management have been the focus of many research studies over recent decades (e.g., Healy, 1985; Jones, 1991; Dechow & Skinner, 2000; Stubben, 2010; Eshleman & Guo, 2020). Despite the well-documented adverse impact of DA on the communication of firm performance (e.g., Guay et al., 1996; Aldahray & Alnori, 2020), the use of DA to manage earnings continues regardless as accounting standards allow managers the latitude to estimate many of the figures in the financial statements. However, such standards also require managers to disclose these estimations in the Notes and such disclosure should thus aid statement users to better understand the estimations and assumptions made by managers in determining DA.

The Notes are scrutinised by financial statement users to seek additional information about accounting estimations (Faello, 2015). Their propensity to examine these estimations is strengthened given that they are the primary source of DA (Lev et al., 2010). For example, information about the estimation of bad debt expenses, a key component of DA, may be found in the Notes. Thus, the level of DA is expected to influence the readability of the Notes. The quality of readability of the Notes is considered fundamental as unreadable Notes are unable to serve the purpose of clarifying managerial estimations of DA. Consistent with this view, the extant empirical evidence (e.g., Abernathy et al., 2019) suggests that managers may use less readable Notes to obfuscate poor performance. Thus, regulators around the world have highlighted the importance of ensuring the readability of company annual reports. For example, the UK’s Financial Reporting Council (FRC) issued a discussion paper in 2011 entitled, “Cutting clutter: combating clutter in annual reports” (FRC, 2011), following an earlier paper entitled, “Louder than words: Principles and actions for making corporate reports less complex and more relevant” (FRC, 2011). In these two papers, the FRC highlights its concern regarding the complexity of corporate annual reports. Furthermore, in 2007, Christopher Cox, the then-chairman of the US Securities and Exchange Commission (SEC), recommended the use of the ‘Fog Index’ as a tool to judge the readability of annual reports to ensure corporate compliance with plain English rules.¹

Building on these regulatory concerns, later studies investigate the readability of narrative texts in annual reports (e.g., Lim et al., 2018; Xu et al., 2020). Lo et al. (2017) examine the association between DA and the Fog Index applied to the readability of the MD&A rather than the Notes. The study intends to investigate the relationship between readability and managing DA to meet previous years’ earnings, as the MD&A narrative provides the manager’s overview of the company’s past and future performance (Li, 2008). However, details of accounting estimations and other information related to DA are not expected to be found in the MD&A as such information is generally made available in the Notes (Li, 2008; Kim et al., 2019). While a strong relationship may be expected between the readability of the Notes and DA, this relationship has not been examined empirically in the

extant literature. Thus, this study contributes to the literature in several ways. First, it examines UK data to examine the readability of the Notes. Although the readability of UK company narrative disclosures has been examined in previous studies, such studies did not focus on the Notes. For example, some UK studies have focused on the readability of narrative disclosures including the Chairman’s statement (e.g., Still, 1972; Jones, 1988; Smith & Taffler, 1992; Sydserff & Weetman, 2002; Clatworthy & Jones, 2003); risk disclosure (e.g., Linsley & Lawrence, 2007); and the remuneration report (e.g., Hooghiemstra et al., 2017). This study of the relationship between earnings management and the readability of the Notes for UK firms is important and makes several valuable contributions to the literature. The UK is the fifth largest economy in the world (Kumar, 2020). In addition, the country’s institutional features and financial reporting requirements may be considered unique (Akbar, et al., 2013). Furthermore, the content of UK annual reports has received broad attention from both regulators and companies, with such context attracting a “considerable amount of thought and experimentation” (Athanasakou et al., 2020, p.28). In addition, UK firms enjoy a great deal of discretion over both the format and content of their financial statements, in contrast to firms in the US where annual reports are structured by 10-K requirements (Athanasakou et al., 2020).

Second, the study employs a randomly generated UK sample, where managers have no incentive to manage earnings or obscure information. In contrast, previous studies such as Lo et al. (2017) investigate the relationship between DA and readability using a sample of firms that had met or just beaten their previous year’s earnings. However, meeting an earnings benchmark is a well-documented incentive for managing DA (e.g., Matsumoto, 2002; Payne & Robb, 2000; Burgstahler & Eames, 2006), while earnings benchmarks may also motivate managers to obscure information (Bloomfield, 2002). Therefore, the employment of a random sample in this study contributes to the literature by providing the first empirical evidence of a relationship between readability and DA, without introducing a particular incentive for manipulation of either element in the sample. Finally, and most importantly, an investigation of this relationship is important as the users of annual reports typically refer to the Notes rather than the MD&A for information concerning accounting estimations (Faello, 2015; Kim et al., 2019). This novel focus should enhance users’ understanding of the estimations that result in DA (Lev et al., 2010). Therefore, the Notes are manually collected from the annual reports for each sample firm to examine empirical evidence on the relationship between their readability and DA.

The remainder of this paper is structured as follows. Section 2 reviews the extant literature and develops the research hypothesis. Section 3 describes the research design, including how readability is measured, the metrics employed to study DA, and the estimation of the OLS model. Section 4 presents and discusses the results. Finally, Section 5 concludes the paper and discusses the limitations of the study.

2. Background and Hypothesis Development

An annual report constitutes an important mechanism for a manager to communicate the firm’s performance, with the report readers in general focusing on earnings as the key measure of performance (Dechow, 1994). While managers present accounting numbers (such as earnings) in the annual report they are also allowed to explain them in narrative text form. Such narrative text provides the opportunity for a clear

¹Details of the plain English rules can be found at <https://www.sec.gov/pdf/handbook.pdf>.

and uncomplicated explanation of the accounting numbers, offsetting any ambiguity in the numbers themselves. However, both the textual and numerical information in annual reports may be subject to manipulation by firm managers. Such manipulation of numerical information is well documented in the DA literature (e.g., [Rosner, 2003](#); [Lehmann, 2016](#)). In addition, managers may manipulate narratives by rendering the text more difficult to read ([Ajina et al., 2016](#)).

Following concerns about the complexity of narrative texts, particularly as they represent a large proportion of the annual report (around 80% according to [Lo et al., 2017](#)), there has been a growing demand for greater text readability ([Lim et al., 2018](#)). Readability can be defined simply as the ease of reading a given text ([Smeuninx et al., 2020](#)). [Laksmmana et al. \(2012\)](#) argue that imposing different degrees of readability may be employed by managers as a component of impression management.

[Li \(2008\)](#) produces a seminal paper on readability and earnings and finds a positive relationship between readability, as measured by the Fog Index, and the level of earnings. He shows that managers in firms with lower earnings tend to make their narrative disclosures more complex. However, [Bloomfield \(2008\)](#) argues that Li's findings are unclear in terms of managerial role and the intentional vagueness in the narrative texts of the annual reports. Bloomfield suggests that, while managers may intentionally make narrative texts more complex to obfuscate bad performance, such complexity may also be attributed to the fact that bad news is simply more difficult to communicate.

