Gaetano Matonti

BIG 4 AUDITORS AND AUDIT QUALITY IN NON-LISTED COMPANIES

Empirical Evidence from Italy

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To my father
To my family

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BOOK REVIEW

"Big 4 Auditors and Audit Quality in Non-Listed Companies: Empirical Evidence from Italy", Dr. Gaetano Matonti

This research monograph aims to investigate audit quality in Italian non-listed companies. More specifically, it addresses the question of whether Big 4 auditors perform high-quality audit in non-listed companies. The key findings are that (i) Big 4 auditors provide high-quality audit compared to other auditors in terms of both accounting and real earnings management; (ii) such auditors are more independent than other auditors.

The introduction in Chapter 1 provides a useful context for the topic of audit quality as it applies to non-listed companies, and to the Italian setting, as well as explaining the structure of the monograph.

Chapter 2 outlines the theoretical framework of auditing with reference to the rich literature in this field. It commences with the broad theoretical and legal context, and goes on to explain well the demand for an audit, grounded upon agency theory but extended into the wider theoretical discussion. Based on this, the role of auditing as a key monitoring mechanism for stakeholders is clearly explained, extended with reference to the information and insurance hypotheses, as well as its inherent impact on management efficiency. The chapter goes on to explore the incentives of auditors themselves to perform a quality audit with reference to both auditor independence and competence, under the pressures of potential litigation, reputation and regulatory risk. The monograph provides some insightful context here to account for the particular characteristics of the non-listed company.

Chapter 3 provides an examination of the concept of audit quality. Perceptions of auditing are very well explained in terms of the audit expectations gap and the desire of auditors to prove their credibility though their duties and

responsibilities. Audit quality is then defined which is itself a complex task given competing definitions and schools of thought in the extant literature. The chapter provides some excellent synthesis here with regard to the level of assurance of the financial statements and the level of compliance with accounting standards, in addition to the strict legal view on what constitutes audit failure or otherwise, and alternative views on audit quality drivers. Once the concept of audit quality is firmly established, the chapter then logically turns to the measurement of audit quality. The chapter discusses both input and output based measures of such quality in a structured and useful manner, going on to explore the particular context of non-listed companies.

Chapter 4 examines audit quality in non-listed Italian companies by first of all explaining the specific nature and characteristics of non-listed companies, and then adding the Italian context which has some fascinating legal, institutional and accountability attributes. The research hypotheses are then set out clearly, with a thorough grounding of each in the extant literature. The hypotheses are sensibly stated in terms of the drivers of real and accruals based earning management, consistent with the underlying literature.

Chapter 5 explains and justifies the research methodology meticulously, commencing with the sample selection of Italian non-listed companies. The sample itself is described thoroughly and forms a firm basis for subsequent analysis. Discretionary accruals are computed to take account of the peculiarities of the Italian accounting system and real earnings management is computed in the standard fashion. This section is very transparent and well explained. The modelling methodology is described and discussed in detail, carefully linking the hypothesis testing in the process. All of the model variables are defined sensibly and in detail. Descriptive statistics of the model variables are examined well, along with some preliminary interpretation of key relations. The correlation analysis adds some more precision to this pretesting phase. The hypothesis testing in relation to model variable coefficients proceeds in a systematic fashion, with thorough discussion around each test. In so doing, the author provides a comprehensive analysis of the drivers of real and accruals-based earnings management, thereby producing some compelling evidence on audit quality.

Chapter 6 provides an excellent conclusion to the monograph. It commences by reminding the reader of the salient special features of non-listed companies within the Italian context. The drivers of earnings management are summarised well, and a clear interpretation is provided in relation to underlying audit quality. The monograph will be of clear use not only to students and academics, but also to company managers, auditors, regulators and

other stakeholders with an interest in the field. Avenues for further research are identified well.

In summary, this monograph makes an excellent and timely contribution to the field of audit quality, with a particular emphasis on non-listed Italian companies. While the Italian context has some specific features, many of the results of highly relatable to other non-listed company settings, which is important given the prevalence of non-listed companies in many advanced and developing economies. The writing is accessible and interesting, and the monograph itself is very well structured.

Professor Jon Tucker
University of the West of England, UK
21/3/18

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PREFACE

Italian auditing environment is something of a special case compared to other European auditing regimes. While listed companies may be audited only by an external auditor, a Big 4 audit company or otherwise, non-listed companies may instead choose to be audited by a Board of Statutory Auditors. Based on that stated above, this research addresses the question of whether Big 4 auditors perform a high-quality audit in non-listed companies. The key findings are that (i) Big 4 auditors provide high-quality audit compared to other auditors regarding both accounting and real earnings management; (ii) such auditors are more independent than other auditors. To measure the first dimension of audit quality through the input-based measures, which evaluate audit quality using observable inputs to the audit process.

To investigate the auditor competence, the accounting and real discretional accruals are estimated. The auditor independence is tested investigating the statistical relationship between the likelihood a company receive a modified audit opinion and the presence of, in turn, accounting and real discretionary accruals. The findings of this research provide evidence that Big 4 auditors perform an audit quality also in non-listed companies, which financial statements are less scrutinised by the public. In conclusion, the findings suggest that the Big 4 auditors protect their reputation also in performing auditing in the context of non-listed companies.

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PART ONE

THEORETICAL FRAMEWORK ON AUDITING

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1. INTRODUCTION

1.1. Background and research motivations

The literature (e.g., DeAngelo, 1981a; 1981b) provides empirical evidence that Big 4 audit companies have several incentives to perform quality because of reputation and litigation concerns. Moreover, these large auditors have also an incentive to act quality to mitigate the audit expectation gap arising from a situation whereby a difference in expectation exists between a group with particular expertise and a group, which relies upon that expertise (the audited companies and the stakeholders). According to the literature (DeAngelo, 1981b), the audit quality is the ability of the auditor to discover any misstatement in the financial statements and to report it on the auditor report. The literature provides empirical evidence that a Big 4 auditor is more likely to constrain earnings management initiatives than other auditors, while there is mixed evidence about the auditor independence (e.g., Butler et al., 2004).

Despite the economic importance of non-listed companies, most of the extant research literature on audit quality focuses on listed companies primarily in common law environments. The research about the audit quality in non-listed companies mainly test the auditor's ability in constraining earnings management (e.g. Beatty and Harris, 1998; Beatty et al., 2002; Vander Bauwhede and Willekense, 2004; Coppens and Peek, 2005; Ball and Shivakumar, 2005; Burgstahler et al., 2006; Arnedo et al., 2007; Van Tendeloo and Vanstraelen, 2008; Mariani et al., 2010; Cameran and Prencipe, 2011; Francis, 2011; Hope et al., 2013; Bisogno, 2012; Dedman et al., 2014; Esplin et al., 2016). However, the literature investigating the auditor independence in the context of non-listed companies is quite scarce. The independence is the probability that a misstatement in the client's accounting system is reported in the auditor' report, is somewhat scarce. Therefore, research on audit quality

(that is the investigation of both professional auditor competence and auditor independence) also in the context of non-listed companies appears warranted. The problem here is that as the financial statements of non-listed companies are not scrutinised as much by investors, financial analysts or stock exchange regulatory authorities as they are for listed companies (Van Tendeloo and Vanstraelen, 2008; Nobes, 2010, Vanstraelen and Schelleman, 2017). As a consequence, the probability that an audit failure is detected is much lower, thereby increasing the likelihood that an auditor does not perform a high-quality audit of these companies. The existing literature argues that non-listed companies are in general characterised by different ownership, governance, financing, and management structures. Moreover, they have different auditing needs to listed firms, thereby affecting the type and strength of agency problems (Ball and Shivakumar, 2005; Van Tendeloo and Vanstraelen, 2008; Nobes, 2010). Thus, it is arguable that large auditors (e.g., a Big 4 auditor) do not get net benefits in assuring high-quality audit in non-listed companies, because of the weak probability that an audit error will be discovered (Cano Rodríguez and Sánchez Alegría, 2012). Thus, because the financial statements of the non-listed companies are less scrutinized, lowering the probability of audit failure detection, one could expect that Big 4 auditors have weaker incentives to supply a high audit quality to their private clients.

According to that stated above, there are several motivation for studying both auditor competence and independence in non-listed companies in the Italian setting. Firstly, in common with the European norm, the majority of Italian companies are non-listed (EC, 2015), underlining the importance of studying such firms in an established European country setting. Moreover, approximately 99.9% of Italian companies are SMEs (EC, 2015; 2016), and about 94.4% of them are micro-sized firms (EC, 2015; 2016), suggesting weaker agency problems in these companies. As a consequence, it should be interesting to investigate whether the larger auditors engaged by these companies have incentives to perform the same level of quality than in listed companies. Secondly, according to the literature (Vander Bauwhede and Willekens, 2004; Ball and Shivakumar, 2005; Van Tendeloo and Vanstraelen, 2008), non-listed companies are more likely to use bank debt to finance their business. Bank loan agreements exhibit more re-contracting flexibility than do bonds; therefore, bond pricing could be more sensitive to the quality and credibility of accounting information (Bharath et al., 2006), suggesting a higher risk that an audit error will be discovered, damaging auditor reputation. The engagement of a Big auditor by a non-listed company is an interesting phenomenon to investigate for at least two reasons. The first reason is that the literature provides empirical evidence that these large auditors tend to charge higher audit fees,

commensurate with their reputational and industry specialisation attributes (e.g. Ferguson et al., 2003; Choi et al., 2008; Francis and Wang, 2008). This circumstance may reduce the net benefit for a non-listed company to have its financial statements audited by a Big 4 audit company. The second reason, related to the first one, is that these companies rely on the quality audit performed by these auditors because they have to signal the reliability of their financial information (for example, for loan purposes). Therefore, these non-listed companies expect that a Big 4 auditor enhances financial reporting quality. Prior empirical evidence in the context of Italian non-listed companies documents that the Big 4 audit companies provide high-quality audit compared to other auditors (included the statutory auditor) (Mariani et al., 2010). However, this literature only investigates the association between the presence of a Big 4 and the level of accruals-based earnings management, but do not analyse if the probability a modified audit opinion is associated to an increase of earnings management initiatives.

This research contributes to the literature on audit quality in non-listed firms as follow. In contrast to the literature on the audit quality in non-listed companies that analyses the two dimensions of audit quality separately, this research analyses the two dimensions together. Moreover, this research also investigates if earnings management initiatives are in somehow inhibited by the presence of an audit market leader, as the Big 4 auditors.

1.2. The structure of the research

The research is structured as follow. Chapter one introduces the aim of the research. Chapter two analyses the auditing theories. In particular, this chapter after defining the auditing, according to the literature, split the theories explaining the need for an audit in two fields: 1) the theories explaining the demand for an audit, 2) the theories explaining the role of an audit. Finally, the auditor incentives in supplying audit quality are analysed to understand the reasons why some auditors make any efforts to perform quality. Chapter three investigates the concept of audit quality by reviewing the main literature on this topic. This chapter also explains the main measurement method used by the literature as a proxy for audit quality. Chapter four analyses the audit quality in the context of the Italian non-listed companies. In particular, this chapter develops the two hypotheses that investigate the audit quality through the lens of the agency theory and the DeAngelo's framework on the audit quality. Chapter five presents the methodology, the sample selection criteria and com-

ments the findings of the univariate and the regression models used in test the hypotheses. Finally, chapter six concludes the research by showing the academic and practical implication and the main limitation of the research.

2. THE AUDITING THEORIES

2.1. The Auditing

Kneckel (2009, p. 8) states that to understand the concept of audit quality, it is fundamental to first understand auditing. Essentially, auditing is a professional service knowledge-based rather than asset-based. That means that the audit's value derives from what the auditor knows about the audited company, that is their expertise. Therefore, the process of providing this auditing service matters a great deal.

Auditing is a process with the objective to transform uncertainty inherent in unaudited financial statements to a state where the auditor and the public feel comfortable with the numbers (Pentland, 1993). The GAO (2003, 2007) states that the main purpose of the (financial) auditing is primarily concerned with providing reasonable assurance about whether financial statements are presented fairly in all material respects in conformity with generally accepted accounting principles, or with a comprehensive basis of accounting other than these accounting principles. Colbert et al. (1988) posit that the auditing exists to monitor the activities of the management and to attest to management's performance.

The American Accounting Association (1973) defines the auditing a systematic process of objectively obtaining and evaluating the evidence regarding assertions about economic actions and events to ascertain the degree of correspondence between those assertions and established criteria and communicating the results to interested users. Elder et al., (2010, p. 4) define that "Auditing is the accumulation and evaluation of evidence about information to determine and report on the degree of correspondence between the information and established criteria. A competent, independent person should do auditing". Auditing proceeds using a logically structured

series of steps. During this process, an auditor will gather information regarding the statements made by the management of an organisation about the economic activities in which they have been engaged. The auditor will then critically examine whether the observed reality is conforming to the standards laid down by law. These standards comprise the established criteria which enables the auditor to evaluate whether the assertions fairly represent the underlying events. As a consequence, the audit enables auditors to express an opinion on financial statements and thereby to provide reasonable assurance that they give a true and fair view and have been properly prepared. Therefore, it is arguable that the exercise of professional judgement pervades the entire audit process. The results of each audit assignment, which are the major deviations between the observed reality and the established norms, are written in a report and are communicated to all stakeholders. The auditor shall thereby perform his work in an objective an independent manner. Therefore, auditor expertise and auditor independence are the two pillars on which the audit profession is founded.

The audit is a crucial contributor to financial stability and to re-establish trust and market confidence. Law entrusts auditors with conducting statutory audits and fulfil an important role in offering an opinion on whether the financial statements are stated truly and fairly (Quick, 2012). Therefore, the demand for auditing can be attributed to users' needs of reliable financial information and to reduce the consequences of users' erroneous decision dealing with inaccurate accounting information. Reliable information, instead, is necessary if managers, investors, creditors, banks, and regulatory agencies are to make informed decisions about resource allocation. The literature (e.g., Watts and Zimmermann, 1986a; 1986b; Elder et al., 2010) states that the most common way for users to obtain reliable information is to have independent external auditing. Therefore, the role of (an external) auditing is to reinforce trust and confidence in financial reporting and to mitigate the conflict of interests. According to that stated above, the literature (Watts and Zimmermann, 1986a) states that an audit is a corporate governance mechanism that can mitigate the agency problems between the principal(s) and the agent(s).

From this perspective, auditors are essential actors in creating trust within the business world as they are engaged in communicating information about a company's financial position objectively to a third party, often shareholders and investors, to facilitate their decision making. For every accounting period, auditors produce an audit report for the client where they state the financial reports. If irregularities have been detected during the audit, the auditor needs to disclose this in the audit report through a modified audit opinion (ISA 705).

Auditing theory also provides a framework for understanding the relationships and interrelationships between different parties (both internal and external) of a company. The users of the financial information (e.g. the investors, creditors, financial institutions, and analysts) expect credible financial information to take their investment decisions. In fact, the information is useful if it helps users in their decision-making. Because the management is responsible for the financial reporting and also has a position to exercise discretion when prepares financial statements, a risk exists that the information is inaccurate, that is the information risk. Moreover, an audit determines whether the overall financial statements present fairly by specified criteria, and is free from material misstatements.

In synthesis, the audit process is designed to assess the probability of a material misstatement and reduce the likelihood of an undetected and uncorrected misstatement to an appropriate assurance level. It means that the auditor's job is to diagnose the risk of a client and to treat that risk through the planning and conduct of specific audit procedures (Kneckel, 2009, p. 11). The audit risk model may not provide perfect assurance. In fact, no auditor, client or regulatory inspector can ever really know what level of assurance is achieved in an audit (Kneckel, 2009, p. 9). As a consequence, it appears that audit quality is a complex concept, made more complicated by the fact that it cannot be clearly defined, accurately measured or routinely observed (Kneckel, 2009, pp. 15-16).

Efforts to improve the audit processes will lead to better audit quality. Moreover, standardisation, inspection and in retrospect may not always lead to improvements in audit quality if auditor judgment and flexibility is considered a limitation of the audit process, rather than an asset that may contribute in improving audit quality. Thus, the best source of audit quality may be the judgment and expertise of an experienced auditor.

Given that stated above, next sections provide an overview of the existing theories explaining the demand for an audit, the theories explaining the role of the auditor in fulfilling this demand, and finally, the incentives for an auditor to perform the high-quality audit.

2.2. The demand for an audit

Duff (2004) highlights that the demand for audit services originates from a need to facilitate contractual relations between the audit client and various stakeholder groups. The preparation of accounts is controlled by the board of directors. These directors are, often, separate from the company's stake-

holders. This separation of ownership and control creates a contractual conflict between the parties, originating agency costs. Agency theory suggests the provision of auditing services reduces agency costs and consequently contractual conflict.

The agency theory is mostly used by the literature investigating the needs for high-quality auditing in listed companies. However, the literature also explains alternative theories on the demanding for an audit. Therefore, the agency theory is described first in next section, while alternative theories are then shown. It could be useful note that these theories could be considered as complementary rather than mutually exclusive. They also appear to apply in different degrees in different countries and different legal systems.

2.2.1. The Agency theory

The need for auditing emanates from the principal-agent relationship existing between the parties within the business (Wallace, 1991, p. 18).

An agency relationship is a contract under which one or more principals engage an agent to perform some service on the principals' behalf and delegate some decision-making authority to the agent (Jensen and Meckling, 1976). The alignment of the interests between the principal(s) and the agent(s) can result in high costs, giving rise to what is known as agency costs to monitor the action of agents. Incentive schemes and explicit and implicit contracts are the most frequently used monitoring techniques (Solomon and Solomon, 2004). The solutions for the problems of agency involve establishing a nexus of explicit and implicit contracts between the managers and the shareholders, who manage the costs above. It is acknowledged, however, that it is an onerous task to verify the behaviour of the agents. The alignment of these interests can result in high costs, giving rise to what is known as agency costs to monitor the action of agents. Incentive schemes and explicit and implicit contracts are the most frequently used monitoring techniques (Solomon and Solomon, 2004; De Almeida, 2014). The solutions for the problems of agency involve establishing a nexus of explicit and implicit contracts between the managers and the shareholders, who manage the costs above. In turn, the managers intend to demonstrate to the shareholders that they act responsibly in the pursuit of maximising wealth, and provide information, in annual reports. The monitoring of these risks is carried out in various ways, giving rise to various forms of shareholder action. Within these actions, it is possible to include the votes, the influence in the makeup of management bodies. In an alternative to the use of external monitoring by an auditor, a

solution might be to implement or to use incentive performance contracts for managers, which also reduce agency costs by improving managerial performance compared to pure wage contracts. However, the enforcement of these contracts requires additional monitoring costs by the owners. To conclude, external monitoring by an auditor reduces the occurring information asymmetries between managers and owners, therefore, ensuring the owners that the company is managed by keeping their interest at heart and ensuring managers that their actions are perceived aligned with the interests of the owners. As such, the most common monitoring mechanism at the company level is the company's external auditors (DeAngelo, 1981b). Jensen and Meckling (1976) suggest that the external auditing of financial statements may mitigate the agency costs arising from the separation of ownership and control within a company. Moreover, auditors play a fundamental corporate governance role as they certify the validity of the financial statements (Watts and Zimmerman, 1986a). Therefore, the essence the essence of the agency theory is the divergence or the information asymmetry in the relationship between the principals and agents. As a consequence, central in this relationship is the monitoring role of an external auditor. In fact, the purpose of the auditor is to limit this divergence or information asymmetry between the two parties, improving the reliability of the financial information. The level of audit quality determines the capabilities of the auditor. Higher quality auditors are better capable of reducing the divergence/information asymmetry.

In this context, agency costs may be reduced by subjecting the financial information to verification by a third party before provision to the providers of finance. The latter is then able to employ that audited information to assess the risk of the company, and lenders can write debt covenants based upon it. The engagement of an auditor starts from the proposition that the demand for high-quality audit arises from the information asymmetry between managers and investors (Carey et al., 2000; Chaney et al., 2004; Niskanen, Karjalainen, and Niskanen, 2011). Thus, prior research uses agency theory to at least partially explain auditor choice (e.g., Carey et al., 2000). In the most narrow sense, the primary role of the audit is to improve the quality of the company's financial statements.

There is significant evidence that a high-quality audit reduces the incidence of earnings management (Becker et al., 1998; Francis et al., 1999; Knechel et al., 2008). This suggests that there is an incentive for both management and other stakeholders to engage reputable auditors (Hayes et al., 2005; Hayes et al., 2014). Also, Chow (1982) states that controlling the conflict of interests among firm managers, shareholders and bondholders is a significant reason for engaging external auditors.

The literature (Ng, 2002) also states that auditing is a means of monitoring that will lead to an overall reduction of agency costs.

In conclusion, the demand for external auditing arises from the auditor's monitoring role in the principal-agent relationship (Eilifsen and Messier, 2000). Based on that stated above, agency theory explains the critical function of auditing as a mechanism for mitigating information asymmetries among related parties. High auditing quality diminishes information asymmetry and minimises uncertainty concerning earnings. Therefore, audit quality may also be related to earnings management detection. High audit quality and quality assurance are expected to provide sufficient constraints on earnings management (Okolie et al., 2013). Finally, Hayes et al. (1999) observe that agency theory can be used to explain the supply side of the audit market. The contribution of an audit to third parties is mainly determined by the probability that the auditor will detect errors in the financial statements and the auditor's willingness to report these errors in the audit opinion.

2.2.2. Other theories explaining the demand for an audit

The literature (Hayes et al., 2005) states that beyond the agency theory several theories are emphasising the need for an audit: the policeman theory, the lending credibility theory, the theory of inspired confidence, and the moderator of claimant's theory.

The policeman theory posits that an auditor is responsible for searching, discovering, and preventing fraud. The focus of the audit, however, has moved towards the verification of the truth and the fairness of the financial statements and the provision of reasonable assurance. Therefore, this theory relies purely on the arithmetical accuracy and the prevention and detection of fraud. More recently the primary focus of auditors has been to provide reasonable assurance and verify the truth and fairness of the financial statements.

The lending credibility theory suggests that the primary function of the audit is to add credibility to the financial statements. Audited financial statements are seen to have elements that increase the users' confidence in the accounting information prepared by the management. The users are perceived to gain benefits from the increased credibility of financial information; these benefits are typically considered to be that the quality of investment decisions improve when they are based on reliable information.

The theory of inspired confidence, also known as the theory of rational expectations, was developed by Limperg. The central area of Limberg's framework is related to the social responsibility of the independent auditor

and possible mechanisms for ensuring that audits meet society's need. The Scholar highlights the significance of auditing and explains the implications of the reasons for how an audit should be performed. Limperg (1932) emphasises the role of the auditor in a relationship with the users of financial statements in the sense that the independent auditor acts as a confidential agent for society (Ogbonna and Appah, 2014). The Limberg's framework bases its validity on the most significant level of satisfaction of users of the audited financial information to enhance the credibility on the auditor work about the auditor's work (that is to meet the audit expectation gap). This theory addresses both the demand and the supply of audit services. The need for audit services is a direct consequence of the participation of stakeholders in the company who demands accountability from the management in return for their investments in the company. Since the information provided by management might be biased, a possible divergence between the interest of management and outside stakeholders, an audit of this information is required (Hayes et al., 1999, p. 36). In particular, the Scholar argues that the auditor derives his general function in society from the need for an expert and independent opinion of the financial information based on that examination. The function is rooted in the confidence that society places on the effectiveness of the audit and in the opinion of the accountant. This confidence is, therefore, a condition for the existence of that function. If the confidence is betrayed, the audit function, too, is destroyed, since it becomes useless. About the supply of audit assurance, Limperg (1932) suggests that the auditor should always strive to meet the public expectations.

Also, the literature also investigates other explanation of the demand for an audit that shows some relationship with some theories presented above. In more specific terms, an audit enhances stakeholders' perceptions of the reliability of the accounts, and the selection of credible auditors signals management's quality and integrity (Dopuch and Simunic, 1980, 1982). Wallace (1980) states that auditing also provides an insurance dimension, whereby shareholders and creditors are indemnified against financial loss by the auditor's professional liability. Finally, according to Beattie and Fearnley (1998), the auditor can provide over and beyond the company audit, such as technical services and advice on financial reporting and strategies relating to the future development of the company. As a consequence, an audit makes several benefits for all group involved.

2.3. The role of the auditing

Auditing provides reasonable assurance that a company's financial statements are free from material misstatements (PCAOB, 2016). The auditing service provides an objective and independent opinion of management's claims about the true state of the financial information. Auditing is further a process with the objective to transform uncertainty inherent in unaudited financial statements to a state where the auditor and the public feel comfortable with the numbers (Pentland, 1993). From this perspective, auditors are essential actors in creating trust within the business world as they are engaged in communicating information about a company's financial position objectively to a third party, often shareholders and investors, to facilitate their decision making. It is crucial that the relationship between client and auditor enable the auditor to maintain the necessary independence from the client to create an audit statement of high quality. For every accounting period, auditors produce an audit report for the client where they state the financial reports. If the auditor detects some irregularities during the audit, he (she) needs to disclose these irregularities in the audit report, issuing a modified audit opinion (ISA 705). The audit report helps create a trust for the company toward its stakeholders, which is needed to obtain investments, business, and growth. A modified audit opinion may be highly inconvenient for a client, expressing that management is not in control. Since a modification could make it difficult to obtain loans and decrease the share price (Carey, Geiger, and O'Connell, 2008), it is something to be eliminated as soon as possible and preferably avoided entirely.

