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Audit quality and earnings management. Theoretical issues and empirical evidence

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Introduction

This thesis aims to investigate audit quality in both the private and public sectors, specifically through the analysis of earnings management. The work is divided into five chapters: the first four are published articles, while the fifth chapter presents the conclusions.

The first chapter presents a systematic review concerning audit quality in the public sector. The Scopus database was exclusively used to perform the systematic review to ensure greater robustness of the documents analyzed. The analysis revealed that, although the number of publications has increased in recent years, it remains minimal. Almost all contributions were individual papers. It was also found that audit quality was investigated in different countries, with varying social contexts and regulatory frameworks that influenced the results. It was confirmed that the results were influenced by differences in social contexts and the measures introduced through national regulations.

In the second chapter, earnings management was analyzed through a systematic review of the relevant literature. The most influential studies on the topic were identified, and the article was structured by distinguishing between first-generation and second-generation models.

In the third chapter, the models discussed in the second chapter were empirically applied. The analysis focused on the agribusiness sector, which has rarely been investigated. All Italian agri-food companies adopting international accounting standards were analyzed using the AIDA database. To identify potential earnings management behavior, the transition from IAS 39 to IFRS 9 — regarding the measurement of losses — was considered the event of interest. A total of 67 companies with complete data were analyzed; consequently, the sample size may limit the results' robustness.

In Chapter 4, a further analysis was conducted to explore the potential link between earnings management and business discontinuation. Discontinuation refers to both bankruptcy and company liquidation. The sample included all companies adopting international accounting standards that did not operate in the financial sector and were not listed on regulated markets. For the 2,699 Italian companies meeting these criteria, the models of Jones and Dechow et al. were applied.

In the fifth chapter, the conclusions to this work are reported, focusing on the problems inherent in the calculation methods found in the public sector regarding the application of the models highlighted in the previous chapters in the cases of public administrations. Given the differences in the drafting of accounting documents in the different sectors that comprise the public sector

and between the different administrations that comprise the same sector. The application, especially in the Italian market, is even more complicated given the various regulatory adjustments that have taken place, are taking place, and will take place soon.

Chapter 1. A systematic and bibliometric review of the audit quality in the public sector

Abstract: This document includes a systematic and bibliometric review of research outcomes addressing the quality of public sector auditing published between 1991 and 2021. The methodology followed for the systematic review involves using an analysis protocol. Regarding the bibliometric analysis, we aim to guide readers in identifying the most significant research, if any, and we also examine the references in terms of reciprocity. Audit quality has been studied mainly in the private sector; in the public sector, there are relatively few reference texts, and there appear to be limited connections and integration among them. High-quality public auditing can benefit the population and should be considered in the regulatory and institutional context and by professionals working in the field. Since this topic is still underexplored, the article contributes to the literature by providing a theoretical overview of the different approaches used to analyze this issue. The framework illustrates the various approaches used to analyze audit quality in the public sector.

1. Introduction

Audit quality has been studied from various perspectives, with a notable proliferation of research, particularly within the economic sphere. Over time, most of these studies have concentrated on companies operating in the private sector, aiming to analyze the different aspects and variables that may influence audit processes. In contrast, significantly fewer studies have focused on the analysis of audit quality within the public sector.

This gap has motivated the development of this paper, whose main objective is to conduct a systematic and bibliometric review of the literature in an area that remains underdeveloped and underexplored.

This paper adopts both a systematic and a bibliometric approach, allowing it to be classified as a “mixed study review.” The study is conducted using both qualitative and quantitative methods to draw comprehensive conclusions, as suggested by Grant and Booth (2009).

The use of a systematic review is helpful in understanding the developments that have occurred in recent years concerning audit quality in the public sector. This is achieved through the use of a rigorous protocol aimed at identifying a common theoretical framework that integrates the various approaches used by scholars with the different factors influencing

audit quality. The bibliometric review analyses the number of citations received by each paper to identify the most influential works, while also examining the reciprocity of citations among them.

The first notable finding is that the number of studies addressing audit quality in the public sector has increased over time. It is also important to note that the contexts examined varies significantly, and the studies analyze different aspects of audit quality.

Some studies focus on internal audit quality, others assess the performance of public sector auditors, and some investigate potential external influences on their work.

With few exceptions, there appears to be little mutual citation among in the selected sample. The following section outlines the theoretical foundations for constructing a new framework specifically related to audit quality in the public sector. Section 3 describes the methodological approach, while Section 4 presents the overall findings from the systematic and bibliometric review of the literature. Section 5 presents the research findings in an effort to establish a shared theoretical framework on audit quality in the public sector, aiming to reconcile the various approaches used by scholars to explore this concept. Section 6 provides the conclusion and outlines the limitations of the current study, offering insights for potential future research developments.

2. Theoretical foundations

One of the most widely used definitions of audit quality is that provided by DeAngelo (1981): “the market-assessed joint probability that a given auditor will both (a) discover a breach in the client’s accounting system, and (b) report the breach” (p.186).

In the public sector, several factors are examined to assess whether audit quality is ensured. Ismail A.H., Merejok N.M., Dangi M.R.M., and Saad S. (2019) find that auditor independence and auditor competence are two key elements for an effective audit system. Other studies in the public sector, such as those by Deis and Giroux (1992) and McLelland and Giroux (2000), suggest that increased sector specialization enhances audit quality. According to Copley (1991), McClelland and Giroux (2000), and Ballantine et al. (2008), factors such as the auditor’s reputation and the size of the audit firm do not significantly influence audit quality.

Some studies on the public sector also evaluate the influence of political factors on audit quality, particularly in relation to auditor independence (Sumiyana S., Hendrian H., Jayasinghe K., Wijethilaka C., 2021). A similar study was conducted by Cohen and

Leventis (2013), which analysed the Greek context and the political delays impacting financial reporting in the public sector.

3. *Methods*

The systematic literature review adopts a scientific, rigorous, and transparent approach, which differs from traditional literature reviews (Cook et al., 1997), thereby reducing subjectivity. A bibliometric analysis was carried out to evaluate the most cited reference papers. The process consisted of three main phases: data collection, analysis, and synthesis. Regarding data collection, the SCOPUS database was used to identify research outputs that met specific criteria, including the use of the keywords described below. The preference for this database lies in the fact that it is the largest source of abstracts and citations from peer-reviewed literature. Compared to other databases, it includes not only journal articles but also books, book chapters—which are of particular interest in this study—and other types of publications such as editorials and conference proceedings. To be considered eligible, publications had to be relevant to the research objective and include the keywords “public sector” or “public administration” and “audit quality.” The concept of audit quality had to be central to the work and not mentioned only in passing or used to support unrelated discussions. Consequently, only the most relevant studies within the international academic community were selected. The selection was limited exclusively to peer-reviewed journal articles and book chapters written in English. Editorials and opinion pieces were excluded.

All grey literature (Rothstein and Hopewell, 2009) was also excluded, as peer-reviewed publications are more likely to meet higher quality standards. As for the time frame, only articles and book chapters published between 1991 and 2021 were included in the review. To facilitate the analysis of the selected papers, we developed a coding guide.

Several variables were identified, including the characteristics of the authors, the journals and books in which the studies were published, the type of research output (e.g., empirical or theoretical), and the methodology employed.

All these variables were entered into an Excel spreadsheet, which allowed for efficient data processing and organization.

For the systematic literature review, the data were made operational through the adoption of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework by Moher et al. (2009). This approach was chosen due to the widespread

recognition and application of the PRISMA protocol in systematic literature reviews (Tam et al., 2017).

To process the results, various Excel functions were employed. Among them was the construction of polynomial trend graphs, which were useful in identifying and visualizing trends over time, thus enabling a better understanding of the evolution of the phenomenon under investigation.

With regard to the bibliometric analysis, the study also examined mutual citations among the authors of the different publications.

Finally, for the synthesis phase, we grouped the publications concerning audit quality in the public sector according to the themes addressed by the individual works.

4. Results

4.1. Article selection

The inclusion criteria used in the SCOPUS database identified 37 results, including articles, journals, and book chapters, while excluding conference papers. Focusing on English-language publications that passed the peer-review process, the number drops to 35. The selection was therefore limited to the years 1991 to 2021.

Among them, there are 30 articles and 5 book chapters. The first interesting result of this work is that the number of studies in the SCOPUS database specifically focusing on audit quality in the public sector is low.

The criteria used for inclusion in the sample were that the articles being selected contained the terms "audit quality" and "public sector" or "public administration" and that there was a reference to the selected words in the abstracts.

Given the strict criteria used in selecting the articles, nearly all the results were included in the analysis.

4.2. Results of the systematic literature review

During the period analyzed, interest in the topic of audit quality in the public sector increased until 2017, experienced a slight decline in 2018, and then saw a renewed and consistent increase in 2020 and 2021.

The trend in the number of articles appears to be increasing and has not yet reached its peak. This suggests that the topic has yet to be developed and has not reached its maturity, which may be a starting point to work on to continue developing contributions in this area.

Among the book chapters considered, four — extracted from Nedyalkova's book in 2020 — had a significant impact on the analysis.

Figure 1 shows that, in most of the years analyzed, the number of articles published in peer-reviewed journals is consistently higher than or equal to the number of book chapters.

Figure 2 also shows an increasing number of contributing authors per year, indicating a growing academic interest in audit quality in the public sector.

Regarding the identity of the authors, the analyzed research produces a list of 72 names, with on average two authors per publication. In most cases, each scholar is the author of a single paper except for Johnsen, Kusumawati and Nedyalkova.

The research containing empirical analyses employed various statistical tools, including case studies, interviews, and regression analyses. The analysis of the methodologies adopted shows that 30 out of 35 papers used empirical methods to address the research questions, while the remaining 5 were theoretical in nature. Among the papers with empirical analyses, 26.67% (8/30) used interviews, 43.33% (13/30) employed regression analysis, 10% (3/30) conducted case studies, and 20% (6/30) applied other statistical tools. The studies examined a variety of geographical contexts: 5.71% (2/35) focused on African countries, 2.86% (1/35) on Oceania, 25.71% (9/35) on European countries, another 25.71% (9/35) on Asian countries, and 11.43% (4/35) on the American continent. The remaining studies addressed general themes not tied to specific countries or regions. This may be a further indicator of how the process of analyzing audit quality in the public sector is of great relevance in different geographical contexts with different regulations that may affect the results obtained in the various studies.

Figure 1 shows the trend-line, and the total number of research published in each year of the timeframe analyzed in this paper. It distinguishes the number of articles and book chapters.

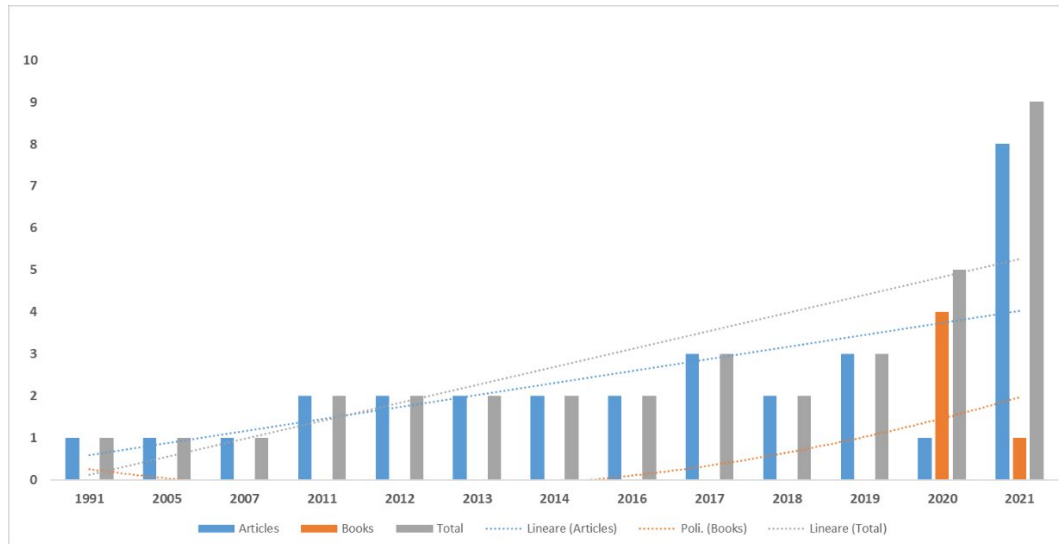


Figure 1 Number of research in the timeframe analysed

The Figure2 shows the polynomial trend-line and the number of authors that deal with audit quality in the timeframe analyzed in this paper. It can be useful to demonstrate the growth over time of the research community.