Building on Bloomfield's work, several studies examine the relationship between DA (as a proxy for earnings management) and readability (e.g., [Ajina et al., 2016](#); [Lo et al., 2017](#)). [Ajina et al. \(2016\)](#) study French-listed firms and find a negative relation between the level of DA and the readability of annual reports as captured by the Fog Index.² However, the authors recognise in their research limitations that they study the readability of the annual reports taken as a whole, without taking into account the nature of the information provided. Underlining this limitation, [Chen et al. \(2015\)](#) argue that the Fog Index does not apply to the entire annual report.

[Lo et al. \(2017\)](#) investigate the MD&A section of US firm reports to examine the relationship between the Fog Index calculated for this narrative and earnings management for those firms using DA to beat prior year earnings. Beating prior year earnings is a well-documented incentive for managing DA (e.g., [Degeorge et al., 1999](#); [Jackson, 2018](#)). Consistent with the prior literature, Lo et al. identify those firms that only meet or just beat the previous year's earnings and find that the relationship between DA and readability is negative, suggesting that those managers manipulating earnings through DA to beat the previous year's earnings tend to complexify their MD&A. According to [Xu et al. \(2019\)](#), the literature provides two possible explanations for unreadable text in company annual reports: complexity that is usually associated with firm losses along with the opportunistic behaviour of managers.

This research study builds upon the work of [Lo et al. \(2017\)](#) though differs in that it does not specify a particular incentive for managing DA, nor does it include a sample of firms more likely to do so. In addition, this study differs from previous research in its focus on the readability of the Notes which are argued to be more relevant to DA than MD&A. Ac-

ording to [Li \(2008\)](#), "[t]he MD&A section contains the discussion by managers of past performance and future outlook [while] Notes to financial statements have detailed assumptions behind the reported financial numbers" (p.226). Further, Li indicates that managers tend to use the Notes more than MD&A as a strategic deterrence to investors. Further, discussion of accounting estimations and changes to such estimations are more likely to be found in the Notes rather than in the MD&A. [Kim et al. \(2019\)](#) highlight the important role of the Notes in enabling the users of annual reports to evaluate whether the performance changes embodied in the accounting figures are driven by real business trends or by DA.

Furthermore, focusing on the readability of the Notes rather than the readability of the MD&A section is important given the rather different direction of relation expected between DA and the readability of the Notes. [Lo et al. \(2017\)](#) argue that managers who determine DA are more likely to produce less readable MD&A as higher quality disclosure can improve the ability of users to identify earnings management, hence reducing managerial opportunities to manage DA ([Jo & Kim, 2007](#)). Moreover, Lo et al. argue that obfuscation in the MD&A section may be considered a direct effect of earnings management being undetected. They argue that this is because complexity increases the costs borne by investors of analysing the disclosures and also decreases the depth of their analysis, thereby reducing the probability of the earnings management being detected. However, a key difference between the MD&A section and the Notes is that the latter are audited while the former are not ([Brown & Tucker, 2011](#); [Tucker, 2015](#)). Thus, analysing the more complex Notes may result in higher costs for both the firms in addition to the investors. [Abernathy et al. \(2019\)](#) find that less readable Notes are associated with higher audit fees. Therefore, while managers may obfuscate the content of the MD&A section, they are unlikely to obfuscate the content of the audited Notes when managing DA, as doing so would both require more effort and increase the likelihood of auditor investigation and thus the opportunity to detect DA. [Caramanis & Lennox \(2008\)](#) find fewer occurrences of earnings management when auditors' efforts are increased. Thus, managers may choose to produce more readable Notes to avoid greater audit fees and greater auditor analysis that is more likely to result in the detection of DA, particularly when there is no strong pressure on them to manage DA.

The avoidance of producing less readable Notes (i.e. the propensity to produce more readable Notes) is likely to be more pronounced in firms engaging more prominent auditors as they already pay relatively higher audit fees compared to firms that engage smaller audit firms (e.g., [Lee, 1996](#); [André et al., 2016](#); [Xu, et al., 2019](#))³. The tendency to avoid producing less readable notes (the tendency to produce more readable Notes) is increased further in the absence of an incentive to manage DA, as managing DA while at the same time producing less readable Notes may both be considered managerial opportunist behaviours ([Hossain et al., 2019](#); [Cho et al., 2022](#)). Therefore, managers who have no incentive to manage DA may choose not to attract auditor attention by producing less readable Notes, that is, they are more likely to produce more readable Notes.

Although the readability of the Notes has been investigated in the accounting literature (e.g., [Cheung & Lau, 2016](#); [Abernathy et al., 2019](#)), its relationship with DA has yet to be examined. Based on the arguments as well as the evidence drawn from the extant literature, and motivated by the ab-

²A positive relationship between DA and the Fog Index suggests a negative relationship between DA and readability, as a higher score on the Fog Index indicates that the text is more difficult to read.

³The vast majority of the sample firms in this study are audited by big audit firms.

sence of empirical evidence on the association between the readability of the Notes and DA, the following hypothesis is developed:

H: There is a positive relationship between the readability of the Notes and DA.

3. Research Design

To test the research hypothesis stated above, supporting a positive relation between the readability of the Notes and DA, UK data from FTSE All Share Index non-financial firms is collected for the period 2005 to 2011. Due to their distinctive financial reporting requirements, financial sector firms are commonly excluded from studies of readability in the existing literature (Linsley & Lawrence, 2007; Leung et al., 2015). Further, McNichols & Stubben (2018) argue that focusing on non-random samples where there is an incentive to manage DA may result in research bias. Thus, to provide a clearer understanding of the relationship between the readability of the Notes and DA, this study uses a random sample where there was no known firm incentive to manage DA.

To calculate the Fog Index for the Notes, annual reports are manually collected from various sources, including the Northcote database, company website investor pages, and the ICC Information Database. The annual report files which constitute the sample are required to be searchable and presented in PDF or MS Word format. Any unsearchable item is converted using the file conversion software package "PDF Converter Enterprise" to ensure that the sample text may be extracted for the readability analysis. However, where the files scanned are found not to be convertible, perhaps due to technical conversion errors, they are excluded from the analysis. The DA variable and control variables are collected for the remaining sample firms from the Thomson Reuters Spreadsheet Link. Table 1 presents the results of the sample selection procedure.