In the previous section theories explaining a demand for auditing were presented. Related, and to some extent overlapping, with these theories Wallace (1980) proposed three hypotheses for emphasising the role of the audit in free and regulated markets: the monitoring (stewardship), the information and the insurance hypotheses (Ittonen, 2010).

The monitoring hypothesis (Wallace, 1980, p. 13, and 2004), defines this hypothesis as "stewardship monitoring hypothesis" is based on agency theory of Jensen and Meckling (1976). The separation of ownership and control motivates the owners to incur costs to monitor the activity of the managers. One of these controls is the hiring of an external auditor who certifies the accuracy of the financial information provided by the managers (Seow, 2001). Therefore, the stewardship (monitoring) hypothesis considers external auditing as a mechanism that can contribute to control the conflict of interests among firm managers, shareholders and other external claimholders by enhancing the credibility of publicly reported financial information (Chow 1982).

Under this hypothesis, it is arguable that listed companies have several benefits in engaging high quality (external) auditors compared to non-listed companies because the agency problems are higher in listed companies than in non-listed companies.

Cano Rodriguez and Sánchez Alegria (2012), analysing the value of an external audit in listed and non-listed companies, argue that the agency costs in listed companies can be mitigated by internal corporate governance mechanisms other than auditing, or by the surveillance of market authorities. For non-listed companies, however, these substitutes are not usually available, so audit quality can be the only mechanism employed to mitigate the agency costs. Therefore, the Scholars conclude that audit quality can be more valuable also for non-listed companies.

Given this role for external auditing, the utility of audit quality can be expected to be higher in those contexts where the agency problems are more critical (Cano Rodriguez and Sánchez Alegria, 2012). Thus, the previous literature has shown that the probability of engaging a high-quality auditor increases when the firms face external capital needs (Copley et al., 1995) or financial problems (Datar et al., 1991; Choi and Wong, 2007).

A second hypothesis explaining the role of (and, as a consequence, demand for) external auditing is the information hypothesis. This hypothesis enhances the information value of financial reporting (Wallace, 1980, and 1987; Seow, 2001). Therefore, the demand for auditing quality is related to the need for high-quality financial information and to reduce losses due to faulty decisions resulting from errors or irregularities in the financial statements. Therefore, the demand for audit quality is linked to the demand for high-quality financial information. The demand for high-quality financial information can be expected to be weaker for non-listed companies than for listed companies. Thus, given the identification between ownership and control, shareholders will not need public financial statements for monitoring the economic activity of the company, because they have access to internal information. The financial statements are then formulated to attend more to other reporting incentives, such as taxation or dividend policy, than to the reduction of the information asymmetry (Ball and Shivakumar, 2005 p. 84). So, the accounting reports of non-listed companies are less informative about the economic evolution of the company (Cano Rodríguez and Sánchez Alegría, 2012, p. 687) and are more likely to be affected by earnings manipulation (Coppens and Peek, 2005; Burgstahler et al., 2006). The poorer quality of the disclosed financial information can motivate external stakeholders of non-listed companies to demand alternative sources of information, on an as needed basis (Ball and Shivakumar, 2005; Burgstahler et al., 2006). This information, although unaudited, can be more

useful than the annual reports because it is timelier and specifically designed for the decision-making process.

The requirements of financial information disclosure for non-listed companies are much less strict, the number of analysts that follow the firm is lower, and the incentives for the voluntary disclosure of information less frequent. Moreover, non-accounting-based information that can be employed to evaluate firm performance is non-existent or very difficult to obtain for non-listed companies. Consequently, given this scarcity of financial information, the audit report is likely to be a significant piece of information for the external stakeholders of non-listed companies (Cano Rodriguez and Sánchez Alegria, 2012, p. 687).

The insurance hypothesis predicts that auditing is demanded because auditors may be sued in case there is a company failure. Auditing thus provides investors with a form of insurance. If an investor purchases securities by audited financial statements and subsequently sustains losses, the law provides some degree of recourse against the auditor. In this way, the auditor can, depending on how the court's reasoning works, function as an indemnifier against investment losses (Fortin and Pittman 2007; Seow 2001; Wallace 1987, and 2004). This demand for insurance will be higher in those environments with more significant litigation risk. This litigation risk is expected to be higher among listed than among non-listed companies because the former are usually larger and are more publicly notorious than non-listed companies. Thus, although the literature detects this insurance protection of an audit for listed companies (Pittman and Fortin 2004), the literature does not provide the same evidence for non-listed companies (Pierre and Anderson, 1984; Palmrose, 1997; Fortin and Pittman, 2007).

Finally, there is a different approach that may explain the demand for (and, as a consequence, the role of) an audit. The literature also explains the needs for high-quality external auditing because of it support managers in improving the efficiency of a company (Abdel-Khalik, 1993; Knechel, 2002; Knechel et al., 2008). Moreover, an external audit may remove the information asymmetries in internal reporting through the evaluation of firm internal processes, deterrence against management malfeasance, and increased compliance with legal and regulatory constraints (Kneckel, 2002; Kneckel et al., 2008; Liu and Lai, 2012). In essence, the literature suggests that organisational complexity is associated with higher information asymmetry (e.g., Simunic and Stein, 1997; Bushman et al., 2004; Demirkan et al., 2011).

The role of the external auditing in improving the efficiency of a company, or the mitigation of the information asymmetries inside the company, suggests that the higher the complexity of the firm the higher the need for a high-quality auditor to monitor firm complexity and operations.

Gray and Manson (2007) propose an integration of all theories both explaining the demand for, and the role of an audit into the agency theory augments. In fact, the Scholars point out that the existence of firm connecting links between them, and suggests that agency theory is a more in-depth, more concrete, rational and suitable explanation about the present economic environment, characterised by a permanent conflict of interests (DeFond and Zhang, 2014).

2.4. The Auditor incentives in performing audit quality

DeFond and Zhang (2014), reviewing the literature on audit quality, also investigated the auditor incentives in supplying audit quality. It is useful to note that the ultimate objective of auditors is to ensure soundness and fairness of a financial report of a company and issue a reliably high-quality audit opinion as a reflection of the company's pure financial performance based on the audited financial statement.

Within the DeAngelo's (1981b) framework, the supply of audit quality is a function of both the auditor's incentives for independence and their competency. Auditor independence arises from market-based incentives that include reputation and litigation concerns (Dye, 1993), and auditor competency refers to the auditor's ability to deliver high-quality audit, as reflected in factors such as inputs to the audit process, and expertise. Further, regulatory intervention can change auditors' incentives to supply high audit quality and their competencies for delivering this supply. In particular, the engagement risk of an audit arises from litigation risk, reputation risk, and regulation risk (Knechel and Vanstraelen, 2007). Litigation risk exposes auditors to financial penalties, while reputation risk impairs the ability to attract and retain clients. DeFond and Zhang (2014) observe that these risks are not independent and may work jointly influencing auditor behaviour and the acceptance of the audit work (the engagement risk of an audit). Some research (Weber et al., 2008; and Skinner and Srinivasan, 2012) provide evidence that auditor reputation offers incentives for high-quality auditing independently of litigation risk.

Litigation damage claims against auditors can be large enough to threaten the viability of even the largest audit firm and thus are expected to have

significant incentive effects. As a result, it is arguable that auditors engage some strategies that counter litigation threats. Some research investigates the research investigating the strategy reducing the litigation risk by increasing audit quality through additional effort. These research are divided in fee and in non-fee studies depending on if they refer or not to the audit fee. The studies based on the fee highlight that auditors can reduce the risk of material misstatement by increasing effort, which improves audit quality and audit fees. Alternatively, auditors can pass this risk on to the client by charging a fee premium. Strategies that include higher fees, however, require the client's willingness to pay those fees. Some literature does not address whether higher fees are due to increased effort or risk premia. This distinction is critical because further attempt rises quality, consistent with Kaplan and Williams (2008), who find that expanded audit hours reduce earnings management.

The non-fee based research finds that lower litigation risk reduces audit quality. For example, Kaplan and Williams (2013) find that auditors issue more GCs (Going concern audit report) to high litigation risk clients.

Some research investigating the auditor incentives to supply high-quality audit focuses on whether large auditors provide relatively higher audit quality, where Big N membership typically captures large auditors. This literature asks whether there is cross-sectional variation in audit quality, referred to as audit quality differentiation. Big 4 auditors are posited to provide higher audit quality because they are expected to be more independent. This independence of Big 4 auditors may be explained by their larger client base subjects them to higher reputation risk and less pressure to succumb to an individual client and because their deep pockets subject them to higher litigation risk. Big 4 auditors, however, also have higher competency in providing audit quality. The majority of this literature provides empirical evidence that Big 4 auditors offer higher audit quality. In more specific terms, the literature (for example, among the other, see Becker et al., 1998; Francis et al., 1999; Kim, Chung, and Firth, 2003) finds that discretionary accruals are lower in Big 4 compared to non-Big 4 audited companies. Zang (2012) finds that while Big 4 auditors constrain accrual-based earnings management, they do not restrict earnings management from real activities.

DeFond and Zhang (2014) state that the literature investigating what factors drive Big N audit quality argue that Big 4 auditors have greater competency in providing higher audit quality. Big 4 auditors are expected to be more competitive for a variety of reasons. For example, Big 4 auditors enjoy economies of scale that make it more efficient to monitor audit quality (Watts and Zimmerman, 1981). Also, their large size allows them to attract and retain higher quality audit inputs, particularly concerning human resources and

expertise (Dopuch and Simunic, 1982). While Big 4 captures both auditor incentives and competencies, most of the literature does not attempt to disentangle the two. Recently, however, researchers have begun to examine audit quality variation within Big N auditors, which holds their incentives relatively constant, thereby teasing out the effects of competency on audit quality. The auditor characteristic that is examined most extensively in this literature is auditor industry specialisation.

Auditor competency refers to the auditor's abilities to deliver high-quality audit, which include training, skills, and expertise. We note, however, that auditor competencies are not independent of their incentives. Greater incentives to supply high audit quality also motivate auditors to develop skills that facilitate the delivery of high-quality audits. Similarly, higher skill in delivering high-quality audits is expected to increase the auditor's reputation capital, thereby providing greater incentives to supply high audit quality (DeFond and Zhang, 2014).

In conclusion, DeFong and Zhang point out that extensive literature finds consistent and robust evidence that increased litigation risk triggers a variety of auditor responses, including charging higher fees, increasing going concern opinions, reducing discretionary accruals, shedding riskier clients, and lobbying for litigation relief.

Compared to listed companies, where the separation of ownership and control is the primary agency conflict and driver of audit demand, there are arguably many more reasons for audit demand in non-listed companies. The need for an audit is due to the significant variation like listed and non-listed companies. As explained by Langli and Svanström (2014), listed companies differ from non-listed companies on a number of important dimensions. In average, there is typically less agency conflict between shareholders and managers in non-listed companies since they commonly have more concentrated ownership, or family ties exist between CEOs, shareholders and board members, and major capital providers have direct access to information (e.g. Petersen and Rajan 1994). As a result, the types of agency conflicts in non-listed companies are different, for example, more agency conflict between majority and minority owners, and/or between owners and creditors and tax authorities (Langli and Svanström, 2014; Vanstraelen and Schelleman, 2017). According to that stated above, it is arguable that the agency theory may explain the demand for a high quality audit also in non-listed companies, and the two-dimensional definition of audit quality provided by DeAngelo (1981b) may help in assessing high quality in the context of these companies.

Duff (2004) highlights that high level of auditing services are seen as a means for a company to achieve a competitive advantage and position itself

more effectively in the marketplace (Lewis, 1993). Research demonstrates that audit companies may get net benefits in providing high-quality auditing services as customer loyalty, the attraction of new customers, positive word-of-mouth, employee satisfaction and commitment, enhanced corporate image, reduced costs and increased business performance (Berry et al., 1989).

3. THE AUDIT QUALITY

3.1. Preface

Because of its role, the audit plays an essential role in developing and enhancing the global economy by attesting the reliability and the credibility of the financial information. Auditors must raise their skills to increase the probability of relying more on the auditor's report and audited financial statements which are more relevant, unbiased and accurate for the decision makers. Auditors are engaged to serving the public interest by providing a high-quality audit function (Liddy, 2014), which purpose is to provides independent assurance that the disclosed reliable and credible financial information assist the principals in monitoring the activities of the agents (Jensen and Meckling, 1986). Moreover, audit quality is considered as a mechanism that highlights the risk that financial statements comprise misstatements material and preventing overstated opportunistic behaviour of the management. Therefore, the literature finds that audit quality limits earnings management initiatives (Dechow et al., 1996; Alzoubi, 2016; Astami et al., 2017; Toumeh and Yahya, 2017).

Knechel et al. (2012) highlight that the perception of audit quality can depend very much on whose eyes one looks through. The users of financial information may associate the high audit quality concept to the absence of financial statements material misstatements. The auditor conducting the audit may define high audit quality as satisfactorily completing all tasks required by the firm's audit methodology. The audit firm may evaluate a high audit quality as one for which the work can be defended against challenge in an inspection or court of law. Regulators may view a high-quality audit as one that complies with professional standards. Finally, society may consider a high-quality audit to be one that avoids economic problems for a company

or the market. Therefore, it is arguable that different views suggest different metrics to measure audit quality. Due to risk to their reputation capital, in uncertain situations, auditors of higher quality will encourage greater and higher quality disclosures. Therefore, auditors are interested in adopting all the measures (for example the knowledge of the associate auditors) to mitigate the so called audit expectation gap. This gap is described in next section before to explain the audit quality concept.

The literature provides many definitions of audit quality. However, there is no single uniform definition of audit quality. Thus, the purpose of this chapter is to describe the main schools of thought in which these definitions may be classified.

3.2. The perception of the auditing: the Audit Expectations Gap

Duff (2004) points out that the DeAngelo (1981a, 1981b) definition of audit quality is subjective. As the demand for audit services comes from a variety of sources (e.g. insurance, credibility, etc.) so do expectations of what auditors can reasonably be asked to perform. Porter (1993) highlights that much criticism about the audit profession is as a consequence of well-publicised corporate failures that attract the attention of the society and limits the relevance of an audit service. Christensen et al. (2016), through a survey, provide evidence that audit quality originates from the different perception of the audit process between auditor and investors. This different perception is defined audit expectation gap (Church et al. 2008). The literature (Liggio, 1974) defines the audit expectation gap as the difference between the levels of expected performance as envisioned by the independent accountant and by the user of financial statements.

Recent literature (e.g., CICA, 1988; Shaikh and Talha, 2003; Salehi et al., 2009; D'Alessio et al., 2017) because the expectation gap may influence auditor independence (Salehi et al., 2009), and, therefore, the audit quality. In fact, Salehi et al. (2009) highlight that audit is essentially entrusted with the task of reporting reality in financial statements, and this reality is what the users of accounting information expect. However, the auditors may not check out the reality, and this reality may fall short of user expectations.

Christensen et al. (2016) find that auditors define audit quality primarily regarding compliance with professional auditing standards. At the same time, the investors rely more on the individual characteristics of the engagement team performing the audit. Investors' focus on auditor characteristics suggests that additional input-related disclosures might be useful to financial

statement users in evaluating audit quality. Regarding engagement-specific characteristics of audit quality, the Scholars find that both audit professionals and investors perceive characteristics of the audit report and the payment of reasonable audit fees as pertinent to determining audit quality. Auditors also indicate that the timely completion of audit planning and fieldwork contribute to high audit quality.

Due to the number of fraudulent reporting cases, some question whether the profession is doing enough. Although the profession can argue properly that accounting cannot be responsible for every financial catastrophe, it must continue to strive to meet the needs of society. However, efforts to meet these needs will become more costly to society. The development of a highly transparent, clear, and reliable system will require considerable resources.

To improve the perception of the auditing, the auditors try to mitigate this mismatch between stakeholder expectation of auditors and auditors' performance by placing clear controls for audit process adhered by the auditors to minimize the situations where auditors appear unable to do their job efficiently and effectively. Identifying components of the audit expectation gap is critical because problems arising from different components require different solutions. Possible tools to reduce the gap can be assigned only to the audit expectation gap, and its components in a specific context have been identified. The literature (Humphrey et al., 1993), for example, attests that the utilisation of more organised systems throughout an audit enhances the auditors' performance in the auditing process. Therefore, that the audit expectation gap can be diminished by extending the current responsibilities and duties of the auditors and enhancing all effort of the auditors in improving the auditing process (Almer and Brody, 2002). The literature (Almer and Brody, 2002, p. 479) also finds that the audit expectation gap arises from the ambiguous language that auditors (have to) use the in auditor report. The reason for the ambiguous language comes from the characteristics of the audit process. In fact, Almer and Brody (2002, p. 478) state that the auditors, as the companies have growth in both size and complexity, shift from an operation-by-operation verification to a procedure in which the auditors verify a sample of company' operations. As a consequence, auditors must place some reliance on the top management of their clients to provide assurances that the information being presented to them is accurate and complete. This procedure may reduce the credibility of the audit report.

Bailey et al. (1983) find that the more taught clients tend to put lesser responsibilities on the auditors when contrasted with those less learned clients. These concentrates likewise found the more taught clients are less inclined to look for certification from the auditor. Research discoveries on the

above demonstrated that training enhances the level of comprehension of the clients of financial statements in connection with the elements of an audit procedure. As a consequence, it is arguable that staff training can be utilized as a way to lessen the audit expectation gap.

Based on that stated above, it is arguable that better communication between the auditors and the public (mainly the users) may help reduce the expectation gap, which depends on the design and implementation of appropriate models by profession. To improve the audit process and the audit report is interesting to note that the IAASB, the standard setter of the international accounting principle introduced an extension of the content of the audit report. In fact, the revised ISA 701 (IAASB, 2015), by introducing the KAM (Key Communication Matters) into the Audit Opinion from December 2016 for listed companies, underlines the need for a more efficient communication between auditing and market, through the audit report. The new paragraph into the audit report (the KAM section) should expand the usefulness of the audit report, so contributing to mitigating the audit expectation gap.

In conclusion, if the audit quality depends on the auditor achieving the appropriate target level of assurance during an engagement, a calibration failure suggests that the auditor has not established the appropriate level of assurance as for the target of the engagement. As a consequence of this error, even if the auditor conducts a perfect audit, he will not achieve society's objectives for the client (Kneckel, 2009, p. 12). As a consequence, this phenomena (the calibration failure) generates the audit expectations gap. So the expectation gap is a manifestation of a systematic gap between the auditor's planned assurance and the public's desired, but less than perfect, level of assurance.

3.3. The definition of Audit Quality

Research provides growing evidence that individual auditor characteristics influence audit outcomes (Gul et al., 2013; Lennox et al., 2014; Knechel et al., 2015; Aobdia et al., 2015).

Kneckel (2009), investigating the concept of audit quality, states that "Perfect assurance is not possible for at least two reasons. First, society is unlikely to be willing to pay for the cost of work that would be necessary even to begin to approach perfect assurance. Second, perfect assurance is not an attainable goal when auditors must deal with issues related to the completeness of liabilities and the valuation of assets. The 'completeness' objective in auditing requires that an auditor determine, for example, that there are

no unrecorded liabilities. In essence, this requires an auditor to search for things unknown, the accounting equivalent of 'trying to prove a negative'. In logic, the reasoning that you accept a statement as true just because you cannot prove it false is called *argumentum ad ignorantiam*. Somehow, I do not believe that the point of the audit is to 'appeal to ignorance'. Consequently, the inability of an auditor to verify the completeness of financial statements serves as an inherent limit on assurance". The Scholar points out that an audit is a complex service provided by competent auditors, and that audit risk model does not assume perfect assurance.

Audit quality is non-observable by the public, due to the confidentiality and professional secret that protect auditors' files and auditor's work. Therefore, it is costly for auditors to establish and communicate the quality of their services (that reduce the audit expectation gap). Thus, audit quality is difficult to demonstrate to the public. However, attempts to measure audit quality are of particular interest. Audit quality is multidimensional and normally unobservable. Any auditor effort it is not directly observable by the public, unless the audit work is scrutinised during a litigation. However, even though audit effort could be observable, this is not sufficient to measure audit quality. In fact, audit quality should depend not only upon the detection of material misstatements in the client's financial statements, but also upon the reporting of these misstatements once discovered. As a consequence, according to DeAngelo (1981b), auditor independence is important in valuating the quality of an audit.

The literature (Wallace, 2004) argues that single external auditor has several problems to perform and communicate quality compared to audit companies. According to DeAngelo (1981b), large audit companies have a high reputation to save. Moreover, it is argued that audit companies specialise in providing a specific credibility level, depending on the characteristics of their production function (DeFond, 1992; Piot, 2001).

However, despite the extent of that literature, no single accepted definition has emerged (Schroeder et al., 1986; Knapp, 1991; Palmer, 2008; Neri and Russo, 2014; Tristschler, 2014; Vaicekauskas, 2014) or accepted. Audit quality is a complex concept and cannot be reduced to a simple definition (Bonner, 2008; Francis, 2011; DeFond and Wang, 2014). The literature (Francis, 2011) posits that audit quality is not a single definition, identifying a single output. The quality of an audit is built long the auditing process and in it each step. So, the audit quality is built step-by-step, from the input level to the output level (when the auditor issues the audit report). Moreover, Francis (2001) also affirms that audit quality is not a dummy concept in the sense that an audit is or not of high quality. The Scholar posits that the concept of

audit quality is a continuum from a minimum (low audit quality) to a maximum (high audit quality), characterising the whole audit process.

To investigates the concept of audit quality, it is useful to notes that the literature (e.g., Chadegani, 2011; Bing et al., 2014; Tristschler, 2014) divides the different definitions of audit quality in different schools of thought. The first School of thought is identified in literature as the level of assurance of financial statements. The second is the level of compliance with auditing standards. The third school of thought is associated with the financial reporting quality and compliance with Auditing Standards. Next sections provide some explanation of these schools of thought.

3.3.1. The level of assurance of financial statements

This first school of thought assumes is based on the probability that financial statements contains no material omissions or misstatements. According to this filed of the literature, higher assurance levels correspond to higher audit quality.

The most cited definition of audit quality was proposed by DeAngelo (1981b). In fact, several research adopts this framework (for example, Lu, 2006; Azizkhani et al., 2007; Gaver and Paterson, 2007; Salehi and Azary, 2008; Gul et al., 2009; Karjalainen, 2011; Seyyed, 2013; Eshleman and Guo, 2014; Kassem and Higson, 2016). DeAngelo defines audit quality as "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".

This definition connects audit quality one to one with financial reporting quality, which means that a financial report where all accounting breaches have been detected and reported by the auditor represents high audit quality. According to this definition, the probability of discovery a misstatement in the financial statements depends on the auditor's competence, whereas the probability of reporting refers to the auditor's independence from the auditee. Duff (2004) highlights some limitations of the DeAngelo's definition of audit quality. This definition does not fully capture the potentially conflicting roles of the various audit market participants. According to Sutton (1993), these participants may be grouped into three main categories: the external statement users, the audit clients, and the auditors. The demand for audit services come from the external users of the financial statements A feature of the audit market external users, who pay only indirectly for the audit services. The audit client is potentially a forced participant in the auditing market, required by law and regulation to engage the audit services of an auditor to

obtain an opinion on its financial statements (Duff, 2004, p. 2). As a consequence, the audit client engages an auditor to improve the credibility of its financial information towards the external users of the financial information.

Palmrose (1988) defines audit quality regarding level of assurance. Starting from the premise that the audit performed to assure financial statements, audit quality is an indicator of the likelihood that financial statements are free of material misstatements. Thus, this definition uses the results of the audit, that is, the reliability of audited financial statements to reflect audit quality. Wooten (2003) states that detection of misstatements is influenced by the performance of the audit team, which is in turn firstly influenced by audit firm factors, and by the auditor's level of independence and expertise (Watts and Zimmermann, 1983). In line with the DeAngelo's, also Arens et al. (2011) defines audit quality how well an audit detects and report material misstatements in financial statements, the detection aspects are a reflection of auditor competence, while reporting is a reflection of ethics or auditor integrity, particularly independence.

3.3.2. The Level of compliance with accounting standards

The second school of thoughts defining the audit quality relies on the level of compliance with auditing standards. In more specific terms, this school of thoughts states that the audit is of high quality when the auditor performs with excellent quality if he complies completely with all relevant standards (Krishnan and Schauer, 2001). Dye (1993) equates audit quality with adherence to auditing standards. The Scholars presents a model in which the prospect of facing litigation arising from substandard audits provides motivation for auditors to comply with auditing standards. In more specific terms, Dye argues that auditors with more wealth at risk from litigation, have more incentives to provide quality. This is the "deep pockets" effect. This effect arises in part because of the professional indemnity insurance held by auditors.

Audit quality plays an essential role in maintaining an efficient market environment (Neri and Russo, 2014). According to this school of thought, the literature (Bedard et al., 2010) defines a high-quality audit as an audit in accordance with generally accepted auditing standards to provide reasonable assurance that the audited financial statements and related disclosures are presented in accordance with generally accepted accounting principles and are not materially misstated whether due to errors or fraud. The external audits performed by high-quality auditing standards can promote the appropriate implementation of accounting standards by reporting entities and

help ensure that their financial statements are reliable, transparent and useful to the marketplace, thus enhancing market confidence.

