








# “Earnings management and impression management: European evidence”

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# EARNINGS MANAGEMENT AND IMPRESSION MANAGEMENT: EUROPEAN EVIDENCE

## Abstract

This study explores the relationship between Earnings Management and Impression Management in the context of some European listed companies. The analysis focuses on the readability of annual reports, measured by the file size. Earnings management is assessed using the modified Jones model. The sample consists of 2,953 listed companies from 17 industries of 24 European countries between 2012 and 2018 resulting in 13,020 firm-year observations. It has been found that one standard deviation increase in financial reports file size increases discretionary accruals in around 4%. These results are robust across different sample specifications in terms of firms' size, industry and country. The findings show that increased intensity in the use of discretionary accruals is obfuscated by the disclosure of less readable annual reports, implying that Earnings Management and Impression Management are used complementarily. The conclusions have impact both for investment management and for policy, preventing inefficient allocation of capital budgeting and providing additional information that improves regulation on financial reporting transparency.

## Keywords

discretionary accruals, financial reporting quality,  
obfuscation hypothesis, readability of annual reports

## JEL Classification

G30, M21, M41, O52

## INTRODUCTION

The need for information and transparent communication gives corporate media the status of potential vehicle of Impression Management (IM) that managers can use to manage the perceptions that the public builds about the company (Clatworthy & Jones, 2006). In fact, the literature has studied managers' communications from the perspective of IM as an attempt to obfuscate or reinforce information (Merkl-Davies & Brennan, 2007).

Empirical research on information obfuscation in financial reports has focused on the readability of the narratives disclosed by managers. Bloomfield (2008) suggests two alternative explanations for a positive relationship between the readability of annual reports and the level of reported earnings. The first is that the decreased readability of annual reports is an attempt by managers to obfuscate results, a practice included in the concept of IM (Merkl-Davies & Brennan, 2007). The second one is that bad news is just inherently more difficult to communicate and is contextualized as ontological theory. Ajina et al. (2016) and Lo et al. (2017) present evidence of management opportunism and they report a negative relationship between earnings management (EM) practice and narrative readability.

As vehicles of communication to external users, annual reports are subject to both IM and EM. However, the literature that explores the association between EM and IM is recent and, therefore, still scarce. Thus, this study evaluates the association between EM practices and the readability of annual reports in the context of European listed companies.

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## 1. LITERATURE REVIEW

Every year (or more frequently), managers release financial reports presenting the economic and financial performance of the companies. The report consists of the Financial Statements and discretionary information that is intended to explain and provide additional information regarding the Financial Statements. The Financial Statements encompass quantitative information and are presented in accordance with mandatory guidelines and standards, but discretionary information may be presented in the form of narratives, photographs, and graphs and is susceptible to being used as a tool to obfuscate a company's economic reality (Courtis, 1995). However, both Financial Statements and discretionary information are subject to judgement by managers, which gives them a margin to manage information for their own benefit despite the various levels of regulation (Gonçalves, 2022; Godfrey et al., 2003; Healy & Wahlen, 1999). In fact, although annual reports are considered to be a means of conveying information that enhances the decision-making process of their users, a more skeptical perspective has emerged that considers them to be potential vehicles for the disclosure of biased information (Gonçalves et al., 2022; Merkl-Davies & Brennan, 2007).

Research on discretionary information presents two schools of thought: The first is the incremental information school that fits into an informational perspective, i.e., it assumes that the disclosure of discretionary information aims to overcome the barrier of information asymmetries providing complementary and additional information and having as ultimate consequence the reduction of the cost of capital (Baginski et al., 2000). The second is the IM school that considers the disclosure of discretionary information to be a way of practicing opportunistic acts to satisfy the interests of the managers thus increasing information asymmetry between internal and external agents to the company (Aerts, 2005; Godfrey et al., 2003).

Research on EM also presents two perspectives similar to those of discretionary information. The first one is the information perspective equivalent to the incremental information approach whereby managers use accounting discretion to provide private and useful information that reveals their future expectations about the company (Holthausen & Leftwich, 1983). The second is an opportunistic perspective that assumes the use of accounting discretion as a mean for managers to pursue their own interests (Gonçalves et al., 2022; Healy, 1985).

Opportunistic EM is well-documented in the literature. EM occurs when managers use judgment in Financial Statements and in structuring operations to alter Financial Statements to "fool" some stakeholders about the economic performance of the company, influence the contractual results (Healy & Wahlen, 1999), or to obtain some private gain (Schipper, 1989).

### 1.1. Impression management

The term "Impression Management" has emerged in the psychology literature (Schlenker, 1980). Later, it was defined as the process through which an individual seeks to obtain control over the impression that others have about himself (Leary & Kowalski, 1990). In the context of accounting disclosure, IM is effective through the selection of the content and the form of the disclosed information to influence the interpretation of the results by the users of the information (Neu, 1991). The study of IM has been approached via four perspectives: psychological, economic, sociological, and critical. In the literature, the psychological (based on attribution theory) and the economic perspectives (explored in the context of the agency theory (Merkl-Davies & Brennan, 2007) predominate.