Table 1. Sample selection procedure

| Procedure | Observations |
|--|--------------|
| Initial sample in FTSE All-Share for the period 2005-2011 | 4,207 |
| Less: Financial firms observations | (1,344) |
| Less: Observations with missing electronic annual reports | (224) |
| Less: Observations with annual reports not meeting readability analysis requirements (file type and conversion issues) | (658) |
| Less: firm-years with insufficient data | (960) |
| Final sample in firm years | 1,021 |

3.1. Readability Measurement

Consistent with the extant financial reporting literature (e.g., Miller, 2010; Lehavy & Merkley, 2011; Lo et al., 2017) this study employs the Fog Index to measure readability. More specifically, the Seven Formulas Application is used to calculate the index⁴, as designed by the Micro Power & Light Company. The Fog Index score indicates the number of years of formal education that a reader would require to be able to understand the text, a higher score indicating text that is more difficult to read.

The Fog Index is thus computed as given in Equation 1:

$$\text{Fog} = 0.4(\text{words per sentence} + \text{percentage of complex words}) \quad (1)$$

⁴This software package includes seven readability measures: FOG, Flesch reading ease, Flesch grade level, Powers-Sumner-Kearl, SMOG, FORCAST, and the Fry graph.

Based on the index score arising from this equation, reading ease may be evaluated as follows. A score greater than or equal to 18 indicates that the text is unreadable. A score falling between 14 and 18 suggests that the text is difficult to read. An ideal score for readability lies between 12 and 14, while a score of 10-12 is considered acceptable. Finally, the text is considered to require a 'childish' reading level if the Fog Index produces lies between 8 and 10.

For the purposes of robustness, the Flesch (1948) Reading Ease Index is also computed as a readability measure. Once the data is collected and cleaned, the Flesch Reading Ease Index is obtained from the Seven Formulas Application as measured in Equation 2 below.

$$\text{Reading ease score} = 206.835 - 1.015(ASL) - 0.846(SPW) \quad (2)$$

where *ASL* is the average sentence length and *SPW* is the number of syllables for each 100 words. The score takes the form of a value ranging from 0 to 100, where a higher score represents more readable text.⁵

3.2. Discretionary Accruals Measurement

In common with the established literature, this paper employs DA as a gauge of earnings management behaviour. The Kothari et al. (2005) model captures DA is computed as given in Equation 3.

$$\begin{aligned} \text{TotAccr}/TA_{i,t-1} = & \alpha_0 + \alpha_1(1/TA_{i,t-1}) \\ & + \alpha_2(\Delta REV_{i,t} - \Delta REC_{i,t}/TA_{i,t-1}) \\ & + \alpha_3(PPE_{i,t}/TA_{i,t-1}) + \alpha_4ROA_{it} + \varepsilon_{i,t} \end{aligned} \quad (3)$$

where *TotAccr* represents total accruals; *TA_{t-1}* is total assets for year *t-1*; ΔREV_t is revenue in year *t* less revenue in year *t-1*; ΔREC_t is net receivables in year *t* less net receivables in year *t-1*; *PPE* is gross property, plant, and equipment; and *ROA* is the return on assets ratio.

This model is estimated in cross-section by industry and year and requires a minimum of six observations, and the resulting residuals constitute the DA. As a robustness test, DA are also computed using the Jones model, as modified by Dechow et al. (1995), where the steps are identical to those of Kothari et al. (2005), though excluding the ROA variable.

3.3. Empirical Model

The regression model estimated to test the study hypothesis is given in Equation 4 below.

$$\begin{aligned} FOG_{i,t} = & \alpha_0 + \beta_1 DA_{i,t} + \beta_2 * * SIZE_{i,t} + \beta_3 PROF_{i,t} + \beta_4 EAR_{i,t} \\ & + \beta_5 AGE_{i,t} + \beta_6 DIV_{i,t} + \beta_7 ISSUE_{i,t} + \beta_8 EXTRA_{i,t} \\ & + \beta_9 CRISIS_{i,t} + \beta_{10} LIT_{i,t} + IND + Year + vt_{i,t} \end{aligned} \quad (4)$$

In the regression model, *FOG* is the dependent variable, representing the readability measure calculated in Equation 1. *DA* is the key independent variable as it gauges earnings management in terms of DA as measured in Equation 3. The model also includes control variables that might affect readability, consistent with the extant literature (e.g., Li, 2008). The first control variable is *SIZE*, which is measured as the natural logarithm of total assets. Larger firms are expected to have less readable annual reports as a result of the typically greater complexity of their business models (Li, 2008).

⁵While readability is positively associated with the Flesch reading ease index score, it is negatively associated with the Fog Index.

In addition, this study controls for two earnings variables found to be significant in Li's study. *PROF* is a dummy variable that takes the value of 1 if there is a positive operating profit, while *EAR* is earnings scaled by total assets. Controlling for these earnings-related variables is essential as the annual reports of profitable firms are likely to be more readable (Bloomfield, 2008). Further, the age of the firm, *AGE*, measured as the number of years since the firm was listed, is expected to be negatively associated with the Fog Index as older firms tend to be more transparent (Li, 2008; Laksmana et al., 2012). In addition, a positive relationship is expected between readability and dividends as firms with more readable narrative disclosures tend to pay more dividends (Hasan & Habib, 2020). Thus, the regression model controls for dividends with a dummy variable, *DIV*, that takes the value 1 if the firm had paid a dividend in the year, and 0 otherwise.

Li (2008) argues that the issuance of shares by the firm is expected to positively affect readability as he finds evidence of greater annual report complexity in firms that did not issue new equity. Therefore, the regression model controls for an *ISSUE* dummy variable that takes the value of 1 if the firm issues common shares during the year, and 0 otherwise. This dummy variable is expected to be positively associated with readability. Furthermore, Li argues that the reporting of special items requires further explanation from management, in turn negatively affecting readability. Therefore, the dummy variable *EXTRA* is introduced to take the value of 1 if the firm reports extraordinary items, and 0 otherwise. This dummy variable is expected to be negatively associated with readability.

In addition, previous studies have suggested that readability is affected by the occurrence of financial crises (e.g., Lahtinen & Shipe, 2017; Moreno & Jones, 2021). Thus, consistent with the literature, a dummy variable *CRISIS* takes the value of 1 for the year 2007 and 0 for the remaining years (González, 2015; André et al., 2016). Finally, Ben-civenga (1997, cited in Li, 2008) argues that firms located in industries that are at greater risk of litigation tend to complexify their annual reports. Thus, a dummy variable *LIT* is introduced which takes the value of 1 if the firm is in a high-litigation risk industry, and 0 otherwise.

