UNIVERSITEIT TWENTE.

The effects of audit firm rotation on audit quality*: does audit firm rotation improve audit quality?*

Version: 17th of May, 2016

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Abstract

As a response to the global financial crisis, the European commission published a green paper named "Audit Policy: Lessons from the Crisis" (2010), in which the role of audit firms and the European audit policy in the financial crisis was questioned. This paper was published in order to seek consultation on subjects such as auditor independence and the audit market structure (European Commission, 2010). As a result of this consultation, one of the submitted proposals suggested that a maximum duration of the audit engagement for public-interest entities had to be established, in order to avoid situations in which the auditor's independence is compromised. As a result, a new regulatory framework on audit policy was approved in April of 2014, in which all public-interest entities will be required to rotate their audit firm every ten years (Regulation (EU) No 537/2014). This mandatory audit firm rotation stipulation of the new regulatory framework on audit policy, with the goal to improve auditor independence, has given rise to a great deal of debate on what the actual effects of this measure will be. In order to contribute to this ongoing debate, this thesis will examine the effects of mandatory audit firm rotation on audit quality for publicly listed companies.

By using the amount of abnormal working capital accruals as a proxy for audit quality, as proposed by Defond & Park (2001), a regression analysis which examines the relationship between mandatory audit firm rotation and audit quality has been performed. However, the collected dataset lacked an approximate normal distribution, which would compromise the reliability of the results. Therefore, the decision was made to explain how future researchers can assess the relationship between audit firm rotation and audit quality, as soon as the opportunity to collect a dataset which meets the required criteria presents itself. Over the financial years 2013-2014, too little audit firm rotations can be identified to perform a valid regression analysis. However, over the financial years 2026-2027, most public interest entities within the EU will have to rotate their audit firms, which presents future researchers with the ideal opportunity to collect a large enough dataset with an approximate normal distribution. With this dataset, researchers will be able to perform the proposed regression analysis, in order to determine whether the mandatory audit firm rotation requirement has actually enhanced the level of audit quality. Thus, this thesis provides future researchers with a framework on how to examine the relationship between audit firm rotation and audit quality.

Keywords: mandatory audit firm rotation, audit quality, auditor independence, abnormal working capital accruals

1. Introduction

Mainly due to several large accounting scandals that have occurred over the past few decades such as the WorldCom case (2002), the Tyco case (2002) and the well-known and widely covered Enron case (2001), the topic of audit quality and auditor independence has received a lot of attention and coverage in both the media and in political discussions. These accounting scandals which often have partly been a result of aspects ranging from misrepresentation of revenues and underreporting of costs to inflation of assets and unreported loans, have inflicted huge losses to unsuspecting investors. Such practices often have been occurring for years before they eventually surfaced and/or were reported, often due to the clever abuse of existing limitations in the General Accepted Accounting Practices (GAAP).

In order to try and protect investors from such situations in the future and also to restore the overall confidence in financial statements, the United States government approved the Sarbanes-Oxley (SOX) Act, by President Bush signing the act into law July 30, 2002. The main goal of the SOX Act was to "*protect investors by improving the accuracy and reliability of corporate disclosures made pursuant to the securities laws*" (Sarbanes-Oxley Act, 2002). For this thesis, section 203 of the SOX Act is very relevant, since it covers the aspect of mandatory auditor rotation. In the SOX act, mandatory audit firm rotation is defined as the "*imposition of a limit on the period of years in which a particular registered public accounting firm may be the auditor of record for a particular issuer*" (Section 207, Sarbanes-Oxley Act, 2002). In section 203 of the SOX act, the US regulations on auditor rotations are described as such that there is maximum period of five years in which an auditor is allowed to perform audit services for the same issuer. This stipulation is included in the act in order to improve auditor independence to ensure that audit services will remain objective. The SOX act also created The Public Company Accounting Oversight Board (PCAOB) in order to restore confidence in independent audit reports and to protect investor's interests. The PCAOB has the responsibility to inspect public accounting firms and has the authority to investigate and discipline registered public accounting firms for noncompliance with the SOX Act's regulations (GAO, 2003).

Following up to the United States' SOX Act, the European Union also responded to the accounting scandals that were uncovered, by recognizing the need for improved regulations on statutory audits and financial reporting. This recognized need was embodied by the 8th Directive on Company Law, which has been approved in 2006 (Braiotta & Zhou,

2008). This Directive provided regulations on statutory audits on aspects such as the integrity, objectivity and professional ethics of an auditor's public-interest function (Directive 2006/43/EC). The main goal of these regulations, as captured in the 8th Directive, was to improve audit quality and eventually restore the confidence of investors in European capital markets (Braiotta & Zhou, 2008). This intended improvement of audit quality will in turn contribute to the proper functioning of these capital markets, by ensuring the integrity and efficiency of financial statements (Directive 2006/43/EC). In order to improve the independence of auditors and subsequently audit quality, mandatory audit partner rotation was included in recital 26 of the 8th Directive on Company Law (Directive 2006/43/EC).

After the global financial crisis had occurred, in which numerous large financial institutions have suffered huge losses and bankruptcies, the European Commission published a green paper named "*Audit Policy: Lessons from the Crisis*" (2010), in which the role of auditors and the overall audit policies in the financial crisis were questioned. By publishing this green paper, the EC was seeking consultation and trying to spark a discussion on subjects such as the role of auditors, the independence of audit firms, the supervision of auditors and the audit market structure (European Commission, 2010). In this green paper on audit policy, several research proposals were made by the EC, ranging from requiring joint audits to requiring mandatory audit firm rotation for all public-interest entities. Mandatory audit firm rotation requires audit firms, instead of only rotating their auditing partners as was required by the 8th Directive on Company Law (European Commission, 2010), to be rotated off with other audit firms.

As a result of the EC's consultation on the topic of audit policy, a proposal on requirements regarding statutory audit, including five new regulations on audit policies was published. One of the five proposed regulations concerned the aforementioned requirement of mandatory audit firm rotation for public-interest entities by establishing a maximum duration of the audit engagement (European Commission, 2011). The reasoning behind this proposal was to address the threat of familiarity that results from a long engagement between the audited entity and its auditor. The threat of familiarity is explained by a situation in which a professional accountant becomes too sympathetic to the client's interests or too accepting of their work (IESBA, 2012). Avoiding the threat of familiarity will contribute to auditor independence and eventually to a higher level of audit quality (European Commission, 2011).

In April of 2014, the European Parliament approved a new regulatory framework on statutory audit, in which mandatory audit firm rotation for all public-interest entities was included. All public-interest entities will be required to rotate their statutory auditors every ten

years, with the exception of the situation of a tender or a joint audit (Regulation (EU) No 537/2014). In situations of a tender or a joint audit, the maximum duration of ten years may be extended up to a total period of twenty years for a tender, or twenty-four years for a joint audit (Regulation (EU) No 537/2014). For re-electing an audit firm, a mandatory cooling-off period of four years is included in regulation 537/2014 (EU). The new laws that were adopted by the regulatory framework on audit policy will apply to the first financial year, starting on or after the 17th of June, 2016. The only exception for this starting date is for the mandatory audit firm rotation stipulation, which is subject to certain transitional provisions. For example, for auditors that have been in place for more than twenty years at the entry into force of the new regulation, the audit engagement with its client cannot be renewed beyond six years after the date of entry into force of the new regulation (Directive 2014/56/EU).

The goal of this paper is to conduct evidence-based research on the actual effects of audit firm rotation on the audit quality of publicly listed firms. This thesis will contribute to the ongoing debate on whether the mandatory audit firm rotation measure, which is a part of the new EU regulatory framework on audit policy as approved by the European Commission in April 2014, is a desirable measure to enhance audit quality. Research into the field of the effects of audit firm rotation on audit quality has yielded both results supporting as well as contradicting the assumption that mandatory auditor rotation is favorable for audit quality. Mainly because there is no consensus amongst politicians, stakeholders of the audit firm industry and academic scholars on the actual effects of auditor rotation on audit quality, this research is very relevant. Since it is unclear how the new regulatory framework on audit policy will affect audit quality in practice, examining this relationship will provide new insights into the desirability of a mandatory audit firm rotation regime. The main aim of this thesis is therefore to answer the following main research question: *What are the effects of audit firm rotation on the audit quality of publicly listed companies?*

The effect of audit firm rotation on audit quality will be examined by using the data from a sample consisting of 150 of Italy's largest, non-financial, publicly listed companies, observed over the period 2013-2014. The amount of abnormal working capital accruals will be used as a proxy for measuring audit quality, as proposed by Defond & Park (2001). This proxy to measure audit quality has been chosen since the management has the most influence on such accruals (Carey & Simnett, 2006) and because using the amount of abnormal working capital accruals is argued by Defond & Park (2001) to yield more powerful results compared to using total working capital accruals. Due to the relatively small sample size, alternative methods to measure audit quality such as the Jones model (1991) and the modified Jones

model (Dechow et al., 1995) are less suitable for a research setting with a small sample, (Cameran, Prencipe, & Trombetta, 2014) and have therefore not been used in this thesis.

The second chapter of this thesis is concerned with reviewing the prior literature on the concepts of auditing, audit quality, audit firm rotation and the relation between these concepts. In the third chapter, the research design will be discussed, in which aspects such as the used hypotheses, selection criteria, sampling method, data collection and data analysis methods will be explained. The fourth chapter is reserved for the descriptive statistics of the dataset and chapter five concerns the analysis and the results of the qualitative data and discusses the key findings. The sixth and last chapter is concerned with an overview of the conclusions and the limitations of the research. Also, an additional explanation on how future research on the subject of audit firm rotation should be performed will be discussed in this chapter.