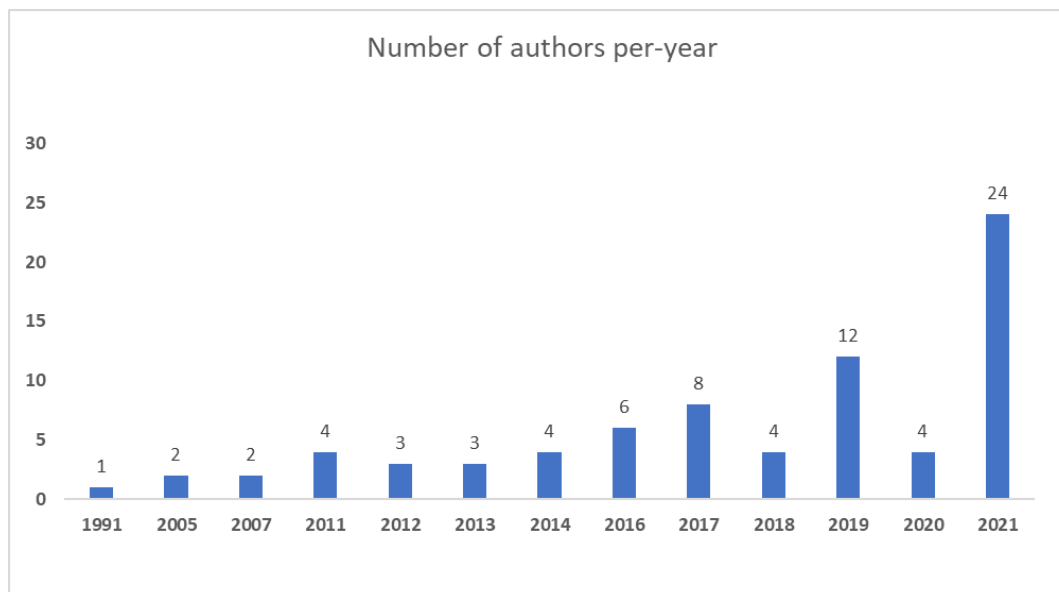


Figure 2 Number of authors per year

4.3. *Results of the bibliometric analysis*

The data reveal that the article that received the most citations was that published by Mihret D.G., Yismaw A.W., (2007) with 112 citations, published in Managerial Auditing Journal, followed by the publication of Copley P.A. (1991) in the Journal of Accounting and Public Policy with 52 citations and the paper by Jensen K.L., Payne J.L (2001) with 31 citations.

Although this may suggest that these articles are reference points for the field, it should be

noted that they are also the oldest publications in the sample. All of them were published in high-ranking journals and certainly have the potential to be increasingly cited in the coming years; however, as shown in Figures 3 and 4, the number of citations does not appear to be random, since the polynomial trend line changes its curvature over the period under investigation.

Regarding the network analysis, Figure 5 illustrates the citation links among the articles in the sample, helping to identify the most influential research. The network reveals that the scholarly community working on this topic is poorly integrated. This may be due to the limited number of studies on the topic and the diversity of the aspects analyzed, which are not always interconnected — suggesting the absence of a unifying theoretical framework.

The results show that only twelve research papers appear in the network. Interestingly, the nodes can essentially be grouped into three clusters. The first counts seven nodes (i.e., Copley, P.A. 1991; Giroux, G., Jones, R., 2011; Jensen, K.L., Payne, J.L. 2005; Cohen, S., Leventis, S. 2013; Greenwood, M., Zhan, R. 2019; Johnsen, Å. 2021; Donatella, P. 2021), all related to the evaluation of audit quality in individual, municipal or national public sector contexts. The second includes two nodes (e.g., Langella et al. 2021; Caruana J., Kowalczyk M. 2021) that focus on audit quality starting from an assessment of the composition of the auditing bodies. The third group consists of two articles (i.e., Nedyalkova, P. 2020; Mihret, D.G., Yismaw, A.W. 2007) that address similar themes. Figure 3 presents the average number of citations over the period 1991–2019. Figure 4 focuses on the period 2011–2021.

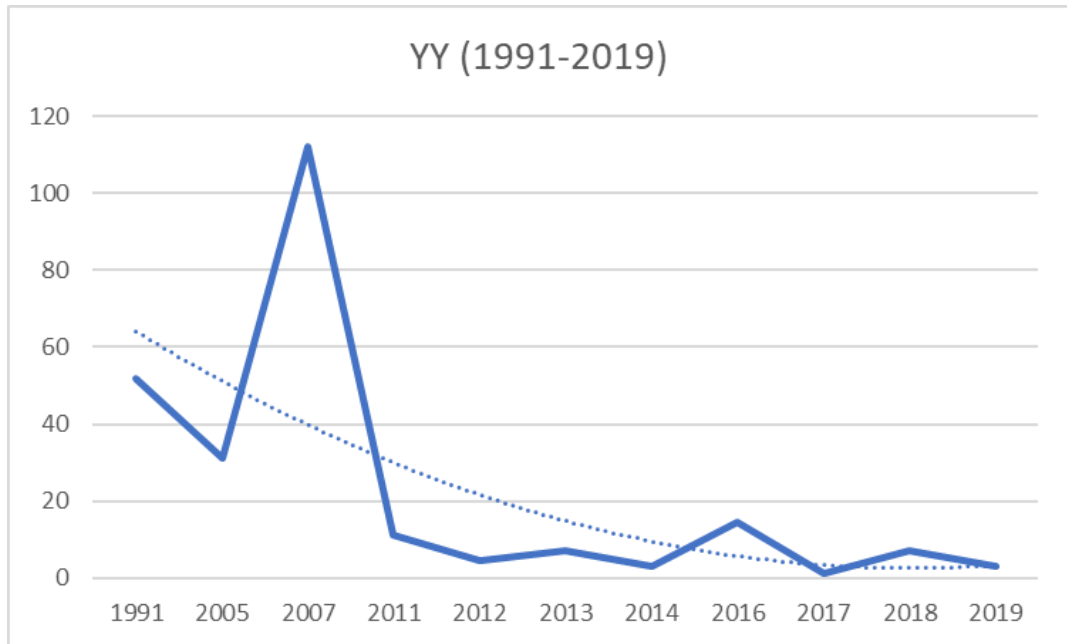


Figure 3 Average number of citations per product

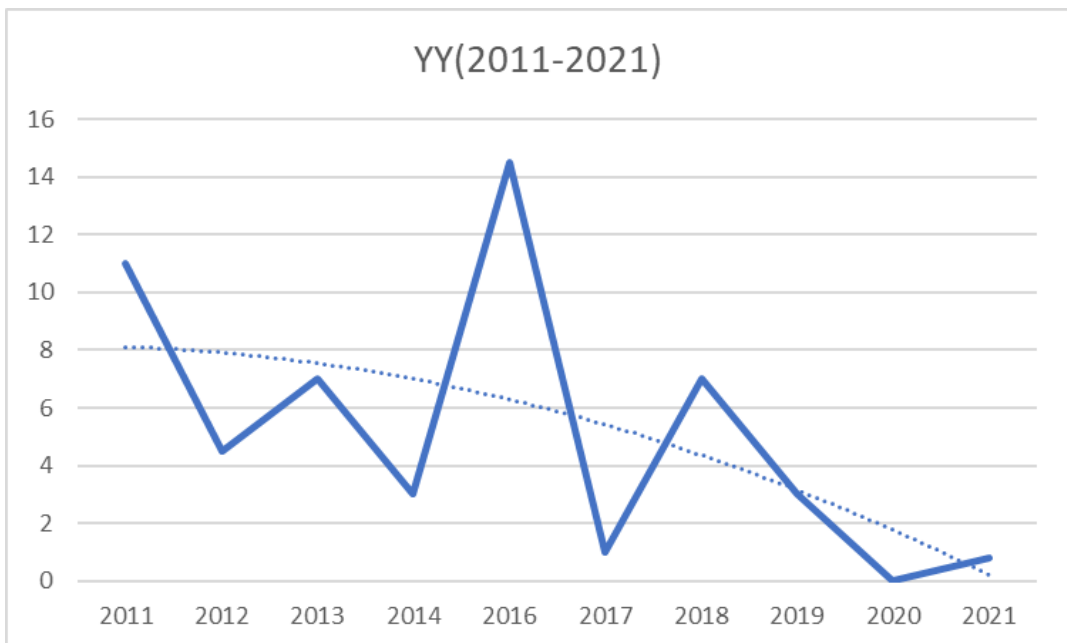


Figure 4 Average number of citations per product

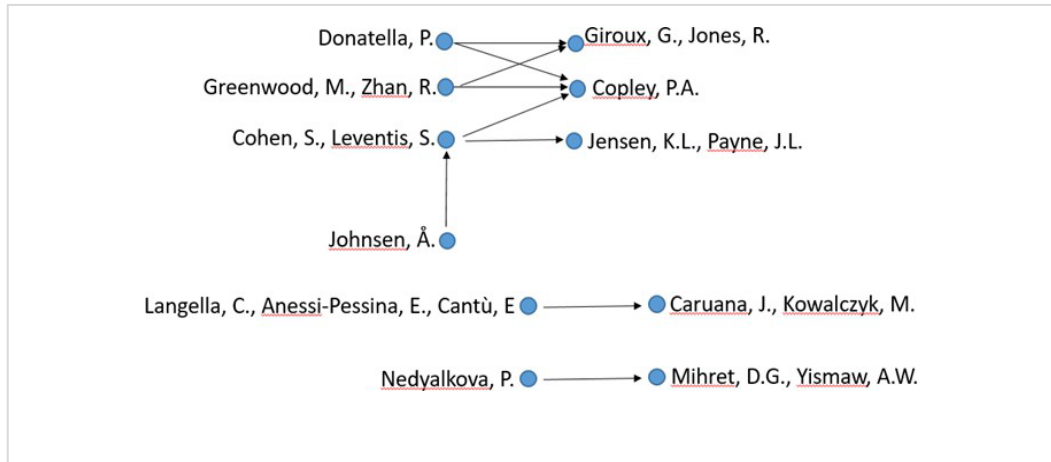


Figure 5 Network analysis

With regard to citations, it should be noted that there are very few cross-references among authors in the examined sample, and in all cases, they are not reciprocal. There appears to be a lack of integration among scholars in this field, which may be due to the diverse themes and practical cases through which audit quality in the public sector is analyzed.

4.4. In search of a common theoretical background

To summarize the findings from the previous sections of the systematic literature review, we can group studies on audit quality in the public sector according to the specific strands related to public sector characteristics that they address. Based on the literature review and the data collected, the development of research on audit quality in the public sector appears to be heterogeneous. Certain studies show distinctive features, such as the one by Sumiyana S., Hendrian H., Jayasinghe K., and Wijethilaka C. (2021), as well as the study by Johnsen Å., Reichborn-Kjennerud K., Carrington T., Jeppesen K.K., Taro K., and Vakkuri J. (2019), which also consider the political component and the potential distortions it may introduce to audit quality in the public sector. In the aforementioned cases, it should also be noted that mechanisms effective in more developed, typically Western, countries may be less effective—or even ineffective—in developing countries. A second strand relates to how audit structures operate in specific countries, particularly regarding internal auditing, as in the studies by Greenwood M. and Zhan R. (2019) and Giroux G. and Jones R. (2011), which assess internal audit quality. The first study investigates whether internal auditing can mitigate distortions during the preparation of financial reports, while the second explores how auditing is conducted for local governments in Wales and England—by whom, and whether its quality is comparable to that offered to private entities, as well as which bodies are primarily responsible.