4. Results and discussion

Table 2 presents the descriptive statistics for the model variables. The mean value of the Fog Index is 13.82 and therefore the readability of the Notes falls within the 'ideal' range of 12-14. In contrast to this ideal score, in their empirical study Lo et al. (2017) report an 'unreadable' score on the Fog Index⁶. There are three potential reasons for this contrasting result between the present study and the extant literature, with particular reference to Lo et al. (2017) as the study the most relevant to the current research. First, the 'unreadable' score observed by Lo et al. relates to poorly performing firms which are expected to complexify their narrative disclosure, in part as bad news is more difficult to communicate and in part because managers have an incentive to obfuscate information when firm performance is bad (Li, 2008; Lo et al., 2017). However, the 'ideal' score in the present study is observed in relation to a random sample rather than a sample of poorly performing firms. Second, most of the literature studies (e.g., Li, 2008; Lo et al., 2017) relate to US data while the present study employs UK data. Accord-

ing to the empirical findings of Lundholm et al. (2014), the narrative text of US firms tends to be less readable than that of non-US text. Further, while previous studies use UK data to investigate readability the analysis does not relate to the Notes section (e.g., Still, 1972; Jones, 1988; Smith & Taffler, 1992; Sydserff & Weetman, 2002; Clatworthy & Jones, 2003; Linsley & Lawrence, 2007; Lo et al., 2017). Thirdly, many sample firms in this study are audited by 'Big 4' audit firms which provide higher quality audits. More readable Notes might be expected for firms audited by the Big 4 as auditors would otherwise identify unreadable disclosure as a primary indicator of a poor quality audit (Christensen et al., 2016).

Table 2. Descriptive statistics for the model variables

| Variable | N | Mean | S.D. | Min | Max |
|---------------|-------|-----------|-----------|------------|-----------|
| <i>FOG</i> | 1,021 | 13.82807 | 1.465744 | 10.4 | 17.9 |
| <i>DA</i> | 1,021 | 0.0177691 | 0.0649676 | -0.1614233 | 0.2514343 |
| <i>SIZE</i> | 1,021 | 1.817473 | 0.1974621 | 0.3266343 | 1.976704 |
| <i>PROF</i> | 1,021 | 0.892051 | 0.3104683 | 0 | 1 |
| <i>EAR</i> | 1,021 | 8.840881 | 9.633441 | -20.38 | 38.95 |
| <i>AGE</i> | 1,021 | 40.7669 | 32.25606 | 7 | 130 |
| <i>DIV</i> | 1,021 | 0.3405299 | 0.4741201 | 0 | 1 |
| <i>ISSUE</i> | 1,021 | 0.6663395 | 0.4717516 | 0 | 1 |
| <i>EXTRA</i> | 1,021 | 0.205103 | 0.4039752 | 0 | 1 |
| <i>CRISIS</i> | 1,021 | 0.6973555 | 0.4596278 | 0 | 1 |
| <i>LIT</i> | 1,021 | 0.1302644 | 0.3367591 | 0 | 1 |

Definitions of variables: *FOG* is the Fog Index. *DA* are the discretionary accruals measured using the Kothari et al. (2005) model. *SIZE* is the natural logarithm of total assets. *PROF* is a dummy variable that takes the value of 1 if there is a positive operating profit, and 0 otherwise. *EAR* is earnings scaled by total assets. *AGE* is the firm age in years since incorporation. *DIV* is a dummy variable that takes the value of 1 if the firm paid a dividend in the year, and 0 otherwise. *ISSUE* is a dummy variable that takes the value of 1 if the firm issued common shares during the year, and 0 otherwise. *EXTRA* is a dummy variable that takes the value of 1 when the firm reported extraordinary items, and 0 otherwise. *CRISIS* is a dummy variable that equals 1 for the year 2007, and 0 for the remaining study years. *LIT* is a dummy variable that takes the value of 1 if a firm belongs to a high litigation industry, and zero otherwise.

Table 3 presents the correlation matrix for the variables employed in the regression analysis. The Fog Index variable (the inverse measure of readability) is negatively correlated with the variable *ISSUE* and positively correlated with the variable *EXTRA*. These correlations indicate that readability improves when common shares are issued by the firm during the year but deteriorates when extraordinary items are reported.

Table 4 presents the regression model results for the relationship between earnings management (as measured by *DA*) and readability (as measured by the Fog Index). *DA* is measured using the Kothari et al. (2005) model in column I and the modified Jones model in column II. The key variable of interest is *DA*, as measured by the Kothari et al. model, has a significant negative coefficient, indicating a positive relationship between *DA* and the readability of the Notes (as a higher Fog Index represents lower readability). The results in column II are qualitatively similar across the model results and thus are shown only for the purposes of confirmation. This finding is inconsistent with Lo et al. (2017) who finds a negative relationship between *DA* and readability showing that managers who manipulate earnings to beat the previous year's figures through *DA* have more complex MD&A narrative. However, when comparing the results of the estimated model with those of previous studies such as that of Lo et al., it is important to highlight the differences between the samples. The Lo et al. study employs a sample of firms that are more likely to manage *DA* to beat their previous year's earnings, and the Fog Index scores indicate that the MD&A texts are unreadable. However, the Notes which are the focus of the current study sample are classed as ideal in terms

⁶The MD&A sections studied by Lo et al. (2017) have a mean score on the Fog Index of over 18.

Table 3. Correlation matrix for the model variables

| Variables | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|-------------|---------|---------|--------|---------|--------|---------|---------|--------|--------|-------|-------|
| (1) FOG | 1.000 | | | | | | | | | | |
| (2) DA | -0.056 | 1.000 | | | | | | | | | |
| (3) Size | 0.043 | 0.028 | 1.000 | | | | | | | | |
| (4) EAR | -0.037 | 0.018 | -0.038 | 1.000 | | | | | | | |
| (5) PROF | 0.038 | 0.233* | -0.023 | 0.029 | 1.000 | | | | | | |
| (6) AGE | -0.059 | 0.034 | -0.041 | 0.016 | 0.018 | 1.000 | | | | | |
| (7) DIV | 0.051 | -0.027 | -0.024 | -0.019 | 0.152* | 0.014 | 1.000 | | | | |
| (8) ISSUE | -0.082* | -0.084* | -0.029 | 0.102* | 0.048 | 0.017 | -0.065 | 1.000 | | | |
| (9) EXTRA | 0.091* | 0.010 | 0.002 | -0.092* | -0.035 | 0.039 | -0.092* | -0.026 | 1.000 | | |
| (10) CRISIS | -0.010 | 0.027 | 0.003 | 0.111* | 0.077 | -0.017 | -0.323* | 0.073 | 0.048 | 1.000 | |
| (11) LIT | -0.060 | 0.034 | -0.041 | 0.157* | -0.016 | -0.107* | -0.011 | -0.040 | -0.030 | 0.003 | 1.000 |

* Correlations are significant at the 1% level. The variables are defined in the notes to Table 2.

of readability according to the Fog Index, and, further, the sample of firms employed is randomly selected.