2. Literature review

This chapter will provide and discuss the concepts of auditing, auditor independence, audit quality and auditor rotation. After introducing and elaborating the key concepts and definitions that are relevant for this thesis, the arguments of the proponents and opponents of audit firm rotation will be discussed. Also, the role of the European Commission and its efforts to enhance audit quality and auditor independence will be explained. Furthermore, the relationship between audit quality and auditor rotation will be examined based on prior academic research on the subject. The findings in prior literature will later on in this paper be used to form my own expectations about the relationship between audit firm rotation and audit quality.

2.1 Auditing

According to Mautz (1964, p.1), auditing is "*concerned with the verification of accounting data, with determining the accuracy and reliability of accounting statements and reports."*. The verification of accounting data is done by extensively evaluating the to the auditor available internal and external evidence of the transactions of the company. The auditing of financial statements refers to conducting an objective evaluation of the financial statements of a company by an independent auditor. Limited liability companies' annual accounts are by law required to be audited, in order to ensure that the financial statements give a true and fair view to the users of these statements (European Commission, 2010). Although it is acknowledged that it is not reasonable to expect that the audited accounts are entirely free of misstatements, the European Commission (2010) argues that the goal of auditors is to minimize the risk that financial information is misstated. By performing the audit of a companies' financial statements, the auditor will provide stakeholders such as investors and shareholders with an opinion on the extent to which the companies' financial statements are accurately presented.

2.2 Audit quality

The definition of audit quality has been addressed and stated by several different scholars over the past decades. In order to provide a clear overview of how the concept of audit quality

has been reviewed over the past decades, an overview of the most important papers that discuss audit quality will be reviewed.

The most well-known definition of audit quality, which has been broadly accepted by scholars in the field of scientific research into the topic is the definition by DeAngelo (1981a). This definition of audit quality by DeAngelo (1981a, p. 186) is stated as following: *"The quality of audit services is defined to be 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 broadly means that audit quality depends on the probability that the auditor discovers a misstatement in a financial statement and actually reports the misstatement. DeAngelo (1981a) added to this definition that the probability of discovering such a breach depends on aspects such as the technological capabilities of the auditor and the employed procedures of the specific audit. She also argues that the probability that the auditor actually reports the discovered misstatement is a measure of the auditor's independence from the specific client. Thus, an auditor is perceived as independent when the auditor is able to withstand the client's pressure to not report the discovered misstatement (DeAngelo, 1981b). If auditors are not independent, they will be less likely to report misstatements, which negatively influences audit quality. As a result, it can be argued that the lower the degree of independence of the auditor is, the lower the quality of audit services will be.

Palmrose (1988, p.56) defines audit quality as *"the level of assurances - the probability financial statements contain no material omissions or misstatements"* and argues that a higher level of assurances corresponds to a higher quality of audit services. Being an important implication of her definition, she adds that audit failure, being a financial statement with omissions and/or misstatements, is less likely to occur when audit services are of higher quality. High quality auditors with a substantial reputation for detecting and reporting irregularities have great incentives to reduce the likelihood of audit failure in order to retain their reputation. In a situation of a litigation of an auditor, auditors therefore often try to settle the matter out of court in order to avoid damage to their reputation. She argues that audit quality is inversely related to, although seldom seen, a litigation against an auditor. Thus, when using the litigation rate as a measure for audit quality, auditors with relatively low litigation rates provide a higher quality of audit services (Palmrose, 1988).

Francis (2004, p.346) describes audit quality as *"a theoretical continuum ranging from very low to very high audit quality".* In addition to the definition, he argues that audit failures occur on the lower end of the quality continuum. According to Francis (2004), audit failures can occur as a result of two different reasons, either when the General Accepted

Accounting Principles were not applied by the auditor, or when the auditor fails to issue a qualified audit report in circumstances that require such a report. Regardless of the reason for the audit failure, in both situations, the audited financial statements will potentially mislead the users of the statements. Francis (2004) argues that the degree to which audits meet the minimal legal and professional requirements can be used as an approximation of audit quality and that audit quality is inversely related to audit failures. Thus, the higher the audit failure rate, the lower the audit quality.

2.3 Threats to auditor independence

In 1962, the American Institute of Certified Public Accountants included a phrase in their Code of Ethics, which clearly refers to the lack of a clear definition of auditor independence. By recognizing the difficulties surrounding the subject of defining auditor independence, the AICP stated that independence is "*not susceptible of precise definition*" (Antle, 1984, p.1). Although the literature does not provide a clear definition of the concept, since auditor independence is an important factor which influences audit quality (Tepalagul & Lin, 2015), it is very important to determine what threatens the degree of auditor independence. It is argued by Tepalagul & Lin (2015) that there are four main threats to auditor independence, which are client importance, non-audit services, auditor tenure and client affiliation with audit firms.

Client importance

It is perceived as such that auditors may be more susceptible to pressure from large clients because of the economic incentives they may have to retain these clients (Tepalagul & Lin, 2015). As a result from the inability to resist this pressure, auditor independence may be impaired, which can result in reduced objectivity when auditing the financial statements of the client. However, a recent study by Hope & Langli (2010) revealed that auditors that are receiving larger audit fees are not less likely to issue a modified audit report. Although there is limited evidence supporting the claim that auditor's actions are affected by client importance, the argument that Big 4 audit firms tend to be more conservative in the process of auditing large clients is generally supported (Tepalagul & Lin, 2015).

Non-audit services

Besides audit services, accounting firms often provide other financial services to audit clients, referred to as non-audit services. In situations in which the audit firm provides such non-audit services to the same client of which they assess the financial reports, there might be an decreased degree of professional skepticism and independence. There is some evidence which suggests that audit quality may be impaired as a result of auditors providing non-audit services to the same client (Frankel, Johnson & Nelson, 2002). Motivated by this belief, auditors are prohibited by the Sox-Act from providing most of these services to a client of which they are the statutory auditor (Tepalagul & Lin, 2015). As a counter-argument however, it is argued that providing these additional services may increase the auditor's client-specific knowledge, which may result in a more effective and efficient audit (Tepalagul & Lin, 2015).

Auditor tenure

Prior literature in which the relationship between auditor tenure and auditor independence has been examined has yielded mixed results. On the one hand it is argued that a longer relationship between the auditor and the client may result in an auditor that is more likely to report in favor of the management. On the other side of the debate, several researchers argue that an extended auditor-client relationship will increase the auditor's understanding of their business, which may help to increase audit quality. In general, it is concluded that long audit tenure does not impair audit quality (Tepalagul & Lin, 2015)

Client affiliation

Although there is limited evidence which supports the claim that auditor independence is compromised by the affiliation between the auditor and the client, according to Imhoff (1978), there are three aspects of the relationship between an auditor and its client that may threaten the auditor's independence. Imhoff (1978) argues these three aspects to be: (a) auditors that are viewing the client as a potential employer, (b) the relation between the auditor and the management will create a distance between the auditor and the shareholders, who are the "real employers" of the auditor, and (c) auditors may experience difficulties in maintaining independent in front of their former colleagues.

Summarizing the findings of Tepalagul & Lin (2015) on the threats to auditor independence, there is some evidence which suggests that auditor independence is compromised by the aspect of providing non-audit services, but limited evidence which

suggest the same about the aspect of client importance. The authors also argue that long auditor tenure generally does not impair auditor independence, and there are too few studies that have examined the relation between client affiliation and auditor independence to determine to what extent this aspect is really a threat.

2.4 The relation between auditor size and audit quality

DeAngelo (1981a) was one of the first researchers to find evidence which suggests that audit quality is not independent of the size of the auditor. In the meantime, several different studies have shown that Big 4 audit firms (PWC, Ernst & Young, Deloitte and KPMG) supply a higher quality of audit services than smaller audit firms. Evidence from these studies shows that Big 4 firms are sued less often (Palmrose, 1988) and less often receive sanctions by the SEC (Feroz, Park & Pastena, 1991). However, it is also argued that that these proxies are not representative for the claim that the audit reports of Big 4 firms are of higher quality, since these large audit firms have more resources in order to fight lawsuits and regulations (Francis, 2004). Broader research into this topic was done by Francis & Krishan (1999), who used other proxies for measuring audit quality than the aforementioned. These authors found evidence which suggests that Big 4 audit firms are also less conservative in issuing modified audit reports, which suggests higher auditor independence which is favourable for audit quality. Furthermore, Becker, DeFond, Jiambalvo & Subramanyam (1998) studied the relation between audit quality and earnings management and found that the income increasing discretionary accruals for the clients of larger audit firms are relatively lower than for small audit firm clients. Overall, it can be concluded that there is substantial evidence which suggests that Big 4 audit firms provide higher audit quality than non-Big 4 firms.

2.5 Audit firm rotation

The main goal of mandatory audit firm rotation is to improve audit quality by ensuring that audit services will remain objective, by enhancing the auditor's independence. The reasoning behind the idea that auditor rotation will improve audit quality is based on the assumption that by rotating auditors, excessive familiarity between the auditor and its clients will be reduced, and it will reinforce the auditor's professional scepticism **(**Regulation (EU) No 537/2014).