3.3.3. Financial reporting quality

This school of thought connects the two-dimensional DeAngelo's (1981b) definition of audit quality with financial reporting quality because it assumes the audit quality as the probability that no material errors or anomalies remain undetected and unreported. There are different followers of this school of thought (Palmrose, 1988; Titman and Trueman, 1986; Knechel, 2009), and some research (Copley and Doucet, 1993; Krishnan and Schauer, 2001) may also be included in this school of thought because they relate audit quality to the level of compliance with auditing standards.

3.3.4. The Francis framework on audit quality

The literature (Tristschler, 2014; Steckel et al., 2015) also identify the fourth school of thoughts proposed by Francis (2011). The Scholar (Francis, 2011, p. 127) uses a double approach to classify audit quality. The first approach is the legal view of auditing that provides a simple dichotomy of either "audit failure" or "no audit failure". An audit failure occurs if the auditor is not independent in fact, or if an independent auditor incorrectly issues a clean (or non-modified) audit report due to the failure to collect sufficient competent evidence as required by auditing standards. In contrast, a good audit or an audit non-failure is one in which the auditor complies with auditing standards and issues the correct opinion regarding the client's financial statements at an appropriate level of audit risk. The second approach to audit quality is based on the relation between a going-concern audit report and client business failure. An audit failure could be deemed to occur when client business failure is not preceded by a going-concern audit report. Lennox (1999) uses the going concern and client failure framework in a different way in order to measure auditor reporting accuracy. Auditors report accurately if client failures are preceded by a going-concern opinion (that is a modified audit report), and if clients that do not fail receive a clean opinion. The Scholar, analysing a sample of British public companies, documents that Big 4 auditors issue more accurate audit reports than non-Big 4 auditors. This finding suggest that Big 4 auditors are more accurate in performing an audit than other auditors confirming the concept of audit quality provided by

DeAngelo (1981b). The Francis' framework highlights that an audit is affected by six dimensions: 1) audit inputs, 2) audit process, 3) accounting firms, 4) audit industry and audit markets, 5) institutions, and 6) economic consequences of an audit outcomes and the quality audit can be assessed at each level. Finally, the Scholar asserts that one of the main key element affecting the audit process is the engagement of the auditor. In other word, according to DeAngelo (1981b), an independent auditor is more likely to performs a high quality audit than other auditors.

3.3.5. Other definitions of audit quality

In the literature, other definitions of audit quality have found. In particular, some research (Bing et al., 2004) approximates or even equates audit quality with the quality of auditors (Lennox, 1999). One major element is the personal characteristics of the auditor, such as skill and experience, ethics and mentality (Duff, 2004). Other research (Seyyed, 2013), instead, derives the concept of audit quality from the auditor work. The Scholar explains that audit quality could be a function of the auditor's ability to detect material misstatements and reporting the errors. Therefore, together with other similar definitions in literature, he focuses on the two of the most important aspects of audit quality, namely auditor ability or auditor effort, and auditor independence. As a consequence, this stream to the literature is strongly related to DeAngelo's definition of audit quality as focuses on the two-dimensional measures of audit quality. A different stream of the literature (De las Heras et al., 2012) highlights that audit quality is the probability of detecting audit failure, disciplining auditors and incentivising them to constrain managerial opportunism, which is closely related to auditing standards. This definition of audit quality is closest to the stream of the literature defining audit quality in term of the output of the auditor work. Mansouri (2009) argues and find that audit quality is positively related to auditor independence (but not to professional auditor competence). This research is not strongly and immediately related to the DeAngelo's (1981b) definition of audit quality. This literature provides evidence that a lack of auditor competence may convince the auditors to rely on the management of the client's to perform the auditing. If this is the case, this threat the auditor independence.

Finally, research (Vaicekauskas and Mackevičius, 2013) defines the audit quality as a level of confirmation between the value an audit creates and the expectations to an audit of third-party users and audit clients. The Scholars state that the expectations of users, driven by the stakeholders' audit needs,

are met or exceeded if the auditors issue an accurate and reliable auditor's report, reduce the likelihood of material misstatements due to fraud or error, the audit is conducted in compliance with professional standards, ethics, and applicable laws at all audit process. Also, this definition of audit quality seems to be related to the DeAngelo's definition of audit quality, but it differs from the latter because this latest definition focuses on the role of an audit in removing the audit expectation gap. This point of view is supported by further research (Vaicekauskas, 2014) that points out that the concept of audit quality should capture the needs and the expectations of the audited clients, since the clients have an advisory vote while approving auditors for the next year audits. This leads to the opinion that auditors should meet clients' expectations driven by particular needs which arise due to various business problems they face in their daily activities. In order to fulfil their needs, the clients face a dilemma whether to assign a well-known audit company (a Big 4 auditor) asking relatively higher audit fees, or to rely on non-Big 4 auditors which offer their services for reasonably lower prices.

3.4. The measurement of audit quality

As defining audit quality is complicated, so is measuring it. This is due to the circumstance that it is impossible to avoid subjectivity in the audit process as each audit client is different from the next. Therefore, barriers to entry seek to maintain audit quality in relation to professional judgement. Therefore, auditors must be highly technically qualified and undergo programmes of continuing professional education. The exercise of professional judgement may enable auditors to signal information to the users of audit reports (Grout et al., 1994).

Several different measures have been developed to measure different aspects of audit quality. A common problem in measuring audit quality in prior research has also been the fact that the measures heavily depend on from which perspective audit quality is researched. DeFond and Zhang (2014), reviewing the literature on the audit quality, note that the audit quality measures may be categorised in the: 1) output-based, and in the 2) input-based audit quality measures.

An essential feature of the output-based audit quality measures (*sub 1*) is that the firm's financial reporting system constrains the auditor work. Within this measure of audit quality, the literature uses essentially four measures of audit quality. These measures are a) the (detection of) material misstatement in the financial statements; b) the auditor communication or audit opinion, concerning mainly the going concern audit opinion; c) the financial reporting quality characteristics; and d) the perception-based measures.

There are several measures used by literature in detecting material misstatement in the financial statements (sub a). These measures include mainly the restatements of financial statements, with which preparers of financial statements correct misstatements in previously issued financial statements. Kinney Jr et al. (2004) uses the restatements of audited or reviewed financial statements to observe the association between financial reporting quality and audit fees and non-audit fees. This stream of literature believes that the restatements indicate a low-quality financial reporting because it corrects previous audit report. The measures related to the auditor communication or audit opinion (sub b), concern mainly the going concern audit opinion. Going concern audit opinions communicate the auditor's evaluation of whether there is substantial doubt about the client's ability to continue as a going concern. Literature uses the modified audit opinion' measure (e.g. Carey and Simnett, 2006; Francis and Yu, 2009; Reichelt and Wang, 2010) to capture audit quality in a variety of settings. In more specific terms, this measure is used to test the perceived threats to audit quality, such as those potentially posed by non-auditing services, client size, and auditor tenure. Going concern audit opinions are also used in tests of whether audit quality is associated with litigation risk, and Big 4 office size. DeFond and Zhang (2014) find that several research use this measure as a proxy of audit quality (e.g. Carcello and Neal, 2000; Reynolds and Francis, 2001; Craswell et al., 2002; DeFond et al., 2002; Lennox, 2005; Carey and Simnett, 2006; Francis and Yu, 2009; Hope and Langli, 2010; Lennox and Li, 2012).

The measures of audit quality related to the financial reporting quality characteristics (sub c) are based on the probability that a high-quality audit detects opportunistic earnings management practices. This measure is motivated by the assumption that high-quality auditing constraints opportunistic earnings management. It is arguable that audit quality cannot be observed, let alone measured. As a consequence, audit quality measures based on this definition are indirect methods of measuring audit quality with the aid of some indicators. A different measure of audit quality is the level of discretionary accruals associated with the presence of an auditor (see Dechow et al. 2010 for a review) and lower discretionary accruals has been associated with higher audit quality in prior research (e.g. DeFond and Jiambalvo, 1991; Balsam et al., 2003; Francis et al., 2012; Kim et al., 2003; Myers et al., 2003; Butler et al., 2004; Carey and Simnett, 2006; Maijoor and Vanstraelen, 2006; Piot and Janin, 2007; Chi et al., 2009; Boone et al., 2010; Chen et al., 2011).

However, a stream of the literature also tests the ability of the auditors in constraining real discretionary accruals (Roychowdhury, 2006).

In this sense, audit quality indicates how well the auditor can prevent earnings management (both accounting and real) practices in the financial statement.

These measures of audit quality are less direct than restatements or going concern audit opinion. That is because the auditor's influence on reporting quality is likely to be relatively more limited, even though DeFond and Jiambalvo (1991) show that non-fraudulent clients of Big 4 auditors are less likely to have errors or irregularities, which are considered to be proxies for earnings management.

The perception-based measures (sub d) of audit quality include the investors' perception of audit quality, earnings response coefficients, the stock market reaction to audit-related events, and the cost of capital.

The input-based measures (*sub 2*) evaluate audit quality using observable inputs to the audit process. The literature uses the auditor characteristics and auditor-client contracting features as proxies of audit quality. Within the auditor characteristic proxies, the most used in the literature is the auditor size, usually measured as Big "N" membership. In fact, according to the literature (DeAngelo, 1981b; Francis and Yu, 2009), large auditors (e.g. Big 4 auditors) have stronger incentives to provide high quality audit because their greater competencies and their reputation to save. The argument here is that larger auditors have more capacity and in-house experience to use in the audit work than small auditors. As a consequence, the literature uses the classification Big 4/Non-Big 4 auditors as a proxy for audit quality. If a large audit firm decides to reduce quality to retain any single client, for instance by not reporting a material misstatement, the potential loss for its whole portfolio (loss of many other clients or fee reductions) mostly outweighs the retention benefits. Given that stated above, a high-quality auditor is more likely to produce a high-quality audit.

Big 4 auditors are thought to be more independent than smaller audit firms because they suffer higher reputational risk should they be negligent, rely less on an individual client's revenues and hence less likely to be swayed by an individual client, and their larger revenue base exposes them to higher litigation risk (among the others, see Palmrose, 1988; Stice, 1991; Bonner et al., 1998; Piot and Janin, 2007; Skinner and Srinivasan, 2012; Koh et al., 2013; DeFond and Zhang, 2014; Hai, 2016; Vanstraelen and Schelleman, 2017).

Moreover, given their scale, Big 4 auditors also have access to better resources related to technology, training, and facilities (Craswell et al., 1995; Francis et al., 1999; Chaney et al., 2004; Khurana and Raman, 2004), and have several equipment to perform high quality audit.

The IFAC (2014, p. 51) points out that an audit company provide training

in the technical aspects of auditing and the requirements of their audit methodologies. These companies also provide an essential practical experience by including trainees in engagement teams undertaking audit work. Merging learning about the technical aspects of auditing with gaining practical experience is important because formal training is only part of the process by which auditors develop skills and experience.

Further, Che et al. (2016) proxy the audit quality using several measures. The first measure they test is the accuracy of the going-concern auditor report. This going-concern audit opinion relay auditors' judgments on whether there is substantial doubt about the client's ability to continue on a going-concern basis. Because Big-4 firms have more competence than other auditors, they should be better at identifying auditees that are likely to face financial distress and thus should be able to issue more accurate audit reports. A stream of literature analyses the accuracy of the going-concern opinion by observing whether a firm declares bankruptcy after receiving a going-concern audit opinion (for a review, see Carson et al. 2012).

Finally, also the audit fee is considered a very important determinant of audit quality. It is argued that higher audit fees impair the independence and thus the willingness to report misstatements. Research (Hoitash et al., 2007) investigates the relation between the total audit fees and different audit quality proxies. The finding shows a positive and significant relationship among all, supporting the argument that higher fees would indicate more hours spent and thus higher quality audits.

It is important to notes that Hosseinniakani et al. (2014) strengthen the empirical findings of DeAngelo (1981b) because it suggests that audit quality may be affected by several factors. These factors are the auditor specifications (that is the auditor competence) and the auditing process attributes (that is the auditor independence). Hence, both these factors can directly affect the audit opinion (that is the observable output of the audit work) which is issued to state the reasonable assurance on financial statement reliability thereby enhancing the confidence of the market. As stated in agency theory, auditor's opinion certifies the assurance for third parties, who are using the financial statement (Lindberg, 2001).

Ball et al. (2000) suggest that the demand for accounting earnings is systematically different in code-law countries compared to common-law countries. Transactions characterise common-law countries at arms-length, a diverse base of investors, and a relatively high risk of litigation. In code-law countries, instead, capital markets are less active. In these countries, companies are mainly bank-based, other financial institutions and the government,

which results in less need for public disclosure. Moreover, litigation rates are relatively low (Ball and Shivakumar, 2005). Daske et al. (2006) provide evidence that discontinuities in the distribution of earnings are more pronounced in code-law countries, and especially in German accounting origin countries, compared to the US and the UK. Hence, earnings management and loss avoidance practices appear to be more prevalent in companies from code-law countries compared to companies from common-law countries. Further, Coppens and Peek (2005) examine earnings management by non-listed companies in Europe. The Scholars find that non-listed European companies in countries with low financial and tax alignment avoid small losses and that non-listed European companies in countries with high financial and tax accounting alignment manage earnings to reduce taxes.

Auditing in non-listed companies is an important topic. One reason is that research focusing on listed companies may not be generalizable to non-listed companies since they differ from unlisted companies along with some critical dimensions. Also, the suppliers of audit services may have different incentives and competences (we elaborate these below). Thus, it is not clear to what extent theory and empirical findings based on public firms can provide insight and guidance to regulators, standard setters, researchers and users of (audited) financial statements when it comes to auditing in the private firm segment of the economy. Further, Maijoor and Vanstraelen (2006) highlight that while the minimum levels of national audit quality might vary from country to country, it could be argued that the Big 4 audit companies have strong incentives to provide the same high audit quality level in different countries. Taking into account that stated above, the present research can be positioned into the DeAngelo' (1981b) frameworks as follows. Firstly, this study adopts one of the basic premises of agency theory, which maintains that corporate governance in general and audit committees and external auditors, in particular, are important in ensuring financial reporting quality. Literature often uses this framework concerning audit quality in non-listed companies (Van Tendeloo and Vanstraelen, 2008). Also, this study subscribes to an underlying notion that certain company-specific characteristics which create agency problems drive the demand for monitoring provided by audit committees and external auditors. Accordingly, external auditors are expected to assure shareholders that a company's financial statements are by accounting standards. Secondly, this study adopts DeAngelo's (1981b) definition of audit quality, which states that audit quality consists of two components: auditor professional competence and auditor independence, through the detection of the earnings management practices and the ability to report these anomalies in the financial statement in the audit opinion.

PART TWO

THE EMPIRICAL ANALYSIS

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4. THE AUDIT QUALITY IN NON-LISTED ITALIAN COMPANIES

4.1. The auditing in non-listed companies

Compared to the vast body of economics based archival auditing research relating to listed companies, economic research on the audit of non-listed companies is much more limited (Vanstraelen and Schelleman, 2017). This is surprising, given that these companies dominate and play a vital role in the world economy regarding generating wealth, jobs and investment in innovation and growth (for example, Wymenga et al., 2012; Asker et al., 2015). Minnis (2011) highlights that the majority of the US companies (about the 99%) are non-listed. These firms generated over the 50% of US' private sector GDP.

In Europe, more than 99% of the companies are non-listed (EC, 2017a). As a consequence, this research investigates the audit quality in non-listed companies operating within the Italian economy for some reasons. First, in common with the European Union norm, the majority of Italian firms are non-listed (EC, 2017b), underlining the importance of studying such firms in an established EU country setting. Second, the 99.9% of Italian firms are Small-Medium Enterprises (EC, 2017a), and about 94.4% of them are micro-sized firms (EC, 2017b), suggesting weaker agency problems in these firms. Third, the Italian business environment of non-listed firms is attributed with corporate governance features that could encourage external auditors to rely on the work of the statutory auditors, neglecting any control over discovering any breach in preparing financial statements. Therefore, this study on audit quality in non-listed companies seems warranted.

However, the majority of research initiatives in the field of auditing focus on listed companies primarily in common law environments. Prior literature investigating the non-listed companies mainly examine the relationship between the earnings management (proxied by the discretionary accruals)

and the quality of auditing services (e.g. Beatty and Harris, 1998; Beatty et al., 2002; Vander Bauwhede and Willekense, 2004; Coppens and Peek, 2005; Ball and Shivakumar, 2005; Burgstahler et al., 2006; Arnedo et al., 2007; Van Tendeloo and Vanstraelen, 2008; Mariani et al., 2010; Cameran and Prencipe, 2011; Bisogno, 2012; Karjalainen, 2015). Evidence of auditor independence in non-listed firms is somewhat scarce. Moreover, these companies are very different from listed companies, and research on these companies may therefore not be generalizable to the former (Langli and Svanström, 2013; Vanstraelen and Schelleman, 2017).

The literature (Ball and Shivakumar, 2005; Burgstahler et al., 2006) points out that non-listed companies arguably have different reporting incentives than listed companies.

Van Tendeloo and Vanstraelen (2008, p. 450) argues that agency conflicts may be weaker in non-listed companies compared to listed companies, because ownership and control are less separated, possibly reducing the demand for financial statements for monitoring managers (Fama and Jensen, 1983) and a high-quality audit. However, high-quality auditing is also called for in non-listed companies for the following reasons. First, many non-listed companies are subject to agency conflicts when they are not entirely run by owner-managers (Ang et al., 2000) and agency conflicts possibly exist between bankers and owners and bankers and management (Vander Bauwhede and Willekens, 2004). In fact, companies receiving a modified audit report have higher interest rates on their debt capital than companies with a clean audit report (Karjalainen, 2011). In the absence of market-based measures of firm-value, high-quality reporting becomes particularly relevant for the evaluation of managerial performance and to support personnel and compensation decisions, resulting in a demand for high-quality audits (Chaney et al., 2004). Further, having a Big 4 auditor could also in non-listed companies be used to signal high financial reporting quality. Moreover, tax authorities rely on financial statements to determine taxable income especially in countries with a high alignment between financial reporting and tax accounting.

Given that stated above, it is useful to synthesize that Ball and Shivakumar (2005) and Burgstahler et al. (2006) suggest that, for non-listed companies, financial reporting is less oriented to reduce information asymmetry between shareholders and managers. Nonetheless, agency problems may arise. In these companies, agency conflicts can arise between bankers and managers (Bauwhede and Willekens 2004) and between tax authorities and managers (Van Tendeloo and Vanstraelen 2008). In both situations, accounting information matters because of the lack of competing sources of information (Chen et al., 2011). Consequently, banks and tax authorities rely on

financial statements of non-listed companies to determine income and monitor compliance (Van Tendeloo and Vanstraelen 2008). Hence, these companies might hire high-quality auditors to signal financial reporting quality to banks and tax authorities. In fact, concerning the tax incentive in engaging a high quality auditor, this signal financial reporting quality and perhaps deter a rigorous tax audit and inspection. Moreover, finally, non-listed companies may also want to convince suppliers, clients or employees of the credibility of their financial statements.

The incentives of (especially large) auditors to supply a high-quality audit in these companies are expected to depend upon the probability that an audit failure is detected and the risk of litigation, at this moment damaging their reputation. In fact, a client failure may be an incentive to provide high-quality audit also in non-listed companies.

However, since financial statements of non-listed companies, compared to listed ones, are not scrutinized as much by investors, financial analysts or regulating authorities of stock exchanges, the probability that an audit failure is detected and the risk of litigation is much lower in non-listed companies, even in countries generally considered as stronger in terms of investor protection or legal enforcement (Chaney et al., 2004; Vander Bauwhede and Willekens, 2004; Van Tendeloo and Vanstraelen, 2008).

As stated by Van Tendeloo and Vanstraelen (2008), according to the DeAngelo' (1981b) two-dimensional definition of audit quality, the most used in the literature, audit quality depends on (1) the probability that material misstatements in the financial statements are discovered and (2) the probability that the auditor will report these misstatements on the audit opinion and signals (DeAngelo, 1981b). While the technical capability of auditors or the probability that the auditor will discover material misstatements and going concern breaches is often assumed to be constant across different auditors, audit quality is assumed to be a function of auditor independence. Litigation and disciplinary sanctions are supposed to prevent auditors from compromising their independence and as such, provide incentives to the auditor to constrain earnings management or issue a qualified opinion when necessary. Apart from the sanctions themselves, litigious actions or disciplinary sanctions damage the auditor's reputation. In this respect, larger audit firms (the Big 4 audit companies) are expected to be less likely to perform low-quality audits because these companies have more to lose regarding clients and audit fees in case of an audit failure. Auditor independence is thus considered to relate to the auditor's reputational capital (DeAngelo, 1981b). When the risk of audit failure detection and litigation is low, litigation and reputation costs of providing a low-quality audit are

expected to be reduced, thereby lowering the incentives of large audit firms to supply a high-quality audit. As documented in the literature (for instance, Maijoor and Vanstraelen, 2006; Francis and Wang, 2008) Big 4 audit firms are less inclined to supply listed client companies with high quality audits in countries with weaker investor protection, lower level of enforcement and lower risk of litigation.

Hope et al. (2012) state that an external audit plays a role in corporate governance by providing an independent assessment of the accuracy and fairness with which financial statements represent the results of operations by generally accepted accounting principles. While researchers commonly consider the role of auditing for listed companies, audits for non-listed companies can also play a role. These companies typically disclose less non-accounting information. This circumstance potentially increases the importance of financial information to external providers of capital in monitoring managerial activities. Also, managerial activities of listed companies are partially constrained by market-based mechanisms. Listed companies are more susceptible to takeovers, indicating that such mechanisms help control for agency conflicts (Lennox 2005). In the absence of market-based measures of firm-value, high-quality reporting may be particularly relevant for the evaluation of managerial performance and to support personnel and compensation decisions (Indjejikian and Matejka 2009), resulting in a demand for high-quality audits (Chaney et al., 2004).

Based that stated above, this research aims to investigate the audit quality in Italian non-listed companies within the lens of the following research question:

RQ. Does a Big 4 auditor perform high-quality audit also in non-listed companies?

The Italian auditing environment is something of a special case compared to other European auditing regimes because of the role of a statutory committee inside the ("traditional" model of) corporate governance of both listed and non-listed Italian firms. Therefore, before to investigate the audit quality in non-listed Italian companies, the Italian auditing environment is explained in next section.

4.2. The Italian auditing environment for non-listed companies

According to the Italian Auditing Reform, instituted in 2010, from 2011, listed stock companies may be audited only by an external auditor (a Big 4 firm or a non-Big 4 audit company). The non-listed companies may instead choose to be audited by a Board of Statutory Auditors (BSA), a statutory committee or by an external auditor. The general rule is that the BSA can be in charge of both administrative and financial auditing in case of firms that are non-listed, not considered "entities of public interest" and not obliged to prepare consolidated financial statements. This kind of auditor, then, is the only one firms are obliged to appoint to fulfil the law. Therefore, since 2003, the financial audit of Italian non-listed companies can be conducted by a BSA or, on a voluntary basis, by an external auditor (Mariani et al., 2010; Bisogno, 2012; Matonti et al., 2016).

Here some context on the Italian auditing environment is provided, to understand the role of these statutory auditors in charge of all listed and non-listed companies. As it will be explained, the BSA is a multifaceted body in charge of both administrative and financial auditing.

Since 1998 there have been a series of legislative changes to the Italian auditing system. The Draghi Law (Legislative Decree 24 February 1998, No. 58) was instituted in that year to separate the administrative audit from the financial audit in both listed and non-listed firms. The administrative auditors have to respect both laws and corporate by-laws, attend to the principles of correct management, and consider the appropriateness of the procedures adopted by management in pursuing the objectives of the firm. Also, the administrative auditors are responsible for verifying the adequacy of the organisational structure of the firm, its internal auditing system, and its administrative accounting system. The (administrative) auditors conduct the duties assigned to them in compliance with the law and the Governance Code. More specifically, the administrative auditors monitor and critically appraise the decisions adopted by the management of a firm, by, for example, participating in the meetings of the Board of Directors. Administrative auditors have to report their opinion to the annual shareholders' meeting on the correctness of a firm's operations and the behaviour of its management.

In contrast, the financial auditors have to certify the correctness of the bookkeeping entries and the financial reporting of management operations to verify that the accounts are maintained appropriately and that ultimately the annual reports give a right and fair view of the financial position, financial performance and cash flows of the company. Further, they supervise the financial disclosure process, the efficacy of the internal control systems, the

internal auditing and risk management of the firm, the auditing of the annual accounts and of the consolidated accounts, and the independence of the external auditor (when appointed by the firm as financial auditor). The financial auditors comply both with Italian law and with International Standards on Auditing, and their work culminates in the issuance of the auditing report which provides an opinion on the reliability of the financial statements.