Thus, in the Lo et al. (2017) study, when managers have a strong incentive to manage DA to beat the previous year's earnings, they are more likely to make the MD&A narrative text unreadable, producing a negative relationship between DA and readability. However, when the narrative texts are classed as ideal in terms of readability, as is the case in the current study sample, and when there is additionally no incentive for managers to manage DA, a positive relationship between DA and readability is shown. This positive relationship implies that those managers who manage firm earnings do not at the same time complexify their narrative texts. Thus, in the absence of strong pressure to manage DA, managers appear to avoid complexity and produce more readable Notes. According to Chen & Tseng (2021), "managers in firms with earnings management incentives are more likely to reduce Notes readability" (p.86). The converse can thus be argued that, without earnings management incentives, managers are less likely to reduce Notes readability when managing DA. In addition, in contrast to the MD&A section, the Notes to the accounts are audited (Brown, & Tucker, 2011; Tucker, 2015). Indeed, while the Notes are an integral element of the financial statements, containing accounting policies and assumptions about the audited numbers (Lee, 2012), the MD&A section is instrumental for managers to communicate their perspectives on their firms to investors (Li, 2010; Brown & Tucker, 2011). In addition, Amel-Zadeh & Faasse (2016) show that investors' reactions to MD&A disclosure are much stronger than their reaction to Notes disclosure. Therefore, while managers are expected to obscure unaudited MD&A, they are unlikely to obscure the audited Notes when managing earnings. The readers of the MD&A section (primarily current and potential investors) have no power or resources to acquire further information and must therefore rely on deep analysis of that complex section. As a result, managers may complexify the MD&A section to obscure information from investors. McKee (2005) argues that less informed investors have a lower propensity to detect earnings management. In contrast, auditors who read the Notes as a key component of their work are likely to be more sceptical and require clarification from management regarding unreadable Notes. As a result, managers may avoid complexifying the Notes when managing DA. According to Blanco et al. (2021), auditors pay more attention to, and invest more effort in, auditing financial statements when the narrative disclosure is complex. In addition, although the sample of this study is randomly selected, the vast majority of the

firms are audited by a Big 4 audit firm⁷. Employing a Big 4 audit firm is a well-known proxy for signalling audit quality, implying a greater ability to detect DA (Blanco et al., 2021). Thus, it appears that managers who manage DA also provide more readable Notes to avoid being detected by auditors, particularly where Big 4 audit firms are engaged.⁸

Regarding the control variables, Table 4 shows that Fog is

Table 4. Results of the readability and earnings management models

| $FOG_{i,t} = \alpha_0 + \beta_1 DA_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 PROF_{i,t} + \beta_4 EAR_{i,t} + \beta_5 AGE_{i,t} + \beta_6 DIV_{i,t} + \beta_7 ISSUE_{i,t} + \beta_8 EXTRA_{i,t} + \beta_9 CRISIS_{i,t} + \beta_{10} LIT_{i,t} + IND + Year + \nu_{i,t}$ | | |
|--|----------------------|----------------------|
| Variables | I | II |
| DA | -1.205* (-1.709) | -1.491* (-1.700) |
| SIZE | 0.376* (1.665) | 0.390* (1.721) |
| PROF | 0.253 (1.602) | 0.256 (1.627) |
| EAR | 0.000 (0.065) | 0.001 (0.110) |
| AGE | -0.003** (-2.134) | -0.003** (-2.234) |
| DIV | 0.047 (0.338) | 0.049 (0.351) |
| ISSUE | -0.239** (-2.479) | -0.237** (-2.451) |
| EXTRA | 0.356*** (3.059) | 0.360*** (3.093) |
| | 0.053 | 0.048 |
| CRISIS | (0.377) | (0.339) |
| LIT | -0.179 | -0.193 |
| LIT | (-1.301) | (-1.405) |
| Industry and year dummies | Yes | Yes |
| Constant | -60.540 (-0.726) | -62.833 (-0.756) |
| Observations | 1,021 | 1,021 |
| R-squared | 0.036 | 0.035 |
| Adj. R-squared | 0.024 | 0.024 |

Robust t-statistics are shown in parentheses. The significance levels are as follows: *** p < 0.01, ** p < 0.05, * p < 0.10. The dependent variable is the Fog Index. DA is the discretionary accruals measured using the Kothari et al. (2005) model in column I and modified Jones model in column II. The variables are defined in the notes to Table 2.

⁷The Big 4 audit firms are PricewaterhouseCoopers (PWC), Deloitte, Ernst & Young (EY), and Klynveld Peat Marwick Goerdeler (KPMG).

⁸Due to the small number of observations, as only 40 firms per year are audited by one of the non-Big 4, the present study did not empirically examine the impact of the Big 4 on notes readability.

positively associated with *SIZE*, thereby indicating a negative relationship between the readability of the Notes and the size of the firm.⁹ This association is expected as larger firms usually have more complex business models (Li, 2008). In addition, there is a positive relationship between the age of a firm (*AGE*) and the readability of its Notes. This is likely to be the result of user unfamiliarity with, and uncertainty concerning, newly established firms which in turn require longer and more complex Notes. Li argues that the financial statements of older firms have less information uncertainty which results in more readable annual reports.

Furthermore, Table 4 reveals a positive relationship between readability and the *ISSUE* variable, indicating that a firm's Notes are more readable when it issues common shares during the year. This finding is consistent with expectations and with the previous literature (e.g., Li, 2008). Finally, there is a negative relationship between readability and the *EXTRA* variable, a finding which is expected as reporting extraordinary items typically requires further explanation from management, resulting in less readable Notes.

As a robustness test, the Flesch Reading Ease Index is also used to investigate the relationship between readability and DA, the results reported in the Appendix. The results confirm the key results reported in Table 4, showing a positive relationship between DA and the readability of the Notes.¹⁰ Therefore, the hypothesis of this research study is confirmed.

5. Conclusion

This study contributes to the extant literature by providing new insights into the relationship between DA and the readability of the Notes. Readability is measured using the Fog Index applied to hand-collected and cleaned Notes for a sample of 1,021 observations for UK listed firms for the period of 2005 to 2011. While the relationship between readability and DA is examined in the literature by Lo et al. (2017), their examination focuses on MD&A readability in firms that are more likely to manage DA. However, the purpose of this study was to analyse the relationship between Notes readability and DA, thus the sample selected was not limited in this way. While a sample of firms expected to manage DA may provide evidence of managers' attitudes towards complexifying narrative texts to conceal DA, such findings would likely depend on the presence of the incentive and would not provide evidence of readability in the absence of such pressure. Therefore, the current study should provide a broader picture of readability and its association with DA.

The results of this study indicate a positive association between readability and DA which suggests that managers who manage DA also generate more readable Notes. Therefore, market participants should take care not to consider more readable Notes as a positive information signal, as they may actually be associated with more DA (greater earnings management). In addition, auditors take care to analyse the Notes in detail, even when they appear to be more readable. Future studies might investigate the impact of engaging non-Big 4 auditors on the relationship between readability and DA. Furthermore, further research might examine the relationship between the readability of the Notes and DA for a sample of firms with a particular incentive to manage DA, such as those firms beating their previous year's earnings or firms meeting analysts' forecasts.

