Master's Thesis

Auditor-Induced Accounting Comparability and Earnings Quality

"Is accounting comparability resulting from auditor style associated with earnings quality?"

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Executive summary

This thesis is an extension study to Francis, Pinnuck and Watanabe (2014), who find that clients of the same Big 4 audit firm have more comparable financial statements, as such clients are subject to the same auditor style. Following the suggestion of Francis et al. (2014), the purpose of this thesis is to investigate whether the identified comparability due to auditor style, which is referred to as auditor-induced comparability, is associated with earnings quality. Consequently, examining this association provides evidence as to whether auditor-induced comparability is in fact 'true' comparability or rather uniformity. Based on the agency theory as well as evidence from prior literature, it is expected that auditor-induced comparability is positively associated with earnings quality, which would indicate on 'true' comparability rather than uniformity. The research design applied in this thesis is based on the earnings response coefficient (ERC) as a proxy for earnings quality. The findings reveal that no significant association exists between auditor-induced comparability and earnings quality, which suggests that the comparability identified by Francis et al. (2014) is in fact uniformity rather than comparability. Secondary research conducted in this thesis investigates the impact of non-audit services (NAS) restrictions on the relation of auditor-induced comparability and earnings quality. The relation between these topics surrounds (a) the potentially greater similarity of financial services provided by auditors as the certain NAS are prohibited by the Sarbanes-Oxley act of 2002, and (b) the potentially enhanced auditor independence, which could possibly influence the relation between accounting comparability and earnings quality. The findings suggest that NAS restrictions does not impact the relation of interest.

Keywords: Auditor-induced comparability; Auditor style; Earnings quality; Comparability; Uniformity; NAS

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1. Introduction

The purpose of this thesis is to examine the relation between auditor-induced accounting comparability and earnings quality. Auditor-induced accounting comparability refers to comparability generated when companies are audited by the same audit firm, hence are subject to the same auditor style. This thesis investigates whether accounting comparability due to auditor style, leads to enhanced informativeness of accounting figures, or rather increases financial uniformity at the expense of more informative accounting, and attempts to answer the following research question:

RQ: *Is accounting comparability resulting from auditor style associated with earnings quality?*

An answer to this research question is important, because comparability is a central concept in accounting, and whether comparability of financial reporting produced by economic institutions leads to enhanced earnings quality is yet unanswered. As defined by the Financial Accounting Standards Board (FASB), comparability refers to the qualitative characteristic which allows users of financial statements to identify and understand similarities and differences between items (FASB, 2010). Comparability is considered to be an enhancing qualitative characteristic of financial information rather than a fundamental qualitative characteristic, which indicates on its importance as perceived by standard setters. It is important to distinguish and understand the fundamental differences between the concepts of comparability and uniformity. While comparability leads to enhanced informativeness by making similar things look alike and different things look different, uniformity could reduce informativeness by making unlike things look alike (Cole et al., 2012). Additionally, the cooperation between the FASB and the International Accounting Standards Board (IASB) on the development of the joint conceptual framework, suggests that comparability is an essential aspect in the usefulness of financial reporting (Francis, Pinnuck & Watanabe, 2014).

Audit style, is a term used to identify the working rules within each auditing firm, which provide guidance and determine the interpretation and standardization of auditing and accounting standards. Francis et al. (2014) are the first to investigate the impact of auditor style on comparability of financial statements. The authors provide evidence that comparability is enhanced between companies which are audited by the same Big 4 firm, and hence are subject to the same audit style. This thesis intends to serve as an extension study, by further investigating the

implication of auditor-induced accounting comparability on the earnings quality. This should provide an answer as to whether accounting comparability due to auditor style is informative to financial statement users, or merely leads to uniformity at the expense of informative accounting.

The secondary research within this thesis examines the impact of non-audit services (NAS) regulation on the relation between auditor-induced accounting comparability and earnings quality. Following financial reporting scandals such as Enron and WorldCom, restrictions on certain NAS[1] were implemented in the United States (US) with the intention to increase auditor independence by reducing the economic bond between the auditor and the client (Beaulieu & Reinstein, 2010; Zhang, 2007). Restricting certain NAS reduces the variability of services provided by auditors, which could increase the similarity of services provided across clients. Hence, in combination with enhanced auditor independence, the similarity of services provided by auditors could potentially impact the relation between accounting comparability and earnings quality.

Gathering sufficient evidence is essential in order to draw conclusions and to reach an answer to the research question. This thesis attempts to answer the research question by means of examining the responsiveness of the market to earnings announcements, which acts as a proxy for earnings quality. This proxy is more widely known as the earnings response coefficient (ERC), such that it captures investors' response to information that has value implications and as a result provides evidence on the usefulness of the information, which is consequently indicative of the quality of earnings (Dechow, Ge & Schrand, 2010). Since this thesis concerns firms which are either audited by the same Big 4 auditor or by different auditors, the ERC will be used to examine the difference in responsiveness by each group of firms, providing evidence on the informativeness and quality of earnings as perceived by the market.

The findings of this thesis reveal that no significant association exists between auditor-induced comparability and the informativeness and quality of earnings. Given that the research design in this paper is based on the ERC model, it is important to stress that this measurement examines the market's perception. In terms of providing an answer to the research question, this

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[1] The eight prohibited non-audit services are: (1) bookkeeping or other services related to the accounting records or financial statements of the audit client; (2) financial information systems design and implementation; (3) appraisal or valuation services; (4) actuarial services; (5) internal audit outsourcing services; (6) management functions or human resources; (7) broker or dealer; (8) legal services and expert services unrelated to the audit; (9) any other service that the board determines, by regulation is impermissible. (SEC, 2002)

means that the accounting comparability as a result of auditor style is not perceived by the market to be associated with earnings quality. These findings of the primary research in this thesis, are robust to the several sensitivity analyses conducted. With regard to the secondary research of this thesis, the findings indicate that the introduction of NAS restrictions does not alter the relation between auditor-induced comparability and earnings quality.

The findings of this thesis have several contributions. Firstly, as the main purpose of this thesis is to serve as an extension study, the findings of this research directly contribute to Francis et al. (2014). This thesis attempts to solve the question raised by the authors as to whether auditor-induced accounting comparability which is identified in their study, is actually accounting comparability and not uniformity. The results obtained in this thesis, suggest that the auditor-induced accounting comparability unveiled by the authors is uniformity rather than comparability. This means that what appears to be comparability in Francis et al. (2014), does not convey value relevant information for investors' decision making processes. These findings contradict to the expectations by Francis et al. (2014) as one of their measures potentially indicated on a positive association between auditor-induced accounting comparability and earnings quality. Secondly, this thesis contributes to the literature by providing evidence that what might appear as comparability could in fact be uniformity, in the context of firms that are audited by the same Big 4. To the knowledge of the author, this is the first research to investigate the direct relation between accounting comparability due to auditor style and earnings quality. Hence, this signifies a new dimension of research within the literature. With regard to the secondary research of this thesis, the findings contribute to the literature stream on the impacts of restricting NAS provision by auditors, suggesting there is no impact of prohibiting certain NAS on earnings quality, within the context of auditor-induced comparability.

In addition to the contributions of this thesis, the insights obtained have further implications in practical terms. The findings are mainly relevant to debtors as well as capital market participants (i.e. analysts and investors), who seek information about the usefulness gained from the financial statement comparability which arise from auditor style. Based on the results, these stakeholder groups could deduce that making comparisons between firms that are audited by the same Big 4 firm, does not provide informative insights on the underlying performance of the firm. Furthermore, standard setters who concern the implications of NAS restrictions could potentially

surmise from the findings that prohibition of certain NAS does not impact the association between auditor-induced accounting comparability and earnings quality.

The remainder of this thesis is structured as follows. First, the relevant theoretical background is discussed and explained including concepts, theories and the institutional settings. Second, a review of the three literature streams related to this research is provided. These literature streams are accounting comparability literature, auditing literature and earnings quality literature. Third, the hypotheses of this research are developed based on the theories and literature review introduced primarily. Fourth, the research methodology to examine the hypotheses is explained and further the data collection process is described. Fifth, the results of the regression analyses are presented and discussed, with the implications on the hypotheses developed. Finally, a summary and conclusion to the thesis is provided including an answer to the research question, and suggestions for future research.

2. Theoretical background

2.1 Accounting comparability

The concept of accounting comparability and its corresponding definition differ across literature and academic research. As stated by the FASB (2010), the definition of comparability is as follows: "*Comparability is the qualitative characteristic that enables users to identify and understand similarities in, and differences among, items. Unlike the other qualitative characteristics, comparability does not relate to a single item. A comparison requires at least two items.*" The first part of this definition suggests that the concept of comparability should allow financial information users to determine both the similarities and the differences between items in financial reports. The second part refers to the notion that comparison has to occur between two or more items, which is different from other qualitative characteristics that usually concern a single item. As further stressed by the FASB, decisions to be made by various stakeholders entail choosing between alternatives, such that information about a single firm should be more useful in case it is comparable with another firm's information (cross-section), or comparable with the single firm's information from previous periods (time-series).

In order to understand the concept of accounting comparability more comprehensively, it is essential to introduce the Conceptual Framework of the FASB and IASB, in which accounting

comparability is discussed. A conceptual framework refers to a coherent system of concepts that form the basis for financial reporting (Kieso, Weygandt & Warfield, 2011). In recent years the IASB and the FASB began to cooperatively work on the development of common conceptual framework with the intention to form the foundation for future accounting standards. The joint development of a conceptual framework by the IASB and the FASB, yielded in addition to other activities, the chapter on the qualitative characteristics of useful financial information. The chapter on qualitative characteristics of useful financial information discusses the types of information that make financial reporting more useful for decision-making purposes by various stakeholders (e.g. existing and potential investors, lenders, and other creditors) (FASB, 2010).

There are two sets of qualitative characteristics, which are fundamental characteristics and enhancing characteristics (FASB, 2010). Regarding the first set of characteristics, there are two fundamental characteristics which are relevance and faithful representation. These characteristics concern the notion that in order for financial information to be decision-useful, it must firstly be capable of affecting the decisions made by users (relevance), and secondly it should faithfully represent what it intends to represent. Regarding the enhancing qualitative characteristics, these are considered complementary to the fundamental characteristics (Kieso et al., 2011). Within the enhancing characteristics there are four aspects, which are comparability, verifiability, timeliness and understandability. The concept of comparability has two perspectives, cross sectional and time-series comparisons. Cross sectional comparability refers to allowing financial information users to identify the real similarities and differences between firms. Time-series comparability mostly concerns the consistency within a firm in applying the same accounting methods throughout time, which indicates on consistent use of accounting standards. However, the term consistency may also refer to the similar application of accounting treatments across firms in a single period, hence also cross-sectional (FASB, 2010). Nevertheless, firms are allowed or sometimes required to switch from one accounting method to another, although these decisions must first be supported as to why the new method is more favorable than the previous. When the change is made, the firm is required to disclose the nature and impact of the accounting change, and additionally provide a justification for the switch in the financial reports of the period in which the change has been made (Kieso et al., 2011). It is important to stress that consistency is not the same as comparability. While consistency refers to the application of the same accounting methods throughout time or among firms in the same period, comparability remains the objective which is

intended to be achieved by the notion of consistency. However, despite the classification of fundamental and enhancing characteristics, each of these sets of qualitative characteristics contribute to the decision usefulness of the reported financial information, regardless of their categorization.

For the purpose of this thesis, the definition of accounting comparability follows from the paper by Francis et al. (2014), who define comparability as: "the closeness of two firms' reported earnings due to the consistency with which rules are applied across firms". The reason this thesis uses this established definition is because this thesis is an extension study to the authors' paper, and should therefore maintain the same approach to accounting comparability being the central topic. However, this definition of accounting comparability differs from the definition by De Franco, Kothari and Verdi (2011), who refer to the notion that for a particular economic event, a pair of firms have comparable accounting systems in case they produce similar financial statements. The main difference between the definitions surrounds the following. On the one hand, Francis et al. (2014) focus on the similarities of earnings arising from consistent application of rules which are driven by auditor style. On the other hand, De Franco et al. (2011) focus on the specific economic transactions to isolate the link between accounting systems and financial statements similarities. As previously mentioned, the definition by Francis et al. (2014) is adopted in this thesis given the purpose of this thesis to serve as an extension study, by means of investigating the association of accounting comparability as defined by the authors and earnings quality. Throughout this thesis, the terms accounting comparability and financial statements comparability are used interchangeably.

2.1.1 Auditor style and accounting comparability

Performing auditing practices requires an audit firm to develop its own set of in-house working rules (Francis et al., 2014). These sets of in-house working rules are unique to each Big 4 firm, and entail aspects such as testing procedures for the implementation of Generally Accepted Auditing Standards (GAAS), and interpretations as well as applications guidelines of Generally Accepted Accounting Principles (GAAP). The term audit style is used to describe the audit approach of each audit firm arising from the systematic differences in the working rules between the firms. In other words, each Big 4 firm has its own audit style due to its unique set of in-house working rules.

Kothari et al. (2010) suggest that developing in-house working rules is by means of standardizing the accounting practices. The audit style of each firm is not only applied by the auditors themselves, but also by their clientele who follow the guidelines which the auditor provides. This means that in the preparation of the financial statements, the clientele of each audit firm uses the GAAP guidance generated by their auditor. Francis et al. (2014) argue that firms which are audited by the same Big 4 auditor, have a greater likelihood of interpreting and implementing GAAP more similarly, and subsequently be subject to the same auditing procedures as determined by each auditor. This means that based on the auditor approach, an audit firm systematically detects or fails to detect similar errors made by the clients, such as misapplication of GAAP. As a result, the authors find that companies in the same industry which are audited by the same auditor, hence are subject to the same auditor style, have higher comparability of financial statements, than companies which are audited by two different auditors, ceteris paribus. This gives rise to the term 'auditor-induced accounting comparability', which signifies the accounting comparability generated between two companies which are audited by the same auditor, hence are subject to the same auditor style.

In this thesis, the comparability due to auditor style surrounds several aspects. Since this thesis is an extension study to the paper by Francis et al. (2014), the auditor-induced comparability aspects concern those which the authors identify. These aspects include greater comparability in abnormal accruals, evident from smaller differences in such abnormal accruals, and greater comparability in terms of earnings time series, while these also map more similarly into the stock returns of the firms audited by the same auditor. Therefore, when referring to comparability due to auditor style throughout this thesis, it concerns these aspects of comparability.

2.1.2 Comparability versus Uniformity

As briefly mentioned in the previous section, a clear distinction has to be made between the concept of comparability and uniformity. Identifying this distinction is important in accounting as also stressed by the FASB (2010). Comparability on the one hand, concerns the emphasis of making similar things look alike, and different things look different, and therefore enhances the informativeness of financial reporting. On the other hand, uniformity refers to making unlike things look similar, which in turn could lead to reduced informativeness of financial reporting.

Despite the distinction between comparability and uniformity, these two concepts are related. The link between the two concepts is outlined by the theoretical concept of the uniformity-flexibility dilemma. In order to understand how comparability is related to uniformity, the uniformity-flexibility dilemma is explained in this thesis based on Cole et al. (2012), who provide an overview of the concept and also conducted a survey study on the distinction between comparability and uniformity. This dilemma surrounds the factors that give rise to the comparability of financial statements which are uniformity and flexibility. In their paper, the authors stress that uniformity is achieved in case all firms apply the same accounting methods. Flexibility is the opposite of uniformity, such that it refers to the approach that each firm is eligible to apply an adapted accounting standard to its own unique circumstances. Between these two concepts of uniformity and flexibility, lies the concept of harmony, which concerns the firms' application of a single or several possible accounting methods, such that there is no absolute uniformity or flexibility. In other words, this uniformity-flexibility dilemma could be illustrated as a scale in which uniformity is on one end and flexibility is on the other end, while harmony is positioned somewhere in between.

Cole et al. (2012) provide various reasons as to why uniformity side of the scale could be favored over flexibility side in obtaining comparability, and further argue why uniformity is actually necessary in achieving comparability. The arguments for preferring uniformity above flexibility, mainly concern the fundamental constraints associated with the flexibility approach of applying accounting methods. Firstly, it is argued that enabling flexibility may lead to inappropriate differences in the accounting methods applied by firms, resulting from managerial discretion or accounting manipulation. Secondly, under the flexibility approach financial statement users would be required to have sufficient knowledge of all different accounting methods applied. These arguments shed light on the profound limitations of the flexibility approach that would hinder attaining comparability, and suggest that the uniformity approach is necessary to some extent. However, uniformity has inherent limitations as well. As previously mentioned, uniformity could reduce comparability and restrict informativeness by making different things look alike. This is due to the fact that uniformity simply generates the appearance of comparability, since there are no accounting standards that account for all possible circumstances, and hence treat different circumstances similarly. Although these limitations exist, auditors, analysts and other financial statement users mostly interpret comparability as uniformity.

2.2 Earnings quality

The concept of earnings quality is widely discussed in accounting literature, and along with its popularity it raises disagreements in terms of its definition and measurement methods (Dichev, Graham, Harvey & Rajgopal, 2013). In order to provide a definition and an overview with respect to the concept of earnings quality, this thesis uses the definition of earnings quality as stated by Dechow et al. (2010), which is presented as follows:

"Higher quality earnings provide more information about the features of a firm's financial performance that are relevant to a specific decision made by a specific decision-maker."

This definition of earnings quality incorporates three main characteristics which are (Dechow et al., 2010):

- Earnings quality conditional on decision relevance
- Underlying financial performance
- Joint determinants of earnings quality

Regarding the first characteristic, it is important to note that under this definition earnings quality is conditional on the decision relevance of the financial information. This means that in the context of decision usefulness the concept of earnings quality becomes valuable, while by itself without considering a specific circumstance such as a decision model, this term is meaningless. Concerning the second characteristic of this definition, the quality of the figure of earnings which a firm provides, is based on the informativeness of such reported figure with respect to the underlying performance of the firm. Consequently, it is important to consider the fact that many features of the underlying performance of the firm are unobservable, which signifies the importance of the informativeness of the earnings figure provided by a firm. Regarding the third characteristic of the definition, there are two main factors that drive the quality of earnings cooperatively, which are the decision relevance of the financial performance derived from the provided information, and whether the accounting system applied by the firm is capable of capturing and measuring the underlying financial performance. This third characteristic essentially refers to the first two characteristics as the determinants of earnings quality, which signifies the interrelation and overlap between the characteristics. After interpreting the definition of earnings quality and discussing the main characteristics thereof, the definition of this concept could be stated in simple terms, such as

the quality of earnings could be assessed with regard to any decision that is taken based on the informativeness of reported financial information.

In line with the aforementioned, Schipper and Vincent (2003) provide an outline of measures used to evaluate the quality of earnings in academic literature, and refer to the decision usefulness aspect of this concept. The authors refer to the FASB's conceptual framework which stresses that the underlying intention of financial reporting is the provision of information that is decision useful to various stakeholder groups (FASB, 2010). As previously stated, the quality of earnings is conditional on a specific context such as in making decisions. However, Schipper and Vincent (2003) further acknowledge the existence of numerous users and uses of financial reporting, which results in the assessment of earnings quality based on the specific context in which the decision usefulness is being examined. The authors recognize the differences in contexts and account for these when presenting the different approaches to measuring the quality of earnings. It is essential to keep in mind the two main uses of earnings information which are valuation and performance evaluation, which are applied in the context of decision making (Dichev et al., 2013). The first use, the valuation of firms by means of making a decision, refers to the perspective of the joint project of the IASB and FASB on the conceptual framework, while the second type of use refers to the evaluation of performance for stewardship and contracting purposes. Despite some existing differences among these two perspectives, the underlying meaning of earnings quality is generally shared between the two.