Following the Corporate Reform Law of 2003, the Italian Civil Code sets out three alternative models of corporate governance: traditional, monistic and dualistic, though the traditional model is that most used by Italian firms (Mariani et al., 2010, Bisogno and De Luca, 2016). Under the traditional model, which provides the focus for this work, two bodies are appointed by the shareholders. The first is the Board of Directors (BoD) who are responsible for the management of the firm. The second is the Board of Statutory Auditors, a mandatory body in charge of administrative auditing in all stock corporations as well as in all limited liability companies with meet the criteria of 2477 of Italian Civil Code. The BSA is appointed for a term of three years, and consists of three to five independent, professional members whose skills and responsibilities are explicitly set out in law. Members must participate in all meetings of both the Board of Directors and the shareholders to monitor the activities of the former and to ensure that no fraud or illegal acts occur. The activities of the BSA also extend to monitoring the internal control system of the firm, thereby representing at least some protection for stakeholders against managerial excess and ultimately firm failure. The system is based on a clear distinction between the administrative function (which concerns the management of the firm) and the internal control function (which concerns the BSA). This, therefore, ensures the continuous supervision of the management by an independent body which is both highly qualified and furnished with significant powers of intervention to protect the interests of both firm insiders and outsiders.

The requirements for the statutory auditors (BSA) are that they: (i) should be strictly independent; (ii) must act exclusively in the interests of the firm; (iii) are selected from an Official Register of Auditors maintained by the Italian Minister of Justice, which is composed of professionals (Chartered Accountants) with a qualification in auditing, managers of complex enterprises with at least three years' experience, as well as university professors of law or economics; and (iv) are required to have advanced professional skills and knowledge in the fields of accounting, auditing, finance, management and/or taxation. Additionally, activities carried out by the BSA are not limited to formal checks on financial statements, involving an in-depth investigation of several accounting patterns. This implies that administrative and financial

audits are complementary activities and systematic cooperation between a BSA and a financial auditor is strongly requested. In fact, the two bodies to which these audit activities are assigned need to cooperate, exchanging information regularly and creating interaction and synergy on behalf of all the stakeholders of a firm (Cortesi et al., 2009, p. 79). Thus, a BSA (The "Collegio Sindacale" in Italian) and an external auditor, when engaged as a financial auditor, operate as two independent auditors. Even though duties related to the administrative and financial auditing are actually separated, the overall control and audit activities should be interpreted in a unitary way. In fact, both bodies act on behalf of the stakeholders, interested in checking the accuracy of the financial statements, the adequacy of the financial and organizational systems, as well as the fairness of the activity of the governing bodies. Given that their activities must be considered complementary, they should not be performed separately. This implies the need for statutory auditors and external auditors to work in close contact and communication, looking for potential synergies and trying to avoid any duplication. This is also emphasised by the Italian Civil Code. In particular, article 2409-species is very explicit about the need for close co-operation, through timely exchange of information during the performance of their activities. This exchange of information should not be limited to extraordinary events characterising pathological situations but rather a constant physiological dialogue should be carried out during their ordinary activities.

The contemporaneous existence of an external auditor and of a BSA (for companies adopting the traditional model of corporate governance) may be an interesting field of research because of the role of a BSA. In particular, the BSA places itself at the centre of a continuous flow of corporate information which enables it, both on its own initiative as a control body and through co-operation with other corporate bodies, to carefully monitor company management. As a consequence, the clear distinction between management (attributed exclusively to the BoD) and control (attributed to a BSA) is a fundamental feature of the Italian traditional model of corporate governance (the most adopted by Italian companies, Mariani et al., 2010; Cameran et al., 2014). Thus model aims to ensure, on one hand, freedom of the choice of operations necessary for the carrying on of business activities and, on the other hand, continuous monitoring of these choices to ensure compliance with the law, the principles of correct administration, and the suitability of the organisational, administrative and accounting system as well as its correct functioning.

Thus, the Italian corporate governance and auditing context are very interesting also for the following reason. The EC Green Paper on Corporate Governance (EC, 2011) proposes the introduction of an Independent Professional Supervisory Board (IPSB) for SMEs (Zanardi, 2010), akin to

the Italian Board of Statutory Auditors, as a corporate governance mechanism for listed and non- listed European SMEs (Zanardi, 2010). The Paper (EC, 2011, p. 4) highlights that proper and efficient governance is also valuable for non-listed companies, especially taking into account the economic importance of such firms. Such firms are of particular importance in countries with less developed capital markets where the vast majority of firms are not listed on a stock exchange or regulated market. Even in more developed economies, most small and medium-sized enterprises are not listed. According to the OECD (2004), improved corporate governance within non-listed firms has the potential to significantly boost productivity growth and job creation in both developed and developing economies (Ecoda, 2010). Moreover, the OECD (2015, p. 10) highlights that "... a credible corporate governance framework, supported by effective supervision and enforcement mechanisms, will help improve the confidence of domestic investors, reduce the cost of capital, underpin the good functioning of financial markets, and ultimately induce more stable sources of financing". However, despite their abundance and economic importance, the governance of non-listed firms is an often neglected area in corporate governance studies.

The OECD (2015, p. 11) further points out that the usefulness of the disclosed information in non-listed firms "...often depends on the experience and quality of the auditors". It posits that in non-listed firms both corporate governance and auditing are relevant concerns. The Chartered Accountants of Italy, Spain and France signed a document that supports this proposal. Therefore, the Italian context is of significant interest and relevance in the wider international context, due to the particularity of the Italian auditing and corporate governance environment that allows non-listed firms to be audited by the BSA, an independent statutory committee consistent with the traditional model of corporate governance adopted by the vast majority of Italian firms (Mariani et al., 2010). Thus, for such firms, the BSA competes with external auditors in the market for auditing services. The role of an internal and independent professional auditing body such as the Italian Board of Statutory Auditors with administrative, and also potentially financial, auditor skills may address agency problems within a company. In the context of market globalization, corporate governance has gradually become more significant as a concern for small and medium-size entities as improvement here can increase.

In general, external auditors are considered to be of higher quality when compared to the BSA. The Italian literature on audit quality (e.g. Mariani et al., 2010; Cameran and Prencipe, 2011) finds that a BSA provides a lower level of audit quality (measured by the magnitude of earnings management, which is higher in absolute value) than an external auditor. Bisogno (2012)

finds no evidence of this in manufacturing firms. Such evidence does not mean that a BSA is in any sense a worse auditor, as Italian law requires BSA members to have high-level professional skills and provide some penalties.

In sum, the BSA is a multi-faceted, qualified and independent statutory body which represents a distinctive feature of the Italian traditional corporate governance model (Melis, 2004). Further, the BSA exerts pervasive power within the firm, in so doing protecting the shareholders by preventing fraud and monitoring the firm's operations. With regard to its performance of the control function, it should be noted that the BSA has the power and indeed the obligation to take part in company meetings, to convene its meetings every 90 days or more frequently if desired, as well as to acquire from and exchange information with the directors, with the external auditor and with the controlling body of group companies. Furthermore, the shareholders may themselves report any irregularities directly to the BSA, thereby triggering a specific control activity (Art. 2409 Italian Civil Code). The BSA, therefore, places itself at the centre of a continuous flow of corporate information which enables it, both on its initiative as a control body and through cooperation with other corporate bodies, to carefully monitor company management. As a consequence, the clear distinction between management (attributed exclusively to the BoD) and control (attributed to a BSA) is a fundamental feature of the traditional Italian model of corporate governance. This model aims to ensure, on one hand, freedom of the choice of operations necessary for the carrying on of business activities and, on the other hand, continuous monitoring of these choices to ensure compliance with the law, the principles of correct administration, and the suitability of the organisational, administrative and accounting system as well as its correct functioning.

4.3. The research hypotheses

Similar to listed companies, one of the significant aspects of the value of auditing for non-listed companies is to improve and signal the reliability of accounting information to stakeholders, especially when these companies disclose less non-financial information than listed companies (Hope et al., 2012).

DeAngelo (1981b) postulates that large audit companies have more incentive to produce high-quality audits because they benefit from more client-specific quasi-rents. If a large audit company decides to reduce quality to retain any single client, for instance by not reporting a material misstatement in the audit opinion, the potential loss for its whole portfolio (loss of many other clients or fee reductions) mostly outweighs the retention benefits.

Given that stated above, a high-quality auditor) is more likely to produce a high quality audit.

Literature mostly related to the present study includes Becker et al. (1998), Francis et al. (1999), Francis and Krishnan (1999), Vander Bauwhede et al. (2003) who argue that lower levels of discretionary accruals are associated with higher quality audits. To date, worldwide there are four largest international professional audit companies (the Big 4): Deloitte, Ernst and Young, KPMG, and PricewaterhouseCoopers.

Although there are other available measures of auditor quality, according to DeAngelo (1981b), the Big 4 auditors are used as a proxy for auditor quality. Moreover, as a latent variable, audit quality is difficult to be measured, and its measurement remains a central argument in empirical studies. However, discretionary accruals, a proxy of earnings management, are used to measure audit quality (e.g. Jeong and Rho, 2004; Carey and Simnett, 2006; Maijoor and Vanstraelen, 2006; Piot and Janin, 2007; Reichelt and Wang, 2010). Therefore, according to the two-dimensional DeAngelo's (1981b) definition of audit quality, next sections investigate both the auditor's professional competence and the auditor independence, respectively.

4.3.1. The auditor's competence in detecting earnings management

A broad stream of the literature (Watkins et al., 2004; Mansouri et al., 2009; Halim et al., 2014; Hosseinniakani et al., 2014; Asmara, 2016; Mokoaleli-Motokeli and Iatridis, 2017) observes that (external) auditors' individual specifications, such as professional competence, specialized knowledge, liability and expertise of the auditor are important factors influencing the quality of auditor professional judgment, and hence, of the audit quality. In more specific terms, the professional auditor competence plays an essential role in the audit process because an experienced auditor is better able to eliminate and to give a plausible explanation on errors in the financial statements through the audit report. In any case, the literature (Asmara, 2016) states that the behaviour of the auditors determines quality audit services.

Based on that stated above, one can conclude that the professional auditor competence is realized by the ability of the auditor in discovering any misstatement (that is earnings management practices) in the financial statements.

Auditors' professional competence in detecting earnings management initiatives relies on the assumption that large audit companies (the Big 4 auditors) provide high-quality auditing services. Prior studies, in fact, provide evidence that, in the case of listed companies, the presence of a Big 4 audior constitutes

a constraint factor on the magnitude of earnings management (Becker et al., 1998; Francis et al., 1999; Bartov et al., 2000; Kim et al., 2003; Butler et al., 2004; Jeong and Rho, 2004; Carey and Simnett, 2006; Maijoor and Vanstraelen, 2006; Piot and Janin, 2007; Reichelt and Wang, 2010; Mokoaleli-Motokeli and Iatridis, 2017). For instance, Becker et al. (1998) observed a positive relation between abnormal accruals and the presence of a non-Big auditing company and Francis et al. (1999) observed a lower level of abnormal accruals among firms audited by Big auditing companies. The negative relation between earnings management and auditor's size (as an indicator of auditors' professional competence) has been documented by several research (e.g., Charles et al., 2010; Chen et al., 2005; Gerayli et al., 2011; Alzoubi, 2016). Becker et al. (1998) observe a positive relation between abnormal accruals and the presence of a non-Big Six auditor. Francis et al. (1999) also observe a lower level of abnormal accruals among Big Six-audited companies. Balsam et al. (2003) documented that firms dealing with industry-specialist auditors experience lower manipulation than firms dealing with non-specialist auditors. Thus, as a form of monitoring, auditing mitigates agency problems between managers and outsiders. Charles et al. (2010) investigate whether audit quality, proxied by auditor size, can constrain earnings management practices in the USA. The Scholars find that Big 4-audited companies are more likely to manage less in earnings management, while clients with non-Big 4 auditors show signs of earnings manipulation. Chen et al. (2011) examine the correlation between audit quality and earnings management for a sample of firms listed on the China Securities Markets from 2001 to 2004. The audit firm size was used as a proxy for audit quality and the eight largest audit firms (Top 8) were classified as high audit quality providers, which include the international Big 4 and the four largest Chinese firms. Chen et al. (2011) find a significantly lower level of earnings management for companies audited by Top 8 auditors than for other companies audited by non-Top 8 auditors. Lin and Hwang (2010), using various factors for audit quality (audit firm size, industry specialist auditor, audit fees, auditor tenure), find that only Big 4 auditors have a significant negative relationship with earnings management. Gerayli et al. (2011) analyze a sample of 540 firm-year observations from the Teheran Stock Exchange for the fiscal years 2004 to 2009. Their findings indicate that auditor size is negatively associated with the earnings management measured by discretionary accruals, thereby indicating that companies audited by Big 4 audit firms will engage in fewer earnings management than firms audited by non-Big 4. Their results are consistent with those of Chen et al. (2005), which suggest that the Big 5 auditors are associated with reduced management discretion over earnings.

Emmanuel (2012) focuses on Big auditors listed companies, and examines the differentiation in the earnings management potential. The study focuses on emerging common law South Africa and code law Brazil and seeks to identify whether there are material differences given their different institutional characteristics. The study reports that even though high-quality auditors may audit firms, their institutional differences influence firms' earnings conservatism, agency costs, and cost of equity significantly. Client firms of big auditors in both common law South Africa and code law Brazil exhibit lower discretionary accruals. Lenard and Yu's (2012) findings show that listed firms audited by auditors other than the Big 4 report significantly greater discretionary accruals. Alzoubi (2016), analysing a sample of listed companies in Jordan, finds that the level of earnings management is significantly less among companies hiring a Big 4 audit firm than among those utilising the service of a non-Big 4 audit firm.

Motoaleli-Mokoteli and Iatridis (2017), analysing a sample of South African listed companies, find that companies that are audited by a Big 4 auditor are likely to exhibit lower discretionary accruals, suggesting that these companies are likely to be less prone to earnings management.

These studies suggest that Big 4 auditors' are asociated with lower levels of earnings management, proxied by the absolute value of the discretionary accruals (Becker et al., 1998; Francis et al., 1999; Gul et al., 2009; Kim et al., 2003). The intuition is that Big N auditors provide a higher-quality audit.

The literature, however, also highlights that when there is little risk of litigation, the deterrent function of sanctions against auditors is low, and auditors may choose not to perform high-quality audits. In other words, if the institutional setting does not induce auditors for high-quality audits, auditors may not constrain the earnings management practices (for example, Petroni and Beasley, 1996; Kim et al., 2003; Jeong and Rho, 2004; Tsipouridou and Spathis, 2012). According to this point of view, some researchers indicate different findings on the topic. Using different data from the UK, France, and Germany, Maijoor and Vanstraelen (2006) indicate that because of the differences in audit environment regimes across the European countries, the quality of international Big 4 may vary from country to other.

Because the financial statements of non-listed companies are not as widely distributed and as scrutinised by capital markets as those of listed companies, the probability of discovering an audit failure and the risk of litigation are much lower in non-listed companies (Vander Bauwhede and Willekens, 2004; Van Tendeloo and Vanstraelen, 2008). Therefore, the consequences of audit failure detection regarding litigation costs and loss of reputation are expected to be less important in the case of non-listed client firms

than in the case of listed client firms (Chaney et al., 2004; Cano-Rodríguez and Manuel, 2010). Non-listed firms are observed to have lower-quality earnings than listed firms, which suggests that the same idea can be extended to the comparison of non-listed and listed firms, and that non-listed firms are likely to substitute private communication for financial reporting to reduced information asymmetries (Ball and Shivakumar, 2005). Private communication implies that audited financial information and audit quality are less critical for stakeholders of non-listed firms.

The incentives for auditors to supply a high-quality audit depend on the risk of litigation when an audit failure is detected, thereby damaging the auditor's reputation (Van Tendeloo and Vanstraelen, 2008, p. 448). Gaeremynck et al. (2008) support the hypothesis that audit quality increases when the auditees increase the auditor's exposure to the risk of loss of reputation or litigation. Thus, the Big 4 audit companies have an incentive to provide a uniform level of audit quality across different market segments and hence would also be inclined to supply high-quality audits in non-listed companies.

According to that stated above, it is also argued that the monitoring value of auditing may be even higher in non-listed companies than in listed companies. Using a sample of Belgian non-listed companies, Vander Bauwhede and Willekens (2004) found no evidence that clients of Big N auditors engaged less in earnings management than clients of other auditors. Van Tendeloo and Vanstraelen (2008) examine whether Big 4 audit firms, as high-quality auditors, provide a constraint on earnings management. Using data on non-listed firms in six European countries, they find that Big auditors are more likely to constrain earnings management initiatives than other auditors.

Given that stated above, we expect that the Big 4 audit companies have more incentive to provide a high-quality audit than other auditors also in non-listed companies, because any error may threaten the auditors' reputation.

In an attempt to shed light on the aforementioned alternative explanations for the trade-off between auditing quality and the risk of litigation and reputation damage within the context of non-listed companies, empirical research focused on Big auditing companies. The underlining assumption is that the Big auditing companies have an incentive to provide a uniform level of audit quality across different market segments and hence would also be inclined to supply high-quality audits in non-listed companies. Van Tendeloo and Vanstraelen (2008) using data on non-listed firms in six European countries find that Big 4 auditing companies are more likely to constrain earnings management than other auditors. However, Vander Bauwhede and Willekens (2004) find no evidence that clients of Big auditing companies engage less in earnings management than clients of other auditing companies. One explanation of this negative

relationship may be the potential pressure from the audited client. In fact, this influence is argued to have a more significant impact on smaller audit firms (i.e. non-Big 4) since they have fewer clients whereas a more extensive portfolio, like the ones kept by Big 4 companies, can have a mitigating effect on the dependency issue (Reynolds and Francis, 2000).

The auditing environment of the Italian non-listed companies provides a unique setting for examining combinations of different levels of auditing quality and different degrees of litigation and reputation damage. The Italian non-listed companies can obtain auditing services by three board categories of auditing companies with diminishing professional competence in detecting earnings management initiatives: (i) Big 4 auditing companies, (ii) non-Big 4 auditing companies and (iii) statutory auditors, that are the Board of Statutory Auditors. The intuition is that the structure of the auditing environment of the Italian non-listed companies has two implications. First, Big-4 auditing companies in Italy experience more intense competition (with the statutory auditors) and a rational strategic decision is to rely on their superior professional competence to provide a high level of auditing quality and to adopt a conservative and adverse behaviour towards risk of litigation and reputation damage. Second, non-listed companies engaging in earnings management activities have the opportunity, within the Italian auditing environment, to avoid external auditing relying on services provided mostly by statutory auditors. Combining these two implications, it seems that Big-4 auditing companies have the incentive to provide a uniformly high level of audit quality to the Italian non-listed companies.

Based on the above analysis and taking into account the superior auditing professional competence (or auditor's technical capability) of Big 4 auditors, the following hypothesis is stated:

H1a: Companies that are audited by a Big 4 auditor are likely to exhibit lower discretionary accrual-based earnings management than other companies.

While prior cited literature provides empirical evidence that a Big 4 auditor constrains accrual-based earnings management (AEM) (as it is associated with lower level of discretionary accruals), it is possible that it is not able to deal with and monitor real activity-based earnings management (REM). In fact, REM is harder to detect for external auditors, regulators and other stakeholders to detect compared with AEM. One exception is Kim et al.' (2003) research, that provides empirical evidence that Big auditors are less efficient than non-Big auditors in monitoring income-decreasing earnings management. Some research

focuses on the relation between REM and the presence of a Big 4 auditor. Chi et al. (2011) find that the presence of a Big 4 audit company is associated with higher real activity-based earnings management. They argue that, as increased audit scrutiny may decrease a firm's accounting flexibility, firms audited by Big 4 are likely to resort to the more costly real earnings management. Similarly, Cohen and Zarowin (2010) provide additional evidence that both accrual and real management tools are used together. They also find that Big 8 auditors are positively related to real earnings management, suggesting that more effective monitoring may motivate companies to manage earnings using techniques that are more difficult to identify. Hence, a negative association between earnings management and audit firm size is expected. Inaam et al. (2012), analysing a sample of Turkish listed companies, find that large auditors do not have any effect on enhancing the REM in the Tunisian companies. Therefore, according to that stated above, the following hypothesis is stated:

H1b: Companies that are audited by a Big 4 auditor are likely to exhibit lower discretionary real abnormal accruals than other companies.

4.3.2. The auditor Independence

The second relevant dimension of the DeAngelo (1981b) definition of audit quality is the probability that an auditor will comment on any discovered misstatements and weaknesses in the audit report that is to provide a more accurate audit opinion. Independence is a critical notion in the audit function, a characteristic that is essential for guaranteeing the credibility of the auditor's work. This is a matter of the auditor independence from the audited company (DeAngelo, 1981b; Azizkhani et al., 2007). The independence of the auditor is not an easy concept to explain and demonstrate, and formulating a definition is not straightforward. The difficult to explains auditor independence may be explained by the circumstance that third parties have different opinions and views regarding situations that may or may not compromise the auditor's independence. Yamani (1991) concludes that the auditor's independence and auditing quality are considered important factors that affect auditor selection, and reflect the confidence level in the financial reports.

Pearson (1980) states that larger audit companies are more likely to withstand pressures from the client's management because of their more significant client portfolios. Also, these audit companies must retain their reputation, and they will, therefore, guarantee the provision of an independent and qualitative audit. Furthermore, bigger audit companies have more

considerable capital assets, better research equipment and greater technology to execute large company audits than smaller audit firms (e.g. McLennan and Park, 2003; 2016). The auditor's examination must be free from the influence of clients in any situation. Another point of view is given by Appah (2011), who claimed that audit independence implies having the position to perform in an unbiased way the audit test, the analysis of the results and drafting the report. Benjaminsson and Doherty (2012) claim that independence means that the Big 4 auditors will always reveal the truth when discovering it, and will not tolerate any financial or sentimental influence, to turn him from that exercise. Tagesson and Öhman (2015) find that Big 4 audit companies in general are more prone to issue going concern opinions (GCOs) than smaller audit firms. These findings provide an indication of higher independence among the Big 4 auditors compared to their smaller competitors.

Big auditing companies seem to be more independent than non-Big auditing companies for the following reasons. Firstly, the Big 4 auditors are exposed to a more significant reputational risk than othe auditors. Secondly, these auditors rely less on an individual client's revenues, and hence are less likely to be influenced by an individual client. Thirdly, the Big 4 auditors are exposed to higher litigation risk due to their larger revenue base (Palmrose, 1988; Stice, 1991; Bonner et al., 1998; Skinner and Srinivasan, 2012; Koh et al., 2013; DeFond and Zhang, 2014).

To assess auditor independence, research examines the relation between accruals-based earnings management and the presence of modified audit opinions. In essence, these studies test the hypothesis that earnings management increases the probability of receiving a modified audit opinion, even though some research provides different conclusions (e.g. Blandón and Bosch, 2013).

Francis and Krishnan (1999) find that auditors of a large sample of U.S. listed companies with high levels of accrual, are more likely to issue qualified opinions for asset realisation uncertainties and going-concern problems than auditors of companies with low absolute levels of accruals. According to the authors, accruals-based earnings management are managers' subjective estimates of future outcomes and cannot be objectively verified by auditors before the occurrence. This causes audits of high-accrual companies to pose more uncertainty than audits of low-accrual firms because of potential estimation error and a higher chance that high-accrual firms have undetected asset realisation and going concern problems related to the high level of accruals. One way that auditors can compensate for this risk exposure is to lower their threshold for issuing modified (or not clean) audit

reports, an action that will increase modified reports and, therefore, lessen the likelihood of failing to issue a modified report when appropriate.

Bartov et al. (2001) demonstrate a significant positive relationship between the discretionary accruals level and the probability to receive modified audit reports.

Chen et al. (2001), analysing a sample of Chinese listed companies, investigate the relationship between earnings management induced by profitability regulation and the modified audit reports (MAOs). Based on annual reports published by listed companies from 1995 to 1997, the findings show a significant association between receiving MAOs and reporting profits marginally above the target levels specified in stock de-listing and rights offering regulations.

Bradshaw et al. (2001) consider firms with any modified audit opinion as a function of signed working capital accruals, documenting a negative relation between signed accruals and the probability of receiving a modified opinion. Authors support that auditors are poor users of accruals information and they are not likely to issue qualification for high accrual auditees. They find strong evidence that auditors fail to communicate to investors' problems arising from high accruals reporting and therefore auditors are expected to render qualified audit opinion for those high accrual auditees more frequently.

Butler et al. (2004) document that relation between modified opinions and abnormal accruals rests with companies that have going-concern opinions. These firms have large negative accruals that are likely due to severe financial distress. Overall, authors find no evidence to support that firms receiving modified audit opinions manage earnings more than those receiving clean opinions.

Johl et al. (2007) examine the question in the Malaysian context. Based on the matched pair sample of companies listed on the Malaysia Stock Exchange, their results provide support for the hypotheses that high EM proxied by absolute abnormal accruals is positively associated with qualified (or modified) audit opinion.

Sengupta and Shen (2007) re-examine this issue and indicate that the probability of receiving a going-concern audit opinion is higher when the quality of accruals for a firm is low.

Ajona et al. (2008) test the relationship between qualified opinion and earnings management in the Spanish context with a sample of non-listed pre-bankrupt firms. Their work reveals a negative association, which stems from reports containing uncertainty about the likelihood of a firm continuing as a going concern. However, when the reasons for the qualification are other than the going-concern, they found a positive relationship. The Scholars suggest that auditor reporting is a positive response to earnings management and

that the negative relationship in going-concern cases is the outcome of auditor conservatism rather than a result of the distressed status of the firm and its liquidity strategies for survival.

Herbohn and Ragunathan (2008) investigate the relationship between abnormal accruals and the probability of receiving a qualified audit opinion in Australia. The Scholars, using a sample of companies listed on the Australian Stock Exchange over the period 1999-2003, document a negative relationship between the qualified opinion and accruals that that is attributable to going concern audit opinion (GC). Their results show that earnings management is not the cause of audit opinion qualifications.