⁹The Fog Index variable is negatively associated with readability, as a higher Fog Index score indicates lower readability.

¹⁰Unlike the Fog Index, a greater Flesch reading ease index score suggests greater readability.

This research has some limitations that should be considered when interpreting the results. The most significant limitation concerns the primary measure of readability. Loughran & McDonald (2014) suggest that the Fog Index is a poor proxy for readability of the financial statements as many of the words assessed to be 'complex' by the index may be readily understandable to users of those statements.

Acknowledgments

I am grateful to Bernardino Benito (Editor in chief) and two anonymous reviewers for their insightful suggestions which have significantly improved the paper. I also thank Sultan Altass for his generosity in providing Fog and Flesch Index data.

Funding

This research has not received any specific grants from public, commercial or non-profit funding bodies.

Conflicts of interest

The author declares that they have no conflict of interests.

References

- Abernathy, J.L., Guo, F., Kubick, T.R., & Masli, A. (2019). Financial statement footnote readability and corporate audit outcomes. *Auditing: A Journal of Practice & Theory*, 38(2), 1-26. <https://doi.org/10.2308/ajpt-52243>
- Ajina, A., Laouti, M., & Msolli, B. (2016). Guiding through the Fog: Does annual report readability reveal earnings management? *Research in International Business and Finance*, 38, 509-516. <https://doi.org/10.1016/j.ribaf.2016.07.021>
- Akbar, S., ur Rehman, S., & Ormrod, P. (2013). The impact of recent financial shocks on the financing and investment policies of UK private firms. *International Review of Financial Analysis*, 26, 59-70. <https://doi.org/10.1016/j.irfa.2012.05.004>
- Aldahray, A., & Alnori, F. (2020). Impact of regulatory environment on accruals manipulation of bankrupt firms. *Spanish Journal of Finance and Accounting/Revista Española de Financiación y Contabilidad*, 50(1), 114-142. <https://doi.org/10.1080/02102412.2020.1735209>
- Amel-Zadeh, A., & Faasse, J. (2016). The Information Content of 10-K Narratives: Comparing MD&A and Footnotes Disclosures (November 27, 2016). Available at SSRN: <https://ssrn.com/abstract=2807546> or <https://doi.org/10.2139/ssrn.2807546>
- André, P., Broye, G., Pong, C., & Schatt, A. (2016). Are joint audits associated with higher audit fees? *European Accounting Review*, 25(2), 245-274. <https://doi.org/10.1080/09638180.2014.998016>
- Athanasakou, V., Eugster, F., Schleicher, T., & Walker, M. (2020). Annual report narratives and the cost of equity capital: UK evidence of a U-shaped relation. *European Accounting Review*, 29(1), 27-54. <https://doi.org/10.1080/09638180.2019.1707102>
- Bergstresser, D., Desai, M., & Rauh, J. (2006). Earnings Manipulation, Pension Assumptions, and Managerial

- Investment Decisions. *The Quarterly Journal of Economics*, 121(1), 157–195. <http://www.jstor.org/stable/25098787>
- Blanco, B., Coram, P., Dhole, S., & Kent, P. (2021). How do auditors respond to low annual report readability? *Journal of Accounting and Public Policy*, 40(3), 106769. <https://doi.org/10.1016/j.jaccpubpol.2020.106769>
- Bloomfield, R.J. (2002). The “incomplete revelation hypothesis” and financial reporting. *Accounting Horizons*, 16(3), 233-243. <https://doi.org/10.2308/acch.2002.16.3.233>
- Bloomfield, R.J. (2008). Discussion of “annual report readability, current earnings, and earnings persistence”. *Journal of Accounting and Economics*, 45(2-3), 248-252. <https://doi.org/10.1016/j.jacceco.2008.04.002>
- Brown, S.V., & Tucker, J.W. (2011). Large-Sample Evidence on Firms’ Year-over-Year MD&A Modifications. *Journal of Accounting Research*, 49(2), 309–346. <http://www.jstor.org/stable/20869872>
- Burgstahler, D., & Eames, M. (2006). Management of earnings and analysts’ forecasts to achieve zero and small positive earnings surprise. *Journal of Business Finance and Accounting*, 33(5&6), 633-652. <https://doi.org/10.1111/j.1468-5957.2006.00630.x>
- Caramanis, C., & Lennox, C. (2008). Audit effort and earnings management. *Journal of Accounting and Economics*, 45(1), 116-138. <https://doi.org/10.1016/j.jacceco.2007.05.002>
- Chen, S., Miao, B., & Shevlin, T. (2015). A new measure of disclosure quality: The level of disaggregation of accounting data in annual reports. *Journal of Accounting Research*, 53(5), 1017-1054. <https://doi.org/10.1111/1475-679X.12094>
- Chen, T.K., & Tseng, Y. (2021). Readability of notes to consolidated financial statements and corporate bond yield spread. *European Accounting Review*, 30(1), 83-113. <https://doi.org/10.1080/09638180.2020.1740099>
- Cheung, E., & Lau, J. (2016). Readability of notes to the financial statements and the adoption of IFRS. *Australian Accounting Review*, 26(2), 162-176. <https://doi.org/10.1111/auar.12087>
- Cho, M., Hyeon, J., Jung, T., & Lee, W.J. (2022). Audit pricing of hard-to-read annual reports. *Asia-Pacific Journal of Accounting & Economics*, 29(2), 547-572. <https://doi.org/10.1080/16081625.2019.1600418>
- Christensen, B.E., Glover, S.M., Omer, T.C., & Shelley, M.K. (2016). Understanding audit quality: Insights from audit professionals and investors. *Contemporary Accounting Research*, 33(4), 1648-1684. <https://doi.org/10.1111/1911-3846.12212>
- Clatworthy, M., & Jones, M.J. (2003). Financial reporting of good news and bad news: evidence from accounting narratives. *Accounting and Business Research*, 33(3), 171-185. <https://doi.org/10.1080/00014788.2003.9729645>
- Cox, C. (2007). Speech by SEC Chairman: Closing Remarks to the Second Annual Corporate Governance Summit, March 23, USC Marshall School of Business, Los Angeles, California. Available at <https://www.sec.gov/news/speech/2007/spch032307cc.htm> (Accessed: 5 August 2020).
- Dechow, P.M. (1994). Accounting earnings and cash flows as measures of firm performance: The role of accounting accruals. *Journal of Accounting and Economics*, 18(1), 3-42. [https://doi.org/10.1016/0165-4101\(94\)90016-7](https://doi.org/10.1016/0165-4101(94)90016-7)
- Dechow, P.M., & Skinner, D.J. (2000). Earnings management: Reconciling the views of accounting academics, practitioners, and regulators. *Accounting Horizons*, 14(2), 235-250. <https://doi.org/10.2308/acch.2000.14.2.235>
- Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting Earnings Management. *Accounting Review*, 70(2), 193–225. <http://www.jstor.org/stable/248303>
- DeGeorge, F., Patel, J., & Zeckhauser, R. (1999). Earnings Management to Exceed Thresholds. *The Journal of Business*, 72(1), 1–33. <https://doi.org/10.1086/209601>
- Eshleman, J.D., & Guo, P. (2020). Do seasoned industry specialists provide higher audit quality? A re-examination. *Journal of Accounting and Public Policy*, 39(6), 1-15. <https://doi.org/10.1016/j.jaccpubpol.2020.106770>
- Faello, J. (2015). Understanding the limitations of financial ratios. *Academy of Accounting and Financial Studies Journal*, 19(3), 75-86.
- Flesch, R. (1948). A new readability yardstick. *Journal of Applied Psychology*, 32(3), 221-233. <https://doi.org/10.1037/h0057532>
- FRC (2011). *Cutting clutter: combating clutter in annual reports*, The Financial Reporting Council. Available at <https://www.frc.org.uk/getattachment/8250571d-4c6d-4d0a-9aa6-ef6a19c1fab2/Cutting-clutter-report-April-20112.pdf> (Accessed: 1 August 2020).
- FRC (2007). *Louder than words: Principles and actions for making corporate reports less complex and more relevant*. The Financial Reporting Council. Available at https://www.frc.org.uk/getattachment/53bf7b4b-0dbb-4586-b85b-b548ef28ca9e/FRC_DiscussionPaper_020609.pdf (Accessed: 1 August 2020).
- González, V.M. (2015). The financial crisis and corporate debt maturity: The role of banking structure. *Journal of Corporate Finance*, 35, 310-328. <https://doi.org/10.1016/j.jcorpfin.2015.10.002>
- Guay, W. R., Kothari, S. P., & Watts, R. L. (1996). A Market-Based Evaluation of Discretionary Accrual Models. *Journal of Accounting Research*, 34, 83–105. <https://doi.org/10.2307/2491427>
- Guay, W. R., Kothari, S. P., & Watts, R. L. (1996). A Market-Based Evaluation of Discretionary Accrual Models. *Journal of Accounting Research*, 34, 83–105. <https://doi.org/10.2307/2491427>
- Hasan, M, M, & Habib, A, (2020). Readability of narrative disclosures, and corporate liquidity and payout policies. *International Review of Financial Analysis*, 68, 101460.
- Healy, P.M. (1985). The effect of bonus schemes on accounting decisions. *Journal of Accounting and Economics*, 7, 85-107. [https://doi.org/10.1016/0165-4101\(85\)90029-1](https://doi.org/10.1016/0165-4101(85)90029-1)
- Healy, P.M., & Wahlen, J. (1999). A review of the earnings management literature and its implications for standard setting. *Accounting Horizons*, 13(4), 365-383. <https://doi.org/10.2308/acch.1999.13.4.365>
- Hooghiemstra, R., Kuang, Y.F., & Qin, B. (2017). Does obfuscating excessive CEO pay work? The influence of remuneration report readability on say-on-pay votes. *Accounting and Business Research*, 47(6), 695-729. <https://doi.org/10.1080/00014788.2017.1300516>
- Hossain, M., Hossain, M., Mitra, S., & Salama, F. (2019). Narrative disclosures, firm life cycle, and audit fees. *International Journal of Auditing*, 23(3), 403-423. <https://doi.org/10.1111/ijau.12169>
- Jackson, A.B., (2018). Discretionary accruals: earnings management... or not? *Abacus*, 54(2), 136-153. <https://doi.org/10.1111/abac.12117>
- Jo, K., & Kim, Y. (2007). Disclosure frequency and earnings management. *Journal of Financial Economics*, 84, 561-