Quality of earnings is of profound importance in terms of the efficient allocation of resources in the market (Schipper & Vincent, 2003). In case of low earnings quality, there is a misallocation of resources in the market, which in turn hinders the growth and prosperity of the economy. This is due to misleading practices by firms who portray earnings figures which are not reflective of the firm's underlying financial performance, hence provide low quality of earnings to the financial reports users. Furthermore, the great importance of high earnings quality is granted when parties base their contractual agreements such as compensation and debt agreement on earnings numbers. This aspect of the importance of earnings quality provides a link to the concept of economic consequences[2] and positive accounting theory, which signify the influence of

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[2] The definition of economic consequences as stated by Zeff (1978) is as follows: "The impact of accounting reports on the decision making behavior of business, government and creditors."

accounting policies that have an impact on the reported earnings numbers (i.e. net income), that are consequently used in contracts. As hypothesized by the positive accounting theory for instance, managers seek to choose an accounting method that allows them to enhance their current compensation benefits (Watts & Zimmerman, 1978). This would result in overstated earnings and consequently lower quality of earnings.

The concept of earnings quality is closely related, but not to be confused with the concept of earnings management (Dechow et al., 2010). Earnings management concerns the choice of management of accounting policies (using judgment) or real actions (structuring transactions) to impact earnings, by means of achieving a specific reporting objective, such as misleading stakeholders or influencing contractual outcomes (Healy & Wahlen, 1999). Earnings management is considered to be closely related to the concept of earnings quality, such that manipulation of earnings could be indicative of deteriorating the quality of the earnings, in case of opportunistic manipulation. However, when earnings management are driven by positive intentions to display inside information, the quality of the earnings could rise, following the definition above.

2.2.1 Earnings quality proxies

In order to obtain a more comprehensive understanding of the concept of earnings quality, this section introduces the proxies used to measure the quality of earnings and their approaches. Vincent and Schipper (2003) as well as Dechow et al. (2010) provide an extensive overview on the proxies used to examine earnings quality and discuss the concepts behind each approach including assumptions, and their advantages and disadvantages. This thesis presents the general proxies based on Dechow et al. (2010) since their article is more recent and incorporates more evidence gathered throughout the years relative to the article by Vincent and Schipper (2003).

Dechow et al. (2010) classify the proxies for earnings quality into three broad categories, namely (1) 'properties of earnings', (2) 'investor responsiveness to earnings', and (3) 'external indicators of earnings misstatements'. With regard to the first category, properties of earnings entails proxies including earnings persistence, abnormal accruals, earnings smoothness, asymmetric timeliness and timely loss recognition, and target beating. Concerning the second category, investor responsiveness to earnings, which is also the focus in this thesis, includes the proxy of ERC. The theory behind ERC refers to the response of investors to information that has value implications for the firm in question. This means that a higher response to information

released by a firm indicates that earnings better reflect the underlying performance of the firm, hence implies on higher quality of earnings. The advantage of ERC as a proxy for earnings quality over other proxies, refers to the direct association of the earnings information to decision usefulness, which is by the definition an essential part of quality of earnings, following the discussion in the previous section. Despite the advantage of this proxy over other proxies, ERC also contains several limitations. An assumption made under the ERC is that markets are efficient, or otherwise known as the efficient market hypothesis (EMH). This hypothesis assumes that market prices fully reflect all publicly available information (Fama, 1970). However, Bloomfield (2002) stresses that a dissatisfaction with the EMH increases among the academic community, following evidence suggesting that this hypothesis does not hold, and consequently develops the alternative 'incomplete revelation hypothesis'. Another concern surrounds the issue of correlated omitted variables which could be due to several factors such as endogeneity and errors in measuring the unexpected earnings component.

2.2.2 Determinants of earnings quality

Dechow et al. (2010) identify six broad categories of factors which determine the earnings quality of a firm. These six categories are (1) firm characteristics, (2) financial reporting practices, (3) governance and controls, (4) auditors, (5) equity market incentives, and (6) external factors. Each of these broad categories entails its own determinants and characteristics. For instance, firm characteristics are driven by several features including firm performance, size, growth opportunities, and capital structure.

Of particular interest to this thesis is the fourth determinant category, which concerns the impact of the auditor on the quality of earnings of a firm. Conceptually, an auditor is a determinant of the earnings quality due to his duty to provide assurance on the financial statements. As previously mentioned, auditor as a determinant of earnings quality is in itself derived from other factors. These factors include the auditor's ability to initially detect and consequently to report on material misstatements, which are respectively determined by the effectiveness of the auditing practices, and the incentives of the auditor to report, that depend on elements such as reputation considerations, litigation risk and auditor independence. The concept of auditor independence is introduced and discussed in the following section, and upon understanding what this concept

entails, one is able to draw the link between the auditor independence and the impact of an auditor on earnings quality.

2.3 Auditor independence

With regard to the secondary research in this thesis, which examines the impact of NAS restrictions on the association between auditor-induced comparability and earnings quality, it is necessary to introduce and discuss the theoretical concept of auditor independence. The concept of auditor independence is composed of two parts, namely independence in mind, and independence in appearance. These two components of auditor independence are discussed as follows.

Independence of mind refers to: "the state of mind that permits the provision of an opinion without being affected by influences that compromise professional judgment, allowing an individual to act with integrity, and exercise objectivity[3] and professional skepticism" (Hayes, Gortemaker & Wallage 2014). In other words, this type of independence occurs when an accountant retains an unbiased and objective approach throughout the audit. Independence in appearance refers to: "the avoidance of facts and circumstances that are so significant that a reasonable and informed third party, having knowledge of all relevant information, including any safeguards applied, would reasonably conclude a firm's, or a member of the assurance team's, integrity, objectivity, or professional skepticism had been compromised" (Hayes et al., 2014). Hence, accountants should not solely retain their independent approach when performing an audit, but the financial statement users should have confidence in the accountant's independence. Independence is essential in the performance of the audit, and is considered one of the fundamental requirements in preserving the public confidence in the reliability of the financial statements.

There are several identified threats to auditor independence which include self-interest, self-review, advocacy, familiarity and intimidation threat. These threats could potentially arise in case an auditor provides NAS to its client. Due to the possible risk of compromised independence emerging from the provision of NAS, a number of countries have implemented a prohibition on several NAS provision. With regard to the US, which is of particular interest in this thesis, the Sarbanes-Oxley (SOX) act of 2002 incorporated a prohibition of eight non-audit services, and further describes the independence requirements of US auditors. The SOX act was passed by US

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[3] Integrity and objectivity are part of the five fundamental principles of ethics which are applicable to all accountants, and further include confidentiality, professional behavior, and professional competence and due care.

congress following a number of large scandals such as Enron and WorldCom, with the intention to protect investors and the general public from accounting errors and fraudulent actions, by enhancing the accuracy and reliability of firms' disclosures (SEC, 2002).

2.4 Agency theory

The agency theory refers to a relationship between two or more parties, in which one is the agent who works for, or on behalf of the other who is designated as the principal (Ross, 1973). This concerns the notion that a company is regarded as the outcome of formal contracts, in which the agent (i.e. management) attempts to attract the principals (i.e. investors and employees) to contribute to the firm, given a specific price (Hayes et al., 2014). The agent seeks to gain these contributions from the principals under favorable circumstances, such as high stock prices for investors and low wages for the employees. Consequently, due to the nature of this relationship, the agent might possess more information than the principal, which gives rise to the concept of information asymmetry. Generally, there are two risks that could arise from information asymmetry, namely adverse selection and moral hazard (Vaassen, Meuwissen & Schelleman, 2009). Adverse selection concerns the hidden characteristics which are only known to one of the parties (i.e. agents) involved in the negotiation prior to the agreements, while moral hazard concerns the hidden actions taken by one of the parties after the agreements have been made.

In the existence of information asymmetry, it could be presumed that simply ordering the agent to perform a specific task, could solve the issues associated with the asymmetry problem (Ross, 1973). However, this solution is somewhat naïve, when considering the difficulty in monitoring the act of the agent which was ordered by the principal. An alternative solution which is more commonly discussed, refers to enhancing the provision of disclosures by firms, as means of reducing the information asymmetry and increasing the principals' confidence (Healy & Palepu, 2001; Francis, Nanda & Olsson 2008). Subsequently, these disclosures by firms are granted with more credibility by standard setters, regulators, auditors and other information intermediaries. Of particular interest to this thesis, is the role of the auditor in mitigating the information asymmetry between the agents and principals.

In the context of management as the agent and investors as the principals, it is the role of the auditor to mitigate the information asymmetry between the two parties. Hayes et al. (2014) stress that engaging a reputable auditor who is believed to meet the expectations, is not only the

interest of the investors but it is also in the interest of management. On the one hand, in order for the investors to have confidence in the management's released information, it has to be reliable which can be deduced from the auditor's report. On the other hand, the management ultimately relies on the investors and other principals for running the firm, and it is therefore important for the management that the investors perceive the management as reliable and credible. Hence, it is of interest to both parties to engage a reputable auditor.

In a cross-sectional setting, Kim, Kraft and Ryan (2013) argue that financial statement comparability reduces the information asymmetry by allowing less sophisticated investors and other users to perform simple and standardized, though still effective financial analyses. This is due to the enhanced ability of financial statement users to gain more insights into the underlying financial performance of the firm of interest, by comparing its reported figures to a comparable financial statement. This cross-sectional setting is of particular interest in this thesis, as comparability of financial statements is at the heart of this study. Hence the relation between the financial statement comparability and the information asymmetry of the agency theory fits well to the main objective of this thesis, and shall be further discussed in the formulation of the hypotheses.

2.5 Institutional setting

This study focuses on the relation between auditor-induced accounting comparability and earnings quality among US firms. Hence, the institutional setting which is of interest in this thesis concerns the type of rules and regulations followed in the US, and further the conventional systems adopted by US firms. This section focuses on two main areas of the institutional setting in the US, namely the US GAAP and the US GAAS.

2.5.1 US GAAP: Rules-based accounting standards

In recent years, numerous international organizations have put a large amount of effort in developing international accounting standards that should be ultimately applied worldwide. Despite the development of global accounting rules, known as the International Financial Reporting Standards (IFRS) which were made mandatory in several countries starting from January 1, 2005 including Australia and the EU, these have not yet been made mandatory in the US (IFRS, 2016a; IFRS, 2016b; IFRS, 2016c). The accounting standards which are currently applied by US firms are the US GAAP. The IFRS which are issued by the IASB are considered

principles-based accounting standards, while the US GAAP issued by the FASB are considered rules-based accounting standards. The 'Norwalk' agreement between the IASB and FASB in 2002, concerned the intention of these two bodies to converge and cooperatively develop a single commonly used set of accounting standards (IFRS, 2016d). Throughout the cooperative process of convergence, a debate has evolved around the level of precision which is applicable to the standards. Bennett, Bradbury and Prangnell (2006) stress that the most profound difference between the two sets of standards (IFRS and US GAAP), refers to the notion that IFRS is principles-based and US GAAP is rules-based as previously mentioned.

Although this study concerns US firms, hence apply US GAAP which is rules-based, this section initially discusses the approach of principles-based accounting standards since this forms the fundamentals of both principles-based and rules-based standards (Schipper, 2003). Furthermore, the introduction of principles-based setting is necessary as the following sections discuss US GAAS, which incorporates a principles-based approach. Principles-based accounting standards outline a broad descriptions on each particular accounting topic and additionally provide a limited number of requirements. This approach to accounting standards ideally strives for assisting reliability and faithful representation, and further assists in the recognition of events and transactions (Van Beest, 2011). In the ultimate case, accounting standards that are solely principles-based are represented by the conceptual framework, with the objective to supply the elementary principles of financial reporting which include decision usefulness, substance over form, true and fair view, and going concern (Bennet et al., 2006; Benston et al., 2006; Schipper, 2003; Psaros & Trotman, 2004). Substance over form is an essential concept within the principles-based approach, which refers to the legitimacy granted to financial reporting preparers to deviate from the accounting standards, in case this deviation provides a clearer reflection of the firm's underlying financial performance (Van Beest, 2011). This emphasizes on the importance of performing professional judgment in the application of principles-based standards.

Moving to the rules-based accounting standards which is the primary interest in this thesis, this approach to accounting standards builds on the principles-based standards and is explained as follows. Both principles-based and rules-based accounting standards are founded on underlying principles which form the fundamentals that are sought to be achieved by the standards (Van Beest, 2011). The more requirements or 'rules' added to a principles-based accounting standard, the more

it moves towards becoming a rules-based standard (Bennett et al., 2006). In the case of the US GAAP, the standards issued by the FASB and the US SEC are highly specific and contain extensive requirements and are therefore considered to be rules-based accounting standards (Schipper, 2003). Such requirements could be characterized based on specific criteria, bright line thresholds, application guidance, examples, and exceptions (Van Beest, 2011). Even though US GAAP is issued by the FASB, all listed US firms are further mandated to comply with the rules as imposed by the SEC. Hence, the nature of rules-based accounting standards leave substantially less room for professional judgment, in contrast to the principles-based approach (Maines, Bartov & Fairfield 2003). This consequently relates to the principle of substance over form as illustrated under principles-based approach, while under rules-based this principle reverses and becomes form over substance. This essentially means that accounting events should be recognized first and foremost in accordance with the accurate description of the accounting standards in combination with, for instance formal contracts, and not be based on the economic substance (Lee, 2006). In its ultimate form, rules-based accounting standards incorporate all possible economic circumstances and corresponding financial reporting solutions to problems (Van Beest, 2011). However, in reality rules-based standards do not exist in an ultimate form. US GAAP is considered to be rules-based accounting standards, due to the strict nature of the standards, while there is still some room for professional judgment.

2.5.2 Rules-based accounting standards and earnings quality

As introduced in section 2.3, the concept of earnings management is closely related to earnings quality. In this section the relation between rules-based accounting standards and earnings management, and consequently earnings quality is discussed and explained on a theoretical basis. Explaining this relation is of interest to this thesis as it is important to understand how earnings quality could be impacted in the particular institutional setting applicable to this study, in contrast to other institutional settings.

      As previously mentioned, there are two main practices to manipulate earnings, namely through accounting policies (use of judgment) and structuring transactions (real actions). Due to the nature of rules-based accounting standards as being fairly strict, with clear and detailed provision of methods for most accounting problems, this implies relatively little room for professional judgment. Therefore, considering the two main practices to manipulation of earnings,

under rules-based settings it is less likely that managers engage in earnings management through accounting policies, which incorporates professional judgment (Van Beest, 2011). Conversely, managers are more likely to engage in earnings management through structuring transactions, since under rules-based settings managers can meet certain thresholds in order to report in a particular manner. This is consistent with the findings by Cohen, Dey and Lys (2008) who find that after the passage of the SOX-act which is considered more rules-based, managers' earnings management practices switched from accounting principles (accruals-based) to structuring transactions. This implies on the application of form over substance, such that accounting treatment is determined by meeting specific criteria, rather than by the underlying economic substance. Furthermore, Zang (2012) finds that the two main practices to manipulation of earnings are used as substitutes by managers, such that a trade-off exists between the two methods depending on their relative costs. With regard to earnings quality, structuring transactions as means of opportunistically managing earnings leads to a deteriorated quality of earnings, as such interventions by management reduces the decision usefulness of financial reports (Van Tendeloo & Vanstraelen, 2005). This illustrates how earnings quality is related to the specific institutional setting of rules-based accounting standards.

2.5.3 US GAAS and auditor style

The audit methods and procedures which auditors apply in the performance of an audit, are required to comply with the US GAAS, which are issued by the Public Company Accounting Oversight Board (PCAOB) (Hayes et al., 2014). These auditing standards are by nature more general and less detailed than US GAAP, and therefore are considered to be more principles-based than US GAAP (Francis et al., 2014). Consequently, each audit firm is responsible to construct its own in-house working rules, by means of efficiently and consistently applying the auditing standards upon performing an audit to its clientele (Cushing & Loebbecke, 1986). This gives rise to the unique auditor style of each auditor, as explained in previous sections. Kothari et al. (2010) stress that it is the principles-based approach to the standards which leads to the discrepancies in the technical innovations that exist within each auditing firm. As a result of these unique auditor styles, there are systematic differences in the auditor's detection or non-detection of similar errors among their clientele (Francis et al., 2014).

2.6 Conclusion

This chapter discussed a number of concepts and theories which are of great importance in this thesis. Accounting comparability is the main topic. Accounting comparability is defined in this thesis according to the definition provided by Francis et al. (2014) given the nature of this thesis as an extension study thereof. This concept relates to the context of auditor style, whereby firms that are audited by the same auditor and hence are subject to the same auditor style, have higher accounting comparability in terms of closeness of earnings. A clear distinction has to be made between comparability and uniformity. Whereas comparability refers to making similar things look alike and different things look different, uniformity makes dissimilar things look alike, which consequently reduces the informativeness and quality of earnings. Earnings quality is defined based on Dechow et al. (2010), in terms of its three characteristics of (1) decision usefulness, (2) underlying financial performance and (3) the role of these characteristics to determine the quality of earnings. The concept of auditor independence refers to two categories, independence in mind and independence in appearance, whereby the former concerns the intrinsic element of an auditor retaining his independence, the latter concerns the perception of a third party on the auditor's independence. This is of particular importance to the secondary research in this thesis. The agency theory, and specifically the aspect of information asymmetry refers to agents' (i.e. managers) possession of knowledge which exceeds the knowledge of principals (i.e. investors). Within the context of auditor-induced comparability, the information asymmetry could be reduced given the ability of principals to more efficiently obtain information about the underlying performance of the firm by the use of comparisons. With regards to the institutional setting concerning this research, rules-based approach such as US GAAP, refers to bright line requirements, which hinders the ability to use professional judgment by management. Principles-based approach such as US GAAS, stems from the conceptual framework and allows more room for professional judgment by management with the intention to better reflect the underlying performance of the firm.

3. Literature review

Three streams of literature are relevant to this thesis. The first stream of literature is accounting comparability literature, the second is auditing literature, and the final is earnings quality literature. This chapter discusses all three streams of literature in each section, while from each observed

paper only the relevant aspects to the study are provided and illustrated. Figure 2 in Appendix 1 illustrates how the three streams of literature and their sub-streams are related, and as explained in this chapter, could in some cases overlap. This figure could be a useful tool in understanding how the different literature streams are linked.

3.1 Accounting comparability literature

Firstly, research surrounding accounting comparability mostly concerns two main perspectives, namely (1) the factors which give rise to the accounting comparability, and (2) the impacts of comparability. The majority of studies in the first approach examine the impact of accounting standards uniformity on the comparability of financial statements, which is relevant to this thesis given the discussion on the distinction between uniformity and comparability. With regard to the second research approach, this thesis discusses the relation between accounting comparability and capital markets, which is relevant to this thesis due to the intention to examine the relation between auditor-induced accounting comparability and investors' reaction as a proxy for earnings quality. These two research perspectives are in some cases examined in a single research, while other studies only examine one of the two approaches. In this chapter both perspectives are discussed distinctively in each section.

