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## Does audit committee financial expertise actually improves information readability?

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### ABSTRACT

This paper investigates the relationship between audit committee financial expertise, particularly considering specific accounting financial expertise, and the readability of management reports. Additionally, this study also examines whether the effect of financial experts is moderated by the intensity of the audit committee's activity. The dataset for directors' characteristics is hand-collected as are the management reports. The sample is composed of Spanish listed firms for the period 2013-2015. The results show a negative association between financial expertise, especially accounting financial expertise, and the readability of management reports. In addition, this association is accentuated with higher number of audit committees' meetings. This evidence stimulates the debate on the advantages of having members with financial expertise in the audit committee. Otherwise, the use of contextual approaches in further studies regarding the role of directors is recommended. In addition, this could help regulators and professionals to guide their requirements and recommendations about directors' qualifications.

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## ¿Mejora la experiencia financiera de la comisión de auditoría la legibilidad de la información?

### RESUMEN

Este trabajo investiga la relación entre la experiencia financiera de los miembros de la comisión de auditoría, particularmente considerando la experiencia financiera contable, y la legibilidad de los informes de gestión. Además, este estudio también examina si el efecto de los expertos financieros está moderado por la intensidad de la actividad de la comisión de auditoría. Los datos referentes las características de los directores se han recopilado a mano, al igual que los informes de gestión. La muestra está compuesta por las empresas cotizadas españolas para el período 2013-2015. Los resultados muestran una asociación negativa entre la experiencia financiera, especialmente la experiencia financiera contable, y la legibilidad de los informes de gestión. Además, esta asociación se acentúa al incrementar el número de reuniones de la comisión de auditoría. Estos hallazgos contribuyen al debate académico sobre los beneficios de tener expertos financieros en la comisión de auditoría. Por otra parte, se recomienda el uso de enfoques contextuales en futuros estudios sobre el papel de los directores. Además, nuestros resultados podrían ayudar a los reguladores y profesionales a guiar sus requisitos y recomendaciones sobre las cualificaciones de los directores.

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## 1. Introduction

The main objective of this paper is to examine the impact of financial experts in the audit committee (AC, hereinafter), considering not only financial expertise in the broad sense but also specific accounting financial expertise, on the readability of management reports.

The AC is a pivotal tool in the control of the reporting policies of a firm (Dhaliwal et al., 2010). Therefore, the composition of the AC remains a relevant issue and, particularly, AC financial expertise has attracted attention from professional organisations, regulatory bodies and academics (Abernathy et al., 2014; García-Sánchez et al., 2017). Prior literature has largely documented that AC financial expertise generally affects corporate reporting quality because financial experts improve the ability to monitor the reporting process (Abbott et al., 2004; Mangena & Pike, 2005; Li et al., 2012; Bravo & Reguera-Alvarado, 2019).

Nevertheless, corporate reporting can be measured by different dimensions, such as information readability, which refers to syntactical complexity (Jones & Smith, 2014). The higher the syntactical complexity the lower the readability. In recent years, information readability has become an important information attribute for both regulators and researchers since textual disclosures represent a significant proportion of firms' reporting practices (Lo et al., 2017). In this sense, the International Financial Reporting Standards (IFRS), as well as several regulatory bodies, have stressed the need to consider information readability in the preparation of financial reports (Securities and Exchange Commission, 2007; European Securities and Markets Authority, 2015). As a result, a recent stream of the accounting literature has analyzed lexical characteristics of narrative disclosures (De Franco et al., 2015; Lang & Stice-Lawrence, 2015; Li, 2008; Melloni et al., 2017; Hesarzadeh et al., 2019; Hesarzadeh & Rajabalizadeh, 2020). The majority of the accounting readability studies have focused on the annual report (including the notes to the financial statements, the Chairperson's letter, and the audit report), and the integrated reports (Stone & Lodhia, 2019). Research tends to find low levels of readability in accounting communications, especially after the introduction of the IFRS (Richard et al., 2015).

Despite the relevance of both the AC composition and information readability, studies concerning the impact of AC financial expertise on the readability of corporate financial reports are scarce. In particular, our study is close to Velte (2018b), who finds that AC financial expertise leads to an increase in the readability of integrated reports because this kind of expertise strengthens the monitoring and oversight of the reporting process, thereby reducing agency costs. This approach is consistent with many other papers which assume that low levels of readability are explained by managers' obfuscation and opportunistic behaviors (Li, 2008; Lo et al., 2017; Xu et al., 2019). However, another cause for low levels of readability may be the provision of additional useful information, which leads to disclosures with specific terminology, or that can require more complex information (Hesarzadeh et al., 2019).

Therefore, there are two opposite arguments in the literature. On the one hand, managers' obfuscation can result in opportunistic incentives to mask adverse information by using longer sentences or more complex language (Tan et al., 2015). This reduction in information readability increases uncertainty and has negative consequences in the capital markets. On the other hand, the disclosure of information that can require detailed aspects of a firm's financial reality

usually requires a high syntactical complexity (Bloomfield, 2008). However, the lower discretionary readability related to higher clarification can help to minimize uncertainty and have positive effects on the capital markets (Hesarzadeh et al., 2019). Therefore, under an agency perspective, the well-documented improvement in AC monitoring abilities due to the influence of financial experts may lead to two competing effects. First, AC financial expertise would help to oversee the reporting process, thereby reducing managers' opportunism and enhancing information readability. Second, AC financial experts could exert a higher influence on the reporting process, not only reducing managers' opportunism, but also actively promoting the disclosure of specific information for investors, which would increase syntactical complexity. In this scenario, AC financial experts would reduce information readability.

Our paper extends Velte (2018b) by proposing a negative effect of AC financial expertise on the information readability of financial reports. In line with Hesarzadeh et al. (2019), we argue that AC financial experts mitigate agency costs by monitoring the reporting process, but this may reduce the readability of documents that demand the disclosure of intrinsically complex information. Consistent with previous accounting readability research (Li, 2008; Lo et al., 2017; Ben-Amar & Belgacem, 2018; Hesarzadeh et al., 2019), we focus on the management report, which is an influential source of information for investors, with a high richness of narrative disclosures, and where managers enjoy a great level of discretion concerning the verbiage in reporting information. The Spanish regulation of the management report and its content is based on international documents, such as the rather recently transposed Directive 2014/95/EU – also called the non-financial reporting directive on disclosure of non-financial and diversity information by large companies. The "IFRS Practice Statement on Management Commentary", issued by the IASB (2010), and the "General Principles Regarding Disclosure of Management's Discussion and Analysis of Financial Condition and Results of Operations", issued by the IOSCO (2003), are also influential documents in this field worldwide. Irrespective of the terminology used in different countries, the management report is equivalent to other documents, like the Management Discussion and Analysis (MD&A) in the United States or the Operating and Financial Review (OFR) in the United Kingdom (CNMV, 2013). The common objective of these reports is to show, from a managers' view, qualitative information about a company's operations and financial conditions relevant to the markets. Specifically, in the Spanish management report the management must provide complementary information on financial statements. In this regard, this report shall include references and additional explanations about the figures shown in the financial statements, including financial and other key performance indicators, company financial risk management objectives and policies, and future projections. The previous literature has highlighted the importance of ACs in reviewing and discussing this report (Keinath & Walo, 2008). In this sense, we posit that AC financial expertise can exert a major influence on the oversight of management reports, thus leading not only to reducing managers' opportunism, but also to assuring the completeness of the disclosures required in this document. As most of these disclosures lead to a high syntactical complexity, an active role of AC financial experts in the monitoring of management reports will reduce their readability.