A distinction has to be made between the two different variants of auditor rotation,

either at the partner or at the firm level (Chen, Lin & Lin, 2008). In order to further explain the differences between both levels of auditor rotation, it will be helpful to define both variants of auditor rotation. Mandatory audit partner rotation is described as following: *"It shall be unlawful for a registered public accounting firm to provide audit services to an issuer if the lead (or coordinating) audit partner (having primary responsibility for the audit), or the audit partner responsible for reviewing the audit, has performed audit services for that issuer in each of the X previous fiscal years of that issuer."* (Section 203, Sarbanes-Oxley Act, 2002). Mandatory audit firm rotation however, is defined as the "*imposition of a limit on the period of years in which a particular registered public accounting firm may be the auditor of record for a particular issuer*" (Section 207, Sarbanes-Oxley Act, 2002). Whereas in audit partner rotation only the auditing partner in the accounting firm will be rotated from partner A to partner B, in audit firm rotation, an actual change from firm A to firm B will take place. The current regulations, as approved by the European parliament in April 2014, require that the audit firms of all public-interested entities have to be rotated every ten years, with a cooling-off period of four consecutive years (Regulation (EU) No 537/2014). Due to the subject of audit firm rotation being very relevant as a result of the newly adopted regulations, this thesis will focus merely on this level of auditor rotation, in order to determine whether the mandatory firm rotation measure is effective in achieving its intended effect.

2.6 Discussion on audit firm rotation

The new EU legislation on audit policy, in which audit firm rotation will become mandatory, has sparked a broad discussion amongst academic researchers, policymakers and audit firms. The legislation created both proponents as well as opponents of the newly introduced measure of mandatory firm rotation. Advocates of mandatory firm rotation such as the European Commission (2011) claim that auditor independence is compromised by a long-term relationship between the audit firm and the issuer and therefore argue that firm rotation is favourable for auditor independence and thus audit quality. On the other side of the debate, being one of the large stakeholders in the audit industry, audit firms seem to take a predominantly negative stance when it comes to mandatory firm rotation. For example, PWC (2013) claims that mandatory firm rotation will endanger the quality of audit as a result of the loss of company specific knowledge. Besides the loss of company knowledge, audit firm rotation will also incur additional costs for both the auditing firm and the issuer. PWC (2013)

argues that there are more effective methods to reinforce the auditor's independence such as creating an audit committee oversight, responsible for assessing the between the client and its auditor. Other alternatives with the aim to enhance auditor independence that have been mentioned, are introducing more strict regulations on the already existing audit partner rotation measure, and introducing globally consistent auditor independence requirements (Ernst & Young, 2013). However, the effectiveness of these alternative measures has not yet been examined thoroughly, and thus are not backed by any evidence-based results that suggest they will indeed enhance auditor independence.

2.7 Advantages and disadvantages of audit firm rotation

One of the commonly used arguments in favor of audit firm rotation is based upon the assumption that a long auditor tenure may cause a relationship to be established between the auditor and the issuer, which in turn possibly may compromise the auditor's independence and objectivity (Cameran et al., 2014). When the auditor's independence is compromised by a relationship between the auditor and the entity that is being audited, discovered breaches in financial statements may less likely be reported (DeAngelo, 1981a). Another argument that is often used by supporters of audit firm rotation, is that audit firm rotation avoids situations in which auditors are becoming too aligned with managers of the issuer, which in turn can compromise the auditor's independence (Jackson et al., 2008). In order to avoid such undesirable situations, it would be enhancing for the auditor's independence if there is a fixed maximum term on the period in which one auditor may be appointed to the same client (Cameran et al., 2014). Supporting this claim on independence, Adeyemi and Okpala (2011) found evidence suggesting that a longer audit firm tenure can result in a compromised auditor's independence. This claim is also supported by Ebimobowei & Keretu (2011) who found evidence in their study which suggests that the mandatory rotation of auditors improves audit quality by enhancing auditor independence and introducing a fresh look at the client's financial reporting. They argue that when auditors are rotated on a regular basis, it will help to avoid situations in which auditors are becoming too familiar with one specific client.

On the contrary however, mandatory audit firm rotation is also claimed to have less favorable effects. For example, audit firm rotation will cause a loss of client-specific knowledge to occur when one auditor is forced to resign from the audit services for the client (Jackson et al., 2008). As a result of the loss of client-specific knowledge, audit firm rotation

also requires the new auditing firm to gain knowledge on the client, which incurs additional costs for the client. According to the GAO (2003), it is estimated for most Fortune 1000 companies that the total additional costs that are incurred by the auditor selection process and additional auditor support are at least 17% of the audit fees of the initial year. As a result of these costs, it is argued by many of these Fortune 1000 companies as well as several scholars, that the costs of audit firm rotation may outweigh the benefits. Studies have also shown that the appointment of a new auditor can have other negative effects on audit quality. For example, according to Carcello & Nagy (2004) found evidence supporting this claim by concluding that in the first three years of the auditor-client relationship, fraudulent financial reporting is more likely to occur. Given the fact that mandatory audit firm rotation will cause new auditor-client relationships to be established more often, as a result of the limit on the period of years an auditor may provide audit services to the same client, the likeliness of fraudulent reporting will also increase.

2.8 The relation between audit firm rotation and audit quality

Auditor rotation has been extensively researched by scholars, resulting in several advantageous aspects as well as disadvantageous aspects of rotating auditors. In order to provide a clear view on the actual effects of auditor rotation, this paragraph will provide an overview of the most important prior evidence-based research on the subject, both supporting and opposing audit firm rotation.

Vanstraelen (2000) is one of the scholars who found evidence which suggests that auditor rotation is positively related to audit quality. This study uses the likelihood of issuing an unqualified audit report as a proxy for audit quality. The results of her study show that a long-term relationship between the auditor and it's client significantly increases the likelihood of an unqualified opinion or significantly reduces the auditor's willingness to qualify an audit report. Furthermore, the results also showed that in the first two years of the auditing mandate, auditors are more willing to issue a "clean" audit report compared to the last year of the mandate. She argues that this could be an indication that if the auditor is already aware that the mandate is ending, the auditor will be more willing to issue an 'unclean' report. Although the results support mandatory auditor rotation, she also acknowledges that given the existing adverse effects of the measure, alternative measures that enhance auditor independence should also be explored.

Kim, Lee & Lee (2015) examined whether audit quality is higher in a regime of mandatory audit firm rotation compared to a non-mandatory rotation regime. Evidence from the study shows that likelihood of an auditor issuing a going-concern opinion to financially distressed companies in a mandatory rotation setting is higher than in a voluntary rotation setting. Furthermore, the authors also found evidence which suggests that firms which were audited by mandatorily rotated new auditors have lower amounts of discretionary accruals and a higher quality of accruals than firms that were audited by a new auditor in a voluntary auditor rotation setting. By summarizing their results, Kim et al. (2015) conclude that in a regime of mandatory audit firm rotation, auditors are more likely to have a "fresh eye" and be more independent, leading to higher audit conservatism. Thus, mandatory audit firm rotation is likely to increase auditor independence and audit quality.

Hatfield, Jackson & Vandervelde (2011) focused their research on the effects of prior auditor involvement and client pressure on the magnitude of audit adjustments. In this study, the authors used proposed audit adjustments as a proxy for audit quality. The results of the study reveal that in a setting of auditor rotation, proposed audit adjustments are significantly larger than in a situation in which there is no auditor rotation required. This can be interpreted as such that auditor rotation increases auditor independence and in turn audit quality. Besides the findings on auditor independence, the authors found evidence that suggests that client pressure significantly reduces, but not eliminates, the magnitude of proposed audit adjustments.

Dopuch, King & Schwartz (2001) found similar results in favour of mandatory rotation. In their article, they investigated whether mandatory rotation and/or retention of auditors successfully increases the independence of auditors and thus audit quality, by reducing their willingness to report in favour of the management of the audited entity. Their experiment was based on the reporting behaviour of auditors, across four different regimes. The four regimes consisted of the following settings: no rotation or retention, retention only, rotation only and a regime in which rotation as well as retention is required. The results from the experiment show that in the regimes in which rotation is required, auditors are less willing to issue biased reports that are favourable for the management compared to the regimes in which no rotation is required. One can conclude from these findings that audit quality is higher in a regime in which auditor rotation is mandatory.

A recent study by Corbella, Florio, Gotti & Mastrolia (2015) examined the costs and benefits that are associated with audit firm rotation in a mandatory setting. The authors used two different measures of abnormal accruals as proxies for audit quality. The results of the

study show that audit firm rotation does have a positive association with firm rotation, but only for non-Big 4 audited clients. Thus, it can be concluded that there are some beneficial effects of mandatory firm rotation on audit quality, although only for clients that were audited by non-Big 4 audit firms. Another conclusion that is drawn from their research is that the total fees paid to the audit firms of Big 4 clients were lower, and the amount of fees paid by non-Big 4 clients did not change following the audit firm rotation. The additional costs that opponents of mandatory firm rotation claim to be generated by switching auditors are not recognized by the authors. Instead, for clients that were audited by Big 4 companies, the total audit fees that were paid to the audit firm were actually lower after the auditor rotation.

Barbadillo, Gómez-Aguilar & Carrera (2008) however, failed to find evidence supporting the arguments of proponents of mandatory firm rotation, by studying the reports of a sample of distressed companies over a nine year period. The period of nine years was divided into a period with a regime of mandatory firm rotation and a period with a regime without mandatory rotation, in order to determine the differences in audit quality. The authors found no evidence which suggest that mandatory firm rotation is associated with a higher likelihood of issuing a going concern opinion by auditors, which was used as a proxy for audit quality. The results of the study suggest that auditors are not influenced in the likelihood of issuing a going concern opinion by their incentives to retain their clients. These findings are consistent for both the regime of mandatory rotation as for the regime in which no rotation is required. Thus, no evidence was found in this study which suggests that mandatory firm rotation increases audit quality.