Johnsen's (2021) study also falls within this line of research. This study approaches the issue from a different perspective, aiming to assess whether deregulation in Norway led to reduced audit prices and how professional services can be made more efficient in the public sector through outsourcing and contracting mechanisms. The study also demonstrates that there is a balance between audit quality and political decision-making. Figure 5 shows that Johnsen's work cites Cohen S. and Leventis S. (2013), who, through an empirical model, attempt to determine appropriate audit pricing in the public sector and identify the variables—particularly political factors—that may influence it. Based on the points discussed, particularly the studies by Johnsen (2021) and Cohen S. and Leventis S. (2013), the following framework can be proposed to analyze audit quality in the public sector:

- Analysis of the socio-economic and legal contexts
- Analysis of the variables under study
- Impact of political choices

To establish a common approach across the various studies conducted over the years, it is essential first to identify the geographical context being analysed; this is important as it helps to understand how the variables used to assess audit quality may be influenced by different supranational and national regulations, as well as how political choices in each region can affect outcomes. Moreover, particularly in the public sector, it is necessary to assess not only individual components but also the overall efficiency delivered to the community, while also attempting to measure the political “variable” in order to strike a balance between the two proposed lines of research.

5. Concluding remarks

As previously highlighted, academic interest in the analysis of audit quality in the public sector is also becoming increasingly significant.

This paper aims to propose a theoretical framework that summarizes the various approaches adopted and the contexts in which they are applied, while also highlighting differences in regulatory frameworks and institutional settings.

The findings suggest that, beyond methods and characteristics of audit quality, other factors—often indirect—can influence it, particularly during the regulatory and normative phases, thereby contributing to greater audit efficiency.

From an academic perspective, the limited number of available studies indicates significant

potential for further research on this topic

Despite the use of specific inclusion criteria, this study presents potential limitations, including possible selection bias and inaccuracies in data extraction.

These issues may stem from inherent limitations of the procedure itself, which, as noted by Moher et al. (2009), is not considered optimal and is subject to publication bias.

Future research could expand the sample by incorporating other databases or types of documents to enhance the robustness of the findings and assess their consistency with the results of this study. Among the various future research directions, a key priority will be to investigate audit quality across different countries, considering diverse legislative frameworks and policy choices. The resulting evaluations should also reassess the individual variables under observation.

Chapter 2. Detecting earnings management in annual reports. An evolutionary approach.

Abstract The primary aim of this paper is to systematize the models used in literature to assess earnings management. By using an evolutionary approach, the paper discusses different model specifications useful to detect opportunistic behaviors in annual reports. A critical review of the literature leads us to conclude that earnings management is detectable by using specifications that can be conveniently classified in “first-generation” and “second-generation” models.

The paper contributes to literature and has implications in the practice, especially for investors. For scholars, it might be useful because it synthesizes the possible approaches that have been used over time by academics to detect earnings management. Investors might be aware of the models useful to detect the possible forms of misrepresentations in annual reports.

1. Introduction

The paper focuses on earnings management that is a phenomenon widely investigated by academics and practitioners. It classifies the models used to detect it into the so-called “first-generation” and “second-generation” models. By using an evolutionary approach, the paper answers the following questions. How do “first-generation” and “second-generation” models differ in their approach to detect earnings management? What are the strengths and limitations of each generation of models?

We can recognize that the annual reports issued under national law and complying with a set of generally accepted accounting standards are tools that satisfy the information needs of internal and external parties. With the publication of this document, people who are outside the firm enter into a sort of conversation with the producers of the documents (i.e., the managers), making the conversation a descriptive metaphor for the interaction between the interests of insiders and those of outsiders. The conversation starts with the outsiders’ need for information about company performance, which managers provide in compliance with the law, formalizing in the annual report all the required information related to firm performance. The conversation does not stop there but continues because outsiders react to insiders’ answers with a decision related to the convenience of continuing to invest in the entity for which financial information has been produced.

Less metaphorically, the International Accounting Standards Board’s (IASB’s) with the Conceptual Framework for financial reporting (2010) validates the notion of a strong interaction

between the two interest groups, in the paragraph dedicated to the objective of financial reporting. Indeed, in paragraph OB 3 of this document, we read that “the objective of general-purpose financial reporting is to provide financial information about the reporting entity that is useful to existing and potential investors, lenders and other creditors in making decisions about providing resources to the entity” (IASB, 2010). This paragraph not only helps us to understand the content of the conversation between managers and outsiders but also suggests the possible answers that outsiders may give to the managers. While the content of the conversation concerns the financial information of the reporting entity, the outsiders’ potential answers are related to the possibility of starting, continuing or stopping the provision of resources to the entity. Thus, to maximize the probability that outsiders start or continue to negotiate with the entity, managers could behave opportunistically by misrepresenting the firm’s performance to influence the outsiders’ behavior.

Financial information is misrepresented when the fundamental qualitative characteristics of financial information are violated, so, according to the Conceptual Framework for financial reporting (2010), financial information is neither relevant nor faithful. Recall that relevance relates to financial information’s capacity to make a difference in its users’ decisions (Conceptual Framework for Financial Reporting, 2010; QC 6). Instead, financial information is faithful when financial reports represent economic phenomena in words and numbers (Conceptual Framework for Financial Reporting, 2010; QC 12). With regards to the faithfulness of financial information, we hypothesize that with the expression “words” and “numbers” the Conceptual Framework for financial reporting (2010) refers to the form (words) and the substance (numbers) of the annual report. While the form (word) involves the reporting choices, the substance involves the accounting numbers, suggesting that both the decisions related to the form and those related to the substance can be used to misrepresent financial information and mislead outsiders’ perceptions of the company’s performance. We can argue that whenever the form of the annual report (words) is manipulated, insiders carry out impression management; in contrast, whenever the substance of the annual report (numbers) is manipulated, the values in the annual report lose their relevance and faithfulness and earnings management occurs (Cimini, 2015).

This paper aims to provide a theoretical framework for the misrepresentation of financial information disclosed in annual reports due to earnings management, systematizing most conveniently the hundreds of papers that scholars published in academic journals in the last decades. In recent years, earnings management has been the topic of thousands of research

papers. Scholars have been interested in the detection of the so-called accrual accounting earnings management or real activities earnings management. While in the first case, they detect the manipulation of those components of earnings that in the literature are well-known as accruals, in the second case scholars focus on real activities, i.e., reductions in expenditures on research and development (IAS 38), price discounts to increase sales or overproduction to disclose the lower cost of goods sold that, differently from the manipulation of accruals has a direct impact on cash flow (Roychowdhury, 2006). In addition, scholars who investigated accrual-accounting earnings management focused on specific accruals or assessed abnormal accruals as a whole to detect earnings management. Despite the relevant number of research papers that deal with specific accruals, in this paper, we are interested in the so-called accrual-accounting earnings management investigated as a whole.

The contribution of the paper is for both the theory and the practice. On the one hand, scholars could find “the state of the art” of the earnings management literature useful to detect this form of misrepresentation in annual reports. On the other hand, investors could learn the possible techniques to identify those annual reports that with higher probability might be affected by this form of misrepresentation of financial information.

The paper is composed of four sections. After this introduction, the paper presents the first models introduced by academics to detect earnings management, that is, the so-called “first-generation models”. In the third section, the paper presents the more recent “second-generation models”. The final section concludes the paper with the possible future line of research in this field of study.

2. The first-generation models to detect earnings management

As to the possible manners to detect misrepresentation, scholars used several models over time to detect accrual- accounting earnings management. In this section, by using an evolutionary approach, we distinguish the “first-generation” models from the “second-generation” models.

The first of these studies is the seminal work of Paul M. Healy, who in 1985 published a paper in the *Journal of Accounting and Economics* titled “The Effect of bonus schemes on Accounting Decisions”. Even though he never used the locutions “earnings management” or “window dressing” to qualify the attitude of insiders regarding the manipulation of accounting numbers, his paper is regarded as a seminal work in the earnings management literature. Healy (1985) found that bonus schemes create incentives for managers to select accounting procedures and accruals that maximize the value of their bonus awards (Healy, 1985, p. 106). As such bonus schemes

become a function of the reported earnings, Healy (1985) explained how managers can manipulate them to maximize the expected utility of their bonus awards. In detail, he decomposed earnings into cash flows from operations and total accruals.

Healy (1985) assumed that the components of total accruals (TA_{it}) are non-discretionary accruals (NDA_{it}) and discretionary accruals (DA_{it}). Because of difficulties in observing and measuring them, he surmised that by exercising discretion over the aforementioned (discretionary) accruals, managers can affect only the timing of reported earnings, so discretionary accruals sum to zero over the manager's employment horizon with the firms (Healy, 1985, p. 89).

The idea behind his research is that insiders — after observing the reported cash flow from operation plus non- discretionary accruals — manipulate discretionary accruals to achieve their earnings targets, i.e., the payment of awards, in case the (real) reported earnings do not exceed the required boundary. The main concern regarding the Healy (1985) framework is that he cannot measure either discretionary or non-discretionary accruals. Discretionary accruals are very difficult to measure and thus, over the period analyzed, are assumed to amount to zero. Yet, he considered non- discretionary accruals unobservable. This is the motivation that leads Healy (1985) to assume total accruals as a proxy of earnings management. Therefore, by analyzing a sample of 94 entities listed in the 1980 Fortune Directory of the 250 largest US industrial corporations, Healy (1985) used a t-test for difference in means to compare the mean total accruals with several bonus plan parameters. By doing so, Healy (1985) found that managers are more likely to choose income- decreasing accruals when their bonus plans' upper or lower boundaries are binding, and income-increasing accruals when these boundaries are not binding (Healy, 1985, p. 106). This result is quite interesting, but the methodology used suffers from limitations that led several scholars to criticize him. The main concerns regarding the Healy (1985) methodology are the use of the mean total accruals as a proxy of the earnings management, for the reasons explained above, and the use of cash flow from operations as a proxy of cash flow plus non-discretionary accruals. To overcome these limitations, in 1986 Linda Elizabeth DeAngelo published in *The Accounting Review* a paper titled "Accounting numbers as market valuation substitutes: A study of management buyouts of public stockholders". Her methodology, improving upon the one of Healy (1985) contributed to the literature at least twofold. First, she provided a deeper qualification of total accruals through the analysis of the management buyout operations; then, she introduced the abnormal accruals concept as a proxy to detect earnings management.

As to total accruals, she similarly calculated them as Healy (1985) and explained that total accruals are negative because of the non-monetary depreciation expenses that are the most important components of total accruals. As to the research design, DeAngelo (1986) used a methodology that she considered roughly similar to the one typical of the event study to assess abnormal accruals. In this regard, she calculated abnormal accruals as the difference between the total accruals reported over the period in which earnings management is expected and the ones reported during the prior year.

In DeAngelo (1986), compared with Healy (1985), the proxy used to detect earnings management are abnormal accruals that are not simply total accruals but the first difference ($AC1 - AC0$) of the reported total accruals reported at the end of different periods. Despite the improvements in comparison to the methodology followed by Healy (1985), the difficulties in assessing non-discretionary accruals remain. Thus, DeAngelo (1986) continued to assume that the average change in non-discretionary accruals ($NDA1 - NDA0$) is approximately zero, so that a significant average decrease in total accruals primarily reflects a significant average decrease in discretionary accruals ($DA1 - DA0$) (DeAngelo, 1986, p. 409). Once she calculated abnormal accruals, DeAngelo (1986) tested whether both the quarterly and the annual change measures of abnormal accruals, earnings and cash flow were statistically different from zero. By using a parametric test, that is, the t- test and the non-parametric Wilcoxon (1945) signed-rank test, her findings did not validate the research hypothesis that managers carry out earnings management before management buyouts. DeAngelo (1986) was aware of the weakness in the adopted methodology and argued that “one possible explanation for both sets of insignificant results is that the accrual methodology is simply not powerful enough to detect systematic income manipulation” (DeAngelo, 1986, p. 418).