In addition, our paper also extends the previous literature by examining both non-accounting financial expertise and

specific accounting financial expertise. This topic remains relevant due to regulatory and professional debates regarding the importance of accounting expertise. While in the United States the Securities Exchange Commission initially included a broad definition of financial expertise based on the Sarbanes-Oxley Act (SOX) (SEC, 2003), in the European context, recent reforms have narrowed this definition, focusing on accounting expertise (Directive 2014/56/EU). In this regard, at least one member of the AC should be a financial expert with specific accounting expertise in order to reinforce the AC's technical competence. Professional bodies have also advocated the incorporation of accounting financial experts into the AC (Deloitte, 2018). Moreover, we also broaden the previous research by analyzing how the intensity of the AC's activity, measured by the number of meetings, may moderate the relationship between financial expertise and information readability. This remains a significant issue since recent research has highlighted the need to consider the context in order to gain a clearer insight into the influence of directors (Zona et al., 2013; Bravo & Reguera-Alvarado, 2019). Specifically, AC activity has become an important issue for professionals and regulators (Directive 2014/56/EU; Deloitte, 2018), which have suggested in their recommendations and legislations the need for ACs to meet frequently to perform their duties effectively.

Our sample is composed of the firms listed on the Madrid Stock Exchange (IGBM) for the period 2013 to 2015. This sample provides an especially interesting scenario because the characteristics of Spanish firms, such as high ownership concentration, unitary board system and voluntary good governance practices, are likely to lead to significant agency conflicts (Manzaneque et al., 2016). Therefore, the Spanish context is particularly relevant for the analysis of the effect of corporate governance mechanisms on reporting practices. While some research has been conducted recently on information readability in Spain (Moreno & Casasola, 2016; Suárez Fernández, 2016), the effects of AC on the readability of corporate reports remains unexplored. Additionally, the data about the financial expertise has been hand-collected by individually analyzing the biographies of AC members.

Our results indicate that there is a negative association between the readability of management reports and AC financial expertise, which is stronger for accounting financial expertise. Moreover, the AC activity moderates this relationship. These findings contribute to the accounting literature in several ways. First, our evidence suggests that, in addition to mitigating managers' obfuscation, AC financial experts actively monitor and influence the management report through the disclosure of specific information, such as business operations, the economic environment, the associated business risks, and future financial projections, increasing the syntactical complexity of reports and thus reducing information readability. Therefore, we reinforce the idea that agency theory can have different implications in the analysis of information readability. In this regard, a reduction of agency costs can lead to a reduction in information readability, which is strictly based on syntactical complexity, especially in documents that required disclosures of a complex nature. This will have implications in terms of actions that can be taken by regulators concerning firms' information readability, and for academics in the definition of theoretical frameworks to analyze the determinants of information readability. Second, our results contribute to the aforementioned debates about the definition of financial expertise by highlighting the stronger influence of financial experts with specific accounting expertise on the reporting process. Third, our findings also emphasize

that the study of the influence of AC members requires the consideration of the context, and that the one-size-fits-all approach may be inappropriate for all cases. In particular, our evidence strengthens the professional and regulatory discussions concerning the need for the AC to meet regularly, since the involvement and the effect of financial experts on reporting practices appear to be amplified by the greater activity of the AC.

The structure of the paper is as follows. The next section overviews the theoretical framework and the main hypotheses are formulated. Section 3 describes the sample, the variables, and the method employed in the empirical analysis. Sections 4 and 5 report the main results and provide a discussion of these findings. Section 6 summarizes our study's main conclusions.

## 2. Theoretical framework and hypothesis development

One of the most important functions of the AC is to assist the board of directors in implementing the corporate reporting strategy. Specifically, after the recent wave of accounting scandals, policymakers and professionals have emphasized the need for more financial experts on ACs to perform their monitoring functions of the reporting process effectively (SEC 2003; FRC 2015). The previous literature indicates that AC financial expertise helps to mitigate earnings management (Badolato et al., 2014; Tanyi & Smith, 2014), and leads to a better internal control (Zhang et al., 2007), less restatements of earnings (Abbott, 2004), reduces bank insolvency risk-taking (García-Sánchez et al., 2017) and more accounting conservatism (Krishnan & Visvanathan, 2008; García-Sánchez et al., 2017). Other studies have reported that financial experts in the AC may contribute to improving voluntary disclosure practices (Ahmed Haji, 2015; Abad & Bravo, 2018), the issuance of management forecasts (Chan et al., 2013), and the timeliness of accounting information (Abernathy et al., 2014). A recent study (Velte, 2018b) has suggested that AC financial expertise is crucial in the monitoring of the reporting process, and this leads to an enhancement of the readability of integrated reports.

Consistent with the approach proposed by Hesarzadeh et al. (2019), our paper extends this research by examining the association between AC financial expertise and information readability under an agency perspective which, unlike most of previous studies, considers that the monitoring ability of AC financial experts may result in a lower readability. In particular, we argue that an active participation of AC financial experts in the oversight of management reports would reduce their readability, given the intrinsic complexity of the disclosures required in these documents. An explanation for this assertion is that readability is traditionally defined as the ease of reading a text due to the style of writing (Klare, 1963), which is related to syntactical complexity (De Souza et al., 2019). The relation between readability and understandability is controversial. While understandability considers a number of factors that may affect reader understanding (experience, knowledge, or familiarity about the matter, among others), readability mainly focuses on syntactical complexity and is generally based on the sentence and word length (Stone & Lodhia, 2019). In this sense, researchers and policymakers have contemplated the use of formulas, such as the Fog Index, calculated as a combination of two variables related to sentence length and word length, to measure the readability of corporate reports (Loughran & McDonald, 2014). The two metrics that integrate this formula may be influenced by either manager discretion (obfuscation and opportunistic



behavior) or as a result of providing additional useful information (Hesarzadeh et al., 2019). Indeed, the recent literature increasingly suggests that reduced readability may be due to a greater extent to the specification of relevant and complex information for investors and legislators with business terminology, as well as the disclosure of specific information on financial and accounting operations<sup>1</sup> (Bloomfield, 2008; Loughran & McDonald, 2014; Guay et al., 2016; Jang & Rho, 2016).

Concretely, when the monitoring mechanisms are better, the disclosure of this kind of information can be accentuated in order to reduce agency costs (Li, 2008; Guay et al., 2016). This may be particularly relevant for management reports, which are required to analyze the information from the financial statements, and to include financial indicators and estimates, as well as information on financial risks. Both academics and firms have acknowledged that ACs actively engage in reviewing and discussing the content of these documents (Cohen et al., 2007; Keinath & Walo, 2008; Lee & Park, 2019). As the monitoring abilities are expected to be intensified because of the financial expertise of AC members, in our paper we expect that AC financial experts play an active role in the oversight of management reports, and this leads to an increase of syntactical complexity, thus reducing their information readability.