Garcia et al. (2013) investigate whether earnings management activities increase the likelihood of receiving a qualified audit report for a sample of Spanish companies for the period 2001–2009. Their results do not show a significant relationship between earnings management and qualified or modified audit reports. In general, the negative or absent relationship between these two variables (especially in the case of going concern opinions, GCOs) may be explained by the circumstance that a larger client may be more financially stable (and thus not distressed) and thereby naturally receive fewer modified audit opinions relating to the continuing operations. Larger companies may also attract more public interest and scrutiny, which counteracts the auditors' propensity to acquiesce because of the reputational risk that comes with a large media interest should a deviation from standards be exposed (Ireland, 2003).

Gajevszky (2014) conducts a study on the sample of 60 Romanian listed on the Bucharest Stock Exchange in 2012. The most significant findings of this research are that the probability to manage earnings to the decrease is related to the issuance of a qualified audit report and the presence of a Big 4 auditor. The results of this study indicate that auditor size is negatively associated with accrual earnings management as measured by discretionary accruals.

Tsipouridou and Spathis (2014) examine the relationship between audit opinions and earnings management for listed firms on the Athens Stock Exchange. Their results provide evidence that the going-concern qualification decision is not related to the level of (accounting) discretionary accruals, both in the full and in the distressed samples. Financial characteristics better explain the variability in the going-concern decision. Therefore, auditors do not incorporate information in accruals into their opinions. In conclusion, the Scholars provide evidence that audit reports are not related to earnings management while client financial characteristics, such as profitability and size, are determinants of the going-concern audit opinion decision.

Omid (2015) examines the relationship between qualified audit opinions and earnings management for companies listed on the Tehran Stock Exchange.

The scholar finds that modified audit opinions are positively related to accounting discretionary accruals, but not related to the abnormal production cost, one of three measurementss of real activity-based earnings management. Moreover, the Scholar finds that findings suggest that client financial characteristics, such as profitability, size, type of audit opinion in the previous year and prior year loss are also determinants of the qualified audit opinion decision.

Moazedi and Khansalar (2016), analyzing a sample of listed companies for the period 2008-2014, find that abnormal production costs do not affect the auditor's opinion.

Habbash and Alghamdi (2017), analyzing a sample of Saudi public companies, find a significant association between audit quality and earnings management, also in less developed economies, indicating that audit opinion is the only variable that constrains earnings management practice.

While there is wide literature examining the association between earnings management initiatives and the likelihood a modified audit report issued, the literature analyzing this question in non-listed companies is very scarce. For example, Hope and Langli (2010) examine a large sample of non-listed Norwegian companies and argue that studying non-listed companies in a low litigation risk setting provided the best chances of finding evidence of impaired independence since the expected costs of delivering low-quality audits is low.

In conclusion, Big 4 auditors are thought to be more independent than non-Big 4 auditors for the three following reasons. Firstly, because they suffer greater reputational risk should they be negligent. Secondly, they rely less on an individual client's revenues and hence are less likely to be influenced by an individual client. Finally, their larger revenue base exposes Big 4 auditors to higher litigation risk (Palmrose, 1988; Stice, 1991; Bonner et al., 1998; Skinner and Srinivasan, 2012; Koh et al., 2013; DeFond and Zhang, 2014). Given that stated above, a positive relationship between the probability that a qualified audit opinion report is issued and earnings management (proxied by the absolute value of discretionary accruals) is expected, also in non-listed companies. For this reason, the following second research hypotheses are introduced:

H2a: In the case of Italian non-listed companies, there is a positive relationship between the issuance of audit qualification and discretionary accruals (AEM).

H2b: In the case of Italian non-listed companies, there is an association relationship between the issuance of audit qualification and discretionary accruals (REM).

5. THE RESEARCH METHODOLOGY

5.1. Sample selection

Accounting and corporate governance data are collected from the Bureau van Dijk AIDA Database which includes the statutory financial statements of all limited-liability Italian companies with a turnover higher than € 1 million, gathered from the Italian Chamber of Commerce depository. The study sample includes Italian non-listed companies for which individual annual reports are collected for the financial years 2008 to 2015. The data collection starts from 2008 because 2006 was the first year available on AIDA Database (on March 2017), and to calculate the dependent variable measuring the intensity of real earnings management, data in the two previous years of the analysis are required. The population of non-listed companies publishing their financial statements are 264,223 (included in the AIDA Database). Within this population, the companies presenting the full format of financial statements and incorporated before 2006 are 29,854. Sampling was done by using probability that provides equal opportunity for every member of the population to be elected. The sampling technique used is a random sampling. A minimum number of samples was determined using the Slovin's formula (Asmara, 2016). The Slovin's formula is the following (Equation 1):

$$n = \frac{N}{1+N(e)^2} \quad \text{(Equation 1)}$$

In the formula (Equation 1), "n" is the required sample size, "N" is the population, and "e" is the degree of error or the error tolerance.

The needs for a sample arises from the needs of the hand collection of corporate governance data and information about the audit opinion (modified or non-modified). Choosing a 2% of error tolerance, the minimum random sample is 2,307 companies. From these companies, that non-adopting the traditional model of corporate governance, that is companies that can assign the financial

auditing only to an external auditor and not to BSA, and those companies for which the information about the corporate governance was not disclosed or dubious. Financial industry-related firms also were removed in line with existing studies. Moreover, the companies that (i) failed in 2008 or later, (ii) have insufficient accounting, and corporate governance data and (iii) their notes do not show the audit opinion was removed from the sample firms. To group firms into the industry sectors, we first identify the industry sector which each firm belongs to. Table 1 shows the classification of the sample firms according to their NACE code. Also, to assure that each group of firms contain at least ten firms, we have merged the firms in industry sectors with less than 10 companies with comparable industry sector (according to their production process). Further from the first data sample companies that have insufficient data for total accruals estimation. Thus, the final balanced sample firms include 1,207 Italian non-listed companies for 9,656 firm-year observations. Table 1 also shows the sample firms classification to industries (columns E and F).

Table 1 – Sample firms (part one)

A	B	C	D	E	F
NACE code	**Description (in brackets the industry sectors are shown)**	**Frequency**	**%**	**Firm grouping code**	**After the grouping in the industry sector**
A	Agriculture, forestry and fishing (01, 02, and 03)	10	0.83%	1	Agriculture
B	Mining and quarrying (from 05 to 09)	6	0.50%	2	Mines, manufacturers
C	Manufactures (from 10 to 33)	662	54.84%	2	Mines, manufacturers
D	Electricity, gas, steam and air conditioning supply (35)	14	1.16%	3	Gas, Energy, Public utilities
E	Water supply; sewerage; waste management and remediation activities (from 36 to 39)	23	1.91%	3	Gas, Energy, Public utilities
F	Construction (from 41 to 43)	50	4.15%	4	Building
G	Wholesale and retail trade; repair of motor vehicles and motorcycles (from 45 to 47)	242	20.05%	5	Trade
H	Transporting and storage (from 49 to 53)	54	4.47%	6	Consumer goods and services
I	Accommodation and food service activities (55, and 56)	16	1.32%	6	Consumer goods and services
J	Information and communication (from 58 to 63)	30	2.49%	8	Communication and Media
K	Financial and insurance activities (from 64 to 66)*	0	0.00%	--	
L	Real estate activities (68)	23	1.90%	4	Building
M	Professional, scientific and technical activities (from 69 to 75)	30	2.49%	6	Consumer goods and services

Table 1 presents the frequency of firms of the data sample classified according to NACE codes (http://ec.europa.eu/competition/mergers/cases/index/nace_all.html) and their regrouping to assure that each group of firms contain at least ten firms.

Table 1 – Sample firms (part two)

A	B	C	D	E	F
NACE code	Description (in brackets the industry sectors are shown)	Frequency	%	Firm grouping code	After the grouping in the industry sector
N	Administrative and support service activities (from 77 to 82)	17	1.41%	6	Consumer goods and services
O	Public administration and defense; compulsory social security (84)	0	0.00%	--	
P	Education (85)	3	0.25%	9	Education and (private) health
Q	Human health and social work activities (from 86 to 88)	17	1.41%	9	Education and (private) health
R	Arts, entertainment and recreation (from 90 to 93)	6	0.50%	7	Tourism and entertainment
S	Other services activities (from 94 to 96)	4	0.33%	7	Tourism and entertainment
	Total sample firms	1,207	100%		

Table 1 presents the frequency of firms of the data sample classified according to NACE codes (http://ec.europa.eu/competition/mergers/cases/index/nace_all.html) and their regrouping to assure that each group of firms contain at least ten firms.

The column A in Table 1 shows the NACE classification code of companies in the sample. Column B shows the description of the industry sectors according to the NACE code (details of the industry sectors are shown in brackets). Column C shows the frequency of the firms for each industry sector in the sample, while the column D shown the percentage of companies in each industry code scaled the total companies in the sample (1,207). Column E showed the industry code in which the NACE industry sectors are counting less then 10 companies were grouped. Column F in table 1, finally, exhibits the industry sector definition after the grouping. Table 1 show that the 74.89% of the sample firms belong to both the manufacturer (54.84%) and the trade (20.05%) industry sectors. The nine industry classification codes are used for cross-sectional estimation of both AEM and REM.

5.2. Definitions of earnings management and earnings management techniques

This research aims to investigate if a Big 4 performs quality audit also in non-listed companies. The audit quality depends on the probability that material misstatements and signals of financial distress are discovered. In more specific terms, a Big 4 auditor can constrain earnings management initiatives of the auditor client than other auditors. In an agency theory

framework, the concept of earnings management stems from the trade-off between relevance and reliability in financial reporting. The concept of earnings management has long been documented in the literature (e.g. e.g. Watts and Zimmermann, 1978; Shipper, 1989; Burgstahler and Dichev 1997; Healy and Whalen, 1999; Dechow and Skinner, 2000; Prencipe, 2006; Dechow et al., 2009; Dichev et al., 2013; Walker, 2013).

Watts and Zimmermann (1978) state that earnings management (EM) occurs when managers have a discretionary behaviour related to accounting numbers with or without limits and this behaviour can be adopted to maximise the value of the company. Derived from the opportunistic use of the discretion in financial reporting, Shipper (1989, p. 92) defines the earnings management as "a purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain". Here, earnings management is viewed through an opportunistic lens.

Healy and Whalen (1999, p. 368), in line with Schipper (1989), consider earnings management as "an event that occurs when management uses judgement in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers". This definition suggests that insiders may exercise discretion along some different dimensions and the preferred method could vary from a situation to another. The Healy and Whalen's definition of earnings management, drawn within the framework of the agency theory, is not strictly restricted to the management of accruals but also include the management of the real activity-based accruals. Moreover, Mulford and Comiskey (2002, p.3) state that earnings management is the "active manipulation of earnings toward a predetermined target, which may be set by management, a forecast made by analysts, or an amount that is consistent with a smoother, more sustainable earnings stream".

Walker (2013, p. 446) describes earnings management as "The use of managerial discretion over accounting choices, earnings reporting choices, and real economic decisions to influence how underlying economic events are reflected in one or more measures of earnings".

Even though these definitions of earnings management differ, all they focus on the intervention in the financial reporting process to achieve some private gain. The earnings management tends to be considered synonymous with creative accounting (e.g. Kraemer, 2008; Jones, 2011) while the nuances that characterise these practices (earnings management and creative accounting) are different. In fact, managers can engage in earnings management initiatives within the boundaries of the flexibility afforded by generally accepted

accounting principles without violating these standards, making it a legal practice. The motives behind earnings management practices and the techniques employed by most managers make earnings management always suspicious. Conceptually, it is a strong management tool that is used to improve the welfare of the company's stakeholders if ethically used in line with the provisions of the (domestic or international) accounting standards (Omar et al., 2014).

Managers can also engage in income smoothing, a form of earnings management practice that is described by Trueman and Titman (1988) and Mulford and Comiskey (2002) as a means by which managers remove peaks and troughs from a normal earnings series to give earnings a more stable outlook. This includes steps taken to reduce and store profits during good years for use in future, less profitable years (Trueman and Titman, 1988; Elklalla, 2017).

The extant literature lacks a universal measure of earnings management initiatives that could be applied to measure every dimension of managerial discretion. This is due to two reasons. Firstly, as the discretionary earnings management decisions of insiders are not directly observable to the empirical researcher (Jansen et al., 2012; Donelson et al., 2013), the literature tends to propose multiple proxies to capture the EM (e.g. Leuz et al., 2003). The most used proxy is the discretionary or abnormal accruals (e.g. Leuz et al., 2003; Bayley and Taylor, 2007) by Jones (1991). Accruals are the difference between (net) earnings and cash flows, and they are a standard component of a firm's transactions (McVay, 2006).

It is complicated to identify what portion of accruals is being managed to move profits towards a desired level of earnings. Some accrual adjustments are necessary and expected by investors, and constitute the non-discretionary component of accruals, while the remaining accruals are not dictated by firm conditions but are instead managed and termed discretionary (Charitou et al., 2007).

There are mainly two broad techniques to practice earnings management. The first technique is the accruals-based earnings management, while the second technique is real activities-based earnings management. These techniques are analysed in next sections.

The literature investigating earnings management in non-listed companies (e.g. Coppens and Peek, 2005; Burgstahler et al., 2006; Hope et al., 2013; Poli, 2013a; 2013b) focuses mainly on accrual-based earnings management (AEM). In more specific terms, this literature provides evidence that such firms are less likely to use public financial statements when contracting with lenders, managers, and other parties, and in primary and secondary equity transactions. The financial statements of non-listed companies are correspondingly more

likely to be influenced by taxation, dividend, and other firm policies, thereby implying a demand for lower quality financial reporting (Ball and Shivakumar, 2005; Van Tendeloo and Vanstraelen, 2008). These findings are further confirmed by Poli (2013a; 2013b) analysing a sample of Italian non-listed companies.

However, there is a paucity of research on real activity-based earnings management (REM) in non-listed companies. Prior REM studies of non-listed companies have focused on firms undergoing an IPO (e.g. Alhadab et al. 2015) and find that such companies engage in earnings management through both accruals and real activities. Based on that stated above, in this research both measures of discretionary accruals (AEM and REM) are used to estimate the quality of an auditor, that is his ability in discovering earnings management initiatives.

5.2.1. The estimation of accrual-based earnings management (AEM)

There is empirical evidence that management is likely to use accruals to manage reported earnings (e.g. Healy, 1985; Sweeney, 1994; DeFond and Jiambalvo, 1994). Several studies, in the framework of the agency theory, have used the discretionary component of total accruals as the measure of the reliability of financial reports. For example, to evaluate the quality performed by the Big 4 and non-Big 4 auditors the literature uses the discretionary accruals (Becker et al., 1998; Francis et al., 1999; Jeong and Rho, 2004).

Accruals-based earnings management occurs when managers intervene in the financial reporting process by exercising discretion and judgment to change reported earnings without any cash flow consequences (Kothari et al., 2016).

The accruals-based earnings management is the discretionary portion of the total accruals. Accounting fundamentals used to separate accruals into non-discretionary (or normal) and discretionary (or abnormal) accruals. Non-discretionary accruals are those accruals which are derived from normal companies' business activities or past accounting transactions that are recorded in the books but have yet to be realized.

The accruals-basis earnings management, a prominent accounting assumption, can cause the lead time between the point of time when a transaction was initially recorded and the point of time when its cash or cash equivalent was paid or received. Reporting this transaction at the end of the period also leads to the difference between the valuation of the transaction at the time when it was initially recognised and its valuation after the first recognition. Also,

accounting standards are flexible to global users (Hepworth, 1953). Therefore, this may create much room for making accounting decisions.

Companies can be aggressive with their accounting choices by bringing forward earnings from a future period, through the acceleration of revenues or deceleration of expenses, thereby increasing earnings in the current period. This creates what is called discretionary accruals in the literature. Since accruals reverse over time, earnings will be lowered automatically by the amount of earnings that was brought forward in the previous period.

Conversely, a company can be conservative and save up earnings for a future period. As an illustration, conservative revenue recognition practices can be used to defer revenue and reduce current period earnings. In the literature, this is referred to as 'cookie jar reserves' whereby a firm is able to store earnings for future years when earnings may be below the target rate of growth (Mulford and Comiskey, 2002). A reduction in deferred revenue can also be made to boost revenues and earnings in the following periods (Elklalla, 2017).

Based on that stated above, it is arguable that it is easier for management to use accruals-basis earnings management, through the abnormal or discretionary accruals, to manage reported earnings. Thus, discretionary accruals are used by many empirical studies as a proxy for earnings management and to investigate the audit quality.

Chambers and Payne (2011) address whether the quality of accruals, measured by their persistence, relates to an audit quality attribute which is Big 4 auditor independence. Their research does not address directly whether discretionary accruals are a proxy for audit quality. Elshafie and Nyadroh (2014) hypothesize that accruals-based earnings management are a good measure of audit quality. Then, these accruals should be highly associated with other indicators of audit quality, such as the likelihood of restating the company's financial statements (Stanley and DeZoort, 2007), performing the audit by one of the Big 4 auditors (Lennox, 1999), the likelihood of issuing a going concern opinion (Carey and Simnett, 2006; Knechel and Vanstraelen, 2007), the level of industry specialization (Balsam et al., 2003), and the efficiency of the internal control. For this reason, consistent with DeAngelo (1981b), the discretionary accruals (the accruals-based earnings management) are associated with the probability that a modified audit opinion is issued in testing H2a.

Previous studies have also proposed methods which are used to separate total accruals into these two types of accruals. McNichols (2000) classified methods for estimating discretionary accruals into three groups. The first group covers aggregate accruals models. This group estimates discretionary

accruals based on the assumption that total accruals are the sum of discretionary accruals and non-discretionary accruals. The estimation can be designed as a linear relation between total accruals and explanatory variables. The second group covers models that focus on earnings management through particular accounts of specific industries. Those industries are industries where a single accruals account is material on the financial statements, e.g. loss reserves among casualty insurers. The third group covers models that aim to explore financial reporting behaviours that influence companies to manage reported earnings around a favourable accounting number.

In detecting earnings management, the literature (e.g. Healy, 1985; DeAngelo, 1986) use the Jones (1991) model to estimate expected accruals, compare those with actual total accruals and use the difference as a proxy for detecting earnings management. The discretionary accruals may also be estimated from the total accruals using the modified Jones model, proposed by Dechow et al. (1995). This modified-Jones model is designed to increase the precision of the original Jones model (Jones, 1991) and eliminate its hypothesised tendency to measure discretionary accruals with error when managerial discretion is exercised over revenues. Dechow et al. (1995) argue that earnings can be managed through discretionary revenues by recording these revenues at year-end when the cash has not yet been received (Tsipouridou and Spathis, 2014).

The Modified-Jones model, in contrast to the original Jones model, assigns the total change in receivables to earnings management. Dechow et al. (1995) and Guay et al. (1996) compare and contrast different accrual-based models. Both studies conclude that the Modified-Jones model is characterised by the highest statistical power to discover earnings management.

Total accruals are affected by an increase in receivables. Thus, they suggest that when estimating the non-discretionary accruals, the change in receivables have to be deducted, which is assumed to be discretionary, from the total change in revenues, as follows: total accruals at time t (TACC) are expressed as the difference between accruals earnings and operating cash flows; an indirect formula is adopted here, based on balance sheet and income statement items, because cash flow statements are not mandatory in Italy for non-listed companies (until to 2015), and they are not systematically included in the AIDA database. Consistent with the Italian format of income statement, in equation (1), not only are depreciation and amortization expenses included but also provisions for contingent losses and liabilities, which represent one of the main categories of earnings management attempts (Nelson et al., 2003; Prencipe, 2006, p. 43; Bisogno, 2012). Therefore, the composition of total accruals (TACC) is defined as follows:

$$\mathrm{TACC_{i,t}} = \Delta[Current\ Assets]_{i,t} - \Delta[Cash]_{i,t} - \Delta[Current\ Liabilities]_{i,t} - [Depreciation\ and\ Amortisation\ Expenses]_{i,t} \quad (2)$$

The change in the variables above (Δ) denotes the yearly change of the corresponding item.

According to the modified Jones' regression model (Dechow et al., 1995), the total accruals for each firm "i" at year "t" in each industry sector (Table 1) are fitted on the following Equation (3):

$$\frac{\mathrm{TACC_{i,t}}}{\mathrm{A_{t-1}}} = \frac{\alpha}{\mathrm{A_{t-1}}} + \beta_1 \frac{(\Delta\mathrm{REV_{i,t}} - \Delta\mathrm{REC_{i,t}})}{\mathrm{A_{t-1}}} + \beta_2 \frac{(\mathrm{PPE_{i,t}})}{\mathrm{A_{t-1}}} + \epsilon_t \quad (3)$$

In equation (3) $\mathrm{TACC_{i,t}}$ is the total accruals for firm "i" in year t; $\Delta\mathrm{REV_{i,t}}$ is sales revenues for year "i" in year t less sales revenues in year t–1; $\Delta\mathrm{REC_{i,t}}$ is the receivables for firm i in year t less receivables in year t–1; $\mathrm{PPE_{i,t}}$ is the net property, plant and equipment plus long-term deferred expenses for firm "i" in year t; $\mathrm{A_{i,t-1}}$ is the total assets in year t–1; and ε is the model error term.

Total accruals include changes in working capital components, such as receivables, inventory and payables, which are influenced by changes in revenues ($\Delta\mathrm{REV_t}$). The model also includes long-term deferred expenses, according to the Italian structure of balance sheet.

Property, plant and equipment and long-term deferred expenses, as well as changes in revenues, are included in the model with the aim of controlling changes in non-discretionary accruals caused by changing external conditions. Revenues are also included in the model because they can be interpreted as a rationale and objective measures of the operation of a firm before managers' manipulations, even if they are not wholly exogenous (they are used to control the economic environment of the firm). Gross property, plant and equipment as well as long-term deferred expenses ($\mathrm{PPE_t}$) are included in the model. The reason is that including these items the model can control the portion of total accruals related to non-discretionary depreciation expenses. The model includes gross value rather than changes in these accounts because total depreciation expenses (versus changes in depreciation expenses) are included in the total accruals measure (Mariani et al., 2010; Bisogno, 2012).

AIDA database does not provide details of the gross value of property, plant and equipment. However, their net values appear to be a significantly explicative term of the regression equation (Piot and Janin, 2007). All

variables in the accrual expectation model are scaled by total assets, to reduce heteroscedasticity.

In equation (5) the residuals, $\varepsilon_{i,t}$, represent the discretionary accruals estimated as $DA_{i,t}$. The discretionary accruals, according to the Modified-Jones model (Dechow et al., 1995), are then calculated as the difference between total and expected accruals (equation 4), that is the difference between total accruals and normal accruals:

$$\left|DA_{i,t}\right| = \frac{TA_{i,t}}{A_{i,t-1}} - \left(\frac{\alpha}{Ai_{,t-1}} + \frac{\beta_1\left(\Delta REV_{i,t} - \Delta REC_{i,t}\right)}{A_{i,t-1}} + \frac{\beta_2\left(PPE_{i,t}\right)}{A_{i,t-1}} + \epsilon_t\right) \quad (4)$$

According to previous studies (Balsam et al., 2003; Jenkins et al., 2006; Rong and Yuping, 2012), the absolute value of discretionary accruals (as estimated in Equation 7) is used to emphasise the magnitude of the discretionary accruals (a proxy of earnings management).

5.2.2. The estimation of real activity-based earnings management (REM)

Zang (2012) provides evidence that managers use real activities-based earnings management (REM) and accruals-based earnings management (AEM) as substitutes.

Real activities-based earnings management occurs when managers intentionally make operating decisions that have actual cash flow consequences with the goal of altering reported earnings. The normal cash flow model is developed by Dechow et al. (1998) and implemented by Roychowdhury (2006). Roychowdhury (2006) defines real activity-based earnings management as departures from normal operational practices with the primary objective of meeting short-term earnings goals. This is motivated by managers' intention to mislead at least some stakeholders into believing specific short-term financial reporting goals have been met in the normal course of operations. These activities are less likely to be challenged by regulators on purely business decision and for realising the short-term benefit. In realising the short-term goals, the repercussions of real earnings management have an impact on future cash flows (Omar et al., 2014).

Cohen and Zarowin (2010) explain real activities-based earnings management as the actions managers take that deviate from normal business practices and that these actions are manipulations that affect cash flows.

Real activities-based earnings management may occur, when managers opportunistically influence discretionary expenses, such as research and development expenditure (Bushee, 1998), by timing the sale of assets (Herrmann et al., 2003) or by increasing credit sales or aggressively offering discounts (Roychowdhurry, 2006). Real-based earnings management also may occur when managers deviate from optimal business decisions with real activities (i.e., overproducing to lower cost of goods sold, cutting discretionary expenses such as research and development) to meet earnings targets (e.g. Dechow and Sloan, 1991; Bushee, 1998).

Graham et al. (2005) highlight that managers prefer real to accruals-based earnings management, but overall, the choice of the instrument used in earnings management depends on the expected benefit (Cohen and Zarowin, 2010; Baderscher, 2011; Zang, 2012). Managers prefer real activity-based earnings management because they are harder to detect that accruals-based earnings management, and less costly (Cohen et al., 2008). According to Roychowdhury (2006), although real activity-based earnings management might reduce a company's value, managers were more willing to manage earnings through real activities such as practices that are less likely to draw auditor or regulatory scrutiny.