Furthermore, Jackson, Moldrich & Roebuck's (2008) found evidence in their study in a regime of mandatory audit firm rotation which suggests that audit quality actually increases with audit firm tenure. They used two proxies for audit quality, the propensity to issue a going concern opinion and the level of discretionary accruals. When using the going concern opinion proxy, audit quality increases with audit firm tenure. However, when using the level of discretionary accruals, audit quality is unaffected. They conclude their paper by stating that given the additional costs that are associated with switching auditors, the benefits of mandatory audit firm rotation are minimal, if there are any. Furthermore, they argue that given the additional costs of switching auditors, other initiatives that aim to enhance auditor independence and audit quality should be considered before imposing mandatory firm rotation.

Johnson, Khurana & Reynolds (2002) examined the extent to which audit firm tenure is associated with financial reporting quality, by using two different proxies for financial

reporting quality. The first proxy that is used for financial reporting quality is the value of unexpected accruals, the second proxy is the relationship between the current-period accruals and future income. The authors found evidence which suggests that short audit firm tenure of two to three years is associated with lower financial reporting quality compared to a longer audit firm tenure of four to eight years. The authors found no evidence which indicates that financial reporting quality is lower for longer audit firm tenures of nine or more years. The authors conclude that short audit tenure is related to lower audit quality and that there is no evidence which suggests that mandatory audit firm rotation enhances audit quality.

These findings are stacked by evidence provided by Chen et al. (2008), who investigated the relationship between audit firm tenure and earnings quality in a non-mandatory audit firm rotation setting. By using performance-adjusted discretionary accruals as a proxy for earnings quality, the results of the study show that requiring audit firm rotation as an addition to audit partner rotation does not improve earnings quality. Instead of this, the results are consistent with prior literature which suggests that requiring audit firm rotation in addition to partner rotation actually may have adverse effects on earnings quality. The authors conclude their research by stating that audit firm rotation, which is significantly more costly than partner rotation, is not justifiable as long as longer audit firm tenure does not negatively affect earnings quality.

These results are consistent with Cameran, Prencipe, & Trombetta's (2014), who studied how audit quality changes during the engagement period of an auditor in Italy. Mandatory auditor rotation regulations in Italy at the time of this study were such that auditors were appointed for a three year mandate, after which they could be reappointed for a maximum of two times for a total mandate of nine years. In this study, the degree of accounting conservatism was used as a proxy for audit quality. The authors argue that auditors were less conservative during the first two periods, and more conservative in the last period of their appointment. The results of their study suggest that accounting conservatism, and thus audit quality, only increases in the in the last period preceding the mandatory rotation. Thus, audit quality is likely to increase with audit tenure.

Carcello & Nagy (2004) argue that mandatory audit firm rotation may have adverse effects on audit quality. They examined the relationship between audit firm tenure and fraudulent reporting by comparing data from fraudulent firms with data from both matched non-fraudulent firms and a population of non-fraudulent firms. The results of the study indicate that in the first three years of the auditor-client relationship, fraudulent financial reporting is more likely to occur. Adding to these results, the authors failed to find any

evidence which suggests that fraudulent financial reporting is more likely to occur in situations of a long auditor-client relationship. The authors conclude their research by stating that mandatory audit firm rotation does not enhance audit quality.

These results are consistent with Ghosh & Moon (2005), who found evidence suggesting that auditor tenure improves the perceived audit quality, which makes mandatory audit firm rotation unwanted. The authors examined how investors and information intermediaries perceive auditor tenure, by using earnings response coefficients from returns-earnings regressions as a proxy for the perceived earnings quality. In general, the results indicate that investors and information intermediaries perceive audit quality as being improved by auditor tenure. Thus, requiring audit firms to rotate will cause a deterioration in the perceived audit quality of investors and information intermediaries. As an addition, they argue that imposing a maximum term in which an auditor may perform audit services for the same client may result in unintended costs for the participants of capital markets.

Myers, Myers & Omer (2003) also conclude their research by stating that mandatory audit firm rotation is not an effective measure in order to enhance audit quality, if the need for the measure is based on the assumption that long auditor tenure reduces audit quality. The authors came to this conclusion by studying the relationship between auditor tenure and earnings quality. In their study, two different measures of earnings quality, absolute abnormal accruals and absolute current accruals, were used as proxies for audit quality. The results of the study suggest that earnings quality is generally higher in situations of long auditor tenure. This confirms the claim of opponents of mandatory firm rotation, who argue that a longer auditor tenure does not cause a decrease in audit and earnings quality.

Table 1 provides an overview of the results of the discussed literature in which the relation of audit firm rotation and audit quality has been examined.

Literature overview

Author(s)	Used proxy for audit quality	Found effect of audit firm rotation on audit quality
Vanstraelen (2000)	Likelihood of issuing an unqualified audit report	**Increased AQ**
Kim et al. (2015)	Likelihood of issuing a going concern and the amount of discretionary accruals and accruals quality	**Increased AQ**
Hatfield et al. (2011)	Magnitude of proposed audit adjustments	**Increased AQ**
Dopuch et al. (2001)	Auditor independence, measured as the willingness to issue biased audit reports	**Increased AQ**
Corbella et al. (2015)	Amount of abnormal accruals	**Condition-dependent increase in AQ**
Barbadillo et al. (2008)	Likelihood of issuing a going concern opinion	**No increase in AQ**
Jackson et al. (2008)	Likelihood of issuing a going concern opinion and the amount of discretionary accruals	**No increase in AQ**
Johnson et al. (2002)	Amount of expected accruals and the relation between current-period accruals and future income	**Condition-dependent decrease in AQ**
Chen et al. (2008)	Amount of performance-adjusted discretionary accruals	**Decreased AQ**
Cameran et al. (2014)	Degree of accounting conservatism	**Decreased AQ**
Carcello & Nagy (2004)	Degree of fraudulent reporting	**Decreased AQ**
Ghosh & Moon (2005)	Earnings response coefficients of investors	**Decreased AQ**
Myers et al. (2003)	Amount of abnormal accruals and current accruals	**Decreased AQ**

Table 1: Summary of the results of prior literature examining the effects of audit firm rotation on audit quality

Summarizing the review of prior literature on the relationship between auditor rotation and audit quality, it becomes clear that rotating audit firms can have both favourable and less favourable effects. The contradicting results of the reviewed literature are most likely caused by several different aspects such as the setting in which the research has taken place, the method of research and most importantly the proxy that was used for measuring audit quality.

3. Methodology

This chapter discusses the research design that is used to conduct research on the actual effects of audit firm rotation on audit quality, in a regime in which audit firm rotation is already mandatory. By conducting a study on the data of Italian publicly listed firms over the period of 2013-2014, the research will focus on determining how the proposed proxy of audit quality is affected by the mandatory rotation of audit firms for publicly listed companies. The focus on publicly listed companies in an European setting is chosen due to the newly introduced EU regulatory framework on audit policy, in which mandatory audit firm rotation for all public-interest entities is included, which makes the subject relevant.

3.1 Research question and hypotheses

The main research question of this thesis is: *What are the effects of audit firm rotation on the audit quality of publicly listed companies?*

Sub-research question: *To what extent do the abnormal working capital accruals vary between entities that were subject to an audit firm rotation compared to entities that were not subject to an audit firm rotation?*

The amount of abnormal working capital accruals will be used as a proxy for audit quality since there is a consensus amongst scholars that this measure of audit quality provides a good indication of the degree to which management was able to manipulate the financial reports of a company (Carey & Simnett, 2006). Paragraph 3.5 explains the subject of working capital accruals more extensively, and provides additional argumentation on the decision to use this specific proxy for audit quality in this thesis. Since the topic of mandatory audit firm rotation recently received a lot of attention as a result of the newly introduced EU-framework on audit policy, examining the relation between mandatory firm rotation and audit quality will provide evidence on the actual effects of the measure, and contribute to the ongoing debate on its effectiveness. The examination of this relationship will be performed by comparing the amount of abnormal working capital accruals of companies that have been subject to an audit firm rotation, to companies that have retained the same auditor over the same period.

After summarizing the results of prior literature in table 1, it can be concluded that the findings on the relationship of audit firm rotation and audit quality are very mixed. Several

studies have provided evidence for the claim that audit firm rotation enhances audit quality, whereas other studies suggest the exact opposite. Based on the literature review however, my personal expectation is that an audit firm rotation will actually influence the amount of abnormal working capital accruals, and thus audit quality. This belief is mainly motivated by the findings of Carcello & Nagy (2004), who found evidence which suggests that fraudulent reporting often occurs in the first years after an audit firm rotation has occurred. This fraudulent reporting following up to an audit firm rotation is often embodied by reporting incorrect amounts of working capital accruals, due to the fact that these accruals are most susceptible to management manipulation (Carey & Simnett, 2006). This expectation is reflected in hypothesis H1. Because of the fact that a new auditor has no/little client-specific knowledge in the first year after the rotation, the expectation is that the audit quality in the year after the rotation has occurred will be lower than in the year before the rotation. This decrease in audit quality, indicated by an increased level of abnormal working capital accruals, is reflected in hypothesis H2. Thus, the following two hypotheses will be used in order to test the relationship between audit firm rotation and the level of audit quality:

H1: *Audit firm rotation influences the level of abnormal working capital accruals*
H2: *Audit firm rotation increases the level of abnormal working capital accruals*

3.2 Research setting

In determining the setting of the research for this thesis, one of the most important conditions was to use data from a setting in which mandatory audit firm rotation has already been adopted. Many prior studies on the subject of whether mandatory firm rotation is beneficial for audit quality, have been conducted in a non-mandatory firm rotation setting. These studies have arguably therefore not yielded representative results which can be generalized to a mandatory setting. The reason for this lack of generalization being, that the incentives to switch audit firms in a setting in which audit firm rotation is not mandatory but voluntary, can be for diverging reasons. Examples of reasons for a voluntary auditor switch can be factors such as the level of audit fees, behavioral reasons or audit service quality (Fontaine, Letaifa & Herda, 2013). When an audit firm provides a low level of audit quality, this could be an incentive for a client to voluntarily switch auditors. Therefore, an identified increase in audit quality after an auditor rotation in a voluntary setting has taken place, can also be the result of

the fact that the audit quality was low in the first place. Thus, studies that support mandatory firm rotation based on evidence which suggests that audit quality has increased after an audit firm rotation has taken place in a non-mandatory setting often omit to consider the initial incentives to switch auditors. To further substantiate this regime-related condition, in a voluntary auditor rotation, the auditor isn't aware of the fact that they will be replaced by another auditor. Whereas in in a mandatory setting, auditors are aware of the fixed period after which they will be rotated off. Research has shown that when auditors are aware of the fact that their mandate will end, the degree of independence in reporting will be influenced as a result of this knowledge (Vanstraelen, 2000).