Under attribution theory, IM is considered to be an opportunistic practice resulting from a cognitive process in which an individual tries to collect

credit for success and denies responsibility for failure (self-serving bias) (Knee & Zuckerman, 1996). In the context of financial reporting, attribution is approached from an egocentric perspective that has been consistently observed (Bettman & Weitz, 1983; Clapham & Schwenk, 1991; Salancik & Meindl, 1984; Wagner & Gooding, 1997). This means that managers tend to attribute responsibility for good results to themselves or to internal factors (e.g., strategy, management decisions, human resources, know-how, product/service quality) and responsibility for bad results to external factors (e.g., economic environment, inflation, political action, exchange rate fluctuation, natural disasters) (Aerts, 2001; Aerts & Cheng, 2011; Clatworthy & Jones, 2003). Attribution theory focuses on the analysis of the actions and events presented as justification for financial performance (Brennan & Merkl-Davies, 2013) assuming that managers adopt attribution behavior consciously, although research in this area is not conclusive (Clatworthy & Jones, 2006; Leary & Kowalski, 1990; Schlenker, 1980).

Under agency theory, IM aims to intentionally bias information reporting (reporting bias) (Bowen et al., 2005) and may have several purposes, including maximization of the managers' remuneration package with special relevance in scenarios that include stock options (Rutherford, 2003; Courtis, 2004a). The agency cost associated with IM consists of the inefficient allocation of capital as observed in most situations that fall under this theory (Davidson et al., 2004; Jensen & Meckling, 1976; Merkl-Davies & Brennan, 2007).

From the IM perspective, analysis in the context of agency theory focuses on the obfuscation of results either by covering up the results that did not meet expectations or by emphasizing the results that did meet or exceeded expectations (Gioia et al., 2000).

## 1.2. Obfuscation hypothesis

Obfuscation is a form of writing or presenting information that masks the content of a message. Information can be obfuscated by deliberately disseminating an opaque message or concealing undesirable facts and events that seek to mitigate negative reactions (Courtis, 2004a).

Various techniques can be used to obfuscate information. Li (2008) reported that companies with lower earnings results tend to issue annual reports with longer and more complex narratives. Aerts and Zhang (2014) found a causal relationship between accruals earnings management and intensity of performance explanation. Hyland (1998) argued that the section of the annual reports that contain a Chief Executive Officer (CEO) message can be the subject of rhetorical discourse using specific linguistic terms that convey an idea of competence, reliability, authority, and honesty about the CEO. Clatworthy and Jones (2001) found that the introduction to the CEO's communication (which includes a reference to the year's results) tends to be easier to read than the rest of the communication (which presents passages about the problems facing the company). Bowen et al. (2005) published evidence for the intention to present good news before bad news. The connotation attributed to the narrative as offering additional information to assist in forecasting future cash flows has also been shown to be an element of obfuscation (Feldman et al., 2010; Schleicher & Walker, 2010). Other ways of obfuscation include managing the visual impression, e.g., by highlighting parts of the text (Brennan et al., 2009) through the choice of color in reports and releases (Courtis, 2004b) or even by using linguistic morphology techniques such as the use of repetition to reinforce certain contents (Davison, 2008).

## 1.3. Impression management and earnings management

As vehicles of communication to external users, annual reports are subject to both IM and EM. EM arises in the preparation of the Financial Statements, while IM occurs in the preparation of the remaining components of the annual reports (Neu et al., 1998).

IM and EM are different processes of perception management and are determined by different factors and directed to different audiences but are likely to occur simultaneously (Guillamón-Saorín & Osma, 2010). Thus, IM can integrate the perception management strategy as a complement or a substitute for the EM. In the context of graphs, Godfrey et al. (2003) found that one year after the change of CEO, companies

tend to practice upward EM and complement this practice with a presentation in the annual report of graphs with the key indicators that are most favorable to the company's performance. Aerts and Cheng (2011) also verified a complementary relationship but this time with EM being practiced through attribution behavior to attract subscribers for IPOs.

As far as the readability of financial documents is concerned, the obfuscation hypothesis suggests that when there is bad news to disclose, the preparers of financial information tend to reduce the clarity of reports making them less transparent (Rutherford, 2003). At the level of annual reports, Li (2008) found a positive and significant association between the persistence of results and the readability of narratives presenting statistical evidence that managers resort to a greater number of words and more complex words when they have less persistent results to disclose.

In terms of EM, Ajina et al. (2016) found a negative association between narrative readability and EM intensity. Lo et al. (2017) observed that companies that more likely managed earnings have a more complex Management Discussion and Analysis (M.D.&A.) section. Importantly, Ajina et al. (2016) investigated the entire annual report, and Lo et al. (2017) focused on the M.D.&A. section; Li (2008) presented results for both and found a strong positive and significant correlation between the readability of the M.D.&A. and the readability of the entire annual report.

Since the literature that studies the association between EM and IM is recent and, therefore, still relatively unexplored, this study evaluates the association between EM practices, through discretionary accruals, and the readability of annual reports in a context less studied in the literature: European listed companies.