3.1.1 Determinants of accounting comparability

With regard to the first perspective observed in this chapter, a common factor which is often examined in research is the implementation for new accounting standards such as in the case of US GAAP or International Financial Reporting Standards (IFRS). In fact, this type of research refers to the uniformity of accounting standards giving rise to comparability. As previously stressed, it is important to acknowledge the difference between uniformity and comparability, while the concept of uniformity may influence and drive comparability. The relation between uniformity and comparability is observed by Cole et al. (2012) regarding the uniformity-flexibility dilemma discussed earlier. The authors conducted a survey research involving 426 auditors, analysts and other users of IFRS financial statements, with the aim to identify the role of uniformity of accounting standards (IFRS adoption) in the generation of comparable financial statements. In terms of defining comparability, the findings suggest that the majority (69%) of the respondents view comparability as uniformity, such that comparability is the application of uniform accounting standards. However, subsequent findings reveal that only 41% of the respondents consider all IFRS

financial statements as comparable, while in order for financial statements to serve comparability, the companies involved should belong to the same industry and country. The findings suggest that besides the uniformity of financial statements, preparers have an important role in influencing financial statements, and considering the various incentives faced by managers, this could hinder the comparability of the financial statements.

In order to examine whether the uniformity of accounting standards drive the comparability of financial statements, Brochet, Jagolinzer and Riedl (2013) conduct an empirical study which encompasses the relation between mandatory adoption of IFRS and the ability of insiders to exploit private information. Insiders benefiting from private information is captured by a proxy of abnormal returns to insider purchases, which is predicted to decrease following the mandatory implementation of IFRS. As predicted, the findings reveal that the ability of insiders to benefit from private information is reduced following the IFRS adoption, which is an indication of higher accounting comparability. These findings suggest that uniformity of accounting standards enhances the comparability of financial statements. However, these findings are counter argued by Beneish, Miller and Yohn (2015), who stress that the increase in cross-border investments following the adoption of IFRS is not necessarily due to higher accounting comparability.

Furthermore, Barth, Landsman, Lang and Williams (2012) conducted an empirical study to examine the impact of increasing similarities between accounting standards on financial statements comparability. The findings of the authors reveal that non-US firms which adopted IFRS have more comparable financial statements with US firms which apply US GAAP. These results suggest that the joint project of the FASB and the IASB on converging the accounting standards, along with cooperation between international securities market regulators, lead to an enhanced comparability of financial statements which are based on the two accounting systems IFRS and US GAAP. Bradshaw and Miller (2008) performed the next step, by particularly focusing on US GAAP setting, and examine whether the adoption of US GAAP by non-US firms leads to higher accounting comparability. The authors stress that prior research on this matter suffer from two main limitations. The first limitation concerns the comparison of financial statements which are based on of different accounting standards, as in the case of Barth et al. (2012) and Leuz (2003) who compared between IFRS and US GAAP. The other limitation stressed by Bradshaw and Miller (2008) concerns the lack of benchmark for an appropriate application of different

accounting standards examined. Hence, the authors overcome these limitations by examining non-US firms that voluntarily adopted US GAAP, and as a benchmark these firms are matched with (1) a sample of US firms that report under US GAAP and (2) a sample of non-US firms that report under local standards. Based on a measure of accruals to cash flow relation, they find that the adoption of uniform set of accounting standards (US GAAP) potentially leads to an increase in financial statements comparability.

Lang, Maffett and Owens (2010) performed the following step, which entails examining the comparability in a cross-country construct, only among firms in IFRS countries, as opposed to Barth et al. (2012) who compare IFRS and US GAAP and opposed to Bradshaw and Miller (2008) who focus on US GAAP. Lang et al. (2010) criticize previous studies stressing that the evaluation of accounting comparability is not based on an appropriate measure. The authors base their assessment of accounting comparability in a cross-country setting on two measures. Whereas the findings of the first construct show an increase in accounting comparability, the findings of the other measure report on a decrease in accounting comparability. These findings suggest that even though one measure indicates on accounting comparability enhancement, the other measure indicates the opposite. This leads the authors to suggest that what appears to be an enhancement in accounting comparability in the first measure, is actually uniformity as indicated by found by the second measure. These findings suggest that uniform accounting standards do not enhance accounting comparability, but rather provide evidence on the concept of uniformity explained before, of making dissimilar things look alike.

Lang et al. (2010) argue that local accounting standards, as opposed to IFRS, reflect and incorporate the underlying economic environment of a country. As a result, the increasing co-movement of earnings in a cross-country setting may appear as increasing accounting comparability, although in fact, the comparability is deteriorated given that IFRS does not account for the economic environment of each country. Furthermore, Cascino and Gassen (2015) find that the impact of mandatory adoption of IFRS on the comparability of financial statements in a cross-country setting is marginal. The authors argue that given the differences among the firms and the countries, the implementation and compliance of IFRS differs across the countries involved.

DeFond, Hu, Hung and Li (2011) find evidence suggesting that mandatory adoption of uniform accounting standards in Europe (IFRS) leads to the enhanced accounting comparability, which

results in more cross-border investments. The authors further find that such comparability is only obtained in countries in which there is strong implementation credibility. These findings confirm the arguments made by the previously observed papers in this section that the comparability of financial statements is not only driven by uniformity of standards, but is also determined by the institutional setting of the countries examined.

The findings of the respective studies observed thus far are inconsistent, which does not enable to clearly deduce what the main drivers of accounting comparability are. The mixed findings do not point at whether the adoption of uniform accounting standards is associated with accounting comparability or whether it rather leads to uniformity at the expense of comparability. This provides room for suggesting on other factors that could impact accounting comparability such as economic environment and financial statement preparers.

3.1.2 Accounting comparability and capital markets

The other research perspective surrounding financial statements comparability concerns the impact of comparability on capital markets. In their paper De Franco et al. (2011) initially generate an empirical construct of accounting comparability, as such global comparability measure has not yet been specified in comparability literature. The comparability measure developed by the authors is a function of the economics of the firm and earnings characteristics. As means of testing their newly constructed comparability measure, the authors examine its properties and validity and approve its reliability. In fact, the authors develop two different measurement approaches to capture accounting comparability. The first measurement is based on the similarity of the mapping of earnings stock returns among the examined firms, while the second measurement is based on the co-movement of the earnings of firms over time. These measures are based on the assumption that firms exposed to the same economic circumstances should have higher accounting comparability, while the economic circumstances are proxied by stock returns. Several empirical studies such as by Lang et al. (2010) which was discussed before, use these comparability measurement developed by De Franco et al. (2011). Additionally, Francis et al. (2014) which is the basis for this thesis, use these methods of De Franco et al. (2011). Subsequently, De Franco et al. (2011) examine the impact of accounting comparability on capital markets by observing the analyst coverage, and the properties of analysts' forecasts. The findings reveal that as hypothesized by the authors, analyst coverage increases as the comparability between the firms increases, and

in terms of the properties of analyst's forecasts, comparability is positively associated with greater forecasts accuracy and negatively associated with forecast dispersion. Overall these findings suggest that higher comparability is beneficial for analysts in terms of lower costs of acquiring information, and increasing the quality of information on the firm. These results are consistent with the findings of Bradshaw, Miller and Serafeim (2009), who provide evidence that comparability is positively associated with analysts' forecast accuracy and negatively with dispersion, which indicates on an improvement in the information environment.

In line with these findings, Joos and Leung (2013) examine the reaction of the stock market to fifteen different events concerning the implementation of IFRS in the US. The results of the authors reveal that the stock market reacts positively to events that indicate on higher likelihood of IFRS adoption in the US. These findings suggest that investors' reaction to possible IFRS adoption is positive due to the perceived benefits of convergence, which for some part entails higher comparability of financial statements. As Chi (2009) stresses, such convergence benefits encompasses the reduction of the processing costs involved in the comparison of financial statements. A similar study conducted by Armstrong, Barth, Jagolinzer and Riedl (2010) focuses on the stock market reaction to events indicating on possible IFRS adoption in Europe. The findings of this study are consistent with those by Joos and Leung (2013), suggesting that in Europe as well investors perceive IFRS adoption beneficial. However, it is important to mention that Armstrong et al. (2010) and Hail, Leuz and Wysocki (2010) emphasize that it is unclear whether the convergence benefits perceived by investors refer to expected increase in the quality of financial information or enhanced comparability of financial statements.

Overall, literature on the impact of accounting comparability on capital markets reveals somewhat more consistency in contrast to the literature on the drivers of comparability. Financial statements comparability is generally found to have a positive association with the reaction of the stock market and the properties of analysts' forecasts. However, it remains unclear whether the reaction of investors is due to enhanced comparability or other potential factors.

3.2 Auditing literature

This chapter discusses the areas in the auditing literature which are of relevance to this thesis. Such areas include studies on auditor characteristics and auditor style, as well as literature surrounding

the concept of auditor independence. The studies illustrated in this section also relate to the concepts and literature presented earlier such as accounting comparability.

3.2.1 Auditor characteristics

A substantial amount of literature surrounding auditor characteristics concerns the relation between the auditor characteristics and the outcomes of financial statements of the auditor's clients. Studies in this field examine this relation from different perspectives such as auditor characteristics in terms of Big 4 versus non Big 4 audit firms, and the outcomes of financial statements in terms of size of abnormal accruals, benchmark beating, timely loss recognition and accounting comparability, while the last mentioned is of most relevance to this thesis.

Empirical studies often examine auditor characteristics and the impact thereof, by distinguishing Big 4 auditors from the non-Big 4 audit firms, which can be referred to as the 'big firm-small firm dichotomy' (Francis, 2004). It is argued that the size of the accounting firm can be used as a proxy for audit quality through the notion of auditor independence, given that the reputation auditors could potentially lose is larger than the potential gain of misrepresentation, in contrast to smaller auditors that are willing to bear the risk as the potential gain of misrepresentation is greater than the perceived loss of reputation (DeAngelo, 1981). Along with other studies, Becker, DeFond, Jiambalvo and Subramanyam (1998) use this dichotomy as a proxy for audit quality, such that the Big 6 auditors (at the time) are assumed to be of higher quality than non-Big 6. The authors find that clients of the Big 6 audit firms have lower discretionary accruals (based on the Jones (1991) model) than clients of non-Big 6, which indicates on less earnings management among clients of the bigger auditors. In line with this study, Francis, Maydew and Sparks (1999) find that a client of a Big 6 auditor is more likely to report lower amounts of discretionary accruals, suggesting that bigger auditors restrain the possibility of opportunistic misstatements by clients' management. These findings are consistent with Francis and Yu (2009), who find that clients of a Big 4 auditor have lower abnormal accruals, and the auditor is more likely to issue a going-concern audit report. These results indicate on higher audit quality by a Big 4 compared to a non-Big 4. In transforming these aspects of accruals which are evidently associated with Big 4 (or 6) audit firms, to the concept of accounting comparability among a Big 4 clientele, Francis et al. (2014) conducted the study which is discussed as follows. This thesis focuses in this literature stream on accruals, as such accruals play a substantial role in the

determination of accounting comparability by Francis et al. (2014) of which this thesis is an extension study to, and are therefore relevant to this paper.

As previously mentioned, the paper by Francis et al. (2014) forms the basis of this thesis. The authors combine the literature of accounting comparability with that of auditing, and in particular auditor characteristics. The previous section stresses the fact that there is mixed evidence on the drivers of accounting comparability, and that most studies focus on the impact of uniform accounting standards. While it is mentioned that other factors could impact accounting comparability, such as economic circumstances and financial reports preparers, Francis et al. (2014) are the first to examine the relation between auditor style and accounting comparability. The intention of the authors is to examine whether the auditor characteristics which are unique to each Big 4 accounting firm, have an impact on the comparability between the auditor firm's clientele, given that they are exposed to the same auditor style. The conceptual relation between auditor style and accounting comparability is explained in section 2.1. The authors base their research design for some part on the comparability measure of De Franco et al. (2011) which is illustrated in the previous subsection. Francis et al. (2014) conduct their research using three measures of comparability, namely total and abnormal accruals between firm-pairs; the earnings covariance of firm-pairs across time (which is based on the measure developed by De Franco et al. (2011) illustrated in previous subsection); and an auditor fixed effects model that examines the commonality of accruals among the clientele of an auditor. The last measure follows from Bamber, Jiang and Wang (2010) who study the influence of top management characteristics (style) on the voluntary disclosure of financial information. The notion of firm-pairs refers to firms operating in the same industry and have the same Big 4 auditor. Consistent with the authors' hypotheses, they find that firm-pairs have greater earnings comparability based on the three measures. This means that firms from the same industry that are audited by the same Big 4 have more similar total and abnormal accruals, higher earnings covariance across time, and auditor fixed effects are significantly associated with accruals. These findings suggest that the auditor style of each Big 4 audit firm enhances the comparability of earnings among its clientele.

3.2.2 Non-audit services and auditor independence

The concept of NAS and its relation to auditor independence is of interest to the secondary research within this thesis. A vast amount of literature has attempted to capture this relationship by means

of arguing whether or not the provision of non-audit services compromises auditor independence, and should therefore be restricted. Numerous studies attempt to capture this relation from various perspectives, which are presented as follows. The literature that is discussed in this section follows the sequence of events which were examined around the implementation of the SOX act in the US in 2002.

DeFond, Raghunandan, and Subramanyam (2002) examine the association between NAS fees and impairment of auditor independence. The study period is before the SOX act in 2002, and contains sample firms with available proxy statements[4] filed with the SEC in 2001. The proxy used to capture the impairment of auditor independence is the propensity to issue a going concern audit opinion[5]. The intuition behind this proxy refers to the notion that an independent auditor is more likely to issue a going concern audit opinion than an auditor whose independence is compromised. Hence, the authors predict an inverse relation between NAS fees and the probability of issuing a going concern audit report by the auditor. However, inconsistent with the authors' predictions, no significant association is found, which suggests that the provision of NAS to audit clients does not impair auditor independence. These findings are consistent with Kinney, Palmrose and Scholz (2004), who examine whether NAS provision compromises auditor independence based on restatements of financial statements, based on a sample period prior to the SOX act. In case of more restatements, this indicates on low quality of financial reporting, which suggests that auditor independence is impaired. However, no significant association is found between NAS provision and restatements, which suggests that auditor independence is not compromised by NAS fees. Consistent with these findings Ashbaugh, LaFond and Mayhew (2003) document no statistically significant association between NAS fees paid to auditors and independence compromise. The authors base their study on firms meeting analysts' forecasts and discretionary accruals to make inferences on auditor independence. Concerning the measure of meeting analysts' forecasts, the intuition behind this stems from the notion that the more fees paid to auditors, the higher the likelihood of the firm to meet analysts' forecasts, which would indicate on auditor independence compromise. With regard to the discretionary accruals measure, the intuition behind this refers to

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[4] Firms are required to disclose in the proxy statements filed from February 5, 2001, information on the fees billed by the auditor. This information should be useful for investors to determine whether the auditor independence has potentially been compromised. (SEC, 2000, Section II.c.5)

[5] Going concern audit opinion is a modified opinion expressed by the auditor when substantial doubt arises regarding the ability of the client to continue its business for the foreseeable future (AICPA, 1988)

the idea that the more fees paid to auditors, the higher the likelihood of the firm to report larger discretionary accruals, which would indicate on auditor independence compromise. The findings indicate that both measures have no significant association with NAS fees, suggesting that auditor independence is not compromised by the NAS provision. These results are inconsistent with the findings of Frankel, Johnson and Nelson (2002), who study the relation between NAS provision and earnings management as well as the reaction of the stock market, prior to the SOX act. The authors find a positive association between NAS provision and small earnings surprises as well as the size of discretionary accruals. Additionally, they find a negative association between the disclosure of NAS fees paid to the auditor and investors' reaction. These results indicate that firms paying higher NAS fees to the auditor, engage more in earnings management than other firms, which indicates on impairment of independence.

Following the implementation of the SOX act in 2002, Krishnan, Su and Zhang (2010) conduct a study to examine whether restrictions on NAS provision by auditors is associated with enhanced auditor independence. In line with previous studies, the authors use discretionary accruals as a proxy for earnings management and consequently auditor independence. The findings reveal that from the period of before to after the SOX act (2000-2005), the provision of NAS substantially decreased, as a result of the restrictions on certain NAS and the increased scrutiny faced by firms and auditors. The authors stress that the reduction in NAS provision is indicative of the association between NAS and auditor independence impairment. The authors make this inference based on the argument that this decline can be used to identify those firms which had a higher likelihood of auditor independence compromise in the period before SOX. The specific findings in this study suggest that only downward discretionary accruals provide evidence on independence impairment in the pre-SOX period.

Overall, the literature on NAS provision and auditor independence portrays inconsistencies and mixed results which does not allow to deduce on a specific direction of association between the provision of NAS and the impairment of auditor independence.

3.3 Earnings quality literature

In this section, the literature surrounding earnings quality shall be discussed, and in particular the studies are of most relevance to this thesis. This entails the literature which links earnings quality and comparability, and earnings quality with auditor independence through NAS provisions.

3.3.1 Earnings quality and accounting comparability

Dichev et al. (2013) conducted a survey study which surrounded the question of what are the determinants of earnings quality as perceived by Chief Financial Officers (CFOs) of US firms. The authors find that CFOs believe that high quality of earnings is sustainable, while the explicit characteristics include consistency in accounting choices, backing of accruals by actual cash flows, and the avoidance of one-time items and long-term estimates. These characteristics are believed to be the factors influencing earnings sustainability. The study further finds that about half of the earnings quality is determined by factors that are non-discretionary, including industry and economic circumstances. Furthermore, earnings manipulation by means of misrepresenting financial performance is present in approximately 20% of firms, and for those misrepresenting firms about 10% of earnings per share (EPS) is manipulated. Findings from this paper that are more relevant to this thesis concern the notion that CEOs view rules-based accounting standards (such as US GAAP) as making the audit function centralized and mechanical, and as a consequence restrains the professional development of auditors. Overall, earnings quality is reflected by a single and unconditional characteristic, which entails a single earnings metric that forms the firm's relation with external stakeholders and internal decision-making.

Deepening more into the literature of earnings quality to aspects relating to this thesis, Lang et al. (2010) examine whether comparability of financial statements is associated with increased earnings quality. This paper, which was discussed earlier in the literature section of accounting comparability, primarily examines the impact of IFRS adoption on accounting comparability in a cross-country setting. The authors predict that in case of an increase in accounting comparability, the bid-ask spread shall decrease given that investors will have greater knowledge about the underlying performance of the firm. The bid-ask spread is used as a proxy for earnings quality, such that the smaller the spread the higher the quality and usefulness of earnings reported by the firm. However, the accounting comparability in this study which was examined by the increase in covariance of earnings, is associated with an increase in the bid-ask spread. This suggests that despite the increase in earnings covariance, the quality of earnings is diminished as investors' ability to determine the underlying performance of the firm decreases. Consistent with these findings, Ball, Robin and Wu (2003) find that implementing uniform or similar accounting standards is not sufficient by means of obtaining higher earnings comparability and consequently

higher earnings quality. The authors stress that auditor and manager incentives play a crucial role in determining comparability of financial statements.

Another paper which has been reviewed previously but also fits well in this stream of literature is by De Franco et al. (2011). With respect to this stream of literature, the authors describe the relation between the comparability of financial statements and the quality of earnings. The findings reveal that the increase in accounting comparability is positively associated with the analysts' forecast accuracy and negatively associated with analysts' forecast dispersion. These properties of analysts' forecasts are used as a proxy for earnings quality, such that the results suggest that comparability enhances the quality of earnings, through the reduction in the costs of acquiring information on the firms involved. These findings are consistent with the results obtained by Kim et al. (2012) who document that financial statement comparability is associated with a decline in market participants' uncertainty surrounding the firms' credit risk, and reduces the information asymmetry among investors.

In addition to the measures of accounting comparability employed by Francis et al. (2014) that were discussed previously, the authors additionally conducted a test of the mapping of earnings to stock returns. Based on the findings of this measure, the authors suggest that auditor-induced comparability is potentially associated with earnings quality, although further research has to be conducted to determine this relationship. It is important to stress that this is the intention of this thesis, to investigate the association between auditor-induced comparability and earnings quality. This is different from the previously discussed literature in this section, as this thesis focuses on accounting comparability arising from auditor style, rather than other determinants such as accounting standards.