At the end of the 1980s, the methodology followed to detect earnings management radically changed, thanks to a more rigorous use of event studies. This method allowed scholars to measure the magnitude of discretionary accruals that, assumed to be a measure of abnormal accruals, have become a measure of earnings management.

The paper of McNichols and Wilson (1988) was the first to use this new methodology. It is titled “Evidence of earnings management from the provisions for bad debts” authored by Maureen McNichols and G. Peter Wilson in the *Journal of Accounting Research* in 1988. Unlike the studies of Healy (1985) and DeAngelo (1986), they detected earnings management due to the manipulation of a specific accrual which is a provision for bad debts, instead of total accruals.

McNichols and Wilson (1988) adopted an event study statistical model similar to that introduced

by Izan (1978) and then used by Binder (1998). The peculiarity of the model is that they used an accrual estimation model that includes, between the explicative variables, a dummy (called PART) that is equal to 1 if the vector of accounting amounts that are assumed to be associated with non-discretionary accruals are observed over the event period, and 0 if accounting amounts are observed over the estimation period, with the assumption that insiders, over the estimation period, have not carried out any manipulation that significantly affected the magnitude of the abnormal accruals' random walk. In the model of McNichols and Wilson (1988), the statistical significance of the coefficient of the PART variable (β) is very important to determine whether insiders have manipulated accounting amounts. That is, the regression coefficient β is used to test the presence of earnings management. In this regard, from a statistical point of view, two possibilities exist.

The former is that the regression coefficient β is statistically significant; the latter is that the same coefficient is not statistically significant. In the first case (β significant), there are two regression lines with different intercepts and the same slope. One interpolates the observations over the estimation period, whose intercept is α , being PART = 0, and one interpolates the observations over the event period, whose intercept is $\alpha + \beta$, being PART = 1. The economic meaning of this first case (β significant) is that after the event, there is a structural break in the magnitude of discretionary accruals in comparison to the period before the event; insiders, because of the event, manipulated earnings enough to produce a structural break in the discretionary accruals' random walk. In the second case (β not significant), there is a single regression line whose intercept is α , that interpolates observations over the estimation period and the event period. In this case, the economic meaning is that before and after the event, discretionary accruals are statistically the same.

This innovative approach adopted to detect earnings management suffers from several limitations that may bias the inference on the β regression coefficient. Dechow *et al.* (1995) or Dechow *et al.* (2012), describing the model of McNichols and Wilson (1988), argue that both measurement errors in discretionary accruals and the problem of omitted variables bias the regression coefficient, its standard errors, and ultimately the statistical inference in tests for earnings management.

Due to the limitations of the dummy variable approach of Izan (1978), after the research of McNichols and Wilson (1988), scholars used the original market model to detect earnings management with regression models estimated both over the estimation period and the event period.

One of this research is the paper published by Jennifer J. Jones in 1991 in the *Journal of Accounting Research*, titled “Earnings management during import relief investigations”. Like McNichols and Wilson (1988), she used the locution earnings management to identify the attitude of insiders toward manipulating earnings. However, while the former used the discretionary components of a specific accrual (e.g., bad debts), the latter avoided distinctions by studying the aggregate accruals, like the aforementioned research of Healy (1985) and DeAngelo (1986).

Jones (1991) tested whether insiders of domestic producers, who would like to benefit from import protection, carried out earnings management by manipulating total accruals one year before and one year after the completion of the investigation by the US International Trade Commission (ITC). Using a sample of 23 firms, she used two different methodologies to detect earnings management. The first is a replication of the one used by DeAngelo (1986) which led them to conclude that accruals decreased, but this result does not allow for a firm conclusion that earnings management decreased because also earnings and cash flow decreased. The second methodology required four steps and relied on a classic event study adopted by using a market model.

With reference to the first step, Jones (1991) qualifies as the event the year when the ITC completed its import relief investigation. Then she identified an event period (p) and an estimation period (t). Jones (1991) assumed that the event period was three years, that is, the year of the event, the one before and the one after the event. The estimation period ranges from 14 to 32 years before the event period, according to the availability of data.

With reference to the second step, Jones (1991) moved from Kaplan's (1985) statement that changes in working capital account and thus accruals depend on the economic circumstances of the firm. Instead, Jones (1991) built a model to assess normal accruals during the estimation period, with total accruals as the dependent variable and the determinants of non-discretionary accruals as regressors that are ΔREV_{it} (the change in revenues from t-1 and t of the firm i) and PPE_{it} (the gross property, plant and equipment in year t of the firm i that control the portion of total accruals related to non- discretionary depreciation expense). All the variables of the model were deflated by the lagged total asset to control for the scale effect. Jones (1991) justified the presence of the abovementioned variables as regressors of her accrual estimation model, arguing that: “Revenues are used to control for the economic environment of the firm because they are an object measure of the firms’ operations before managers’ manipulation, but they are not completely exogenous. Gross property, plant and equipment are included to control the portion

of total accruals related to nondiscretionary depreciation expense. Gross property, plant, and equipment are included in the expectations model rather than changes in this account because total depreciation expense (versus the change in depreciation expense) is included in the total accruals measure” (Jones, 1991, pp. 211-212).

Regarding the third step, Jones (1991) calculated abnormal accruals as the difference between the reported total accruals and the non-discretionary accruals predicted, by using the regression coefficients estimated over the estimation period, under the strong hypothesis of stationarity of non-discretionary accruals (Jones, 1991, p. 210). Abnormal accruals are assumed to be discretionary accruals, because once she controlled for the effect of the economic circumstances on non-discretionary accruals, Jones (1991) could assume that the difference between current and prior-year accruals is due solely to changes in discretionary accruals.

For the fourth step, Jones (1991) used the Wilcoxon (1945) signed-rank test to verify her research hypothesis that during the import relief investigations by the ITC, accounting accruals are underestimated by insiders to maximize the benefit from increased import protection and/or the amount of protection granted. With this non-parametric test, she found that discretionary accruals for year 0 are significantly less than zero ($p\text{-value} < 0.001$), validating her research hypothesis.

In 1995 the Jones (1991) model was improved by a model specification proposed by Dechow *et al.* (1995). They published the results, “Detecting Earnings Management” in *The Accounting Review*.

First, they reference all the previous models used by scholars to detect earnings management, then propose a model that they called a “modified Jones” (1991) model. Continuing to assume that the components of total accruals are non-discretionary accruals and discretionary accruals, like in the modified Jones (1991) model, there is the strong assumption that non-discretionary accruals are constant over time. The most significant difference regards the prediction of normal accruals over the event period. In the modified Jones (1991) model, Dechow *et al.* (1995) used $\Delta REV_{it} - \Delta REC_{it}$ instead of ΔREV_{it} , explaining that the original model implicitly assumes that discretion is not exercised over revenue in either the estimation period or the event period. The modified version of the Jones (1991) model implicitly assumes that all changes in credit sales in the event period result from earnings management. This is based on the reasoning that it is easier to manage earnings by exercising discretion over the recognition of revenue on credit sales than it is to manage earnings by exercising discretion over the recognition of revenue on cash sales (Dechow *et al.*, 1995, p. 199).

Several scholars demonstrated that the modified version of the Jones (1991) model improved the original Jones (1991) model even though it is affected by several limitations. To describe such limitations also argued by Dechow *et al.* (1995), we quote Dechow *et al.* (2012) in which subsection 3 is dedicated to the presentation of the limitations of those that we call “first-generation” models. Such limitations are:

1. all the models generate well-specified test statistics when applied to random samples.
2. all models generate tests of low power for earnings management of economically plausible magnitudes (e.g., 1% to 5% of total assets), and
3. all models are misspecified when applied to samples of firms with extreme financial performance (Dechow *et al.*, 2012, p. 282).

An in-depth analysis of the literature leads us to integrate the concerns listed above. In our opinion, the paper that summarizes these issues is McNichols (2000), where we can find three other limits of the “first-generation” models.

They are:

1. All the models require the event study approach. In each event study, we have an assumption over the estimation period and a hypothesis to test over the event period. The assumption is that earnings management does not occur during the so-called estimation period. In other words, the presence of earnings management does not cause any structural break over the estimation period in the accruals’ random walk. In the event period, the hypothesis to be tested is the presence of earnings management. Thus, the researcher has to test whether, after the occurrence of a specific event, the abnormal accruals vary differently in comparison to the estimation period, because of a major (minor) attitude of insiders to carry out earnings management as a consequence of the occurrence of the event. To implement such a research protocol, the non-discretionary accruals are assumed to be constant over time (hypothesis of stationarity) and a lot of subjectivity is required to identify both the estimation period and the event period. Take also into account that the use of OLS requires the linearity of any relationship between the magnitude of performance and accruals, and that in event studies, controlling for reversals in the event period of earnings management which occurred in prior years is quite difficult.
2. all the models assess accruals following the balance sheet approach that according to McNichols (2000) is neither sensitive to the hypothesized manipulation nor readily controlled.

3. all the methodologies adopted in the “first-generation” models are firm-specific and require the use of panel data of at least 10 years. This increases the probability of losing observations because of missing data. Alternatively, an industry-specific approach (e.g., estimation of accruals on a cross-sectional basis instead of with the use of time series) could limit the loss of missing data.

All these limitations led to a decline of that strand of literature that detected earnings management by using event studies, regression models and test statistics, i.e., the “first-generation” models, and we turned to a new strand of literature that has assessed earnings management by using the “second-generation” models.

3. The second-generation models to detect earnings management

After a period during which scholars detected earnings management using ratios (Leuz et al., 2003), the “second- generation models” have been introduced to overcome the limitations of the “first-generation models”. Between them, in 2002, Maureen F. McNichols published a paper in *The Accounting Review* discussing Dechow and Dichev (2002), who proposed a measure of the quality of accruals and earnings based on the extent to which accruals map into cash flow realizations in contemporaneous and adjacent periods (McNichols, 2002, p. 61). Moving from the Jones (1991) model, she proposed a correction (a new accruals estimation model) to avoid one of the main concerns that scholars had with the “first-generation” model, i.e., their misspecification due to the presence of omitted (independent) variables (e.g., the so- called economic fundamentals) that are correlated with non-discretionary accruals’ determinants. In this regard, McNichols (2002) began by assuming that discretionary accruals estimates are correlated with earnings performance. This is why the proposal of McNichols (2002) was to add cash flow in the Jones (1991) model, to reduce the extent to which the model omits variables that are correlated with sample firms’ economic performance fundamentals. In addition, McNichols (2002) used the cash flow statement approach and overcame a limitation of the “first-generation” models, which extensively adopted the balance sheet approach to calculate total accruals. Other than using a cash flow statement approach, she did not consider total accruals as a whole, but only the working capital accruals. In other words, she avoided considering the depreciation expenses. McNichols (2002) justified this choice by arguing that this is consistent with Dechow and Dichev (2002) and because depreciations are related to long-term capital expenditure accruals rather than working capital accruals (Allen *et al.*, 2010). We can add that not including depreciations, the models that consider only the working capital accruals as dependent variable

can detect earnings management in the extent to which changes of working capital accruals map changes of cash flow included between the explicative variables. Methodologically, McNichols (2002) compared the Dechow and Dichev (2002) model, the Jones (1991) and her model, which combines the former with the latter. By using a sample of non-financial firms over the period 1988-1998, the scholar found that the model with cash flow between the independent variables is the most correctly specified and that both the Dechow and Dichev (2002) model and the Jones (1991) model are not correctly specified, since their residuals – assumed by Dechow and Dichev (2002) to be a measure of earnings quality – are associated with lagged, current and future cash flow and also with the change in sales. In addition to being less mis specified; her model is the one that better estimates discretionary accruals. McNichols (2002) achieved this conclusion by comparing the adjusted R^2 and the F-statistic of the three different accrual estimation models. McNichols (2002) found that her model compared to the other ones has the highest explanatory power (adjusted R^2) and F-statistic. In addition, she argued that the current operating cash flow (CFO_{it}) has a regression coefficient and t-statistic higher than both the lagged and the future cash flow (CFO_{it-1} ; CFO_{it+1}); for this reason, the regard, to randomize their sample, Kothari *et al.* (2005) used a simulation analysis that allowed them to identify 250 different simulated samples of 100 firms each. The scholars drew samples without replacement from the full sample or from stratified subsets. The subsets are the lowest and highest quartiles of firms ranked on book-to-market, past sales growth, earnings-to-price, size (market value of equity, referred to as large and small firms) and operating cash flow. To construct the subsets, each year they ranked all firm-year observations based on each partitioning characteristic (e.g., book-to-market or size, measured at the beginning of the year). Each year, they only retained the upper and lower quartiles of the sample. For each partitioning variable, they then pooled observations across all years to form two sub-samples: one based on pooling all data from the annual upper quartiles and another based on pooling all data from the annual lower quartiles (Kothari *et al.*, 2005, p. 172).