In regard to our first hypothesis, the previous literature generally indicates that the valuable skills and knowledge of financial experts may provide the AC with the ability to better monitor the reporting of a firm and to serve the interests of the shareholders (Güner et al., 2008). AC members with financial expertise are also supposed to improve internal controls and promote the disclosure of additional information to prevent possible litigation and scrutiny from policymakers (García-Sánchez et al., 2017). Therefore, financial experts are expected to play an active role in the reporting process, particularly encouraging the AC to be more critical in analyzing corporate reporting (Sarwar et al., 2018) and providing information relevant for investors and policymakers (Abad & Bravo, 2018). In line with the previous arguments, this engagement with the reporting process is expected to be high for financial mandatory reports, such as the management reports. In particular, AC financial experts can encourage a superior monitoring of management reports to meet higher reporting standards (Lee & Park, 2019). Consistent with the approach proposed by recent research (Hesarzadeh et al., 2019), we posit that, given the complexity of the disclosures required in the management report, the active participation of AC financial experts will lead to detailed comments of firms' financial reality, with specific terminology, which generally demand longer sentences. Furthermore, financial disclosures may contain polysyllable words, such as consolidated, corporation, expenses, interest, management, liabilities, operations, revenue, securities, subsidiaries (Loughran & McDonald, 2014). These words lead to an increase in syntactical complexity, although they are presumably easy for investors to comprehend. For instance, directors with financial expertise have the necessary knowledge to promote the communication of the specific disclosures required in the management report concerning business operations or the business environment (Xie et al., 2003), about the associated risks of future financial operations (Harris & Raviv, 1990), the consequences of financial decisions (Tanyi & Smith, 2014), and the discussion of the information concerning business

projections (Badolato et al., 2014) and financial estimates (Abernathy et al., 2014). Regardless of the usefulness of this information, syntactical complexity is expected to increase, thus reducing the readability of these documents. Therefore, the following hypothesis is formulated:

**H1:** *There is a negative association between AC financial expertise and the management report readability.*

Beyond the wide definition of financial expertise, there is a growing international debate on the relevance of specific accounting financial expertise, which is likely to increase the technical competence of the audit committee (Directive 2014/56/EU; Deloitte, 2018). In this sense, empirical research shows that those financial experts with explicit accounting expertise are more effective in monitoring financial reports (Dhaliwal et al., 2010; Ghafran & O'Sullivan, 2017). In particular, AC members with accounting financial expertise can better understand and oversee annual accounts and associated documents, such as the management report (Zhang et al., 2007), and therefore encourage the AC to provide a high level of the information demanded in these reports. Specifically, directors with accounting expertise are in a better position to promote in the management report more accurate information about accounting variables (Baatwah et al., 2015), a deeper discussion of the evolution of the financial statements (Tanyi & Smith, 2014), and detailed information about future business projections and earnings forecasts (Chan et al., 2013; Abad & Bravo, 2018). Furthermore, accounting experts may also assist ACs to meet greater standards regarding the disclosure of certain issues related to consolidation accounting, mergers and acquisitions, financial assets, derivatives or hedging, or any other hard aspect derived from the adoption of IFRS (DeFond et al., 2005; Chasan & Rubenfeld, 2015). Therefore, AC accounting experts are likely to exert a higher monitoring of management reports, thus leading to specific disclosures which will increase syntactical complexity to a greater extent. Hence, we expect that the reduction in the readability of management reports will be more accentuated due to AC accounting experts, and the following hypothesis is formulated:

**H2:** *The association between AC financial expertise and the management report readability is stronger (weaker) for AC accounting financial expertise (non-accounting financial expertise).*

Furthermore, as an additional objective, this paper provides a more in-depth analysis of the role played by AC financial expertise (including accounting financial expertise) by examining whether the intensity of the activity of this committee may moderate the effect that financial experts have on reporting practices. This is a relevant issue for several reasons. First, recent research emphasizes the need to employ contextual analysis to understand the influence of directors in the reporting process (Zona et al., 2013; Veltrop et al., 2018). Therefore, financial experts may have a more active role in the reporting process depending on the context in which they work. Specifically, the AC supervises the elaboration and presentation of the reporting process, thus the more AC activity, the higher the monitoring effect (Monterrey & Sánchez, 2008; Deloitte, 2018). In this regard, the intensity of the activity of the AC, which can improve the dedication, coordination and commitment of AC members, is expected to affect the way financial experts oversee the reporting process (Bravo & Reguera-Alvarado, 2019). Previous research has generally used the number of meetings as a measure of

<sup>1</sup>This information may improve understandability and reduce uncertainty, but it is expected to require longer sentences and words, which will increase syntactical complexity and reduce information readability.

the activity and/or diligence of a board or committee, under the assumption that more activity contributes to better monitoring (Brick & Chidambaran, 2010) and enhances directors' involvement in the reporting process (Vafeas, 1999). Frequent meetings are expected to lead to a greater control over disclosure practices and encourage the AC to improve the information in the financial statements and management reports (Al-Mudhaki & Joshi, 2004). Specifically, financial experts in ACs that hold many meetings are likely to allocate more time to analyzing and addressing information needs and specific disclosure requirements and promoting the disclosure of additional information in the management report (Naseem et al., 2017). Consistent with the previous arguments, financial experts will have a stronger influence on reporting practices in firms with a higher AC activity, and therefore the following hypothesis is formulated:

**H3:** *The association between AC financial expertise and the management report readability is influenced by AC activity.*

### 3. Data and methodology

#### 3.1. Sample and Data

Our sample is composed of firms listed on the Madrid Stock Exchange for the period 2013-2015. The period of analysis has been selected due to the entry into force in Spain during 2016 of the Directive 2014/95/UE, regarding the disclosure of non-financial information, which may bias our results by influencing the information presented in the management reports. We focus on the management report, which has mainly a narrative nature and must be supervised by the AC (Lo et al., 2017). In order to enhance the comparability of our study, we selected those management reports written in English. Once the management reports were downloaded from the company's websites, the parsing process defined by Loughran & McDonald (2014) was followed. To that end, the management reports initially need to be edited in order to eliminate numbers, titles, graphics, acronyms and even the company's name, since these could distort readability measures.

Data about financial expertise were hand-collected by examining 778 AC members' biographies in the corporate governance reports, or by using other sources such as Bloomberg Business Week and LinkedIn, if necessary. On average, four directors were analyzed for every AC. Moreover, information about AC meetings and other financial data were extracted from corporate governance reports and the DataStream database, respectively.

A number of observations were missed because some firms failed to disclose their management reports in English, or some firms provided these reports in a non-editable format. The sample selection procedure is described in Table 1. As a result, an unbalanced dataset with 188 observations for the whole period (from 73 different companies) was obtained. The sample size has been proven to have enough statistical power in many recent studies using regression analyses techniques (Martínez-Blasco et al., 2017; Pavlopoulos et al., 2019). In our paper, readability scores are calculated concerning the management reports published one-year ahead of the independent variables to mitigate endogeneity concerns derived from reverse causality (Ben-Amar & McIlkenny, 2015; Cabeza-García et al., 2018).