Thus, based on previous literature and on the Obfuscation Hypothesis, this study aims to analyze the complementary relationship between EM and IM and test if the readability of the annual report is associated with the level of discretionary accruals presented by a company.

## 2. METHOD

### 2.1. Data and sample

Data were extracted from Bureau Van Dijk's Amadeus database. All listed companies in the Eurozone (EU28) were selected, excluding companies belonging to the financial and public administration sectors due to accounting and regulatory specificities (Ajina et al., 2016; Lo et al., 2017; Gonçalves et al., 2020). All companies with insufficient data availability for the calculation of the EM measure and/or no submission of the annual report in the database were excluded, as well as companies from countries and industries with fewer than 8 observations. Finally, variables are winsorized at 1% and 99% to control for outliers.

The final sample is composed of 2,953 listed companies from 17 industries of 24 European countries. The period of analysis corresponds to 7 years, between 2012 and 2018, resulting in 13,020 firm-year observations. More than half of the sample are companies based in the United Kingdom and France with a representativeness of 29.99% and 18.92%, respectively, followed by Germany (12.51%) (results not tabulated). Two industries predominate: M. Professional, scientific, and technical activities (27.56%) and C. Manufacturing (24.85%) (results not tabulated).

### 2.2. Measuring the readability of annual reports

The Fog Index is a widely used indicator to quantify the readability of annual report narratives. However, it has been subject to several criticisms. The Fog Index is an indicator composed of a linear combination of average sentence length and proportion of complex words built to assess any type of prose.

Loughran and McDonald (2014), among others, argue that the Fog Index is not appropriate for measuring the readability of financial documents. In fact, the identification of sentences is not very effective, given that financial documents present lists, epigraphs, peculiar narrative structures, abbreviations, and a set of other particularities that make it difficult to identify (by computer) the punctuation that identifies the beginning and the end of each sentence. Complex words

are frequently used in accounting narratives, and the Fog Index considers complex words to be all English words composed of three or more syllables. Loughran and McDonald (2014) note that words such as company, corporation, operations, and management are common in financial reports and do not test the ability of the readership. Therefore, Loughran and McDonald (2014) suggest using the size of the electronic file as an alternative to the Fog Index to quantify the readability of financial documents.

Dale and Chall's (1948) definition of readability includes all the elements in a printed document that affect its understanding. This definition is considered by Tekfi (1987) as the classic definition, as well as by DuBay (2007) as the most comprehensive. This definition allows the use of electronic file size as a metric of financial report readability to be extended to annual reports as elements such as charts and images.

Discretionary information is voluntary and will be disclosed under two scenarios. The first is if it is demanded *a priori* by investors, a scenario in which companies will be incentivized to disclose the same amount of information. It is expected that annual reports will not have significantly different electronic file sizes. The second is because managers intend to hide or obscure any reality, a scenario in which significant differences in electronic file sizes will be expected because the content and form of annual reports will have to be selected with a different purpose than serving investors with the information that they want.

Thus, the additional content voluntarily disclosed in annual reports will also have a role to play in obfuscating bad news as argued by Loughran and McDonald (2014). This helps determine the readability of annual reports.

This study focuses on the readability of annual reports considering not only the accounting narratives but all disclosed elements as potential obfuscation factors. The amount of information disclosed is analyzed following the line of Guay et al. (2016) who suggest that the costs associated with processing long and complex documents are assumed to be high, i.e., they might be more difficult to read and understand. Thus, following Loughran and McDonald (2014) and Guay et al. (2016), this

study uses electronic file size as a measure of annual report readability.

### 2.3. Measuring earnings management

To capture the practice of EM, the model of Jones (1991) modified by Dechow et al. (1995) and by Kothari et al. (2005) is used as follows:

$$\begin{aligned} \frac{TAcc_{i,t}}{TA_{i,t-1}} = & \beta_0 + \beta_1 \left( \frac{1}{TA_{i,t-1}} \right) + \\ & + \beta_2 \left( \frac{\Delta REV_{i,t} - \Delta AR_{i,t}}{TA_{i,t-1}} \right) + \\ & + \beta_3 \left( \frac{PPE_{i,t}}{TA_{i,t-1}} \right) + \beta_4 ROA_{i,t} + \varepsilon_{i,t}, \end{aligned} \quad (1)$$

where,  $TAcc_{i,t}$  is total accruals of firm  $i$  in year  $t$ ;  $\Delta REV_{i,t}$  is change in sales of firm  $i$  from year  $t - 1$  to year  $t$ ;  $\Delta AR_{i,t}$  is change in accounts receivable of firm  $i$  from year  $t - 1$  to year  $t$ ;  $PPE_{i,t}$  is property, plant and equipment of firm  $i$  in year  $t$ ;  $ROA_{i,t}$  is return on assets of firm  $i$  in year  $t$  as the ratio of net income to assets; and  $TA_{i,t}$  is total assets of firm  $i$  in year  $t - 1$ . All variables are divided by total assets at the beginning of the year to reduce the presence of heteroscedasticity in the residuals. These metrics are estimated for each year-industry (Gonçalves et al., 2021).