3.3.2 Earnings quality and non-audit services

Moving to another area within this literature stream which is of great relevance to this thesis, observes the relation between auditor independence and earnings quality. It is worth mentioning that the literature discussed in the previous section on auditor independence and NAS provision, is closely linked to the literature on earnings quality and auditor independence. This is because some studies that examine the relation between NAS provision and earnings quality, use the latter as an indication for auditor independence. There are namely two perspectives on the impact of non-audit services provision on earnings quality, in which one holds that the provision

compromises independence and lowers earnings quality, while the other holds that such provision enables the auditor to be more engaged in the firm's operations and therefore possesses more knowledge required for the audit, and hence enhances the quality of earnings without compromising the auditor's independence (Frankel et al., 2002).

In addition to the literature discussed previously that relate to this literature, Brown, Falaschetti and Orlando (2008) examine whether auditor independence enhances earnings quality, and consequently discuss whether regulation is required to achieve such enhancement. Consistent with the authors' predictions, auditor independence improves the quality and informational content of earnings. More specifically, the results show that the dependence of auditors on NAS fees hinders earnings quality. Consistent with these findings, Dee, Lulseged and Nowlin (2002) find that firms paying relatively higher NAS fees, have higher earnings management measured by income-increasing discretionary and total accruals. The authors suggest that the NAS provision negatively impacts the independence of the auditor, which leads to its compromise, and consequently the quality of earnings is reduced as well. However, it is important to note that these findings are contradictory to the studies discussed earlier by Kinney et al. (2003) and Ashbaugh et al. (2003). Kinney et al. (2003) document that financial statements restatements are not significantly associated with NAS provision, which indicates that NAS provision does not impair earnings quality and as documented before does not compromise auditor independence. Similarly, Ashbaugh et al. (2003) find that NAS provision is not associated with discretionary accruals or meeting analysts' forecasts, suggesting that NAS provision does not hinder earnings quality.

Furthermore, Francis and Ke (2006) examine whether the implementation of mandatory disclosure of audit fees and NAS fees paid to an incumbent auditor, impacted the market's perception of auditor independence and earnings quality. In other words, the authors investigate the effect of NAS fees paid to auditors on auditor independence and earnings quality, as perceived by investors. The findings provide evidence that the disclosure of NAS fees are negatively associated with auditor independence and the earnings of quality perceived by investors. This suggests that high NAS fees paid to an incumbent auditor, leads to negative appraisal by investors of the independence of the auditor and consequently the quality of earnings.

3.4 Conclusion

This chapter provides an overview on the literature streams relevant to this thesis. The three literature streams are accounting comparability literature, auditing literature and earnings quality literature. With regard to the first literature of accounting comparability, this thesis focuses on two aspects which are: (1) the determinants giving rise to accounting comparability, and (2) the various impacts of accounting comparability on capital markets. Concerning the determinants of accounting comparability, there is mixed evidence on what might be the main drivers of accounting comparability, such that uniform accounting standards could potentially lead to uniformity rather than comparability. In contrast, literature on impact of accounting comparability on capital markets provides more consistent findings on the existing positive association between accounting comparability and the reaction of the stock market and the properties of analysts' forecasts. With regard to the second literature of auditing literature, this thesis focuses on two aspects which are: (1) auditor characteristics, and (2) the relation of NAS and auditor independence. Concerning auditor characteristics, it is stressed that each Big 4 firm has its own unique characteristics, while the audit quality is higher among Big 4 firms in contrast to non-Big 4 firms. Francis combines this literature stream with the stream of accounting comparability determinants, and finds that auditor characteristics is a determinant of accounting comparability. The relation of NAS and auditor independence within the auditing literature, portrays inconsistent findings as to whether NAS provision by an incumbent auditor leads to impairment of independence. With regard to the third literature of earnings quality, this thesis focuses on two aspects which are: (1) earnings quality and accounting comparability, and (2) earnings quality and NAS. Earnings quality and accounting comparability is the association that is examined in this thesis, and the findings suggest that within the context of auditor-induced comparability there is potentially a positive association. Concerning earnings quality and NAS, contradictory findings are reported on the impact of NAS provision by auditors on earnings quality. It is important to stress that this links to the stream of literature on NAS and auditor independence, given that in some cases earnings quality is employed as a proxy for auditor independence. In both literature streams, the findings are inconsistent. Table 1 provides a summary of the most relevant articles to this thesis.

Table 1: Summary main literature

Authors	Objective of study	Sample	Research Methodology	Main Findings
Francis, Pinnuck & Watanabe (2014)	The impact of audit style on the comparability of financial statements.	2,471,917 firm-pairs observations	Archival study	Pair of firms that are audited by the same Big 4 firm have higher accounting comparability, as these firms are subject to the same auditor style.
De Franco, Kothari & Verdi (2011)	To investigate the effects and benefits of financial statement comparability.	635,777 firm-pairs observations	Archival study	Accounting comparability is positively associated with analysts' forecast accuracy and negatively associated with analysts' dispersion. This indicates that accounting comparability increases the informativeness and quality of earnings.
Francis & Ke (2006)	The effect of NAS fees paid to auditors on auditor independence and earnings quality as perceived by the market.	16,910 firm-quarter observations	Archival study	High NAS fees paid to auditors are negatively associated with auditor independence and earnings quality, as perceived by investors.

Table 1 presents the three most relevant articles in this thesis. For each article, the table portrays the authors, the objective of the study, the sample used, the research methodology, and the main findings.

4. Hypotheses

As stressed by Francis et al. (2014), a distinction has to be made between uniformity and comparability of financial statements across firms. Comparability is not uniformity, whereas comparability intends to make like things look alike and different things look different, uniformity could hinder comparability by making different things look alike (FASB, 2010; Kothari & Barone, 2011). According to the agency theory, agents (e.g. managers) possess more knowledge about the firm than principals (e.g. investors), which leads to information asymmetry (Hayes et al., 2014). It is suggested that the role of the auditor is to reduce this information asymmetry. In a cross-firm setting as stressed by Kim et al. (2013), accounting comparability further reduces the information asymmetry by allowing less sophisticated investors to perform simple and standardized, though still effective financial analyses.

De Franco et al. (2011) predict and find evidence indicating that accounting comparability lowers the cost of acquiring information, which consequently increases the informativeness and quality of earnings. This is indicated by the increase in analysts' coverage and analysts' forecast properties associated with comparability. Francis et al. (2014) find evidence on the concept of auditor-induced comparability, which implies that two firms which are both audited by the same Big 4 auditor and hence are subject to the same auditor style, have higher accounting comparability. Even though the authors do not investigate the next step of whether this auditor-induced comparability is associated with earnings quality, one of the tests conducted in their research potentially suggests on the existence of a positive association. This test indicates that auditor-induced accounting comparability results in more similar mapping of earnings to stock returns, indicating that such comparability is potentially value-relevant and informative to users. Hence, the first hypothesis stated in the alternative form:

H1: auditor-induced accounting comparability is positively associated with earnings quality.

Concerning the second objective of this thesis, the debate on NAS provision by auditors has been driven by numerous theories as well as empirical arguments. Auditor independence is a theoretical concept, which suggests that provision of NAS potentially reduces auditors' independence due to threats such as self-interest, familiarity and intimidation (Hayes et al., 2014). This relates to the concept of 'economic bond' between the auditor and client, arguing that NAS could strengthen this bond and may lead to an auditor giving in to pressure by clients, which compromises independence and consequently reduces the quality and informativeness of earnings (Simunic, 1984; Frankel et al., 2002).

This thesis seeks to provide evidence on the direction of impact of NAS restrictions on the association determined in testing the first hypothesis. Given that auditors are restricted in the provision of NAS to clients, this could lead to more similar services provided to the clientele as well as greater auditor independence and as a result enhance the comparability of financial statements. Consequently, this might further influence the quality and informativeness of earnings. On the other hand, restrictions on certain NAS provision may hinder the knowledge of the auditor on the operations of the firm, and as a result could lead to lower earnings quality. In combination with the mixed evidence provided by empirical studies of Frankel et al. (2002), Ashbaugh et al. (2003), Dee et al. (2002) and Francis and Ke (2006) on the impact of NAS on earnings quality and

consequently auditor independence, it does not enable to hypothesize how NAS restrictions affect the association determined in hypothesis 1. Hence, the second hypothesis stated in the null form:

H2: NAS restriction does not affect the association between auditor-induced comparability and earnings quality.

5. Research Design

In order to test the hypotheses developed, and consequently obtain an answer to the research question, this thesis employs an event study methodology. An event study is a method which examines the impact of a particular event on a given variable. The event study methodology conducted in this thesis is in the form of market responsiveness to earnings releases, or more specifically the earnings response coefficient (ERC). The first part of this chapter discusses the concept of ERC, and the theoretical relations incorporated within this methodology including the control variables. In addition, the reason for applying this methodology in this study is justified. Subsequently, the regression model is presented and the link between the model and the hypothesis is explained, as well as the predicted sign of the coefficient on the variable of interest is indicated. Thereafter the Libby boxes are displayed by means of illustrating how the conceptual relation investigated in this thesis is operationalized. Finally the sample and data on which the research is conducted, is described in detail including steps undertaken in the data collection process.

5.1 Earnings Response Coefficient (ERC)

There are three main categories identified by Dechow et al. (2010) to measure earnings quality. These categories are (1) properties of earnings, (2) investor responsiveness to earnings, and (3) external indicators of earnings misstatements. The first category includes proxies for earnings quality such as earnings persistence, abnormal accruals, earnings smoothness and timely loss recognition. As the name of the first category implies, these proxies concern the attributes of the earnings reported by the individual firm. The second category, which is applied in this thesis, includes several approaches that can be used in examining the responsiveness of the market to earnings announcements by firms. The two broad approaches in this category are an event study and an association study. An event study, which was briefly introduced before, refers to assessing the impact of an event on the reaction of the market, mostly based on a short-window. Inversely,

an association study is based on a long-window of examining the movement of returns throughout time and the changes that arise due to earnings announcements. This thesis applies the short-window approach, which is mostly conducted by the use of ERC. The last category of measuring earnings quality concerns external indicators, which provide potential evidence of the quality of earnings through proxies such as restatements and deficiencies in the internal control system as reported by the firm.

As previously mentioned, the research conducted in this thesis is based on the ERC measure of earnings quality. The theory behind this measure refers to the idea that investors respond to newly released information which has value implications for the firm (Dechow et al., 2010). This stems from the notion that when there is an earnings announcement, and the actual earnings differ from the expected earnings, then this 'earnings surprise' should lead to investors' revaluation of the firm. This means that a higher response by investors to newly released information implies that the information better reflects the underlying performance of the firm. In other words, when a firm releases its earnings information, the investors' reaction to this announcement provides an indication of the quality of the earnings reported by the firm. Hence, the larger the market responsiveness to earnings release by a firm, indicates on higher informativeness and quality of the earnings information. Later in this chapter it is illustrated how this theoretical link is operationalized and intuitively understood.

The ERC methodology is applied in this research due to two main reasons, which are the advantage of ERC and the limited applicability of other measures. The first reason for choosing the ERC as a measure for earnings quality surrounds the advantage of this measure over other proxies. This advantage originates from the direct link which is measured by the ERC between the earnings release and the decision usefulness being the market responsiveness, while this decision usefulness is a fundamental component of earnings quality that stems from the definition discussed in chapter two (Dechow et al., 2010). This direct link is not observed in any of the other proxies which are previously illustrated in this chapter. Hence, the ERC methodology enables to make inferences about the informativeness and quality of earnings by examining the direct relation between the reporting of such earnings and the reaction of investors which is indicative of the decision usefulness. With regard to the intention of this thesis as to whether the auditor-induced financial statement comparability found by Francis et al. (2014) is associated with enhanced

earnings quality, this construct could provide evidence through examining the reaction of investors to information releases by firms which are more comparable compared to those which are less. The second reason for choosing the ERC as a measure for earnings quality refers to Francis et al. (2014) of which this thesis is based upon. In their research, the authors measure financial statement comparability based on the same proxies which are also used to measure earnings quality, such as abnormal accruals and earnings structure. However, it is important to note that the authors make no inferences about the quality of earnings. In their research, these proxies provide evidence that firms which operate in the same industry and are audited by the same auditor have more similar attributes of earnings in terms of abnormal accruals and the structure of earnings. These attributes are in fact related to the first category of proxies to measure earnings quality. Based on the first category, no model could be constructed which would be intuitively convincing enough to provide sufficient evidence on whether auditor-induced comparability is associated with enhanced informativeness for decision making purposes and therefore indicative of earnings quality. Alternatively, the ERC model provides a more intuitive approach to examine the association between auditor-induced comparability and earnings quality, given the link it draws between earnings information releases and the market responsiveness as an indication for earnings quality.

5.2 Regression model

To examine the association between auditor-induced comparability and the quality and informativeness of earnings, a cross-sectional regression model for a sample of yearly earnings announcements is constructed. The following ERC model in the form of firm-year unit analysis ("*it*") is based on the model developed by Francis and Ke (2006) and is the main model in this thesis which tests hypothesis 1:

$$CAR3_{it} = \alpha + \beta_1 UE_{it} + \beta_2(UE_{it} * dSameBig4_{it}) + \gamma_1(UE_{it} * MTBV_{it}) + \gamma_2(UE_{it} * Risk_{it}) +$$
$$\gamma_3(UE_{it} * Firmsize_{it}) + \gamma_4(UE_{it} * dLoss_{it}) + \gamma_5(UE_{it} * dBig4_{it}) + \varepsilon_{it} \qquad (1)$$

Where:

- **CAR3** = Cumulative Abnormal Return (CAR) measured over a 3-day window (one day before to one day after), around the earnings announcement date of fiscal year *t* for firm *i*.

- **UE** = Unexpected Earnings (earnings surprise) of firm i for fiscal year t, measured as the difference between the analysts' forecast and actual earnings per share (EPS), scaled by the fiscal year end stock price.

- **dSameBig4** = a dummy variable which equals 1 if the following two conditions are met, firm i has a peer[6] firm that is audited by the same Big 4; and operates in the same industry (2-digit SIC[7]) in fiscal year t; and equals 0 if at least one of the two conditions are not met.

- **MTBV** = Market-to-book value per ordinary share of firm i for fiscal year t.

- **Risk** = measure of debt-to-equity as a proxy for risk of firm i for fiscal year t.

- **Firmsize** = natural logarithm of market capitalization for firm i for fiscal year t.

- **dLoss** = a dummy variable which equals 1 if firm i has incurred a loss (negative EPS) in fiscal year t, as a proxy for firm persistency, and 0 otherwise.

- **dBig4** = a dummy variable which equals 1 if firm i is audited by a Big 4 firm in fiscal year t, as a proxy for auditor quality, and 0 otherwise.

- **ε** = error term

In order to understand how this model is used to operationalize the theoretical relation between auditor-induced comparability and quality of earnings, it is necessary to first explain the various components incorporated in this model. Consequently, this shall enable to interpret the coefficient of interest and its expected sign according to the hypotheses. This model is later referred to in this thesis as the 'first regression model'.

The dependent variable of this model is a three-day window cumulative abnormal return, which is measured based on the market model. In fact, there are a number of benchmarks which can be applied to estimate the abnormal returns of a firm, such as the Market Model (MM), the Capital Asset Pricing Model (CAPM), the Mean Adjusted Returns Model (MAR) and the Index Model (IM). In this research the Market Model is applied due to its higher validity in comparison with other models, following the research conducted by Cable and Holland (1999), and it is presented as follows:

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[6] Firm A has a "peer" firm B in case firm B is audited by the same Big 4 auditor and operates in the same industry as firm A, in the same fiscal year. This essentially means that firm A is also the "peer" firm of firm B, hence they are both categorized as "peer" firms.
[7] Standard Industrial Classification code

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \tag{2}$$

Where:

- R_{it} = rate of return of firm i's common stock on announcement day t.
- R_{mt} = rate of return of a market index on announcement day t.
- β_i = measure of sensitivity of R_{it} to market index.
- α_i = constant term
- ε_{it} = error term

This Market Model could be rearranged in order to calculate the abnormal return, and consequently derive the abnormal return, in the following way (Eventus, 2010):

$$AR_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt}) \tag{3}$$

This rearranged model displays that the abnormal return (AR_{it}) as the dependent variable, is calculated as the difference between the actual return and the expected return based on the coefficient estimates $\hat{\alpha}_i$ and $\hat{\beta}_i$ of firm i for period t. Consequently, the three-day cumulative abnormal return is the sum of abnormal return from one day prior to announcement (AR_{t-1}), through one day after the announcement (AR_{t+1}), as portrayed in the following formula:

$$CAR3_{it} = \sum_{t-1}^{t+1} R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt}) \tag{4}$$

This formula expresses the calculation of a three-day cumulative abnormal return, which is derived from the sum of the abnormal return one day before (t-1), through one day after (t+1) the announcement day (t). The reason a three-day window is applied in this research is following the use of such method by Francis and Ke (2006), who argue that a short window of three days isolates the impact of the earnings announcement, and further enabling to control for information leakage occurring prior to the announcement date. Such three-day window is commonly applied in event studies.

Furthermore, the unexpected earnings (UE) component of the main formula of this research (1), is based on the difference between the actual earnings per share and the expected earnings per share of firm *i* for period *t*. Such difference between the actual and the expected is also referred to as the earnings surprise or analysts' forecast error. The expected component of earnings reflects the most recent median consensus of analysts' forecast, following Francis and Ke (2006) who apply the same method. The authors' calculation of unexpected earnings is also applied in this research, which is measured by subtracting the most recent median consensus of analysts' forecast of earnings per share from the actual earnings per share, scaled by the end of the fiscal year stock price. This calculation is expressed in the following formula:

$$UE_{it} = \frac{EPS_{it,actual} - EPS_{it,expected}}{P_{it}}$$

(5)

The unexpected earnings along with the cumulative abnormal return are the fundamental components of the concept of earnings response coefficient. Now that these two components of the model have been explained, it is possible to understand how model (1) is operationalized to specifically assess the first hypothesis. The two coefficients which are observed by means of examining the first hypothesis are β_1 and β_2:

β_1 = The ERC of firms with no peer firm which is audited by the same Big 4 or operates in the same industry (2-digit SIC)

$\beta_1 + \beta_2$ = The ERC of firm with a peer firm which is both audited by the same Big 4 and operates in the same industry (2-digit SIC)

Hence, the coefficient β_1 captures the ERC of firms which do not meet at least one of the following two conditions: no peer firm which is audited by the same Big 4; or no peer firm which operates in the same industry. The coefficient of interest for assessing the first hypothesis is β_2, on the interaction between unexpected earnings and the existence of a peer firm which is both audited by the same Big 4 auditor and operates in the same industry. Intuitively, it is possible to interpret the model in the following way, when there is an earnings surprise, such that the unexpected earnings is either positive or negative, the cumulative abnormal return is expected to increase or decrease accordingly around the announcement date. Therefore, the earnings response coefficient captures

the reaction of the market to a one unit change in earnings surprise, and as a consequence, this measure indicates on the informativeness of the earnings news to investors, and hence on the quality of the earnings. Following this line of reasoning, hypothesis 1 expects that β_2 is positive. This implies that for firms which have a peer firm that is both audited by the same Big 4 and operates in the same industry, and therefore have more comparable financial statements, there shall be greater reaction to earnings surprises, which indicates on more informative and higher quality of earnings.