**Table 1.** Sample selection procedure

	Number of firms			
	2013	2014	2015	Total
Total firms listed in Madrid Stock Exchange	161	161	161	483
Excluding firms without management reports in English or in a valid format	102	94	99	295
Total firms in the sample analyzed	59	67	62	188

#### 3.2. Dependent variable

The Fog Index (Fog) is used to measure the readability of management reports. This index has been widely used in recent research in the management and finance literature (Li, 2008; Lehavy et al., 2011; Ajina et al., 2016; Lo et al., 2017; Muslu et al., 2017; BenAmar, & Belgacem, 2018; Velte, 2018b; Hesarzadeh & Rajabalizadeh, 2020). This index evaluates text linguistic complexity as a function of the average sentence size and the proportion of complex words (those that contain three or more syllables) per sentence, and it is calculated by the following formula:

$$\text{Fog Index} = 0.4 * (\text{average words per sentence} + \text{percentage of "complex words"})$$

Assuming that the text is well-written and logical, research generally considers that the Fog Index captures text complexity (Ajina et al., 2016) and the higher the value, the lower the readability. The index establishes several different categories for the analysis of the readability levels, and in order to make them comparable with other readability indices the recent literature (Li, 2008; Velte, 2018b) suggests the interpretation of the index scores as follows: Fog values higher than 18 mean that the text is very difficult to read; scores between 14 and 18 imply that the text is difficult to read; between 12 and 14 would be ideal; between 10 and 12 acceptable; and between 8 and 10 childish.

In order to increase the robustness of our empirical study, a sensitivity analysis is performed by employing an alternative dependent variable, the Smog Index (Smog), which has been also highlighted as relevant in capturing the readability of company reports (Fakhfakh, 2016; Muslu et al., 2017; Nazari et al., 2017). This index also analyzes readability based on syntactical complexity by considering the number of polysyllabic words (those that have four or more syllables) in the text (McLaughlin, 1969), and it is calculated as follows:

$$\text{Smog Index} = 3 + (\text{number of polysyllabic words} * 30 \text{ sentences})^{1/2}$$

The interpretation of the scores obtained by the Smog Index is divided into four categories: values over 19 mean that the text has a low readability; between 17 and 18 refer to an intermediate-difficult level; between 13 and 16 would be intermediate-easy; and under 12 texts are easy to read.

Moreover, additional analyses are carried out, including other readability measures, which will enable drawing more in-depth conclusions. On the one hand, the two metrics of the Fog index, length (Length), and complex words (Complex\_words), are included since this helps to understand the readability scores (Hesarzadeh & Bazrafshan, 2019). On the other hand, the number of pages (Number\_pages) has been taken into account as a proxy for information readability (De Souza et al., 2019).

### 3.3. Explanatory variables

Our main explanatory variables are related to AC financial expertise. Specifically, we consider accounting financial expertise (AFE) and non-accounting financial expertise (NAFE). Following recent research (Abernathy et al., 2014; Badolato et al., 2014), in order to classify an AC member as an accounting financial expert that person needs to have a professional certification in accounting, including Chief Financial Officer, Accounting Officer, Certified Public Accountant, Chief Accountant, Chartered Accountant, Head of Accounting, Vice-President of Accounting. Second, non-accounting financial experts have held supervisory and finance positions, such as Chief Executive Officer, President, Banker, Analyst, Loan Officer, Investment Manager, Fund Manager, Asset Manager, Treasurer, Finance Director, Manager Finance, and Vice-President Finance. AFE is the percentage of AC members with specific accounting expertise and NAFE is the proportion of non-accounting financial experts in the AC. A supplemental variable that incorporates both types of financial expertise is also considered in this paper, as the proportion of AC members with any kind of financial expertise (FE).

### 3.4. Moderating variable and other control variables

Our moderating variable, related to AC activity (Ac\_meetings), is defined as the number of meetings of the AC in a year. Based on recent studies on the determinants of information readability (Ben-Amar & Belgacem, 2018; Velte, 2018b), several control variables are also considered: firm size, leverage, profitability, firm growth, firm age, number of segments, and industry. Firm size (Size) is measured as the logarithm of total assets. Leverage (Leverage) is calculated as the ratio of total debt to assets. Profitability (Profitability) refers to the return on assets. Firm growth (Growth) is measured as the change in net sales. The age of the company (Firmage) is calculated from when the company started its business. The number of business segments (Segments) is measured as the number of segments. Finally, the industry (Sector) is a dichotomous variable based on the industry classification provided by the Madrid Stock Exchange. Table 2 provides a summary of all the variables and their definitions.

### 3.5. Research model

To test the hypotheses formulated, we employ a fixed effect panel data estimation model for the regression analysis where the readability of management reports, a dependent variable, is regressed on explanatory and control variables. The Hausman test was used to select the most appropriate estimation method: fixed effects or random effects. The models used in the empirical analysis are represented as follows:

Model 1: Readability measures = f (control variables)

Model 2: Readability measures = f (FE, control variables)

Model 3: Readability measures = f (AFE, control variables)

Model 4: Readability measures = f (NAFE, control variables)

Model 5: Readability measures = f (AFE, NAFE, control variables)

Model 1 includes only the control variables. Model 2 considers a broad definition of financial expertise which aggregates both accounting and non-accounting expertise. Models 3 and 4 alternatively include specific accounting financial expertise and non-accounting financial expertise. Model 5 in-

cludes these two variables together to avoid biases of omission.

**Table 2. Definition of variables**

Variables	Definition
<b>Dependent Variables</b>	
<i>Fog</i>	Gunning Fog Index
<i>Smog</i>	Smog Index
<i>Length</i>	Average words per sentence
<i>Complex_words</i>	Percent of words with three or more syllables
<i>Number_pages</i>	Number of pages of the management report
<b>Explanatory Variables</b>	
<i>FE</i>	Proportion of members in the audit committee with financial expertise
<i>AFE</i>	Proportion of members in the audit committee with accounting financial expertise
<i>NAFE</i>	Proportion of members in the audit committee with non-accounting financial expertise.
<b>Control Variables</b>	
<i>Ac_meetings</i>	Number of meetings of the audit committee in a year
<i>Size</i>	Logarithm of the total assets
<i>Leverage</i>	Ratio of total debt to assets
<i>Profitability</i>	Return on assets
<i>Growth</i>	Change in net sales
<i>Firmage</i>	The number of years since the formation of the firm
<i>Segments</i>	Number of business segments
<i>Sector</i>	Dummy variables for each industry
<i>Year</i>	Dummy variables for each year

## 4. Results

### 4.1. Descriptive statistics and correlations

Table 3 provides the main descriptive statistics for our variables. As regards the main measure of the readability of management reports, the average value of the Fog Index is 18.22, which highlights that management reports are very difficult to read because they have a high complexity. This value is similar to those found by other studies on the readability of management reports in other countries in the European Union or in the United States (Ajina et al., 2016; Melloni et al., 2017; Ben-Amar & Belgacem, 2018). With respect to the Smog index, an average of 14.239 is obtained. This score corresponds to texts with an "Intermediate-easy" level in terms of readability, which shows important differences with respect to the Fog Index. The previous literature also shows

**Table 3. Descriptive Statistics**

	Mean	Standard deviation	Q1	Median	Q3
<i>Fog</i>	18.220	2.007	17.3	18.35	19.5
<i>Smog</i>	14.239	1.456	13.525	14.3	15.1
<i>Length</i>	25.350	4.499	23.005	25.79	28.31
<i>Complex_words</i>	20.201	2.268	19.003	20.24	21.475
<i>Number_pages</i>	30.415	30.584	10	21	34
<i>FE</i>	0.361	0.285	0.2	0.333	0.575
<i>AFE</i>	0.174	0.181	0	0.2	0.333
<i>NAFE</i>	0.187	0.210	0	0.2	0.333
<i>Ac_meetings</i>	9.543	4.818	6	9	12
<i>Size</i>	14.875	3.732	13.779	15.037	16.997
<i>Leverage</i>	0.669	0.277	0.527	0.709	0.882
<i>Growth</i>	0.036	0.124	-0.033	0.021	0.086
<i>Profitability</i>	5.149	5.731	1.475	3.875	6.94
<i>Firmage</i>	57.447	49.301	24.5	43	74.5
<i>Segments</i>	3.622	1.743	3	3	4

See Table 2 for the definition of all the variables.