Roychowdhury (2006) provides empirical support that managers avoid reporting losses or missing analyst forecasts through the manipulation of real activities (e.g. manipulate sales, reduce discretionary expenditures, and overproduce inventory to decrease the cost of goods sold). Prior research (e.g. Cohen et al., 2008; Badertscher, 2011; Zang, 2012; Abernathy et al., 2014) suggests when one form of earnings management is constrained, or it is costly to engage, managers use alternative forms of earnings management to achieve reporting objectives.

The definition of real activities manipulation according to Roychowdhury (2006) is the deviation from normal business practices. However, a disadvantage of real activities manipulation is that it may negatively affect the economic performance of the firm in the long term. A study by Xu et al. (2007) highlight that these deviations can be managed through various operating investing and financing activities.

This study focuses on the effect of auditing quality and auditing independence on accounting earnings management. It seems that higher auditing quality and auditing independence characterise Big 4 auditors that BSA in the case of Italian non-listed firms. A plausible explanation is that a BSA

might place more emphasis on monitoring real activity-based earnings management relying, at the same time, on external (Big 4) auditors to control for accruals-based earnings management. For this reason, the aim of this research is also to investigate to what extent the type of auditor affects the extent of real activity-based earnings management.

In general, the literature (e.g. Cohen and Zarowin, 2010; Roychowdhury, 2006) employs three metrics to examine REM, namely abnormal cash flow from operations, abnormal production costs and abnormal discretionary expenses. These different metrics impact on the operative cash flows.

Following Roychowdhury (2006), the presence of sales manipulation activities is expected to lead to lower current period operating cash flows. The normal level of operating cash flows for a given level of sales revenues is calculated by estimating the following model (equation 5):

$$\mathrm{CFO}_{i,t}/\mathrm{A}_{i,t-1} = \alpha_0 + \alpha_1 \left(1/\mathrm{A}_{i,t-1}\right) + \beta_1 \left(\mathrm{S}_{i,t}/\mathrm{A}_{i,t-1}\right) + \beta_2 \left(\Delta \mathrm{S}_{i,t}/\mathrm{A}_{i,t-1}\right) + \varepsilon_{i,t} \quad (5)$$

In the equation (5) CFO is the cash flows from operations of the firm i in the year t, A_{t-1} the total assets of the firm i in the year t-1, S are the net sales of the firm i in the year t and ΔS is the difference of the net sales of the firm i between year t and year t-1. For every firm-year, the abnormal cash flows from operations CFO of the firm i in the year t is the residual ε.

Another measure of real earnings management is the abnormal production cost PROD which is the residual ε of the following equation (6):

$$\mathrm{PROD}_{i,t}/\mathrm{A}_{i,t-1} = \alpha_0 + \alpha_1 \left(1/\mathrm{A}_{i,t-1}\right) + \beta_1 \left(\mathrm{S}_{i,t}/\mathrm{A}_{i,t-1}\right) + \beta_2 \left(\Delta \mathrm{S}_{i,t}/\mathrm{A}_{i,t-1}\right) + \beta_3 \left(\Delta \mathrm{S}_{i,t-1}/\mathrm{A}_{i,t-1}\right) + \varepsilon_{i,t} \quad (6)$$

The variable PROD is the production cost from operations of the firm i in the year t and it is the sum of the cost of goods sold COGS and the change on inventory ΔINV of the firm i in the year t. In particular, equation 6 is the result of by combining the following equations 7 and 8:

$$\frac{COGS_{i,t}}{A_{t-1}} = \alpha_0 + \alpha_1 \left(\frac{1}{A_{t-1}}\right) + \beta_1 \left(\frac{S_{i,t}}{A_{t-1}}\right) + \epsilon_t \quad (7)$$

$$\frac{\Delta INV_{i,t}}{A_{t-1}} = \alpha_0 + \alpha_1 \left(\frac{1}{A_{t-1}}\right) + \beta_1 \left(\frac{S_{i,t}}{A_{t-1}}\right) + \beta_2 \left(\frac{\Delta S_{i,t-1}}{A_{t-1}}\right) + \epsilon_t \quad (8)$$

The last type of real activity manipulation is the production of more goods than necessary to meet expected demand (overproduction). Overproduction reduces the cost of goods sold (COGS), which results in the higher operating margin. Production cost is the total of COGS and Inventory. Since, delaying write-offs of obsolete inventory reduces the COGS but increases the cost of ending inventory (Roychowdhury, 2006).

The literature has investigated firms' behaviour to influence earnings through acceleration of sales, overproduction, and alternations in shipment schedules. To be specific, firms can grant price discounts or more lenient credit terms to increase sales volumes temporarily. The rise in sales can increase accounting earnings in the current period. Firms can also increase production more than necessary to lower the overall costs of goods sold (COGS) and hence to boost earnings. Shipping of inventory can affect earnings if revenue is recognised at the point the inventory is shipped out. Jackson and Wilcox (2000) document that managers grant sales price reductions in the fourth quarter to avoid reporting losses and decreases in earnings and sales. Roychowdhury (2006) tests the abnormal production costs and abnormal CFOs of 17,338 firm-years from 1987 to 2001. The study finds that companies manage earnings by price discounts and overproduction to avoid reporting losses or to meet analysts' earnings forecasts. Cohen et al. (2008) and Gunny (2010) also find similar evidence that companies influence accounting earnings through controlling sales discounts and production levels.

The third measure of real earnings management is the abnormal discretionary expenses $\mathrm{DISEXP}_{i,t}$ which is the residual $\varepsilon_{i,t}$. of the following equation (9):

$$\mathrm{DISEXP}_{i,t}/\mathrm{A}_{i,t-1} = \alpha_0 + \alpha_1 \left(1/\mathrm{A}_{i,t-1}\right) + \beta_1 \left(\mathrm{S}_{i,t-1}/\mathrm{A}_{i,t-1}\right) + \varepsilon_{i,t} \qquad (9)$$

Discretionary expenses are the sum of R&D expenses, advertising expenses and SG&A (that is Selling, General & Administrative) expenses.

Following Cohen et al. (2008), a combined measure of the three measures above of the real earnings management activities can be estimated as follow: CFO – PROD + DISEXP.

In this research, according to Omid (2015), the abnormal production costs is used as a proxy of real activity-based earnings management for the following reasons. Firstly, Italian non-listed companies did not prepare a cash flow statement before 2015 as it was not mandatory. As a consequence, data on cash flow from operations was not available for those companies. Secondly, the Italian civil code and Italian accounting standards allow non-listed

companies to capitalise some discretionary expenses. Moreover, according to the net income statement format provided by the Italian civil code, the discretionary expenses (e.g. R&D) are not disclosed separately from other expenses. This makes it difficult to estimate the abnormal discretionary expenses.

Roychowdhury (2006), Zang (2012), and Zamri et al. (2013) also explain that real activity-based earnings management may be conducted using reducing the cost of goods sold through the overproduction of inventory. The abnormal level of production costs is used to measure the reduction in the cost of goods sold through the overproduction of inventory since the fixed cost per unit declines with an increasing volume of production (Kuo et al., 2014).

The abnormal level of production costs is measured as the estimated residual from this equation. The greater the amount of inventory overproduction, the higher the residual, and thus the greater the increase in reported earnings through the reduction in the cost of goods sold. This approach, consisting of measuring the real activity-based earnings management only with the abnormal level of the production costs also was used by the literature (Omid, 2015).

5.3. Hypothesis test: the empirical models

5.3.1. Auditor's competence (H1)

To test hypotheses H1, that is to investigate the association between the discretionary accruals and the presence of a Big 4 audit company, the following model of Equation (10) is estimated:

$$DAC_{i,t} = \alpha_i + \beta_1 BIG4_{i,t} + \beta_2 LEVF_{i,t} + \beta_3 TAX_{i,t} + \beta_4 ROA_{i,t} + \beta_5 SIZE_{i,t} + \beta_6 OWN_{i,t} + \varepsilon_{i,t} \quad (10)$$

In equation (10) DAC is the absolute value of estimated discretionary accruals from model of equation (7) for firm i in year t; BIG4 is the auditor type dummy variable, taking the value 1 if the auditor of firm i in year t is a Big 4, and the value 0 otherwise; LEVF is the financial leverage ratio of firm i in year t; TAX is the amount of the accrual taxes (i.e., payable taxes + deferred taxes – prepaid taxes) scaled by the income before taxes of firm i in year t; ROA is the return on assets of firm i in year t; SIZE is a binary variable

for the firm's size proxied by the distance of the natural logarithm of the total assets of each firms in each industry sector from the median of the firm size in the same sector. It receives the value 1 if the firm's size in a year is above the median, the value zero otherwise; OWN is a binary variable for the ownership concentration of the firm i in year t. It takes the value 1 if at least an owner owns at least the 25,01% of the equity, and the value 0 otherwise. Corporate governance data was drawn from the Notes available on AIDA Database, and ε is the model error term.

Further, equation 11 tests the auditor competence in detecting real abnormal accruals measured by the abnormal production cost.

$$\begin{aligned} PROD &= \alpha_i + \beta_1 BIG4_{i,t} + \beta_2 LEV_{i,t} + \beta_3 TAX_{i,t} + \\ &\beta_4 ROA_{i,t} + \beta_5 SIZE_{i,t} + \beta_6 OWN_{i,t} + \varepsilon_{i,t^{i,t}} \end{aligned} \quad (11)$$

In equation (11) PROD is the absolute value of abnormal production cost. The other variables used in equation 11 are defined in the equation 10 above.

The control variables of the regression model of equations 10 and 11 that have some effects on the earnings management incentives are the following (Reynolds and Francis, 2000; Ahmed et al., 2002; Moradi et al., 2012; Poli, 2015; Hosseini et al., 2016; Piloto Sincerre et al., 2016): the ownership concentration, the financial leverage rate, the tax rate, the firm profitability, and the firm size.

The model controls for the effect of the ownership concentration because most companies in Europe (and also in Italy) are more closely held (Iacovone, 2015; Poli, 2015; Ecoda, 2010), shareholder turnover is lower, and owners take a more active role in a firm's management, which reduces their reliance on financial statements for monitoring managers (Ball and Shivakumar, 2005). Prior studies (Klein, 2002; Peasnell, Pope and Young, 2005; Prencipe and Bar-Yosef, 2011) suggest that the corporate governance characteristics may affect the extent to which companies purposefully apply various accounting policies to achieve earnings targets.

The effects of ownership concentration influences on information asymmetry depend on whether the incentive alignment effect (the monitoring benefits) or the entrenchment effect (the expropriation cost) is dominant. This circumstance may increase the auditor efforts in constraining earnings management initiatives, mitigating the agency conflicts. Separation of ownership and control leads to a divergence in the pursuit of managerial interests versus owners' interests (Jensen and Meckling 1976), and thus external monitoring managerial decisions become essential to assure protection of shareholders' interests, reliable and complete financial reporting. Prior literature suggests

that different ownership structures imply different incentives to control and monitor a firm's management (Shleifer and Vishny 1986; Morck et al. 1988).

According to the efficient monitoring hypothesis, ownership concentration may limit earnings management. The reason of this effect is related to the circumstance that small shareholders would not be interested in monitoring because they would bear all the monitoring costs, but only share a small proportion of the benefit. Consequently, shareholders owning a small fraction of outstanding share have incentives to free-ride in monitoring management. Prior studies have suggested that large shareholders have a strong incentive to actively monitor and influence firm management to protect their significant investments, which in turn reduces the scope of managerial opportunism to engage in earnings management (e.g. Shleifer and Vishny, 1986; Dechow et al., 1996). Some research also documents a negative relationship between ownership concentration and earnings management, suggesting that earnings management is significantly lower for companies with higher ownership concentration (Iturriaga and Hoffmann 2005; Ali et al., 2008). Additionally, Alves (2012) finds that earnings management is negatively related to ownership concentration. In more specific terms, the Scholar, analysing a sample of Portuguese listed companies, finds that ownership concentration inhibits earnings management. These results corroborate the efficient monitoring hypothesis which suggests that significant shareholders reduce the scope of managerial opportunism. Ownership concentration reduces the managers' discretionary behaviour because there will be less pressure on management to meet short-term earnings expectations because controlling shareholders focus more on the long term. Therefore, ownership concentration is expected to reduce agency costs by increasing monitoring and alleviating the free-rider problem.

On the other hand, other studies have documented a positive relationship between earnings management and ownership concentration (Shleifer and Vishny, 1997; Choi, Jean and Park, 2004; Bolton et al. 2006; Jaggi and Tsui 2007; Kim and Yoon 2008). That is, higher ownership concentration in the company was found to relate to earnings management. They argued that companies with concentrated ownership may be subject to conflicts of interest between majority and minority shareholders. Large shareholders can exercise their control rights to create private benefits, sometimes expropriating minority shareholders (expropriation hypothesis). Given this discussion, the effect of ownership concentration on earnings management is still not clear; it can have a negative effect due to the closer monitoring of managers or a positive effect as a consequence of the expropriation effect. Analyzing a sample of Italian non-listed companies for the period 2010-2013, Poli (2015) finds that ownership concentration is not associated with either type of earnings management

practice. Ball and Shivakumar (2005) note that the economic incentives for owners and managers in non-listed companies are more closely aligned as they are often the same person(s) who are involved in the firm's management. Accordingly, the expected association between the dependent variable DAC and the control variable OWN is non-directional.

Swai and Mbogela (2016), analysing a sample of East-Africa listed companies, find a negative and significant relationship between ownership concentration and real earnings management. This result suggests that real earnings management is significantly lower for companies with higher ownership concentration and institutional investors. This result corroborates the efficient monitoring hypothesis that suggests that large shareholders reduce the scope of managerial opportunism. Moreover, Zang (2012) argues that real activity-based earnings management is more expensive for a company than accrual earnings management, and this may reduce the probability of companies in engaging in this earnings management strategy. Accordingly, a negative association between the dependent PROD and the control variable OWN is expected.

The impact of financial leverage on earnings management is an empirical controversy. Two different streams are found describing the relationship between financial leverage and earnings management. The first stream, that is the debt contract hypothesis (Watts and Zimmerman, 1986b), suggests a positive impact of the financial leverage on the earnings management initiatives in order to avoid debt covenants violations. In fact, any violation of the debt covenants imposes costs on the company (Waweru and Riro 2013; Bassiouny et al., 2016). The second stream of literature suggests an opposite view and introduces the control hypothesis (Jensen 1986). According to the control hypothesis, debt creation reduces the opportunistic managerial behaviour. This effect may be interpreted as an indication that high financial leverage might restrict managerial ability to manipulate income increasing accruals since managerial opportunism and earnings management are found to be associated (Christie and Zimmerman, 1994). The debt pricing implications of audits depend on the extent to which lenders rely on audited financial information when monitoring debt contracts.

Previous studies, concerning non-listed companies (e.g. Baralexis, 2004; Moreira, 2006; Sercu et al., 2006; Poli, 2013a; Poli, 2013b; Poli, 2015) have controlled for the effect of bank indebtedness on earnings management in non-listed companies, but their findings are mixed. Moreira (2006), exploring the impact of the level of bank indebtedness on Portuguese non-listed company' earnings management practices, documents that companies with a higher level of bank indebtedness have a higher propensity to manage

earnings upward to avoid losses and a lower propensity to manage earnings downward to minimize tax payments than companies with a lower level of bank indebtedness. Baralexis (2004) and Poli (2013a; 2013b) found that the level of bank indebtedness does not constrain non-listed companies' propensity to manage earnings downward to minimise tax payments in the Greek and Italian contexts, respectively. Sercu et al. (2006), analysing a sample of non-listed Belgian companies, find that earnings management is significantly and positively related to bank debts. Finally, Poli (2015) finds that bank indebtedness positively influences the propensity of Italian non-listed companies to practice earnings management. We argue that earnings management incentives of non-listed companies are not only driven by the typical agency problems documented in listed companies but also by the specific agency problems of non-listed companies relating to influential stakeholders. As the key/influential stakeholders of Italian non-firms are the banks (La Rocca and Montalto, 2011), it is arguable that a different motivation for audit quality arises from the bank-firm relationship. Thus, according to the debt contract hypothesis, a positive relationship between the dependent variable DAC and the financial leverage is expected.

Bruns and Merchant (1990) and Graham et al. (2005) argue that the managers of listed companies tend to manage earnings more through manipulating real activities than through accruals as AEM is more visible due to the scrutiny of auditors and regulators. Zagers (2009) surveys managers to determine whether they manipulate operating cash flow through REM when financial leverage increases and find that for such firms, increased leverage does indeed lead to REM with the purpose of impacting on operating cash flows. Kim et al. (2010) investigate the relation between the debt covenants and the real activity-base earnings management. The Scholars find that companies use REM to avoid debt covenant violations. More specifically, they find that once there are strict debt covenant conditions in place, then REM increases. Further, they find that firms use REM when they have limited power for renegotiating debt covenant violations.

However, Zamri et al. (2013) find that leveraged companies have lower levels of REM, consistent with the argument that leverage limits REM activities, which otherwise would affect the quality of accounting earnings. Moradi (2012) surveys companies listed on the Tehran Stock Exchange and finds that there is a significant negative relationship between financial leverage and income smoothing. Esadinia et al. (2014) also find a negative relationship between financial leverage and REM for such firms. Braam et al. (2015) examine whether the trade-off between real and accruals-based management strategies differs for firms with and without political connections. They find that political

connections play a significant role in the choice between accruals-based and real earnings management strategies, and argue that focusing on accruals-based EM alone underestimates the total earnings management activities of politically connected firms.

Zamri et al. (2013) study a sample of Malaysian listed firms for the period 2006-2011 and find that leverage negatively related to the residual cash flow from operations, one of the proxies for REM, consistent with leverage acting as one of the controlling and monitoring mechanisms which limit REM. Enomoto et al. (2015) examine differences in earnings management practices across countries from the perspective of investor protection and find that managers in countries with stronger investor protection tend to engage in real earnings management rather than accruals-based earnings management.

As real earnings management is more expensive for the companies than AEM (Zang, 2012), this may reduce the probability of firms engaging in the former. As a consequence, a negative relation is expected between the dependent PROD and the control variable LEV.

According to Van Tendeloo and Vanstraelen (2008), this research also controls for the effect of the tax burden on earnings management. Taxation is the most obvious reason for earnings management (Scott, 2003) as the burden of the tax paid by the company reduces the level of dividends (Amiram et al., 2013). Tax incentives for earnings management have been widely studied among listed companies (e.g. Scholes et al., 1992; Lopez et al., 1998; Amiram et al., 2013; Blaylock et al., 2015; Mulyadi and Anwar, 2015), whereas the corresponding empirical evidence in non-listed companies remains scarce. The degree of alignment between financial and tax accounting provides an institutional perspective on tax-induced earnings management. The link between a firm's taxation and its reported net earnings is strong in most European countries, including Italy (high tax alignment countries). In low tax alignment countries, such as the US and the UK, companies have more opportunities to use financial accounting for reporting purposes. In fact, companies in these countries typically operate in common law and use two parallel systems for calculating income for financial reporting and taxable income under public sector rules (Shackelford and Shevlin, 2001; Ball and Shivakumar, 2005; Desai and Dharmapala, 2009). This is in contrast to high tax alignment countries, in which accounting regarding the net income of firms is almost identical to accounting regarding income used for tax reporting. Prior studies show that strong versus weak tax alignment makes a difference in the earnings management of non-listed firms (Coppens and Peek, 2005; Burgstahler et al., 2006; Van Tendeloo and Vanstraelen, 2008). These studies implicitly provide a tax-reporting-based

explanation for these observations. Mard and Vigneron (2014), comparing two samples of listed and non-listed French companies, argue that accounting choices among non-listed companies are less constrained by market pressure, but more for tax purposes. According to that stated above, it is expected that non-listed companies have great incentives in reducing taxes, by manipulating discretionary accruals. Thus, it is expected a negative relationship between the absolute value of discretionary accruals and tax.

Wang (2014) states that real earnings management such as deferring or accelerating revenue sales, spending high or low R&D, advertising and general and administrative expenditures, will all change the company' taxable income. Zang (2012) posits that tax incentives could constrain the application of REM as well. Increasing the book income via real activities manipulation increases taxable income inevitably, this as opposed to AEM. Therefore, for companies that face higher marginal tax rates, it is more expensive to apply REM than AEM as REM increases taxable income. Therefore,it is also expected a negative relationship between the dependent variable PROD and tax.

This research includes return on assets as a control variable because prior empirical research (e.g. Koumanakos, 2008) suggests that firms' profitability might affect discretionary accrual choices in the current accounting period (Kasznik, 1999; Dechow et al., 1995; Haw et al., 2004). DeFond and Park (1997) show that accruals are negatively associated with current operating performance and positively associated with the next period's operating performance. Van Tendeloo and Vanstraelen (2008), analysing a sample of non-listed companies, provide evidence that the firm profitability has a negative and significant impact on earnings management. Kapoor and Goel (2016), analysing a sample of large Indian listed companies, predict that firm profitability is an essential variable in the context of earnings management. According to DeFond and Park (1997) and Van Tendeloo and Vanstraelen (2008), a negative relationship between discretionary accruals and the control variable firm profitability is expected.

There is evidence that companies engaging in real earnings management (Cohen et al., 2008; Cohen and Zarowin, 2010; Graham et al. 2005; Gunny, 2005; Roychowdhury, 2006; Zang, 2011) may evidence a more significant relation with ROA than accrual earnings management. This is because REM alters company' behaviour and not just their accounting records. Moreover, accruals-based earnings management is more prone to scrutiny, and therefore may be more readily constrained by auditors and regulators. Thus, real earnings management may itself impact on the future profitability of the company. Thus, consistent with the extant literature, we expect a negative relationship between REM and ROA.

The research also controls for company size. Several reasons suggest a negative relationship between company size and earnings management (Kim et al., 2003; Ahmad et al., 2014). Large-sized companies might have more efficient internal control system as compared to small-sized companies, they are usually audited by one of the big audit companies, and they are associated with higher reputation cost which reduces the ability of the management to manipulate earnings. On the other hand, the literature has identified causes suggesting a positive relation as large-sized listed companies face more pressures to meet the analysts' expectations (Barton and Simko 2002), and they have greater bargaining power with auditors. Vakilifard and Mortazavi (2016), analysing a sample of companies listed on Tokyo Stock Exchange for the period 2004-2013, find that firm size is positively related to both AEM and REM. To address the uncertainty in this relation between company size and the level of earnings managements, the expected relation between the real earnings management and the company size is not indicated.

5.3.2. Auditor's Independence (H2)

The second research hypothesis H2, which examines the independence of a Big 4 auditor in reporting any misstatements on the audit opinion, is tested by estimating a binary logistic panel regression model for the full data sample of equation (12):

$$\mathrm{MAO1}_{i,t} = \alpha_i + \beta_1 \mathrm{DAC}_{i,t} + \beta_2 \mathrm{BIG4}_{i,t} + \beta_3 \mathrm{DACBIG}_{i,t} + \beta_4 \mathrm{ROA}_{i,t} + \beta_5 \mathrm{SIZE}_{i,t} + \beta_6 \mathrm{TLTE}_{i,t} + \beta_7 \mathrm{INVREC}_{i,t} + \beta_8 \mathrm{MAO2}_{i,t} + \beta_9 \mathrm{LOSS}_{i,t} + \varepsilon_{i,t} \quad (12)$$

The probability of receiving MAOs is the joint probability of three factors. The first factor is the likelihood that there is a substantial misrepresentation in annual reports. The second factor is the probability that auditors find substantial misrepresentation in annual reports, conditional on there being a substantial misrepresentation in annual reports. Finally, the third is the probability that auditors report substantial misrepresentation, conditional on them finding it (Lin et al., 2011). The second and third factors are called professional competence and auditor independence, and represent audit quality (Watts and Zimmerman, 1986b).

The dependent variable MAO1 is a dichotomous one. To form the dependent variable, the opinion and explanatory paragraphs of all audit reports were examined. The audit opinion was collected manually through the

notes and the attached audit report (in PDF format). The audit opinions of the data sample were divided into the following two categories (Ianniello and Galloppo, 2015):

- qualified or modified audit opinions for any reason (the variable MAO1 takes the value 1). Are signalled as "modified audit opinion" also the case in which the audit opinion is clean but the auditor signals to the users of the financial statements some events that may influence or threats the future of the company;
- unqualified, or non-modified, or clean opinions, that is a financial statement with no accounting problems (the variable MAO1 takes the value 0).

The binary logistic panel regression model of equation (12) includes the following variable as a dependent: The variable DAC is the absolute value of estimated (accounting) discretionary accruals. This independent variable controls for the existence of discretionary accruals in the presence of an issued modified audit opinion. A positive relationship between MAO1 and DAC is expected.

According to previous literature (e.g. Carcello and Neal, 2000; Carey and Simnett, 2006; Boone et al., 2010; Tsipouridou and Spathis, 2014; Omid, 2015; Ozcan, 2016), several control variables check tor their impacts on the issuance of a MAO in equation 12.