In their empirical analysis, they collected data by using COMPUSTAT for a sample of 123,000 firm-year observations over the period 1962-1999. Kothari *et al.* (2005) required a large amount of data not only to guarantee the robustness of their findings but also because they used randomized samples to detect earnings management with both the Jones (1991) and the modified Jones (1991) models and also with the performance matching approach, discovering that all of them are mis specified without any controls for performance. Since Kothari *et al.* (2005) did not use the event study approach, we recall that, in comparison to previous studies, abnormal (discretionary) accruals are the residuals of their regression model. Another distinctive feature of the “second-generation” models is the presence of a constant term between the regression

parameters. They justified this methodological choice by arguing that the constant term, together with deflating variables with the lagged total assets, reduces heteroskedasticity. Moreover, by having the work of Brown *et al.* (1999) as a reference, they explain that the constant term allows controlling for omitted size variables. On the contrary, a model without a constant term produces biases in the test statistics used to compare the different models.

We can conclude the presentation of Kothari *et al.* (2005) by arguing that their model is not the panacea to assess earnings management. Kothari *et al.* (2005) conceded that their methodology cannot and does not solve all the problems arising from bad discretionary accruals models or from a researcher's failure to recognize the accrual management incentives that are unique to the research question being addressed (Kothari *et al.*, 2005, p. 165).

Cheng *et al.* (2012) demonstrate that both the McNichols (2002) specification and the Kothari *et al.* (2005) model are useful to detect earnings management. In detail, the best-performing model is the one in which operating cash flows are used as the controlling variable in firm-specific regressions, followed by the one in which ROA is used as the control variable in industry-specific regressions. However, despite the effectiveness of both the specifications of the “second-generation models”, none of them controlled for reversals of accruals from one period to another. This is the purpose of Dechow *et al.* (2012) titled “Detecting earnings management: A new approach” which was published in the *Journal of Accounting Research*. Dechow *et al.* (2012) criticize the performance-matching procedure adopted by Kothari *et al.* (2005) to mitigate misspecification and introduce a new approach to detect earnings management, using a methodology more similar to that of McNichols and Wilson (1988) direct to overcome its limitations though the analysis of a sample of 209,530 firm-year observations between 1950 and 2009. In their paper, they compared three different specifications that correspond to three different scenarios that involve the presence of reversals.

In the first scenario, Dechow *et al.* (2012) hypothesized that there are no reversals in their model, and so the model specification that they adopted is the same as McNichols and Wilson (1988). This specification does not consider the dummy variable $PART_{it}$, and is representative of the different specifications of all the “first-generation” models (e.g., sales and property, plant and equipment for the Jones (1991) model and “second-generation” models that do not control for reversals, being $X_{k,i,t}$ the variables that scholars used to control for non-discretionary accruals.

In the second scenario, the scholars hypothesized that all the accrual-accounting earnings management reverses in the following period. In this model, if the difference between the coefficients of $PART_{it}$ and $PARTR_{it}$, is positive, it suggests an upward earnings management

with respect to its reversal over the period analyzed; on the contrary, if negative, it suggests a downward earnings management with respect to its reversal over the period analyzed. More concretely, in the first case ($a_2 - a_3 > 0$), manipulations of accruals done during the period investigated will reverse in future periods not investigated by the researcher. In the second case ($a_2 - a_3 < 0$), reversals that refer to manipulations done during previous periods not investigated by the researcher reverse during the period analyzed. If researchers could detect earnings management by analyzing the entire firm's life cycle, they would find the equivalence between a_2 and a_3 because all the earnings management carried out in prior periods has to reverse in subsequent periods.

In the third scenario, Dechow *et al.* (2012) hypothesized that the accrual-accounting earnings management reverses both in the first and in the second year following the period during which the researcher assumes the presence of manipulations.

Other than controlling for reversal of earnings management, Dechow *et al.* (2012) consider that all of the models generate well-specified test statistics when applied to random samples. In this regard, they used an iterative methodology, based on simulations, to evaluate the specifications of the Healy (1985), the Jones (1991), the modified Jones (1991), the Dechow and Dichev (2002) and the McNichols (2002) models. The methodology used by Dechow *et al.* (2012) reduced misspecification due to omitted variables and increased the power of the test statistics by around 40% (Dechow *et al.*, 2012, p. 275).

4. Concluding remarks

By using an evolutionary approach, this paper has systematized the models used in literature to assess earnings management. The paper has discussed the different model specifications useful to detect opportunistic behaviors in annual reports providing a critical review of the existing literature. Academic scholars have detected earnings management by using specifications that this paper has conveniently classified in “first-generation” and “second-generation” models.

The paper contributes to literature, being the first paper that has provided a review of the literature on the methodologies used over time to detect such a specific form of misrepresentation. The paper has also implications for the practice, especially for investors. The review of the literature has provided evidence of the high interest of scholars involved in the misrepresentation field to find the most appropriate specification useful to detect accrual accounting earnings management in the annual reports. Despite earnings management can be considered a mature field of study, there are several motivations that might justify such an interest. First, the fact that opportunistic

behaviors of managers change “cross section” and “over time” is the first plausible motivation that explains the high (actual) interest of academics and practitioners in investigating the accrual-accounting earnings management phenomenon. Second, scholars involved in topics that belong to the positive accounting theory (e.g., value relevance, earnings management) use empirical analyses and models to test their research hypotheses and to answer their research questions. This further reason that justifies the high interest of scholars in earnings management is based on the limitations of the models used to detect accrual-accounting earnings management. Such limitations are leading academics to improve the existing models and to introduce new and more sophisticated statistical models, useful to detect misrepresentation of financial information. The willingness to improve the existing models has emerged, we think, also from our evolutionary approach that presented, the different accrual specification models adopted by scholars in the last 40 years to detect this phenomenon. The essence of our evolutionary approach is that such models have been improved in several aspects over time. However, the most recent ones are still far from perfect and need further adjustments that allow them to model the “real world”, that is by far more complicated than the “modelled world”. In this regard, for the future research directions, academics and practitioners might improve the existing models furthermore. In addition, future research should adapt such models to the firms’ business model. For instance, the most appropriate accrual accounting earnings management specifications should be identified for financial firms and distinguished from those used, for instance, by the public sector entities. To protect the interests of investors and other stakeholders, standard setters might reduce accounting discretion to mitigate the possible earnings management effects in annual reports. Regarding the models’ improvements, probably, scholars will never find a model that will fill the gap between the “real” and the “modelled world”, because earnings management is something that involves also the motivations of insiders that, we think, models cannot catch. Meanwhile, scholars will continue to introduce new improvements to the earnings management models’ specification, being aware that such improvements will only minimize the gap between the “real” and the “modelled world”.

Chapter 3. Earnings management agribusiness companies before and after the introduction of IFRS 9: possible implications for the banking sector

ABSTRACT: The purpose of this work is to analyze the changes that have occurred in the preparation of financial statements following the issuance by the IASB of accounting standard IFRS 9. This study analyzes 67 Italian companies in the agri-food sector that prepare their financial statements in accordance with international accounting standards, aiming to determine whether the adoption of IFRS 9—mandatory since January 1, 2018, replacing IAS 39—has led to changes in the phenomenon of earnings management. The statistical models of Jones and Dechow et al. were used to assess this phenomenon. Regarding the practical implications, the paper can be a starting point for investigating this phenomenon following the change in international accounting standards by considering a broader timeframe and assessing the functionality of the application of the new standard compared to the previous one. This paper may also be useful for the banking sector, as identifying possible opportunistic accounting policies may assist institutions in granting loans or providing access to financial instruments.

1. Introduction

The phenomenon of earnings management has been discussed and studied by academics for years. It has been defined in various ways. With reference to Cimini (2015), two possible definitions of earnings management can be drawn. One definition is broader, while the other is more restrictive. The first refers to all actions and circumstances initiated by managers that affect balance sheet values with the aim of altering external stakeholders' assessment of the company's performance; in the narrower sense, earnings management occurs only when the purpose of those who implement it, through the manipulation of balance sheet data, is to misrepresent information for opportunistic purposes. A distinction is made in the literature between accrual-accounting earnings management and real-activity earnings management (Ewert and Wagenhofer, 2005). The first case concerns the manipulation of book values when preparing accrual-based financial statements (e.g. earnings, earnings, and one of its components, the so-called accruals); the second case, that of; *real-activity earnings management*, concerns the manipulation of transactions. The effect of manipulation is the same despite the fact that the object of manipulation is dissimilar (Cimini, 2015). In this paper, it will be analyzed whether the phenomenon of balance sheet policies, i.e. the manipulation of accounting quantities for opportunistic purposes (*earnings management*) is found in agri-food companies as a result of the change made to the credit valuation methodology. Taking agri-food companies that draw up

their financial statements according to international accounting standards as a reference, the work also aims to provide a tool for banking institutions, useful when issuing or structuring loan contracts or other financial instruments, by using statistical models applicable in any context. In the wake of the 2008 financial crisis, the IASB, in 2014, and the FASB, in 2016, issued two new accounting standards no longer based on the *impairment* model that adopt the *incurred* type but the *expected* type, which therefore provides for a valuation of financial assets considering expected losses and not only those that occur, thus ensuring that these are not all recognized following a corporate crisis (Mechelli et al., 2020). Both *impairment* models have merits and drawbacks. In the case of the *incurred* model, among the merits, as can also be deduced from the literature, we find the reduction of *earnings management* risk (Giner and Mora, 2019) since the discretion of the directors is reduced, unlike with the application of the *expected* models, given that the recognition of the loss is necessary when the event occurs; however, among the criticisms made of the same model, it should be noted that other studies have shown that in certain contexts the losses determined with the *incurred* model have been subject to manipulation (Cohen et al, 2014) or have been used to stabilize incomes (Morris et al., 2016). Another criticism levelled at this model is with regard to the detection of losses, which in some cases may be insufficient or may even favor pro-cyclicality (Cohen and Edwards, 2017). Among the negative observations made against *incurred* loss calculation models, we must also highlight the possibility of late loss recognition. The above-mentioned aspects are counterbalanced by the application of the *expected* models. Whereas the *incurred* model was contained in IAS 39, which was in force until the financial year 2017, the *expected* model is contained in IFRS 9, effective 1 January 2018.

In line with the previously stated objective, this paper aims to investigate, through the application of a specific regression model, whether the transition from the incurred loss model under the former IAS 39 to the expected loss model under IFRS 9 led to an increase in the phenomenon under examination, using a sample of Italian agri-food companies.