Total accruals are computed using the balance sheet approach as follows:

$$\begin{aligned} TA_{i,t} = & \Delta CA_{i,t} - \Delta CL_{i,t} - \\ & - \Delta Cash_{i,t} + \Delta Debtst_{i,t} - Dep_{i,t}, \end{aligned} \quad (2)$$

where,  $\Delta CA_{i,t}$  is change in current assets of company  $i$  from year  $t - 1$  to year  $t$ ;  $\Delta CL_{i,t}$  is change in current liabilities of company  $i$  from year  $t - 1$  to year  $t$ ;  $\Delta Cash_{i,t}$  is change in cash and cash equivalents of firm  $i$  from year  $t - 1$  to year  $t$ ;  $\Delta Debtst_{i,t}$  is change in short-term debt of firm  $i$  from year  $t - 1$  to year  $t$ ; and  $Dep_{i,t}$  is depreciation and amortization of firm  $i$  in year  $t$ .

The direction of EM (upward or downward) is given by the value of the errors ( $\varepsilon_{i,t}$ ) from equation (1), and the intensity of EM is revealed by the absolute value of these errors ( $|\varepsilon_{i,t}|$ ).

## 2.4. Empirical model

To study the association between IM ad EM, the following model was developed:

$$\begin{aligned} \ln FileSize_{i,t} = & \beta_0 + \beta_1 EM_{i,t} + \\ & + \beta_2 \ln Size_{i,t} + \beta_3 MTB_{i,t} + \beta_4 FirmAge_{i,t} + \\ & + \beta_5 SpecItems_{i,t} + \beta_6 EarnVol_{i,t} + \\ & + \beta_7 RetVol_{i,t} + \beta_8 \ln Nitems_{i,t} + \\ & + \sum Industry_{i,t} + \sum Country_{i,t} + \sum Year_i + \varepsilon_{i,t}, \end{aligned} \quad (3)$$

where,  $\ln FileSize_{i,t}$  represents the natural logarithm of the size of the electronic file of the annual report corresponding to each firm-year observation in kilobytes (KB). Whenever a company has submitted more than one annual report per reporting period, then the electronic file size for that reporting period was assumed to be the value corresponding to the largest amongst the annual reports submitted during that same period. This choice does not ignore any element that has been disclosed and is consistent with Dale and Chall's (1948) theorization arguing that all elements included in the annual report increase the readability of its understanding. A higher value of  $\ln FileSize$  implies a lower readability.

The independent variable of interest  $EM_{i,t}$  represents EM by discretionary accruals and takes the designation  $ABS\_DACC_{i,t}$ , when the focus of the analysis is on the intensity of EM, and the designation  $DACC_{i,t}$  when the focus is on the direction of EM (upward or downward).

Based on prior literature (Li, 2008; Lo et al., 2017; Gonçalves et al., 2019), the following control variables are used: firm size ( $\ln Size$ ), growth oppor-

tunities ( $MTB$ ), firm age ( $FirmAge$ ), special items ( $SpecItems$ ), earnings volatility ( $EarnVol$ ), stock returns volatility ( $RetVol$ ), and firm complexity ( $\ln Nitems$ ) (see the Appendix A for more details). The model also controls for industry, country, and year fixed effects to account for sector-specific reporting requirements, institutional factors differences, and year-specific effects on the electronic file size of annual reports, respectively. The regression model was estimated by the pooled least squares method (Pooled OLS). Like Li (2008) and Lo et al. (2017), errors are clustered robust by industry in order to estimate the standard deviations, because the readability of annual reports may be correlated across industries.