Prior studies stress that there are several determinants of ERC that need to be controlled for, which are firm size, growth, risk, and persistency of earnings (Holthausen & Verrecchia, 1988; Collins & Kothari, 1989; Easton & Zmijewski, 1989). These controls are included in order to isolate the coefficient of interest on 'SameBig4' by means of enabling a more reliable interpretation of the ERC. Although prior studies also control for other determinants, the control variables mentioned above are consistently used throughout ERC studies, and are therefore applied in this research. In addition to these generally established control variables, the auditor quality of each firm is also controlled for, following Haw, Qu and Wu (2008). This research controls for all the above mentioned control concepts using a unique proxy for each. The proxy for firm size is the natural logarithm of a firm's market capitalization, following the methodology executed by Francis and Ke (2006). The proxy for growth follows from Frankel et al. (2002), which is the ratio of the market-to-book value for common equity. The proxy for firm risk follows from Francis and Ke (2006), which is the ratio of total debt to total equity. The proxy for earnings persistence also follows from Francis and Ke (2006), which is a dummy variable that equals one if the firm incurred a loss in its corresponding fiscal year, and zero otherwise. This stems from the notion that earnings of loss firms are less persistent (Hayn, 1995). The last proxy, which is for auditor quality, is a dummy variable which equals one if a firm is audited by a Big 4 firm and zero otherwise (Haw et al., 2008). As previously mentioned, the control variables are determinants of the ERC, and therefore these have to be included as an interaction term with the unexpected earnings in the regression model.

Besides the expectation of sign for the coefficient of interest, the coefficients of the control variables are also expected to have specific signs. Such expectations are based on prior studies and theoretical reasoning. The coefficient on growth is expected to be positive, while the coefficients

on earnings persistence and firm risk are expected to be negative based on Francis and Ke (2006) and Haw et al. (2008). The coefficient on growth is predicted to be positive as investors are expected to react more to firms with higher growth prospects, as opposed to firms with lower growth prospects. The coefficients on earnings persistence and firm risk are predicted to be negative as the reaction of investors is expected to be lower for firms that have less earnings persistence and firms that are more risky. There is no prediction on the signs of the coefficient on firm size and auditor quality.

With regard to hypothesis 2 which concerns the secondary research of this thesis, the association examined in hypothesis 1 is tested based on the difference between the pre- and post-SOX act restrictions on NAS provision. The research model constructed to test the impact of the NAS restriction on the association between auditor-induced comparability and earnings quality, is a three-way interaction regression model that builds on model (1) with some modifications and additions of independent variables based on Francis and Ke (2006). The model used to examine hypothesis 2 is expressed as follows:

$$
\begin{aligned}
CAR3_{it} = {} & \alpha + \beta_1 UE_{it} + \beta_2 UE_{it} * dPost + \beta_3 UE_{it} * dSameBig4 + \beta_4 UE_{it} * dNAS_{it} + \beta_5 UE_{it} \\
& * dPost * dSameBig4_{it} + \beta_6 UE_{it} * dPost * dNAS_{it} + \beta_7 UE_{it} * dNAS_{it} \\
& * dSameBig4_{it} + \beta_8 UE_{it} * dPost * dNAS_{it} * dSameBig4_{it} \\
& + \gamma_1 (UE_{it} * MTBV_{it}) + \gamma_2 (UE_{it} * Risk_{it}) + \gamma_3 (UE_{it} * Firmsize_{it}) \\
& + \gamma_4 (UE_{it} * dLoss_{it}) + \gamma_5 (UE_{it} * dBig4_{it}) + \varepsilon_{it}
\end{aligned}
$$

$$(6)$$

Where:

- **dPost** = a dummy variable that equals 1 for fiscal years 2004-2005, and 0 for fiscal years 2000-2001. (Krishnan, 2010)
- **dNAS** = a dummy variable that equals 1 if the ratio of non-audit fees to total fees (the sum of audit and non-audit fees) paid to the incumbent auditor, exceeds the sample median of 0.171. (Francis & Ke, 2006).
- The other variables are the same as in model (1).

The main intention of this model is to examine the impact of the SOX-act restrictions on NAS provision by an incumbent auditor. After the restriction has been implemented, it is expected that auditors provide more similar services to their clients, thereby enhancing the comparability of

financial statements. Consequently, this might suggest that after the SOX implementation the comparability between a Big 4 clientele could be associated with earnings quality enhancement. However, as previous studies report mixed findings about the impact of NAS restrictions on earnings quality, hypothesis 2 does not predict the sign of β_8 which is the coefficient of interest. A positive sign indicates that the NAS restrictions enhances the association between auditor-induced comparability and earnings quality. The dummy variable for 'Post' is based on the research by Krishnan et al. (2010), whereby fiscal years 2002-2003 are not included in the research due to the time firms need to adapt to the new rules. Therefore the exclusion of these years should minimize the impact of the transition period on the comparability of financial statements. The dummy variable for 'NAS', which is based on the research by Francis and Ke (2006), captures the firms with relatively high levels of NAS fees, thereby enabling to examine the market's reaction to NAS restrictions in combination with the presence of auditor-induced comparability. Besides the modifications established for model (1) to obtain model (6), the dependent variable and other independent variables remain the same, with the same predictions for the coefficients on the control variables. This model is later referred to in this thesis as the 'second regression model'.

As the research design of this thesis has been explained, by means of measuring the hypotheses developed, it is now possible to present the operationalization of the conceptual relation between the independent and the dependent variable, using the Libby boxes. The Libby boxes which are alternatively known as the Predictive Validity Framework developed by Libby (1981), are applied to the conceptual relation investigated in this thesis and are presented in figure 1[8].

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[8] Figure 1 shows how the concepts and their relation are operationalized, such that auditor-induced comparability is operationalized by the dummy variable of Same Big 4, and the NAS restrictions by the SOX-act are operationalized by the interaction of dummy variables Pre/Post SOX and NAS ratio. The concept of the dependent variable, quality and informativeness of earnings, is operationalized by the cumulative abnormal return, while it is important to bear in mind that the earnings response coefficients are the main interest for drawing conclusions.

Figure 1: Libby Boxes

Independent   Dependent

Concepts

H1: Auditor-induced comparability

H2: Non-audit services restrictions by SOX-act

→ Quality and informativeness of earnings

Operationalization

Dummies:
H1: 1 = Same Big 4
     0 = Non-same Big 4
H2: 1 = Post-SOX
     0 = Pre-SOX
       *
1=NAS ratio > median
0=NAS ratio < median

→ 3-day window Cumulative Abnormal Return (CAR)

Control variables:
Earnings persistence (Loss firm), firm growth (Market-to-Book), firm size (Market Capitalization), firm risk (Debt-to-Equity), and auditor quality (Big 4)

5.3 Sample selection and data

The sample selection process conducted in this thesis, is based on the selection process followed by Francis et al. (2014), due to the reason that this research is an extension study thereof. Hence, the first step in the collection process entails the gathering of all data available for fiscal years 1991 through 2014 on the CRSP/Compustat Merged database[9]. This sample period is used due to the following reason. In the year 1989 two mergers occurred between established accounting firms

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[9] The CRSP (Center for Research in Security Prices)/Compustat Merged database is a database provided by WRDS (Wharton Research Data Services), which allows to gather combined information from the individual databases, therefore prevents the need to merge between the databases.

to form Deloitte and Ernst and Young (Francis et al., 2014). Due to such mergers, it takes time for the newly formed accounting firms to implement and settle on a unique style, and therefore, the sample period starts two years after these mergers took place. In contrast to Francis et al. (2014), whose sample period consists of 25 years (1987 – 2011), and entails firm-quarter observations, this thesis is comprised of firm-year observations, due to the fact that all yearly reported information is audited while quarterly reports are not always audited or to a less extent (PCAOB, 2007). The initial sample obtained from CRSP/Compustat Merged database consists of 183,258 firm-year observations. From this full sample, there are missing variables for several variables including total market value (82,347), stockholders' equity (58,889), total debt (8,148), and book value per share (110). This leads to a remaining sample of 33,764 of non-missing variables from the CRSP/Compustated Merged database.

Subsequently, following the selection procedure of Francis et al. (2014), only firms with fiscal years ending in March, June, September and December are retained. This procedure is performed by Francis et al. (2014) following De Franco et al. (2011). This leads to a remaining sample of 29,584. Furthermore, following Francis et al. (2014) firms with negative total assets or less than $10 million reported assets, are deleted from the sample, which yields a sample of 28,788. Additionally, all firms with names containing "HOLDING", "HOLDINGS", "HLDG", "LP", "LLP", "Partnership", and "ADR"; duplicated observations; firms in a 2-digit industry with less than 20 observations; and firm-year observations in which a firm switches its auditor[10], are all removed from the sample. This results in a final sample from CRSP/Compustat Merged database of 26,411. It is important to stress that despite the intention to acquire a sample of years 1991 through 2014, the remaining observations after the data cleaning procedures, results in a sample observations for years 1998 through 2014.

The second database which is used in this research is I/B/E/S[11], by means of gathering information about analysts' forecasts to enable the calculation of unexpected earnings. In the merging procedure between I/B/E/S and CRSP/Compustat Merged database, 20,365 firm-year observations matched. In order to calculate the unexpected earnings, both the most recent median of analysts'

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[10] This information is available for 76.27% of the final sample observations (Panel A, Table 2).
[11] I/B/E/S stands for Institutional Brokers' Estimate System, and the database is accessed through WRDS.

forecast as well as the actual EPS are needed. However, of the 20,365 merged observations, 19,545 possess complete information.

The third database used in this research is Eventus, and more specifically within this database, the 'Cross-Sectional Analysis – Daily event study' database is applied. This database allows the collection of Cumulative Abnormal Returns based on the firm identifier and the date of announcement, which is provided by I/B/E/S. As indicated earlier in this chapter, this thesis required the output of a three-day window around the announcement date, based on the Market Model. Of the 19,545 observations requested, 17,650 observations with complete information were merged.

This sample selection described thus far, concerns the primary research of this thesis of examining hypothesis 1. This sample shall be referred to as the 'primary sample' in this thesis. Prior to the operationalization of the model constructed for hypothesis 1, all continuous variables are winsorized at the 1 percent and 99 percent level. The selection process for the secondary research of examining hypothesis 2 is explained next. Panel A in Table 2 presents the sample selection process for the primary sample.

Regarding the secondary research of this thesis, an additional database, Audit Analytics, is used in order to obtain information about audit and non-audit fees paid to auditors. The output obtained from this database is then merged with the primary sample used for examining the first hypothesis. Of the primary sample (17,650), complete data of 9,469 firm-year observations (53.65%) are matched with Audit Analytics. However, it is important to stress that the merged sample used for the testing of the second hypothesis only requires firm-year observations for fiscal years 2000-2001 and 2004-2005. As a consequence, the sample used for the secondary research (hypothesis 2) is substantially smaller than the sample applied in testing hypothesis 1. This newly merged data used for hypothesis 2, shall be referred to as the 'secondary sample'. Since the first hypothesis is considered to be the main research conducted in this thesis, the primary sample applied in the research conducted for hypothesis 1 is not limited to the secondary sample obtained for testing the second hypothesis. Panel B in Table 2 presents the sample selection process for the secondary sample.

Table 2: Sample selection process

Panel A: Primary Sample (hypothesis 1 testing)	
Sample criteria	*Observations*
Initial observations from CRSP/Compustat FY 1991-2014	183,258
Less missing variables:	
Total Market value	(82,347)
Stockholders' Equity	(58,889)
Total Debt	(8,148)
Book value per share	(110)
Non-missing observations	33,764
Firms with FY ending in months March, April, June, December	29,584
Less: Firms with Total Assets less than $10 million	(796)
Firms with names including "HOLDING", "HOLDINGS", "HLDG", "LP", "LLP", "Partnership", and "ADR"	(2,159)
Duplicated observations	(14)
Firms in 2-digit industry with less than 20 observations	(49)
Firm-year switching auditor	(155)
Complete sample observations from CRSP/Compustat	26,411
Merge CRSP/Compustat observations with I/B/E/S	
Matched firm-year observations	20,365
Less: Missing variables of Actual EPS	(554)
Missing required identifier	(266)
Complete sample observations from merged CRSP/Compustat & I/B/E/S	19,545
Merge CRSP/Compustat & I/B/E/S observations with Eventus	
Matched firm-year observations	17,650
Sample Observations	17,650

Panel B: Secondary Sample (hypothesis 2 testing)	
Merge Primary Sample observations with Audit Analytics	
Matched firm-year observations	9,469
Only FY 2000-2001, 2004-2005	1,179
Sample Observations	1,179

This table provides information on the sample selection process, and describes how the final sample has been obtained after deleting certain observations for reasons such as missing data or zero values. A line starting with the word "matched" means that only the indicated amount was found for both the existing data and the newly added data. Panel A describes the selection process for the data to be used in the first regression analysis, for testing hypothesis 1. Panel B describes the selection process for the data to be used in the second regression analysis, for testing hypothesis 2.

6. Results

Following the collection and screening procedures of all the required data, as well as merging the data gathered from different databases, the statistical analysis of the data is conducted. The statistical analysis of the data entails the operationalization of the regression models presented in the previous chapter, by means of assessing the hypotheses developed in chapter 4, with the intention to consequently provide an answer the research question. The structure of this chapter is as follows, initially the descriptive statistics are presented and discussed, thereafter the assumptions of the Ordinary Least Squares (OLS) regression model are stressed with relation to the data used in this research, and the required amendments executed as a reaction to the violations identified. Subsequently, the regression results are presented and the interpretation of the results are discussed with regard to implications of such findings for the hypotheses. The findings of the two regression analysis which correspond to hypothesis 1 and 2, are presented separately. Furthermore, sensitivity tests are performed and their findings are presented in respect to the original regression results.

6.1 Descriptive analysis

Table 3 displays the descriptive statistics for the data used in this research. The table presents the mean, median and standard deviation for the various variables separately for the groups of the full sample, sample of 'Same Big 4' and sample of 'Non-Same Big 4'. Panel A and B portray the descriptive statistics for the data used for testing hypothesis 1 and 2, respectively. The statistics show that the cumulative abnormal return as well as the unexpected earnings are significantly different between the two samples of same Big 4 and non-same Big 4. These are considered to be the most fundamental variables in this research, which appear to be significantly different across the samples. In fact, it is noteworthy that the sign of the mean cumulative abnormal return among firms within the sample of same Big 4 is positive, while it is negative for the sample of non-same Big 4. Furthermore, regarding the control variables, it is evident that the proxy for growth, which is the market-to-book-ratio is not significantly different between the samples. Conversely, concerning the other continuous control variables, these are significantly different between the samples. The mean of the natural logarithm of market capitalization, which is the proxy for firm size, is significantly higher for the sample of the Big 4 (7.1899) than the mean of the non-same

Big 4 sample (5.6785). Similarly, the mean of the debt-to-equity ratio, as a proxy for firm risk, also shows a significantly higher mean for same Big 4 sample compared to non-same Big 4.

Concerning the sample data applied for the secondary research, the descriptive statistics are presented in Table 4. This data is displayed differently from the descriptive statistics of the sample used in the first regression model. The reason that the data is presented differently, is due to the fact that the second regression model is constructed based on a three-way interaction regression, such that for each of the three groups there are two categories. It is noteworthy that large differences exist between the number of observations for some of the interactions, such that for the group of non-same Big 4, where NAS is zero in the Pre-Sox period, there is only a single observation. Limited observations for some groups while there are substantially more observations for other groups, might constrain the reliability of the findings, as the regression results are based on unbalanced sample (Lowry, 2014).

Table 3: Descriptive statistics (model H1)

Variable	Full Sample (n = 17,650)			Same Big 4 (n = 14,203)			Non-Same Big 4 (n = 3,447)			Difference in means
	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation	Mean	Median	Std. Deviation	
Continuous:										
CAR3	0.00243	0.00121	0.07955	0.00315	0.00183	0.07819	-0.00057	-0.00133	0.08489	0.003719*
UE	-0.00252	0.00037	0.03111	-0.00172	0.00043	0.02805	-0.00583	0.00000	0.04125	0.004110***
MTBV	3.17479	2.18080	4.61367	3.19542	2.21189	4.61668	3.08981	2.06652	4.60091	0.105615
Firm size	6.89473	6.78230	1.76165	7.18990	7.07134	1.68685	5.67847	5.48989	1.52600	1.511435***
Risk	0.63339	0.27065	1.69555	0.66199	0.31346	1.71470	0.51553	0.09534	1.60914	0.146458***
Dummy:										
dLoss	0.21122	0.00000	0.40818	0.19334	0.00000	0.39493	0.28489	0.00000	0.45143	
dBig4	0.83462	1.00000	0.37154	1.00000	1.00000	0.00000	0.15318	0.00000	0.36021	
dSameBig4	0.80470	1.00000	0.39644							

The difference between the means is calculated by subtracting the means of 'Non-Same Big 4' from the means of the 'Same Big 4', and a t-test is conducted to identify whether the difference is significant. The upper section of the table only includes continuous variables, whereby CAR3 is the cumulative abnormal return for a 3-day window; UE is the Unexpected Earnings; MTBV is the market-to-book ratio as a proxy for growth; Firm size is measured by the log of market capitalization; and Risk is the debt-to-equity ratio. The lower section of the table represents the dummy variables: dLoss equals 1 for firms that made a loss in a given fiscal year and 0 otherwise; dBig4 equals 1 for firms that are audited by a Big 4 firm and 0 otherwise; and dSameBig4 is the variable of interest in this research that equals 1 for a firm that has a peer firm which is both audited by the same Big 4 and also operates in the same 2-digit industry and 0 otherwise. For the dummy variables difference between the means is not calculated since it would only be based on values of 1 and 0.