590. <https://doi.org/10.1016/j.jfineco.2006.03.007>
- Jones, J. J. (1991). Earnings Management During Import Relief Investigations. *Journal of Accounting Research*, 29(2), 193–228. <https://doi.org/10.2307/2491047>
- Jones, M. J. (1988). A longitudinal study of the readability of the chairman's narratives in the corporate reports of a UK company. *Accounting and Business Research*, 18(72), 297–305. <https://doi.org/10.1080/00014788.1988.9729377>
- Kim, C., Wang, K., & Zhang, L. (2019). Readability of 10K reports and stock price crash risk. *Contemporary Accounting Research*, 36(2), 1184–1216. <https://doi.org/10.1111/1911-3846.12452>
- Kothari, S.P., Leone, A.J., & Wasley, C.E. (2005). Performance matched discretionary accrual measures. *Journal of Accounting and Economics*, 39(1), 163–197. <https://doi.org/10.1016/j.jacceco.2004.11.002>
- Kumar, R. (2020). India & South Asia: Geopolitics, regional trade and economic growth spillovers. *The Journal of International Trade & Economic Development*, 29(1), 69–88. <https://doi.org/10.1080/09638199.2019.1636121>
- Lahtinen, K.D., & Shipe, S. (2017). Readability of financial advisor disclosures. *Journal of Empirical Finance*, 44, 36–42. <https://doi.org/10.1016/j.jempfin.2017.08.002>
- Lakshmana, I., Tietz, W., & Yang, Y.W. (2012). Compensation discussion and analysis (CD&A): Readability and management obfuscation. *Journal of Accounting and Public Policy*, 31(2), 185–203. <https://doi.org/10.1016/j.jaccpubpol.2011.08.003>
- Lee, D.S.Y. (1996). Auditor market share, product differentiation and audit fees. *Accounting and Business Research*, 26(4), 315–324. <https://doi.org/10.1080/00014788.1996.9729521>
- Lee, Y.J. (2012). The effect of quarterly report readability on information efficiency of stock prices. *Contemporary Accounting Research*, 29(4), 1137–1170. <https://doi.org/10.1111/j.1911-3846.2011.01152.x>
- Lehavy, R., Li, F., & Merkley, K. (2011). The effect of annual report readability on analyst following and the properties of their earnings forecasts. *The Accounting Review*, 86(3), 1087–1115. <https://doi.org/10.2308/accr.00000043>
- Lehmann, N. (2016). The role of corporate governance in shaping accruals manipulation prior to acquisitions. *Accounting and Business Research*, 46(4), 327–364. <https://doi.org/10.1080/00014788.2015.1116969>
- Leung, S., Parker, L., & Curtis, J. (2015). Impression management through minimal narrative disclosure in annual reports. *The British Accounting Review*, 47(3), 275–289. <https://doi.org/10.1016/j.bar.2015.04.002>
- Lev, B., Li, S., & Sougiannis, T. (2010). The usefulness of accounting estimates for predicting cash flows and earnings. *Review of Accounting Studies*, 15(4), 779–807. <https://doi.org/10.1007/s11142-009-9107-6>
- Li, F. (2008). Annual report readability, current earnings, and earnings persistence. *Journal of Accounting and Economics*, 45(2-3), 221–247. <https://doi.org/10.1016/j.jacceco.2008.02.003>
- Li, F. (2010). The information content of forwardlooking statements in corporate filings—A naïve Bayesian machine learning approach. *Journal of Accounting Research*, 48(5), 1049–1102. <https://doi.org/10.1111/j.1475-679X.2010.00382.x>
- Lim, E.K., Chalmers, K., & Hanlon, D. (2018). The influence of business strategy on annual report readability. *Journal of Accounting and Public Policy*, 37(1), 65–81. <https://doi.org/10.1016/j.jaccpubpol.2018.01.003>
- Linsley, P.M. & Lawrence, M.J. (2007). Risk reporting by the largest UK companies: readability and lack of obfuscation. *Accounting, Auditing & Accountability Journal*, 20, 620–627. <https://doi.org/10.1108/09513570710762601>
- Lo, K. (2008). Earnings management and earnings quality. *Journal of Accounting and Economics*, 45(2-3), 350–357. <https://doi.org/10.1016/j.jacceco.2007.08.002>
- Lo, K., Ramos, F., & Rogo, R. (2017). Earnings management and annual report readability. *Journal of Accounting and Economics*, 63(1), 1–25. <https://doi.org/10.1016/j.jacceco.2016.09.002>
- Loughran, T., & McDonald, B. (2014). Measuring readability in financial disclosures. *Journal of Finance*, 69(4), 1643–1671. <https://doi.org/10.1111/jofi.12162>
- Lundholm, R.J., Rogo, R., & Zhang, J.L. (2014). Restoring the tower of Babel: How foreign firms communicate with US investors. *The Accounting Review*, 89(4), 1453–1485. <http://www.jstor.org/stable/24468347>
- Machuga, S., & Teitel, K. (2007). The effects of the Mexican corporate governance code on quality of earnings and its components. *Journal of International Accounting Research*, 6(1), 37–55. <https://doi.org/10.2308/jiar.2007.6.1.37>
- Matsumoto, D.A. (2002). Management's incentives to avoid negative earnings surprise. *The Accounting Review*, 77(3), 483–514. <https://doi.org/10.2308/accr.2002.77.3.483>
- McKee, T.E. (2005). *Earnings Management: An Executive Perspective*. Mason, Ohio, USA: Thomson Higher Education.
- McNichols, M.F., & Stubben, S.R. (2018). Research design issues in studies using discretionary accruals. *Abacus*, 54(2), 227–246. <https://doi.org/10.1111/abac.12128>
- Miller, B.P. (2010). The effects of reporting complexity on small and large investor trading. *The Accounting Review*, 85(6), 2107–2143. <http://www.jstor.org/stable/27895913>
- Moreno, A., & Jones, M.J. (2021). Impression management in corporate annual reports during the global financial crisis. *European Management Journal*, <https://doi.org/10.1016/j.emj.2021.08.007>
- Payne, J., & Robb, S. (2000). Earnings management: The effect of ex ante earnings expectations. *Journal of Accounting, Auditing and Finance*, 15(4), 371–392. <https://doi.org/10.1177/0148558X0001500401>
- Rosner, R.L. (2003). Earnings manipulation in failing firms. *Contemporary Accounting Research*, 20(2), 361–408. <https://doi.org/10.1506/8EVN-9KRB-3AE4-EE81>
- Smith, M., & Taffler, R. (1992). The chairman's statement and corporate financial performance. *Accounting & Finance*, 32(2), 75–90. <https://doi.org/10.1111/j.1467-629X.1992.tb00187.x>
- Still, M.D. (1972). The readability of chairmen's statements. *Accounting and Business Research*, 3(9), 36–39. <https://doi.org/10.1080/00014788.1972.9728995>
- Stubben, S.R. (2010). Discretionary revenues as a measure of earnings management. *The Accounting Review*, 85(2), 695–717. <http://www.jstor.org/stable/20744146>
- Sydserrff, R., & Weetman, P. (2002). Developments in content analysis: a transitivity index and Diction scores. *Accounting, Auditing & Accountability Journal*, 15(4), 523–545. <https://doi.org/10.1108/09513570210440586>
- Smeuninx, N., De Clerck, B., & Aerts, W. (2020). Measuring the readability of sustainability reports: A corpus-based analysis through standard formulae and NLP. *International Journal of Business Communication*, 57(1), 52–85. <https://doi.org/10.1177/2329488416675456>
- Tucker, J.W. (2015). The Relation between Disclosure Quality and Reporting Quality: A Discussion of Cassell, Myers,