## 3. RESULTS

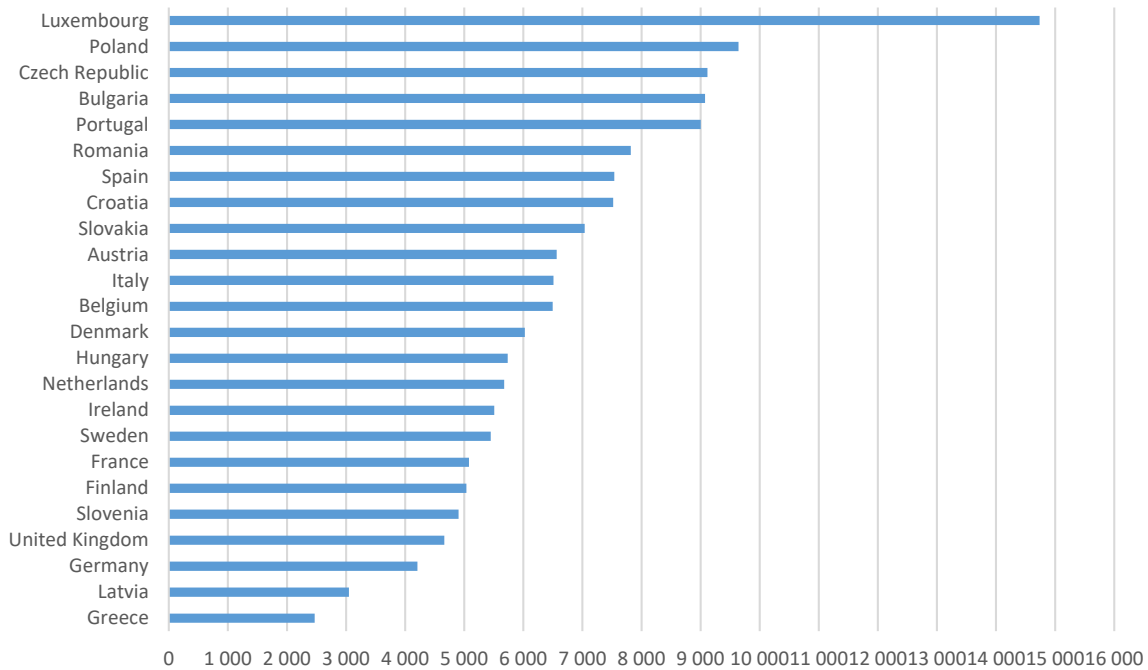
### 3.1. Descriptive statistics

Table 1 reports descriptive statistics. The average electronic file size of the annual reports is 3,573.85 KB ( $e^{8.1814}$ ). The electronic files considered in the sample present a coefficient of variation for their size of 1.03 with the largest electronic file being 17.36 times larger than the average electronic file and the smallest electronic file being 32.19 times smaller than the average electronic file.

The average of discretionary accruals is positive suggesting that, on average, the companies in the sample manage earnings upwards. The average company in the sample has a market value of equity of 145,509.987 thousand euros ( $e^{11.888}$ ), a market-to-book ratio of 1.6377, and an age of approximately 35 years. Extraordinary events occurred in 28.49% of the observations of the sample. The av-

**Table 1.** Descriptive statistics

Variables	N	Mean	Median	Std. deviation	Minimum	Maximum
<i>lnFileSize</i>	13,020	8.1814	3.870	0.9173	4.7095	11.4251
<i>ABS_DACC</i>	13,020	0.1276	0.0703	0.2448	0.000006	13.2944
<i>DACC</i>	13,020	0.0013	0.0265	0.2761	-8.5775	13.2944
<i>lnSize</i>	13,020	11.888	11.6724	2.4343	3.4012	19.0304
<i>MTB</i>	13,020	1.6377	1.2645	1.1328	0.4362	8.8677
<i>FirmAge</i>	13,020	35.3475	25	29.8492	3	147
<i>SpecItems</i>	13,020	0.2849	0	0.4514	0	1
<i>EarnVol</i>	13,020	0.0421	0.0198	0.0737	0.0001	1.9388
<i>RetVol</i>	13,020	0.1007	0.0773	0.1142	0	5.9680
<i>lnNitems</i>	13,020	3.4944	3.4965	0.0547	3.2581	3.6109



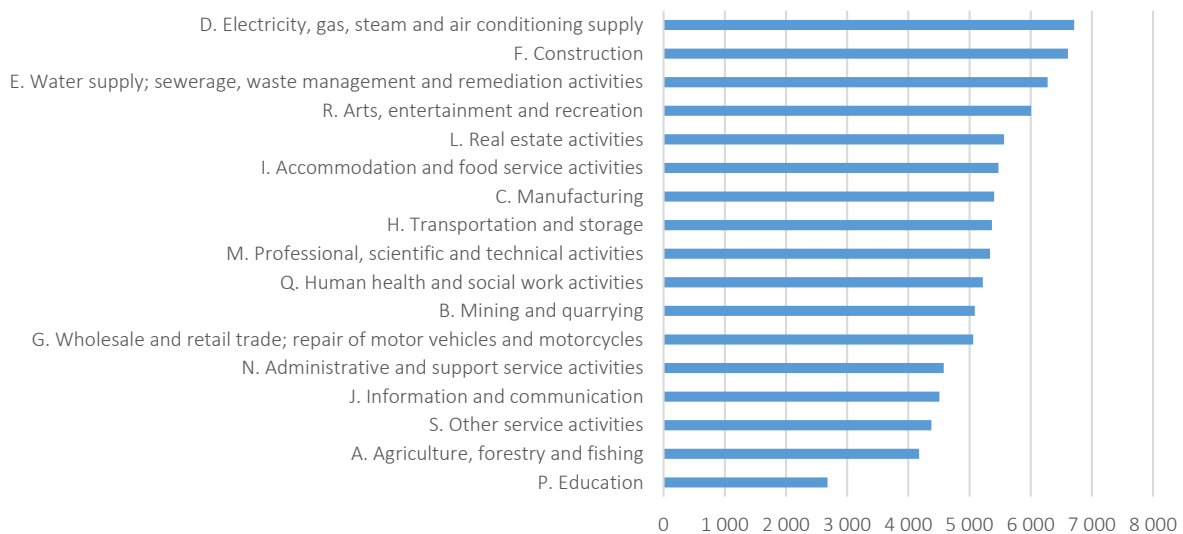
**Figure 1.** Average electronic file size by country

verage volatility of earnings and stock returns are 4.21% and 10.07%, respectively. Finally, companies, on average, disclose 33 items (e<sup>3.4944</sup>) out of the 37 items listed by the Global Standard Format corresponding to the Statement of Financial Position and the Income Statement.