*   Significant at 10%, two-tailed

**   Significant at 5%, two-tailed

*** Significant at 1%, two-tailed

Table 4: Descriptive statistics (model H2)

				Continuous variables						Dummy variables	
				CAR3	UE	Firm size	dLoss	Risk	MTBV	dLoss	dBig4
non-Same Big 4	NAS=0	Pre-SOX	Obs.	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
			Mean	0.00822	-0.01425	4.75531	1.00000	0.62271	10.69564	1.00000	0.00000
			Median	0.00822	-0.01425	4.75531	1.00000	0.62271	10.69564	1.00000	0.00000
			Std. Dev.	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
		Post-SOX	Obs.	98.00000	98.00000	98.00000	98.00000	98.00000	98.00000	98.00000	98.00000
			Mean	-0.00381	-0.00030	6.27321	0.14286	0.53055	3.81431	0.14286	0.39796
			Median	-0.00234	0.00021	6.18440	0.00000	0.04254	2.90965	0.00000	0.00000
			Std. Dev.	0.08341	0.01174	1.43677	0.35173	1.12516	3.36296	0.35173	0.49199
	NAS=1	Pre-SOX	Obs.	18.00000	18.00000	18.00000	18.00000	18.00000	18.00000	18.00000	18.00000
			Mean	0.00711	-0.00106	7.55418	0.27778	1.08627	3.88002	0.27778	0.77778
			Median	-0.00012	-0.00001	7.54562	0.00000	0.61541	2.56776	0.00000	1.00000
			Std. Dev.	0.08552	0.00856	1.84050	0.46089	1.07966	3.34075	0.46089	0.42779
		Post-SOX	Obs.	64.00000	64.00000	64.00000	64.00000	64.00000	64.00000	64.00000	64.00000
			Mean	0.00967	-0.00237	6.43016	0.15625	0.40967	2.68094	0.15625	0.32813
			Median	0.00861	0.00014	6.29202	0.00000	0.14584	2.50692	0.00000	0.00000
			Std. Dev.	0.07283	0.01401	1.45327	0.36596	1.18253	2.78900	0.36596	0.47324
Same Big 4	NAS=0	Pre-SOX	Obs.	3.00000	3.00000	3.00000	3.00000	3.00000	3.00000	3.00000	3.00000
			Mean	-0.10871	0.00395	5.01298	0.00000	0.85208	2.00812	0.00000	1.00000
			Median	-0.14464	0.00329	4.85400	0.00000	0.65273	2.42261	0.00000	1.00000
			Std. Dev.	0.12439	0.00702	0.97028	0.00000	0.38807	0.89065	0.00000	0.00000
		Post-SOX	Obs.	488.00000	488.00000	488.00000	488.00000	488.00000	488.00000	488.00000	488.00000
			Mean	0.00640	-0.00066	6.96700	0.15984	0.45351	3.11311	0.15984	1.00000
			Median	0.00725	0.00037	6.84608	0.00000	0.25534	2.35585	0.00000	1.00000
			Std. Dev.	0.07490	0.01230	1.52901	0.36683	1.11399	3.72191	0.36683	0.00000
	NAS=1	Pre-SOX	Obs.	29.00000	29.00000	29.00000	29.00000	29.00000	29.00000	29.00000	29.00000
			Mean	0.01009	-0.00013	7.23356	0.13793	0.95969	2.08844	0.13793	1.00000

	Median	-0.00352	0.00028	7.32694	0.00000	0.73826	1.87944	0.00000	1.00000
	Std. Dev.	0.05959	0.01414	1.75360	0.35093	1.28521	1.56228	0.35093	0.00000
				478.0000	478.0000	478.0000	478.0000		478.0000
Post-	Obs.	478.00000	478.00000	0	0	0	0	478.00000	0
SOX	Mean	0.00089	0.00034	7.56647	0.06904	0.55437	3.54876	0.06904	1.00000
	Median	0.00527	0.00036	7.39733	0.00000	0.30441	2.86734	0.00000	1.00000
	Std. Dev.	0.06778	0.00713	1.79841	0.25378	0.96889	3.05859	0.25378	0.00000

The table above represents the descriptive statistics of the secondary data which is to be used in the analysis of the second regression model that corresponds to hypothesis 2. Due to the fact that the second regression model is based on a 3-way interaction, the 3 categories of which each has 2 groups, are presented on the left hand side. These categories are (1) Same Big 4, which is a dummy variable that equals 1 for a firm that has a peer firm which is both audited by the same Big 4 and also operates in the same 2-digit industry and 0 otherwise; (2) NAS is a dummy variable that equals 1 if the ratio of non-audit fees to total fees (the sum of audit and non-audit fees) paid to the incumbent auditor, exceeds the sample median of 0.171; and (3) Pre- and Post-SOX are an indication of whether the time period is before or after the SOX-act implementation in the US, such that pre-SOX indicates years 2000-2001 and post-SOX indicates years 2004-2005. The table provides information about the observations in each of the interaction groups, and the median mean and standard deviation of the variables. The variables on the left hand side represent the continuous variables, whereby CAR3 is the cumulative abnormal return for a 3-day window; UE is the Unexpected Earnings; MTBV is the market-to-book ratio as a proxy for growth; Firm size is measured by the log of market capitalization; and Risk is the debt-to-equity ratio. On the right hand side are the dummy variables: dLoss equals 1 for firms that made a loss in a given fiscal year and 0 otherwise; and dBig4 equals 1 for firms that are audited by a Big 4 firm and 0 otherwise.

6.2 Regression assumptions

There are a number of OLS regression assumptions that have to be examined with relation to the data used in this research. It is important to examine such assumptions before making any inferences about the findings generated from the given data, by means of providing credibility to the findings or rather treating the findings with sufficient caution. The assumptions that are discussed in this section are the assumptions of multicollinearity, homoscedasticity, normal distribution of errors, and their corresponding tests. Starting with multicollinearity, this term describes a situation in which there is a nearly perfect linear combination between at least two independent variables in the model (Field, 2009). The assumption therefore holds that such multicollinearity should not exist. This assumption is examined by the variance inflation factor (vif), and the rule of thumb under this test method suggests that multicollinearity does not exist when the vif is below 10 (Field, 2009). It is evident from Table 7 in Appendix 2 that multicollinearity exists, as the vif of several variables exceeds 10, which means that the assumption is violated. This indicates that the variable could be considered as a linear combination of the other independent variables, and as a consequence the estimates of the coefficients in the regression model become unstable as well as their standard errors are largely inflated. This issue is not surprising given that the unexpected earnings variable is multiplied with each of the control variables, and hence the correlation between independent variables is expected. In order to tackle this assumption violation, the control variables *firm size* and *Big 4 dummy* with relatively large vif are removed from the model, and as a result of removing these variable, the multicollinearity issue is eliminated as none of the vif measures exceed 10 (Appendix 2, Table 8).

Concerning the second OLS assumption, homoscedasticity refers to variance of the residuals which should be constant, meaning that the residuals of the independent variables should have the same variance (Field, 2009). Inversely, in case of violation of this assumption, it implies that heterogeneity exists, which suggests that the residuals form a pattern against the fitted values. This assumption could be tested based on graphical and non-graphical methods. In this research, the assumption of homoscedasticity is measured based on the Breusch-Pagan test, as presented in Table 9 in Appendix 2. The findings suggest that the null hypothesis of homoscedasticity is rejected, which means that the assumption is violated. In order to tackle this violation, the robust standard errors are applied in the regression.

The last assumption examined in this section concerns the normal distribution of the errors. This follows from the assumption that the residuals in the regression model are random, as well as normally distributed with a zero mean (Field, 2009). This assumption is tested based on the Shapiro-Wilk W test for normality. As evident from Table 10 in Appendix 2, the null hypothesis of normal distribution is rejected, meaning that the error terms are not normally distributed, which might be due to the large sample size[12].

6.3 Main regression analysis

This section discusses the findings of the first regression model which corresponds to the examination of the hypothesis 1. The first hypothesis predicts that auditor-induced comparability, due to firms being audited by the same Big 4 auditor and are operating in the same industry, is associated with enhanced informativeness and quality of earnings. In the operationalization part of this constructed relationship, this means that the earnings response coefficient is higher for firms who meet the conditions of having a peer firm which is both audited by the same big 4 auditor and operates in the same 2-digit SIC. Hence, the coefficient of interest as stressed in chapter 5 is the β_2 which is expected to be positive. As discussed in the previous section, given the identified multicollinearity issue, variables *firm size* and *Big 4 dummy* are removed from the regression analysis. The findings of the first regression model, which examine hypothesis 1 are presented in Table 5. To start with, the F-statistics indicate that the regression model is significant at the 1% significance level. The R-squared is 1.6% which is within the range of R-squared manifested by other studies of earnings response coefficient that mostly report on R-squared below 5% (Liu & Thomas, 2000). Concerning the estimation of the coefficients, the earnings response coefficient for non-same Big 4 firms (β_1) is positive and significant with a coefficient of 0.6880 and a p-value of 0.000 which means that it is significant at the 1% level. This coefficient estimation is consistent with the predictions. With regard to the coefficient of interest (β_2), it is evident that the earnings response coefficient -0.0272 with a non-significant p-value of 0.633, contradicts the prediction of a positive coefficient for β_2. The negative sign indicates that a firm with a peer firm which is audited by the same auditor and operates in the same industry, has a lower response to unexpected earnings in comparison with a firm that does not have a peer firm with those criteria. However, this coefficient is insignificant so no inferences can be made from the negative sign. This means

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[12] The Shapiro-Wilk W test for normality is not suited for a large sample size since small deviations from normality lead to rejection of the null (normality), which may lead to misleading inferences made about normality (Field, 2009).

that the first hypothesis that auditor-induced comparability is associated with enhanced informativeness and quality of earnings, is not supported. As previously mentioned, the earnings response coefficient of a 'same Big 4' firm is determined by the accumulation of the two coefficients β_1 and β_2, while the earnings response coefficient for a 'non-same Big 4' firm is β_1. In terms of magnitude of the coefficients, it is evident that the β_1 is substantially greater than β_2, which implies that even if the negative coefficient of β_2 was significant, the overall earnings response coefficient of a 'same Big 4' firm would be positive, illustrated as $\beta_1 + \beta_2 > 0$. Conclusively, the findings provide evidence that hypothesis 1 is rejected, suggesting that auditor-induced comparability based on the proxy of 'same Big 4', does not have a higher earnings response coefficient, and therefore is not associated with enhanced informativeness and quality of earnings.

The findings of the control variables of the regression model are also presented in Table 5 and provide further insights into the impact of such items on the earnings response coefficient. Interestingly, the sign of all the coefficients on the control variables included in the regression model are consistent with the predictions. To start with, the market-to-book ratio as a proxy for firm growth, has a positive coefficient of 0.0140 and a p-value of 0.022 which is significant at the 5% level. This suggests that for a firm with a higher growth prospect, the market reaction for a positive earnings surprise is higher than for a firm with a lower growth outlook. These results are also in line with Francis and Ke (2006) who capture growth by a different proxy, although this contradicts with the results of Haw et al. (2008) who capture growth with the same proxy as this research, although find a negative insignificant coefficient. With regard to the second control variable, debt-to-equity as a proxy for firm risk has a negative coefficient of -0.0206 with a p-value of 0.109 which is not significant at the 10% level. A negative sign indicates that for a firm which bears a higher risk, the market response to positive earnings surprise is lower, compared to a firm that bears a lower risk level. In terms of the coefficient sign these findings are in line with Francis and Ke (2006) who use the same proxy to capture firm risk. The third control variable is a based on a dummy variable that equals 1 for a loss firm, as a proxy for earnings persistence. The coefficient on this control variable is negative (-0.5116) with a p-value 0.000, which indicates that for a firm with lower earnings persistency there is lower market response to positive earnings surprise, compared with a firm that is considered to have more persistent earnings. This is in line with the findings of both Francis and Ke (2006) as well as Haw et al. (2008), in terms of both sign

and significance. Overall, the results of the three control variables discussed in this section display consistency with prior studies and are in accordance with the predicted sign.

Table 5: Regression results (model H1)

$$CAR3_{it} = \alpha + \beta_1 UE_{it} + \beta_2(UE_{it} * dSameBig4_{it}) + \gamma_1(UE_{it} * MTBV_{it}) + \gamma_2(UE_{it} * Risk_{it})$$
$$+ \gamma_3(UE_{it} * Firmsize_{it}) + \gamma_4(UE_{it} * dLoss_{it}) + \gamma_5(UE_{it} * dBig4_{it}) + \varepsilon_{it}$$

			Interest variable	Control variables					
			Same Big 4 dummy ×	Market-to-book dummy ×	Debt-to-Equity ratio ×	Firm size ×	Loss dummy ×	Big 4 dummy ×
	Intercept	UE	UE	UE	UE	UE	UE	UE
	α	β1	β2	γ1	γ2	γ3	γ4	γ5
Predictions		+	+	+	-	?	-	?
Coefficient	0.0024	0.6880	-0.0272	0.0140	-0.0206		-0.5116	
t-statistics	(4.00)***	(7.93)***	(-0.48)	(2.29)**	(-1.60)		(-6.31)***	
Rob. Std. Error	0.0006	0.0867	0.0570	0.0061	0.0128		0.0810	
Number of obs.	17,650							
R-squared	0.016							
F-statistics	0.0000							

The dependent variable of the above regression analysis is the 3-day window cumulative abnormal return (CAR). The variable UE is Unexpected Earnings, which is multiplied with each of the independent variables, which enables the calculation of the earnings response coefficient (ERC). The variable of interest is 'Same Big 4' which is a dummy variable that equals 1 for a firm that has a peer firm that is both: audited by the same Big 4; and operates in the same 2-digit industry. The control variables represent established determinants of ERC, which are firm growth (market-to-book), firm risk (debt-to-equity), firm size (market capitalization), and earnings persistence (loss firm). An additional control variable captures the quality of the auditor, based on whether a Big 4 firm or not. This regression is corrected for robustness of standard errors due to heteroskedasticity identified. The predicted signs are based on prior literature findings.

* Significant at 10%, two-tailed
** Significant at 5%, two-tailed
*** Significant at 1%, two-tailed

6.3.1 Sensitivity analyses

In addition to the original regression results presented in the previous section, additional sensitivity tests are conducted by means of identifying the robustness of the findings reported. The sensitivity analyses conducted and presented as follows correspond to the examination of hypothesis 1. This section displays and discusses several sensitivity analyses which include fixed effect model, regression based on extended criteria for 'same Big 4' condition, regression based on years other

than 2008-2009 that are substantially influenced by financial crisis, and regression analyses based on sample of only Big 4 data.

6.3.2 Fixed effects model

Despite the uncommon application of a fixed effects model in the ERC regression analysis, Ghosh, Kallapur and Moon (2009) constructed a fixed effects model, as part of their sensitivity analysis to their ERC regression results. As in the case of Ghosh et al. (2009), this thesis concerns a cross-sectional study which raises concern about the association between the variable of interest and the dependent variable that could be attributed to correlated omitted variables. Hence, in order to tackle the potential issue of correlated omitted variables, which may lead to biased coefficients, a fixed effects model is estimated. The results of the fixed effects model are presented in Table 11 in Appendix 3. The findings reveal similar results as in the original regression analysis. Slight difference exists in terms of the coefficients value of the certain variables such as of unexpected earnings (β_1), which in the fixed effects model is 0.7749 and in the original model the coefficient is 0.6880. Besides this difference, the coefficients estimates, their corresponding significance level as well as the R-squared and F-statistics are similar to the original regression model. This implies on the robustness of the original model.

6.3.3 Extended 'Same Big 4'

The notion of the identifying a firm as having a 'same Big 4' relies on the condition of a firm having a peer firm which is audited by the same Big 4 and also operates in the same industry. This is then translated into the regression model by examining whether a firm which is categorized as having a 'same Big 4' also has a higher earnings response coefficient. However, these criteria are based on the study by Francis et al. (2014), and do not account for whether the one firm and its peer firm have the same fiscal year end month. Hence, this sensitivity analysis adds another criterion for categorizing a firm as a 'same Big 4', being that the fiscal year end month of the peer firm also has to be the same. The idea behind this additional criterion is that when an investor compares between two firms, the comparison should be more credible when the firms have the same fiscal year and are therefore subject to the same confounding events that happen in the same fiscal period. Therefore, the regression model remains the same as the original, while only the 'same Big 4' variable changes to the new variable with the extended criteria, named 'Extended same Big 4' in the regression model.

The findings of this modified regression model are presented in Table 12 in Appendix 3. The results reveal that the extended criterion for categorizing a firm as 'Extended same Big 4' has a negative coefficient of -.0146 and a p-value of 0.798, which is not significant. This is consistent with the findings of the original regression model that manifests negative and insignificant coefficient for 'same Big 4'. These findings provide further evidence that auditor-induced comparability, based on an additional condition, is not associated with enhanced informativeness and quality of earnings. In addition to the coefficient of interest (β_2), all other independent variables are consistent with the findings of the original regression, in terms of both sign and significance. It is worth mentioning that the magnitude of the coefficients as well as of the p-values are quite similar between the regression models. Hence, by means of sensitivity analysis, the results of the modified regression support the robustness of the findings generated by the original regression model.

6.3.4 Exclusion of years 2008-2009

Earnings response coefficient as a measure for quality earnings is fundamentally based on the reaction of the market to earnings news, as captured by the stock prices on the financial market. However, it is important to understand that this measure may also be affected by other external influences that could alter the reaction of investors to earnings news. The impact of such external influences are intended to be mitigated by forming a 3-day window period, as well as controlling for established determinants of earnings response coefficients as discussed in chapter 5. Despite the actions to limit the impact of external factors on the measure of earnings response coefficient, the financial crisis in the US had a major impact on the behavior of financial markets and investors' willingness to actively trade in stocks (Hoffmann, Post & Pennings, 2012). As a consequence, it would be interesting to analyze whether the impact of financial crisis in years 2008 and 2009 had an impact on the earnings response coefficient, and controlling for these years might alter the coefficient of interest.

In order to operationalize this construct the original regression model is used, while the sample excludes the years 2008 and 2009, as these are the years that had the most impact on the financial markets (Frankel & Saravelos, 2012). This modification of the sample entails a reduction in the sample size of 14,866 firm-year observations. The findings of this regression model are presented in Table 13 in Appendix 3. The results show that the coefficient of interest remains similar as in

the original regression. This sensitivity analysis is intended to examine whether the exclusion of the years in which the financial crisis had the most impact on the financial markets, changes the coefficient of interest. The findings suggest that the original regression is robust. It is worth mentioning that the R-squared of this regression analysis is 1.9% which is 0.3 percentage points higher than the original regression. This could mean that the exclusion of the financial crisis years enhances the explanatory power of the independent variables in terms of the variation in the dependent variable.

6.3.5 Big 4 sample

It is important to stress that originally the first regression model also includes a dummy variable of whether a firm is audited by a Big 4, by means of controlling for a possible endogeneity issue of correlation between an independent variable and the error term. However, the inclusion of Big 4 as a control variable leads to a high multicollinearity with the variable of interest (same Big 4), due to the fact that Big 4 is a condition for determining the dummy of same big 4, such that a high correlation exists between these two variables. Hence, by excluding this control variable, the multicollinearity problem is reduced. The intention of this sensitivity analysis is to examine whether controlling for Big 4 has an impact on the original findings, by running the same regression with only firm-year observations that are audited by a Big 4.

The operationalization side of this construct entails the removal of firm-year observations that are audited by a non-Big 4 firm, while using the original regression model. This leads to a sample of only firms that are audited by a Big 4, which results in 14,731 firm-year observations. The findings of this sensitivity analysis are presented in Table 14 in Appendix 3. The results display a higher R-squared (1.8%) in relation to the original regression analysis, while the coefficient of interest remains the same as negative and non-significant. This further provides evidence that the original regression analysis is robust.

6.4 Secondary regression analysis

This section discusses the findings of the regression model 2 which corresponds to the examination of the hypothesis 2. The second hypothesis examines the impact of the NAS restrictions as implemented by the SOX-act, on the association between auditor-induced comparability and earnings quality which is predicted by the first hypothesis. Due to mixed evidence on the impact

of NAS restrictions on earnings quality in the accounting literature, no predictions are made in relation to the impact on the association. However, the coefficient of interest to identify whether such impact does exist is β_8, such that a positive sign indicates that the NAS restrictions have a positive impact on the association between auditor-induced comparability and earnings quality, while a negative sign has the opposite impact.

The results of this regression model are displayed in Table 6. It is important to stress that several independent variables which were presented in regression model 6, are excluded from the regression results displayed. These excluded variables are *dPost*, *dSameBig4*, *dNAS*, *dPost*dSameBig4*, *Firmsize*, and *dBig4*. These are excluded from the regression model due to the high vif which arise for these variables in case these are included. To begin with the analysis of this regression results, the F-statistics indicate that the regression analysis is significant at the 1% significance level. The R-squared is 3.6% which is within the range of R-squared manifested by other studies of earnings response coefficient that mostly report on R-squared below 5% (Liu & Thomas, 2000). Concerning the estimation of the coefficient of interest β_8, the findings present a negative coefficient and a p-value of 0.433 which means that the coefficient not significant. These findings provide evidence that NAS restrictions implemented by the SOX-act have no significant impact on the association between auditor-induced comparability and earnings quality. These findings suggest that hypothesis 2, which is stated in the null form that NAS restrictions have no impact on the association between auditor-induced comparability and earnings quality, is not rejected.

It is further evident that only two coefficients in this regression model are significant. Firstly, the default earnings response coefficient which is the coefficient on earnings surprise, is positive (2.309) and significant (p-value = 0.000). The other significant coefficient is the control variable for a loss company, -2.130 and p-value 0.001 which is significant at the 1% level, and consistent with the prediction of a negative coefficient. The interpretation of the coefficients in this regression model are limited due to the fact that several coefficients are excluded from the analysis, which means that the included coefficients possibly capture other variables as well.