**Table 4. Pearson's Correlation Matrix**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 <i>Fog</i>	1													
2 <i>Smog</i>	0.959***	1												
3 <i>Length</i>	0.892***	0.905***	1											
4 <i>Complex_words</i>	0.443***	0.327***	-0.010	1										
5 <i>Number_pages</i>	0.074	0.087	-0.004	0.171**	1									
6 <i>FE</i>	0.140*	0.175**	0.142*	0.028	0.227***	1								
7 <i>AFE</i>	0.104	0.117	0.148**	-0.065	0.132*	0.677***	1							
8 <i>NAFE</i>	0.101	0.136*	0.065	0.095	0.195***	0.773***	0.056	1						
9 <i>Ac_meetings</i>	0.068	0.089	0.099	-0.047	0.327***	0.037	-0.048	0.091	1					
10 <i>Size</i>	0.159**	0.171**	0.128*	0.101	0.467***	0.145**	-0.107	0.289***	0.397***	1				
11 <i>Leverage</i>	-0.106	-0.085	-0.062	-0.110	0.300***	-0.014	-0.109	0.075	0.415***	0.662***	1			
12 <i>Profitability</i>	0.106	0.117	0.093	0.050	-0.241*	0.077	0.047	0.063	-0.101	-0.015	-0.153**	1		
13 <i>Growth</i>	0.002	-0.009	-0.022	0.049	-0.080	0.062	0.019	0.068	-0.110	-0.002	0.013	-0.005	1	
14 <i>Firmage</i>	0.059	0.006	0.027	0.077	0.083	-0.142*	-0.083	-0.121*	0.106	-0.008	-0.002	-0.059	-0.014	1
15 <i>Segments</i>	-0.205***	-0.144**	-0.128*	-0.199***	0.228***	-0.082	-0.0914	-0.032	0.275***	0.213***	0.444***	-0.204***	-0.070	0.244***

\*p-value &lt; 0.1; \*\* p-value &lt; 0.05; \*\*\* p-value &lt; 0.01.

differences between the Fog and Smog Indices due to their calculation and underline that Smog scores tend to report a higher readability than Fog values (Nazari et al., 2017). On the other hand, our results also highlight that only 36.1% of the audit committee members have financial expertise. Particularly, only 17.4% of the directors are accounting financial experts, and 18.7% of the directors are non-accounting financial experts. In addition, our findings show that ACs, on average, held nine meetings per year.

The sample correlations between all the variables are reported in Table 4. The Fog and Smog Index are correlated, as could be expected. The bivariate correlations show that the proportion of financial experts in the AC is positively associated with the values of readability indices, which means that AC financial expertise is negatively related to the readability of management reports, as predicted in the theoretical framework. As expected, the variable FE shows a positive association with both AFE and NAFE. Nevertheless, the correlation coefficients show that the variables AFE and NAFE are not correlated. In addition, we fail to find a positive bivariate correlation between the readability of management reports and most of the control variables, except for firm size and the number of segments. Overall, none of the independent variables show a significantly high correlation, which suggests multicollinearity is not likely to be an issue in our regression models<sup>2</sup>.

#### 4.2. Multivariate analysis

The results of the multivariate analysis are presented in Table 5. Model 1 only considers the control variables. Specifically, a negative relationship between the readability of management reports (higher values of the Fog Index) and both firm size and firm age is found. In line with prior studies, larger and older firms tend to have greater complexities and therefore longer and less readable reports (Li, 2008; De Franco, 2015). An unexpected positive association between business segments and information readability is also found (Li, 2008). Results from Model 2 show a negative and significant association between AC financial expertise and the readability of management reports, thus accepting our hypothesis H1. As predicted, financial experts in the AC are likely to exert a strong monitoring of the reporting process and promote the disclosure of additional specific information for investors

<sup>2</sup>Generally, multicollinearity is considered to be a problem if a correlation between independent variables is higher than 0.7 (Cooper & Schindler, 2003).

and policymakers (Güner et al., 2008; García-Sánchez et al., 2017), which may increase the complexity of these reports. Models 3, 4 and 5 examine the effect of specific AC financial expertise on the readability of management reports. The results indicate that only AFE (and not NAFE) is significantly related to the readability of management reports. Firms with a higher proportion of accounting financial experts in the AC disclose more complex, and therefore less readable, management reports. Hence, our hypothesis H2 can be accepted. The regression analysis confirms that financial expertise, and particularly accounting financial expertise, individually helps to explain the variations in readability scores. In particular, adjusted R2 increases in the models that incorporate a broad definition of financial expertise, and especially in the models containing AFE.

**Table 5. Results of the regression of information readability and AC financial expertise**

	Model 1	Model 2	Model 3	Model 4	Model 5
<i>Constant</i>	16.392 (13.89)***	15.756 (12.91)***	15.685 (12.72)***	16.312 (13.71)***	15.577 (12.51)***
<i>FE</i>		1.430 (2.12)**			
<i>AFE</i>			1.805 (1.77)*		1.877 (1.83)*
<i>NAFE</i>				1.044 (1.21)	1.113 (1.83)
<i>Ac_meetings</i>	0.016 (0.49)	0.011 (0.35)	0.011 (0.33)	0.016 (0.48)	0.010 (0.30)
<i>Size</i>	0.217 (3.01)***	0.181 (2.47)**	0.210 (2.94)***	0.19 (2.63)**	0.186 (2.52)**
<i>Leverage</i>	-1.210 (-1.21)	-0.678 (-0.66)	-0.89 (-0.88)	-1.009 (-0.99)	-0.654 (-0.64)
<i>Profitability</i>	-0.025 (-0.99)	-0.026 (-1.04)	-0.024 (-0.94)	-0.027 (-1.05)	-0.025 (-1.01)
<i>Growth</i>	0.147 (0.15)	-0.059 (-0.06)	-0.025 (-0.03)	0.096 (0.10)	-0.085 (-0.09)
<i>Firmage</i>	0.008 (1.84)*	0.008 (1.98)**	0.008 (1.89)*	0.008 (1.91)*	0.008 (1.96)**
<i>Segments</i>	-0.314 (-2.48)**	-0.309 (-2.45)**	-0.306 (-2.44)**	-0.315 (-2.47)**	-0.307 (-2.43)**
<i>Year</i>	YES	YES	YES	YES	YES
<i>Sector</i>	YES	YES	YES	YES	YES
Adjusted R-sq	0.200	0.206	0.218	0.1956	0.212
F test	(21.34)*	(25.93)**	(25.00)**	(22.48)*	(26.24)**

Model 1: Fog = f (control variables)

Model 2: Fog = f (FE, control variables)

Model 3: Fog = f (AFE, control variables)

Model 4: Fog = f (NAFE, control variables)

Model 5: Fog = f (AFE, NAFE, control variables)

See Table 2 for the definition of all the variables. \* p-value &lt; 0.1; \*\* p-value &lt; 0.05; \*\*\* p-value &lt; 0.01.