- and Seidel. *Accounting, Organizations and Society*, 46(1), 39-43. <https://doi.org/10.1016/j.aos.2015.05.002>
- Xu, H., Dao, M., Wu, J., & Sun, H. (2020). Political corruption and annual report readability: evidence from the United States. *Accounting and Business Research*, 52(2), 166-200. <https://doi.org/10.1080/00014788.2020.1815516>
- Xu, Q., Fernando, G., Tam, K., & Zhang, W. (2019). Financial report readability and audit fees: a simultaneous equation approach. *Managerial Auditing Journal*, 35(3), 345-372. <https://doi.org/10.1108/MAJ-02-2019-2177>

Appendix

Appendix. Results of the readability and earnings management models

$$Flesch_{i,t} = \alpha_0 + \beta_1 DA_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 PROF_{i,t} + \beta_4 EAR_{i,t} + \beta_5 AGE_{i,t} + \beta_6 DIV_{i,t} + \beta_7 ISSUE_{i,t} + \beta_8 EXTRA_{i,t} + \beta_9 CRISIS_{i,t} + \beta_{10} LIT_{i,t} + IND + Year + v_{i,t}$$

| Variables | |
|---------------------------|-----------------------|
| DA | 6.132* (1.824) |
| SIZE | -1.504 (-1.203) |
| EAR | -1.257* (-1.953) |
| PROF | -0.013 (-0.631) |
| AGE | 0.010* (1.656) |
| DIV | 0.291 (0.490) |
| ISSUE | 1.078*** (2.629) |
| EXTRA | -1.832*** (-3.997) |
| CRISIS | -0.044 (-0.077) |
| LIT | 0.163 (0.273) |
| Industry and year dummies | Yes |
| Constant | 694.433 (1.953) |
| Observations | 1,021 |
| R-squared | 0.038 |
| Adj. R-squared | 0.027 |

Robust t-statistics are shown in parentheses. The significance levels are as follows: *** p < 0.01, ** p < 0.05, * p < 0.10. Robust t-statistics in parentheses. The dependent variable is the Flesch Index. DA is computed using the Kothari et al. (2005) model. The variables are defined in the notes to Table 2.