Several possibilities have surfaced in the process of determining which country to gather the required data for the research from. After researching the different countries in which a mandatory audit firm rotation setting currently exists, India, Brazil and Italy surfaced as being the main candidates. European countries in which mandatory firm rotation has been adopted in the past such as Spain and Austria, were excluded due to the fact that these countries have already abolished the rotation requirement, mainly due to the lack of cost-effectiveness of the measure (Harris & Whisenant, 2012). However, due to the substantial differences in culture and legal regimes, India and Brazil were also excluded as candidates because of the difficulties that will occur in the generalization of results to a European setting. As a result, the Italian setting, in which mandatory audit firm rotation has already been implemented since 1975 (Harris & Whisenant, 2012) will provide better generalization possibilities due to the more comparable European culture and legal regime. Given the already existing mandatory rotation regime and the availability of sufficient information to accurately identify the auditing firms and therefore audit firm rotations, the decision to use data from Italian listed companies for the research was made.

3.3 Regulations on mandatory audit firm rotation in Italy

The initial version of the mandatory audit firm regulation in Italy as introduced in 1975 was as such that audit firms were appointed for a period of at least three years (Presidential Decree D.P.R. 136/1975). After the three year period had ended, the shareholders had the possibility to re-appoint the auditor for another period of three years. The maximum term in which an auditor was allowed to provide audit services to the same client were three periods of three years, which makes a total mandate of nine years. After the maximum appointment term of

nine years was reached, the audit firm was required to be rotated of with another audit firm. After the two re-appointments, the regulations required a cooling-off period of five consecutive years.

In December of 2003, one of Italy's largest companies by the name of the Parmalat Group, entered bankruptcy protection after information was made public which stated that around nine billion dollars were missing from the company's accounts (Segato, 2005). Parmalat's investors who bought shares and bonds, based on incorrect and false information, suffered substantial losses as a result of the fraudulent reporting of the company. The two audit firms that were responsible for auditing the financial statements of Parmalat during the period in which the fraud occurred, as well as Bank of America were put on trial as a result of the scandal going public (Segato, 2005). The unveiling of the Parmalat scandal, which has been referred to as "Europe's Enron" due to its huge impact on the country's economy (The Economist, 2003), triggered new discussions on the role of audit firms and the regulatory framework on auditor rotation in Italy.

Partly as a result of the unveiling of the Parmalat scandal, during the period 2013-2014, over which the observations that are used in this thesis are made, the Italian regulations on mandatory audit firm rotation differentiated from the initial requirements from the 1975 regulations. Since 2010, the requirements were changed to a situation in which audit firms are appointed for a fixed period of nine years, with no possibility of re-appointment after these nine years, instead of the prior maximum of three periods of three years rule (Legislative Decree No. 303/2006). Besides the fixed maximum term of nine consecutive years in which an audit firm may be the auditor for the same client, the new regulation also included a change in the required cooling-off period, from five to three consecutive years.

3.4 Sample and selection

The initial sample that will be used for this research will consist of the 150 largest publicly listed, non-financial companies within Italy, observed over the period 2013-2014. In the process of sample selection it is very important to determine which firms are relevant for this research and which ones have to be excluded. After collecting the initial sample, specific firms will be excluded from the sample in situations in which the auditor cannot be identified from the annual report. Also, all financial firms (i.e. banks, insurance companies, pension funds) will be excluded from the sample due to their substantially different asset base and

financial structure from the other companies in the sample (Carey & Simnett, 2006). When computing the abnormal working capital accruals, these structural differences of financial firms make them non-comparable to the rest of the sample. Therefore, including data of financial firms in the sample will yield unrepresentative results. Therefore, this research will solely be based upon non-financial, publicly listed firms in Italy. Besides financial firms and firms in which the audit firm is unidentifiable from the annual report, firms on which there is insufficient financial information available in order to compute the abnormal working capital accruals and the proposed control variables will also be excluded from the sample.

The tables 2 and 3 provide information on the used sample and the excluded companies as a result of the proposed exclusion criteria, as well as the number of audit firm rotations that were identified between 2013 and 2014.

Sample overview

Criteria	Companies
Initial sample of non-financial firms	150
Excluded due to the inability to identify the audit firm	4
Excluded due to insufficient financial information required to calculate AWCA	15
Excluded due to insufficient information required to calculate control variables	9
Total sample	**122**

Table 2: The used sample of Italian non-financial, publicly listed companies

Audit firm rotation overview

Criteria	Companies
No audit firm rotation (AR=0)	111
Audit firm rotation (AR=1)	11
Total sample	**122**

Table 3: Overview of the identified audit firm rotations over the period 2013-2014

3.5 Variables

This paragraph discusses the variables that are used for testing the proposed hypotheses on the relationship between audit firm rotation and audit quality. First, the variables are introduced, after which the used proxy for the variable is explained.

Dependent variable: Audit quality, measured as the amount of abnormal working capital accruals (Defond & Park, 2001)
Audit quality, as defined by DeAngelo (1981a, p.186) is *"The quality of audit services is defined to be the market-assessed joint probability that a given author will both (a) discover a breach in the client's accounting system, and (b) report the breach."*

For this research, audit quality will be measured as the amount of abnormal working capital accruals, as proposed by DeFond & Park (2001). In estimating the amount of abnormal accruals, the sample size is of great importance. The smaller the sample size, the greater the impact of one observation on the result will eventually be. As a result, the usefulness of models that are used in order to predict the amount of accruals are significantly affected by the sample size (Meuwissen, Peek, Moers & Vanstraelen, 2013). Models such as the Jones model (Jones, 1991) and the Modified Jones model (Dechow et al., 1995) are therefore not usable due to the limited amount of observations in this research (Cameran et al., 2014). In order to avoid a situation in which the limited sample size will cause the results of the estimated accruals to be unrepresentative, the amount of abnormal working capital accruals (DeFond & Park, 2001) will be used instead.

Working capital accruals is the change in non-cash working capital accounts such as inventories, accounts receivables and accrued expenses (DeFond & Park, 2001). The amount of abnormal working capital accruals is the difference between the realized working capital and an expected level of working capital that is required to support the current sales level (Carey & Simnett, 2006). Carey & Simnett (2006) used an examination of the signed and absolute amount of abnormal working capital accruals as a measure for audit quality in their study, which provides an indication to what extent the management was able to influence these accruals. Using the amount of abnormal working capital accruals as a proxy for audit quality, is argued by DeFond & Park (2001) to yield more powerful results compared to using total (normal plus abnormal) working capital accruals. The decision to use working capital accruals instead of total accruals is also supported by the fact that previous research has

suggested that the management has the most influence on such accruals (Carey & Simnett, 2006). It is argued that a large amount of abnormal accruals is indirect evidence of lower earnings quality and thus also lower audit quality (Francis & Yu, 2009). The absolute amount of abnormal working capital accruals will be scaled by the average total assets of the period of observation as proposed by Myers et al. (2003), in order to account for size differences of the firms in the sample.

The amount of abnormal working capital accruals is calculated as following:

$AWCA_t = WC_t - (WC_{t-1} / S_{t-1}) * S_t$

t = the year, t-1 refers to the previous year

WCt = the non-cash working capital in the current year, computed as: (Current assets – cash and short-term investments) – (Current liabilities – short-term debt)

WCt-1 = the non-cash working capital in the previous year

St = the sales in the current year

St-1 = the sales in the previous year

Independent variable: Audit firm rotation

Audit firm rotation, assuming a mandatory setting, is defined as an "*imposition of a limit on the period of years in which a particular registered public accounting firm may be the auditor of record for a particular issuer*" (Section 207, Sarbanes-Oxley Act, 2002). Determining whether an audit firm rotation has occurred will be done by hand, by comparing the audit firm responsible for auditing the annual report of 2013 to the auditing firm responsible for auditing the annual report of 2014. The observed rotations will be used for testing the expected relationship between the firm rotations and the abnormal working capital accruals for 2013 and 2014, by performing a multiple linear regression analysis on the gathered data.