In addition, Table 6 presents the results from the regression analyses including the interaction of the variables related to financial expertise with the number of AC meetings (*Ac\_meetings*). In relation to financial expertise, defined in a broad sense, Model 2 confirms that the relationship between AC financial expertise and readability scores is significant only for ACs with more frequent meetings. In the same way, Models 3, 4, and 5 confirm that AC activity influences the association between AC AFE and the readability of management reports. Therefore, Hypothesis 3 can be supported. These results suggest that ACs that meet more frequently facilitate financial experts having a greater influence on management reports (Al-Mudhaki & Joshi, 2004).

**Table 6. Relationship between information readability and AC financial expertise including the moderating effect of AC meetings**

	Model 2	Model 3	Model 4	Model 5
<i>Constant</i>	16.504 (12.82)***	16.545 (12.55)***	16.303 (13.60)***	16.613 (12.37)***
<i>FE</i>	-0.749 (-0.56)			
<i>AFE</i>		-0.937 (-0.53)		-1.354 (-0.75)
<i>NAFE</i>			1.232 (0.67)	0.282 (0.15)
<i>FE_meetings</i>	0.223 (1.91)*			
<i>AFE_meetings</i>		0.256 (1.90)*		0.314 (2.23)**
<i>NAFE_meetings</i>			-0.017 (-0.11)	0.108 (0.70)
<i>Ac_meetings</i>	-0.084 (-1.40)	-0.067 (-1.27)	0.018 (0.47)	-0.100 (-1.64)
<i>Size</i>	0.196 (2.65)**	0.213 (2.96)***	0.194 (2.57)**	0.191 (2.45)**
<i>Leverage</i>	-0.715 (-0.70)	-0.785 (-0.77)	-0.988 (-0.96)	-0.534 (-0.51)
<i>Profitability</i>	-0.027 (-1.06)	-0.024 (-0.95)	-0.027 (-1.05)	-0.026 (-1.04)
<i>Growth</i>	-0.309 (-0.32)	-0.193 (-0.20)	0.102 (0.11)	-0.344 (-0.36)
<i>Firmage</i>	0.009 (2.05)**	0.008 (1.85)*	0.008 (1.89)**	0.008 (1.97)**
<i>Segments</i>	-0.300281 (-2.38)**	-0.317 (-2.51)**	-0.317 (-2.46)**	-0.312 (-2.43)**
<i>Year</i>	YES	YES	YES	YES
<i>Sector</i>	YES	YES	YES	YES
Adjusted R-sq	0.201	0.199	0.1949	0.197
F test	(29.57)**	(28.22)**	(22.29)	(30.70)**

Model 1: Fog = f (control variables)

Model 2: Fog = f (FE, control variables)

Model 3: Fog = f (AFE, control variables)

Model 4: Fog = f (NAFE, control variables)

Model 5: Fog = f (AFE, NAFE, control variables)

See Table 2 for the definition of all the variables. \* p-value < 0.1; \*\* p-value < 0.05; \*\*\* p-value < 0.01.

#### 4.3. Additional tests and endogeneity analysis

Additional sensibility analysis and robustness tests were performed to ensure that our findings are not influenced by our empirical design. First, a sensitivity analysis is performed, where the Smog Index is employed as a dependent variable (Smog). The results, reported in the Table 7, confirm the existence of a negative association between AC financial expertise, especially AFE, and the readability of management reports. Other additional tests have been performed including the variables Length, Complex\_words, and Number\_pages as dependent variables (Luo et al., 2018; De Souza et al., 2019; Hesarzadeh & Bazrafshan, 2019). The results are presented in Table 8, divided into three different panels. These results show that there is a significant and positive association

between Length and both financial expertise in a broad sense and particularly AFE. Moreover, AFE is also positively associated with Number\_pages. In contrast, financial expertise appears to be unrelated to Complex\_words. These findings serve to explain the reasons behind the reduction in readability due to the AC financial expertise by indicating that, specifically, ACs with accounting financial experts tend to include longer explanations in the management reports which are, as a result, more extensive.

**Table 7. Sensitivity analysis with Smog Index**

	Model 1	Model 2	Model 3	Model 4	Model 5
<i>Constant</i>	13.164 (15.58)***	12.648 (14.49)***	12.630 (14.26)***	13.103 (15.40)***	12.545 (14.03)***
<i>FE</i>		1.111 (2.29)**			
<i>AFE</i>			1.361 (1.85)*		1.419 (1.92)*
<i>NAFE</i>				0.843 (1.35)	0.896 (1.44)
<i>Ac_meetings</i>	0.015 (0.63)	0.012 (0.48)	0.012 (0.46)	0.016 (0.62)	0.011 (0.43)
<i>Size</i>	0.157 (3.03)***	0.130 (2.45)**	0.152 (2.96)***	0.139 (2.61)***	0.133 (2.49)**
<i>Leverage</i>	-1.117 (-1.55)	-0.692 (-0.94)	-0.872 (-1.20)	-0.949 (-1.30)	-0.675 (-0.91)
<i>Profitability</i>	-0.009 (-0.51)	-0.11 (-0.58)	-0.008 (-0.48)	-0.011 (-0.59)	-0.010 (-0.56)
<i>Growth</i>	0.171 (0.24)	0.004 (0.00)	0.042 (0.06)	0.122 (0.17)	0.013 (-0.02)
<i>Firmage</i>	0.004 (1.26)	0.004 (1.43)	0.004 (1.31)	0.004 (1.36)	0.004 (1.40)
<i>Segments</i>	-0.146 (-1.61)	-0.143 (-1.58)	-0.140 (-1.56)	-0.148 (-1.62)	-0.142 (-1.56)
<i>Year</i>	YES	YES	YES	YES	YES
<i>Sector</i>	YES	YES	YES	YES	YES
Adjusted R-sq	0.187	0.191	0.200	0.184	0.194
F test	(19.29)	(24.52)**	(23.11)*	(20.81)*	(24.75)**

Model 1: Smog = f (control variables)

Model 2: Smog = f (FE, control variables)

Model 3: Smog = f (AFE, control variables)

Model 4: Smog = f (NAFE, control variables)

Model 5: Smog = f (AFE, NAFE, control variables)

See Table 2 for the definition of all the variables. \* p-value < 0.1; \*\* p-value < 0.05; \*\*\* p-value < 0.01.

Moreover, although we have one-year lagged our independent variables, this may not be enough to reduce endogeneity concerns, as factors affecting information readability and the presence of financial experts on the AC may be endogenously determined, which could bias our regression analysis (Mangena et al., 2020). As a result, an additional analysis, presented in Table 9, is performed to ensure that the readability of management reports and directors' characteristics are not endogenously determined. Consistent with the related literature (Abernathy et al., 2014; Muslu et al., 2017), a probit regression is estimated to determine the predicted probability of having an audit committee member with financial expertise. The dependent variable is a dummy variable that equals one if the firm has at least one financial expert in the audit committee and zero otherwise. In line with prior evidence, we consider several determinants of the presence of financial experts in the audit committee (Dhaliwal et al., 2010; Abernathy et al., 2014): corporate governance quality, firm size, leverage, profitability and firm growth. The probit regression enables calculating the Inverse Mills ratio (the ratio of the probability density function to the cumulative distribution function), and we include it as an additional explanatory variable in the models (Mills). The dependent variable, Fog, remains negatively associated with AC financial expertise, and especially with the AFE of AC members.