Table 6: Regression results (model H2)

$$CAR3_{it} = \alpha + \beta_1 UE_{it} + \beta_2 UE_{it} * dPost + \beta_3 UE_{it} * dSameBig4 + \beta_4 UE_{it} * dNAS_{it} + \beta_5 UE_{it} * dPost * dSameBig4_{it} + \beta_6 UE_{it} * dPost * dNAS_{it} + \beta_7 UE_{it} * dNAS_{it} * dSameBig4_{it} + \beta_8 UE_{it} * dPost * dNAS_{it} * dSameBig4_{it} + \gamma_1(UE_{it} * MTBV_{it}) + \gamma_2(UE_{it} * Risk_{it}) + \gamma_3(UE_{it} * Firmsize_{it}) + \gamma_4(UE_{it} * dLoss_{it}) + \gamma_5(UE_{it} * dBig4_{it}) + \varepsilon_{it}$$

									Interest variable	Control variables				
			Post dummy × UE	Same Big 4 dummy × UE	NAS ratio dummy × UE	Post dummy × Same Big 4 dummy × UE	Post dummy × NAS ratio dummy × UE	NAS ratio dummy × Same Big 4 dummy × UE	Post dummy × NAS ratio dummy × Same Big 4 dummy × UE	Market-to-book dummy × UE	Debt-to-Equity ratio × UE	Firm size × UE	Loss dummy × UE	Big 4 dummy × UE
	Intercept α	UE β1	β2	β3	β4	β5	β6	β7	β8	γ1	γ2	γ3	γ4	γ5
Predictions		+	+	+	?	?	?	?	?	+	-	?	-	?
Coefficient	0.0025	2.3086					1.2096	-0.3172	-1.0676	-0.0397	0.0445		-2.1296	
t-statistics	(-1.16)	(5.15)***					(1.39)	(-0.31)	(-0.78)	(-0.45)	(0.22)		(-3.3)***	
Rob. StdError	0.0021	0.4479					0.8733	1.0231	1.3620	0.0874	0.2028		0.6448	
Number of obs.	1,179													
R-squared	0.036													
F-statistics	0.0000													

The dependent variable of the above regression analysis is the 3-day window cumulative abnormal return (CAR). The variable UE is Unexpected Earnings, which is multiplied with each of the independent variables, which enables the calculation of the earnings response coefficient (ERC). The 'Post dummy' independent variable equals 1 for years 2004-2005 and 0 for years 2001-2002, representing pre- and post-SOX act. 'Same Big 4 dummy' equals 1 for a firm that has a peer firm that is both: audited by the same Big 4; and operates in the same 2-digit industry. 'NAS ratio dummy' equals 1 if the ratio of non-audit fees to total fees (the sum of audit and non-audit fees) paid to the incumbent auditor, exceeds the sample median of 0.171. The variable of interest is 'Post dummy x NAS ratio dummy x Same Big 4 dummy', of which the coefficient captures the impact of NAS restrictions implemented by SOX on the relation between auditor-induced comparability and earnings quality. The control variables represent established determinants of ERC, which are firm growth (market-to-book), firm risk (debt-to-equity), firm size (market capitalization), and earnings persistence (loss firm). An additional control variable captures the quality of the auditor, based on whether a Big 4 firm or not. This regression is corrected for robustness of standard errors due to heteroskedasticity identified. The predicted signs are based on prior literature findings.

*   Significant at 10%, two-tailed, **   Significant at 5%, two-tailed, *** Significant at 1%, two-tailed

6.5 Results conclusion

The research conducted in this thesis attempts to provide insights into the question raised following Francis el al. (2014), of whether auditor-induced comparability is associated with informativeness and quality of earnings. The two hypotheses which were developed in this thesis intend to shed light on this association, and to subsequently provide an answer to the research question. This chapter initially discusses the highlights of the descriptive statistics that are used in the regression analysis. Thereafter, the OLS assumptions are reviewed with relation to the statistics used in this regression, whereby it is stressed that multicollinearity, homoscedasticity and normality are violated, although these violations are tackled by robustness of standard errors and removal of certain variables. Subsequently, the findings of the first regression model are presented and discussed, suggesting that hypothesis 1 of positive association between auditor-induced comparability and earnings quality is rejected. Several sensitivity tests are conducted including a fixed effects model, the extension of criteria to categorizing 'same Big 4', exclusion of the financial crisis years 2008 and 2009, and applying the sample of only Big 4 firms. All these sensitivity analyses suggest that the results of the original regression are robust. Lastly, the findings of the second regression model are presented and discussed, providing evidence that hypothesis 2 of no impact of NAS restrictions on the association between auditor-induced comparability and earnings quality, is not rejected. These findings form the basis to providing an answer to the research question in the conclusion of this thesis, in the following chapter.

7. Summary and conclusion

The purpose of this thesis is to conduct an extension study to the research by Francis et al. (2014) who find that firms which are audited by the same Big 4 auditor have more comparable financial statements. The authors (Francis et al., 2014) refer to this phenomena as 'auditor style', which implies that each Big 4 firm has its own unique in-house working rules and interpretations of accounting rules, that subsequently lead to more financial comparability among clients of each Big 4 firm. By means of extending their research, this thesis attempts to provide evidence as to whether this auditor-induced comparability is associated with enhancement of informativeness and quality of earnings. Consequently, the findings of this thesis could provide further insights into the question raised by Francis et al. (2014), of whether the comparability found between the firms'

financial statements is indeed true comparability or rather uniformity. The concept of comparability is central in accounting, and is one of the fundamental reasons for implementing and enforcing accounting standards. Whereas comparability makes similar things appear more similar and different things appear more different, uniformity makes different things appear more similar. The research question that is examined in this thesis is as follows:

Is financial comparability resulting from auditor style associated with earnings quality?

There are two main concepts which are inherent in this perceived relationship, these are auditor-induced accounting comparability and earnings quality. Accounting comparability refers to the qualitative characteristic that allows users to determine and comprehend both the similarities and differences between items (FASB, 2010). Auditor-induced accounting comparability concerns the context in which comparability is enhanced between two firms, in case the firms are audited by the same Big 4 auditor. The accounting comparability that is identified by Francis et al. (2014) is based on dimensions such as accruals and earnings structure. The other fundamental concept in the examined association is earnings quality, which is defined in this thesis as the provision of information about the firm's financial performance that is relevant to decision making (Dechow et al., 2010). The agency theory is applied in this thesis to draw the link between the concepts. According to the theory, the information asymmetry between management and investors is ought to diminish in case of enhanced comparability due to auditor style, given that more insights are obtained about the underlying performance of firms, which consequently enhances earnings quality.

Three streams of literature are used in the formulation of the two hypotheses of this thesis, which intend to subsequently provide an answer to the research question. The first hypothesis predicts that there is a positive association between auditor-induced comparability and earnings quality. This hypothesis is based on findings of previous literature that suggest on such relationship, and is therefore stated in the alternative form. Concerning the second hypothesis, which is related to the secondary research in this thesis, examines the impact of the NAS restrictions implemented by the SOX-act on the association investigated in hypothesis 1. Given that mixed evidence are reported on the impact of NAS restrictions on earnings quality and auditor independence, the second hypothesis is stated in the null form that there is no impact on the

perceived association. The operationalization of the conceptual relations investigated in this thesis are based on the earnings response coefficient regression model. This regression model is applied in this research as a proxy for earnings quality, which also enables to capture the concept of auditor-induced comparability. The advantage of this proxy over other measures is the ability to measure the direct link between earnings and decision usefulness, whereby the latter reflects earnings quality by definition. Furthermore, the proxies for earnings quality are not as intuitively convincing in capturing the examined relationship as the earnings response coefficient. These arguments justify the reasoning for applying the earnings response coefficient as the research design of this thesis.

The findings of this research provide evidence that no significant association exists between auditor-induced comparability and informativeness and quality of earnings. This suggests that the first hypothesis of this thesis is rejected. The sensitivity analyses which included four different tests indicate that the original findings are robust, and provide more comprehensive basis to rejecte the first hypothesis. With regard to the secondary research of this thesis, which is related to the second hypothesis, the findings illustrate that there is no impact of NAS restriction on the association between auditor-induced comparability and earnings quality. Hence, the second hypothesis stated in the null form is not rejected. By means of answering the research question, these findings form the basis to conclude that there is no association between accounting comparability resulting from auditor style and earnings quality.

This conclusion has a number of implications. First, the findings of this research are important for the main purpose of this thesis as an extension study to Francis et al. (2014). The suggestion made by Francis et al. (2014) to investigate the relationship examined in this thesis, is to determine whether auditor-induced comparability identified in their research is indeed comparability and not uniformity. The findings of this thesis suggest that the comparability due to auditor style identified by Francis et al. (2014) is not 'true' comparability, but rather uniformity which does not improve the informativeness and quality of earnings. Despite findings by Francis et al. (2014) that could potentially indicate on positive association between auditor-induced comparability and earnings quality, the results presented in this thesis suggest the opposite. This leads to the second contribution of this thesis which is the contribution to the literature. This thesis contributes to the literature by providing evidence that what might be perceived as greater comparability of financial

statements between two firms that are audited by the same Big 4, does not result in actual comparability but instead leads to uniformity. This is the first study that investigates this relationship directly, which resembles a new dimension of investigating the implications of auditor-induced comparability. With regard to the findings of the secondary research, these also contribute to the literature as they suggest that restricting the provision of NAS by an incumbent auditor, does not enhance the quality of earnings, within the context of auditor-induced comparability. Another contribution of this thesis relates to the users of financial statements who base their decision making processes on the information disclosed by firms. Users of the financial statements such as investors, banks, or other capital market participants, who seek information about the underlying performance of the firm, should not base their evaluation on the perceived comparability between firms that are audited by the same Big 4, as the results signify. Further contribution of this research could be to standard setters, as the findings provide additional evidence that restrictions on NAS provision by an incumbent auditor does not lead to higher earnings quality. This may provide alternative insights into the debate on the constraints imposed on various NAS provision by auditors.

The research conducted in this thesis is however not free of limitations. The limitations identified in this research could be divided in two categories. The first category concerns the general drawbacks of the research design in using earnings response coefficient as a proxy for earnings quality, while the second category refers to the limitations specific to this thesis. In terms of the general drawbacks of applying earnings response coefficient in the research design, this proxy assumes market efficiency, such that market prices are expected to capture all available information (Dechow et al., 2014). Although Bloomfield (2002) provides evidence that the hypothesis of market efficiency does not hold, and alternatively develops the 'incomplete revelation hypothesis', which consequently raises doubts on the credibility of ERC. Additional concern with ERC is the issue of correlated omitted variables that could arise from several factors including endogeneity and errors in measuring the component of earnings surprise. This could potentially lead to misleading inferences of the coefficients and subsequently false interpretations of the estimated model. With regard to the limitations specific to this research, several violations of the regression assumptions were identified, although corrective practices were performed by means of eliminating such issues. As part of the corrective practices, a number of independent variables are removed from the regression model, both in the first and second regression, which

subsequently led less clear interpretation of the coefficient estimates. Furthermore, the data for the second regression model which is based on a three-way interaction, has unbalanced sample design, whereas for a particular interaction group there is a single observation, another groups have substantially more. This issue could lead to misleading interpretation of the results. This specific issue is due to the limited data available for the years before the SOX-act which resulted in unbalanced sample. Additionally, this research focuses primarily on the US, which does not enable to generalize the obtained findings. Considering all mentioned limitations, it should be stressed that the findings and conclusions made in this thesis should be treated with caution.

Future research could focus on constructing a different model for capturing the association between auditor-induced comparability and earnings quality, in order to provide a more comprehensive basis to determine the nature of the sought association. In terms of generalization of the findings, future research could also focus on other setting such as economies that apply IFRS and possibly find similarities and differences with the US setting. It is important to stress that the restrictions on NAS provision tested in this research are specific to the US, such that in other countries such restrictions do not exist (Australia), or exist in other forms (Hossain, 2013). It could be interesting to investigate the impacts of such setting divergences.

8. References

American Institute of Certified Public Accountants. (1988). *Statement on auditing standard No. 59*: *The auditor's consideration of an entity's ability to continue as a going concern*. New York: AICPA.

Armstrong, C. S., Barth, M. E., Jagolinzer, A. D., & Riedl, E. J. (2010). Market reaction to the adoption of IFRS in Europe. *The Accounting Review*, *85*(1), 31-61.

Ashbaugh, H., LaFond, R., & Mayhew, B. W. (2003). Do nonaudit services compromise auditor independence? Further evidence. *The Accounting Review*, *78*(3), 611-639.

Ball, R., Robin, A., & Wu, J. S. (2003). Incentives versus standards: properties of accounting income in four East Asian countries. *Journal of Accounting and Economics*, *36*(1-3), 235-270.

Bamber, L. S., Jiang, J., & Wang, I. Y. (2010). What's my style? The influence of top managers on voluntary corporate financial disclosure. *The Accounting Review*, *85*(4), 1131-1126.

Barth, M. E., Landsman, W. R., Lang, M., & Williams, C. (2012). Are IFRS-based and US GAAP-based accounting amounts comparable? *Journal of Accounting and Economics*, *54*(1), 68-93.

Beaulieu, P., & Reinstein, A. (2010). Belief perseverance among accounting practitioners regarding the effect of non-audit services on auditor independence. *Journal of Accounting and Public Policy*, *29*(4), 353-373.

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

Beest, F. van (2011). *Rules-based and principles-based accounting standards and earnings management*. Enschede, The Netherlands: Ipskamp.

Beneish, M. D., Miller, B. P., & Yohn, T. L. (2015). Macroeconomic evidence on the impact of mandatory IFRS adoption on equity and debt markets. *Journal of Accounting and Public Policy*, *34*(1), 1-27.

Bennett, B., Bradbury, M., & Prangnell, H. (2006). Rules, principles and judgments in accounting standards. *ABACUS*, *42*(2), 189-204.

Bloomfield, R. J. (2002). The "incomplete revelation hypothesis" and financial reporting. *Accounting Horizons*, *16*(3), 233-243.

Bradshaw, M. T., & Miller, G. S. (2008). Will harmonizing accounting standards really harmonize accounting? Evidence from non-US firms adopting US GAAP. *Journal of Accounting, Auditing & Finance*, *23*(2), 233-264.

Bradshaw, M. T., Miller, G. S., & Serafeim, G. (2009). Accounting method heterogeneity and analysts' forecasts. *Unpublished paper, University of Chicago, University of Michigan, and Harvard University*.

Brochet, F., Jagolinzer, A. D., & Riedl, E. J. (2013). Mandatory IFRS adoption and financial statement comparability. *Contemporary Accounting Research*, *30*(4), 1373-1400.

Brown, J. R., Falaschetti, D., & Orlando, M. J. (2010). Auditor independence and the quality of information in financial disclosures: evidence for market discipline versus Sarbanes-Oxley proscriptions. *American Law and Economics Review*, *12*(1), 39-68.

Cable, J., & Holland, K. (1999). Modelling normal returns in event studies: a model-selection approach and pilot study. *The European Journal of Finance*, *5*(4), 331-341.

Cascino, S., & Gassen, J. (2015). What drives the comparability effect of mandatory IFRS adoption? *Review of Accounting Studies*, *20*(1), 242-282.

Chi, S. (2009). Simultaneous presence of different domestic GAAPs and investors' limited attention bias in U.S. equity market: Implication of convergence. *Working Paper*.

Cohen, D. A., Dey, A., & Lys, T. Z. (2008). Real and accrual-based earnings management in the pre- and post-Sarbanes-Oxley periods. *The Accounting Review*, *83*(3), 757-787.

Cole, V., Branson, J., & Breesch, D. (2012). The uniformity-flexibility dilemma when comparing financial statements. *International Journal of Accounting & Information Management*, *20*(2), 114-141.

Collins, D. W., & Kothari, S. (1989). An analysis of intertemporal and cross-sectional determinants of earnings response coefficients. *Journal of Accounting and Economics*, *11*(2-3), 143-181.

Cushing, B. E., & Loebbecke, J. K. (1986). *Comparison of audit methodologies of large accounting firms*. Sarasota, FL: American Accounting Association.

De Franco, G., Kothari, S., & Verdi, R. S. (2011). The benefits of financial statement comparability. *Journal of Accounting Research*, *49*(4), 895-931.

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

Dechow, P., Ge, W., & Schrand, C. (2010). Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics*, *50*(2-3), 344-401.

Dee, C. C., Lulseged, A. A., & Nowlin, T. S. (2002). Earnings quality and auditor independence: An examination using non-audit fee data. *Working paper, Virginia Commonwealth University*.

DeFond, M., Hu, X., Hung, M., & Li, S. (2011). The impact of mandatory IFRS adoption on foreign mutual fund ownership: The role of comparability. *Journal of Accounting and Economics*, *51*(3), 240-258.

DeFond, M. L., Raghunandan, K., & Subramanyam, K. (2002). Do non-audit service fees impair auditor independence? Evidence from going concern audit opinions. *Journal of Accounting Research*, *40*(4), 1247-1274.

Dichev, I. D., Graham, J. R., Harvey, C. R., & Rajgopal, S. (2013). Earnings quality: Evidence from the field. *Journal of Accounting and Economics*, *56*(2-3), 1-33.

Easton, P. D., & Zmijewski, M. E. (1989). Cross-sectional variation in the stock market response to accounting earnings announcements. *Journal of Accounting and Economics*,*11*(2-3), 117-141.

Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *The Journal of Finance*, *25*(2), 383-417.

Field, A. P. (2009). *Discovering statistics using SPSS* (3rd ed.). London: Sage Publications.

Financial Accounting Standards Board (FASB). (2010). *Conceptual framework for financial reporting: statement of financial accounting concepts No. 8*. Norwalk, CT: FASB.

Francis, J. R., & Ke, B. (2006). Disclosure of fees paid to auditors and the market valuation of earnings surprises. *Review of Accounting Studies*, *11*(4), 495-523.

Francis, J. R., Maydew, E. L., & Sparks, H. C. (1999). The role of big 6 auditors in the credible reporting of accruals. *Auditing: A Journal of Practice & Theory*, *18*(2), 17-34.

Francis, J. R, Nanda, D., & Olsson, P. (2008). Voluntary disclosure, earnings quality, and cost of capital. *Journal of Accounting Research*, *46*(1), 53-99.

Francis, J. R., Pinnuck, M. L., & Watanabe, O. (2014). Auditor style and financial statement comparability. *The Accounting Review*, *89*(2), 605-633.

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 non-audit services and earnings management. *The Accounting Review*, *77*(4), 71-105.

Frankel, J., & Saravelos, G. (2012). Can leading indicators assess country vulnerability? Evidence from the 2008–09 global financial crisis. *Journal of International Economics*, *87*(2), 216-231.

Hail, L., Leuz, C., & Wysocki, P. (2010). Global accounting convergence and the potential adoption of IFRS by the U.S. (Part I): Conceptual underpinnings and economic analysis. *Accounting Horizons*, *24*(3), 355-394.

Haw, I. M., Qi, D., & Wu, W. (2008). The economic consequence of voluntary auditing. *Journal of Accounting, Auditing & Finance*, *23*(1), 63-93.

Hayes, R. S., Gortemaker, J. C., & Wallage, P. (2014). *Principles of auditing: An introduction to international standards on auditing*. Harlow, England: Prentice Hall, Financial Times.

Hayn, C. (1995). The information content of losses. *Journal of Accounting and Economics*, *20*(2), 125-153.