Control variables

Several control variables are included in this research in order assure that no other variables than the variables of interest will influence the results. The following control variables from prior research (Jackson et al., 2008, Carey & Simnett, 2006) will be used: BIG4; whether a firm's financial statements have been audited by a Big-4 audit firm or not, SIZE; measured in

the natural logarithm of total assets, LEVERAGE; measured as the ratio of total liabilities to total assets, RETURN; measured by the return on assets, and GROWTH; measured by the change in sales compared to the prior year, divided by the sales from the prior year. The variable BIG4 is included to control for differences in audit quality, since Big-4 audit firms provide a higher quality of audit services than non-Big-4 firms (Palmrose, 1988; Feroz, Park & Pastena, 1991; Tepalagul & Lin, 2015). SIZE is included as a control variable because larger clients will have more assets to sell in the case that they will experience financial distress (Jackson et al., 2008) and because larger companies have greater negotiation power and are less likely to go bankrupt (Carey & Simnett, 2006). The natural logarithm of the total assets will be used instead of the absolute amount of total assets, in order to transform the otherwise skewed values into approximately normally distributed values. LEVERAGE (the ratio of total liabilities to total assets) is included as a control variable, because high levels of leverage indicate a higher level of risk (Jackson et al., 2008; Carey & Simnett, 2006). The variable RETURN (return on assets) is included as a market based measure of risk and firm performance (Carey & Simnett, 2006). The last control variable, GROWTH is used as an additional measure of firm performance, measured by using the change in sales compared to the prior year, divided by the sales from the prior year. Table 4 summarizes the variables which are used in the analysis.

Variables overview

Variable	Description	Measured as
AQ	Audit quality	Amount of abnormal working capital accruals, scaled by average total assets
AR	Audit firm rotation	Whether an audit firm rotation occured between 2013 and 2014
BIG4	Audited by Big-4 firm	Audited by Big-4, or non Big-4 audit firm
SIZE	Size of the company	Natural logarithm of total assets
LEVERAGE	Degree of debt financing	Ratio of total liabilities to total assets
RETURN	Return on assets	Net income divided by total assets
GROWTH	Sales growth	Change in sales compared to the prior year, divided by the sales from the prior year

Table 4: Overview and description of the used variables in the analysis

3.6 Data collection

Since there is no database in which auditor rotations are collected, information on whether an audit firm rotation has taken place will be collected by hand from the annual reports of the specific firms in question. The financial statements which are required in order to compute the amount abnormal working capital accruals as the proposed measure of audit quality as well as the control variables, are derived from the ORBIS database by Bureau van Dijk. The ORBIS database provides the possibility to accurately determine which criteria a search query has to fulfill. By altering the search query in such a way that only firms from specific industries are displayed, it was relatively easy to gather the sample of publicly listed, non-financial firms in Italy. Information on relevant regulations will be derived from several sources such as the EU website and prior published literature on the subject. Other literature sources that will be used in this thesis mainly concern academic papers that relate to the theoretical background and previous research on auditor rotation and audit quality. All sources that are used to derive information and data from are included in the bibliography.

3.7 Data analysis

The analysis of empirical data with the main focus to measure the effects of audit firm rotation on audit quality, by using the amount of abnormal working capital accruals as a proxy for audit quality, will be executed by performing a multiple linear regression analysis. This test will be used in order to estimate whether there is a significant relationship between the observed variables in the dataset. Thus, performing the regression analysis will predict the value of the dependent variable (audit quality, measured as the amount of abnormal working capital accruals) based upon the value of the independent variable (whether an audit firm rotation has occurred). In the context of this research, regression analysis is used to determine whether audit quality has increased, decreased or remains unchanged after an audit firm rotation has taken place. The following regression model of which the used variables are explained in table 4, will be used in order to test the effects of audit firm rotation on audit quality:

$$AQ_t = AR + \beta 1\ BIG4_t + \beta 2\ SIZE_t + \beta 3\ LEVERAGE_t + \beta 4\ RETURN_t + \beta 5\ GROWTH_t$$

4. Descriptive statistics

This chapter summarizes the descriptive statistics of the collected dataset and the identified audit firm rotations in the sample. Table 5 provides an overview of the descriptive statistics of the sample, which includes the number of observations, the means, the standard deviations and the minimum and maximum values of each variable. This table is merely included in the report in order to provide an orderly summary of the data, and to clarify on which data the statistical analysis will be performed. The data has been split into the two different years of observation in order to provide a more detailed overview of the dataset, as well as showing the differences between 2013 and 2014, over which the observations have taken place.

Dataset overview

Variables	Observations	Mean	Std. Deviation	Minimum	Maximum
AQ2014	122	-0,015	0,076	-0,566	0,153
AQ2013	122	-0,012	0,046	-0,212	0,145
AR	122	0,090	0,288	0	1
BIG4.2014	122	0,934	0,249	0	1
BIG4.2013	122	0,926	0,262	0	1
GROWTH2014	122	-0,104	0,195	-0,557	1,442
GROWTH2013	122	0,001	0,146	-0,569	0,475
LEVERAGE2014	122	0,636	0,173	0,182	1,015
LEVERAGE2013	122	0,648	0,171	0,195	1,109
RETURN2014	122	0,023	0,058	-0,130	0,313
RETURN2013	122	0,008	0,081	-0,547	0,245
SIZE2014	122	14,129	1,667	11,451	19,125
SIZE2013	122	14,232	1,659	11,541	19,236

Table 5: Summary of the dataset

Table 6 shows the number of identified audit firm rotations over the period 2013-2014, as well as the mean values and the standard deviations of the observed audit quality in 2014, divided into firms that were subject to an audit firm rotation and firms that did not switch audit firms. The data in table 6 shows that of the 122 publicly listed firms in the sample, only 11 (9%) firms have switched their auditing firm between the financial years 2013 and 2014, and 114 (93,4%) firms have been audited by a Big-4 audit firm. Of all the firms in the sample,

there was not one firm which rotated audit firms before the maximum mandate of 9 years had expired. This suggests that all of the identified audit firm rotations have been mandatory instead of voluntary. The reasoning behind this phenomenon could possibly be explained by the argument that switching audit firms is very costly and causes firm-specific knowledge to be lost (Jackson et al., 2008). After an auditor has been in place for several years, the auditor will gain more client-specific knowledge, and will have a better understanding of the client's processes, areas of concern and risks. This is consistent with my own expectations which I formed during several days on which I was invited to come along with an audit team of a local audit firm. The process of selecting and especially the supporting of a new auditor can be very time-consuming and thus costly, since the client has to invest additional time in the new auditor in order to explain and clarify certain aspects in the reporting of the firm, which would not have been necessary if the same auditor would have been retained.

Overview audit quality 2014

Condition	Observations	Mean	Std. Deviation	Std. Error Mean
No audit firm rotation (AR=0)	111	-0,0102	0,0589	0,0056
Audit firm rotation (AR=1)	11	-0,0651	0,1681	0,0507

Table 6: Descriptive statistics of AQ2014 under two conditions

5. Results of data analysis

After having collected and observed all the required data in order to perform regression analysis, several indications pointed towards the fact that the dataset was lacking certain important conditions which are required to perform a valid regression analysis. When the dataset was exported to SPSS, several tests were used to determine whether the data in the sample was normally distributed. After having performed several tests in order to examine the normality of the sample, i.e. Kolmogorov-Smirnov and Shapiro-Wilk test, and having checked the skewness and kurtosis of the data, the conclusion that the dataset lacks normality was drawn. Given the lack of normally distributed data, the observed data is therefore not suitable for performing a valid regression analysis. The lack of normality is caused by the relatively small amount of observed audit firm rotations. At the time of the observations in this study, Italian law required publicly listed firms only to rotate their auditing firm every nine years. Therefore, the chance of identifying an actual rotation over the years 2013-2014 is relatively small, which is reflected in the amount of identified audit firm rotations.

Since the conclusion was drawn that the data was not normally distributed, and therefore is not suitable for regression analysis, the different possibilities of dataset transformation were explored. The commonly used method to transform the observations into a more usable dataset, is to normalize the data. Although normalization of the dataset has several advantages in terms of the increased amount of parametric tests that become available, the results will be less reliable compared to a naturally normally distributed dataset, due to the small number of identified audit firm rotations in the sample. The idea of scaling the variables in the dataset in order to make the dataset usable for regression analysis has also been briefly discussed in the process of determining the usability of the dataset. However, it became clear that it is very difficult to efficiently scale the amount of abnormal working capital accruals, due to the fact that the mutual differences between the observations are relatively small, especially around the mean value. This situation is graphically displayed in the figures 1 and 2, for AQ2013 and AQ2014.