The average electronic file size by country and by industry are presented in Figure 1 and Figure 2, respectively. Countries from Central Eastern Europe and Southern Europe are predominant among the countries with the largest average elec-

tronic file. The countries of Northern Europe and Western Europe are the ones with the lowest average electronic file. The exceptions are Luxembourg and Latvia, which are among the countries with the lowest representation in the sample along with Greece and Slovenia. These are possibly due to factors inherent to the country itself.

In terms of industries, the categories D. Electricity, gas, steam, and air conditioning supply and F. Construction have the largest average electronic file sizes, and categories P. Education and A.



**Figure 2.** Average electronic file size by industry



Agriculture, forestry, and fishing have the lowest (the industry classification is based on NACERev.2.).

Correlation results shows a negative and significant correlation between the IM measure and the absolute value of discretionary accruals, as well as a positive and significant correlation with discretionary accruals. The highest correlation coefficient is 0.5104 between *lnNItems* and *SpecItems*, suggesting that there are no multicollinearity issues, which is confirmed by the Variance Inflation Factors (VIF) below 10 for all variables (not tabulated).

### 3.2. Regression results

Table 2, Panel A, presents the results of the regression model considering as independent variable *ABS\_DACC* (Column (1)) or *DACC* (Column (2)), in order to study the association between IM and both intensity and direction of EM.

Results show a positive and statistically significant coefficient (p-value < 0.05) of the *ABS\_DACC* variable, indicating that lower levels of EM are associated with greater readability of annual reports, supporting the study hypothesis.

In terms of EM direction (upward and downward), the results do not provide any evidence of an association between *lnFileSize* and the *DACC*. Indeed, the coefficient, although negative, does not reveal statistical significance. To extend the analysis and to circumvent the suspicion of a non-linear relationship, two additional models were estimated: the association between upward and downward EM and the readability of annual reports separately. Table 2, Panel B, presents the results for the sample of companies with *DACC* > 0 in column (3), and for the sample of companies with *DACC* < 0 in column (4).

The coefficient on *DACC* is positive in both regressions although not statistically significant. Since the non-linearity of the relationship between the variables may be at the origin of this result, a test was carried out for the equality of means of the size of the electronic file of annual reports between the two subsamples. The result of the test (not tabulated) shows a significant difference (p-value < 0.01) between the averages of the two groups, suggesting that upwardly oriented companies present a higher average and disclose less readable annual reports than downwardly oriented companies.

**Table 2.** Relationship between earnings management and impression management

Variables	Panel A		Panel B	
	(1)	(2)	(3)	(4)
<i>ABS_DACC</i>	0.0380** (2.487)	–	–	–
<i>DACC</i>	–	–0.0340 (–1.127)	0.0093 (0.248)	0.0734 (1.171)
<i>lnSize</i>	0.1513*** (21.935)	0.0000*** (21.534)	0.1572*** (18.227)	0.1458*** (35.247)
<i>MTB</i>	–0.0368*** (–3.836)	–0.0356*** (–3.765)	–0.0414*** (–3.056)	–0.0309*** (–3.622)
<i>FirmAge</i>	0.0001 (0.304)	0.0001 (0.306)	0.0000 (0.028)	0.0004 (0.669)
<i>SpecItems</i>	0.0179 (0.652)	0.0173 (0.633)	0.0085 (0.330)	0.0368 (0.819)
<i>EarnVol</i>	–0.3613*** (–5.015)	–0.3310*** (–4.343)	–0.1724 (–1.477)	–0.5795 (–3.957)
<i>RetVol</i>	0.1833* (1.929)	0.1845* (1.926)	0.3277** (2.277)	0.0350 (0.373)
<i>lnNItems</i>	0.5578 (1.597)	0.5533 (1.588)	0.6977 (1.534)	0.3054 (0.628)
Observations	13.020	13.020	8.072	4.948
Adjusted R <sup>2</sup>	0.2416	0.2416	0.2494	0.2374

Note: Panel A shows the results for the full sample. Panel B shows the results for companies with *DACC* > 0 (column (3)) and *DACC* < 0 (column (4)). t-statistics are in parentheses, \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

### 3.3. Robustness analysis

To test the robustness of the main results, several analyses were performed: alternative sample composition; the influence of company size; and the influence of reporting an operating profit or loss.

Indeed, more than half of the sample is composed by firms from only three countries (United Kingdom, France and Germany) concentrated in three industries (M. Professional, scientific and technical activities; C. Manufacturing; and J. Information and communication). Table 3, Panels A and B, presents the results obtained without firms from these countries (columns (1) and (2)) and these industries (columns (3) and (4)).

Results for both EM intensity and EM direction are similar to those obtained in the main analysis. The exclusion of the three most representative countries and the three most represented industries does not alter the statistical significance of the complementary relationship between EM and

IM in terms of intensity, suggesting that higher levels of earnings management are associated with less readable annual reports.