2. Sample Selection

The sample was selected using the Aida database. In order to identify the companies in the sample, all Ateco codes expected to be used by companies in the agri-food sector were considered that are involved in both the production and sale of products. This search key produced 94,650 results. As a further criterion for selecting the sample, only companies that filed financial statements from 2010 to 2019 were considered. This reduced the number of companies

from 94,650 to 77,373. Finally, in order to enable the development of the analysis under investigation, only companies preparing their financial statements in accordance with international accounting standards were included. The number of companies in the sample drops from 77,373 to 122. Of the 122 companies identified, only 64 had all the required data for the study. For three others, only one value was missing, so the missing data were retrieved from the financial statements filed and available through the Chamber of Commerce. The final sample consists of 67 companies. It should be noted that, as far as geographical distribution is concerned, 8 companies are in Central Italy (11.94%), 1 company is only in the Islands (1.49%), 22 of the companies examined are located in the North-East (32.83%) and 30 in the North-West respectively (44.78%) of the sample and, finally, 6 companies are based in Southern Italy (8.96%).

3. Application of the statistical models of Jones and Dechow et al.

To test whether earnings management increased following the introduction of IFRS 9, this paper applied the Jones (1991) model. Specifically, the average abnormal discretionary accruals were calculated for the pre-IFRS 9 period (2010–2017) and the post-IFRS 9 period (2018–2019) and then compared. If this average increased following the introduction of IFRS 9, it can be concluded that earnings management practices have intensified.

The regression model presented below was estimated for each period examined:

$$TA_{it}/A_{it-1} = \alpha_0 + \alpha_1 1/A_{it-1} + \beta_1 \Delta REV_{it}/A_{it-1} + \beta_2 PPE/A_{it-1} + \varepsilon_{it} \quad [1]$$

Dove:

TA_{it} is the value of the estimated period's *total accruals*, i.e. the difference between the period's earnings and *cash flow*. In other words, TA_{it} can be considered the non-cash part of *earnings*, i.e. the part most easily managed for opportunistic purposes.

ΔREV_{it} is the difference between the value of revenues at time t and time $t-1$.

PPE_{it} represents the value of the company's tangible assets at time t , which is a control variable for depreciation, which is a significant component of *accruals* that can be easily managed for opportunistic purposes

A_{it-1} corresponds to the value of assets at time $t-1$ and is considered in the literature to be a parameter to use to reduce the risk of the scale effect producing biased results.

ε_{it} is the error term.

Taking the data from the companies in the sample, once the parameters of the regression model were estimated, the predicted values of the TA were calculated for each of these companies, and the *abnomal discretionary accruals* were calculated as the difference between total *accruals* and their predicted value, which, in literature, is considered a measure of *non-discretionary accruals*. In essence, the *abnomal discretionary accruals* represent the residuals of Jones (1991) regression model.

4. Results

In the following tables there are the main results of the regression analysis.

TA	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
1/Ait-1	1.235.966,000 0	717.117,000 0	1,72	0,085	-172.399,0000 264.433,0000
ΔREV_{it}	0,0155	0,0096	1,62	0,106	-0,0033 0,0342
PPE_{it}	-0,0163	0,0107	-1,52	0,129	-0,0374 0,0047
Residual standard error			0,1016 on 600 degrees of freedom		
Multiple R-squared			0,0104		
Adjusted R-squared			0,0054		
F-statistic			2.097 on 3 and 600 DF		
p-value			0,0995		

Table 1 *Regression model*

To pick up on what has already been explained above, we have estimated the predicted values of the Jones (1991) regression model, which, as we know, represent the *non-discretionary accruals*. In contrast, the residuals of the regression model are *discretionary accruals* whose growth in the literature is regarded as an indicator of the presence of *earnings management*.

The following tables show the main descriptive statistics of the magnitudes just mentioned for both the period before the introduction of IFRS 9 (2010-2017) and the period after (2018-2019).

	Year	Mean	Min.	Median	Max.
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Discretionary accruals	2010-2017	0,0144	-0,4782	0,0140	0,7731
Non discretionary accruals	2010-2017	0,0003	-0,0537	-0,0008	0,1028
Discretionary accruals	2018-2019	0,0218	-0,2817	0,0180	107.160,0000
Non discretionary accruals	2018-2019	-0,0023	-0,0715	-0,0022	0,0295

Table 2 Jones' model

The table shows an increase in average *discretionary accruals* from 0.0144 to 0.0218, indicating an increase in *earnings management* due to the introduction of the new accounting standard, and particularly the new model for calculating expected losses.

To verify the robustness of the results, the methodology described in the previous section was replicated using the model of Dechow et al. (1995). The reference equation of this model turns out to be as follows:

$$NDA_{ip}/A_{ip-1} = a_1 1/A_{ip-1} + b_1 (\Delta REV_{ip} - \Delta REC_{ip})/A_{ip-1} + b_2 PPE/A_{ip-1} \quad [2]$$

The following table shows the values of *non-discretionary* and *discretionary accruals* estimated with this new model:

Table 3 Dechow's Model

	Year	Mean	Min.	Median	Max.
Discretionary accruals	2010-2017	0,0143	-0,4775	0,0139	0,7726
Non-discretionary accruals	2010-2017	0,0004	-0,0543	-0,0007	0,1022
Discretionary accruals	2018-2019	0,0217	-0,2819	0,0174	107.156,0000
Non discretionary accruals	2018-2019	-0,0022	-0,0711	-0,0022	0,0278

The values in the table confirm the conclusions we reached with the Jones (1991) model. Indeed, this model shows an increase in average discretionary accruals from 0.0143 to 0.0217, providing evidence of increased earnings management following the introduction of the new accounting standard, particularly the model for calculating expected losses.

5. Concluding remarks

This study analyzed the evolution of the *earnings management* phenomenon within companies in the agri-food sector following the introduction of the accounting standard IFRS 9 and thus the changes made in the estimation of adjustments to receivables and other financial assets by international bodies.

The results from the two statistical models used —Jones (1991) and Dechow et al. (1995)— suggest that the phenomenon has increased compared to the period before the introduction of the new accounting standard. The findings may also be relevant for banking institutions that provide loans and financial instruments to companies applying international accounting standards, as there appears to be a trend indicating increased earnings management. These models could also be applied by banks to companies in other sectors.

The future scenarios of investigation still remain very broad, all the more so in view of the new developments it is possible to apply the analysis to a broader time frame and which can also be supported by *ratio analysis* indicators, which are another tool used to trace the presence of

earnings management, which would complement the analysis already in place aimed at gaining a more precise idea of the trend.

Chapter 4. The Audit Quality and the Cessation of the Activity of the Companies

Abstract: The purpose of this study is to examine and test the relationship between audit quality and business cessation in non-financial, non-listed companies operating under IAS. A logistic regression model is used to test the hypotheses based on the modified Jones model and other variables. The results based on abnormal accrual values indicate no correlation between business cessation and some of the variables studied, such as abnormal accruals and non-monetary accruals. On the other hand, the relationship is statistically significant when considering working capital. Understanding whether there is a relationship between audit quality and business cessation allows for the identification of variables to monitor in order to reduce such events, especially in the presence of potential earnings management practices. The originality of this article lies in its analysis of the relationship between audit quality and business cessation, offering a new perspective on the topic.

1. Introduction

Audit quality is a subject that has been studied from different perspectives, and which has seen the proliferation of studies, especially concerning the economic field. Over the years, studies on audit quality have focused on companies operating in the private sector, analyzing the various aspects and variables that may influence it. Few works, however, focus on the effect that low audit quality might have on the cessation of activities. This motivated the present research, which assesses the likelihood that a low level of audit quality increases the probability of a firm ceasing operations in a given year.

To test the hypothesis that such probability is affected by audit quality, this paper considers a sample of non-financial companies that are not listed and that prepare their financial statements according to the international accounting standards (IAS) and international financial reporting standards (IFRS). In the paper, logistic regression is used. Its dependent variable is a dummy identifying firms that ceased and whose regressors are discretionary (abnormal) accruals that are considered a measure of audit quality. The higher discretionary accruals, the audit quality is.

This analysis provides an initial approach to examining the relationship between audit quality and company closure. In detail, the aim of this paper is to obtain indications through the results of regression models of the investigated variables that provide evidence of how low audit quality affects business closure. The motivation also arises from a literature review that highlights a gap

in studies linking audit quality to the final phase of a company's life cycle, whether due to bankruptcy, liquidation, or cessation. The analysis was based on abnormal accrual values, also aiming to detect any distortions caused by earnings management practices that may have influenced the results. The literature review focused on studies that use abnormal accruals as a proxy for audit quality to analyze the various aspects under investigation.

This paper is structured as follows. Section 2 provides the theoretical basis useful for understanding the context of studies concerning audit quality. Section 3 outlines the methodological approach. Section 4 details the sample selection strategy and descriptive statistics. The overall research results are presented in Section 5.

Section 6 discusses the results and concludes the paper, highlighting its limitations and potential future developments.

2. Theoretical Foundations

Audit quality, according to one of the most widely used definitions by DeAngelo (1981), is *"the joint probability, assessed by the market, that the auditor will be able to detect errors and irregularities in the company's accounting evidence and will communicate them to the market so that the stakeholders are not misled by a distorted representation of the company's assets, financial and economic situation"*. Audit quality is a topic that has been extensively studied in relation to several factors. By analyzing the phenomenon using accruals as a tool, numerous studies in the literature assess different contexts and areas of inquiry.

In the study by J.N. Myers, L.A. Myers, & Omer (2003) the phenomenon is investigated in relation to the length of the audit mandate and the study reports that a longer audit mandate increases both audit quality and the quality of earnings; in the paper by Reichelt and Wang (2010) it is reported that specialist auditors guarantee higher audit quality than non-specialist auditors. In their study, abnormal accruals are used as the basis for their conclusions.

Abnormal accruals are used as a proxy for audit quality in the study by Boone, Khurana, & Raman (2010). However, their focus is on audit opinions issued by Big 4 and non-Big 4 auditing firms, concluding that there is no propensity to issue going concern opinions for distressed companies.

In the study by Bédard, Gonthier-Besacier, and Schatt (2019), which measures audit quality using abnormal accruals in the French market, it is found that a more balanced allocation of audit work between the engaged audit firms reduces audit quality and increases audit fees compared to

an unbalanced work allocation.

In the study by Al-Hiyari, Colsey, and Muqattash (2022), it is shown that, in the Middle Eastern context, auditors from the largest audit firms are not associated with audit quality, as measured by abnormal accruals. Furthermore, audit quality between large and smaller audit firms is associated with the type of clientele rather than the competence of the auditors.

In the study by Kwon, Ki, & Kim (2021), it is established that audit firms with global networks enable auditors to share industry knowledge with foreign members. Specialized auditors within the global industry gain competitive advantages by participating in the global network of audit firms, and their clients are willing to pay premiums for specialized audit services. The authors use abnormal accruals combined with performance as a proxy for audit quality, and their results indicate high audit quality

Ismael and Kamel (2021) assert that there is a negative relationship between internal audit quality and abnormal accruals, implying the prominent role of internal audit in reducing upwards earnings management. The study also reveals a significant impact of internal audit competence on the reduction of UK companies' involvement in earnings management aimed at increasing revenue, over and above internal audit independence.

Hunt, Rosser, & Rowe (2020) establish through their analysis that companies more likely to change auditors, but that remain with their current auditor, exhibit lower audit quality. Specifically, these companies have a higher probability of errors and higher abnormal accrual ratios.

Li, Hay, & Lau (2019) examined audit quality as measured by absolute abnormal accruals and audit fees for listed companies in New Zealand. The results suggest that improved audit reports were followed by an improvement in audit quality, as approximated by a reduction in absolute abnormal accruals following the adoption of the new audit reporting requirements. There was also a significant increase in audit fees

Dao, Xu, & Liu (2019) use two measures of audit quality (abnormal accruals and likelihood of detecting material weaknesses in internal control) and find that disclosure of engagement partners' names is associated with a lower level of abnormal accruals and a higher likelihood of audit firms detecting material weaknesses in controls.