Dataset distribution

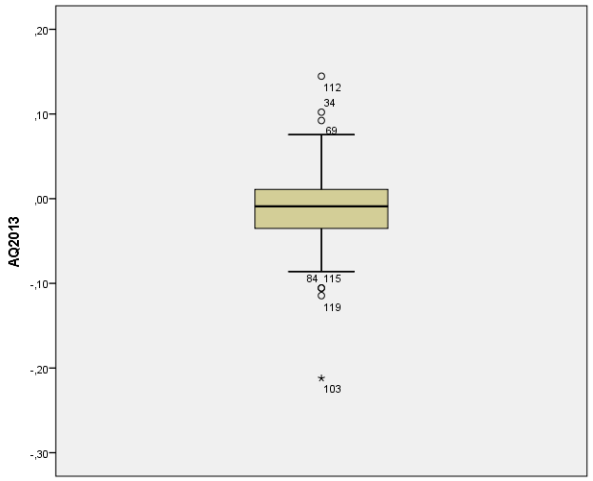

Figure 1: Distribution of AQ2013
*Extreme value = **

Dataset distribution

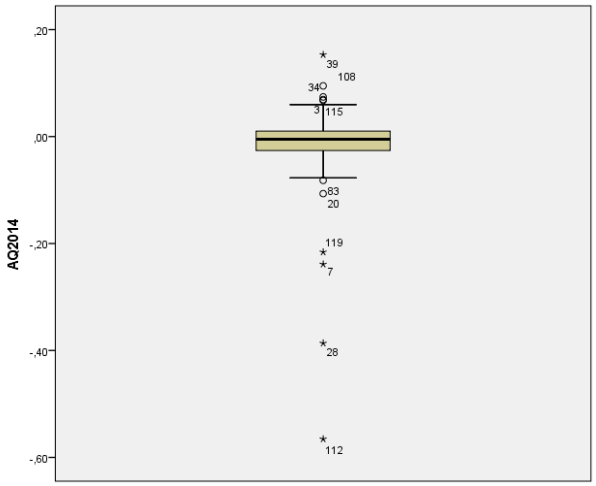

Figure 2: Distribution of AQ2014
*Extreme value = **

Due to this problematic distribution, it becomes subjective whether the amount of abnormal working capital accruals is small, medium or large. Especially the extreme outliers of the data will substantially influence the process of determining the scales. Also, since the number of identified audit firm rotation is relatively small in this sample, the influence of one extreme observation will have substantial effects on the outcomes, which is not favorable for the reliability of the results. Performing non-parametric tests which don't require certain distribution conditions, does provides some evidence on the effects of audit firm rotation on audit quality. However, due to the fact that non-parametric tests provide less powerful results than parametric tests, testing the hypotheses will not yield results which are reliable enough to confirm or reject the stated hypotheses about the effect of audit firm rotation on audit quality, let alone provide generalizability of the results. Although the current regime of audit firm rotation is not yet able to provide suitable data for performing a regression analysis, in order to provide future researchers with a format on how to examine the relationship between audit firm rotation and audit quality, this paragraph will discuss and exemplify the initially intended statistical research methods for this thesis and thus for future research.

According to the performed independent samples t-test, of which the results are displayed in table 7, there appears to be no significant difference (p=0,307) between the mean value of audit quality in 2014 for firms that switched audit firms between 2013 and 2014 compared to firms which have retained the same audit firm. However, the main limitation in this test is the lack of a normal distribution and the small amount of AR=1 compared to AR=0, which compromises the extent to which the results of the test are valuable enough to base conclusions on.

Independent samples t-test

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	**Sig.**	**t**	**df**	**Sig. (2-tailed)**
AQ2014	Equal variances assumed	9,012	0,003	2,331	120	0,021
	Equal variances not assumed			1,074	10,244	0,307

Table 7: Descriptive statistics of the independent samples t-test for AQ2014

In order to test the linear relationship between the dependent variable audit quality and the independent variable audit firm rotation and the suggested control variables, a multiple linear regression analysis will be performed. The purpose of the linear regression analysis is to predict the value of the measured audit quality, based upon the values of the independent variables audit firm rotation and the five control variables. In order to examine the effect of the independent variables on the dependent variable AQ2013, the following regression model will be used:

$$AQ2013 = \beta 0 + \beta 1\ BIG4.2013 + \beta 2\ SIZE2013 + \beta 3\ LEVERAGE2013 + \beta 4\ RETURN2013 + \beta 5\ GROWTH2013$$

Table 8 provides an overview of the results of the linear regression model for the audit quality in 2013. The smaller the significance level, the smaller the chance of being wrong when stating that the results are significant. Because standard errors are larger in small datasets such as this one, a p-value of <0.10 will still be interpreted as significant. The results show that the F-statistic of 6,947 is significant at the 1% level, and the adjusted R-square is 19,7%. The interpretation of these values for 2013 is not relevant, since the regression model for this year does not take into account the effect of audit firm rotations, whereas the regression model for 2014 does. The coefficients of the independent variables BIG4, SIZE, RETURN are positive and significant and the 5% level, suggesting that audit quality is higher for firms that have been audited by Big-4 auditors, larger size firms and firms with a higher return on assets. The finding that large size firms experience a higher level of audit quality could possibly be explained by the claim that large audit firms are assumed to have more resources to conduct tests with, and therefore provide a higher level of audit quality (Dopuch & Simunic, 1982).

The coefficient of the variable LEVERAGE is negative however not significant, which provides insignificant evidence suggesting that firms with a higher level of leverage experience lower audit quality. On the other hand, the coefficient for the variable GROWTH is negative and significant at the 1% level, suggesting that audit quality is lower for firms with higher levels of sales growth.

Linear regression results for AQ2013

Independent variables	Coefficient	P-value
BIG4.2013	0,032	0,029**
SIZE2013	0,005	0,048**
LEVERAGE2013	-0,030	0,224
RETURN2013	0,140	0,013**
GROWTH2013	-0,100	0,000***
Constant	0,060	0,833

Observations	F-statistic	Adjusted R Square
122	6,947***	0,197

Table 8: Linear regression results for the dependent variable AQ2013
*Significant at 1% level = ****
*Significant at 5% level = ***
*Significant at 10% level = **

For testing the effects of the independent variables on the audit quality for 2014, a slightly altered version of the regression model for AQ2013 will be used. Since the main interest of this thesis is to determine what the effects of audit firm rotation on audit quality are, the variable audit firm rotation (AR) will be included in the regression model for the audit quality of 2014. Because audit firm rotations were only collected over the period 2013-2014 and not over 2012-2013, the variable AR has been excluded from the regression model for the dependent variable AQ2013. For examining the effect of the independent variables on the audit quality in 2014, the following regression model will be used:

$$AQ2014 = AR + \beta 1\ BIG4.2014 + \beta 2\ SIZE2014 + \beta 3\ LEVERAGE2014 + \beta 4\ RETURN2014 + \beta 5\ GROWTH2014$$

The results of the linear regression model which examines the audit quality in 2014 are summarized in table 9. The F-statistic of the model is 4,318, which is significant at the 1% level. The adjusted R-square for this regression model is 14,1%, which suggests that just

14,1% of the variance in audit quality is explained by the independent variables in the model. The coefficients of the independent variables AR, BIG4, SIZE, LEVERAGE and RETURN are positive, however not significant. The independent variable GROWTH is the only variable which shows a significant result, suggesting that audit quality is higher for firms with a higher level of sales growth. Overall, it can be argued that there is no significant evidence which suggests that audit firm rotation, as well as the other independent variables has positively influenced audit quality in 2014. Concluding the results, the linear regression analysis provides no significant evidence which suggests that audit firm rotation improves audit quality. However, since the regression analysis as performed in this paragraph is based on data which doesn't meet the conditions for performing such a parametric test, neither accepting or rejecting the hypotheses will have any real value. Although the current data does not meet the linear regression conditions, based on the results of the proposed linear regression model, future researchers will be able to accept or reject the stated hypotheses predicting the effect of audit firm rotation on audit quality, and thus make claims about whether the measure successfully enhances audit quality.

Linear regression results for AQ2014

Independent variables	Coefficient	P-value
AR	0,023	0,155
BIG4.2014	0,026	0,887
SIZE2014	0,004	0,947
LEVERAGE2014	0,041	0,516
RETURN2014	0,125	0,414
GROWTH2014	0,034	0,000***
Constant	0,060	0,833

Observations	F-statistic	Adjusted R Square
122	4,318***	0,141

Table 9: Linear regression results for the dependent variable AQ2014

*Significant at 1% level = ****

*Significant at 5% level = ***

*Significant at 10% level = **

Please note that the results of the regression analysis for the variables AQ2013 and AQ2014 are merely being presented in order to guide future research into the relationship between mandatory audit firm rotation and audit quality. The results have no real practical implications, since the regression analysis has been performed on a dataset which does not meet the critical conditions of a regression analysis.

6. Conclusion

After the European Parliament approved the new regulatory framework on audit policy in April of 2014, the measure of mandatory audit firm rotation for all public-interest entities caused a lot of discussion amongst politicians, policymakers, researchers and stakeholders of the audit industry. The supporters of mandatory audit firm rotation argue that a long-term relationship between the audit firm and its client compromises the auditor's objectivity, and thus negatively influences audit quality. On the other side of the debate, the opponents of mandatory audit firm rotation argue that switching auditors will cause client-specific knowledge which reduces audit quality and incurs additional costs for switching auditors.

The initial objective of this thesis was to determine what the effects of the newly introduced measure of mandatory audit firm rotation are on the measured audit quality by providing evidence from a regime in which mandatory audit firm rotation already exists for many years. The initial dataset which was to be used for this research consisted of 150 Italian, non-financial, publicly listed companies. However, due to the relatively small amount of observed audit firm rotations in the sample, combined with the lack of a normal distribution of the dataset, the assumptions for performing powerful parametric tests such as a linear regression analysis were not met. As a result, testing the stated hypotheses about the expected relationship between the variables audit firm rotation and audit quality became technically impossible and thus, conclusions based on strong evidence can't be drawn yet. Although several prior studies have attempted to draw conclusions based on datasets with similar limitations, sometimes by heavily transforming the data to make it suitable for regression analysis, the results of these studies are therefore arguably questionable. By not wanting to compromise the reliability of the results, no attempt to reject or accept the stated hypotheses has been made. Instead, the decision was made to discuss the linear regression model in order to exemplify the intended research method, which as soon as suitable data presents itself will function as a format for future research into the effect of mandatory audit firm rotation on audit quality.