The research controls for BIG4, the auditor type dummy variable, taking the value 1 if the company engages a Big 4 audit company, and the value zero otherwise. According to DeAngelo (1981b), a positive relationship between MAO1 and BIG4 is expected because of the high independence of these auditors. The variable DACBIG is a continuous interacting variable considering the combined effect of the presence of a Big 4 auditor and the discretionary accruals level. As a consequence, a positive sign is expected for this variable as the probability a modified audit opinion is issued increases combining the engagement of a Big 4 audit company and its ability in detecting earnings management initiatives. The interacting variable is used because the resulting coefficient will show the incremental effect of each variable on the relationship between discretionary accruals (proxied by AEM or REM) and the presence of a Big 4 auditor.

The impact of firm profitability (ROA) on the probability of receiving a modified audit opinion. Laitinen and Laitinen (1998) document that the probability a modified audit opinion has issued decreases when the company's growth decreases. Further, previous studies (e.g. Akers et al., 2007) indicate profitability one of the key factors in the advance detection of the inclusion

of going concern in the audit opinion. Thus, according to previous literature (Lin et al., 2011; Tsipouridou and Spathis, 2014; Omid, 2015), a positive relationship between the dependent MAO1 moreover, the control variable ROA is expected.

The research also controls for the impact of firm size (SIZE) on the probability of receiving a qualified audit opinion. The literature (e.g., Tsipouridou and Spathis, 2014; Omid, 2015) predicts that firm size has a negative impact for going-concern qualified opinions, but it can have a positive impact on the likelihood of a firm receiving a modified audit opinion, as larger companies are more complex, thereby increasing the likelihood of misstatements in the accounts (Ireland, 2003). This literature finds a negative and significant relationship, highlighting that the higher the firm size, the lower the probability of receiving a qualified audit opinion. According to the literature, a negative relationship between the dependent variable MAO1 moreover, the control variable SIZE is expected, also in non-listed companies.

The research introduces the variable INVREC as the inventory and accounts receivables scaled by total assets and the total liabilities scaled by total equity (TLTE). These variables have been identified in the previous literature as they are likely to affect the audit opinion decision (e.g. Butler et al., 2004; Carey and Simnett, 2006; Boone et al., 2010) in listed companies. However, in the case of Greek (Tsipouridou and Spathis, 2014) and Iranian (Omid, 2015) a not significant association between the dependent variable MAO1 and the independent variables TLTE and INVREC was found According to the extant literature, analysing mainly listed companies, a relationship between the dependent variable MAO1 and the independent variables INVREC and is not indicated.

This research controls for the effect of the auditor judgment in the previous year (MAO2) on the probability of receiving a qualified audit opinion in the previous year. According to the extant literature (e.g. Boone et al., 2010; Chi and Chin, 2011; Tsipouridou and Spathis, 2014; Omid, 2015) analysing a sample of listed companies, the issuance of a qualified opinion in the previous year increases the probability of issuance of a qualified opinion also in the current year, because conditions that generate uncertainty in a particular year are likely to persist in subsequent years (DeFond et al., 2002; Choi et al., 2004). Thus, a positive sign between the dependent MAO1 and the control variable MAO2 is expected.

Finally, this research also controls for the effect of loss (LOSS) recognized in the previous year on the probability of receiving a qualified audit opinion in year t. Tsipouridou and Spathis (2014) and Omid (2015) find that companies reporting a negative income in the previous year are also

more likely to fail than other companies, thereby increasing the probability of receiving a going-concern qualified opinion. According to that stated above, a positive sign between the dependent variable MAO1 and the control variable LOSS is expected.

Equation 13 tests the hypothesis H2 in the presence of abnormal production costs (in absolute value).

$$\begin{aligned} MAO1_{i,t} = \alpha_i + \beta_1 PROD_{i,t} + \beta_2 BIG4_{i,t} + \beta_3 PRODBIG_{i,t} + \beta_4 ROA_{i,t} \\ + \beta_5 SIZE_{i,t} + \beta_6 TLTE_{i,t} + \beta_7 INVREC_{i,t} + \beta_8 MAO2_{i,t} \\ + \beta_9 LOSS_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (13)$$

According to Omid (2015), given the rare finding in literature, a relationship between the dependent variable MAO1 and the independent test variables PROD is not indicated. The expected sign of the control variables is the same expected in equation 12. The interacting variable PRODBIG is the combined effect of both the variables PROD and BIG4. Therefore, according to that stated above about the expected sign of the variable PROD is not indicated.

Variables definition and measurement in the equations 10, 11, 12, and 13 are provided in Table 2.

Table 2 (Part one) – Definition of variables in equations 10, 11, 12 and 13

Dependent variable		
$DAC_{i,t}$	The absolute value of the discretionary accruals.	H1a
$PROD_{i,t}$	The absolute value of the abnormal production cost.	H1b
$MAO1_{i,t}$	An audit opinion binary variable which receives the value 0 in case of a non-modified audit opinion is issued. Otherwise, $MAO1_{i,t}$ receives the value 1.	H2a,b
Test variables of HP1a, H1b		***Pred. sign***
$BIG4_{i,t}$	A dummy variable that receives the value 1 if the firm assigns the financial audit to a Big 4 auditor, the value 0 otherwise. The Big 4 auditors are the PwC, the Ernst & Young, the Kpmg, and the Deloitte.	HP1a = - HP1b = +/-
Test variables of HP2a, HP2b		***Pred. sign***
$DAC_{i,t}$	The absolute value of the discretionary accruals.	HP2a= +
$PROD_{i,t}$	The absolute value of the abnormal production cost.	HP2b = +/-
Control variables of HP1a, HP1b		***Pred. sign***
$OWN_{i,t}$	A categorical variable that measures the ownership concentration. The categorical variable takes the value 0 if each owner owns at most the 24,99% of the equity; the value 1 if an owner owns at least the 25%.	+/-
$LEV_{i,t}$	The financial debt ratio that it is proxied by the financial debts (debt to banks) of the year t scaled by total assets of the same year.	+
$TAX_{i,t}$	A taxation variable that it is proxied by accrual taxes scaled by the net income before taxes of the same year.	-
$ROA_{i,t}$	The firm profitability, measured as the return on asset.	-
$SIZE_{i,t}$	The firm size for year t, measured as the natural logarithm of total assets for the year t.	+/-

Table 2 (Part two) – Definition of variables in equations 10, 11, 12 and 13

Control variables of HP2a, HP2b		***Pred. sign***
$BIG4_{i,t}$	A dummy variable that receives the value 1 if the firm assigns the financial audit to a Big 4 auditor.	+
$DACBIG_{i,t}$	An interacting variable that measures the combined effect of the accruals-basis earnings management and the presence of a Big 4	+
$PRODBIG_{i,t}$	An interacting variable that measures the combined effect of the level of the real activity-based earnings management (the abnormal discretionary cost) and the presence of a Big 4	+/-
$ROA_{i,t}$	The firm profitability, measured as the return on asset, that is, operating income for the year t scaled by total assets for the same year.	+
$SIZE_{i,t}$	The firm size for year t, measured as the natural logarithm of total assets for the year t.	-
$INVREC_{i,t}$	The Inventory and account receivable for the year t scaled by total assets of the same year.	+/-
$TLTE_{i,t}$	The total liabilities of the year t scaled by total equity of the same year.	+/-
$LOSS_{i,t}$	A binary variable for the losses experienced in a previous year. The variable takes the value 1 if a firm experienced negative earnings in the year t-1; the sign 0 otherwise.	+
$MAO2_{i,t}$	A binary variable for the audit opinion issued in the previous year which receives the value 0 in case of a non-modified audit opinion is issued. Otherwise, $MAO2_{i,t}$ receives the value 1.	+

5.4. Descriptive statistics

The descriptive statistics of the sample firms include the process of organizing, summarizing and presenting data in an informative way that presented the analysis formally to give the reader an overall sense of data being analysed. Thus, the purpose of this statistics is to have an overall idea of the data set analysed.

Table 3 illustrates the descriptive statistics for continuous variables in equations 10 and 11.

The Panel A shows the descriptive statistics for the continuous control variables for the full sample. The panel B exhibits the descriptive statistics for the continuous control variables in equations 10 and 11 by type auditor (Big 4 and non-Big 4, respectively). This descriptive analysis by the type of auditor engaged shows the characteristics of the Big 4 and non-Big 4 audited companies. Finally, Panel C shows the descriptive statistics for the independent (test) and control dummy variables BIG and OWN, respectively.

Table 3, panel A, shows the descriptive statistics for the dependent, the independent and the control variables in equations 10 and 11.

The mean of the variable DAC is, in average, 0.070 (the dependent variable in equation 12), while the median is 0.046. Table 3, panel B, shows that the Big 4 audited companies exhibit, in average, a lower level of discretionary accruals than non-Big 4 audited companies (0.064 and 0.714, respectively). Therefore, it is expected a negative relationship between the presence of a Big 4 auditor and the accrual earnings management, proxied by the discretionary accruals. The mean of the variable PROD (the dependent variable in equation 11) is, on average, 0.077, while the median is 0.047. Table 3, panel B, shows that the Big 4 audited companies exhibit, on average, a lower level of abnormal production costs than non-Big 4 audited companies (0.071 and 0.078, respectively). However, the difference between the two values is lower than the difference in DAC. The sample firms have a mean of debt to banks of 0.224, indicating that the 22.4% of the sample firm's liabilities come from bank loans. Panel B shows that both Big 4 and non-Big 4 audited companies exhibit a comparable level of bank loans (0.225 and 0.222, respectively).

Table 3 (Part one) – Descriptive statistics of variables in equations

Panel A) Continuous variables (full sample: N= 1,207; Obs. 9,656)

						Percentiles		
Variable	**Mean**	**St. err.**	**Median**	**St. dev.**	**Var.**	**25**	**50**	**75**
DAC	0.070	0.001	0.046	0.079	0.006	0.021	0.046	0.090
PROD	0.077	0.001	0.047	0.101	0.010	0.021	0.047	0.096
LEV	0.224	0.002	0.205	0.190	0.036	0.036	0.205	0.368
TAX	0.401	0.008	0.375	0.833	0.694	0.057	0.375	0.589
ROA	3.672	0.078	3.190	7.705	59.369	0.890	3.190	6.370
SIZE	9.871	0.010	9.772	0.975	0.951	9.210	9.772	10.426
TLTE	3.430	0.245	1.776	24.17	584.08	0.80	1.78	3.708
INVREC	0.591	0.002	0.618	0.24	0.059	0.432	0.618	0.784
DACBIG	0.015	0.000	0.000	0.04	0.002	0.000	0.000	0.000
DACPROD	0.017	0.000	0.000	0.05	0.003	0.000	0.000	0.000

Table 3 (Part two) – Descriptive statistics of variables in equations

Panel B) Mean of the dependent variables by the variable BIG4		
	BIG4=0	**BIG4=1**
DAC	0.714	0.064
PROD	0.078	0.071
LEV	0.225	0.222
TAX	0.397	0.410
ROA	3.605	3.886
SIZE	9.813	10.057
TLTE	3.602	2.876
INVREC	0.590	0.594

Panel C) Dummy variables for the full sample firms				
	0		**1**	
	N.	**%**	**N.**	**%**
BIG4	7,370	76.3	2,268	23.7
OWN	1,215	12.6	8,441	87.4
MAO1	9,205	95.33	451	4.67
MAO2	9,213	95.41	443	4.59
LOSS	7,286	75.46	2,370	24.54

The variable TAX has a mean of 0.401 meaning that the tax burden (accrual income taxes) in the sample firms is, on average, the 40.1% of the income before taxes. Panel B shows the mean for the variable TAX for both Big 4 and non-Big 4 audited companies. The tax burden is higher for Big 4 audited companies (0.397) than for non-Big 4 audited companies (0.397). Panel A shows that the mean of the variable ROA, measuring the firm' profitability, is, on average, 3.67%. Panel B exhibit that Big 4 audited companies have a firm' profitability higher than non-Big 4 audited companies (3.886 and 3.605, respectively). Finally, Panel A shows that the company' size is, on average, 9.871. Company's size is proxied by the natural logarithm of the total assets. Panel B exhibits that Big 4 audited companies are bigger than non-Big 4 audited companies (10.057 and 9.813, respectively). This finding suggests that Big 4 audited companies are bigger than their counterpart, therefore these companies are more likely to engage a Big 4 auditor in order to signal the high quality of their financial information.

The Panel C of Table 3 shows the descriptive statistics for the dummy independent (BIG4) and control variable (OWN). The findings show that the 76.3% of the sample firms engage a non-Big 4 auditor in charge of the financial auditing, while only the 23.7% assign the financial audit to a Big 4 auditor. Within the non-Big 4 auditors also the statutory auditors (a BSA) are included. A not-tabulated finding exhibits that the 58.07% of the sample firms assign the

financial auditing to a BSA, while the 41.93% are audited by an external auditor (both Big 4 and non-Big 4 auditors). Within this group, the 23.7% of these companies assign the financial auditing to a Big 4 company.

Table 3 (Panels A, B and C) also shows the descriptive statistics of the variables in equations 12 and 13, testing the HP2. Only the new variables are depicted.

In particular, panel A shows that sample firms have a mean of TLTE (total liabilities scaled total equity) of 3.430. This means that debts are three times the owner equity. Panel B shows that Big 4 audited companies are less leveraged that non-Big 4 audited companies (2.876 and 3.602, respectively). Panel A also shows that sample firms have a mean of INVREC (the proportion of the sum of both inventories and receivables scaled the total assets) of 0.591, while the Big 4 and non-Big 4 audited companies show similar values of INVREC (0.594 and 0.590, respectively), suggesting that the risky of the financial auditing (Dedman et al., 2014) in these companies is equivalent.

Only the 4.67% of the sample firms (451 firm-year observations) received a modified audit opinion in the year of the analysis (MAO1), while the 4.59% (443 firm-year observations) received a modified audit opinion in the previous year. Finally, the 24,54% of the firm sample recognised a loss in a previous year.

5.5. Correlation analysis

A correlation coefficient measures the extent to which two variables tend to change together. The coefficient describes both the strength and the direction of the relationship. The Pearson correlation evaluates the linear relationship between two continuous normally distributed variables. A relationship is linear when a change in a variable is associated with a proportional change in the other variable. The Spearman's Rank Order correlation (hereafter Spearman correlation) evaluates the monotonic relationship between two non-normally distributed continuous or ordinal variables. In a monotonic relationship, the variables tend to change together, but not necessarily at a constant rate. Spearman correlation is often used to evaluate relationship involving ordinal variables. Both the Pearson and Spearman correlation coefficients can range in value from – 1 (negative correlation) to + 1 (positive correlation). When a correlation is random or not existent, then both correlation coefficients are nearly zero. The t-test is used to establish if the correlation coefficient is significantly different from zero, and, hence, that there is evidence of an association between the two variables. The sample firms data are

not normally distributed as the statistically significance of the dependent, test and control variables is lower than 0.05. Therefore, Spearman's Rank Order correlation (hereafter Spearman correlation) is required.

Table 4 exhibits the Pearson (below the diagonal) and Spearman (above the diagonal) correlations between the variables of the equations 10 and 11. Even though the data are not normally distributed, both the Pearson and Spearman coefficient correlations are shown and discussed. Only the significant coefficient correlations between the dependent, the test and the control variables are commented.

It was found a negative, even though weak, significant Pearson and Spearman correlation at 1% between the dependent variables DAC and PROD and the independent (test) variable BIG4. Taking into account the test variable BIG4 is dichotomous; the "t-test" was run using STATA software. The finding shows that there is a significant (at 1% level, p= 0.0001) difference in the mean between both DAC and PROD, on the one hand, and the presence of a BIG4 on the other hand. The negative sign of the correlation coefficient in Table 4 suggests that Big 4 audited companies, as expected, shows a lower level of both discretionary accruals (a proxy of AEM) and abnormal production cost (a proxy of REM). It is found a negative and significant (at 1% level) Pearson and Spearman' correlation between the dependent variables DAC and PROD and the control variable TAX. The sign of this correlation suggests that companies with lower tax burden are more inclined to indulge earnings management.

It is also found a weak positive and significant Pearson (significant at 1% level) and Spearman (significant at 5% level) correlation between the dependent variables DAC and PROD and the control variable OWN. The sign of the correlations suggests that more concentrated companies are more inclined to indulge in bot accrual and real earnings management. It was found a weak negative correlation between the dependent variable PROD and the control variable SIZE, suggesting that larger companies are less inclined to indulge in engaging the REM (proxied by the abnormal production costs).

Table 4 also shows a positive correlation, significant at 1% level, between the two dependent variables DAC and POD. This relationship suggests that sample firms engage in both accounting and real earnings management.

Table 4 – Correlation matrix of variables in equations 10 and 11

Spearman's (n= 1,207 companies in the sample; 9,656 company year observations)								
Pearson's Correlation (n= 1,207 companies; 9,656 company year observations)		DAC	PROD	BIG4	LEV	TAX	ROA	SIZE
	DAC	1	0.139**	-0.054**	-0.049**	-0.112**	-0.046**	-0.026*
	PROD	0.159**	1	-0.032**	-0.181**	-0.127**	0.153**	-0.082**
	BIG4	-0.040**	-0.031**	1	-0.01	0.01	0.01	0.088**
	LEV	-0.01	-0.141**	-0.01	1	0.068**	-0.171**	0.060**
	TAX	-0.054**	-0.056**	0.01	0.029**	1	0.233**	-0.033**
	ROA	-0.103**	0.02	0.02	-0.176**	0.086**	1	0.024*
	OWN	0.086**	.028**	0.021*	-0.045**	0.01	0.024*	0.052**

This table reports Pearson (Spearman) correlation coefficients for the model variables below (above) the diagonal. ** Correlation is significant at the 1% level (2-tailed) and * at the 5% level (2-tailed). The definitions of variables are reported in Table 2

Table 5 exhibits the Pearson (below the diagonal) and Spearman (above the diagonal) correlations between the variables of the equations 12 and 13. Firstly, the correlation between the dummy dependent and independent variables is estimated by using the Chi-square test. This test is commonly used to test the statistical independence or association between two or more dichotomous and categorical variables. The acceptance level is at 5% of significance. The not-tabulated Chi-square test between the dependent dummy variable MAO1 and the testing dummy variable BIG4 shows a statistical significance lower than 0.005 (p=0.000) meanings that there is an association between MAO1 and BIG4. The not-tabulated Chi-square test between the dependent dummy variable MAO1 and the control variable LOSS shows a significance greater than 0.005 (p=0.679) suggesting that there not be an association between MAO1 and LOSS. The not-tabulated Chi-square test between the dependent dummy variable MAO1 and the control variable MAO2 shows statistical significance lower than 0.005 (p=0.000) suggesting an association between these two variables.

Table 5 – Correlation matrix of variables in equations 12 and 13.

Spearman's (n= 1,207 companies in the sample; 9,656 company year observations)													
		MAO1	DAC	PROD	BIG4	DAC-BIG	PROD-BIG	ROA	SIZE	INVREC	LOSS	TLTE	MAO2
Pearson's Correlation (n= 1,207 companies; 9,656 company year observations)	MAO1	1	0.070**	0.01	0.186**	0.201**	0.184**	-0.01	0.032**	-0.02	0.00	0.028**	0.374**
	DAC	0.166**	1	0.139**	-0.054**	0.022*	-0.045**	-0.046**	-0.026*	-0.034**	0.055**	0.01	0.020*
	PROD	0.030**	0.159**	1	-0.032**	-0.023*	0.042**	0.153**	-0.082**	0.174**	0.01	0.02	0.01
	BIG4	0.186**	-0.040**	-0.031**	1	0.988**	0.988**	0.01	0.088**	0.01	-0.01	-0.01	0.175**
	DACBIG	0.291**	0.331**	0.023*	0.610**	1	0.979**	0.01	0.087**	0.01	-0.01	-0.01	0.178**
	PRODBIG	0.133**	0.022*	0.333**	0.572**	0.429**	1	0.024*	0.079**	0.027**	-0.01	-0.01	0.173**
	ROA	0.00	-0.103**	0.02	0.02	-0.01	0.031**	1	0.024*	.060**	-0.437**	-0.160**	0.00
	SIZE	0.053**	0.01	-0.060**	0.107**	0.092**	0.026*	0.02	1	-.148**	-0.084**	0.00	0.029**
	INVREC	-0.023*	-0.040**	0.099**	0.01	0.00	0.059**	0.01	-0.179**	1	-0.028**	0.352**	-0.023*
	LOSS	0.00	0.060**	0.036**	-0.01	0.01	0.01	-0.385**	-0.078**	-.026**	1	0.163**	-0.01
	TLTE	0.02	0.01	0.02	-0.01	0.00	0.01	-0.032**	0.022*	.054**	0.040**	1	0.031**
	MAO2	0.374**	0.058**	0.024*	0.175**	0.153**	0.118**	0.01	0.050**	-.024*	-0.01	0.026*	1

This table reports Pearson (Spearman) correlation coefficients for the model variables below (above) the diagonal. ** Correlation is significant at the 1% level (2-tailed) and * at the 5% level (2-tailed). The definitions of variables are reported on Table 2

Table 5 exhibits a positive moderate significant (at 1% level) Spearman correlation between the dependent variable MAO1 and the test variable DAC. The positive sign predicts that larger discretionary accruals (DAC), as expected, are associated with the issuance of a MAO. The Spearman correlation between the dependent MAO1 and the test variable PROD is not significant. This finding suggests that there should not exist a correlation between the probability a modified audit opinion (MAO1) is issued and the real activity-based earnings management (PROD). Table 6 shows a positive moderate Pearson and Spearman association (significant at 1% level) between MAO1 and the independent interacting variables DACBIG and PRODBIG. The sign of the statistical associations predicts that a MAO is issued in the presence of earnings management (both AEM and REM) and the auditing is assigned to a Big 4 auditor. There is a weak positive significant (at 1% level) Pearson association between MAO1 and SIZE. The sign of this association predicts that larger companies are less likely to receive a modified audit opinion. Table 6 exhibits a negative, weak Pearson association (significant at 5% level) between MAO1 and INVREC (that is the proportion of the inventories and receivables on the total assets). There is a weak positive Spearman association (significant at 5% level) between MAO1 and TLTE, that is the proportion of total liabilities on the shareholder's equity.

The VIF (Variance Influence Factor) shows a value lower than 2 meanings that there is not concern for multicollinearity between the variables used in the equation 10, 11, 12, and 13.

5.6. Hypotheses test and discussion

This section provides empirical evidence on the equations 10, 11, 12, and 13. In particular, sections 4.7.1 and 4.7.2 discusses the findings of equations 10 and 11 (testing the hypothesis HP1a and H1b) and 12 and 13 (testing the hypothesis HP2a and H2b), respectively. All models work with panel data. Baltagi (2008) and Hsiao (2014) list some advantages of using panel data, instead of pure cross-section or pure time series data. The main benefit is regarding obtaining a large sample, giving more degrees of freedom, more variability, more information and less multicollinearity among the variables. A panel has the advantage of having "N" cross-section and "T" time series observations, thus contributing a total of "N*T" observations. Another advantage comes with a possibility of controlling for individual or time heterogeneity, which the pure cross-section or pure time series data cannot afford. Panel data also opens up a scope for dynamic analysis. Moreover, another advantage of a panel data comes from its solution to the difficulties involved in interpreting the regression coefficients in the framework of a cross-section only or time series only regression (Vijayamohanan Pillai, 2016).

5.6.1. Earnings management activities and auditor's competence (H1a and H1b)

Table 6 shows the results of the model measuring the first dimension of the audit quality that is the auditor skills and technical capabilities in detecting and in constraining earnings management activities. To test hypotheses HP1, the model of equation 10 was estimated using the panel data method. The panel data method considers both the cross-sectional dimension and temporal dimension. The Hausman test and the Breusch LM Pagan test suggest (Prob > chibar2 = 0.000) that the fixed effect is more appropriate than the random effect and pooled OLS, respectively. The fixed effects method controls for time-invariant variables that have not been measured but that affect "y", that is the dependent variable. The regression analysis were run using STATA software.

The panel regression approach gives the right coefficient estimates (except for the constant), but the standard errors are wrong because the estimation does not take into account the fact that the cases are not independent of each other.

The panel regression model shows a within, between and overall R-square of 4.44%, 1.83% and of 2.66%, respectively.

The meanings of the three R-squares reported in the regression tables 6, 7 and 8 is, shortly, the following. The within R-square is the R-squared from the mean-deviated regression, i.e. the ordinary r-squared from running OLS on the transformed data. The between R-square is the fitted values using the fixed-effects parameter vector and the within-individual means of the independent variables. Then calculates the r-squared as the squared correlation between those predicted values and the within-individual means of the original "y" variable. Finally, the overall R-square first computes the fitted values using the fixed-effects parameter vector and the original, untransformed independent variables. Then calculates the r-squared as the squared correlation between those predicted values and the original, untransformed "y" variable. When a fixed effect panel regression is estimated, the within R-square have to be analysed.