Healy, P. M., & Palepu, K. G. (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of Accounting and Economics*, *31*(1-3), 405-440.

Healy, P. M., & Wahlen, J. M. (1999). A review of the earnings management literature and its implications for standard setting. *Accounting Horizons*, *13*(4), 365-383.

Hoffmann, A. O., Post, T., & Pennings, J. M. (2013). Individual investor perceptions and behavior during the financial crisis. *Journal of Banking & Finance*, *37*(1), 60-74.

Holthausen, R. W., & Verrecchia, R. E. (1988). The effect of sequential information releases on the variance of price changes in an intertemporal multi-asset market. *Journal of Accounting Research*, *26*(1), 82-106.

Hossain, S. (2013). Effect of regulatory changes on auditor independence and audit quality. *International Journal of Auditing*, *17*(3), 246-264.

International Financial Reporting Standards (IFRS). (2016a). *IFRS application around the world jurisdictional profile: Australia*.

International Financial Reporting Standards (IFRS). (2016b). *IFRS application around the world jurisdictional profile: European Union*.

International Financial Reporting Standards (IFRS). (2016c). *IFRS application around the world jurisdictional profile: United States of America*.

International Financial Reporting Standards (IFRS). (2016d). *Convergence between IFRSs and US GAAP*.

Joos, P. P., & Leung, E. (2013). Investor perceptions of potential IFRS adoption in the United States. *The Accounting Review*, *88*(2), 577-609.

Kieso, D. E., Weygandt, J. J., & Warfield, T. D. (2011). *Intermediate accounting: Vol. 1*. Hoboken, NJ: John Wiley & Sons.

Kim, S., Kraft, P., & Ryan, S. G. (2013). Financial statement comparability and credit risk. *Review of Accounting Studies*, *18*(3), 783-823.

Kinney, W. R., Palmrose, Z., & Scholz, S. (2004). Auditor independence, non-audit services, and restatements: Was the U.S. government right? *Journal of Accounting Research*, *42*(3), 561-588.

Kothari, J., & Barone, E. (2011). *Advanced financial accounting: An international approach*. Harlow, England: Financial Times Prentice Hall.

Kothari, S., Ramanna, K., & Skinner, D. J. (2010). Implications for GAAP from an analysis of positive research in accounting. *Journal of Accounting and Economics*, *50*(2-3), 246-286.

Krishnan, J., Su, L., & Zhang, Y. (2011). Nonaudit services and earnings management in the pre-SOX and post-SOX Eras. *Auditing: A Journal of Practice & Theory*, *30*(3), 103-123.

Lang, M. H., Maffett, M. G., & Owens, E. L. (2010). Earnings comovement and accounting comparability: The effects of mandatory IFRS adoption. *Working paper, University of North Carolina, University of Chicago, and University of Rochester*.

Lee, T. A. (2006). *Financial reporting and corporate governance*. Chichester, England: John Wiley & Sons.

Leuz, C. (2003). IAS versus U.S. GAAP: Information asymmetry-based evidence from Germany's new market. *Journal of Accounting Research*, *41*(3), 445-472.

Libby, R. (1981). *Accounting and human information processing: Theory and applications*. Englewood Cliffs, NJ: Prentice-Hall.

Liu, J., & Thomas, J. (2000). Stock returns and accounting earnings. *Journal of Accounting Research*, *38*(1), 71-101.

Lowry, R. (2014). *Concepts and applications of inferential statistics*. Poughkeepsie, NY: R. Lowry.

Maines, L. A., Bartov, E., Fairfield, P., Hirst, D. E., Iannaconi, T. E., Mallett, R., … Vincent, L. (2003). Evaluating concepts-based vs. rules-based approaches to standard setting. *Accounting Horizons*, *17*(1), 73-89.

PCAOB (Public Company Accounting Oversight Board). (2007). *Auditing Standard No. 5*. Washington, DC: PCAOB.

Ross, S. A. (1973). The economic theory of agency: The principal's problem. *The American Economic Review*, *63*(2), 134-139.

Securities and Exchange Commission (SEC) (2000). *Final rule: Revision of the commission's auditor independence requirements*. Washington, D.C.: Government Printing Office.

Securities and Exchange Commission (SEC) (2002). *Sarbanes-Oxley Act of 2002 (Public Law 107-204)*. Washington, D.C.: Government Printing Office.

Schipper, K. (2003). Principles-based accounting standards. *Accounting Horizons*, *17*(1), 61-72.

Schipper, K., & Vincent, L. (2003). Earnings quality. *Accounting Horizons*, *17*(1), 97-110.

Simunic, D. A. (1984). Auditing, consulting, and auditor independence. *Journal of Accounting Research*, *22*(2), 679-702.

Tendeloo, B. van, & Vanstraelen, A. (2005). Earnings management under German GAAP versus IFRS. *European Accounting Review*, *14*(1), 155-180.

Vaassen, E. H., Meuwissen, R., & Schelleman, C. (2009). *Accounting information systems and internal control*. Chichester, U.K: John Wiley & Sons.

Watts, R. L., & Zimmerman, J. L. (1978). Towards a positive theory of the determination of accounting standards. *The Accounting Review*, *53*(1), 112-134.

Zeff, S. A. (1978). The rise of "economic consequences". *Journal of Accountancy*, *146*, 56-63.

Zang, A. Y. (2012). Evidence on the trade-off between real activities manipulation and accrual-based earnings management. *The Accounting Review*, *87*(2), 675-703.

Zhang, I. X. (2007). Economic consequences of the Sarbanes–Oxley Act of 2002. *Journal of Accounting and Economics*, *44*(1-2), 74-115.

9. Appendices

9.1 Appendix 1: Literature review

Figure 2: Relation of literature streams

3.1 Accounting comparability literature

3.1.1 Determinants of Accounting comparability

3.1.2 Accounting comparability & capital markets

3.3.1 Earnings quality & accounting comparability

3.2.1 Auditor characteristics

3.3 Earnings quality literature

3.2.1 Earnings quality & NAS

3.2.2 NAS & auditor independence

3.2 Auditing literature
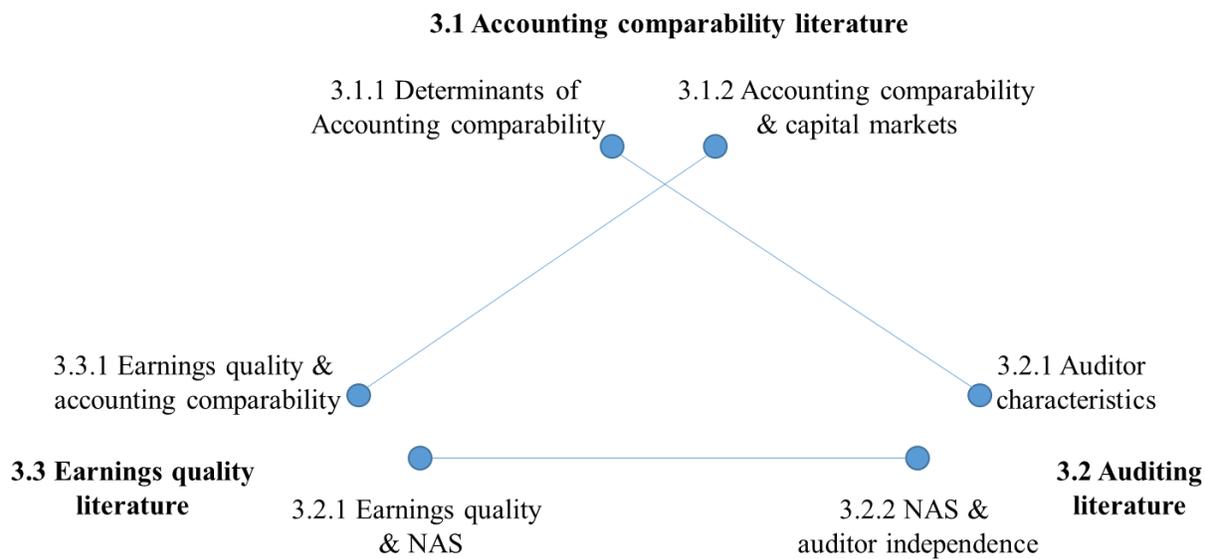
9.2 Appendix 2: Regression assumptions

Table 7: Multicollinearity

		Variable	VIF	1/VIF
UE	×	Big 4 dummy	43.34	0.023073
UE	×	Same Big 4 dummy	41.61	0.024035
UE			21.99	0.045485
UE	×	Firm size	17.33	0.057688
UE	×	Loss dummy	6.04	0.165516
UE	×	Market-to-Book	1.32	0.757473
UE	×	Debt-to-Equity	1.21	0.826785
Mean VIF			18.98	

This variance inflation factor (vif) is a measure of multicollineariy, in which the rule of thumb stresses that vif under 10 implies that no multicollinearity exists between the variables. It is evident from the table above that multicollinearity exists between the variables, such that the exclusion of at least one of the variables might lead to vif under 10. The variables in the table above resemble the independent variables in the complete model of hypothesis 1 (model 1).

Table 8: Multicollinearity

		Variable	VIF	1/VIF
UE			7.95	0.125752
UE	×	Loss dummy	5.83	0.171556
UE	×	Same Big 4 dummy	2.89	0.345756
UE	×	Market-to-Book	1.31	0.761330
UE	×	Debt-to-Equity	1.21	0.828097
Mean VIF			3.84	

This variance inflation factor (vif) is a measure of multicollineariy, in which the rule of thumb stresses that vif under 10 implies that no multicollinearity exists between the variables. The table shows that the assumption of no multicollinearity is not violated, after the removal of the variables 'Firm size' and 'Big 4 dummy'. The variables in the table above resemble the independent variables to be used in the regression analysis of hypothesis 1, table 3.

Table 9: Homoscedasticity

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

H_0: Constant variance (Homoscedasticity)

Chi-squared	22.62
Prob > Chi-squared	0.000

The table above indicates that the null hypothesis of homoscedasticity is rejected, which means that the variance of the residuals are heterogeneous and do not have a constant variance. In order to combat this violation of the assumption, the robustness of standard errors is applied to the regression model.

Table 10: Normality

Shapiro-Wilk W test for normality

H_0: Normal distribution

Variable	Obs	W	V	z	Prob>z
residuals	17,650	0.97431	207.143	14.483	0.0000

The findings presented in this table provide evidence that the residuals of the regression analysis are not normally distributed, as the null hypothesis of normal distribution is rejected. These findings are not surprising given the fact that the number of observations (17,650) is well above the number of observations that are suited for the Shapiro-Wilk W test of observations between 4 and 2000.

9.3 Appendix 3: Sensitivity analyses

Table 11: Fixed effects model

$$CAR3_{it} = \alpha + \beta_1 UE_{it} + \beta_2(UE_{it} * dSameBig4_{it}) + \gamma_1(UE_{it} * MTBV_{it}) + \gamma_2(UE_{it} * Risk_{it}) + \gamma_3(UE_{it} * Firmsize_{it}) + \gamma_4(UE_{it} * dLoss_{it}) + \gamma_5(UE_{it} * dBig4_{it}) + \varepsilon_{it}$$

			Interest variable	Control variables					
			Same Big 4 dummy	Market-to-book dummy	Debt-to-Equity ratio	Firm size	Loss dummy	Big 4 dummy
			$\times$	$\times$	$\times$	$\times$	$\times$	$\times$
	Intercept	UE	UE	UE	UE	UE	UE	UE
	α	$\beta1$	$\beta2$	$\gamma1$	$\gamma2$	$\gamma3$	$\gamma4$	$\gamma5$
Predictions		+	+	+	-	?	-	?
Coefficient	0.00236	0.77489	-0.00603	0.01500	-0.02030		-0.59841	
t-statistics	(14.98)***	(7.42)***	(-0.08)	(2.08)**	(-1.63)		(-6.06)***	
Rob. StdError	0.00016	0.10447	0.07305	0.00722	0.01248		0.09868	
Number of obs.	17,650							
R-squared	0.016							
F-statistics	0.0000							

The dependent variable of the above regression analysis is the 3-day window cumulative abnormal return (CAR). This is a fixed effects regression model, meaning that the panel data on which the model is regressed on, is firm and fiscal year. The variable UE is Unexpected Earnings, which is multiplied with each of the independent variables, which enables the calculation of the earnings response coefficient (ERC). The variable of interest is 'Same Big 4' which is a dummy variable that equals 1 for a firm that has a peer firm that is both: audited by the same Big 4; and operates in the same 2-digit industry. The control variables represent established determinants of ERC, which are firm growth (market-to-book), firm risk (debt-to-equity), firm size (market capitalization), and earnings persistence (loss firm). An additional control variable captures the quality of the auditor, based on whether a Big 4 firm or not. This regression is corrected for robustness of standard errors due to heteroskedasticity identified. The predicted signs are based on prior literature findings.

* Significant at 10%, two-tailed
** Significant at 5%, two-tailed
*** Significant at 1%, two-tailed

Table 12: Extended Big 4 model

$$CAR3_{it} = \alpha + \beta_1 UE_{it} + \beta_2(UE_{it} * dExtendedSameBig4_{it}) + \gamma_1(UE_{it} * MTBV_{it}) +$$
$$\gamma_2(UE_{it} * Risk_{it}) + \gamma_3(UE_{it} * Firmsize_{it}) + \gamma_4(UE_{it} * dLoss_{it}) + \gamma_5(UE_{it} * dBig4_{it}) + \varepsilon_{it}$$

			Interest variable	Control variables				
			Extended Same Big 4 dummy	Market-to-book dummy	Debt-to-Equity ratio	Firm size	Loss dummy	Big 4 dummy
			×	×	×	×	×	×
	Intercept	UE	UE	UE	UE	UE	UE	UE
	α	$\beta1$	$\beta2$	$\gamma1$	$\gamma2$	$\gamma3$	$\gamma4$	$\gamma5$
Predictions		+	+	+	-	?	-	?
Coefficient	0.00240	0.67926	-0.01460	0.01387	-0.02043		-0.51162	
t-statistics	(4.00)***	(7.91)***	(-0.26)	(2.27)**	(-1.59)		(-6.31)***	
Rob. StdError	0.00060	0.08585	0.05692	0.00611	0.01284		0.08105	
Number of obs.	17,650							
R-squared	0.016							
F-statistics	0.0000							

The dependent variable of the above regression analysis is the 3-day window cumulative abnormal return (CAR). The variable UE is Unexpected Earnings, which is multiplied with each of the independent variables, which enables the calculation of the earnings response coefficient (ERC). The variable of interest is 'Extended Same Big 4' which is a dummy variable that equals 1 for a firm that has a peer firm that is: audited by the same Big 4; operates in the same 2-digit industry; and ends its fiscal year in the same month. The control variables represent established determinants of ERC, which are firm growth (market-to-book), firm risk (debt-to-equity), firm size (market capitalization), and earnings persistence (loss firm). An additional control variable captures the quality of the auditor, based on whether a Big 4 firm or not. This regression is corrected for robustness of standard errors due to heteroskedasticity identified. The predicted signs are based on prior literature findings.

*   Significant at 10%, two-tailed
**   Significant at 5%, two-tailed
*** Significant at 1%, two-tailed

Table 13: Model excluding years 2008-2009

$$CAR3_{it} = \alpha + \beta_1 UE_{it} + \beta_2(UE_{it} * dSameBig4_{it}) + \gamma_1(UE_{it} * MTBV_{it}) + \gamma_2(UE_{it} * Risk_{it}) + \gamma_3(UE_{it} * Firmsize_{it}) + \gamma_4(UE_{it} * dLoss_{it}) + \gamma_5(UE_{it} * dBig4_{it}) + \varepsilon_{it}$$

			Interest variable	Control variables					
			Same Big 4 dummy	Market-to-book dummy	Debt-to-Equity ratio	Firm size	Loss dummy	Big 4 dummy
			×	×	×	×	×	×
	Intercept	UE	UE	UE	UE	UE	UE	UE
	α	$\beta1$	$\beta2$	$\gamma1$	$\gamma2$	$\gamma3$	$\gamma4$	$\gamma5$
Predictions		+	+	+	-	?	-	?
Coefficient	0.00218	0.88361	-0.04944	0.01176	-0.03087		-0.65499	
t-statistics	(3.47)***	(9.42)***	(-0.73)	(1.73)*	(-1.94)*		(-7.35)***	
Rob. StdError	0.00063	0.09383	0.06812	0.00680	0.01590		0.08908	
Number of obs.	14,866							
R-squared	0.019							
F-statistics	0.0000							

The dependent variable of the above regression analysis is the 3-day window cumulative abnormal return (CAR). This regression analysis excludes the years of the financial crisis in the US, 2008-2009, in order to examine the robustness of the original regression analysis. The variable UE is Unexpected Earnings, which is multiplied with each of the independent variables, which enables the calculation of the earnings response coefficient (ERC). The variable of interest is 'Same Big 4' which is a dummy variable that equals 1 for a firm that has a peer firm that is both: audited by the same Big 4; and operates in the same 2-digit industry. The control variables represent established determinants of ERC, which are firm growth (market-to-book), firm risk (debt-to-equity), firm size (market capitalization), and earnings persistence (loss firm). An additional control variable captures the quality of the auditor, based on whether a Big 4 firm or not. This regression is corrected for robustness of standard errors due to heteroskedasticity identified. The predicted signs are based on prior literature findings.

*   Significant at 10%, two-tailed
**   Significant at 5%, two-tailed
*** Significant at 1%, two-tailed

Table 14: Regression Big 4 Sample

$$CAR3_{it} = \alpha + \beta_1 UE_{it} + \beta_2(UE_{it} * dSameBig4_{it}) + \gamma_1(UE_{it} * MTBV_{it}) + \gamma_2(UE_{it} * Risk_{it}) + \gamma_3(UE_{it} * Firmsize_{it}) + \gamma_4(UE_{it} * dLoss_{it}) + \gamma_5(UE_{it} * dBig4_{it}) + \varepsilon_{it}$$

			Interest variable	Control variables					
			Same Big 4 dummy ×	Market-to-book dummy ×	Debt-to-Equity ratio ×	Firm size ×	Loss dummy ×	Big 4 dummy ×
	Intercept	UE	UE	UE	UE	UE	UE	UE
	α	$\beta1$	$\beta2$	$\gamma1$	$\gamma2$	$\gamma3$	$\gamma4$	$\gamma5$
Predictions		+	+	+	-	?	-	?
Coefficient	0.00282	1.18772	-0.29822	0.00938	-0.02449		-0.69224	
t-statistics	(4.39)***	(3.09)***	(-0.79)	(1.07)	(-1.39)		(-6.45)***	
Rob. StdError	0.00064	0.38493	0.37986	0.00878	0.01762		0.10738	
Number of obs.	14,731							
R-squared	0.018							
F-statistics	0.0000							

The dependent variable of the above regression analysis is the 3-day window cumulative abnormal return (CAR). This regression analysis is based on only Big 4 data, by means of examining the robustness of the original regression analysis. The variable UE is Unexpected Earnings, which is multiplied with each of the independent variables, which enables the calculation of the earnings response coefficient (ERC). The variable of interest is 'Same Big 4' which is a dummy variable that equals 1 for a firm that has a peer firm that is both: audited by the same Big 4; and operates in the same 2-digit industry. The control variables represent established determinants of ERC, which are firm growth (market-to-book), firm risk (debt-to-equity), firm size (market capitalization), and earnings persistence (loss firm). An additional control variable captures the quality of the auditor, based on whether a Big 4 firm or not. This regression is corrected for robustness of standard errors due to heteroskedasticity identified. The predicted signs are based on prior literature findings.

*   Significant at 10%, two-tailed
**   Significant at 5%, two-tailed
*** Significant at 1%, two-tailed