Prior results suggest an important role of a company's size in explaining the readability of annual reports. Since the sample comprises companies with significantly different sizes, the sample was split into two subsamples: small and medium entities (SMEs) and large entities (LEs). Companies with total assets below and above 43,000,000 euros (European Commission Recommendation, 2003) are considered SMEs and LEs, respectively. Table 3, Panel C, reports the results for SMEs in columns (5) and (6) and for LEs in columns (7) and (8).

Positive coefficients of *ABS\_DAC* suggest a decrease in the readability of annual reports as the intensity in the use of discretionary accruals increases. However, only the SMEs group has a significant coefficient. The absence of statistical significance in the LEs sample may be due to

**Table 3.** Influence of predominant countries and industries, company size and reporting operating profit or loss

Variables	Panel A		Panel B		Panel C				Panel D	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<i>ABS_DAC</i>	0.1021** (2.407)	–	0.0635** (2.422)	–	0.1108** (2.805)	–	0.0040 (0.108)	–	0.0301* (2.027)	–
<i>DACC</i>	–	–0.0512 (–0.513)	–	–0.0611 (–1.115)	–	–0.0691 (–1.226)	–	–0.0206 (–0.784)	–	–0.0132 (–0.512)
<i>Loss</i>	–	–	–	–	–	–	–	–	0.0472* (2.027)	0.0457* (2.027)
<i>lnSize</i>	0.1069*** (13.892)	0.1062*** (13.162)	0.1510*** (12.695)	0.1512*** (12.780)	0.1164*** (3.870)	0.1156*** (3.996)	0.1347*** (14.536)	0.1348*** (14.419)	0.1539*** (20.638)	0.1537*** (20.713)
<i>MTB</i>	0.0250*** (–3.807)	–0.0209*** (–3.410)	–0.0402* (–1.908)	–0.0385* (–1.802)	0.0082 (0.557)	0.0113 (0.713)	–0.0545*** (–4.556)	–0.0539*** (–4.428)	–0.0378*** (–4.042)	–0.0368*** (–3.920)
<i>FirmAge</i>	0.0001 (0.161)	0.0001 (0.165)	–0.0002 (–0.282)	–0.0002 (–0.319)	–0.0021** (–2.184)	–0.0021* (–2.107)	0.0005* (1.996)	0.0005* (2.016)	–0.0001 (0.381)	0.0005 (0.371)
<i>SpecItems</i>	0.0901** (2.146)	0.0888* (2.058)	0.0576 (1.557)	0.0563 (1.508)	0.1185* (2.054)	0.1162* (2.020)	–0.0126 (–0.408)	–0.0127 (–0.412)	0.0174 (0.648)	0.0170 (0.635)
<i>EarnVol</i>	–0.3122 (–1.564)	–0.2382 (–1.454)	–0.4966** (–2.614)	–0.4256* (–2.002)	–0.2172* (–1.893)	–0.1512 (–1.137)	–0.3713* (–2.050)	–0.3649* (–1.867)	–0.4110*** (–5.673)	–0.3774*** (–5.061)
<i>RetVol</i>	0.1269* (1.882)	0.1263 (1.710)	0.0451 (0.388)	0.0453 (0.410)	0.2583 (1.538)	0.2571* (1.479)	0.1706* (1.759)	0.1704* (1.803)	0.1694* (1.865)	0.1722* (1.881)
<i>lnNItems</i>	1.1578* (2.121)	1.1645* (2.058)	1.1841 (1.563)	1.1833 (1.577)	1.9684** (2.869)	1.9370** (2.814)	–0.3004 (–0.865)	–0.3056 (–0.892)	0.5650 (1.624)	0.5611 (1.619)
Observations	5.022	5.022	4.569	4.569	3.565	3.565	9.455	9.455	13.020	13.020
Adjusted R <sup>2</sup>	0.2194	0.2192	0.2501	0.2502	0.2277	0.2275	0.1863	0.1864	0.2419	0.2419

Note: Panel A shows results for the influence of predominant countries (columns (1) and (2)). Panel B shows results for the influence of predominant industries (columns (3) and (4)). Panel C shows results for the subsamples of SMEs (columns (5) and (6)) and LEs (columns (7) and (8)). Panel D shows results for the influence of reporting operating profit or loss (columns (9) and (10)). *t*-statistics are in parentheses. \*\*\*  $p < 0.01$ . \*\*  $p < 0.05$ . \*  $p < 0.1$ .

the greater scrutiny that this group of firms is subjected compared to SMEs. Again, the coefficients of *DACC* are positive but without statistical significance.

Finally, to analyze the effect of operating performance on the association between EM and IM, a dummy variable, *Loss*, was included in the model. *Loss* takes the value 1 if a firm reported operating loss and 0 otherwise. Table 3, Panel D, presents the results in columns (9) and (10).

There is evidence that companies disclose less readable annual reports when they report operating losses rather than operating profits. The results of the main analysis remain unchanged with the *ABS\_DACC* showing a positive and statistically significant coefficient and *DACC* having a positive but not significant coefficient.

## 4. DISCUSSION

This study documents a positive association between EM intensity and IM practices in the context of annual reports. The results suggest that managers seek to obfuscate the intensity with which they manage earnings by disclosing more complex, meaning less readable annual reports, reinforcing the conclusions of Ajina (2016), Li (2008), and Lo (2017).