The work of Lesage, Ratzinger-Sakel, and Kettunen (2016) analyzed the differences in audit quality, in the Danish market, between audits by a single large audit firm and joint audits with one or two large audit firms. Most CFOs perceive the audit quality from a single of the four large

audit firms as being the same as joint audits. The results are in line with perceptions.

In the article by Johl, Jubb, and Houghton (2007), which analyses auditors' behaviour in the presence of aggressive earnings management (EM) during the Asian economic crisis that affected Malaysia, Big 5 auditors in Malaysia appear more likely to issue qualifications than their non-Big 5 counterparts when high levels of abnormal accruals are present. However, the interaction between auditor sector specialization and abnormal accruals is not significant in predicting the incidence of qualification.

In all these studies, abnormal accruals are negatively associated with audit quality, leading us to hypothesise that a decrease in audit quality (i.e., an increase in discretionary accruals) should positively affect the probability of firm ceases. This has led us to formulate the following hypothesis:

H1: there is a negative relationship between audit quality and the probability that a firm fails

3. Method

This study uses the following logistic regression to test our hypothesis:

$$\text{logistic Ceased}_{it} = \text{AQ}_{it} + \varepsilon_{it} \quad (1)$$

where AQ_{it} is the value of the audit quality of the firm i in period t and ε is the error term.

3.1. Total Accrual Estimation

As proxy of audit quality, the discretionary (abnormal) accruals are used. To estimate them, this study starts from the formula for total accruals that we can find in Cimini (2015) for which total accruals are given by the difference between earnings and cash flow:

$$\text{TA}_{it} = \text{E}_{it} - \text{CF}_{it} \quad (2)$$

- TA_{it} are total accruals of enterprise i in period t ;
- E_{it} is the earning of enterprise i in period t ;
- CF_{it} is the cash flow of enterprise i in period t ;

Using the indirect method for the cash flow item results in the following equation:

$$\text{CF}_{it} = \text{E}_{it} + \text{DEP}_{it} - \Delta \text{WC}_{it} \quad (2.1)$$

- DEP_{it} are the non-monetary costs such as depreciation and amortization expenses of enterprise i in period t ;
- ΔWC_{it} are the changes in non-cash working capital reported by company i at the end of

fiscal year t .

It is therefore possible to calculate the difference between earnings and cash flow algebraically from the above equation as follows:

$$E_{it} - CF_{it} = \Delta WC_{it} - DEP_{it} \quad (2.2)$$

Substituting the previous equations, we obtain:

$$TA_{it} = \Delta WC_{it} - DEP_{it} \quad (2.3)$$

The equation just described has different economic meanings and implications for scholars and regulators. As far as economic meanings are concerned, total accruals have two components, the change in non-monetary working capital (ΔWC_{it}) and total non-monetary costs (DEP_{it}), which are quite different. Depending on the size of its components, total accruals can be positive or negative. DeAngelo (1986) asserts that total accruals are generally negative due to depreciation expenses being the largest component of total accruals. However, it is easy to understand that when changes in working capital are greater than non-monetary costs, the value of total accruals will be positive. Since total accruals are the sum of the change in working capital and non-monetary costs, compensation between these two components is inevitable. It is necessary to investigate earnings management, which, according to our hypothesis, may result from a low level of audit quality, not only in relation to non-monetary costs but also in relation to changes in working capital. Introducing the Jones (1991) model, one of the main statistical models used to investigate earnings management, we report that:

1. The change in working capital is calculated as the change in the balance sheet items which are receivable, inventories and trade payables:

$$\Delta WC_{it} = (\Delta CA_{it} - \Delta CASH_{it}) - (\Delta CL_{it} - \Delta STD_{it}) \quad (2.4)$$

- ΔCA_{it} is the change in current assets of enterprise i from $t - 1$ and t ;
- $\Delta CASH_{it}$ is the change in cash and cash equivalents of company i from $t - 1$ and t and thus represents the cash flow produced in period t ;
- ΔCL_{it} is the change in current liabilities of enterprise i from $t - 1$ and t ;
- ΔSTD_{it} is the change in the current maturities of the long-term debts of firm i from $t - 1$ and t .

2. The non-monetary costs to be included in the equation also appear on the balance sheet. In the numerical example provided in the following pages, we show that they correspond to the first difference (e.g. $DEP_{it} - DEP_{it-1}$) of the cumulative non-monetary costs shown in the statement.

The equation clearly identifies the possible accounting items whose sum gives rise to the two components of total accruals, and which could be manipulated by insiders to mislead outsiders' perceptions of company performance.

These items produce:

- a) changes in working capital (ΔWC_{it}), which according to the equation are composed of:
 - the change in receivables and inventories calculated as the difference between the change in current assets and the change in cash and cash equivalents ($\Delta CA_{it} - \Delta CASH_{it}$);
 - the change in trade payables calculated as the difference between current liabilities and the change in current maturities of long-term liabilities ($\Delta CL_{it} - \Delta STD_{it}$);
- b) non-monetary items, generally identified as depreciation expenses (DEP_{it}).

3.2. Abnormal (Discretionary Accruals) Estimation

Several scholars have investigated earnings management at the empirical level. The earliest studies include Healy (1985), later followed by DeAngelo (1986).

Healy focuses on how managers' bonuses can influence accounting procedures and accruals in order to maximise their own compensation. In his study, Healy distinguishes between non-discretionary and discretionary accruals: the former cannot be manipulated, as they are determined by existing national and international regulations, while the latter are based on the discretionary judgment of financial statement preparers. Healy encountered difficulties in calculating both discretionary and non-discretionary accruals. DeAngelo (1986) attempts to overcome these issues by using abnormal accruals. Although this approach improves upon Healy's model, it still faces the challenge of estimating non-discretionary accruals, which are assumed by the author to have an average variance of zero.

This paper is based on the models developed by Jones (1991) and the Modified Jones model introduced by Dechow, Sloan, and Sweeney (1995). In developing his empirical approach, Jones proposes the following four steps:

- a) the determination of the period to be estimated and more specifically the period of the event relating to a specific event.
- b) the estimation of regression parameters using a regression model in order to predict what the normal accruals are in the event period.
- c) the calculation of abnormal accruals in the period of the event.
- d) the use of test statistics to verify the significance of abnormal accruals.

The model of Dechow et al. (1995) departs from the earlier model of Jones (1991) in that it is believed that it is easier to exercise discretion when revenues are credit-settled and not cash-settled, and that all changes in sales credits are related to earnings management; departing from the view of estimating normal accruals during the event period in that in the model of Jones (1991) it is implicitly believed that revenues are not subject to discretionary estimates by managers.

Starting from the above, there will be an initial application of the Jones modified model to see if there are any indications of possible manipulation behavior in the balance sheet data. In a second step, the values of abnormal accruals, non-monetary costs and changes in working capital will be investigated by applying regression models to the individual variables for both years under study and attempting to trace a relationship between the resulting values, audit quality and cessation of business.

4. Sample Selection and Descriptive Statistics

The companies studied are 2,699 Italian unlisted companies that do not operate in the financial sector and adopt the IAS/IFRS during the years 2018 and 2019. The results shown in Table 4 indicate that the number of companies changed and decreased from 1,383 in 2018 to 1,316 during 2019.

Table 4 . Number of firms operating in 2018 and 2019

<i>Year</i>	<i>Number of firms</i>
2018	1.383
2019	1.316
TOTAL	2.699

The decrease in the number of firms is due to missing data. In the database the paper distinguishes between active firms and those that ceased operations in 2020 and 2021. These firms include those that declared bankruptcy or were placed in liquidation and subsequently ceased operations.

Applying the Modified Jones model by Dechow et al. (1995), Table 5 presents descriptive statistics for abnormal accruals and its components non-monetary abnormal accruals and working capital abnormal accruals.

Table 5 Modified Jones model year 2018

2018						
Variable	<i>Obs</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min.</i>	<i>Median</i>	<i>Max.</i>
absabnormalaccrual	1.383	1.1950	12.2091	.0022	.1922	351.5956
Abnormal non-monetary accrual	1.383	3.6235	21.7046	.0007	.3566	520.4995
abnormal wc accrual	1.383	2.7463	11.5990	.0002	.2403	192.6302

Note Obs = observations; wc = working capital; Std. Dev.= Standard Deviation; Min= minimum; Max = maximum.

Table 6 Modified Jones model year 2019

2019						
Variable	<i>Obs</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min.</i>	<i>Median</i>	<i>Max.</i>
absabnormalaccrual	1.313	.9103	8.0734	.0004	.1277	273.9571
Abnormal non-monetary accrual	1.316	2.9611	17.0382	.0007	.3294	466.8314
abnormal wc accrual	1.316	2,3653	10.7757	.0012	.3113	211.5169

Note Obs = observations; wc = working capital; Std. Dev.= Standard Deviation; Min= minimum; Max = maximum.

The table suggests that the values of the analyzed variables decrease between 2018 and 2019. Assuming discretionary (abnormal) accruals as a measure of earnings management, this leads us to believe that there was no evidence of an earnings management increase in the annual reports of the companies analyzed.

5. Results

5.1. Main Analysis

Table 7 tabulates the regression parameters of equation (1) estimated separately for 2018 and 2019 and assuming the total abnormal (discretionary) accruals as regressor.

Table 7 Regression model of abnormal accrual (2018)

Logistic regression Year = 2018			Number of obs = 1,383			
Log likelihood = -121.0455			LR chi2(1) = 0.08 Prob > chi2 = 0.7774 Pseudo R2 = 0.0003			
ceased abnormal accrual	Coef.	Std. Err	z	P> z	[95% Conf. Interval].	
	.0034	.0103	0.33	0.742	-.0167	.0235
cons	-4.0416	.2069	-19.53	0.000	-4.4472	-3.6360

Note Obs = observations; coef. = coefficient; Std. Err. = Standard errors; Prob = probability

Table 8 Regression model of abnormal accrual (2019)

Logistic regression Year = 2019			Number of obs = 1,316			
Log likelihood = -94.9660			LR chi2(1) = 0.33			
ceased			Prob > chi2 = 0.5646			
abnormal accrual			Pseudo R2 = 0.0017			
_cons			[95% Conf. Interval].			
	Coef.	Std. Err	z	P> z		
	.0084	.0111	0.75	0.454	-.0135	.0302
	-4.2903	.2389	-17.96	0.000	-4.7586	-3.8221

Note Obs = observations; coef. = coefficient; Std. Err. = Standard errors; Prob = probability

Findings do not support the hypothesis of this paper to the extent there is not statistical evidence that the value of abnormal (discretionary) accruals affects the probability that a firm ceases.

Tables 9 and 10 tabulate the regression parameters re-estimating equation (1) for the two components of abnormal (discretionary) accruals that is working capital and non-monetary accruals. Also, in this case the estimations have been done separately for 2018 and 2019.

Table 9 Regression model of non monetary cost (2018)

Logistic regression Year = 2018			Number of obs =			
Log likelihood = -121.574			1,383 LR chi2(1) =			
			1.02			
			Prob > chi2 = 0.3118			
			Pseudo R2 = 0.0042			
Ceased	Coef.	Std. Err	z	P> z	[95% Conf. Interval].	
Abnormal non-monetary accrual	.0049	.0038	1.30	0.195	-.0025	.0123
_cons	-4.0648	.2091	-19.44	0.000	-4.4746	-3.6549

Note. Obs = observations; coef. = coefficient; Std. Err. = Standard errors; Prob = probability.