Table 6 – Estimation results of linear panel regression model (H1a) – Equation 10

Variables	Exp. sign	Coefficient	Std. Error	p-value	
Testing variables:					
BIG4	-	-0.023	0.004	0.000	***
Control variables:					
LEV	+	0.035	0.010	0.001	***
TAX	-	-0.001	0.001	0.399	
ROA	+	-0.002	0.000	0.000	***
SIZE	+/-	0.010	0.004	0.025	**
OWN	+/-	0.104	0.006	0.000	***
Constant		-0.095	0.003	0.000	***
R-square: *Within*: 6.20%; *Between*: 0.71%; *Overall*: 1.66%					
Prob>F = 0.000					
VIF < 2% for all variables					
Year control: YES					

The hypothesis H1a predicts that a Big 4 auditor is more likely than other auditors to discover and limit the earnings management initiatives also in non-listed companies. The estimated coefficient of the independent variable BIG4 has a negative sign, which is consistent with the hypothesis HP1a, significant at 1% level. This finding suggests that a Big 4 auditor, on average, provides a higher audit quality compared to other auditors in non-listed companies and it is consistent with previous literature concerning both listed companies (e.g. Becker et al., 1998; Francis et al., 1999; Gul et al., 2009; Bartov et al., 2000; Balsam et al., 2003; Kim et al., 2003; Emmanuel, 2012; Alzoubi, 2016) and non-listed companies (Van Tenedeloo and Vanstraelen, 2008; Mariani et al., 2010; Cameran and Prencipe, 2011). The finding of this

research is not consistent with Vander Bauwhede and Willekens (2004) who find no evidence that clients of Big 4 auditors engage less in earnings management than clients of other auditors.

The finding of this research also suggests that a Big 4 incur in a high risk of litigation when they fail in the auditing and that Italian institutional setting for non-listed companies induces Big 4 auditors to a high-quality audit. Probably, two reasons may explain this high-quality audit of these auditors. The firs reason is that, because of their international reputation, they try to exceed the audit expectation gap by adopting several measures to infuse and restore credibility in their work. The second reason, related to the first one, is that these auditors are engaged to mitigate the several agency problems. This finding also confirms the assumption that Big 4 auditors have an incentive to provide a uniform level of audit quality also in non-listed companies. Thus, hypothesis H1a is supported.

The results of control variables provide evidence whether the (accruals) discretionary accruals are influenced by factors related to the agency problems in companies.

The estimated coefficient of financial leverage (LEV) exhibits a positive sign, consistent with expectations, significant at 1% level. This finding is consistent with the debt contract hypothesis that posits that leverage has a positive impact on earnings management to avoid debt covenants violations (e.g. Moreira, 2006; Sercu et al., 2006; Poli, 2015).

The estimated coefficient of control variable TAX shows a negative sign, as expected, though not significant. This finding, not consistent with the prior literature (e.g. Coppens and Peek, 2005; Burgstahler et al., 2006; Van Tendeloo and Vanstraelen, 2008) does not provide clear evidence of the effect of the tax burden on earnings management initiatives. Probably, even though tax inspection may be a deterrent for non-listed companies, the result provides evidence that these companies may engage different strategies to reduce the tax burden.

The coefficient of the variable ROA is negative, as expected, significant at 1% level. This finding suggests that the high the firm profitability the lower the probability of managing earnings. This finding is consistent with the prior literature (e.g. DeFond and Park, 1997; Van Tendeloo and Vanstraelen, 2008), but it is not consistent with the literature analysing mainly listed companies (e.g. Koumanakos, 2008). This finding suggests that management not seems to transfer gains from the future to the present period to gain from reporting relatively good results in the present period at the expense of the future.

The variable SIZE shows a positive sign, significant at 5% level. This finding suggests that firm size impacts on earnings management initiatives, and it is consistent with the prior literature (e.g. Barton and Simko, 2002; Vakilifard and Mortazavi, 2016). According to Ali et al., (2015) this finding suggests that large companies face more pressure from investors, financial analysts, and lenders to show positive earning or increase in earnings. In addition to this, large companies have more bargaining power to negotiate with auditors, more treatments of a transaction they have available and stronger power of management they have; which make it easier to manipulate the earnings.

The variable OWN, proxying the ownership concentration at the level of minimum 25,01%, shows a positive sign, significant at 1% level. This finding suggests that higher ownership concentration would provide managers with deeper entrenchment and, therefore, the higher scope for opportunistic behaviour. This finding, consistent with the prior literature (e.g. Shleifer and Vishny, 1997; Choi, Jean and Park, 2004; Kim and Yoon, 2008) supporting a positive relationship between discretionary accruals and earnings management, suggests that companies with concentrated ownership may be subject to agency problems between majority and minority shareholders. The finding of this research is not consistent with Ball and Shivakumar (2005) who argue that in non-listed companies the interests of managers and owners are more aligned as they are often the same person who is involved in the management. Probably, the findings of this research confirm that earnings management is used to mitigate the agency problems of type II, that is the agency problems between majority and minority shareholders in non-listed companies.

In conclusion, the analysis suggests that the Big 4 auditor are more likely to constrain accounting earnings management initiatives in non-listed companies, confirming the high quality of this auditors.

Table 7 shows the results of the model measuring the first dimension of the audit quality using the real earnings management (proxied by the abnormal production costs). The model of equation 11 was estimated using the panel data method. The Hausman test and the Breusch LM Pagan test suggest (Prob > chibar2 = 0.000) that the fixed effect is more appropriate than the random effect and pooled OLS, respectively. The panel regression model shows a within, between and overall R-square of 2.92%, 2.18% and of 2.50%, respectively.

Table 7 – Estimation results of linear panel regression model (HP1b) – Equation 11

Variables	Exp. sign	Coefficient	Std. Error	p-value	
Testing variables:					
BIG4	+	-0.008	0.004	0.023	**
Control variables:					
LEV	+	-0.035	0.010	0.000	***
TAX	-	-0.001	0.001	0.107	
ROA	-	0.000	0.000	0.432	
SIZE	+/-	-0.001	0.004	0.788	
OWN	-	0.025	0.006	0.000	***
Constant		0.086	0.040	0.032	**

R-square: *Within*: 2.92%; *Between*: 2.18%; *Overall*: 2.50%
Prob>F = 0.000
VIF < 2% for all variables
Year control: YES

The estimated coefficient of the test variable BIG4 has a negative sign, contrary to expectation, though significant at 5% level. This finding suggests that a Big 4 auditor, on average, provides a higher quality audit compared to other auditors in non-listed companies also in constraining real earnings management. This finding is not consistent with the prior literature (e.g. Zang, 2012; Swai and Mbobela, 2016) pointing out that real earnings management is hard to detect. The circumstance may explain the finding of this paper that a BSA, performing the administrative audit, make the first control of the internal system. Thus, the manipulation of the operations may be discovered by a BSA (that is an independent but professional statutory committee) that (have to) reports these anomalies to the external auditor. This finding also suggests that a Big 4 incur in a high risk of litigation when they fail in the auditing and that Italian institutional setting for non-listed companies induce Big 4 auditors to perform a high-quality audit. Thus, hypothesis H1b is also supported in the case the earnings management is proxied by the abnormal production cost (real earnings management).

The results of control variables provide evidence whether the (real) discretionary accruals are influenced by factors related to the agency problems in companies.

The estimated coefficient of the control variable financial leverage (LEV) exhibits a negative sign, contrary to expectation, significant at 1% level. This finding suggests that leverage is associated with lower real earnings management initiatives (proxied by the abnormal production cost) as it is more expensive for (especially non-listed) companies compared to AEM. This result is consistent with Zagers (2009), Kim et al. (2010), Esadinia (2014), while it

contrasts with the results of Moradi (2008) Zamri et al. (2013), Braam et al. (2013), Zamri et al. (2013), and Enomoto et al. (2015).

The estimated coefficient of the control variable measuring the impact of tax-burden on earnings management exhibits a negative sign, as expected, though not significant. This finding is partially in contrast with the results of Zang (2012) and Zeng (2014). According to Zang (2012), the finding of this research may be explained by the circumstance that, firstly, tax incentives could constrain the application of REM as well. Increasing the book income via real activities manipulation, in fact, increases taxable income inevitably, this as opposed to AEM. As a consequence, for companies that face higher marginal tax rates, it is more expensive to apply REM than AEM as REM increases taxable income.

The estimated coefficient of the control variable ROA exhibits a negative sign, as expected, though not significant. This finding is not surprising because, according to previous literature (e.g. Cohen et al., 2008; Cohen and Zarowin, 2010; Roychowdhutry, 2006), real earnings management alters company's behaviour and not just their accounting records, as accrual earnings management. Thus, real earnings management may itself impact on the future profitability of the company.

The estimated coefficient of the control variable SIZE is negative, though not significant. The finding is partially consistent with Kim et al., (2003) and Ahmad et al. (2014). Larger companies might have more efficient internal control system as compared to smaller companies, and they are usually audited by a Big 4 auditor that are more likely to constrain earnings management.

Finally, the estimated coefficient of the control variable OWN exhibits a positive sign, contrary to expectation, though significant at 1% level. This result corroborates the efficient monitoring hypothesis that suggests that large shareholders reduce the scope of managerial opportunism, and this finding is consistent with Swai and Mbogela (2016). Consistent with Zang (2012), this negative relationship may also be explained by the circumstance that real earnings management is more expensive for a company than accrual earnings management, and this may reduce the probability of companies in engaging in this earnings management strategy.

Taking into account the results in equations 10 and 11 (Tables 6 and 7, respectively), it is possible to infers that Big 4 audited companies appear to have a significant lower level of discretionary accruals, measured by both AEM and REM compared to non-audited Big 4 companies.

To compare the two models (in equations 10 and 11, respectively) which differ solely in relation the dependent variable, using STATA software, the

Zellner's seemingly unrelated regression system (also named SUR system) is estimated. The SUR is a set of equations that has contemporaneous cross-equation error correlation (i.e. the error terms in the regression equations are correlated). A single regression model may contain some linear equations. In such a model it is often unrealistic to expect that the equation errors would be uncorrelated. At first look, the equations seem unrelated, but the equations are related through the correlation in the errors and then estimate the linear combinations of parameters to test the difference between each independent variable related to one of the two dependents. The not tabulated Zellner's (SUR) test shows that, in equation 10, the coefficients of the variables BIG4, LEV, TAX, ROA and OWN are statistically significant (at 1% level), meaning that these variables explain the variation in the dependent DAC. The coefficient of the variable SIZE is not statistically significant. In equation 11, the not tabulated Zellner's test shows that, except for ROA, all the variables show a coefficient statistically significant at 1% level. Comparing the findings of the two tests, it seems that the test variable BIG4 better explain the variation in the dependent variables (that, in turn, are DAC and PROD, respectively) in equation 10 and 11. These findings suggest that a Big 4 audit company are more likely to detect both accounting and real earnings management than other auditors, confirming their competence.

5.6.2. Auditor independence (H2a and H2b)

The second research hypothesis tests whether the audit opinion decision is related to earnings management. The findings are shown in Table 8. The validity of the model can be determined by examining the significance of the parameter "Prob>Chi2" (provided by STATA software) and the -2 LL (Log Likelihood) value. A significance of the parameter Prob>Chi-square ($p<0.005$) and smaller values of -2 Log Likelihood means a better fit of the model. These parameters are shown in Table 8. The model is statistically valid and reliable to predicts the probability of issuance of audit qualification.

Table 8 – Estimation results of linear panel regression model (H2a) – Equation 12

Variables Dependent: MAO1	Exp. sign	Coefficient	Std. Error	p-value	
Testing variables:					
DAC	+	5.030	0.638	0.000	***
Control variables:					
BIG4	+	1.113	0.180	0.000	***
DACBIG	+	5.878	1.139	0.000	***
ROA	+	0.006	0.008	0.432	
SIZE	-	0.074	0.066	0.266	
INVREC	+/-	-0.257	0.275	0.352	
TLTE	+/-	0.003	0.003	0.345	
LOSS	+	-0.041	0.153	0.787	
MAO2	+	2.243	0.172	0.000	***
Constant		-5.701	0.752	0.000	***
Log Likelihood: -1,333.43 Wald chi-square: 566.04 Prob>chi-square = 0.000 VIF < 2% for all variables Year control: YES					

The estimated coefficient of the test variable DAC is positive, as expected, and significant at 1% level. The positive sign of the variable suggests that auditor's decision to qualified opinion is positively related to discretionary accruals. It means that the higher the level of discretionary accruals, the greater the probability of receiving a qualified opinion. Therefore, the hypothesis H2a is supported as the variable explains the issuance of qualified opinion for materially misstated financial statements. This finding is consistent with, among the others, Francis and Krishnan (1999), Bartov et al. (2001), Chen et al. (2001), Sengupta et al. (2007), while it is not consistent with, among the other, Bradshaw et al. (2001), Butler et al. (2004), Garcia et al. (2013), and Tsipouridou and Spathis (2014).

The estimated coefficient of the control variable BIG4 is positive, consistent to expectation, and significant at 1% level. This finding, that is consistent with DeAngelo (1981b), suggests that these auditors are more likely to issue a modified audit opinion. Also the interacting control variable DACBIG4 exhibits a positive sign, as expected, significant at 1% level. This finding suggests that in the presence of a BIG 4 auditor, increase the likelihood that a modified audit opinion will be issued.

The estimated coefficient of the control variable ROE is positive, as expected, though not significant. This finding is not consistent with prior literature (e.g. Laitinen and Laitinen, 1998; Tsipouridou and Spathis, 2014; Omid, 2015). The circumstance may explain this finding that firm

profitability does not impact on the probability a MAO is issued.

The estimated coefficient of the control variable SIZE is positive, contrary to expectation, though it is not significant. This finding is not consistent with prior literature (e.g. Lin et al., 2011; Tsipouridou and Spathis, 2014; Omid, 2015). This finding suggests that the higher the firm size the higher the probability of receiving a qualified audit opinion.

The estimated coefficients of the control variables INVREC and TLTE are negative and positive, respectively, though not significant. These findings are not consistent with the prior literature (e.g. Butler et al., 2004; Carey and Simnett, 2006; Boone et al., 2010) and suggest that these variables do not impact on the probability that a MAO is issued.

The estimated coefficient of the variable LOSS is negative, though not significant. This finding, not consistent with Tsipouridou and Spathis (2014) and Omid (2015), suggests that loss recognised in a previous year does not increase the likelihood to receive a MAO,

Finally, the estimated coefficient of the control variable MAO2 is positive and significant at 1% level. This finding, consistent with the prior literature (e.g. Omid, 2015), suggests that auditors are more likely to issue qualified audit reports in year t when the company has received a qualified audit opinion in year t-1.

Table 9 exhibits the result of equation 13, testing the H2b.

Table 9 – Estimation results of linear panel regression model (H2b) – Equation 13

Variables Dependent: MAO1	Exp. sign	Coefficient	Std. Error	p-value	
Testing variables:					
PROD	+/-	1.240	0.515	0.016	***
Control variables:					
BIG4	+	1.465	0.155	0.000	***
PRODBIG	+/-	0.407	0.930	0.661	
ROA	+	-0.002	0.008	0.762	
SIZE	-	0.120	0.062	0.053	*
INVREC	+/-	-0.376	0.259	0.146	
TLTE	+/-	0.003	0.003	0.185	
LOSS	+	-0.006	0.146	0.969	
MAO2	+	2.244	0.172	0.000	***
Constant		-5.52	0.705	0.000	***
Log Likelihood: -1,427.88 Wald chi-square: 437.71 Prob>chi-square = 0.000 VIF < 2% for all variables Year control: YES					

The validity of the model can be determined by examining the significance of the parameter "Prob>Chi2" (provided by STATA software) and the -2 LL (Log Likelihood) value. A significance of the parameter Prob>Chi-square ($p<0.005$) and smaller values of -2 Log Likelihood means a better fit of the model. These pamaters are shown in Table 9. The model is statistically valid and reliable to predict the probability of issuance of audit qualification.

The estimated coefficient of the test variable PROD is positive and significant at 5% level. The positive sign of the variable means that the higher is the level of abnormal production costs the higher is the probability of modified audit opinion is issued (the dependent variable takes the value 1). This means that the hypothesis HP2b is supported as the variable explains the issuance of qualified opinion for materially misstated financial statements. This finding is not consistent with Omid (2015) and Moazedi and Khansalar (2016).

The estimated coefficient of the control variable BIG4 is positive, consistent to expectation, and significant at 1% level. This finding, which is consistent with DeAngelo (1981b), suggests that these auditors are more likely to issue a modified audit opinion. Also, the interacting control variable PRODBIG4 exhibits a positive sign, as expected, significant at 1% level. This finding suggests that in the presence of a BIG 4 auditor, increase the literature that a modified audit opinion will also be issued in the case of real earnings management.

The estimated variables ROA, INVREC, TLTE and LOSS are insignificant, suggesting that these variables do not impact on the probability a modified audit opinion is issued in this model.

The estimated control variable SIZE exhibits a positive, contrary to expectation, though significant at 10% level. This finding is consistent with prior literature (e.g. Tsipouridou and Spathis, 2014; Omid, 2015) predicting that firm size has a positive impact on the likelihood of a company receiving a modified audit opinion, as larger companies are more complex, thereby increasing the likelihood of misstatements in the accounts (Ireland, 2003). Finally, the estimated control variable MAO2 exhibits a positive, as expected, significant at 1% level. This finding, consistent with prior literature (e.g. Omid, 2015), suggests that auditors are more likely to issue qualified audit reports in year t when the company has received a qualified audit opinion in year t-1.

6. CONCLUSIONS

The majority of research initiatives in the field of auditing focus on listed companies primarily in common law environments. Prior empirical evidence investigating the quality of auditing services within the context of non-listed companies only investigate the relationship between earnings management and the quality of auditing services (e.g. Beatty and Harris, 1998; Beatty et al., 2002; Vander Bauwhede and Willekense, 2004; Coppens and Peek, 2005; Ball and Shivakumar, 2005; Burgstahler et al., 2006; Arnedo et al., 2007; Van Tendeloo and Vanstraelen, 2008; Mariani et al., 2010; Cameran and Prencipe, 2011; Bisogno, 2012). Therefore, empirical evidence of auditor independence in non-listed companies are rather scarce. Non-listed companies are characterized by different ownership, governance, financing, and management structures, as they have different auditing requirements than listed companies, thereby affecting the type and strength of agency problems (Ball and Shivakumar, 2005; Van Tendeloo and Vanstraelen, 2008; Nobes, 2010). Also, the financial statements of non-listed companies are not scrutinised as much by investors, financial analysts or regulatory authorities as they are for listed companies (Van Tendeloo and Vanstraelen, 2008). This circumstance implies that the probability of a detection of an audit failure by the public is much lower. This may be an auditor's incentive increases to perform low-quality auditing services because an audit failure detection may not threat auditor' reputation. However, investors and debtors of non-listed companies have greater demand for credible accounting information than investors and debtors of publicly traded companies (Lennox, 2005; Bharath et al., 2008) since they experience greater information asymmetries. The 23.67% of the sample firms engage a Big 4 auditor in charge of the financial auditing instead of a BSA, the statutory committee. This provide evidence that also non-listed companies suffers from agency problems: these

companies mitigate these problems by engaging a Big 4 auditor and not a different auditor (e.g. a non-Big 4 auditor or the statutory committee). This is an interesting phenomena for non-listed companies, especially if one take into account that the literature provides evidence that external audit companies (so, as a Big 4) tend to charge higher audit fees, commensurate with their reputational and industry specialization attributes (e.g. Ferguson et al., 2003; Choi et al., 2008; Francis and Wang, 2008). Therefore, this circumstance should reduce the net benefit for a non-listed company to have its financial statements audited by a Big 4.

Moreover, it is interesting to investigate if the Big 4 auditors have incentives to perform high-quality audit also in non-listed companies. Maijoor and Vanstraelen (2006) while arguing that Big 4 auditors have strong incentives to provide the same high audit quality level in different countries, their findings suggest that the limits placed by Big 4 audit companies on earnings management are not uniform across countries. Furthermore, the Scholars find no evidence of a global Big 4 audit quality effect in Europe. Therefore, the objective of this research is to investigate the audit quality in non-listed companies through the lens of the two dimensions of the audit quality (DeAngelo, 1981). The first dimension is the auditor's professional competence and ability to discover material misstatements in financial statements. The second dimension of audit quality is the auditor independence, that is its ability to report the material misstatements and/or errors in the audit opinion, issuing a qualified (or modified) auditor opinion when discretionary accruals are measured. The audit opinions were collected manually on the AIDA Database by analysing the Notes and the attached documents. These auditor judgments were classified into two main groups: modified (or qualified) audit opinion and non-modified or clean audit report. Within the first group the qualified opinion, adverse opinion and disclaimer judgements were included. Only the 4.67% of the sample firms gained a modified audit opinion in the sample period. The findings of the panel binary regressions, testing the hypotheses H2a and H2b, exhibit a positive and significant association between the modified audit opinion and the discretionary accruals, both measured by accounting and real earnings management. The analysis also exhibits a positive and significant association between the presence of a Big 4 and the issuance of a modified audit report. In order to take into accounting the independence of a Big 4 auditor a interacting variable was introduced in the regression model. This interacting variable (the association between the presence of a Big 4 auditor and of the absolute value of discretionary accruals, both accounting and real) exhibits a positive and significant sign meanings that the probability a modified audit is issued increases when a Big 4 in

engaged and accounting or real abnormal accruals are measured. Thus, taking into account these results the independence of a Big 4 could also be demonstrated in non-listed companies.

Other variables are tested in regression models to check if earnings management initiatives (H1a and H1b) or the issuance of a modified audit report (H2a and H2b) are influenced by some other characteristics related to agency problems. In particular, the findings concerning the H1a and H1b shows that earnings management initiatives (both accrual and real) are influenced by leverage but not by taxation. Probably, to avoid tax office inspection (this is more frequent in Italian non-listed companies that have to comply with the "Studi di settore") these companies engage in different strategies to reduce tax burden.

Even though stakeholders of non-listed companies rely less on high-quality financial information (Ball and Shivakumar, 2005; Van Tendeloo and Vastraelen, 2008), it is interesting to note the effort of Big 4 auditors in performing high-quality audit also in these companies. Probably, this finding may be explained by the circumstance of the close co-operation between the Big 4 auditor and the statutory committee (the BSA) required by the Italian civil law. Further, the presence of the statutory committee in charge of the administrative accounting may improve and strengthen the internal control system. In fact, Abbott and Parker (1999), investigating auditor rotation, find that the presence of an active and independent audit committees is associated with increases in audit quality at the time of auditor changes. Therefore, it is arguable that the quality of an audit performed by a Big 4 auditor, probably, it is also due to the presence of the board of statutory auditors (BSA) within the "traditional" model of corporate governance adopted by the majority of the Italian (listed and non-listed) companies (Mariani et al., 2010).

The findings of this research contribute to the literature on audit quality in non-listed companies by demonstrating that the Big 4 auditors are more likely than other auditors to detect earnings management initiatives, and to report these accounting anomalies in the audit opinion, issuing a qualified judgment.

These findings also contribute to encouraging auditors in performing high-quality audit also in non-listed companies, by exceeding the boundaries of the audit expectation gap, as the European Commission places considerable emphasis on the need for auditor independence, as reflected in the EU Auditing Directive (Council Directive 2014/56/EU).

The evidence presented in this research may also be of interest to managers, audit committees, investors, creditors, and regulators. Managers and audit committees would like to know whether the Big 4 performs higher-quality

audits also in non-listed companies. This information will help them choose an auditor to issue reliable accounting information. Investors and creditors will also be interested in the results, as this will help them assess the credibility of companies' financial reports. Regulators are also interested in whether the Big 4 accounting firms provide higher-quality audits.

The research of this work is characterised by several main limitations. A first limitation is the collection of the auditor judgement. In fact, grouping the auditor' judgments into two groups (by using a dummy variable), also the disclaimer was included in the modified audit opinion (MAO1=1) group. A second limitation of this research is the selection of the control variables, which were drawn from prior literature analysing listed companies. This may be a problem because may be high the risk that the selected variables do not affect a particular type of modification, while other variables have. A third limitation is that the accruals-based earnings management were measured by the modified-Jones model, while other studies, concerning listed companies, provide evidence that other models better measured these abnormal accruals in non-listed companies. Thus, a suggestion for further research is to test also in non-listed companies other models in detecting discretionary accruals, as the Kasnitz (1999) and the Kothari et al. (2005). Moreover, within the literature investigating non-listed companies, Burgstahler et al. (2006) and Bisogno and De Luca (2016) use the small positive earnings (the SPOS) as a proxy of earnings management. Even though the SPOSs are used to smooth earnings, probably they explain better the earnings management initiatives of Italian non-listed companies.

Further, there is evidence in the literature of a potential impact of corporate governance variables upon the degree of earnings management behaviour (both accruals and real activity-based). However, the inclusion of corporate governance variables, other than the ownership concentration, in this research was not possible due to the fact that there was no data availability for such variables for non-listed companies on AIDA Database. This database, in fact, lacks the necessary data which would have required hand collecting these variables (for example, family information or board independence). However, this would not have been possible since the analysis of this research is conducted for non-listed companies for which the corporate governance information is not mandatory. Probably, to know the corporate governance information about the corporate governance structure of these companies a survey should be conducted. Therefore, due to time and resource limitations, this would not have been possible.

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This research monograph aims to investigate audit quality in Italian non-listed companies. More specifically, it addresses the question of whether Big 4 auditors perform high-quality audit in non-listed companies. The key findings are that (i) Big 4 auditors provide high-quality audit compared to other auditors in terms of both accounting and real earnings management; (ii) such auditors are more independent than other auditors. The findings provide an analysis of the drivers of real and accrual-based earnings management, thereby producing some compelling evidence on audit quality in the context of the Italian non-listed companies.

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La passione per le conoscenze