**Table 8. Regression analysis with Length, Complex\_words and Number\_pages**

Panel A: Results of the regression of Length and AC financial expertise.					
	Model 1	Model 2	Model 3	Model 4	Model 5
Constant.	21.324 (8.17)***	19.975 (7.44)***	19.532 (7.22)***	21.213 (8.06)***	19.398 (7.10)***
FE		2.890 (1.93)**			
AFE			4.479 (1.98)**		4.551 (2.00)**
NAFE				1.607 (0.82)	1.6736 (0.87)
Ac_meetings	0.073 (0.91)	0.064 (0.80)	0.063 (0.78)	0.071 (0.89)	0.060 (0.76)
Size	0.423 (2.64)***	0.354 (2.17)**	0.413 (2.63)***	0.389 (2.34)**	0.375 (2.30)**
Leverage	-2.081 (-0.93)	-1.001 (-0.44)	-1.360 (-0.61)	-1.737 (-0.76)	-0.973 (-0.43)
Profitability	-0.025 (-0.42)	-0.028 (-0.49)	-0.024 (-0.41)	-0.028 (-0.47)	-0.027 (-0.45)
Growth	0.562 (0.24)	0.102 (0.04)	0.098 (0.04)	0.475 (0.21)	0.002 (0.00)
Firmage	0.015 (1.60)	0.016 (1.75)*	0.015 (1.67)*	0.016 (1.65)*	0.016 (1.72)*
Segments	-0.562 (-2.01)**	-0.555 (-2.00)**	-0.542 (-1.98)**	-0.566 (-2.01)**	-0.546 (-1.97)**
Year	YES	YES	YES	YES	YES
Sector	YES	YES	YES	YES	YES
Adjusted R-sq	0.147	0.176	0.176	0.143	0.171169
F test	(16.46)	(20.55)	(21.49)*	(16.02)	(21.80)

**Panel B: Results of the regression of Complex\_words and AC financial expertise.**

	Model 1	Model 2	Model 3	Model 4	Model 5
Constant.	19.974 (14.39)***	19.632 (13.68)***	19.855 (13.75)***	19.868 (14.23)***	19.708 (13.54)***
FE		0.766 (1.04)			
AFE			0.361 (0.33)		0.473 (0.43)
NAFE				0.922 (1.01)	0.961 (1.05)
Ac_meetings	-0.014 (-0.45)	-0.016 (-0.53)	-0.015 (-0.48)	-0.014 (-0.45)	-0.015 (-0.49)
Size	0.113 (1.41)	0.095 (1.15)	0.110 (1.36)	0.099 (1.21)	0.094 (1.14)
Leverage	-1.398 (-1.26)	-1.173 (-1.03)	-1.329 (-1.17)	-1.303 (-1.17)	-1.209 (-1.06)
Profitability	-0.047 (-2.01)**	-0.046 (-1.98)**	-0.046 (-1.97)**	-0.048 (-2.05)**	-0.047 (-2.00)**
Growth	-0.641 (-0.78)	-0.727 (-0.88)	-0.67725 (-0.81)	-0.655 (-0.80)	-0.702 (-0.84)
Firmage	0.005 (0.85)	0.005 (0.89)	0.005 (0.84)	0.005 (0.90)	0.005 (0.90)
Segments	-0.214 (-1.49)	-0.209 (-1.46)	-0.213 (-1.48)	-0.211 (-1.47)	-0.210 (-1.45)
Year	YES	YES	YES	YES	YES
Sector	YES	YES	YES	YES	YES
Adjusted R-sq	0.1682	0.1660	0.1668	0.1699	0.1676
F test	(20.17)	(21.14)	(20.12)	(21.13)	(21.16)

Nevertheless, the readability of management reports is not associated with non-accounting financial experts. The significance and direction of the main explanatory variables and the control variables remain basically unchanged after the inclusion of the Inverse Mills ratio in the equation. These results reject the existence of endogeneity problems and confirm that financial experts in the AC, particularly those with specific accounting expertise, lead to the disclosure of more complex and less readable management reports.

**Panel C: Results of the regression of Number\_pages and AC financial expertise.**

	Model 1	Model 2	Model 3	Model 4	Model 5
Constant.	7.198 (0.46)	4.517 (0.29)	0.713 (0.05)	8.325 (0.53)	1.716 (0.11)
FE		5.044 (0.67)			
AFE			19.828 (1.78)**		19.223 (1.71)*
NAFE				-6.376 (-0.69)	-4.223 (-0.46)
Ac_meetings	-0.234 (-0.80)	-0.244 (-0.82)	-0.298 (-1.00)	-0.239 (-0.82)	-0.300 (-1.01)
Size	1.696 (2.02)**	1.622 (1.89)*	1.530 (1.82)*	1.750 (2.06)*	1.569 (1.84)*
Leverage	-8.628 (-0.74)	-7.670 (-0.65)	-5.042 (-0.43)	-8.744 (-0.75)	-5.244 (-0.44)
Profitability	-0.237 (-1.08)	-0.234 (-1.06)	-0.197 (-0.89)	-0.230 (-1.05)	-0.194 (-0.87)
Growth	1.040 (0.12)	0.439 (0.05)	-1.171 (-0.13)	1.037 (0.12)	-1.088 (-0.12)
Firmage	0.028 (0.42)	0.030 (0.46)	0.029 (0.46)	0.023 (0.39)	0.028 (0.43)
Segments	3.397 (2.23)**	3.422 (2.25)**	3.372 (2.23)**	3.352 (2.19)**	3.342 (2.20)**
Year	YES	YES	YES	YES	YES
Sector	YES	YES	YES	YES	YES
Adjusted R-sq	0.340	0.354	0.363	0.331	0.357
F test	(41.38)***	(42.54)***	(46.11)***	(41.31)***	(45.74)***

See Table 2 for the definition of all the variables. \*p-value < 0.1; \*\* p-value < 0.05; \*\*\* p-value < 0.01.