Table 10 Regression model of non monetary cost (2019)

Logistic regression Year = 2019			Number of obs =			
Log likelihood = -97.9230			1,316 LR chi2(1) =			
			2.32			
			Prob > chi2 = 0.1279			
			Pseudo R2 = 0.0122			
Ceased	Coef.	Std. Err	z	P> z	[95% Conf. Interval].	
Abnormal non-monetary accrual	.0082	.0042	1.97	0.048	.0001	.0163
_cons	-4.3269	.2425	-17.85	0.000	-4.8021	-3.8517

Note Obs = observations; coef. = coefficient; Std. Err. = Standard errors; Prob = probability.

Results tabulated in the tables suggest that only in 2019 the non-monetary discretionary accruals are positively associated with the probability that a firm ceases its activity within the next two years.

Such a mixed result might be attributable to the presence of self-financing by the companies and is not necessarily an indicator of companies' ceasing activity.

When this paper uses the working capital discretionary accruals, the results tabulated in Tables

11 and 12 suggest that in both the years analyzed, they are positively associated with the probability that a firm ceases within the next two years.

Table 11 Regression model of working capital (2018)

Logistic regression Year = 2018			Number of obs =			
Log likelihood = -119.7363			1,383 LR chi2(1) =			
			2.70			
			Prob > chi2 = 0.1005			
			Pseudo R2 = 0.0111			
ceased	Coef.	Std. Err	z	P> z	[95% Conf. Interval].	
Abnormal WC accrual	.0146	.0070	2.10	0.035	.0001	.0283
_cons	-4.1039	.2132	-19.25	0.000	-4.5219	-3.6860

Note. Obs = observations; wc = working capital; coef. = coefficient; Std. Err. = Standard errors; Prob = probability

Table 12 Regression model of working capital (2019)

Logistic regression Year = 2019			Number of obs =			
Log likelihood = -93.0617			1,316 LR chi2(1) =			
			4.14			
			Prob > chi2 = 0.0419			
			Pseudo R2 = 0.0218			
ceased	Coef.	Std. Err	z	P> z	[95% Conf. Interval].	
Abnormal WC accrual	.0177	.0066	2.67	0.008	.0047	.0306
_cons	-4.3652	.2468	-17.69	0.000	-4.8489	-3.8816

Note Obs = observations; wc = working capital; coef. = coefficient; Std. Err. = Standard errors; Prob = probability

Concerning the indications returned by the previous variables on working capital, we obtain a result that is indicative with respect to the topic analyzed. We note, in fact, that the value of z is statistically significant with reference to both 2018 and 2019. This can be attributed to the components of working capital —particularly receivables and payables— which are more susceptible to opportunistic behavior by financial statement preparers, especially in environments with lower audit quality.

5.2. Additional and Robustness Tests

Similar results are observed when considering the values jointly for both years under analysis, with reference to each individual variable. Table 13 presents the results of the regression model using abnormal (discretionary) accruals as proxy of earnings management. Table 14 shows the results for non-monetary abnormal (discretionary) accruals. Table 15 reports the results for working capital discretionary accruals.

Table 13 Regression model of abnormal accrual (2018/2019)

Logistic regression			Number of obs = 2,699			
			LR chi2(1) = 0.33			
			Prob > chi2 = 0.5680			
Log likelihood = -216.3531			Pseudo R2 = 0.0008			
Ceased	Coef.	Std.err	z	P> z	[95% Conf. Interval].	
Abnormal accrual	.0052	.0073	0.70	0.483	-.0092	.0195
_cons	-4.1550	.1564	-26.57	0.000	-4.4615	-3.8485

Note Obs = observations; wc = working capital; coef. = coefficient; Std. Err. = Standard errors; Prob = probability

Table 14 Regression model of non-monetary cost (2018/2019)

Logistic regression			Number of obs = 2,699			
			LR chi2(1) = 3.06			
			Prob > chi2 = 0.080			
Log likelihood = -214.9877			Pseudo R2 = 0.0071			
Ceased	Coef.	Std. Err	z	P> z	[95% Conf. Interval].	
Abnormal non-monetary	.0062	.0027	2.29	0.022	.0009	.0115
_cons	-4.1835	.1582	-26.44	0.000	-4.4937	-3.8733

Note Obs = observations; wc = working capital; coef. = coefficient; Std. Err. = Standard errors; Prob = probability

Table 15 Regression model of working capital (2018/2019)

Logistic regression			Number of obs = 2,699			
			LR chi2(1) = 6.77			
			Prob > chi2 = 0.0093			
Log likelihood = -213.1298			Pseudo R2 = 0.0156			
Ceased	Coef.	Std. Err	z	P> z	[95% Conf. Interval].	
Abnormal wc accrual	.0162	.0048	3.38	0.001	.0068	.0255
_cons	-4.2239	.1612	-26.19	0.000	-4.5400	-3.9078

Note Obs = observations; wc = working capital; coef. = coefficient; Std. Err. = Standard errors; Prob = probability

With respect to the main analysis, not only are working capital abnormal (discretionary) accruals positively associated with the probability that a firm will fail within the following years, but so are non-monetary abnormal (discretionary) accruals.

6. Concluding remarks

This study, aimed at analyzing the relationships between the cessation of business of unlisted non-financial companies applying IAS/IFRS and audit quality, yielded discordant results. In fact, concerning the hypothesis that a decrease in audit quality positively affects the probability that a firm ceases within the next two years, the paper provided evidence that only a part of abnormal (discretionary) accruals positively affects such probability. Assuming them as a measure of audit quality, the working capital abnormal (discretionary) accruals are those that affect (more than others) the probability that a firm ceases. The nature of this result is certainly due to the items that make up working capital, which are more maneuverable and modifiable during the preparation of the financial statements, and therefore in the presence of a low level of audit quality, they increase the possibility of cessation of business. The analysis, as already indicated, leaves discordant results about the variable of non-monetary accrual and therefore it needs to be further investigated with future studies how much this variable may affect the issue and also whether the difference in statistical significance between the analyzed years is exclusively due to the presence of self-financing produced by the companies. Regarding the last variable, abnormal accruals, it is not statistically significant and therefore does not affect the companies' cessation of business. Combining the evidence just listed with what is returned by the application of the modified Jones model in the sample of companies studied, there does not appear to be any evidence of earnings manipulation that could have affected company performance.

The study is a first step in the reading of audit quality related to the cessation of activities by companies, it suffers from the limitations due to the lack of existing references for the analysis; however, it should be emphasized that there is evidence that one of the variables analyzed turns out to affect the possible distortions created within the company that can even lead to its closure, especially in an environment where audit quality is low. This result turns out to be a basis for possible future studies of the phenomenon; the scope is very broad because this study only analyzed companies that operate in non-financial markets and are not listed. The analysis can also be extended to a broader time period, and for future studies it will also be possible to assess the use of other variables that might provide different evidence from that taken as reference.

The analysis of the phenomenon of audit quality about business closures can also represent a new point of reference for regulators, political bodies and auditing firms themselves to further improve the tools available to prevent business closure scenarios, especially in relation to events

linked to company bankruptcies, which are events that impact on the stakeholders of companies but also, especially in the case of bankruptcies of larger companies, on the social fabric.

Chapter 5. Conclusions

The aim of this work was to investigate the phenomenon of earnings management by offering an analysis covering both the private and public sectors. In the thesis, the analysis covered different sectors and different types of companies operating in the private sector, as outlined in the previous chapters. With regard to the public sector, although a review of the work on the study of audit quality has been undertaken, the regulatory changes made both with regard to the programming required of public administrations and the way in which accounting documents are drawn up has made it difficult to study the phenomenon empirically. In terms of planning, Article 6 of Decree Law No. 80/2021 required the drafting of the Integrated Activity and Organisation Plan (PIAO), making it mandatory for all public administrations.

With the subsequent Decree No. 132 of 30 June 2022, the Civil Service Department provided for a regulation containing the drafting methods and contents that the document had to possess. The purpose of the document is to plan and manage the activities of public administrations by replacing and supplementing certain documents that were already present in the previous regulations. One aspect of particular interest is related to the Public Value section and the assessment of the objectives that each public administration must set itself in the planning phase, detailing how they are to be achieved. It could have been useful to observe whether the achievement of these objectives was reflected in the publication of budget documents and to investigate the possible presence of earnings management by studying both the planning document and the budget file. However, the various extensions that took place in the drafting of the document and the ‘novelty’ of its drafting meant that the PIAOs analyzed, in their early versions, were exclusively a combination of the documents that were drafted under previous legislation (e.g. performance plans, agile value plans and anti-corruption plans). The Planning for Public Value section, which represents the main innovation of the PIAO, was often not properly analysed and in some cases contained only a reference to the legislation. The short time span, the lack of uniformity in drafting the document, partly due to the diversity of sectors within public administration, and the limited amount of data made it impractical to compare these documents or relate them to the budget documents.

A further element of difficulty in the analysis is the different ways in which the financial statements are drawn up by public administrations, an example of which is what is provided for state universities. The AIDEA document published in 2023, which analyzed various adjustments to the preparation of financial statements, showed that even within the same public sector,

different approaches were adopted in the drafting and estimation of the items making up the annual documents. The structure of the university budget resulted from a series of reforms that had affected all public administrations. For state universities, the single annual financial statements with the introduction of financial accounting had been provided for by Law No. 240/2010, by Implementing Decree No. 18/2012 and by a series of administrative acts that had taken place until 2019. This process also aimed to ensure the comparability of universities' economic and financial reporting, and its consolidation for oversight by the competent Ministry. The search for uniformity in the preparation of accounting documents was a principle of innovation, given that under the previous rules, wide autonomy was given to the use of different budget structures and information-accounting systems. This was the case for different accounting items and even for mandatory documents such as the notes to the accounts and the cash flow statement.

In drafting the documentation concerning numerous accounting items and the methods of preparing the required documents, several critical issues emerged, particularly with regard to tangible fixed assets. For example, the criteria for classifying fixed assets according to the balance sheet layout in the 3rd edition of the Technical Operating Manual were often not applied, and certain categories of fixed assets were reported differently by individual universities. Depreciation rates often differed from the ranges established in the Technical Operating Manual. In many cases, write-downs of fixed assets in response to permanent losses were not implemented.

A number of critical issues were also identified in the way other items in the universities' financial statements were prepared and estimated, such as the valuation of book assets and inventories.

For the first of the two items, for example, discrepancies were observed among various public universities in the Notes to the Financial Statements regarding the methods used to estimate book value—methods that were, in some cases, entirely absent. There were also inconsistencies in the analytical description of the assets constituting book value, and some universities failed to report the book value of their bibliographic heritage, resulting in the absence of information on purchase cost and depreciation funds for individual assets. In some cases, despite legal requirements, no distinction was made between book assets subject to impairment and those that were not. Furthermore, differences were found among universities in the methods used to calculate depreciation. With regard to inventories, the main discrepancies identified by the study concerned the methods used to calculate inventory values, inconsistencies in their estimation

among universities, and the lack of accurate information in the Notes to the Financial Statements in some cases..

Lastly, it is important to consider that a further change affecting the public sector is the forthcoming adoption of the Single Economic and Financial Accounting System for all public administrations, as set out in Reform No. 1.15 of the NRP. This reform establishes that all public entities must adopt the system by 1 January 2026. It is part of a broader process of gradual adoption by state bodies, exemplified by the drafting of the single chart of accounts for use with the double-entry accounting system by administrations in November 2023. A further step involves the publication of the ITAS accounting standards to be adopted. This step stems from the adoption of European Regulation 11/85/EU, which calls for the implementation of common accounting principles and systems for all public administrations (EPSAS/IPSAS).

An optional experimental phase is planned for 2025 for public entities choosing to adopt the single economic and financial accounting system in advance; as previously noted, adoption will become mandatory in 2026.

In light of the above, it is believed that the phenomenon of earnings management can be more effectively investigated in the public sector once the new accounting system is fully implemented, as it will ensure uniformity in data presentation and in the preparation of accounting documents across all public administrations, regardless of their specific sector.

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