6.1 Future research

Although the collected dataset is not suitable for performing a regression analysis, this thesis will be helpful for future research into the topic of audit firm rotation, by having described

how future research can be performed effectively. Since the European Union will require all public entities to rotate their auditors every ten years from the financial year staring on/after the 17th of June (Regulation 537/2014), the amount of audit firm rotations that will occur in the future will be substantially larger than under the current regime. Because the new EU regime requires audit firms to be rotated off after ten years for all public-interest entities, the first mandatory rotations under the new regulatory framework will occur between the financial years of 2026 and 2027. This will result in a relatively large amount of audit firm rotations that will be occurring over these years, which will provide future researchers with the possibility to collect a sufficiently large enough dataset with an approximate normal distribution. When these requirements are met, a reliable regression analysis which examines the relationship between audit firm rotation and audit quality can be performed. If this future research will be extended by collecting data over a longer period of time, both prior to and after the audit firm rotation, the opportunity emerges to also examine the longevity of the positive/negative effects of the rotation on audit quality.

It will also be interesting for future research to broaden the research area by including data from several different countries within the EU, instead of only using data from a single country like in this study. Due to the cross-country differences in legal regimes and culture, the results may differ between countries and therefore compromise the generalizability of the results. Over the period of observation however, Italy was the only EU-country in which a regime of mandatory audit firm rotation existed, which is the reason for using this research setting for this thesis. However, since the first large wave of mandatory audit firm rotations will take place over 2026-2027 for most public interest entities within the EU, there will be sufficient cross-country data available to perform such a broader research, which will also improve the generalizability of the results. There will be occurring some mandatory audit firm rotations before the years 2026-2027 for firms of which the auditor has been in place for more than eleven, and for more than twenty years, as a result of certain transitional arrangements (Directive 2014/56/EU). However, this amount of rotations will be relatively small compared to the larger wave that will occur between 2026 and 2027 for firms with audit engagements of less than eleven years, which most likely will result in a relatively small dataset with the same lack of normal distribution. Therefore, the larger wave of audit firm rotations over the years 2026-2027 will provide researchers and policymakers with the ideal opportunity to determine whether the new EU regulatory framework on audit policy, which requires mandatory audit firm rotation, has been an effective measure for enhancing audit quality within the EU.

7. References

Adeyemi, S. B., & Okpala, O. (2011). The impact of audit independence on financial reporting: Evidence from Nigeria. *Business and Management Review*, *1*(4), 9-25.

Antle, R. (1984). Auditor independence. *Journal of accounting research*, 1-20.

Barbadillo, E., Gomez-Aguilar, N., & Carrera, N. (2009). Does mandatory audit firm rotation enhance auditor independence? Evidence from Spain. *Auditing: A Journal of Practice & Theory*, *28*(1), 113-135.

Becker, C. L., DeFond, M. L., Jiambalvo, J., & Subramanyam, K. R. (1998). The effect of audit quality on earnings management*. *Contemporary accounting research*, *15*(1), 1-24.

Braiotta, L., & Zhou, J. (2008). An exploratory study of the effects of the European Union 8th Directive on Company Law on audit committees: Evidence from EU companies listed on the US stock exchanges. *Advances in Accounting*, *24*(2), 262-271.

Cameran, M. (2005). Audit fees and the large auditor premium in the Italian market. *International Journal of Auditing*, *9*(2), 129-146.

Cameran, M., Prencipe, A., & Trombetta, M. (2014). Mandatory Audit Firm Rotation and Audit Quality. *European Accounting Review*, (ahead-of-print), 1-24.

Carcello, J. V., & Nagy, A. L. (2004). Audit firm tenure and fraudulent financial reporting. *Auditing: A Journal of Practice & Theory*, *23*(2), 55-69.

Carey, P., & Simnett, R. (2006). Audit partner tenure and audit quality. *The Accounting Review*, *81*(3), 653-676.

Chen, C. Y., Lin, C. J., & Lin, Y. C. (2008). Audit Partner Tenure, Audit Firm Tenure, and Discretionary Accruals: Does Long Auditor Tenure Impair Earnings Quality?*. *Contemporary Accounting Research*, *25*(2), 415-445.

Corbella, S., Florio, C., Gotti, G., & Mastrolia, S. A. (2015). Audit firm rotation, audit fees and audit quality: The experience of Italian public companies. *Journal of International Accounting, Auditing and Taxation*, *25*, 46-66.

DeAngelo, L. E. (1981a). Auditor size and audit quality. *Journal of accounting and economics*, *3*(3), 183-199.

DeAngelo, L. E. (1981b). Auditor independence, 'low balling', and disclosure regulation. *Journal of accounting and Economics*, *3*(2), 113-127.

Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting earnings management. *Accounting review*, 193-225.

DeFond, M. L., & Park, C. W. (2001). The reversal of abnormal accruals and the market valuation of earnings surprises. *The Accounting Review*, *76*(3), 375-404.

Dopuch, N., King, R. R., & Schwartz, R. (2001). An experimental investigation of retention and rotation requirements. *Journal of Accounting Research*, *39*(1), 93-117.

Dopuch, N., & Simunic, D. (1982). Competition in auditing: An assessment. In *Fourth Symposium on auditing research* (Vol. 401, p. 405). Urbana, IL: University of Illinois.

Ebimobowei, A., & Keretu, O. J. (2011). Mandatory rotation of auditors on audit quality, costs and independence in South-South, Nigeria. *International business management*, *5*(3), 166-172.

Economist, The. (2003). Europe's Enron. 366 (March 1): 55–56.

Ernst & Young. (2013). Point of view – our perspective on issues of concern: Q&A on Mandatory Firm Rotation.

European Commission. (2010). Green Paper, Audit Policy: Lessons from the Crisis.

European Commission. (2011). Proposal for a regulation of the European Parliament and of the Council on specific requirements regarding statutory audit of public-interest entities. *Brussels*.

Feroz, E., Park, K., & Pastena, V. (1991). The Financial and Market Effects of the SEC's Accounting.

Fontaine, R., Letaifa, S. B., & Herda, D. (2013). An interview study to understand the reasons clients change audit firms and the client's perceived value of the audit service. *Current Issues in Auditing*, *7*(1), A1-A14.

Francis, J. R. (2004). What do we know about audit quality?. *The British accounting review*, *36*(4), 345-368.

Francis, J. R., & Krishnan, J. (1999). Accounting Accruals and Auditor Reporting Conservatism*. *Contemporary Accounting Research*, *16*(1), 135-165.

Francis, J. R., & Yu, M. D. (2009). Big 4 office size and audit quality. *The Accounting Review*, *84*(5), 1521-1552.

Frankel, R. M., Johnson, M. F., & Nelson, K. K. (2002). The relation between auditors' fees for nonaudit services and earnings management. *The Accounting Review*, *77*(s-1), 71-105.

Ghosh, A., & Moon, D. (2005). Auditor tenure and perceptions of audit quality. *The Accounting Review*, *80*(2), 585-612.

Harris, K., & Whisenant, S. (2012). *Mandatory audit rotation: An international investigation*. University of Houston.

Hatfield, R. C., Jackson, S. B., & Vandervelde, S. D. (2011). The effects of prior auditor involvement and client pressure on proposed audit adjustments. *Behavioral Research in Accounting*, *23*(2), 117-130.

Hope, O. K., & Langli, J. C. (2010). Auditor independence in a private firm and low litigation risk setting. *The Accounting Review*, *85*(2), 573-605.

IESBA (2012). Strengthening Safeguards Against Familiarity Threats. IFAC Offices, New York, USA.

Imhoff Jr, E. A. (1978). Employment effects on auditor independence. *Accounting review*, 869-881.

Jackson, A. B., Moldrich, M., & Roebuck, P. (2008). Mandatory audit firm rotation and audit quality. *Managerial Auditing Journal*, *23*(5), 420-437.

Johnson, V. E., Khurana, I. K., & Reynolds, J. K. (2002). Audit-Firm Tenure and the Quality of Financial Reports*. *Contemporary accounting research*,*19*(4), 637-660.

Jones, J. J. (1991). Earnings management during import relief investigations.*Journal of accounting research*, 193-228.

Kim, H., Lee, H., & Lee, J. E. (2015). Mandatory Audit Firm Rotation and Audit Quality. *Journal of Applied Business Research*, *31*(3), 1089.

Mautz, R. K. (1964). *Fundamentals of auditing*. John Wiley & Sons.

Myers, J. N., Myers, L. A., & Omer, T. C. (2003). Exploring the term of the auditor-client relationship and the quality of earnings: A case for mandatory auditor rotation?. *The Accounting Review*, *78*(3), 779-799.

Palmrose, Z. V. (1988). 1987 Competitive Manuscript Co-Winner: An analysis of auditor litigation and audit service quality. *Accounting review*, 55-73.

Peek, E., Meuwissen, R., Moers, F., & Vanstraelen, A. (2013). Comparing abnormal accruals estimates across samples: An international test.*European Accounting Review*, *22*(3), 533-572.

PWC (2013). Point of View Mandatory audit firm rotation – other changes would be better for investors

Segato, L. (2005). Comparative Analysis of Shareholder Protections in Italy and the United States: Parmalat as a Case Study, A. *Nw. J. Int'l L. & Bus.*,*26*, 373.

Tepalagul, N., & Lin, L. (2015). Auditor Independence and Audit Quality A Literature Review. *Journal of Accounting, Auditing & Finance*, *30*(1), 101-121.

United States General Accounting Office, GAO (2003). Required Study on the Potential Effects of Mandatory Audit Firm Rotation

Vanstraelen, A. (2000). Impact of renewable long-term audit mandates on audit quality. *European Accounting Review*, *9*(3), 419-442.