**Table 9. Endogeneity analysis**

	Model 2	Model 3	Model 4	Model 5
Constant.	15.478 (12.52)***	15.465 (12.39)***	16.052 (13.29)***	15.345 (12.16)***
FE	1.429 (2.12)**			
AFE		1.766 (1.73)*		1.843 (1.79)*
NAFE			1.066 (1.23)	1.138 (1.32)
Ac_meetings	0.012 (0.37)	0.012 (0.36)	0.017 (0.50)	0.011 (0.33)
Size	0.255 (2.83)***	0.280 (3.18)***	0.271 (2.98)***	0.258 (2.85)***
Leverage	-1.708 (-1.35)	-1.886 (-1.51)	-2.068 (-1.64)	-1.672 (-1.32)
Profitability	-0.049 (-1.65)	-0.045 (-1.53)	-0.050 (-1.68)*	-0.048 (-1.61)
Growth	0.464 (0.46)	0.480 (0.47)	0.633 (0.62)	0.433 (0.42)
Firmage	0.009 (2.03)**	0.008 (1.94)*	0.008 (1.97)**	0.008 (2.01)**
Segments	-0.338 (-2.63)***	-0.334 (-2.62)***	-0.345 (-2.66)***	-0.336 (-2.61)***
Mills	0.893 (1.44)	0.862 (1.39)	0.920 (1.47)	0.882 (1.42)
Year	YES	YES	YES	YES
Sector	YES	YES	YES	YES
Adjusted R-sq	0.202	0.214	0.193	0.207
F test	(27.83)**	(26.70)*	(24.48)	(28.05)*

Model 2: Fog = f (FE, control variables)

Model 3: Fog = f (AFE, control variables)

Model 4: Fog = f (NAFE, control variables)

Model 5: Fog = f (AFE, NAFE, control variables)

See Table 2 for the definition of all the variables. \*p-value < 0.1; \*\* p-value < 0.05; \*\*\* p-value < 0.01.

#### 4.4. Discussion

These findings extend the literature on both AC financial expertise and the determinants of information readability. First, the regulatory and professional discussions about the relevance of directors' financial expertise have attracted attention from academics, and previous literature has commented on the effect of AC financial expertise on accounting quality or specific disclosures. Our paper adds evidence to recent research on the impact of AC financial expertise on information readability. Unlike [Velte \(2018b\)](#), we argue that AC financial experts may have an active role in the oversight of mandatory financial reports, such as the management reports, thus leading to a reduction in their readability. This can be explained by a greater engagement of AC financial experts in reviewing the management report, enhancing specific disclosures to meet higher standards, which is likely to increase syntactical complexity. Our paper is in line with recent studies which support that information readability may not be necessarily related to managers' obfuscation, but lower readability can be also associated with the disclosure of additional complex information that is expected to be useful for investors and policymakers ([Loughran & McDonald, 2014](#); [Guay et al., 2016](#); [Hesarzadeh et al., 2019](#)).

In particular, due to their specific knowledge and experience, financial experts are in a better position to understand certain complex issues and they may encourage the AC to include in the management report detailed information regarding financial operations, the economic environment, associated risks, or about business projections ([Xie et al., 2003](#); [Badolato et al., 2014](#)). As expected, financial experts with explicit accounting expertise exert a stronger monitoring of annual accounts and associated reports, and may have a stronger effect on the oversight of management reports ([Zhang et al., 2007](#); [Dhaliwal et al., 2010](#); [Baatwah et al., 2015](#)). These results are consistent with previous evidence suggesting that accounting experts intensify the monitoring activity of ACs ([Dhaliwal et al., 2010](#); [Ghafran & O'Sullivan, 2017](#)). Particularly, these experts have advanced knowledge in accounting and auditing, and they make a greater emphasis on the need to include technical information in corporate reports ([Scarpati, 2003](#)). For instance, they are more likely to induce disclosures in the management report of the evolution of the financial statements, financial projections, earnings forecasts, and other accounting issues such as mergers and acquisitions, financial assets, derivatives or hedging ([Tanyi & Smith, 2014](#); [Abad & Bravo, 2018](#)). Specifically, this kind of information may require more extended explanations and longer documents.

An additional implicit debate that may arise from our evidence is related to the controversial association between readability and understandability ([Stone & Lodhia, 2019](#)). Irrespective of the understandability and usefulness of certain disclosures, information readability can be low since formulas to measure it generally focus on the analysis of the syntactical complexity (word length and sentence length). In this regard, this paper adds evidence to the considerable discussion among academics on the concept of readability ([Courtis, 2004](#); [Stone & Parker, 2013](#)).

Moreover, consistent with recent research, our evidence also confirms that contextual factors moderate the role of AC members ([Li, 2008](#); [Bravo & Reguera-Alvarado, 2019](#)) and, concretely, the frequency of AC meetings is vital to examine the influence of its members in corporate reporting decisions. Particularly, our results suggest that the AC activity is likely to affect the degree of dedication and coordination of its mem-

bers and, therefore, the way financial experts oversee management reports.

In addition, our study complements readability studies, as while information readability has become an important issue for policymakers, previous studies have focused mainly on financial attributes ([Li, 2008](#); [Lehavy et al., 2011](#)) and gender diversity ([Ginesti et al., 2018](#); [Velte, 2018a](#)) as potential determinants of readability levels.

#### 5. Conclusion

Our study presents new empirical evidence regarding the impact of AC on reporting practices. In particular, we broaden the previous research by examining the relation between AC financial expertise and reporting readability, which has become a relevant information attribute for academics and policymakers. We find that the presence of financial experts in the AC, especially accounting financial experts, reduces the readability of management reports. All the management reports examined were written in English in order to enhance the comparability of our findings in an international context and make our evidence more generalizable. A number of sensitivity analysis and additional tests have been performed and our results remain robust.

This paper has several implications which are both practical and academic. First, the effect of financial experts in the AC on reporting practices has recently attracted great attention from academics, professionals and regulators. Our findings extend the debate about the role of financial experts, specifically those with accounting expertise, in the AC. These ACs with a higher proportion of accounting experts have a greater influence on management reports by promoting the disclosure of additional information. This could help regulators and professionals to guide their requirements and recommendations about directors' qualifications. At the same time, stakeholders may demand that nomination committees appoint directors with specific characteristics. Second, our evidence emphasizes the need for regulators and researchers to further explore the effects of information readability. As previously discussed, readability and understandability are often unrelated. There is no academic consensus on how closely the readability reflects the actual understanding process. While understandability considers certain characteristics of the reader (such as prior knowledge, reading ability, interests), the concept of readability excludes these factors and focuses on a syntactic analysis of a text ([Jones & Shoemaker, 1994](#)). As readability scores are based on the writing style instead of the content of information, we support the idea that the consequences of reporting readability, especially when using readability formulas, need to be carefully interpreted. For instance, in many cases, the disclosure of specific information related to financial or accounting issues may be useful for investors and reduce uncertainty, but also may increase syntactical complexity by extending reports and thus reducing the information readability. In this line, [Loughran & McDonald \(2014\)](#) highlight that accounting and financial explanations are likely to increase syntactical complexity (and the Fog Index may indicate low levels of readability), although this kind of disclosures are commonly understood and helpful for investors.

In addition, our paper also presents significant implications due to the consideration of the context in which the financial experts work to better understand their impact on information readability. Therefore, researchers should be aware that the traditional one-size-fits-all approach may be inappropriate to examine the effects of ACs. As a result, more

contextual research will assist both professionals and policy-makers by refining their specific recommendations about the composition of ACs. In particular, we suggest that studies examining the effect of AC on reporting practices need to take into consideration the activity of this committee. These findings are expected to encourage policy-makers and professional bodies to more explicitly include AC activity as an important issue in their legislations, codes of governance, and recommendations.

This research presents interesting avenues for future research. First, future studies could investigate different contexts. In addition, other moderating factors apart from AC activity could also be examined. Therefore, we think our paper offers a valuable insight into accounting issues because the influence of AC financial expertise on reporting practices remains a relevant and open question in the literature.

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## Conflict of interests

The authors declare no conflict of interests.

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