Thus, there is evidence of a complementary relationship between the practice of EM through accruals and IM through managing the readability of annual reports, suggesting that firms present annual reports with more content as an attempt to obfuscate discretionary accounting choices. This evidence is consistent with the results from Aerts and Cheng (2011) and Godfrey et al. (2003). In terms of narrative readability, Ajina et al. (2016) and Lo et al. (2017) also found that companies that practice EM tend to make their annual report less readable.

No evidence was found in terms of the association between the direction of EM and the practice of IM, but further analysis suggests that companies that practice income-increasing EM have on average higher file size of annual re-

ports than companies that practice income-decreasing EM.

Finally, the robustness of the results was confirmed by using a different sample composition, without the influence of the three countries and three industries more representative and by analyzing the role of firm size and financial performance on the relationship between EM and IM.

Additional results suggest that, although large firms tend to present annual reports more complex, it is in the context of small and medium enterprises that the practice of obfuscating EM is more significant. There is also evidence that companies that report operating losses are more likely to disclose more complex annual reports than those that report an operating profit, consistent with prior research (Li, 2008; Lo et al., 2017).

This study contributes to the literature in several ways. First, it extends a rare stream of research on the association between EM practices and annual report readability by providing evidence of the complementarity of EM and IM under managerial discretion. Second, it provides a better understanding of these relationship by analyzing a broad sample of European companies. Third, it uses an alternative and novel measure of readability (the size of the electronic file) that mitigates the criticism associated with the measures used in previous literature. Fourth, it provides evidence that the association is stronger in the context of small and medium sized firms revealing the scrutiny effect to which large companies are subjected.

The results have economic and practical implications. Understanding the relationship between EM and IM is relevant to avoid inefficient allocation of capital, which can harm investment profitability and therefore negatively affect value creation. It is also relevant to regulators who, by understanding the strategies for managing information and communication, obtain guidelines for establishing a standardization that is more effective in eliminating information asymmetries.

## CONCLUSION

This study analyzes the association between EM and IM practices in the context of annual reports. EM is measured using discretionary accruals using the modified Jones model. The measure of IM is the size of firms' annual reports. The sample consists of 2,953 listed firms in 24 European countries, with data between 2012 and 2018, corresponding to 13,020 firm-year observations.

A positive and significant association is found between EM (discretionary accruals) and IM (report file size). The results are robust across different robustness tests. The same positive and significant association is obtained after controlling for the most representative countries or industries and controlling for year, country and sector fixed effects.

The results support that the increased intensity in the use of discretionary accruals leads managers to obfuscate these accounting choices with the disclosure of less readable annual reports, suggesting a complementary relationship between EM and IM.

## AUTHOR CONTRIBUTIONS

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## APPENDIX A

**Table A1.** Variables description

Variables	Description	
<i>LnFileSize</i>	Is the natural logarithm of the size of the electronic file of the annual report corresponding in kilobytes (KB)	A higher value implies a lower readability
<i>ABS_DACC</i>	Is the absolute value of the errors from Jones Model (1991) modified by Dechow et al. (1995) and Kothari et al. (2005)	The intensity of EM. A higher value implies a higher level of EM
<i>DACC</i>	Is the value of the errors of the errors from Jones Model (1991) modified by Dechow et al. (1995) and Kothari et al. (2005)	The direction of EM (upward or downward)
<i>LnSize</i>	Is the natural logarithm of the market value	Larger firms are expected to have more complex operations and higher political costs leading managers to disclose more information and, consequently, annual reports with a larger size of the respective electronic file
<i>MTB</i>	Is the market value of equity plus book value of liabilities divided by total assets	Controls for the impact of the firm's growth opportunities assuming that firms with more growth opportunities will disclose annual reports with more information in order to bridge the uncertainty associated with their business models
<i>FirmAge</i>	Is the difference between the year of observation and the year of incorporation of the firm	Controls for the effect of firm seniority on the readability of the annual report. On one hand, companies with greater seniority may present greater diversity or investment in their activities leading to the disclosure of less readable annual reports. On the other hand, if information users are familiar with and have more accurate information about the business model of older firms, then one would expect these firms to release more readable annual reports
<i>SpectItems</i>	Is a dummy variable that takes a value of 1 if the company reported Extraordinary and other P/L items and 0, otherwise	Controls for the effect of the occurrence of extraordinary events that lack explanation in the annual report. It is expected that, when they occur, they will contribute to the increase in the size of the electronic file
<i>EarnVol</i>	Is the standard deviation of operating income over the last 3 reporting years divided by assets	Control for the effect of the volatility of the business and operations that may make reporting more complex and extensive because a decrease in predictability of the results is associated with increased volatility and, users demand for additional explanations in order to reduce uncertainty
<i>RetVol</i>	Is the standard deviation of monthly stock returns over the last 12 months	
<i>LnNItems</i>	is the natural logarithm of the number of items disclosed according to the Global Standard Format and is available in Bureau Van Dijk's Amadeus database	Controls for the complexity of the firm. Companies that disclose more items in the Financial Statements should present more complex and extensive annual reports